01268-EPA-5500

"Sutley, Nancy H." <(b) (6) ov>

12/28/2010 02:05 PM

To (b) (6) "shawnita.jackson@js.pentagon.mil", "jane.lubchenco@noaa.gov", "james.clapper@dni.gov", "woodardew@state.gov", "ssuresh@nsf.gov", "annie.bradley@usdoj.gov", "robert.rangel@sd.mil", "Browner, Carol M.", "Summers, Lawrence", "Barnes, Melody C.", "Brennan, John O.", "Donilon, Thomas E.", "Zients, Jeffrey D.", "Klain, Ron", (b) (6) "kensalazar@ios.doi.gov", "charles.bolden@nasa.gov", (b) (6), Richard Windsor, (b) (6), "jon.wellinghoff@ferc.gov", "janet.napolitano@dhs.gov"

cc "aretha.robinson@osec.usda.gov", "howard.hankin@wdc.usda.gov", "Ashley.Chappell@noaa.gov", "Teresa.Christopher@noaa.gov", "robin.brake@navy.mil", "Damian.Bednarz@hq.doe.gov", Paul Cough, Kate Perry, "merrill.hathaway@ferc.gov", "Carolyn.templeton@ferc.gov", (b) (6) "John.T.Oliver@uscg.mil", "mike.m.sollosi@uscg.mil", "Terry_Holman@ios.doi.gov", "BRADLEY.APPLEMAN@js.pentagon.mil", "Karen.wardzinski@usdoj.gov", (b) (6), "Uzzell.Megan@dol.gov", "jack.kaye@nasa.gov", "dconover@nsf.gov", "O'BrienGJ@state.gov", "Camille.Mittelholtz@dot.gov", "Janice.Weaver@dot.gov", "anne.christenson@dot.gov", "Levine, Brian S.", (b) (6) (b) (6) "McConville, Drew", "Zichal, Heather R.", "Connors, Celeste A." (b) (6) gov", "Ericsson, Sally C.", "tina.palacios@nasa.gov", "Luster, Jeffrey P.", "Praskovich, Alisa L.", "Nikolaus, Roxanne", "aretha.robinson@osec.usda.gov", "barnesmd@state.gov", "Shanedda.bogan@usdoj.gov", "jstewart@nmic.navy.mil", "Deborah.D.Smith@uscg.mil", "Allandra.Washington@noaa.gov", "Emily.barson@hhs.gov", "lmoorman@nsf.gov", "kathryn.manuel-1@nasa.gov", "brizzi.djuna.y@dol.gov", "howard.hankin@wdc.usda.gov", "Levenbach, Stuart"

bcc

Subject NOC Principal-level committee virtual action on the GCC Slate and ORM-IPC Charter

Dear National Ocean Council Members:

(b) (5)

[redacted]

(b) (5)

[redacted]

[redacted]

[redacted]

Nancy H. Sutley
Chair, Council on Environmental Quality
Co-Chair National Ocean Council

John P. Holdren
Director, Office of Science and Technology Policy
Co-Chair National Ocean Council

GCC Slate (revised 12-27-10)(with Jan 7 due date).pdf

ORM-IPC Charter (with Jan 7 due date).pdf

01268-EPA-5501

Al Armendariz/R6/USEPA/US
12/28/2010 07:53 PM

To "Lisa Garcia", "Richard Windsor", "Seth Oster", "Betsaida Alcantara"
cc "Larry Starfield"
bcc
Subject Fw: following up on WH EJ Forum

FYI: note from Suzie.

As we'll talk about next week (and as you can see in her email), Suzie is really interested in 1 thing, and 1 thing only.

Relocation of fenceline communities.

[redacted] Ex. 5 Deliberative

[redacted]

Best to all - Happy new year.

Al

_____
Al Armendariz
Regional Administrator
U.S. EPA
Region 6
armendariz.al@epa.gov
office: 214-665-2100
twitter: @al_armendariz

From: "Suzie Canales" [scanales@grandecom net]
Sent: 12/28/2010 06:42 PM CST
To: LisaP Jackson
Cc: "Morales, Toni" <[redacted] (b) (6)> "Shapiro, Jack" <[redacted] (b) (6) v>; "Buffa, Nikki" <[redacted] (b) (6)> '"EJ Forum"' <[redacted] (b) (6)> Al Armendariz; Jeannine Hale; Shirley Quinones
Subject: following up on WH EJ Forum

Dear Lisa Jackson,

You may remember me from the WH EJ forum (12/15/10). I was the one who disrupted the morning by speaking out to express my dissatisfaction for the day's agenda and at the government's efforts on environmental justice. My actions resulted in the White House agenda being changed to allow for decent community input and it resulted in a face-to-face meeting with you in the hallway.

I handed you a copy of the report I wrote titled, "Risk Assessment or Risk Acceptance: Why EPA's attempts to achieve environmental justice have failed and what they can do about it."

You asked me for three things I want. I responded by saying:

1) I'd like to be invited to attend an upcoming EJ interagency working group meeting to discuss how this group of powerful agencies with vast resources could work toward prioritizing and relocate fence-line communities to safety, in a way that is fair to them.
2) Stop studying us to death. Stop imposing already suffering communities to risk assessments when you already know EJ communities are at risk and incorporate the precautionary principle.
3) Roll up your sleeves, get to work on truly addressing EJ issues. I said the documents EPA has produced have no value to us, they're words on paper, what we need is real action.

Then you stood up and I asked you, "Will I hear back from you?" And you said, "Yes."

A DC reporter happened to be close by, witnessed our meeting and documented it in an article that was picked up by the *New York Times* . Link to article: http://www.nytimes.com/gwire/2010/12/16/16greenwire-environmental-justice-activist-urges-epa-chief-24157.html

Reflections on WH EJ Forum

For some time now I've felt that this administration "just doesn't get it." Evidence of that was the fact that the WH held an EJ forum yet provided no assistance for travel. Last November, after receiving my invitation to the forum, I called Nancy Sutley's office and explained to them that by definition, EJ is low-income people of color. How then should we be expected to cover travel expenses? I was told that it came from the top: **no federal money will go for travel.**

It was only through the grace of God and the generosity of my good friends that I was able to cover the travel costs.

But the hypocrisy was clear to me --- I have no doubt that the WH has spent federal funds for other events (i.e., state dinners, lavish Christmas parties) yet at the WH **EJ** forum, when I was thirsty, instead of getting a simple glass of water, I was given directions to the closest water fountain which was to walk outside the auditorium, (exposed to the freezing elements) and into another building to get to the water fountain. At lunch time, we were on our own but we were pointed to the direction of the cafeteria…

The fact that the EJ activists invited to the forum weren't given the same consideration as celebrities and others invited to various other WH events tells me that we've being discriminated against. We deserve to be treated with dignity and respect. I left DC feeling very disillusioned by this administration.

One more thing, we keep hearing "**the WH has made EJ a priority,"** but what I see is our serious issues being "paraded about" by the EPA and WH at press conferences and media releases in a way that gives the *illusion* that meaningful things are being done for us, when in reality they're not. It's all a smoke screen to advance the WH agenda. My hope is that the WH and EPA stop using our grave issues to make the WH look good.

I hope this New Year brings a renewed and sincere effort on the part of the WH and EPA with regard to EJ and I hope to hear from you soon on the three items you asked me to share with you that day.

Sincerely,
Suzie Canales
EJ Activist/Advocate

01268-EPA-5502

Richard Windsor/DC/USEPA/US
12/28/2010 08:36 PM

To Al Armendariz, "Lisa Garcia", "Lisa Jackson", "Seth Oster", "Betsaida Alcantara"
cc Lawrence Starfield
bcc
Subject Re: following up on WH EJ Forum

[redacted] Ex. 5 Deliberative [redacted]

From: Al Armendariz
Sent: 12/28/2010 07:53 PM EST
To: "Lisa Garcia" <garcia.lisa@epa.gov>; "Richard Windsor" <Windsor.Richard@epa.gov>; "Seth Oster" <oster.seth@epa.gov>; "Betsaida Alcantara" <alcantara.betsaida@epa.gov>
Cc: Lawrence Starfield
Subject: Fw: following up on WH EJ Forum

FYI: note from Suzie.

As we'll talk about next week (and as you can see in her email), Suzie is really interested in 1 thing, and 1 thing only.

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[redacted] Ex. 5 Deliberative [redacted]

Best to all - Happy new year.

Al

Al Armendariz
Regional Administrator
U.S. EPA
Region 6
armendariz.al@epa.gov
office: 214-665-2100
twitter: @al_armendariz

From: "Suzie Canales" [scanales@grandecom net]
Sent: 12/28/2010 06:42 PM CST
To: LisaP Jackson
Cc: "Morales, Toni" <[redacted] (b) (6) [redacted]> "Shapiro, Jack" <[redacted] (b) (6) [redacted]> "Buffa, Nikki" <[redacted] (b) (6) [redacted]> '"EJ Forum"' <[redacted] (b) (6) [redacted]> Al Armendariz; Jeannine Hale; Shirley Quinones
Subject: following up on WH EJ Forum

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I hope this New Year brings a renewed and sincere effort on the part of the WH and EPA with regard to EJ and I hope to hear from you soon on the three items you asked me to share with you that day.

Sincerely,
Suzie Canales
EJ Activist/Advocate

01268-EPA-5503

David McIntosh/DC/USEPA/US
01/07/2011 06:57 PM

To Richard Windsor
cc
bcc
Subject Fw: Follow-up Deputies Meeting on CES

[redacted]
Ex. 5 Deliberative

----- Forwarded by David McIntosh/DC/USEPA/US on 01/07/2011 06:54 PM -----

From: "Utech, Dan G." <(b) (6)
To: "Moilanen, Stephen S." <(b) (6) "Fetter, Steve" <(b) (6) "Bhowmik, Rachana" <(b) (6) "Lew, Shoshana M. (WHO)" <(b) (6) "Levinson, Arik" <(b) (6) "Judson.Jaffe@do.treas.gov" <Judson.Jaffe@do.treas.gov>, "Bordoff, Jason E." <(b) (6) David McIntosh/DC/USEPA/US@EPA, "Zichal, Heather R." <(b) (6) "Deese, Brian C." <(b) (6) "Furman, Jason L." <(b) (6) "Siegel, Avra" <(b) (6) "Ferris, Ann E." <(b) (6) "Fawcett, Allen" <(b) (6) "Maher, Jessica A." <(b) (6) "Heimbach, Jay" <(b) (6) "Maxted, Sarah Jane" <Sarah.Maxted@Hq.Doe.Gov>, "DeGolia, Alexander H." <(b) (6) "William.Pizer@do.treas.gov" <William.Pizer@do.treas.gov>, "cathy.zoi@hq.doe.gov" <cathy.zoi@hq.doe.gov>, "Levine, Brian S." <(b) (6) "'Newell, Richard'" <Richard.Newell@eia.gov>
Cc: "Keohane, Nathaniel" <(b) (6)
Date: 01/07/2011 06:30 PM
Subject: RE: Follow-up Deputies Meeting on CES

(b) (5)
[redacted]

[redacted]

[redacted]

[redacted]

Dan Utech
White House Office of Energy and Climate Change
(b) (6)

-----Original Appointment-----
From: Moilanen, Stephen S.
Sent: Friday, January 07, 2011 4:50 PM
To: Fetter, Steve; Bhowmik, Rachana; Utech, Dan G.; Lew, Shoshana M. (WHO); Levinson, Arik; Judson.Jaffe@do.treas.gov; Bordoff, Jason E.; McIntosh.David@epamail.epa.gov; Zichal, Heather R.; Deese, Brian C.; Furman, Jason L.; Siegel, Avra; Ferris, Ann E.; Fawcett, Allen; Maher, Jessica A.; Heimbach, Jay; Maxted, Sarah Jane; DeGolia, Alexander H.; William.Pizer@do.treas.gov; Keohane, Nathaniel; cathy.zoi@hq.doe.gov

Subject: Follow-up Deputies Meeting on CES
When: Monday, January 10, 2011 2:00 PM-3:00 PM (GMT-05:00) Eastern Time (US & Canada).
Where: EEOB TBC

All,

(b) (5) [redacted]

[redacted]

Best,

Office of Energy and Climate Change

[redacted] Ex. 5 Deliberative

DRAFT CES Memo 1-7-11.docx

01268-EPA-5504

David McIntosh/DC/USEPA/US
01/09/2011 12:50 PM

To Richard Windsor
cc
bcc
Subject Re: Fw: Follow-up Deputies Meeting on CES

An additional point: Ex. 5 Deliberative [redacted]

David McIntosh [redacted] 01/07/2011 06:57:54 PM

From: David McIntosh/DC/USEPA/US
To: Richard Windsor/DC/USEPA/US@EPA
Date: 01/07/2011 06:57 PM
Subject: Fw: Follow-up Deputies Meeting on CES

Ex. 5 Deliberative [redacted]

----- Forwarded by David McIntosh/DC/USEPA/US on 01/07/2011 06:54 PM -----

From: "Utech, Dan G." <(b) (6)
To: "Moilanen, Stephen S." <(b) (6) "Fetter, Steve" <(b) (6) "Bhowmik, Rachana" <(b) (6) "Lew, Shoshana M. (WHO)" <(b) (6) "Levinson, Arik" <Arik_M._Levinson@cea.eop.gov>, "Judson.Jaffe@do.treas.gov" <Judson.Jaffe@do.treas.gov>, "Bordoff, Jason E." <(b) (6) David McIntosh/DC/USEPA/US@EPA, "Zichal, Heather R." <(b) (6) "Deese, Brian C." <(b) (6) "Furman, Jason L." <(b) (6) "Siegel, Avra" <(b) (6) "Ferris, Ann E." <Ann_E._Ferris@ceq.eop.gov>, "Fawcett, Allen" <(b) (6) "Maher, Jessica A." <(b) (6) "Heimbach, Jay" <(b) (6) "Maxted, Sarah Jane" <Sarah.Maxted@Hq.Doe.Gov>, "DeGolia, Alexander H." <Alexander_H._DeGolia@omb.eop.gov>, "William.Pizer@do.treas.gov" <William.Pizer@do.treas.gov>, "cathy.zoi@hq.doe.gov" <cathy.zoi@hq.doe.gov>, "Levine, Brian S." <(b) (6) "'Newell, Richard'" <Richard.Newell@eia.gov>
Cc: "Keohane, Nathaniel" <(b) (6)
Date: 01/07/2011 06:30 PM
Subject: RE: Follow-up Deputies Meeting on CES

(b) (5) [redacted]

[redacted]

[redacted]

([redacted]

(b) (5) [redacted].

Dan Utech
White House Office of Energy and Climate Change
(b) (6)

-----Original Appointment-----
From: Moilanen, Stephen S.
Sent: Friday, January 07, 2011 4:50 PM
To: Fetter, Steve; Bhowmik, Rachana; Utech, Dan G.; Lew, Shoshana M. (WHO); Levinson, Arik; Judson.Jaffe@do.treas.gov; Bordoff, Jason E.; McIntosh.David@epamail.epa.gov; Zichal, Heather R.; Deese, Brian C.; Furman, Jason L.; Siegel, Avra; Ferris, Ann E.; Fawcett, Allen; Maher, Jessica A.; Heimbach, Jay; Maxted, Sarah Jane; DeGolia, Alexander H.; William.Pizer@do.treas.gov; Keohane, Nathaniel; cathy.zoi@hq.doe.gov
Subject: Follow-up Deputies Meeting on CES
When: Monday, January 10, 2011 2:00 PM-3:00 PM (GMT-05:00) Eastern Time (US & Canada).
Where: EEOB TBC

All,

(b) (5) [redacted]

[redacted]

Best,

Office of Energy and Climate Change

Ex. 5 Deliberative [redacted]

DRAFT CES Memo 1-7-11.docx

01268-EPA-5505

Richard Windsor/DC/USEPA/US
01/09/2011 01:42 PM

To David McIntosh
cc
bcc
Subject Re: Fw: Follow-up Deputies Meeting on CES

[redacted] Ex. 5 Deliberative

David McIntosh [redacted] Ex. 5 Deliberative 01/07/2011 06:57:55 PM

From: David McIntosh/DC/USEPA/US
To: Richard Windsor/DC/USEPA/US@EPA
Date: 01/07/2011 06:57 PM
Subject: Fw: Follow-up Deputies Meeting on CES

[redacted] Ex. 5 Deliberative

----- Forwarded by David McIntosh/DC/USEPA/US on 01/07/2011 06:54 PM -----

From: "Utech, Dan G." <[redacted] (b) (6)
To: "Moilanen, Stephen S." <[redacted] (b) (6) "Fetter, Steve" <[redacted] (b) (6) "Bhowmik, Rachana" <[redacted] (b) (6) "Lew, Shoshana M. (WHO)" <[redacted] (b) (6) "Levinson, Arik" <[redacted] (b) (6) "Judson.Jaffe@do.treas.gov" <Judson.Jaffe@do.treas.gov>, "Bordoff, Jason E." <[redacted] (b) (6) David McIntosh/DC/USEPA/US@EPA, "Zichal, Heather R." <[redacted] (b) (6) "Deese, Brian C." <[redacted] (b) (6) "Furman, Jason L." <[redacted] (b) (6) "Siegel, Avra" <[redacted] (b) (6) "Ferris, Ann E." <[redacted] (b) (6) "Fawcett, Allen" <[redacted] (b) (6) "Maher, Jessica A." <[redacted] (b) (6) "Heimbach, Jay" <[redacted] (b) (6) "Maxted, Sarah Jane" <Sarah.Maxted@Hq.Doe.Gov>, "DeGolia, Alexander H." <[redacted] (b) (6) "William.Pizer@do.treas.gov" <William.Pizer@do.treas.gov>, "cathy.zoi@hq.doe.gov" <cathy.zoi@hq.doe.gov>, "Levine, Brian S." <[redacted] (b) (6) "'Newell, Richard'" <Richard.Newell@eia.gov>
Cc: "Keohane, Nathaniel" <[redacted] (b) (6)
Date: 01/07/2011 06:30 PM
Subject: RE: Follow-up Deputies Meeting on CES

(b) (5) [redacted]

Dan Utech
White House Office of Energy and Climate Change
(b) (6)

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From: Moilanen, Stephen S.
Sent: Friday, January 07, 2011 4:50 PM
To: Fetter, Steve; Bhowmik, Rachana; Utech, Dan G.; Lew, Shoshana M. (WHO); Levinson, Arik; Judson.Jaffe@do.treas.gov; Bordoff, Jason E.; McIntosh.David@epamail.epa.gov; Zichal, Heather R.; Deese, Brian C.; Furman, Jason L.; Siegel, Avra; Ferris, Ann E.; Fawcett, Allen; Maher, Jessica A.; Heimbach, Jay; Maxted, Sarah Jane; DeGolia, Alexander H.; William.Pizer@do.treas.gov; Keohane, Nathaniel; cathy.zoi@hq.doe.gov
Subject: Follow-up Deputies Meeting on CES
When: Monday, January 10, 2011 2:00 PM-3:00 PM (GMT-05:00) Eastern Time (US & Canada).
Where: EEOB TBC

All,

(b) (5)

Best,

Office of Energy and Climate Change

Ex. 5 Deliberative

DRAFT CES Memo 1-7-11.docx

01268-EPA-5506

Richard Windsor/DC/USEPA/US
01/09/2011 01:43 PM

To Bob Perciasepe, Gina McCarthy
cc
bcc
Subject Fw: Follow-up Deputies Meeting on CES

[redacted] Ex. 5 Deliberative

----- Forwarded by Richard Windsor/DC/USEPA/US on 01/09/2011 01:46 PM -----

From: David McIntosh/DC/USEPA/US
To: Richard Windsor/DC/USEPA/US@EPA
Date: 01/07/2011 06:57 PM
Subject: Fw: Follow-up Deputies Meeting on CES

[redacted] Ex. 5 Deliberative

----- Forwarded by David McIntosh/DC/USEPA/US on 01/07/2011 06:54 PM -----

From: "Utech, Dan G." <[redacted] (b) (6)
To: "Moilanen, Stephen S." <[redacted] (b) (6) "Fetter, Steve" <[redacted] (b) (6) "Bhowmik, Rachana" <[redacted] (b) (6) "Lew, Shoshana M. (WHO)" <[redacted] (b) (6) "Levinson, Arik" <[redacted] (b) (6) "Judson.Jaffe@do.treas.gov" <Judson.Jaffe@do.treas.gov>, "Bordoff, Jason E." <[redacted] (b) (6) David McIntosh/DC/USEPA/US@EPA, "Zichal, Heather R." <[redacted] (b) (6) "Deese, Brian C." <[redacted] (b) (6) "Furman, Jason L." <[redacted] (b) (6) "Siegel, Avra" <[redacted] (b) (6) "Ferris, Ann E." <[redacted] (b) (6) "Fawcett, Allen" <[redacted] (b) (6) "Maher, Jessica A." <[redacted] (b) (6) "Heimbach, Jay" <[redacted] (b) (6) "Maxted, Sarah Jane" <Sarah.Maxted@Hq.Doe.Gov>, "DeGolia, Alexander H." <[redacted] (b) (6) "William.Pizer@do.treas.gov" <William.Pizer@do.treas.gov>, "cathy.zoi@hq.doe.gov" <cathy.zoi@hq.doe.gov>, "Levine, Brian S." <[redacted] (b) (6) "'Newell, Richard'" <Richard.Newell@eia.gov>
Cc: "Keohane, Nathaniel" <[redacted] (b) (6)
Date: 01/07/2011 06:30 PM
Subject: RE: Follow-up Deputies Meeting on CES

[redacted] (b) (5)

[redacted]

[redacted]

[redacted]

[redacted]

Dan Utech
White House Office of Energy and Climate Change
[redacted] (b) (6)

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From: Moilanen, Stephen S.
Sent: Friday, January 07, 2011 4:50 PM

To: Fetter, Steve; Bhowmik, Rachana; Utech, Dan G.; Lew, Shoshana M. (WHO); Levinson, Arik; Judson.Jaffe@do.treas.gov; Bordoff, Jason E.; McIntosh.David@epamail.epa.gov; Zichal, Heather R.; Deese, Brian C.; Furman, Jason L.; Siegel, Avra; Ferris, Ann E.; Fawcett, Allen; Maher, Jessica A.; Heimbach, Jay; Maxted, Sarah Jane; DeGolia, Alexander H.; William.Pizer@do.treas.gov; Keohane, Nathaniel; cathy.zoi@hq.doe.gov
Subject: Follow-up Deputies Meeting on CES
When: Monday, January 10, 2011 2:00 PM-3:00 PM (GMT-05:00) Eastern Time (US & Canada).
Where: EEOB TBC

All,

(b) (5)
[redacted]

Best,

Office of Energy and Climate Change

Ex. 5 Deliberative

DRAFT CES Memo 1-7-11.docx

01268-EPA-5507

David McIntosh/DC/USEPA/US
01/09/2011 01:50 PM

To Richard Windsor
cc
bcc
Subject Re: Fw: Follow-up Deputies Meeting on CES

[redacted] Ex. 5 Deliberative

Richard Windsor [redacted] Ex. 5 Deliberative 01/09/2011 01:42:13 PM

From: Richard Windsor/DC/USEPA/US
To: David McIntosh/DC/USEPA/US@EPA
Date: 01/09/2011 01:42 PM
Subject: Re: Fw: Follow-up Deputies Meeting on CES

[redacted] Ex. 5 Deliberative

David McIntosh [redacted] Ex. 5 Deliberative 01/07/2011 06:57:55 PM

From: David McIntosh/DC/USEPA/US
To: Richard Windsor/DC/USEPA/US@EPA
Date: 01/07/2011 06:57 PM
Subject: Fw: Follow-up Deputies Meeting on CES

[redacted] Ex. 5 Deliberative

----- Forwarded by David McIntosh/DC/USEPA/US on 01/07/2011 06:54 PM -----

From: "Utech, Dan G." <[redacted] (b) (6)
To: "Moilanen, Stephen S." <[redacted] (b) (6) "Fetter, Steve" <[redacted] (b) (6) "Bhowmik, Rachana" <[redacted] (b) (6) "Lew, Shoshana M. (WHO)" <[redacted] (b) (6) "Levinson, Arik" <[redacted] (b) (6) "Judson.Jaffe@do.treas.gov" <Judson.Jaffe@do.treas.gov>, "Bordoff, Jason E." <[redacted] (b) (6) David McIntosh/DC/USEPA/US@EPA, "Zichal, Heather R." <[redacted] (b) (6) "Deese, Brian C." <[redacted] (b) (6) "Furman, Jason L." <[redacted] (b) (6) "Siegel, Avra" <[redacted] (b) (6) "Ferris, Ann E." <[redacted] (b) (6) "Fawcett, Allen" <[redacted] (b) (6) "Maher, Jessica A." <[redacted] (b) (6) "Heimbach, Jay" <[redacted] (b) (6) "Maxted, Sarah Jane" <Sarah.Maxted@Hq.Doe.Gov>, "DeGolia, Alexander H."

< (b) (6) "William.Pizer@do.treas.gov" <William.Pizer@do.treas.gov>, "cathy.zoi@hq.doe.gov" <cathy.zoi@hq.doe.gov>, "Levine, Brian S." < (b) (6) "'Newell, Richard'" <Richard.Newell@eia.gov>
Cc: "Keohane, Nathaniel" < (b) (6)
Date: 01/07/2011 06:30 PM
Subject: RE: Follow-up Deputies Meeting on CES

(b) (5)

Dan Utech
White House Office of Energy and Climate Change
(b) (6)

-----Original Appointment-----
From: Moilanen, Stephen S.
Sent: Friday, January 07, 2011 4:50 PM
To: Fetter, Steve; Bhowmik, Rachana; Utech, Dan G.; Lew, Shoshana M. (WHO); Levinson, Arik; Judson.Jaffe@do.treas.gov; Bordoff, Jason E.; McIntosh.David@epamail.epa.gov; Zichal, Heather R.; Deese, Brian C.; Furman, Jason L.; Siegel, Avra; Ferris, Ann E.; Fawcett, Allen; Maher, Jessica A.; Heimbach, Jay; Maxted, Sarah Jane; DeGolia, Alexander H.; William.Pizer@do.treas.gov; Keohane, Nathaniel; cathy.zoi@hq.doe.gov
Subject: Follow-up Deputies Meeting on CES
When: Monday, January 10, 2011 2:00 PM-3:00 PM (GMT-05:00) Eastern Time (US & Canada).
Where: EEOB TBC

All,

(b) (5)

Best,

Office of Energy and Climate Change

Ex. 5 Deliberative

DRAFT CES Memo 1-7-11.docx

01268-EPA-5508

Richard Windsor/DC/USEPA/US
01/09/2011 02:02 PM

To David McIntosh
cc
bcc
Subject Re: Fw: Follow-up Deputies Meeting on CES

Ex. 5 Deliberative

David McIntosh

----- Original Message -----
From: David McIntosh
Sent: 01/09/2011 01:50 PM EST
To: Richard Windsor
Subject: Re: Fw: Follow-up Deputies Meeting on CES

Ex. 5 Deliberative

Richard Windsor Ex. 5 Deliberative 01/09/2011 01:42:13 PM

From: Richard Windsor/DC/USEPA/US
To: David McIntosh/DC/USEPA/US@EPA
Date: 01/09/2011 01:42 PM
Subject: Re: Fw: Follow-up Deputies Meeting on CES

Ex. 5 Deliberative

David McIntosh Ex. 5 Deliberative 01/07/2011 06:57:55 PM

From: David McIntosh/DC/USEPA/US
To: Richard Windsor/DC/USEPA/US@EPA
Date: 01/07/2011 06:57 PM
Subject: Fw: Follow-up Deputies Meeting on CES

Ex. 5 Deliberative

----- Forwarded by David McIntosh/DC/USEPA/US on 01/07/2011 06:54 PM -----

From: "Utech, Dan G." <(b) (6)
To: "Moilanen, Stephen S." <(b) (6) "Fetter, Steve" <(b) (6) "Bhowmik, Rachana" <(b) (6)

"Lew, Shoshana M. (WHO)" <(b) (6)> "Levinson, Arik" <(b) (6)> "Judson.Jaffe@do.treas.gov" <Judson.Jaffe@do.treas.gov>, "Bordoff, Jason E." <(b) (6)> David McIntosh/DC/USEPA/US@EPA, "Zichal, Heather R." <(b) (6)> "Deese, Brian C." <(b) (6)> "Furman, Jason L." <(b) (6)> "Siegel, Avra" <(b) (6)> "Ferris, Ann E." <(b) (6)> "Fawcett, Allen" <(b) (6)> "Maher, Jessica A." <(b) (6)> "Heimbach, Jay" <(b) (6)> "Maxted, Sarah Jane" <Sarah.Maxted@Hq.Doe.Gov>, "DeGolia, Alexander H." <(b) (6)> "William.Pizer@do.treas.gov" <William.Pizer@do.treas.gov>, "cathy.zoi@hq.doe.gov" <cathy.zoi@hq.doe.gov>, "Levine, Brian S." <(b) (6)> "'Newell, Richard'" <Richard.Newell@eia.gov>
Cc: "Keohane, Nathaniel" <(b) (6)>
Date: 01/07/2011 06:30 PM
Subject: RE: Follow-up Deputies Meeting on CES

(b) (5)

Dan Utech
White House Office of Energy and Climate Change
(b) (6)

-----Original Appointment-----
From: Moilanen, Stephen S.
Sent: Friday, January 07, 2011 4:50 PM
To: Fetter, Steve; Bhowmik, Rachana; Utech, Dan G.; Lew, Shoshana M. (WHO); Levinson, Arik; Judson.Jaffe@do.treas.gov; Bordoff, Jason E.; McIntosh.David@epamail.epa.gov; Zichal, Heather R.; Deese, Brian C.; Furman, Jason L.; Siegel, Avra; Ferris, Ann E.; Fawcett, Allen; Maher, Jessica A.; Heimbach, Jay; Maxted, Sarah Jane; DeGolia, Alexander H.; William.Pizer@do.treas.gov; Keohane, Nathaniel; cathy.zoi@hq.doe.gov
Subject: Follow-up Deputies Meeting on CES
When: Monday, January 10, 2011 2:00 PM-3:00 PM (GMT-05:00) Eastern Time (US & Canada).
Where: EEOB TBC

All,

(b) (5)

Best,

Office of Energy and Climate Change

[attachment "DRAFT CES Memo 1-7-11.docx" deleted by Richard Windsor/DC/USEPA/US]

01268-EPA-5509

David McIntosh/DC/USEPA/US
01/09/2011 02:09 PM

To Richard Windsor
cc
bcc
Subject Re: Fw: Follow-up Deputies Meeting on CES

[redacted] Ex. 5 Deliberative

Richard Windsor [redacted] 01/09/2011 02:02:45 PM

From: Richard Windsor/DC/USEPA/US
To: David McIntosh/DC/USEPA/US@EPA
Date: 01/09/2011 02:02 PM
Subject: Re: Fw: Follow-up Deputies Meeting on CES

[redacted] Ex. 5 Deliberative

David McIntosh

----- Original Message -----
From: David McIntosh
Sent: 01/09/2011 01:50 PM EST
To: Richard Windsor
Subject: Re: Fw: Follow-up Deputies Meeting on CES

[redacted] Ex. 5 Deliberative

Richard Windsor [redacted] Ex. 5 Deliberative 01/09/2011 01:42:13 PM

From: Richard Windsor/DC/USEPA/US
To: David McIntosh/DC/USEPA/US@EPA
Date: 01/09/2011 01:42 PM
Subject: Re: Fw: Follow-up Deputies Meeting on CES

[redacted] Ex. 5 Deliberative

David McIntosh [redacted] Ex. 5 Deliberative i... 01/07/2011 06:57:55 PM

From: David McIntosh/DC/USEPA/US
To: Richard Windsor/DC/USEPA/US@EPA
Date: 01/07/2011 06:57 PM
Subject: Fw: Follow-up Deputies Meeting on CES

Ex. 5 Deliberative

----- Forwarded by David McIntosh/DC/USEPA/US on 01/07/2011 06:54 PM -----

From: "Utech, Dan G." <(b) (6)
To: "Moilanen, Stephen S." <(b) (6) "Fetter, Steve" <(b) (6) "Bhowmik, Rachana" <(b) (6) "Lew, Shoshana M. (WHO)" <(b) (6) "Levinson, Arik" <(b) (6) "Judson.Jaffe@do.treas.gov" <Judson.Jaffe@do.treas.gov>, "Bordoff, Jason E." <(b) (6) David McIntosh/DC/USEPA/US@EPA, "Zichal, Heather R." <(b) (6) "Deese, Brian C." <(b) (6) "Furman, Jason L." <(b) (6) "Siegel, Avra" <(b) (6) "Ferris, Ann E." <(b) (6) "Fawcett, Allen" <(b) (6) "Maher, Jessica A." <(b) (6) "Heimbach, Jay" <(b) (6) "Maxted, Sarah Jane" <Sarah.Maxted@Hq.Doe.Gov>, "DeGolia, Alexander H." <(b) (6) "William.Pizer@do.treas.gov" <William.Pizer@do.treas.gov>, "cathy.zoi@hq.doe.gov" <cathy.zoi@hq.doe.gov>, "Levine, Brian S." <(b) (6) "'Newell, Richard'" <Richard.Newell@eia.gov>
Cc: "Keohane, Nathaniel" <(b) (6)
Date: 01/07/2011 06:30 PM
Subject: RE: Follow-up Deputies Meeting on CES

(b) (5)

Dan Utech
White House Office of Energy and Climate Change
(b) (6)

-----Original Appointment-----
From: Moilanen, Stephen S.
Sent: Friday, January 07, 2011 4:50 PM
To: Fetter, Steve; Bhowmik, Rachana; Utech, Dan G.; Lew, Shoshana M. (WHO); Levinson, Arik; Judson.Jaffe@do.treas.gov; Bordoff, Jason E.; McIntosh.David@epamail.epa.gov; Zichal, Heather R.; Deese, Brian C.; Furman, Jason L.; Siegel, Avra; Ferris, Ann E.; Fawcett, Allen; Maher, Jessica A.; Heimbach, Jay; Maxted, Sarah Jane; DeGolia, Alexander H.; William.Pizer@do.treas.gov; Keohane, Nathaniel; cathy.zoi@hq.doe.gov
Subject: Follow-up Deputies Meeting on CES
When: Monday, January 10, 2011 2:00 PM-3:00 PM (GMT-05:00) Eastern Time (US & Canada).
Where: EEOB TBC

All,

(b) (5)
[redacted]

[redacted]

Best,

Office of Energy and Climate Change

[attachment "DRAFT CES Memo 1-7-11.docx" deleted by Richard Windsor/DC/USEPA/US]

01268-EPA-5510

David McIntosh/DC/USEPA/US
01/09/2011 02:12 PM

To Richard Windsor
cc
bcc
Subject Fw: Follow-up Deputies Meeting on CES

FYI
----- Forwarded by David McIntosh/DC/USEPA/US on 01/09/2011 02:12 PM -----

From: David McIntosh/DC/USEPA/US
To: "Utech, Dan G." <(b) (6) "Heimbach, Jay" <(b) (6) "Maher, Jessica A." <(b) (6)
Cc: "Zichal, Heather R." <(b) (6)
Date: 01/09/2011 02:11 PM
Subject: RE: Follow-up Deputies Meeting on CES

Ex.5 - Deliberative

"Utech, Dan G." Attached is a draft memo for review pri... 01/07/2011 06:30:02 PM

From: "Utech, Dan G." <(b) (6)
To: "Moilanen, Stephen S." <(b) (6) "Fetter, Steve" <(b) (6) "Bhowmik, Rachana" <(b) (6) "Lew, Shoshana M. (WHO)" <(b) (6) "Levinson, Arik" <(b) (6) "Judson.Jaffe@do.treas.gov" <Judson.Jaffe@do.treas.gov>, "Bordoff, Jason E." <(b) (6) David McIntosh/DC/USEPA/US@EPA, "Zichal, Heather R." <(b) (6) "Deese, Brian C." <(b) (6) "Furman, Jason L." <(b) (6) "Siegel, Avra" <(b) (6) "Ferris, Ann E." <(b) (6) "Fawcett, Allen" <(b) (6) "Maher, Jessica A." <(b) (6) "Heimbach, Jay" <(b) (6) "Maxted, Sarah Jane" <Sarah.Maxted@Hq.Doe.Gov>, "DeGolia, Alexander H." <Alexander_H._DeGolia@omb.eop.gov>, "William.Pizer@do.treas.gov" <William.Pizer@do.treas.gov>, "cathy.zoi@hq.doe.gov" <cathy.zoi@hq.doe.gov>, "Levine, Brian S." <(b) (6) "'Newell, Richard'" <Richard.Newell@eia.gov>
Cc: "Keohane, Nathaniel" <(b) (6)
Date: 01/07/2011 06:30 PM
Subject: RE: Follow-up Deputies Meeting on CES

(b) (5)

Dan Utech
White House Office of Energy and Climate Change
(b) (6)

-----Original Appointment-----
From: Moilanen, Stephen S.
Sent: Friday, January 07, 2011 4:50 PM
To: Fetter, Steve; Bhowmik, Rachana; Utech, Dan G.; Lew, Shoshana M. (WHO); Levinson, Arik; Judson.Jaffe@do.treas.gov; Bordoff, Jason E.; McIntosh.David@epamail.epa.gov; Zichal, Heather R.; Deese, Brian C.; Furman, Jason L.; Siegel, Avra; Ferris, Ann E.; Fawcett, Allen; Maher, Jessica A.; Heimbach, Jay; Maxted, Sarah Jane; DeGolia, Alexander H.; William.Pizer@do.treas.gov; Keohane, Nathaniel; cathy.zoi@hq.doe.gov
Subject: Follow-up Deputies Meeting on CES
When: Monday, January 10, 2011 2:00 PM-3:00 PM (GMT-05:00) Eastern Time (US & Canada).
Where: EEOB TBC

All,

(b) (5) [redacted]

[redacted]

Best,

Office of Energy and Climate Change

[redacted] Ex.5 - Deliberative

DRAFT CES Memo 1-7-11.docx

01268-EPA-5511

Richard Windsor/DC/USEPA/US
01/09/2011 02:13 PM

To David McIntosh
cc
bcc
Subject Re: Fw: Follow-up Deputies Meeting on CES

[redacted] Ex.5 - Deliberative

David McIntosh FYI ----- Forwarded by David McIntosh/... 01/09/2011 02:12:13 PM

From: David McIntosh/DC/USEPA/US
To: Richard Windsor/DC/USEPA/US@EPA
Date: 01/09/2011 02:12 PM
Subject: Fw: Follow-up Deputies Meeting on CES

FYI
----- Forwarded by David McIntosh/DC/USEPA/US on 01/09/2011 02:12 PM -----

From: David McIntosh/DC/USEPA/US
To: "Utech, Dan G." <[redacted] (b) (6)
Cc: "Zichal, Heather R." <[redacted] (b) (6) "Heimbach, Jay" <[redacted] (b) (6) "Maher, Jessica A." <[redacted] (b) (6)
Date: 01/09/2011 02:11 PM
Subject: RE: Follow-up Deputies Meeting on CES

[redacted] Ex.5 - Deliberative

"Utech, Dan G." Attached is a draft memo for review pri... 01/07/2011 06:30:02 PM

From: "Utech, Dan G." <[redacted] (b) (6)
To: "Moilanen, Stephen S." <[redacted] (b) (6) "Fetter, Steve" <[redacted] (b) (6) "Bhowmik, Rachana" <[redacted] (b) (6) "Lew, Shoshana M. (WHO)" <[redacted] (b) (6) "Levinson, Arik" <[redacted] (b) (6) "Judson.Jaffe@do.treas.gov" <Judson.Jaffe@do.treas.gov>, "Bordoff, Jason E." <[redacted] (b) (6) David McIntosh/DC/USEPA/US@EPA, "Zichal, Heather R." <[redacted] (b) (6) "Deese, Brian C." <[redacted] (b) (6) "Furman, Jason L." <[redacted] (b) (6) "Siegel, Avra" <[redacted] (b) (6) "Ferris, Ann E." <[redacted] (b) (6) "Fawcett, Allen" <[redacted] (b) (6) "Maher, Jessica A." <[redacted] (b) (6) "Heimbach, Jay" <[redacted] (b) (6) "Maxted, Sarah Jane" <Sarah.Maxted@Hq.Doe.Gov>, "DeGolia, Alexander H." <[redacted] (b) (6) "William.Pizer@do.treas.gov" <William.Pizer@do.treas.gov>, "cathy.zoi@hq.doe.gov" <cathy.zoi@hq.doe.gov>, "Levine, Brian S." <[redacted] (b) (6) "'Newell, Richard'" <Richard.Newell@eia.gov>
Cc: "Keohane, Nathaniel" <[redacted] (b) (6)
Date: 01/07/2011 06:30 PM
Subject: RE: Follow-up Deputies Meeting on CES

Attached is a draft memo for review prior to Monday's meeting on the Clean Energy Standard (note: there are placeholders in the memo for modeling results that are not yet available).

(b) (5) [redacted]

[redacted]

[redacted]

Dan Utech
White House Office of Energy and Climate Change
(b) (6) [redacted]

-----Original Appointment-----
From: Moilanen, Stephen S.
Sent: Friday, January 07, 2011 4:50 PM
To: Fetter, Steve; Bhowmik, Rachana; Utech, Dan G.; Lew, Shoshana M. (WHO); Levinson, Arik; Judson.Jaffe@do.treas.gov; Bordoff, Jason E.; McIntosh.David@epamail.epa.gov; Zichal, Heather R.; Deese, Brian C.; Furman, Jason L.; Siegel, Avra; Ferris, Ann E.; Fawcett, Allen; Maher, Jessica A.; Heimbach, Jay; Maxted, Sarah Jane; DeGolia, Alexander H.; William.Pizer@do.treas.gov; Keohane, Nathaniel; cathy.zoi@hq.doe.gov
Subject: Follow-up Deputies Meeting on CES
When: Monday, January 10, 2011 2:00 PM-3:00 PM (GMT-05:00) Eastern Time (US & Canada).
Where: EEOB TBC

All,

(b) (5) [redacted]

[redacted]

Best,

Office of Energy and Climate Change
[attachment "DRAFT CES Memo 1-7-11.docx" deleted by Richard Windsor/DC/USEPA/US]

01268-EPA-5512

David McIntosh/DC/USEPA/US
01/09/2011 02:14 PM

To Richard Windsor
cc
bcc
Subject Re: Fw: Follow-up Deputies Meeting on CES

[redacted]

Richard Windsor [redacted] 01/09/2011 02:13:49 PM

From: Richard Windsor/DC/USEPA/US
To: David McIntosh/DC/USEPA/US@EPA
Date: 01/09/2011 02:13 PM
Subject: Re: Fw: Follow-up Deputies Meeting on CES

[redacted]

David McIntosh FYI ----- Forwarded by David McIntosh/... 01/09/2011 02:12:13 PM

From: David McIntosh/DC/USEPA/US
To: Richard Windsor/DC/USEPA/US@EPA
Date: 01/09/2011 02:12 PM
Subject: Fw: Follow-up Deputies Meeting on CES

FYI
----- Forwarded by David McIntosh/DC/USEPA/US on 01/09/2011 02:12 PM -----

From: David McIntosh/DC/USEPA/US
To: "Utech, Dan G." <(b) (6)
Cc: "Zichal, Heather R." <(b) (6) "Heimbach, Jay" <(b) (6) "Maher, Jessica A." <(b) (6)
Date: 01/09/2011 02:11 PM
Subject: RE: Follow-up Deputies Meeting on CES

[redacted]

"Utech, Dan G." Attached is a draft memo for review pri... 01/07/2011 06:30:02 PM

From: "Utech, Dan G." <(b) (6)
To: "Moilanen, Stephen S." <(b) (6) "Fetter, Steve" <(b) (6) "Bhowmik, Rachana" <(b) (6) "Lew, Shoshana M. (WHO)" <(b) (6) "Levinson, Arik" <(b) (6) "Judson.Jaffe@do.treas.gov" <Judson.Jaffe@do.treas.gov>, "Bordoff, Jason E." <(b) (6) David McIntosh/DC/USEPA/US@EPA, "Zichal, Heather R." <(b) (6) "Deese, Brian C." <(b) (6) "Furman, Jason L." <(b) (6) "Siegel, Avra" <(b) (6) "Ferris, Ann E." <(b) (6) "Fawcett, Allen" <(b) (6) "Maher, Jessica A." <(b) (6) "Heimbach, Jay" <(b) (6) "Maxted, Sarah Jane" <Sarah.Maxted@Hq.Doe.Gov>, "DeGolia, Alexander H." <(b) (6) "William.Pizer@do.treas.gov" <William.Pizer@do.treas.gov>, "cathy.zoi@hq.doe.gov" <cathy.zoi@hq.doe.gov>, "Levine, Brian

S." <(b) (6)> "'Newell, Richard'" <Richard.Newell@eia.gov>
Cc: "Keohane, Nathaniel" <(b) (6)>
Date: 01/07/2011 06:30 PM
Subject: RE: Follow-up Deputies Meeting on CES

(b) (5)

Dan Utech
White House Office of Energy and Climate Change
(b) (6)

-----Original Appointment-----
From: Moilanen, Stephen S.
Sent: Friday, January 07, 2011 4:50 PM
To: Fetter, Steve; Bhowmik, Rachana; Utech, Dan G.; Lew, Shoshana M. (WHO); Levinson, Arik; Judson.Jaffe@do.treas.gov; Bordoff, Jason E.; McIntosh.David@epamail.epa.gov; Zichal, Heather R.; Deese, Brian C.; Furman, Jason L.; Siegel, Avra; Ferris, Ann E.; Fawcett, Allen; Maher, Jessica A.; Heimbach, Jay; Maxted, Sarah Jane; DeGolia, Alexander H.; William.Pizer@do.treas.gov; Keohane, Nathaniel; cathy.zoi@hq.doe.gov
Subject: Follow-up Deputies Meeting on CES
When: Monday, January 10, 2011 2:00 PM-3:00 PM (GMT-05:00) Eastern Time (US & Canada).
Where: EEOB TBC

All,

(b) (5)

Best,

Office of Energy and Climate Change
[attachment "DRAFT CES Memo 1-7-11.docx" deleted by Richard Windsor/DC/USEPA/US]

01268-EPA-5513

Richard Windsor/DC/USEPA/US
01/09/2011 02:25 PM

To "Carol Browner"
cc "Nancy Sutley"
bcc
Subject 2 impt things

Hi Carol,

[redacted] Ex.5 - Deliberative

[redacted]

01268-EPA-5514

Richard Windsor/DC/USEPA/US
01/09/2011 02:25 PM

To "David McIntosh"
cc
bcc
Subject Fw: 2 impt things

Richard Windsor

----- Original Message -----
From: Richard Windsor
Sent: 01/09/2011 02:25 PM EST
To: "Carol Browner" <(b) (6)
Cc: "Nancy Sutley" <(b) (6)
Subject: 2 impt things

Hi Carol,

Ex.5 - Deliberative

[redacted]

01268-EPA-5515

David McIntosh/DC/USEPA/US
01/09/2011 02:32 PM

To Richard Windsor
cc
bcc
Subject Re: 2 impt things

Good, thanks.
Richard Windsor

----- Original Message -----
From: Richard Windsor
Sent: 01/09/2011 02:25 PM EST
To: "David McIntosh" <mcintosh.david@epa.gov>
Subject: Fw: 2 impt things

Richard Windsor

----- Original Message -----
From: Richard Windsor
Sent: 01/09/2011 02:25 PM EST
To: "Carol Browner" <(b) (6)
Cc: "Nancy Sutley" <(b) (6)
Subject: 2 impt things

Hi Carol,

Ex.5 - Deliberative

01268-EPA-5516

Gina McCarthy/DC/USEPA/US

01/09/2011 04:34 PM

To Richard Windsor
cc "Bob Perciasepe"
bcc
Subject Re: Follow-up Deputies Meeting on CES

Ok. Let me know when you want to talk. [redacted] Ex. 5 Deliberative [redacted].
Richard Windsor

----- Original Message -----
From: Richard Windsor
Sent: 01/09/2011 01:43 PM EST
To: Bob Perciasepe; Gina McCarthy
Subject: Fw: Follow-up Deputies Meeting on CES

[redacted] Ex.5 - Deliberative

----- Forwarded by Richard Windsor/DC/USEPA/US on 01/09/2011 01:46 PM -----

From: David McIntosh/DC/USEPA/US
To: Richard Windsor/DC/USEPA/US@EPA
Date: 01/07/2011 06:57 PM
Subject: Fw: Follow-up Deputies Meeting on CES

[redacted] Ex.5 - Deliberative

----- Forwarded by David McIntosh/DC/USEPA/US on 01/07/2011 06:54 PM -----

From: "Utech, Dan G." <[redacted] (b) (6)
To: "Moilanen, Stephen S." <[redacted] (b) (6) "Fetter, Steve" <[redacted] (b) (6) "Bhowmik, Rachana" <[redacted] (b) (6) "Lew, Shoshana M. (WHO)" <[redacted] (b) (6) "Levinson, Arik" <[redacted] (b) (6) "Judson.Jaffe@do.treas.gov" <Judson.Jaffe@do.treas.gov>, "Bordoff, Jason E." <[redacted] (b) (6) David McIntosh/DC/USEPA/US@EPA, "Zichal, Heather R." <[redacted] (b) (6) "Deese, Brian C." <[redacted] (b) (6) "Furman, Jason L." <[redacted] (b) (6) "Siegel, Avra" <[redacted] (b) (6) "Ferris, Ann E." <[redacted] (b) (6) "Fawcett, Allen" <[redacted] (b) (6) "Maher, Jessica A." <[redacted] (b) (6) "Heimbach, Jay" <[redacted] (b) (6) "Maxted, Sarah Jane" <Sarah.Maxted@Hq.Doe.Gov>, "DeGolia, Alexander H." <[redacted] (b) (6) "William.Pizer@do.treas.gov" <William.Pizer@do.treas.gov>, "cathy.zoi@hq.doe.gov" <cathy.zoi@hq.doe.gov>, "Levine, Brian S." <[redacted] (b) (6) "'Newell, Richard'" <Richard.Newell@eia.gov>
Cc: "Keohane, Nathaniel" <[redacted] (b) (6)
Date: 01/07/2011 06:30 PM
Subject: RE: Follow-up Deputies Meeting on CES

(b) (5) [redacted]

Dan Utech
White House Office of Energy and Climate Change
(b) (6)

-----Original Appointment-----
From: Moilanen, Stephen S.
Sent: Friday, January 07, 2011 4:50 PM
To: Fetter, Steve; Bhowmik, Rachana; Utech, Dan G.; Lew, Shoshana M. (WHO); Levinson, Arik; Judson.Jaffe@do.treas.gov; Bordoff, Jason E.; McIntosh.David@epamail.epa.gov; Zichal, Heather R.; Deese, Brian C.; Furman, Jason L.; Siegel, Avra; Ferris, Ann E.; Fawcett, Allen; Maher, Jessica A.; Heimbach, Jay; Maxted, Sarah Jane; DeGolia, Alexander H.; William.Pizer@do.treas.gov; Keohane, Nathaniel; cathy.zoi@hq.doe.gov
Subject: Follow-up Deputies Meeting on CES
When: Monday, January 10, 2011 2:00 PM-3:00 PM (GMT-05:00) Eastern Time (US & Canada).
Where: EEOB TBC

All,

(b) (5)

Best,

Office of Energy and Climate Change

[attachment "DRAFT CES Memo 1-7-11.docx" deleted by Gina McCarthy/DC/USEPA/US]

01268-EPA-5517

Bob Perciasepe/DC/USEPA/US
01/09/2011 06:29 PM

To Gina McCarthy
cc Richard Windsor, "Bob Perciasepe"
bcc
Subject Re: Follow-up Deputies Meeting on CES

Lisa and Gina:

I will be on Boston on Monday at R1. [redacted] Ex. 5 Deliberative

It looks like David McIntosh was also on the distribution from Dan.

If you all want to discuss before someone goes to the deputy meeting tomorrow, I could have phone time in late morning through early afternoon.
Bob P

-----Gina McCarthy/DC/USEPA/US wrote: -----

To: Richard Windsor/DC/USEPA/US@EPA
From: Gina McCarthy/DC/USEPA/US
Date: 01/09/2011 04:34PM
Cc: "Bob Perciasepe" <perciasepe.bob@epa.gov>
Subject: Re: Follow-up Deputies Meeting on CES

Ok. Let me know when you want to talk. [redacted] Ex. 5 Deliberative .

Richard Windsor

----- Original Message -----
From: Richard Windsor
Sent: 01/09/2011 01:43 PM EST
To: Bob Perciasepe; Gina McCarthy
Subject: Fw: Follow-up Deputies Meeting on CES

[redacted] Ex.5 - Deliberative

----- Forwarded by Richard Windsor/DC/USEPA/US on 01/09/2011 01:46 PM -----

Fro m: David McIntosh/DC/USEPA/US
To: Richard Windsor/DC/USEPA/US@EPA
Dat 01/07/2011 06:57 PM

e:
Sub Fw: Follow-up Deputies Meeting on CES
ject
:

Ex.5 - Deliberative

----- Forwarded by David McIntosh/DC/USEPA/US on 01/07/2011 06:54 PM -----

Fro "Utech, Dan G." <(b) (6)
m:
To: "Moilanen, Stephen S." <(b) (6) "Fetter, Steve" <(b) (6) "Bhowmik, Rachana" <(b) (6) "Lew, Shoshana M. (WHO)" <(b) (6) "Levinson, Arik" <(b) (6) "Judson.Jaffe@do.treas.gov" <Judson.Jaffe@do.treas.gov>, "Bordoff, Jason E." <(b) (6) David McIntosh/DC/USEPA/US@EPA, "Zichal, Heather R." <(b) (6) "Deese, Brian C." <(b) (6) "Furman, Jason L." <(b) (6) "Siegel, Avra" <(b) (6) "Ferris, Ann E." <Ann_E._Ferris@ceq.eop.gov>, "Fawcett, Allen" <(b) (6) "Maher, Jessica A." <(b) (6) "Heimbach, Jay" <(b) (6) "Maxted, Sarah Jane" <Sarah.Maxted@Hq.Doe.Gov>, "DeGolia, Alexander H." <(b) (6) "William.Pizer@do.treas.gov" <William.Pizer@do.treas.gov>, "cathy.zoi@hq.doe.gov" <cathy.zoi@hq.doe.gov>, "Levine, Brian S." <(b) (6) "'Newell, Richard'" <Richard.Newell@eia.gov>
Cc: "Keohane, Nathaniel" <(b) (6)
Dat 01/07/2011 06:30 PM
e:
Sub RE: Follow-up Deputies Meeting on CES
ject
:

(b) (5)

Dan Utech
White House Office of Energy and Climate Change
(b) (6)

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All,

(b) (5) [redacted]

[redacted]

Best,

Office of Energy and Climate Change

[attachment "DRAFT CES Memo 1-7-11.docx" deleted by Gina McCarthy/DC/USEPA/US]

01268-EPA-5518

Richard Windsor/DC/USEPA/US
01/09/2011 06:54 PM

To Bob Perciasepe
cc Gina McCarthy, "Bob Perciasepe", David McIntosh
bcc
Subject Re: Follow-up Deputies Meeting on CES

Looping in David who has been conveying our concerns. Lisa

Bob Perciasepe Lisa and Gina: 01/09/2011 06:29:25 PM

From: Bob Perciasepe/DC/USEPA/US
To: Gina McCarthy/DC/USEPA/US@EPA
Cc: Richard Windsor/DC/USEPA/US@EPA, "Bob Perciasepe" <perciasepe.bob@epa.gov>
Date: 01/09/2011 06:29 PM
Subject: Re: Follow-up Deputies Meeting on CES

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Subject: Re: Follow-up Deputies Meeting on CES

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----- Original Message -----
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Sent: 01/09/2011 01:43 PM EST
To: Bob Perciasepe; Gina McCarthy
Subject: Fw: Follow-up Deputies Meeting on CES

Ex.5 - Deliberative

----- Forwarded by Richard Windsor/DC/USEPA/US on 01/09/2011 01:46 PM -----

From: David McIntosh/DC/USEPA/US
To: Richard Windsor/DC/USEPA/US@EPA
Date: 01/07/2011 06:57 PM
Subject: Fw: Follow-up Deputies Meeting on CES

Ex.5 - Deliberative

----- Forwarded by David McIntosh/DC/USEPA/US on 01/07/2011 06:54 PM -----

From: "Utech, Dan G." <(b) (6)
To: "Moilanen, Stephen S." <(b) (6) "Fetter, Steve" <(b) (6) "Bhowmik, Rachana" <(b) (6) "Lew, Shoshana M. (WHO)" <(b) (6) "Levinson, Arik" <(b) (6) "Judson.Jaffe@do.treas.gov" <Judson.Jaffe@do.treas.gov>, "Bordoff, Jason E." <(b) (6) David McIntosh/DC/USEPA/US@EPA, "Zichal, Heather R." <(b) (6) "Deese, Brian C." <(b) (6) "Furman, Jason L." <(b) (6) "Siegel, Avra" <(b) (6) "Ferris, Ann E." <(b) (6) "Fawcett, Allen" <(b) (6) "Maher, Jessica A." <(b) (6) "Heimbach, Jay" <(b) (6) "Maxted, Sarah Jane" <Sarah.Maxted@Hq.Doe.Gov>, "DeGolia, Alexander H." <(b) (6) "William.Pizer@do.treas.gov" <William.Pizer@do.treas.gov>, "cathy.zoi@hq.doe.gov" <cathy.zoi@hq.doe.gov>, "Levine, Brian S." <(b) (6) '"Newell, Richard"' <Richard.Newell@eia.gov>
Cc: "Keohane, Nathaniel" <(b) (6)
Date: 01/07/2011 06:30 PM
Subject: RE: Follow-up Deputies Meeting on CES

(b) (5)

Dan Utech
White House Office of Energy and Climate Change
(b) (6)

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Sent: Friday, January 07, 2011 4:50 PM
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Deese, Brian C.; Furman, Jason L.; Siegel, Avra; Ferris, Ann E.; Fawcett, Allen; Maher, Jessica A.; Heimbach, Jay; Maxted, Sarah Jane; DeGolia, Alexander H.; William.Pizer@do.treas.gov; Keohane, Nathaniel; cathy.zoi@hq.doe.gov
Subject: Follow-up Deputies Meeting on CES
When: Monday, January 10, 2011 2:00 PM-3:00 PM (GMT-05:00) Eastern Time (US & Canada).
Where: EEOB TBC

All,

(b) (5) [redacted]

Best,

Office of Energy and Climate Change

[attachment "DRAFT CES Memo 1-7-11.docx" deleted by Gina McCarthy/DC/USEPA/US]

01268-EPA-5519

Gina McCarthy/DC/USEPA/US

01/10/2011 12:38 AM

To Richard Windsor, Bob Perciasepe
cc "Bob Perciasepe", David McIntosh
bcc
Subject Re: Follow-up Deputies Meeting on CES

[redacted] Ex.5 - Deliberative

Richard Windsor

----- Original Message -----
From: Richard Windsor
Sent: 01/09/2011 06:54 PM EST
To: Bob Perciasepe
Cc: Gina McCarthy; "Bob Perciasepe" <perciasepe.bob@epa.gov>; David McIntosh
Subject: Re: Follow-up Deputies Meeting on CES

Looping in David who has been conveying our concerns. Lisa

Bob Perciasepe Lisa and Gina: 01/09/2011 06:29:25 PM

From: Bob Perciasepe/DC/USEPA/US
To: Gina McCarthy/DC/USEPA/US@EPA
Cc: Richard Windsor/DC/USEPA/US@EPA, "Bob Perciasepe" <perciasepe.bob@epa.gov>
Date: 01/09/2011 06:29 PM
Subject: Re: Follow-up Deputies Meeting on CES

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I will be on Boston on Monday at R1. [redacted] Ex. 5 Deliberative

[redacted]

[redacted]

[redacted]

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Bob P

-----Gina McCarthy/DC/USEPA/US wrote: -----

To: Richard Windsor/DC/USEPA/US@EPA

From: Gina McCarthy/DC/USEPA/US
Date: 01/09/2011 04:34PM
Cc: "Bob Perciasepe" <perciasepe.bob@epa.gov>
Subject: Re: Follow-up Deputies Meeting on CES

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Richard Windsor

----- Original Message -----
From: Richard Windsor
Sent: 01/09/2011 01:43 PM EST
To: Bob Perciasepe; Gina McCarthy
Subject: Fw: Follow-up Deputies Meeting on CES

[redacted] Ex.5 - Deliberative
----- Forwarded by Richard Windsor/DC/USEPA/US on 01/09/2011 01:46 PM -----

From: David McIntosh/DC/USEPA/US
To: Richard Windsor/DC/USEPA/US@EPA
Date: 01/07/2011 06:57 PM
Subject: Fw: Follow-up Deputies Meeting on CES

[redacted] Ex.5 - Deliberative
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From: "Utech, Dan G." <[redacted] (b) (6)
To: "Moilanen, Stephen S." <[redacted] (b) (6) "Fetter, Steve" <[redacted] (b) (6) "Bhowmik, Rachana" <[redacted] (b) (6) "Lew, Shoshana M. (WHO)" <[redacted] (b) (6) "Levinson, Arik" <Arik_M._Levinson@cea.eop.gov>, "Judson.Jaffe@do.treas.gov" <Judson.Jaffe@do.treas.gov>, "Bordoff, Jason E." <Jason_E._Bordoff@ceq.eop.gov>, David McIntosh/DC/USEPA/US@EPA, "Zichal, Heather R." <[redacted] (b) (6) "Deese, Brian C." <[redacted] (b) (6) "Furman, Jason L." <[redacted] (b) (6) "Siegel, Avra" <[redacted] (b) (6) "Ferris, Ann E." <[redacted] (b) (6) "Fawcett, Allen" <[redacted] (b) (6) "Maher, Jessica A." <[redacted] (b) (6) "Heimbach, Jay" <[redacted] (b) (6) "Maxted, Sarah Jane" <Sarah.Maxted@Hq.Doe.Gov>, "DeGolia, Alexander H." <[redacted] (b) (6) "William.Pizer@do.treas.gov" <William.Pizer@do.treas.gov>, "cathy.zoi@hq.doe.gov" <cathy.zoi@hq.doe.gov>, "Levine, Brian S." <[redacted] (b) (6) '"Newell, Richard"' <Richard.Newell@eia.gov>
Cc: "Keohane, Nathaniel" <[redacted] (b) (6)
Date: 01/07/2011 06:30 PM
Subject: RE: Follow-up Deputies Meeting on CES

[redacted] (b) (5)

[redacted]

[redacted]

[redacted]

(b)

Dan Utech
White House Office of Energy and Climate Change
(b) (6)

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From: Moilanen, Stephen S.
Sent: Friday, January 07, 2011 4:50 PM
To: Fetter, Steve; Bhowmik, Rachana; Utech, Dan G.; Lew, Shoshana M. (WHO); Levinson, Arik; Judson.Jaffe@do.treas.gov; Bordoff, Jason E.; McIntosh.David@epamail.epa.gov; Zichal, Heather R.; Deese, Brian C.; Furman, Jason L.; Siegel, Avra; Ferris, Ann E.; Fawcett, Allen; Maher, Jessica A.; Heimbach, Jay; Maxted, Sarah Jane; DeGolia, Alexander H.; William.Pizer@do.treas.gov; Keohane, Nathaniel; cathy.zoi@hq.doe.gov
Subject: Follow-up Deputies Meeting on CES
When: Monday, January 10, 2011 2:00 PM-3:00 PM (GMT-05:00) Eastern Time (US & Canada).
Where: EEOB TBC

All,

(b) (5)

Best,

Office of Energy and Climate Change

[attachment "DRAFT CES Memo 1-7-11.docx" deleted by Gina McCarthy/DC/USEPA/US]

01268-EPA-5520

Bob Perciasepe/DC/USEPA/US
01/10/2011 05:47 AM

To Gina McCarthy, Richard Windsor
cc "Bob Perciasepe", David McIntosh
bcc
Subject Re: Follow-up Deputies Meeting on CES

[redacted] Ex. 5 Deliberative [redacted]

[redacted]

This needs to be addressed.
Bob Perciasepe
Deputy Administrator
(o)202 564 4711
(c) [redacted] (b) (6)

Gina McCarthy

----- Original Message -----
From: Gina McCarthy
Sent: 01/10/2011 12:38 AM EST
To: Richard Windsor; Bob Perciasepe
Cc: "Bob Perciasepe" <perciasepe.bob@epa.gov>; David McIntosh
Subject: Re: Follow-up Deputies Meeting on CES

[redacted] Ex.5 - Deliberative [redacted]

Richard Windsor

----- Original Message -----
From: Richard Windsor
Sent: 01/09/2011 06:54 PM EST
To: Bob Perciasepe
Cc: Gina McCarthy; "Bob Perciasepe" <perciasepe.bob@epa.gov>; David McIntosh
Subject: Re: Follow-up Deputies Meeting on CES

Looping in David who has been conveying our concerns. Lisa

Bob Perciasepe Lisa and Gina: 01/09/2011 06:29:25 PM

From: Bob Perciasepe/DC/USEPA/US
To: Gina McCarthy/DC/USEPA/US@EPA
Cc: Richard Windsor/DC/USEPA/US@EPA, "Bob Perciasepe" <perciasepe.bob@epa.gov>
Date: 01/09/2011 06:29 PM
Subject: Re: Follow-up Deputies Meeting on CES

Lisa and Gina:

I will be on Boston on Monday at R1. [redacted] Ex.5 - Deliberative [redacted]

Ex. 5 Deliberative

[redacted]

[redacted]

[redacted]

It looks like David McIntosh was also on the distribution from Dan.

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Bob P

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Ex.5 - Deliberative

[redacted]

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Cc: "Keohane, Nathaniel" < (b) (6)
Dat 01/07/2011 06:30 PM
e:
Sub RE: Follow-up Deputies Meeting on CES
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(b) (5)

Dan Utech
White House Office of Energy and Climate Change
(b) (6)

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All,

(b) (5)

Best,

Office of Energy and Climate Change

[attachment "DRAFT CES Memo 1-7-11.docx" deleted by Gina McCarthy/DC/USEPA/US]

01268-EPA-5521

Richard Windsor/DC/USEPA/US
01/10/2011 06:00 AM

To Bob Perciasepe, Gina McCarthy
cc "Bob Perciasepe", David McIntosh
bcc
Subject Re: Follow-up Deputies Meeting on CES

Yep. Let's discuss.
Bob Perciasepe

----- Original Message -----
From: Bob Perciasepe
Sent: 01/10/2011 05:47 AM EST
To: Gina McCarthy; Richard Windsor
Cc: "Bob Perciasepe" <perciasepe.bob@epa.gov>; David McIntosh
Subject: Re: Follow-up Deputies Meeting on CES

[redacted] Ex. 5 Deliberative [redacted]

[redacted]

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Deputy Administrator
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(c) [redacted] (b) (6)
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Cc: "Bob Perciasepe" <perciasepe.bob@epa.gov>; David McIntosh
Subject: Re: Follow-up Deputies Meeting on CES

[redacted] Ex.5 - Deliberative [redacted]

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From: Richard Windsor
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Dat e: 01/07/2011 06:30 PM
Sub ject: RE: Follow-up Deputies Meeting on CES

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Dan Utech
White House Office of Energy and Climate Change
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All,

(b) (5)

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Best,

Office of Energy and Climate Change

[attachment "DRAFT CES Memo 1-7-11.docx" deleted by Gina McCarthy/DC/USEPA/US]

01268-EPA-5522

"Luster, Jeffrey P." <Jeffrey_P._Luster@ceq.eop.gov>

01/10/2011 10:20 AM

To "(b) (6)" "(b) (6)" "(b) (6)" "(b) (6)" "shawnita.jackson@js.pentagon.mil", "jane.lubchenco@noaa.gov", "james.clapper@dni.gov", "woodardew@state.gov", "ssuresh@nsf.gov", "annie.bradley@usdoj.gov", "'robert.work@navy.mil'", "Browner, Carol M.", "Summers, Lawrence", "Barnes, Melody C.", "Brennan, John O.", "Donilon, Thomas E.", "Zients, Jeffrey D.", "Klain, Ron", "(b) (6)" "(b) (6)", "charles.bolden@nasa.gov", "(b) (6)", Richard Windsor, "(b) (6)", "jon.wellinghoff@ferc.gov", "janet.napolitano@dhs.gov"

cc "aretha.robinson@osec.usda.gov", "howard.hankin@wdc.usda.gov", "Ashley.Chappell@noaa.gov", "Teresa.Christopher@noaa.gov", "robin.brake@navy.mil", "Damian.Bednarz@hq.doe.gov", Paul Cough, Kate Perry, "merrill.hathaway@ferc.gov", "Carolyn.templeton@ferc.gov", "(b) (6)", "John.T.Oliver@uscg.mil", "mike.m.sollosi@uscg.mil", "Terry_Holman@ios.doi.gov", "BRADLEY.APPLEMAN@js.pentagon.mil", "Karen.wardzinski@usdoj.gov", "(b) (6)v", "Uzzell.Megan@dol.gov", "jack.kaye@nasa.gov", "dconover@nsf.gov", "'O'BrienGJ@state.gov'", "Camille.Mittelholtz@dot.gov", "Janice.Weaver@dot.gov", "anne.christenson@dot.gov", "Levine, Brian S.", "(b) (6)" "(b) (6)" "McConville1, Andrew", "Zichal, Heather R.", "Connors, Celeste A.", "S(b) (6)", "Ericsson, Sally C.", "tina.palacios@nasa.gov", "Luster, Jeffrey P.", "Praskovich, Alisa L.", "Nikolaus, Roxanne", "barnesmd@state.gov", "Shanedda.bogan@usdoj.gov", "jstewart@nmic.navy.mil", "Deborah.D.Smith@uscg.mil", "Allandra.Washington@noaa.gov", "Emily.barson@hhs.gov", "lmoorman@nsf.gov", "kathryn.manuel-1@nasa.gov", "brizzi.djuna.y@dol.gov", "howard.hankin@wdc.usda.gov", "Levenbach, Stuart", "Weiss, Michael I.", "Miller, Jerry L.", "'Sarri, Kristen'", "Borlik, Bryan", "'Byron.Black@dot.gov'", "'Ann.Mills@osec.usda.gov'", "Boatman, Mary C.", "Lipsky, Andy"

bcc

Subject NOC Principal-level Committee Virtual Action on the Alaska Representative to the GCC

Dear National Ocean Council Principal-level Committee Members,

(b) (5)

(b) (5) [redacted]

[redacted]

[redacted]

[redacted]

Very respectfully,
Jeff Luster

Jeffrey P. Luster
Ocean Policy Advisor
National Ocean Council
Executive Office of the President
(b) (6) / (b) (6)
www.whitehouse.gov/oceans

(b) (6) [redacted]

(b) (6) [redacted] Resume.Biography.pdf Incoming AK Governor GCC Nominee Update.pdf

STATE CAPITOL
PO Box 110001
Juneau, Alaska 99811-0001
907-465-3500
fax: 907-465-3532

550 West 7th Avenue #1700
Anchorage, Alaska 99501
907-269-7450
fax 907-269-7463
www.Gov.Alaska.Gov
Governor@Alaska.Gov

Governor Sean Parnell
STATE OF ALASKA

January 4, 2011

Ms. Nancy H. Sutley
Mr. John P. Holdren
Co-Chairs
National Ocean Council
Washington, DC 20503

Dear Ms. Sutley and Mr. Holdren,

In October, I wrote to you providing my nominations for three individuals to the National Ocean Council Governance Coordinating Committee (GCC). As you know, one of these individuals, Gordon (Gordy) Williams, has requested his name be withdrawn from consideration. In light of this development, I would like to reaffirm my support for the two remaining candidates, Mark Robbins and Randall (Randy) Bates, as my first and second choices, respectively, for the committee.

Please contact my office if you have any questions at 907-465-3500.

Best regards,

Sean Parnell
Governor

cc: The Honorable Cora Campbell, Commissioner, Alaska Department of Fish and Game
John Katz, Director of State/Federal Relations and Special Counsel, Office of the Governor
Jason Hooley, Director, Boards and Commissions, Office of the Governor
Randy Bates, Director, Coastal and Ocean Management Division, Alaska Department of Natural Resources
Mark Robbins, Associate Director, Office of the Governor
Gordy Williams, Special Assistant to the Commissioner, Alaska Department of Fish and Game

01268-EPA-5523

Diane Thompson/DC/USEPA/US
01/10/2011 06:53 PM

To "Richard Windsor"
cc "Heidi Ellis"
bcc
Subject Fw: POTUS meeting tomorrow

From: "Zichal, Heather R." [redacted]
Sent: 01/10/2011 06:41 PM EST
To: "Davis, Laura" <Laura_Davis@ios.doi.gov>; "Kroloff, Noah" <Noah.Kroloff@dhs.gov>; Margaret Spring <margaret.spring@noaa.gov>; Diane Thompson; "Carson, Jon" [redacted] "OConnor, Rod" <Rod.OConnor@hq.doe.gov>
Cc: "Lu, Chris" <[redacted]
Subject: RE: POTUS meeting tomorrow

All – [redacted]

From: Zichal, Heather R.
Sent: Monday, January 10, 2011 12:57 PM
To: 'Davis, Laura'; Noah Kroloff (Noah.Kroloff@dhs.gov); 'Margaret Spring'; Thompson.Diane@epamail.epa.gov; Carson, Jon; OConnor, Rod
Cc: Lu, Chris
Subject: POTUS meeting tomorrow

All – [redacted]

Thanks, [redacted]

Heather briefing memo for principals.doc

01268-EPA-5524

David McIntosh/DC/USEPA/US
01/11/2011 07:44 AM

To Richard Windsor
cc
bcc
Subject Fw: Fyi

[redacted]
Ex.5 - Deliberative

----- Forwarded by David McIntosh/DC/USEPA/US on 01/11/2011 07:42 AM -----

From: David McIntosh/DC/USEPA/US
To: "Heimbach, Jay" <[redacted] (b) (6)
Date: 01/11/2011 07:40 AM
Subject: Re: Fyi

[redacted]
Ex.5 - Deliberative

----- Original Message -----
From: "Heimbach, Jay" [redacted] (b) (6)
Sent: 01/11/2011 07:07 AM EST
To: David McIntosh
Subject: Re: Fyi

Give me your topline points so I can make sure I get them across
---
Sent using BlackBerry

----- Original Message -----
From: McIntosh.David@epamail.epa.gov <McIntosh.David@epamail.epa.gov>
To: Heimbach, Jay
Sent: Tue Jan 11 06:50:14 2011
Subject: Re: Fyi

Thanks

----- Original Message -----
From: "Heimbach, Jay" [(b) (6)
Sent: 01/11/2011 06:30 AM EST
To: David McIntosh
Subject: Fyi

Am going to discuss ces w utech later this morning

Sent using BlackBerry

01268-EPA-5525

Richard Windsor/DC/USEPA/US
01/11/2011 08:12 AM

To David McIntosh
cc
bcc
Subject Re: Fyi

Cool
David McIntosh

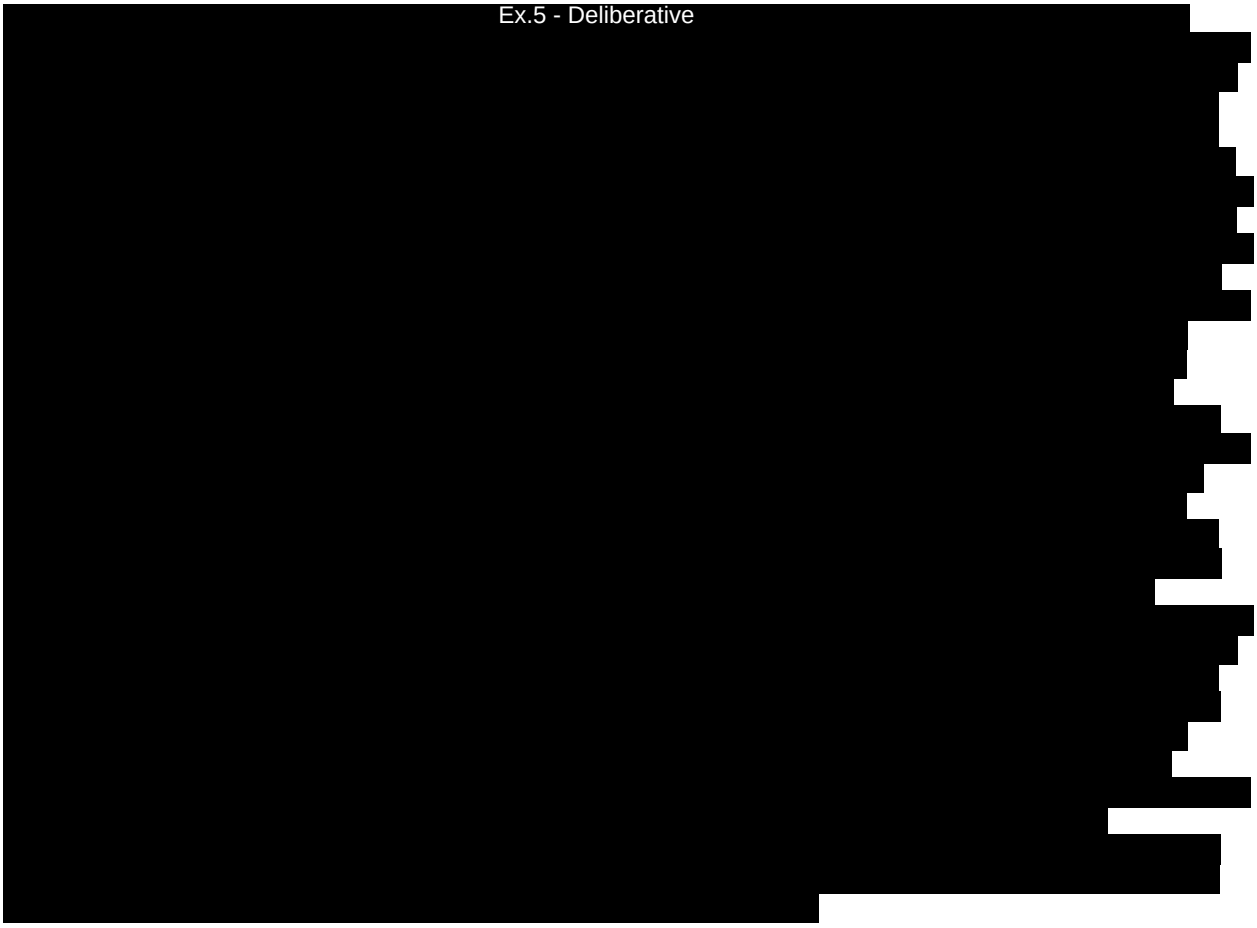
----- Original Message -----
From: David McIntosh
Sent: 01/11/2011 07:44 AM EST
To: Richard Windsor
Subject: Fw: Fyi

Ex.5 - Deliberative

----- Forwarded by David McIntosh/DC/USEPA/US on 01/11/2011 07:42 AM -----

From: David McIntosh/DC/USEPA/US
To: "Heimbach, Jay" <(b) (6)
Date: 01/11/2011 07:40 AM
Subject: Re: Fyi

Ex.5 - Deliberative



----- Original Message -----
From: "Heimbach, Jay" [(b) (6)]
Sent: 01/11/2011 07:07 AM EST
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Subject: Re: Fyi

Thanks

----- Original Message -----
From: "Heimbach, Jay" [(b) (6)]
Sent: 01/11/2011 06:30 AM EST
To: David McIntosh
Subject: Fyi

Am going to discuss ces w utech later this morning

Sent using BlackBerry

01268-EPA-5526

"Browner, Carol M."
(b) (6) Privacy
01/11/2011 10:16 AM

To Richard Windsor
cc
bcc
Subject FW: Chamber Speech

From: Collamore, Tom <TCollamore@USChamber.com>
To: Psaki, Jennifer R.
Cc: Fielder, J.P. <JPFielder@uschamber.com>; Freeman, Tita <TFreeman@USChamber.com>
Sent: Tue Jan 11 08:31:13 2011
Subject: Tom Donohue's Speech for Today

Jen,

Here's a copy of today's speech and our press release. Please let us now if you have any questions.

Best,

Tom

Thomas J. Collamore
Senior Vice President, Communications and Strategy
Counselor to the President
U.S. Chamber of Commerce
1615 H Street, NW
Washington, DC 20062
(202) 463-5686
TCollamore@USChamber.com
www USChamber com


State_of_American_Business_2011--As_Prepared_for_Delivery_v2.docx

Press Release - 1 11 11 - SOAB.doc

U.S. CHAMBER OF COMMERCE NEWS
Phone: 202-463-5682 | 888-249-NEWS | E-mail: press@uschamber.com

FOR IMMEDIATE RELEASE – January 11, 2011 Contact: Tita Freeman 202-463-5682

U.S. Chamber President Looks Toward an Improving Economy, Promotes Plan to Spur Job Creation

In Annual State of American Business *Address, Donohue Outlines How to Turn Economic Recovery Into a Jobs Recovery*

WASHINGTON, D.C.—In his annual *State of American Business* address, U.S. Chamber of Commerce President and CEO Thomas J. Donohue was cautiously optimistic about the state of the economy and outlined a four-point plan to put jobless Americans back to work.

"We begin 2011 in a lot better shape than we found ourselves last year. The state of American business is improving," Donohue said, pointing to expectations that the GDP will grow by 3.2% this year. "While the recovery may be picking up steam, it is fragile and uneven. There are many unanswered questions that must be addressed before companies will start aggressively hiring. Over the next year, the Chamber's number one priority will be to turn this economic recovery into a jobs recovery so that we can start putting Americans back to work."

"We face an array of potentially serious risks that at any moment could send us back in the wrong direction," Donohue continued. His speech outlined four immediate priorities that the Chamber will address to boost America's competitiveness in the global economy:

1. **Regulatory restraint and reform—**Work to reform the regulatory process—to restore some badly needed balance, restraint, and common sense. We will also stand up a new group to tell the story to the American people about the massive costs of excessive regulations on jobs and their personal and economic freedom.

2. **Expanding American trade**—Work to pass the pending free trade agreements and launch a major initiative to educate citizens and policymakers on trade that will clearly link global engagement to American jobs.

3. **Rebuilding our economic platform**—Rebuild America's economic foundation—the platform our society runs on. Roads, bridges, rail and mass transit networks, airports, and air transport systems must be modernized. Broadband capacity, power generation, and water supplies must be expanded. We can create jobs, reduce our trade and budget deficits, and increase our own security by developing all forms of alternative, renewable, and traditional energy. We will also commence a new project to outline what our nation must do to create and secure a 21st century global supply chain and logistics system.

4. **Reducing deficits and debt**—Support congressional efforts to lower spending. We will make the case for entitlement reform as any plan that fails to tackle these runaway programs is doomed to fail. We will also support efforts by Republican and Democratic governors to challenge public employee unions and their excessive payroll, health, and retirement demands.

In order to deepen the understanding about our nation's competitive challenges, Donohue announced that the Chamber is going to undertake an analysis of the American business community's understanding of our strengths and weaknesses and those of our competitors.

"The Chamber is examining, in a factual and objective way, the actions by our government and the actions by the business community that are either moving us forward in the global economy or holding us back," said Donohue. "We'll then compare this analysis to what our competitors are doing with the goal of identifying the major factors that shape the decisions of job creators, innovators, and investors—to pinpoint our strengths so that we can build on them and our weaknesses so that we can fix them."

Donohue began his speech by expressing the Chamber's shock and sadness over the tragic shootings in Arizona. "Under any circumstance, the violence, injury, and loss of life that occurred are an outrage to us all," Donohue said. "We are specifically offended by the fact that this rampage was directed at our democracy itself—striking down public servants as well as free citizens who had come to engage in a dialogue and express their views. We are praying for a full recovery for Congresswoman Giffords and the others who were injured. And our hearts go out to the families of those who lost their lives."

With President Obama scheduled to speak at the Chamber on February 7, Donohue pledged to work with the administration, the new House majority, and Democratic legislators on the Chamber's priorities over the next year. He also noted the new political realities of getting things done in a divided government.

In the coming weeks and months, Donohue and the Chamber's leadership will echo this message through various speeches throughout the country. This begins with Donohue's address before the Economic Club of Minnesota in Minneapolis on January 18.

"No one should expect the Chamber to march in lock step with anyone else's agenda but our own," he said. "And our agenda is simple. We will continue to win important policy victories for the business community; we'll support, protect, improve, and advance the free enterprise system; and we'll help create good jobs and promising opportunities so the people of our country can reach the American Dream."

The U.S. Chamber of Commerce is the world's largest business federation representing the interests of more than 3 million businesses of all sizes, sectors, and regions, as well as state and local chambers and industry associations.

www.uschamber.com # # # www.chamberpost.com

As Prepared for Delivery
(Note: due to event time constraints, some material may not be delivered from the podium but remains a part of the Chamber's 2011 State of American Business report.)

The State of American Business 2011

Address by Thomas J. Donohue, President and CEO
U.S. Chamber of Commerce

Outlook 2011: The State of American Business
National Chamber Foundation
January 11, 2011

The Economic Outlook

Thank you very much and good morning ladies and gentlemen.

Let me thank the National Chamber Foundation and all the staff who organized this event—and thank you all for coming.

At the outset, I'd like to express, on behalf of the U.S. Chamber of Commerce, our shock and sadness over the tragic shootings in Arizona.

Under any circumstance, the violence, injury, and loss of life that occurred are an outrage to us all. We are especially offended by the fact that this rampage was directed at our democracy itself—striking down public servants as well as free citizens who had come to engage in a dialogue and express their views.

We are praying for a full recovery for Congresswoman Giffords and the others who were injured. And our hearts go out to the families of those who lost their lives.

While the New Year has begun on this sad note, I can report that when it comes to the nation's economy, we begin 2011 in better shape than we found ourselves last year. The state of American business is improving.

Last year, we worried about a double dip recession. Today, we are cautiously optimistic that the recovery will continue and pick up steam as the year progresses. The new tax package could give growth and jobs a significant boost—which is precisely why the Chamber, along with many of you, worked hard to renew all of the 2001 and 2003 tax cuts.

Overall, we believe the economy will expand by 3.2 percent in 2011 and create 2.4 to 2.6 million net new jobs by the end of the year.

Yet we still face a number of risks that could send us in the wrong direction and our recovery is fragile and uneven.

Housing and construction are still very weak. A new wave of home foreclosures could drive down real estate values and household wealth. Oil and gasoline prices are rising rapidly and could reignite inflation. Major states are nearly insolvent and will be looking to raise taxes on consumers and businesses.

And, we face a long list of known and unknown geopolitical and national security threats that could change our economic prospects overnight.

To be sure, November's election results, the tax package, progress on a Korea trade agreement, and a new tone coming out of the White House have addressed some of the business community's immediate concerns. Yet uncertainty among companies, lenders, and investors still abounds. There are many unanswered questions about regulations, taxes, and other policies that must be addressed in order to unleash aggressive hiring by the private sector.

Turning an Economic Recovery into a Jobs Recovery

When it comes to jobs, we have a steep hill to climb.

Unemployment has exceeded 9 percent for 20 consecutive months. That hasn't happened since the 1930s. Some 27 million Americans are either unemployed, underemployed, or have given up looking for work.

Let's suppose we do create about 2 ½ million net new jobs this year. As welcome as this would be, it would only drive the unemployment rate down by about one percent.

In fact, we must create 1.2 million jobs a year just to absorb the new entrants into our workforce. On our current course, it could take years to get back to where we were before the recession and the financial crisis hit. In my book, that's not good enough.

Therefore, in 2011, the Chamber's top priority will be to turn an economic recovery into a jobs recovery so that we can put Americans back to work.

To succeed, we must work to enact policies that will sustain and accelerate economic growth by removing regulatory uncertainty and doubling U.S. exports over five years.

We must make our domestic economy more attractive to global investors, job creators, and start-up entrepreneurs by clearing away the impediments that are causing them to sit on their capital or invest it outside of the United States.

And we must do right for future generations and our economy by beginning a serious effort to cut runaway spending, reform entitlements, and bring government deficits and debt under control.

Strengthening America's Competitive Position

To successfully improve our own economy, we must take into account what other nations are doing to improve theirs.

Other countries are signing trade deals, forming alliances to share natural resources, and rapidly developing their own domestic energy supplies. Some are cutting taxes and regulations, pushing legions of young people through science and engineering schools, and building brand-new infrastructure in a fraction of time that it takes to build anything here.

In many respects, America is not keeping up.

To deepen our understanding about our nation's competitive challenges, we are doing what any smart coach or political candidate would do before a big game or important campaign—and that is to learn everything there is to know about their own strengths and weaknesses and those of their competitors.

The Chamber is now conducting this kind of competitive analysis. We are examining, in a factual and objective way, the actions by our government and the actions by the business community that are either moving us forward in the global economy or holding us back. We'll then compare it to what our competitors are doing. Our goal is to identify the major factors that shape the decisions of job creators, innovators and investors—to pinpoint our strengths so we can build on them and our weaknesses so we can fix them.

These findings, which we plan to release this spring, will set the stage for a major project to strengthen America's competitive position in the global economy.

At the same time, the Chamber will seek to focus our government's attention on a host of immediate priorities, and we're prepared to work with anyone in order to make progress. Time doesn't permit me to cover them all, so let me briefly touch upon a few issues in four areas:

- Regulatory restraint and reform
- Expanding American trade
- Rebuilding the nation's economic foundation, and
- Reducing runaway spending, deficits, and debt

THE REGULATORY TSUNAMI

First, we must rein in excessive regulations and reform the regulatory process.

At the federal level alone, regulations already fill 150,000 pages of fine-print text and cost Americans $1.7 trillion a year. Many of these rules are necessary and business strongly supports them.

Yet in recent years, we have seen an unprecedented explosion of new regulatory activity. Furthermore, the administration is likely to turn increasingly to the regulatory agencies now that getting legislation out of Congress could be more difficult.

The resulting regulatory tsunami poses, in our view, the single biggest challenge to jobs, our global competitiveness, and the future of American enterprise.

Health Care—For example, the new health care law creates 159 new agencies, commissions, panels, and other bodies. It grants extraordinary powers to the Department of Health and Human Services to redefine health care as we know it.

When the bill passed, Americans were promised that it would lower costs and allow anyone who liked their existing coverage to keep it. Instead, costs are rising and health plans are being forced to change.

Officials have already raised the cost estimates of the bill and have acknowledged that the savings earmarked for Medicare will never materialize.

In some states, Medicare Advantage participants are being told their plans will no longer be available.

Workers who have been banking on employer-based coverage when they retire are being told not to count on it. And as premiums rise, thanks in part to the law's new mandates, many companies are thinking about ending their employer-based plans, and moving workers into government-run exchanges.

By mid-December, HHS had already granted 222 waivers to the law—a revealing acknowledgement that the law is unworkable. And, with key provisions under challenge in the courts by states and others, it's time to go back to the drawing board.

Last year, while strongly advocating health care reform, the Chamber was a leader in the fight against this particular bill—and thus we support legislation in the House to repeal it. We see the upcoming House vote as an opportunity for everyone to take a fresh look at health care reform—and to replace unworkable approaches with more effective measures that will lower costs, expand access, and improve quality.

Financial Regulations—The regulatory tsunami is also about to wash over our capital markets.

Dodd-Frank contains 259 mandated rulemakings, another 188 suggested rulemakings, 63 reports, and 59 studies. My grandchildren will be old and retired before it is all implemented.

The Chamber's Center for Capital Markets Competitiveness is deeply involved in the regulatory rulemaking triggered by this massive law.

We are particularly concerned that the new Consumer Financial Protection Bureau does not use its broad authority in ways that deny small businesses and consumers the credit and financial products they need.

We want to make sure that Main Street end-users are still able to use derivatives in an effective way to manage their legitimate business risk—without sidelining billions of dollars in productive capital and costing tens of thousands of jobs.

And although our pending litigation against the SEC over its proxy access rule has delayed its implementation, that battle is far from over. We'll continue to oppose proposals that would expand the ability of special interest shareholders such as unions to exploit proxy access rules to the detriment of companies, jobs, and all shareholders.

Even as we actively participate in these and many other rulemakings, we will renew our efforts to create a more modern, coherent regulatory structure with more effective regulators—areas where the new legislation fell far short. If we want to create enough jobs, we must ensure that our nation has the most vibrant, transparent, efficient, and well-regulated capital markets in the world.

Labor Market Regulations and Policies—Job creators are also facing unprecedented regulatory activity and case law changes in the Department of Labor, the National Labor Relations Board, and similar agencies. Over 100 such efforts are underway covering compensation, contracting, leave, ergonomics, workplace safety, hiring and firing, and union organizing.

The Chamber is going to fight hard throughout the year to challenge policies and rulings that are unfair to employers. But much more than workplace rules are at stake here.

Some unions—particularly the public employee unions—are are pushing an extreme agenda that extends well beyond representing their members in the workplace. They have been using their position as a powerful political force to sabotage the nation's trade agenda, which has damaged our standing overseas. Some want to vastly expand the size and cost of government, perpetuate the status quo in our failing public schools, and attack the nation's best companies through destructive tactics.

The sad irony is that all of these activities undermine the nation's ability to create and keep good-paying American jobs.

EPA Rulemakings and Greenhouse Gas Regulations—We will also continue our legal and legislative efforts to stop the EPA from misapplying environmental laws in order to unilaterally regulate greenhouse gases. The Chamber will support appropriate bipartisan legislation to delay or stop the EPA and return the important climate change issue to the purview of the Congress.

While EPA is starting with the largest emitters, it could eventually regulate 6 million entities—including small businesses, hotels, warehouses, and even churches. Before any of these facilities could build or expand, they would have to get pre-construction permits that take 6 to 9 months to obtain at a cost in excess of $100,000 per permit—and even then, the permits can be challenged in court. This could seriously disrupt construction activity across our nation and throw a lot of people out of work.

Beyond greenhouse gases, EPA's regulatory agenda lists 342 rulemakings in various stages of development and completion. Of these, 30 are deemed "economically significant"—each with a cost to our economy of $100 million or more.

Regulatory Reform and Advocacy—I could cite many other troubling examples of regulatory over-reach. Here's just one: By unfairly imposing a one-size-fits-all test that has little to do with academic quality, the Department of Education would make entire higher education programs ineligible for federal financial aid.

As a result, hundreds of thousands of students could be denied access to our excellent for-profit colleges, universities, and technical institutes. The administration should take the advice of many in the Congressional Black Caucus and withdraw the regulation.

How will the Chamber challenge this vast array of regulatory activities across our government?

We will use a range of tools depending on the circumstance. We will work cooperatively with the agencies whenever we can to reach a reasonable outcome. We will support, when appropriate, efforts to limit agency funding to implement regulations. We may pursue legislation or seek the application of the Congressional Review Act.

Yet the time has come to reform the regulatory process itself—to restore some badly needed balance and accountability to the system. This could be done by giving Congress the right to vote up or down on major rules before they take effect—and by strengthening the burden of proof that all agencies would have to demonstrate in court when they are imposing major rules.

Speaking of courts, new regulations mean new opportunities for the trial bar to expand lawsuits. The need for legal reform as well as courtroom advocacy on behalf of business will be greater than ever in the coming year and beyond. Our Institute for Legal Reform and our law firm, the National Chamber Litigation Center, will therefore play a critical role in the Chamber's ongoing program of work.

Finally, the Chamber will soon stand up a new group that will engage one or more respected advocates of stature and experience in the regulatory arena. This group will continually tell the story to the American people, policymakers, and the media about the massive costs of excessive regulations on jobs and on our personal and economic freedoms.

We cannot allow this nation to move from a government of the people to a government of the regulators. That's where it has been headed under Republicans and Democrats alike. We're going to be engaged in this fight for years to come.

A PRO-AMERICA TRADE AGENDA

Another key priority for the Chamber is to create jobs by advancing a pro-America trade agenda that doubles exports in five years, and doubles them again in the five years after that.

Last year, we heard a lot of talk about expanding trade but we didn't see much action. We have a good bipartisan opportunity to change that in 2011.

Market Opening Trade Agreements—A year ago, the Chamber released a study which warned that the United States will lose more than 380,000 existing jobs and $40 billion in export sales if we fail to implement our pending Free Trade Agreements, while within months, the EU and Canada will move ahead with theirs.

The administration must work urgently with the new Congress to approve the FTAs with South Korea, Colombia, and Panama. We will pull out all the stops to help get the votes.

We also strongly support the Trans-Pacific Partnership negotiations to open markets and expand trade with some of the fastest growing Asian economies—and if Japan can make the necessary reform commitments to join the negotiations, so much the better.

Transatlantic Zero-Tariff Agreement—And let's not overlook America's largest commercial partner—the EU. This month, I'll be traveling to Dublin, Brussels, and the World Economic Forum in Davos. One key objective of my trip will be to advance the idea of simply eliminating all tariffs on goods in the $600 billion transatlantic trading relationship.

An independent study commissioned by the Chamber found that doing this would increase transatlantic trade by more than $100 billion between now and 2015.

We think it could also jump-start global trade negotiations and set the stage for similar agreements with other partners.

Protecting Intellectual Property—We also need stronger global rules as well as more effective enforcement efforts to address the rampant theft of intellectual property in both the digital and physical worlds.

This is an issue that unites business and labor as well as Republicans and Democrats. Consumers should not be threatened by unsafe counterfeit products. And we cannot stand by as 19 million jobs in our most innovative and creative industries are threatened.

Modernizing Export Controls—In addition, we need to reform export control rules, which were designed during the Cold War and have cost us billions in lost exports sales.

The administration deserves credit for the progress it has made in creating a single export control list that distinguishes between the "crown jewels" of American technologies and those that are widely available. We urge officials to get the job done soon.

Fair Treatment in China—We must also continue to press our major trading partners to open their markets and create a level playing field for American goods and services.

Our relationship with China was a big issue in many campaigns last fall. China is a vital market for the United States. Our exports to that country are growing faster than almost anywhere else. But we are also concerned about a host of Chinese policies—from its effort to promote indigenous innovation, to the favoritism it shows to domestic industries, to its lax IP protections, to its undervalued currency.

Some progress has been made on these issues. More progress is needed—and soon. But starting a trade war with one of our fastest growing export markets is not the answer.

Mexican Trucks—As we work to persuade China and others to adhere to the principles of free and fair trade, we must live up to these principles ourselves.

That's why we welcome last week's news that the administration is taking a first step towards resolving the long-running U.S.-Mexico trucking dispute.

It's been some 15 years since the United States promised to allow safe, carefully-inspected trucks to move back and forth between our countries. The resulting tariffs imposed against us and authorized under NAFTA, have cost us 25,000 American jobs. It's time to keep our word.

Tax Reform, Visas, and Tourism—We also need to make the United States more attractive to global investors, talent, and tourists. The Chamber will work to reform our tax code and lower the corporate tax rate, which is the second highest in the developed world.

Almost all of us are sons, daughters, or descendents of immigrants. The Chamber will continue to pursue comprehensive immigration reform. We urgently need to improve visa processing, oppose attempts to gut temporary worker programs, and increase the number of worker visas.

A smarter visa policy would also allow us to greatly expand one of the surest job-creating exports to be found – foreign tourists and all the money they bring, spend and leave behind.

Regrettably, many Americans think that trade agreements cost jobs, that foreign investment and immigration threaten our national sovereignty, and that U.S. investments abroad take domestic jobs away. To change these misperceptions, we'll launch a major initiative to educate citizens and policymakers on trade that will clearly link global engagement to American jobs.

Ninety-five percent of the people we want to sell something to live overseas. There are 283 free trade agreements in force around the globe today, the United States has just 11 FTAs covering 17 countries. It's time to get the United States back into the game in a vigorous way.

REBUILDING OUR ECONOMIC FOUNDATION

Another priority we're putting front and center this year is the need to rebuild America's economic foundation—the platform on which our society runs.

Roads, bridges, rail and mass transit networks, airports, and air transport systems must be modernized. Broadband capacity, power generation, and water supplies must be expanded. If we fail to act as growth returns, we will soon run out of capacity. Our economy will hit the wall and we will be physically unable to grow. We'll lose jobs and even lives as a result.

Investing in Transportation—Our core surface transportation, aviation, and water resources programs are all operating under a series of short-term funding extensions. Neither states nor private investors can get projects off the drawing board with this kind of uncertainty—American jobs hang in the balance.

The Chamber will lead the fight to remove the regulatory, financial, and legal barriers that have locked away hundreds of billions of dollars in <u>private</u> infrastructure spending. But we must also have a strong, consistent, and reliable federal commitment to infrastructure—or these private dollars will go somewhere else.

Developing American Energy—With crude oil prices on the rise again, we are also reminded of the compelling need to develop more of our own vast energy and other natural resources.

According to one study, increasing access to America's domestic oil and gas resources could, by 2025, create a minimum of 530,000 jobs, $150 billion in government revenue, and the equivalent of four million barrels of oil per day.

Yet instead of moving forward, we are slipping backwards. Government delays in issuing permits for energy development in the Gulf of Mexico have prompted companies to move drilling rigs—and jobs—to other oil producing countries. Excluding the Eastern Gulf of Mexico and the Atlantic and Pacific coasts from the upcoming Five Year offshore plan will seriously undercut jobs and America's energy security.

There's no good or valid reason to send our money to other countries to pay for something we have plenty of right here at home. We can create jobs, reduce our trade and budget deficits, and increase our own security by prudently developing all forms of alternative, renewable, and traditional energy.

Global Supply Chain—In order to expand trade and move people, goods, information, and money throughout the country and around the world, we must focus new attention on America's global supply chain. We need to connect our entire economy in a seamless 21st century system of superior transportation, high speed information and communications technology, and modern seaports, airports and border crossings.

And so we have just engaged Jack Potter, the former Postmaster General of the United States, to lead an important new project for us. He will consult with the leading supply chain firms and experts worldwide and help us rally the business community around a plan to improve, maintain, secure, and advocate for a 21st century global supply chain and logistics system.

Restoring Educational Excellence—Rebuilding America's economic foundation is about more than the physical infrastructure. It is fundamentally about people—developing the talents of our children and workers, and ensuring that our country continues to lead the world in innovation.

In 2011, the Chamber will continue to mobilize our grassroots federation to the cause of improving educational and training opportunities for all Americans. This is more than an economic issue. How can any of us sit still when millions of American children are trapped in failing schools and a third of them don't even get a high school diploma? This is a moral outrage and a ticking social time bomb.

I commend President Obama for challenging some of the orthodoxy among his own political supporters. But we must move faster and more ambitiously on fundamental school reform or we will all pay a horrific price in the years ahead.

AMERICA'S DEBT CRISIS

Business, like all Americans, must also do its part to help address another defining challenge of our times—the growth of government spending and entitlements, and with it, the explosion of government debt.

The national debt already exceeds $14 trillion and is on track to nearly double over the next decade. Our current fiscal path leads to only one destination—insolvency.

The conventional wisdom says that no effort to address deficits will be considered until after the 2012 elections. But we can't wait that long. At the very least, a serious down payment on bringing deficits and debt under control should be made this year.

To control deficits, we must first put unemployed Americans back to work so that they are paying taxes instead of collecting benefits. But Congress and the administration must also move swiftly to reduce spending. The Chamber will support strong proposals even if we don't like all the details.

We'll also make the case for entitlement reform because any plan that fails to tackle these runaway programs is doomed to fail. And, we're going to support efforts by Republican and Democratic governors to challenge public employee unions and their excessive payroll, health, and retirement demands which are causing states to accumulate massive and unsustainable debt.

Getting Things Done in a Divided Government

Ladies and gentlemen, let me end where I began—on a note of optimism about our economy. It is picking up steam. We'll see stronger job creation. And while the philosophical gap on some issues will be too wide to bridge, I believe our elected officials can find enough common ground—or at least some shared enlightened self-interest—to make progress on the priorities I have outlined today.

To help persuade them, the Chamber will keep our grassroots systems—including our voter education and issue advocacy programs—fully mobilized, funded, and fired up throughout 2011.

We'll continue to expand our free enterprise campaign and educate all Americans about the need for a proven economic system based on open markets, limited government, and the freedom to take a risk, work hard, and be rewarded for those efforts.

We will also significantly expand our efforts to support small businesses and do everything we can to ensure their success. At the same time, we will get small businesses more actively engaged in the Chamber's political, legislative, and advocacy efforts.

And while we're doing that, the Chamber will vigorously defend the rights of companies and the associations that represent them to lobby, to petition the government, and to fully participate in the political and policy debates that will shape the future of our country. We will not allow the business community to be intimidated and we will use every tool at our disposal to challenge those who try to silence our voice.

Our approach in Washington will be to call them as we see them. We'll continue to have our differences with the White House on some issues but we'll work together on other issues. We'll support the new House leadership on many occasions, and we'll work with Democratic legislators as well, but no one should expect the Chamber to march in lock step with anyone.

We have a clear mission and agenda of our own:

It's to continue to win important policy victories for our members and the American business community.

It's to support, protect, and advance the free enterprise system that made this country great.

And it's to help create good jobs and promising opportunities for all the people of our country so that they can achieve the American dream.

I want to thank you again for coming today. We look forward to working with all of you throughout this year and beyond to vigorously and proudly represent the one institution in our nation that really works, the one institution that can put our nation back to work—the American business community.

Thank you very much.

01268-EPA-5527

Richard Windsor/DC/USEPA/US
01/11/2011 10:19 AM

To "Seth Oster"
cc "Gina (Sheila) McCarthy", "David McIntosh"
bcc
Subject Fw: Chamber Speech

[redacted] Ex.5 - Deliberative

From: "Browner, Carol M." [redacted] (b) (6)
Sent: 01/11/2011 10:16 AM EST
To: Richard Windsor
Subject: FW: Chamber Speech

From: Collamore, Tom <TCollamore@USChamber.com>
To: Psaki, Jennifer R.
Cc: Fielder, J.P. <JPFielder@uschamber.com>; Freeman, Tita <TFreeman@USChamber.com>
Sent: Tue Jan 11 08:31:13 2011
Subject: Tom Donohue's Speech for Today

Jen,

Here's a copy of today's speech and our press release. Please let us now if you have any questions.

Best,

Tom

Thomas J. Collamore
Senior Vice President, Communications and Strategy
Counselor to the President
U.S. Chamber of Commerce
1615 H Street, NW
Washington, DC 20062
(202) 463-5686
TCollamore@USChamber.com
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State_of_American_Business_2011--As_Prepared_for_Delivery_v2.docx

Press Release - 1 11 11 - SOAB.doc

01268-EPA-5528

David McIntosh/DC/USEPA/US
01/11/2011 10:36 AM

To Seth Oster
cc "Gina (Sheila) McCarthy", Richard Windsor
bcc
Subject Re: Fw: Chamber Speech

[redacted] Ex.5 - Deliberative

[redacted] Ex.5 - Deliberative

EPA Steps to Address GHG Emissions.doc Delay Would Cost America Jobs.doc

Adm Jackson reply to Cong Barton and Burgess.pdf

Seth Oster Just talked with the WH comms shop. ... 01/11/2011 10:25:16 AM

From: Seth Oster/DC/USEPA/US
To: Richard Windsor/DC/USEPA/US@EPA
Cc: "Gina (Sheila) McCarthy" <mccarthy.gina@epa.gov>, "David McIntosh" <mcintosh.david@epa.gov>
Date: 01/11/2011 10:25 AM
Subject: Re: Fw: Chamber Speech

Just talked with the WH comms shop [redacted] Ex.5 - Deliberative

[redacted]

Seth

Seth Oster
Associate Administrator

Office of External Affairs and Environmental Education
Environmental Protection Agency
(202) 564-1918
oster.seth@epa.gov

Richard Windsor [Ex.5 - Deliberative] 01/11/2011 10:19:36 AM

From: Richard Windsor/DC/USEPA/US
To: "Seth Oster" <oster.seth@epa.gov>
Cc: "Gina (Sheila) McCarthy" <mccarthy.gina@epa.gov>, "David McIntosh" <mcintosh.david@epa.gov>
Date: 01/11/2011 10:19 AM
Subject: Fw: Chamber Speech

[Ex.5 - Deliberative]

From: "Browner, Carol M." [(b) (6)]
Sent: 01/11/2011 10:16 AM EST
To: Richard Windsor
Subject: FW: Chamber Speech

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To: Psaki, Jennifer R.
Cc: Fielder, J.P. <JPFielder@uschamber.com>; Freeman, Tita <TFreeman@USChamber.com>
Sent: Tue Jan 11 08:31:13 2011
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[attachment "State_of_American_Business_2011--As_Prepared_for_Delivery_v2.docx" deleted by Seth Oster/DC/USEPA/US] [attachment "Press Release - 1 11 11 - SOAB.doc" deleted by Seth Oster/DC/USEPA/US]

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

NOV - 8 2010

THE ADMINISTRATOR

The Honorable Joe Barton
Ranking Member
Committee on Energy and Commerce
House of Representatives
Washington, DC 20515-6115

The Honorable Michael C. Burgess
Ranking Member
Subcommittee on Oversight and Investigations
Committee on Energy and Commerce
House of Representatives
Washington, DC 20515-6115

Dear Congressman Barton and Congressman Burgess:

Thank you for your October 14 letter about EPA's work to follow Congress's instructions in the Clean Air Act. The pace of EPA's Clean Air Act regulatory work under this administration is actually not faster than the pace under either of the two previous administrations. In fact, EPA has finalized or proposed fewer Clean Air Act rules (87) over the past 21 months than in the first two years of either President George W. Bush's administration (146) or President Clinton's administration (115).[1]

The chart attached to your October 14 letter highlights eight of EPA's current Clean Air Act rulemakings as having projected compliance costs exceeding one billion dollars. One of those rulemakings, however – the national ambient air quality standard for nitrogen dioxide – actually has projected compliance costs of only $3.6 million (your chart states $3.6 billion). Of the seven remaining rulemakings, one was initiated under the previous administration, two are in response to mandatory-duty lawsuits, and two are corrected versions of rules that were promulgated under the previous administration but then overturned in court for being inconsistent with Congress's instructions.

The chart attached to your letter does not present the projected economic benefits of any of the listed rulemakings. Those benefits projections can be found in the same documents from which the cost projections were drawn. Had the chart included the benefits projections, readers of it would have be able to see that the projected benefits of EPA's pollution reduction rules under the Clean Air Act exceed the projected costs by 13 to 1. According to the current, public

[1] All three counts include all Clean Air Act rules that amend the Code of Federal Regulations and that require the EPA Administrator's signature.

draft of an EPA report entitled "The Benefits and Costs of the Clean Air Act: 1990 to 2020,"[2] the benefits of Clean Air Act rules are expected to reach nearly $2 trillion in 2020 – exceeding costs by more than 30 to 1.

EPA's work to implement the Clean Air Act has a positive impact on employment in the United States. First of all, when we remove harmful smog and soot from the air, fewer Americans are forced to miss work due to pollution-related illnesses from which they or their loved ones suffer.

What is more, requirements to cut harmful air pollution at American facilities spur investments in the design, manufacture, installation, and operation of pollution-reducing technologies. All of those activities create jobs for Americans, and work installing or operating pollution controls on American facilities cannot be sent abroad. Many of the power plants and other facilities that will receive job-creating, pollution-reducing upgrades are concentrated in the very places that currently have the most unemployed workers.

Data from the International Brotherhood of Boilermakers indicates that the number of boilermakers in the United States increased by 6,700 – or 35 percent – from 1999 to 2001 as a result of EPA rulemakings implementing the Clean Air Act. The Institute of Clean Air Companies estimates that preparations to comply with just one of those rules have occupied approximately 200,000 person-years of labor over the past seven years.

The Department of Commerce estimates that, in 2007, environmental firms and small businesses in the United States generated $282 billion in revenues and $40 billion in exports, while supporting 1.6 million American jobs. Air pollution control equipment alone generated revenues of $18.3 billion in 2007, including exports of more than $3 billion. Thanks to the Clean Air Act and EPA's implementation of it, American manufacturing companies now lead a growing global market in air pollution reduction technology.

In sum: EPA's common-sense steps to implement the Clean Air Act result in much greater economic value than cost for Americans. The companies whose products and services bring American industry into line with the Clean Air Act's public health requirements support hundreds of thousands of American jobs. Those requirements foster global markets for American-made technologies.

EPA in the near future will complete and publish a periodic update of its regulatory agenda. At this time, the agency has identified three planned Clean Air Act rules that were not on your list but are likely "economically significant" (i.e., rules with projected benefits and/or costs greater than $100 million). One proposed rule would set air pollution limits for commercial and industrial solid waste incinerators (cost estimate $224 million; benefits estimate $240-$580 million in 2015). The second proposed Clean Air Act rule would set "Tier 3" emissions and fuel standards for motor vehicles. The third proposed rule would (in conjunction with a rule issued by the Department of Transportation) establish fuel economy and greenhouse gas emission standards for light-duty vehicles of Model Years 2017 through 2025.

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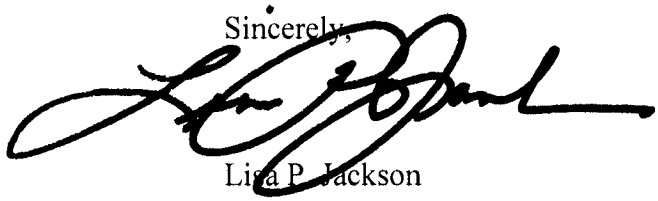
[2] http://www.epa.gov/oar/sect812/aug10/fullreport.pdf

Thank you again for your letter. If you have additional questions, please feel free to contact me or to have your staff contact David McIntosh in EPA's Office of Congressional and Intergovernmental Relations.

Sincerely,



Lisa P. Jackson

01268-EPA-5529

Gina McCarthy/DC/USEPA/US

01/11/2011 10:52 AM

To David McIntosh, Seth Oster
cc "Gina (Sheila) McCarthy", Richard Windsor
bcc
Subject Re: Fw: Chamber Speech

[redacted]
Ex.5 - Deliberative

David McIntosh

----- Original Message -----
From: David McIntosh
Sent: 01/11/2011 10:36 AM EST
To: Seth Oster
Cc: "Gina (Sheila) McCarthy" <mccarthy.gina@epa.gov>; Richard Windsor
Subject: Re: Fw: Chamber Speech

[redacted]
Ex.5 - Deliberative

[attachment "EPA Steps to Address GHG Emissions.doc" deleted by Gina McCarthy/DC/USEPA/US]
[attachment "Delay Would Cost America Jobs.doc" deleted by Gina McCarthy/DC/USEPA/US]

[attachment "Adm Jackson reply to Cong Barton and Burgess.pdf" deleted by Gina McCarthy/DC/USEPA/US]

Seth Oster Just talked with the WH comms shop. ... 01/11/2011 10:25:16 AM

From: Seth Oster/DC/USEPA/US
To: Richard Windsor/DC/USEPA/US@EPA
Cc: "Gina (Sheila) McCarthy" <mccarthy.gina@epa.gov>, "David McIntosh" <mcintosh.david@epa.gov>
Date: 01/11/2011 10:25 AM
Subject: Re: Fw: Chamber Speech

Just talked with the WH comms shop. Ex.5 - Deliberative

Seth

Seth Oster
Associate Administrator
Office of External Affairs and Environmental Education
Environmental Protection Agency
(202) 564-1918
oster.seth@epa.gov

Richard Windsor Ex.5 - Deliberative 01/11/2011 10:19:36 AM

From: Richard Windsor/DC/USEPA/US
To: "Seth Oster" <oster.seth@epa.gov>
Cc: "Gina (Sheila) McCarthy" <mccarthy.gina@epa.gov>, "David McIntosh" <mcintosh.david@epa.gov>
Date: 01/11/2011 10:19 AM
Subject: Fw: Chamber Speech

Ex.5 - Deliberative

From: "Browner, Carol M." (b) (6)
Sent: 01/11/2011 10:16 AM EST
To: Richard Windsor
Subject: FW: Chamber Speech

From: Collamore, Tom <TCollamore@USChamber.com>
To: Psaki, Jennifer R.
Cc: Fielder, J.P. <JPFielder@uschamber.com>; Freeman, Tita <TFreeman@USChamber.com>
Sent: Tue Jan 11 08:31:13 2011
Subject: Tom Donohue's Speech for Today

Jen,

Here's a copy of today's speech and our press release. Please let us now if you have any questions.

Best,

Tom

Thomas J. Collamore
Senior Vice President, Communications and Strategy
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[attachment "State_of_American_Business_2011--As_Prepared_for_Delivery_v2.docx" deleted by Seth Oster/DC/USEPA/US] [attachment "Press Release - 1 11 11 - SOAB.doc" deleted by Seth Oster/DC/USEPA/US]

01268-EPA-5530

Seth Oster/DC/USEPA/US
01/11/2011 10:56 AM

To Gina McCarthy, David McIntosh
cc "Gina (Sheila) McCarthy", Richard Windsor
bcc
Subject Re: Fw: Chamber Speech

Please provide it, Gina -- thanks. We need this in the next 30 minutes.
Gina McCarthy

----- Original Message -----
From: Gina McCarthy
Sent: 01/11/2011 10:52 AM EST
To: David McIntosh; Seth Oster
Cc: "Gina (Sheila) McCarthy" <mccarthy.gina@epa.gov>; Richard Windsor
Subject: Re: Fw: Chamber Speech

Ex.5 - Deliberative

David McIntosh

----- Original Message -----
From: David McIntosh
Sent: 01/11/2011 10:36 AM EST
To: Seth Oster
Cc: "Gina (Sheila) McCarthy" <mccarthy.gina@epa.gov>; Richard Windsor
Subject: Re: Fw: Chamber Speech

Ex.5 - Deliberative

[attachment "EPA Steps to Address GHG Emissions.doc" deleted by Gina McCarthy/DC/USEPA/US]
[attachment "Delay Would Cost America Jobs.doc" deleted by Gina McCarthy/DC/USEPA/US]

[attachment "Adm Jackson reply to Cong Barton and Burgess.pdf" deleted by Gina McCarthy/DC/USEPA/US]

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From: Seth Oster/DC/USEPA/US
To: Richard Windsor/DC/USEPA/US@EPA
Cc: "Gina (Sheila) McCarthy" <mccarthy.gina@epa.gov>, "David McIntosh" <mcintosh.david@epa.gov>
Date: 01/11/2011 10:25 AM
Subject: Re: Fw: Chamber Speech

Just talked with the WH comms shop. [redacted] Ex.5 - Deliberative [redacted]

[redacted]

Seth

Seth Oster
Associate Administrator
Office of External Affairs and Environmental Education
Environmental Protection Agency
(202) 564-1918
oster.seth@epa.gov

Richard Windsor [redacted] Ex.5 - Deliberative 01/11/2011 10:19:36 AM

From: Richard Windsor/DC/USEPA/US
To: "Seth Oster" <oster.seth@epa.gov>
Cc: "Gina (Sheila) McCarthy" <mccarthy.gina@epa.gov>, "David McIntosh" <mcintosh.david@epa.gov>
Date: 01/11/2011 10:19 AM
Subject: Fw: Chamber Speech

[redacted] Ex.5 - Deliberative [redacted]

From: "Browner, Carol M." [redacted] (b) (6)
Sent: 01/11/2011 10:16 AM EST
To: Richard Windsor
Subject: FW: Chamber Speech

From: Collamore, Tom <TCollamore@USChamber.com>
To: Psaki, Jennifer R.
Cc: Fielder, J.P. <JPFielder@uschamber.com>; Freeman, Tita <TFreeman@USChamber.com>
Sent: Tue Jan 11 08:31:13 2011
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01268-EPA-5531

Richard Windsor/DC/USEPA/US
01/12/2011 10:58 AM

To Bob Perciasepe, Peter Silva
cc
bcc
Subject Fw: NOC Principal-level committee virtual action on the GCC Slate and ORM-IPC Charter

Ex.5 - Deliberative

----- Forwarded by Richard Windsor/DC/USEPA/US on 01/12/2011 10:52 AM -----

From: "Sutley, Nancy H." <(b) (6)
To: "(b) (6) <(b) (6) "(b) (6) <(b) (6) "(b) (6) <(b) (6) "(b) (6) <(b) (6) "(b) (6) <(b) (6) "shawnita.jackson@js.pentagon.mil" <shawnita.jackson@js.pentagon.mil>, "jane.lubchenco@noaa.gov" <jane.lubchenco@noaa.gov>, "james.clapper@dni.gov" <james.clapper@dni.gov>, "woodardew@state.gov" <woodardew@state.gov>, "ssuresh@nsf.gov" <ssuresh@nsf.gov>, "annie.bradley@usdoj.gov" <annie.bradley@usdoj.gov>, "robert.rangel@sd.mil" <robert.rangel@sd.mil>, "Browner, Carol M." <(b) (6) "Summers, Lawrence" <(b) (6) "Barnes, Melody C." <(b) (6) "Brennan, John O." <(b) (6) "Donilon, Thomas E." <(b) (6) "Zients, Jeffrey D." <(b) (6) "Klain, Ron" <(b) (6) "(b) (6) <(b) (6) "kensalazar@ios.doi.gov" <kensalazar@ios.doi.gov>, "charles.bolden@nasa.gov" <charles.bolden@nasa.gov>, "(b) (6) <(b) (6) Richard Windsor/DC/USEPA/US@EPA, "(b) (6) <(b) (6) "jon.wellinghoff@ferc.gov" <jon.wellinghoff@ferc.gov>, "janet.napolitano@dhs.gov" <janet.napolitano@dhs.gov>
Cc: "aretha.robinson@osec.usda.gov" <aretha.robinson@osec.usda.gov>, "howard.hankin@wdc.usda.gov" <howard.hankin@wdc.usda.gov>, "Ashley.Chappell@noaa.gov" <Ashley.Chappell@noaa.gov>, "Teresa.Christopher@noaa.gov" <Teresa.Christopher@noaa.gov>, "robin.brake@navy.mil" <robin.brake@navy.mil>, "Damian.Bednarz@hq.doe.gov" <Damian.Bednarz@hq.doe.gov>, Paul Cough/DC/USEPA/US@EPA, Kate Perry/DC/USEPA/US@EPA, "merrill.hathaway@ferc.gov" <merrill.hathaway@ferc.gov>, "Carolyn.templeton@ferc.gov" <Carolyn.templeton@ferc.gov>, "(b) (6) <(b) (6) "John.T.Oliver@uscg.mil" <John.T.Oliver@uscg.mil>, "mike.m.sollosi@uscg.mil" <mike.m.sollosi@uscg.mil>, "Terry_Holman@ios.doi.gov" <Terry_Holman@ios.doi.gov>, "BRADLEY.APPLEMAN@js.pentagon.mil" <BRADLEY.APPLEMAN@js.pentagon.mil>, "Karen.wardzinski@usdoj.gov" <Karen.wardzinski@usdoj.gov>, "(b) (6) <(b) (6) v>, "Uzzell.Megan@dol.gov" <Uzzell.Megan@dol.gov>, "jack.kaye@nasa.gov" <jack.kaye@nasa.gov>, "dconover@nsf.gov" <dconover@nsf.gov>, "O'BrienGJ@state.gov" <O?BrienGJ@state.gov>, "Camille.Mittelholtz@dot.gov" <Camille.Mittelholtz@dot.gov>, "Janice.Weaver@dot.gov" <Janice.Weaver@dot.gov>, "anne.christenson@dot.gov" <anne.christenson@dot.gov>, "Levine, Brian S." <(b) (6) "(b) (6) <(b) (6) "(b) (6) <(b) (6) "McConville, Drew" <(b) (6) "Zichal, Heather R." <(b) (6) "Connors, Celeste A." <(b) (6) "(b) (6) <(b) (6) "Ericsson, Sally C." <(b) (6) "tina.palacios@nasa.gov" <tina.palacios@nasa.gov>, "Luster, Jeffrey P." <(b) (6) "Praskovich, Alisa L." <(b) (6) "Nikolaus, Roxanne" <(b) (6) "aretha.robinson@osec.usda.gov" <aretha.robinson@osec.usda.gov>, "barnesmd@state.gov" <barnesmd@state.gov>, "Shanedda.bogan@usdoj.gov" <Shanedda.bogan@usdoj.gov>, "jstewart@nmic.navy.mil" <jstewart@nmic.navy.mil>, "Deborah.D.Smith@uscg.mil" <Deborah.D.Smith@uscg.mil>, "Allandra.Washington@noaa.gov" <Allandra.Washington@noaa.gov>, "Emily.barson@hhs.gov" <Emily.barson@hhs.gov>, "lmoorman@nsf.gov" <lmoorman@nsf.gov>, "kathryn.manuel-1@nasa.gov" <kathryn.manuel-1@nasa.gov>, "brizzi.djuna.y@dol.gov"

<brizzi.djuna.y@dol.gov>, "howard.hankin@wdc.usda.gov" <howard.hankin@wdc.usda.gov>,
"Levenbach, Stuart" <(b) (6)
Date: 12/28/2010 02:06 PM
Subject: NOC Principal-level committee virtual action on the GCC Slate and ORM-IPC Charter

Dear National Ocean Council Members:

(b) (5)

Nancy H. Sutley
Chair, Council on Environmental Quality
Co-Chair National Ocean Council

John P. Holdren
Director, Office of Science and Technology Policy
Co-Chair National Ocean Council

GCC Slate (revised 12-27-10)(with Jan 7 due date).pdf

ORM-IPC Charter (with Jan 7 due date).pdf

ACTION ITEM
DECISION NEEDED

TOPIC: Governance Coordinating Committee (GCC) Selection

Overview

Executive Order 13547, *Stewardship of the Ocean, Our Coasts, and the Great Lakes,* establishes the GCC. The role of the GCC is to serve as a formal body for State, tribal, and local government representatives to deliberate and coordinate with the National Ocean Council (Council)on issues of inter-jurisdictional collaboration and cooperation on the National Policy and related matters. The GCC will consist of eighteen officials from State, tribal, and local governments serving staggered two-year terms, and must be either an elected official or be designated by an elected official with jurisdiction to act on that official's behalf for purposes of the GCC. Nominees were to be evaluated utilizing the Council-approved GCC Selection Criteria. Broadly speaking, these criteria included; knowledge and experience on maritime or land use stewardship issues, including economic, social, conservation, commerce, trade, energy, recreation, agriculture, national security, and underserved communities.

The GCC Selection Committee, which is comprised of Council Deputies Byron Black (DOT), Laura Davis (DOI), and Dr. Larry Robinson (NOAA), reviewed the pool of GCC nominees and finalized a slate for NOC Deputy and Principal approval. The Selection Committee presented the 2011 GCC slate for l Deputy-level Committee approval at its December 16 meeting. At the meeting, it was recommended that each newly appointed GCC member serve a minimum one-year term, to afford the Council flexibility in developing an effective strategy to stagger the terms based on GCC member input and consideration of any relevant issues that may arise during that first year. The Deputies-level Committee approved the GCC slate, and adopted the recommendation that each nominee be selected for an initial one-year term.

Given the importance in standing up the GCC in accordance with the aggressive timeline outlined in the Final Recommendations, the Principal-level Committee must expeditiously approve the GCC slate virtually in lieu of delaying action until its next meeting. Principal-level Committee approval is the last step prior to official GCC member selection, and requires our full consensus. Please note that we have yet to receive the Inland State nominees. They will be sent at a future date for review and action.

The attachment (2011 GCC Slate) is the Deputy-level Committee's approved slate of nominees. It is important to note that each GCC nominee has undergone a detailed vetting and screening process conducted jointly by the White House Office of Presidential Personnel and CEQ/OSTP General Counsel. The Deputy-level Committee members and agency Senior Staff Contacts have additional background material regarding the membership slate for the GCC.

Action Requested of Principal Committee

Approve GCC slate

Timeline

Due January 7, 2011

Attachment

2011 GCC Slate

2011 Governance Coordinating Committee Member Slate

The 2011 Governance Coordinating Committee (GCC) member slate is organized by the five GCC categories of seats, starting first with the State regional representatives, followed by the tribal officials, local government officials, and the State legislative representative. This slate overview provides a synopsis of the nominees, summarizing the geographical areas they represent, current job title, and the career highlights the GCC Selection Committee thought were most relevant to meeting the GCC selection criteria. More detailed information on each nominee, including current resumes and biographies, is included in the 2011 GCC Slate Background Information document. There is a placeholder for the inland State regional representatives, since the NOC has yet to receive any formal nominees for this category. Once nominations in this category are received, the GCC Selection Committee will review them, and its recommendation will be subsequently provided to the NOC Deputies for consideration.

State Regional Representatives

Brian Baird: California (West Coast Region)
Assistant Secretary for Ocean and Coastal Policy, California Natural Resources Agency

Director of the CA Ocean Resources Management Program under three CA Governors. Chief author of the CA Ocean Strategies for Governors Schwarzenegger and Wilson. Current Executive Committee Member and former Chair of the U.S. Coastal States Organization, and former Chair of its Ocean Policy Committee. Commissioner of the CA Coastal Commission. CA's representative on the West Coast Governors' Agreement on Ocean Health and the Pacific Coast Collaborative. 2008 recipient of NOAA's Susan Snow-Cotter Award for Excellence in Ocean and Coastal Management. Initiated and served as Vice-Chair on each of the State's four international conferences, "California and the World Ocean."

Bob Ballard: Florida (South Atlantic Region)
Deputy Secretary of Land and Recreation for the Florida Department of Environmental Protection

Has served as the Deputy Secretary of Land and Recreation since 1999. FL Representative serving on the Gulf of Mexico and South Atlantic Alliances, the U.S. Coral Reef Task Force, and Co-Chairs the FL Oceans and Coastal Council. Supervises the Department of Environmental Protection's administration of the world's largest land and water conservation program - Florida Forever, a $3 billion, 20-year program to preserve land and water resources. Chairs the 11-member Acquisition and Restoration Council that reviews management plans and land uses for all state-owned conservation lands. Former Chief Cabinet Aide at the FL Department of Education serving under two previous Education Commissioners.

Kathleen Leyden: Maine (Northeast Region)
Director of Maine's Coastal Zone Management Program

Has served as Maine's Coastal Zone Program Manager since 1998. Current Chair of the Gulf of Maine Council on the Marine Environment, and immediate past Chair of the Northeast Regional Ocean Council. Recently served as a member of Governor Baldacci's Ocean Energy Task Force, and serves as ME's lead on the Department of Interior's Atlantic States Offshore Wind Energy Consortium. Elected as Vice Chair of the Coastal States Organization in 2010, where she chairs the workgroup on Ocean Governance. Former Planning Director for the City of Saco, ME from 1985-1987. 2008 recipient of NOAA's Susan Snow-Cotter Award for Excellence in Coastal and Marine Resource Management.

David Naftzger: Illinois (Great Lakes Region)
Executive Director, Great Lakes-St. Lawrence River Basin Water Resources Council

Executive Director of the Council of Great Lakes Governors, directing eight State regional Governors' organizations focused on environmental protection and economic development. Facilitated negotiation and implementation of the "Great Lakes Compact" which was enacted into law in 2008 and details how the States manage the use of the Great Lakes Basin's water supply. Previous Committee Director on the National Conference of State Legislatures from 1999-2001 where he directed government relations on international trade and agricultural issues. Appointed member since 2004 on the Office of the U.S. Trade Representative, Intergovernmental Policy Advisory Committee on Trade

Lelei Peau: American Samoa (Pacific Islands Region)
Deputy Director, Department of Commerce for the American Samoa Government

More than 25 years of service within the American Samoa Government, primarily in the Department of Commerce (DOC). Operates as the senior advisor to the Governor on environment and economic issues. Provided oversight on behalf of American Samoa for the establishment of the Rose Atoll Marine National Monument that protects 13,450 sq. miles of territory. As the Resource Management Program Manager under the DOC, managed nine sections with oversight of all permitting, enforcement, water quality and ocean and coastal and ocean resource management. Member of the U.S. Coral Reef Task Force for the last 10 years. Former Chairman of the U.S. All Islands Committee and the Coastal States Organization All Islands Committee.

Paige Rothenberger: U.S. Virgin Islands (Caribbean Region)
Coral Reef Initiative Coordinator, USVI Dept. of Planning & Natural Resources

Has worked in the resource management field for the last 15 years (13 within the USVI). USVI appointed member to the U.S. Coral Reef Task Force and U.S. All Islands Coral Reef Committee. Extensive coral reef research, and conservation program development, including site assessments and collaboration with Federal, territorial, and non-governmental agencies. Oversees development and coordination of the St. Croix East End Marine Park, which she led the efforts to have incorporated into the U.S. National System of Marine Protected Areas in 2010. Education coordinator with the Coastal Conservation Foundation, operating out of Mexico, to develop bilingual outreach ocean educational venues.

George Stafford: New York (Mid-Atlantic Region)
Deputy Secretary of State

Has led NY's Coastal Resources programs since its inception 28 years ago. Initiated creation of the Mid-Atlantic Regional Council on the Ocean. Negotiated and authored the Mid-Atlantic Governor's Agreement on Ocean Conservation in 2009. Oversees departmental programs related to maritime transportation in NY Harbor. Previous Chair to the NY Maritime Advisory Council. Manages over $200 million of grants for 500 waterfront and community revitalization projects. Represents the Secretary of State on the Governor's Environmental Justice Interagency Task Force. Oversees the Governor's Smart Growth Cabinet which strives to redevelop underserved urban areas and promote economic growth.

Bill Walker: Mississippi (Gulf of Mexico Region)
Chair of the Gulf of Mexico Alliance Management Team and Executive Director of the MS Department of Marine Resources

Over 25 years of experience and expertise in Gulf Coast environmental toxicology research and analysis. Completed a 28-year career at the University of MS Gulf Coast Research Laboratory as the Associate Director. Previous U.S. Environmental Protection Agency (EPA) Legislative Fellow in the Office of Senator Trent Lott. Former Chief of the U.S. EPA's Ecological Diagnostics Branch and Molecular Ecology Branch, Gulf Ecology Division. Member of the MS Research Consortium Water Quality Task Force since 1991. Adjunct faculty member at four other universities.

Gordon Williams: Alaska (AK Region)
Special Assistant to the Commissioner of Fish and Game

Over ten years experience working with the AK Department of Fish and Game, and 20+ years in fisheries and small business management. Primary advisor for AK's Pacific Salmon Treaty involvement, and co-chair of the Pacific Salmon Commission's bilateral Northern Panel. Fish and Game Commissioner's designee as AK's non-voting member of the Pacific Fishery Management Council. Previous commercial fisherman from 1977-1992 in Southeast AK, holding a Coast Guard 50 ton Master's License. Served as the Southeast Regional Fish and Game Council Chair from 1983-1987. Former U.S. (AK) Delegate to the U.S./Canadian Pacific Salmon Treaty Negotiations from 1984-1985.

Tribal Officials

Steve Crawford: Maine
Environmental Director, Passamaquoddy Tribe of Pleasant Point, ME

Long-time consultant in bio-remediation technology in aquaculture systems. Former Peace Corps volunteer and technical trainer in fisheries, serving in India, Philippines, Nepal, and Africa. Designed, built, and ran Oklahoma's largest commercial catfish farm from 1976 to 1989. Founded and ran the 120-acre Coastal Plantations international, Inc., the only company to commercially produce the marine algae "nori" (used in sushi wrappers) in the Western Hemisphere. Nominated to serve on the Gulf of Maine Council on Marine Environment and the Northeastern Aquatic Nuisance Species Task Force. Chair of the United South and Eastern Tribes Inc. Natural Resources Committee since 2005.

Jacque Hostler: California
Chief Executive Officer and Director of the Transportation and Land-Use Department, Cher-Ae Heights Indian Community of the Trinidad Rancheria

17 years of working in Indian Country, specializing in construction, land-use, and transportation projects. Current Chair, North Coast Tribal Transportation Commission, and member of Cal Trans Native American Advisory Committee. Cal Trans award recipient for the "Transportation Planning for American Indian Tribes."Represents all CA tribes on the National Indian Reservation Roads Coordinating Committee. Active member of the CA Marine Life Protected Act (MLPA) North Coast Regional Stakeholders Group, and tribal leader heavily engaged in the North Coast MLPA planning process. Participates on the Bureau of Land Management's Gateway Committee for the CA Coastal Rocks Monument.

Micah McCarty: Washington State
Tribal Councilman Member & Marine Policy & Fisheries Advisor, Makah Tribal Council

Has served on the Makah Tribal Council for over six years including terms as both Chairman and Vice Chairman. Created first ever Makah Office of Marine Affairs. Co-founder of the Olympic Coast National Marine Sanctuary's Inter-governmental Policy Council. Represented Makah interests in three joint U.S./ Canadian Western Juan de Fuca Ecology Symposiums that focused on implementing borderless ecosystem-based management and research initiatives. Led Makah Tribal Council's efforts to secure the tribe's first chartered institution with the U.S. Navy to address military training exercise issues, resulting in stand-up of a formal Navy/Tribal Council. Tribal Treaty fisherman since 1980.

Local Government Officials

Kristin Jacobs: Florida
County Commissioner - District 2, Broward County, Florida

Commissioner since 1998, representing 24 miles of coastline and the Port Everglades world-ranked Cruise Ship terminal. As the former Mayor of Broward County, led the emergency response efforts following devastation of Hurricane Wilma in 2005. Initiated the creation of, and current Chair of the county's first ever Climate Change Task Force. Sponsored the South FL Regional Climate Change Summit which resulted in a 4-county compact to address climate change impacts in Southeast FL. As Vice Chair of the county's Water Resources Task Force, developed and implemented a now nationally-recognized water conservation program. Current Chair of the FL Association of Counties Large Urban Caucus.

Geraldine Knatz: California
Executive Director, Port of Los Angeles

Has held senior leadership positions with the Nation's two busiest container ports, Los Angeles and Long Beach, for over 30 years. Chief Executive of the nation's largest container port, responsible for overall port management and operations. Managing director of the Port of Long Beach for over 20 years. Key leader in development and implementation of the San Pedro Bay Clean Air Action Plan and Green Ports Policy. Current Chair of the International Association of Ports and Harbors World Ports Climate Initiative and Port Environment Committees. 2008-2009 Chair of the American Association of Port Authorities. Former member of the Scientific Advisory Board to the U.S. Ocean Commission from 2002-2004.

Joan Murphy: Illinois
Cook County Commissioner, IL, 6th District

Commissioner since 2002, representing the entire upper northeastern section of IL (District 6 includes Chicago). Commissioner of Cook County's Forest Preserve District, responsible for stewardship of over 68,000 acres. Current Chair of the National Association of Counties (NACo) Ports Subcommittee, and Vice Chair of NACo's Transportation Steering Committee. Since 2003, has secured over $100 million to the District for neighborhood stabilization program allocations, community development block grant funds, and justice assistance grant funds. County Chair of the Construction Committee and Labor Finance Subcommittee, and Vice Chair of the Worker's Compensation and Zoning, Building Committees.

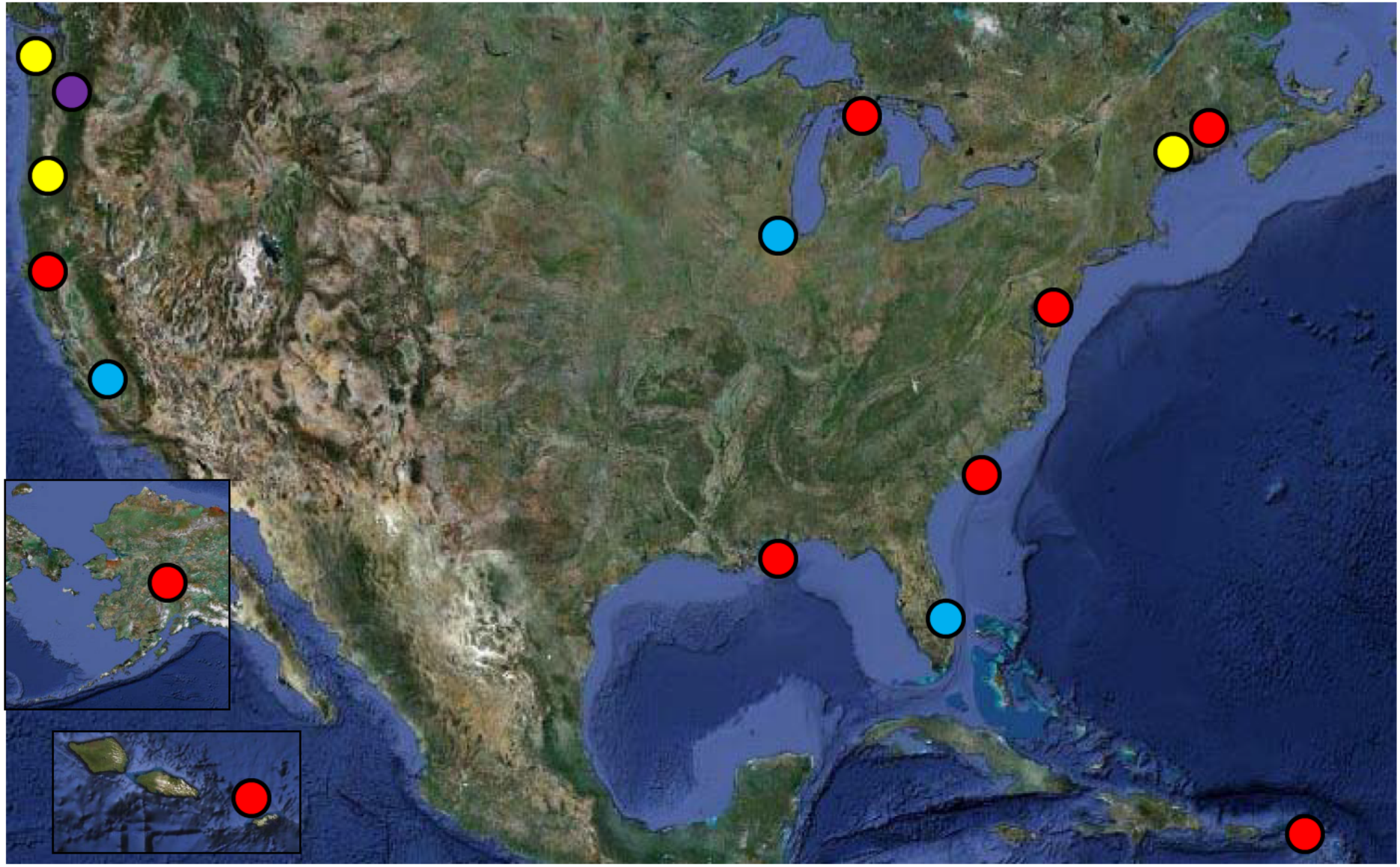
State Legislative Representative

Kevin Ranker: Washington State
Washington State Senator

Over 15 years experience with coastal and ocean policy at the State, national and international level. Senior Fellow at the Ocean Foundation, and Senior Advisor to the Meridian Institute where he advises on coastal and ocean policy issues. In 2009, elected Chair of the Coastal States Caucus to represent legislators from the nation's coastal and Great Lakes States. In the WA State Senate, serves as Chair of the Natural Resources and Marine Waters Committee where he sponsored the successful marine spatial management and oil spill response and preparedness legislation. Chair of the San Juan County Board of County Commissioners from 2005-2008, responsible for all executive, legislative, and land use matters.

Inland State Representatives

2011 GCC Member Geographic Representation



Tribal Rep

Regional Rep

Local Govt Rep

State Leg Rep

Inland State Rep-TBD

Governance Coordinating Committee

Governance Coordinating Committee
State/Tribal/Local

one State legislative representative
(1)

two at-large representatives from inland States
(2)

one State representative each from:

Alaska
Caribbean
Great Lakes Region
Gulf of Mexico Region
Mid-Atlantic Region
Northeast Region
Pacific Islands
South Atlantic Region
West Coast Region
(9)

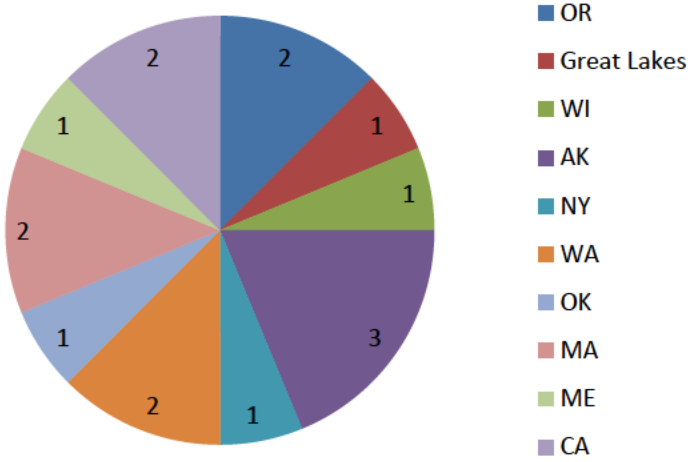
three at-large tribal representatives
(3)

three local government representatives from coastal States
(3)

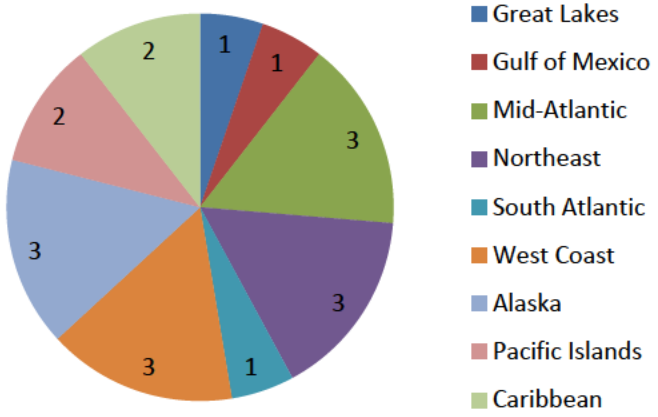
Total GCC Nominations Received

47 Total Received

16 Tribal Nominees

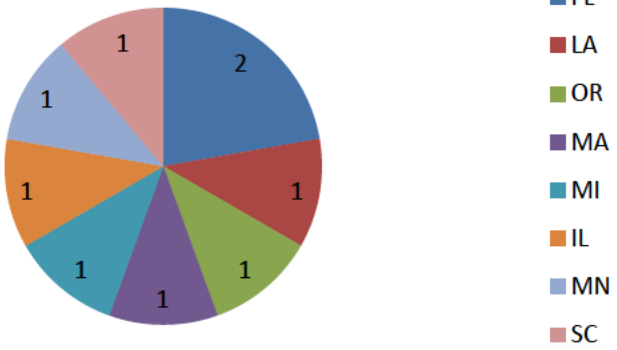


19 Regional Nominees

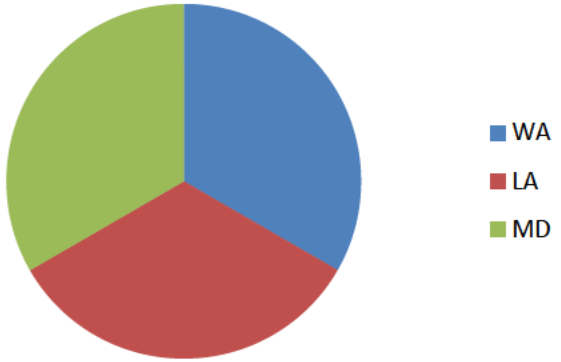


O Inland State Reps Received

9 Local Govt Reps



3 State Leg Nominees



List of Nominees to the Governance Coordinating Committee (organized by category)

Last Name	First Name	Category (Membership Group)	Submitted By	Title	State/Province
Ahgeak	Doreen	Tribal	Inupiat Community of the Arctic Slope (ICAS)	North Slope Planning Dept	AK
Andersen	Ralph	Tribal	Bristol Bay Native Association (BBNA)	President & CEO, Bristol Bay Native Association	AK
Andrews-Maltais	Cheryl	Tribal	United South & Eastern Tribes Inc.	Chairwoman, Wampanoag Tribe of Gay Head (Aquinnah)	MA
Crawford	Steve	Tribal	United South and Eastern Tribes Inc.	Environmental Director, Passamaquoddy Tribe of Pleasant Point	ME
Cromwell	Cedric	Tribal	United South & Eastern Tribes Inc.	Chairman, Mashpee Wampanoag Tribe	MA
Hartley-Kelso	Deanna	Tribal	Chickasaw Nation	Attorney General, Chickasaw Nation	OK
Hostler	Jacque	Tribal	Trinidad Rancheria Tribal Council	Chief Executive Officer & Director of Transportation & Land Use Department, Trinidad Rancheria	CA
Johnstone	Ed	Tribal	Quinault Indian Nation	Fisheries & Marine Policy Representative for Quinault Indian Nation	WA
Matylewitch	Michael	Tribal	Columbia River Inter-Tribal Fish Commission (CRITFC)	Manager, CRITFC Fish Management Department	OR
McCarty	Micah	Tribal	Makah Tribal Council	Tribal Councilman Member & Marine Policy & Fisheries Advisor	WA

Orosco	Kristie	Tribal	San Pasqual band of Indians of CA	Director, Environmental Protection and Compliance	CA
Osterback	David	Tribal	Aleutian Pribilof Islands Association	President, Qagan Tayagungin Tribe of Sand Point AK	AK
Patterson	Brian	Tribal	Oneida Nations Homeland	President, United South & Eastern Tribes	WA
Pyatskowit	Jeremy	Tribal	Menominee Tribal Chairman's Office	Environmental Scientist, Menominee Indian Tribe	WI
Sharma	Rishi	Tribal	Columbia River Inter-Tribal Fish Commission	Biometrician, CRITFC	OR
Zorn	James	Tribal	Great Lakes Indian Fish and Wildlife Commission	Executive Administrator, GLIFWC	WI

Bates	Randall (Randy)	Regional - Alaska	Governor of Alaska	Director of the Division of Coastal and Ocean Management in the Department of Natural Resources	AK
Robbins	Mark	Regional - Alaska	Governor of Alaska	Associate Director of the Washington, DC Office of the Governor of Alaska	MD
Williams	Gordon (Gordy)	Regional - Alaska	Governor of Alaska	Special Assistant to the Commissioner of Fish and Game	AK
Diaz	Ernesto	Regional - Caribbean	Governor of Puerto Rico (in agreement with the Governor of US Virgin Islands). Note that this is PR's first choice of nominee, but not USVI's first choice.	Director of the Puerto Rico Coastal Management Program	PR

Rothenberger	Paige	Regional - Caribbean	Governor of U.S. Virgin Islands and Governor of Puerto Rico (note that this nominee is USVI's first choice, but PR's second choice)	Coral Reef Initiative Coordinator, USVI Dept. of Planning & Natural Resources	VI
Naftzger	David	Regional - Great Lakes	Great Lakes Governors	Executive Director, Great Lakes-St. Lawrence River Basin Water Resources Council	IL
Walker	Bill	Regional - Gulf of Mexico	Gulf of Mexico Governors	Chair of the Gulf of Mexico Alliance Management Team and Exec Dir MS Dept. of Marine Resources	MS
Cooksey	Sarah	Regional - Mid-Atlantic	Governor of Delaware on behalf of the Governors of the Mid-Atlantic states	Administrator of Delaware Coastal Programs, Department of Natural Resource and Environmental Control	DE
Schultz	Gwynne	Regional - Mid-Atlantic	Governor of Maryland on behalf of the Mid-Atlantic Governors	Senior Coastal and Ocean Policy Advisor	MD
Stafford	George	Regional - Mid-Atlantic	Governor of New York on behalf of the Mid-Atlantic Governors	Deputy Secretary of State	NY
Carlise	Bruce	Regional - Northeast	Northeast Governors	Deputy Director, Massachusetts Office of Coastal Zone Management	MA
Fugate	Grover	Regional - Northeast	Northeast Governors	Executive Director, Coastal Resources Management Council	RI

Leyden	Kathleen	Regional - Northeast	Northeast Governors	Director of Maine's Coastal Zone Management Program	ME
Mayer	Abbey	Regional - Pacific Islands	Governor of Hawaii	Director, State of Hawaii Office of Planning	HI
Peau	Lelei	Regional - Pacific Islands	Governor of American Samoa	Deputy Director, Department of Commerce for the American Samoa Government	AS
Ballard	Bob	Regional - South Atlantic	South Atlantic Governors	Deputy Secretary of Land and Recreation for the Florida Department of Environmental Protection	FL
Baird	Brian	Regional - West Coast	West Coast Governors	Assistant Secretary for Ocean and Coastal Policy, California Natural Resources Agency	CA
Hennessey	Jennifer	Regional - West Coast	West Coast Governors	Ocean Policy Planner, Washington State Department of Ecology	WA
Solliday	Louise	Regional - West Coast	West Coast Governors	Director of the Department of State Lands, Oregon	OR

Harrison	Joe	State Legislative	National Conference of State Legislatures	Louisiana State Representative	LA
Jameson	Sally Young	State Legislative	National Conference of State Legislatures	Delegate, Maryland House of Delegates	MD
Ranker	Kevin	State Legislative	National Conference of State Legislatures	Washington State Senator	WA

Heartwell	George	Local Government	U.S. Conference of Mayors	Mayor, Grand Rapids, MI	MI

Hibbard	Frank	Local Government	U.S. Conference of Mayors	Mayor of Clearwater, FL	FL
Jacobs	Kristin	Local Government	National Association of Counties	County Commissioner - District 2, Broward County, Florida	FL
Josi	Tim	Local Government	National Association of Counties	Tillamook County Commissioner, OR	OR
Knatz	Geraldine	Local Government	U.S. Conference of Mayors	Executive Director, Port of Los Angeles	CA
McElveen	Joseph	Local Government	U.S. Conference of Mayors	Mayor of Sumter, SC	SC
Murphy	Joan	Local Government	National Association of Counties	Cook County Commissioner, IL, 6th District	IL
Randolph	Charlotte	Local Government	National Association of Counties	President, Lafourche Parish, LA	LA
Tobey	Bruce	Local Government	National League of Cities	Councilor-at Large, Gloucester, Massachusetts	MA

ACTION ITEM
DECISION NEEDED

TOPIC: Ocean Resource Management Interagency Policy Committee Charter

Overview
The Ocean Resource Management Interagency Policy Committee (ORM-IPC) is the ocean resource management body of the National Ocean Council (Council) with an emphasis on ensuring the interagency implementation of the National Ocean Policy, national priority objectives, and other priorities defined or approved by the Council. It is the successor to the Subcommittee on Integrated Management of Ocean Resources, and consists of Deputy Assistant Secretaries or comparable representatives, or appropriate senior-level representatives with decision-making authority from departments, agencies and offices represented on the Council.

The charter addresses purpose and scope, functions, membership, meetings, Council Steering Committee participation, establishment of sub-IPCs, transparency and collaboration, and termination date. The Council, through the Co-chairs of the Council Deputy-level Committee, designates the Chairs of the ORM-IPC; the Chairs develop the ORM-IPC charter for Council approval. The draft charter prepared by Council staff was provided to the Council Deputies at the September 24, 2010, Deputies meeting with a request for comments. Comments received were incorporated. The revised charter was provided to the ORM-IPC Co-chairs for review and finalizing.

The Council Deputies recommended at their December 16, 2010, meeting that the Council Principals approve the ORM-IPC Charter.

Action Requested of Deputies Committee
Approve ORM-IPC Charter

Timeline
Due January 7, 2011

Attachments
Final Draft ORM-IPC Charter

DRAFT
CHARTER
of the
Ocean Resource Management Interagency Policy Committee

A. Official Establishment and Designation

Executive Order 13547, *Stewardship of the Ocean, Our Coasts, and the Great Lakes,* of July 19, 2010, establishes the Ocean Resource Management Interagency Policy Committee (ORM-IPC) of the National Ocean Council, as described in the *Final Recommendations of the Interagency Ocean Policy Task Force* (Final Recommendations).

B. Purpose and Scope

The purpose of the ORM-IPC is to serve as the ocean resource management body of the Council, with an emphasis on ensuring the interagency implementation of the National Ocean Policy as directed in Executive Order 13547 (National Policy) and set forth in the Final Recommendations, the national priority objectives, and other priorities as defined or approved by the Council. In implementing the National Policy, the ORM-IPC will work closely with the Ocean Science and Technology Interagency Policy Committee (OST-IPC) and will interact with other entities, including the Governance Coordinating Committee (GCC) and the Ocean Research and Resources Advisory Panel (ORRAP), as necessary and appropriate.

The ORM-IPC reports to the Council and is the successor organization to the Subcommittee on Integrated Management of Ocean Resources (SIMOR).

C. Functions

The ORM-IPC will regularly coordinate with the OST-IPC to ensure coordination of science and resource management issues to further the National Policy.

The ORM-IPC will carry out the following functions:

- Develop strategic action plans, in coordination with the OST-IPC, for the implementation of priority management objectives described in the Final Recommendations. Strategic action plans will include:
    - Clear outcomes;
    - Milestones;
    - Deadlines;
    - Designated Agencies;
    - Performance Measures; and
    - Adaptive Review Process.

- Develop and maintain a plan of work, including revisions and updates as appropriate, for submission to the Council for approval;
- Coordinate with the OST-IPC, and with input from the ORRAP and the GCC, to develop a process for encouraging and obtaining input from States, tribes, local, governments, regional governance structures, stakeholders, and the public in the development and implementation of strategic action plans; and
- Perform other assignments and actions as directed by the Council.

Within 60 days of its first meeting, the ORM-IPC will develop detailed procedures for its operation to be approved by the Council's Deputy-level Committee.

D. Membership

ORM-IPC membership will consist of Deputy Assistant Secretaries or comparable representative, or appropriate senior-level representatives with decision-making authority from departments, agencies, and offices represented on the Council. Council member departments, in consultation with the ORM-IPC Co-Chairs, may invite agencies and bureaus within their department structure to attend ORM-IPC meetings as non-voting, non-member attendees and to participate in ORM-IPC discussions. In addition, the ORM-IPC Co-chairs may invite the Chair of the Oceans Sub-Interagency Policy Committee, the Co-Chairs of the OST-IPC, the Chair and Vice-Chairs of the ORRAP, and the Chair and Vice Chair of the GCC to be non-voting, *ex officio* members of the ORM-IPC to encourage strong coordination of national ocean affairs. Non-voting, *ex officio* invitations are not delegable.

The Co-chairs of the Deputy-level Committee of the Council will select federal agencies to serve as Co-chairs of the ORM-IPC from among a list of self-nominations provided by the Council member agencies. There will be a minimum of two and a maximum of three Co-chairs. Co-chairs will serve for three-year terms, which may be renewed. The Co-Chairs shall serve in addition to, and independent of, their respective agency's ORM-IPC member. Co-Chair agencies will also be responsible for providing one staff member each for support of the ORM-IPC in meeting its duties in implementing the National Policy.

The Co-Chairs of the ORM-IPC may designate additional non-voting, *ex officio* members as deemed necessary.

E. Meetings

The ORM-IPC will meet at least once every two months. The Co-Chairs of the ORM-IPC may convene additional meetings as they find appropriate, including Co-Chair meetings. The Co-Chairs will provide a meeting agenda and meeting materials to the ORM-IPC members at least one week prior to the meeting, denoting those items on which action will be required. Meetings are open only to the ORM-IPC membership, additional federal attendees as defined in the Membership section, and invited guests. Meetings or portions

of meetings may be designated as “federal only” to allow discussion of any sensitive, deliberative, or proprietary information.

F. Steering Committee Participation

Each ORM-IPC Co-chair may participate on the Council Steering Committee, but one, designated by the Council’s Deputy level Co-Chairs in consultation with the ORM-IPC Co-Chairs, will serve as the voting member should voting be required. In this capacity the designated ORM-IPC Co-Chair will represent the views of the ORM-IPC to ensure integration and coordination on priority areas within the Council. The role of the ORM-IPC Co-chairs on the Steering Committee is to help ensure that there is coordination of resource management and science issues and that the activities of the ORM-IPC and OST-IPC are aligned to fully support implementation of the National Policy and priorities agreed upon by the Council.

G. Sub-IPCs

The ORM-IPC may, in coordination with the OST-IPC and with approval from the Council Deputy-level Committee, establish sub-Interagency Policy Committees (sub-IPCs) as necessary to accomplish ORM-IPC functions, including developing strategic action plans. All products of the sub-IPCs must be submitted for review and deliberation by the ORM-IPC, in coordination with the OST-IPC as appropriate, for submission to the Council.

The ORM-IPC may, with approval from the Council, continue Interagency Working Groups established under SIMOR that contribute to ORM-IPC functions or address legislated or other requirements.

G. Transparency and Collaboration

In implementing the National Policy, the ORM-IPC will solicit input from State, tribal, and local authorities; regional governance structures; academic institutions; nongovernmental organizations; recreational interests; and private enterprise, as appropriate, through the GCC, ORRAP, conferences and workshops, and other means. The ORM-IPC may also collaborate with international ocean research and resource management entities as appropriate.

H. Termination Date

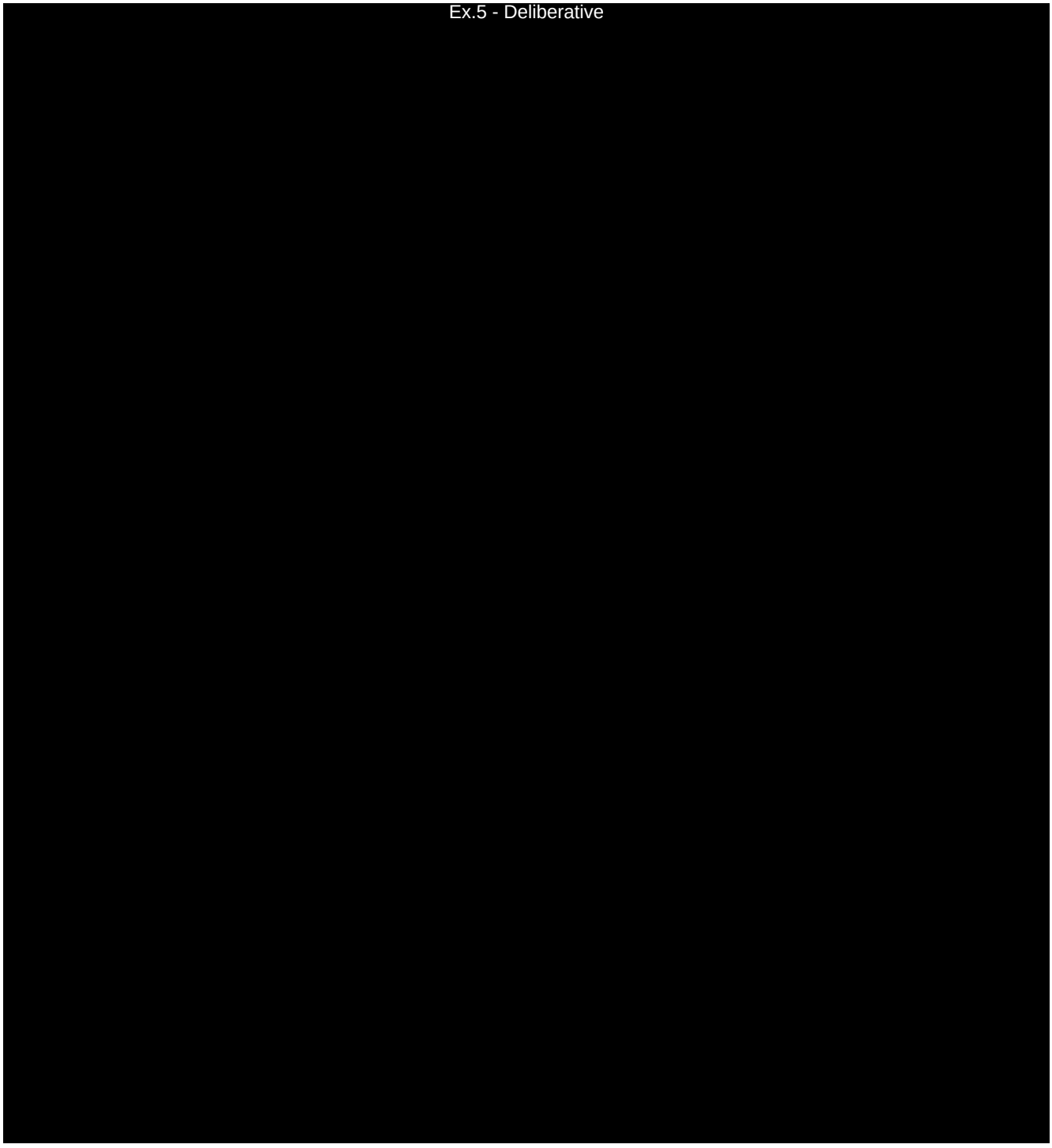
This charter will become effective upon approval by the Council’s Principal-level Committee. The Council may modify this charter in writing as it deems appropriate. The ORM-IPC Co-chairs will review the charter prior to its expiration and update it as necessary, for review and approval by the Council. Unless the Council renews this charter prior to its expiration, it will expire on XXXX.

01268-EPA-5532

David McIntosh/DC/USEPA/US
01/12/2011 12:27 PM

To Richard Windsor
cc Arvin Ganesan, Bob Perciasepe, Bob Sussman, Diane Thompson, Seth Oster
bcc
Subject Re: Fw: Business Roundtable releases "Roadmap for Growth"

Ex.5 - Deliberative



Richard Windsor Not sure if I ever sent this to you the li... 01/12/2011 11:50:37 AM

From: Richard Windsor/DC/USEPA/US
To: David McIntosh <McIntosh.David@EPA.GOV>, Seth Oster/DC/USEPA/US@EPA, Bob Perciasepe/DC/USEPA/US@EPA, Diane Thompson/DC/USEPA/US@EPA, Bob Sussman/DC/USEPA/US@EPA, Arvin Ganesan/DC/USEPA/US@EPA
Date: 01/12/2011 11:50 AM
Subject: Fw: Business Roundtable releases "Roadmap for Growth"

Not sure if I ever sent this to you the link to this report. I deleted the actual report since it take up a lot of disk space but the link is below. LPJ

----- Forwarded by Richard Windsor/DC/USEPA/US on 01/12/2011 11:25 AM -----

From: "Browner, Carol M." <(b) (6)
To: Richard Windsor/DC/USEPA/US@EPA, "Sutley, Nancy H." <(b) (6)
Date: 12/08/2010 05:38 PM
Subject: FW: Business Roundtable releases "Roadmap for Growth"

From: Eric Thomas [mailto:ethomas@fratelli.com]
Sent: Wednesday, December 08, 2010 10:02 AM
To: Eric Thomas
Subject: Business Roundtable releases "Roadmap for Growth"

Attached, please find Business Roundtable's "Roadmap for Growth," including a cover letter sent today to all Members of Congress.

The *Roadmap* offers data-driven recommendations in five key areas:

-Fiscal Policy and Competitive Taxation
-Market Access
-Education
-Government Regulation
-Energy and the Environment

For more information, visit: http://businessroundtable.org/studies-and-reports/roadmap-for-growth/ or www.brt.org. [attachment "Roadmap_for_Growth_Full_Report_1.pdf" deleted by Richard Windsor/DC/USEPA/US] [attachment "Roadmap 2010 - transmittal letter.pdf" deleted by Richard Windsor/DC/USEPA/US]

01268-EPA-5533

Arvin Ganesan/DC/USEPA/US

01/13/2011 03:01 PM

To Richard Windsor, Bob Sussman
cc
bcc
Subject Fw: Rockefeller Letter re: Spruce

ROckefeller letter to POTUS attached, regarding Spruce.

ARVIN R. GANESAN
Deputy Associate Administrator
Office of the Administrator
United States Environmental Protection Agency
Ganesan.Arvin@epa.gov
(p) 202.564.5200
(f) 202.501.1519
----- Forwarded by Arvin Ganesan/DC/USEPA/US on 01/13/2011 03:00 PM -----

From: "Kennedy, Sean D." <(b) (6)
To: "Maher, Jessica A." <(b) (6) "Heimbach, Jay" <(b) (6) Arvin Ganesan/DC/USEPA/US@EPA, "Gavin, Tom" <(b) (6)
Cc: "Terrell, Louisa" <(b) (6) "Papa, Jim" <(b) (6)
Date: 01/13/2011 02:59 PM
Subject: Rockefeller Letter re: Spruce

Rocky letter to POTUS... uses the word "outrage" in sentence one.

Manchin did a press release too... pasted below.

Charleston, W.Va. — Senator Joe Manchin today voiced his strong opposition to the unprecedented decision by the Environmental Protection Agency to retroactively veto a coal mining permit for the Spruce No. 1 Mine in Logan County, West Virginia. The permit was already approved after an exhaustive, approximately 10-year regulatory process which included time for an extensive review by the EPA.

"Today's EPA decision is not just fundamentally wrong, it is an unprecedented act by the federal government that will cost our state and our nation even more jobs during the worst recession in this country's history," Senator Manchin said. "While the EPA decision hurts West Virginia today, it has negative ramifications for every state in our nation, and I strongly urge every Senator and every Member of Congress to voice their opposition."

Manchin continued: "It goes without saying, such an irresponsible regulatory step is not only a shocking display of overreach, it will have a chilling effect on investments and our economic recovery. I plan to do everything in my power to fight this decision."

The US Army Corps of Engineers awarded the Spruce Mine permit to the Mingo Logan Coal Company in 2007. The permit, known as a Section 404(c) permit, is a requirement for constructing valley fills, a process used in surface coal mining. The EPA has authority under the Clean Water Act to "veto" Section 404(c) permits before they are awarded by the US Army Corps. However, the EPA has never before attempted to veto a previously awarded and active permit.

"The EPA is setting a dangerous precedent with this decision," Manchin said. "According to the EPA, it doesn't matter if you did everything right, if you followed all of the rules. Why? They just change the rules. But what the EPA doesn't seem to understand is that this decision has ramifications that reach far beyond coal mining in West Virginia. The EPA is jeopardizing thousands of jobs and essentially sending a message to every business and industry that the federal government has no intention of honoring past promises and that no investment is safe. That message will destroy not only our jobs, but our way of life."

Mingo Logan Coal Company was poised to invest $250 million dollars in the Spruce Mine project, which would have created approximately 200 well-paying jobs with benefits. The EPA's decision to retroactively veto the permit casts serious doubt on the future of this project.

-----Original Message-----
From: Moore, Jocelyn (Rockefeller) [
mailto:Jocelyn_Moore@rockefeller.senate.gov]
Sent: Thursday, January 13, 2011 11:21 AM
To: Kennedy, Sean D.
Cc: Ates, Kerry (Rockefeller)
Subject: Spruce Mine Letter to the President

Hi Sean,

The Spruce Mine letter to President Obama is attached. Please call with any questions.

Thanks,
Jocelyn


Document.pdf

United States Senate
WASHINGTON, DC 20510–4802

January 13, 2011

The Honorable Barack Obama
President of the United States of America
The White House
1600 Pennsylvania Ave., Nw
Washington, D.C. 20500-0005

Dear Mr. President,

I am writing to express my outrage with the Environmental Protection Agency's (EPA) decision to veto a rigorously reviewed and lawfully issued permit at the Spruce Number 1 Mine in Logan County, West Virginia. This action not only affects this specific permit, but needlessly throws other permits into a sea of uncertainty at a time of great economic distress.

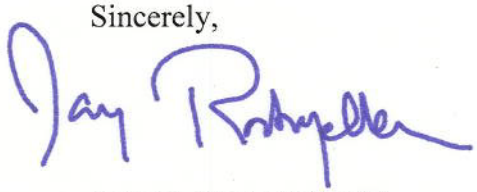
It is further upsetting that the EPA is seeking to veto a permit that has already been so thoroughly reviewed. The U.S. Army Corps of Engineers reviewed this permit for nearly a decade before it was approved in 2007. A complete Environmental Impact Statement (EIS) was conducted and the EPA fully engaged in commenting and revising the permit application during the review process. In order to satisfy the environmental concerns raised by the EPA at the time, the permit was substantially scaled back. As approved, the final permit reduced the acreage of the permit by 835 acres or 27 percent and excess spoil by 150 million cubic yards, a decrease of 57 percent. These dramatic reductions in environmental impact were noted specifically by the EPA before the final permit was issued. Now the EPA, seeking a second bite at the apple, has revoked a lawfully issued permit.

When companies conduct business in the United States, they must be able to trust that commitments made to them by the government will be honored, not retracted. Today's action not only threatens an operation that could have employed hundreds of West Virginians, but it shakes West Virginians' trust in government – leaving the impression that no matter what actions coal companies in West Virginia take to reduce, minimize and mitigate environmental impacts of mining operations, it may never be enough for the EPA. The matter will now certainly move to the courts. A long and protracted additional legal process should not be required to achieve a fair result here, but the legal case is a strong one and I believe may very well ultimately overturn the EPA's action.

Let there be no doubt that surface mining operations can and must be done in an environmentally sensitive manner with ever-improving technology. However, as a nation we must not fall into the trap of forcing unnecessary choices between protecting the environment and having good paying jobs that support energy independence. We must demand both and find a responsible balance. Today's decision does not strike that balance - it seeks to tip the scales.

I urge the EPA to immediately reconsider its approach to coal mining permits in Central Appalachia and instead find constructive ways to reduce environmental impacts while allowing mining operations that spur job creation to go forward.

Sincerely,



John D. Rockefeller IV

CC: The Honorable Lisa Jackson
EPA Administrator

01268-EPA-5534

Daniel Kanninen/DC/USEPA/US
01/18/2011 06:11 PM

To Richard Windsor, Bob Perciasepe
cc Diane Thompson, Lisa Garcia
bcc
Subject Fw: Revised AGO Exec Summary and Report

Administrator:

(b) (5) [redacted]

[redacted]

Dan Kanninen
White House Liaison
U.S. Environmental Protection Agency
202.564.7960
kanninen.daniel@epa.gov

----- Forwarded by Daniel Kanninen/DC/USEPA/US on 01/18/2011 06:05 PM -----

From: "Conant, Kathryn" <(b) (6)
To: "Conant, Kathryn" <(b) (6) "Salzman, Amelia S." <(b) (6) "Boots, Michael J." <(b) (6) "'Shafroth, William'" <Will_Shafroth@ios.doi.gov>, "'Carrillo, Francisco'" <Francisco_Carrillo@ios.doi.gov>, "'Bonnie, Robert'" <Robert.Bonnie@osec.usda.gov>, "'rock.salt@us.army.mil'" <rock.salt@us.army.mil>, "'Raychaudhuri, Arnab Mr CIV USA ASA CW'" <arnab.raychaudhuri@us.army.mil>, Daniel Kanninen/DC/USEPA/US@EPA
Date: 01/18/2011 04:48 PM
Subject: Revised Exec Summary

(b) (5) [redacted]

Kathryn

_____
Kathryn Conant
Deputy Associate Director for Lands
Council on Environmental Quality
(b) (6) (office)
(b) (6) (cell)
(b) (6)

Ex.5 - Deliberative

AGO- Exec Summary 01-18-2011 CLEAN.doc

Ex.5 - Deliberative

AGO Main Report draft 01-18-2011 CLEAN.doc

01268-EPA-5535

Lisa Jackson
<(b) (6)>
01/20/2011 06:29 AM

To Richard Windsor
cc
bcc
Subject Fwd: Fw: Letter from 23 Groups to the President

----- Original Message -----
From: Tiernan Sittenfeld
To: Browner, Carol M. <(b) (6)> 'Zichal, Heather R.' <(b) (6)>
'Utech, Dan G.' <(b) (6)> 'Nelson, Greg' <(b) (6)> Messina, Jim
<(b) (6)>
Sent: Wed Jan 19 21:09:50 2011
Subject: Letter from 23 Groups to the President

We want to give you all a heads up about the letter to the President that is below and attached. It will be formally submitted and publicly released tomorrow, so we wanted to be sure you had it in advance. I am on my cell (b) (6) if any of you have questions or want to discuss it.

Best,

Tiernan

1Sky * American Rivers * Center for American Progress * Clean Water Action * Conservation Law Foundation * Defenders of Wildlife * Earthjustice * Environment America * Environmental Defense Fund * Friends of the Earth * Greenpeace * League of Conservation Voters * National Audubon Society * National Parks Conservation Association * National Wildlife Federation * Natural Resources Defense Council * Oceana * Pew Environment Group * Sierra Club * The Wilderness Society * Union of Concerned Scientists * U.S. Climate Action Network * World Wildlife Fund

January 20, 2011

The President

The White House

1600 Pennsylvania Avenue NW

Washington, DC 20500

Dear Mr. President,

We are writing to you about the Clean Air Act, a remarkably successful public health law that has saved hundreds of thousands of lives over the last 40 years while our economy has tripled in size. Our organizations cannot overstate the priority we put on preventing efforts to block, weaken or delay implementation of this vital law, which at every stage in its history has garnered overwhelming bipartisan support. We urge you to use your upcoming State of the Union address to underscore the critical need for the Clean Air Actâ□□s sensible safeguards and to oppose any attempt to block, weaken, or delay its continued implementation.

As you know, the Environmental Protection Agency (EPA) has begun to roll out long-overdue safeguards to reduce carbon, mercury, and other life-threatening pollution from big sources that have been allowed to dump unlimited amounts of pollution into our air for far too long. These clean air safeguards will save tens of thousands more lives, prevent millions of illnesses, and reduce health care costs, while spurring innovation and job growth. Their health benefits will vastly outweigh their costs.

Unfortunately, the nationâ□□s biggest polluters and some members of Congress have launched an unprecedented attack on the Clean Air Act. Your recent Wall Street Journal op-ed emphasized your administrationâ□□s achievements under the Clean Air Act. In order to build on those achievements, the EPA must retain its authority to hold polluters accountable and continue moving forward to implement all of these much-needed safeguards.

You have demonstrated a strong commitment to protecting public health and bringing about a clean energy economy throughout your presidency. Your upcoming State of the Union address offers a perfect opportunity to renew that commitment by making clear that you will continue to stand with the public -- not polluters -- and do everything in your power to ensure that the EPA retains the authority and the resources to take the life-saving actions necessary to protect the air we breathe and the water we drink.

Sincerely,

Liz Butler, Campaign Director

1Sky

Rebecca Wodder, President

American Rivers

John D. Podesta, President and CEO

Center for American Progress

John Kassel, President

Conservation Law Foundation

Bob Wendelgass, President and CEO

Clean Water Action

Rodger Schlickeisen, President and CEO

Defenders of Wildlife

Trip Van Noppen, President

Earthjustice

Margie Alt, Executive Director

Environment America

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Environmental Defense Fund

Erich Pica, President

Friends of the Earth

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Union of Concerned Scientists

Peter Bahouth, Executive Director

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Carter Roberts, President and CEO

World Wildlife Fund

POTUS SOTU letter FINAL.pdf

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William Meadows, President
The Wilderness Society

Kevin Knobloch, President
Union of Concerned Scientists

Peter Bahouth, Executive Director
U.S. Climate Action Network

Carter Roberts, President and CEO
World Wildlife Fund

01268-EPA-5536

Richard Windsor/DC/USEPA/US
01/20/2011 06:35 AM

To "Seth Oster", "David McIntosh", "Bob Perciasepe", "Gina (Sheila) McCarthy", "Bob Sussman", "Scott Fulton", "Diane Thompson", "Bicky Corman", "Arvin Ganesan", "Barbara Bennett"
cc
bcc
Subject Fw: Fwd: Fw: Letter from 23 Groups to the President

From: Lisa Jackson [(b) (6)
Sent: 01/20/2011 05:29 AM CST
To: Richard Windsor
Subject: Fwd: Fw: Letter from 23 Groups to the President

----- Original Message -----
From: Tiernan Sittenfeld
To: Browner, Carol M. <(b) (6) 'Zichal, Heather R.' <(b) (6)
'Utech, Dan G.' <(b) (6) 'Nelson, Greg' <(b) (6) Messina, Jim <(b) (6)
Sent: Wed Jan 19 21:09:50 2011
Subject: Letter from 23 Groups to the President

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Best,

Tiernan

1Sky * American Rivers * Center for American Progress * Clean Water Action * Conservation Law Foundation * Defenders of Wildlife * Earthjustice * Environment America * Environmental Defense Fund * Friends of the Earth * Greenpeace * League of Conservation Voters * National Audubon Society * National Parks Conservation Association * National Wildlife Federation * Natural Resources Defense Council * Oceana * Pew Environment Group * Sierra Club * The Wilderness Society * Union of Concerned Scientists * U.S. Climate Action Network * World Wildlife Fund

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POTUS SOTU letter FINAL.pdf

1Sky * American Rivers * Center for American Progress * Clean Water Action * Conservation Law Foundation * Defenders of Wildlife * Earthjustice * Environment America * Environmental Defense Fund * Friends of the Earth * Greenpeace * League of Conservation Voters * National Audubon Society * National Parks Conservation Association * National Wildlife Federation * Natural Resources Defense Council * Oceana * Pew Environment Group * Sierra Club * The Wilderness Society * Union of Concerned Scientists * U.S. Climate Action Network * World Wildlife Fund

January 20, 2011

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1Sky

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The Wilderness Society

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Peter Bahouth, Executive Director
U.S. Climate Action Network

Carter Roberts, President and CEO
World Wildlife Fund

01268-EPA-5537

Richard Windsor/DC/USEPA/US
01/20/2011 09:29 AM

To "Carol Browner", "Nancy Sutley", "Cass Sunstein"
cc
bcc
Subject Fw: good statements from Dominion in this story

FYI
David McIntosh

----- Original Message -----
From: David McIntosh
Sent: 01/20/2011 09:09 AM EST
To: Richard Windsor; Gina McCarthy; Seth Oster; Joseph Goffman; Adora Andy; Brendan Gilfillan; Arvin Ganesan; Michael Moats
Subject: good statements from Dominion in this story

REGULATIONS: EPA's regulatory 'train wreck' sparks little concern beyond Beltway (Thursday, January 20, 2011)

Dina Fine Maron, E&E reporter

Beyond the Beltway, utilities and state regulators are adopting a conciliatory tone as they eye a suite of future regulations on smokestack emissions and water pollution from coal-fired power plants.

Speaking at a panel sponsored by the Bipartisan Policy Center yesterday, Pamela Faggert, the chief environmental officer for Dominion, a Virginia-based power company, and several state regulators agreed that postponing any of the regulations that are geared toward cleaning up the air and water around coal plants in the next several years would not make economic sense and could harm public health.

Industry advocates on Capitol Hill have blasted the rules -- which would cover traditional air pollutants, carbon and water -- as a "regulatory train wreck" that will hurt the economy and lead to plant shutdowns.

Faggert, though, emphasized that the agency should not wait on its regulations. Instead of delaying the rules, she said, the industry would like to see EPA consider the regulations in a synchronized manner so companies could plan to comply with various regulations all at once.

She also called for "flexibility" from U.S. EPA to lighten utilities' load whenever possible, such as when choosing whether to designate coal ash as hazardous material.

"Utility regulators are concerned that failure to address such uncertainty in the near term could lead to higher costs and less reliability in the future," agreed Richard Morgan, commissioner of the Washington, D.C., Public Service

Commission.

"There are an increasing number of utilities who are pursuing multi-pollutant planning," to address those issues, he said, adding that energy efficiency and fuel switching are on utilities' radar as a hedge against uncertainty.

"What some people refer to as a 'train wreck' may actually be a golden opportunity to look for synergies between different compliance options," he said.

Congress gears up for an EPA fight

Sue Tierney, a managing principal for Analysis Group and former assistant secretary for policy at the Department of Energy, said that any delays would further fuel uncertainty.

"It's a bad idea to think flexibility means everyone should move back," she said. There are more "surgical" approaches available to solve problems on a case-by-case basis if they should crop up, she said.

Various projections have been presented by the private sector and the Obama administration about future retirements of coal-fired power plants (*ClimateWire*, Jan. 12). But what factors decisionmakers will weigh more heavily when deciding plants' fates -- EPA's regulations or expectations about a future price on carbon or the cost of natural gas -- is a study in balancing uncertainties, since EPA's rules have not been finalized.

Yesterday's event took place against a backdrop of strong Republican rhetoric about how the party plans to rein in EPA's regulatory authority.

"We don't want EPA to go too far, too fast," said Michael Catanzaro, a Republican staffer for the Senate Environment and Public Works Committee. He declined to discuss how the Republicans plan to ratchet up their battle on EPA's regulations, but it is in their cross hairs, he said.

01268-EPA-5538

"Sunstein, Cass R." <(b) (6) .gov>
01/20/2011 09:32 AM

To Richard Windsor
cc
bcc
Subject RE: good statements from Dominion in this story

Great and hi Lisa! This is very helpful. Also: Meant to wish you a very happy New Year! ([redacted (b) (6)])

-----Original Message-----
From: Windsor.Richard@epamail.epa.gov [mailto:Windsor.Richard@epamail.epa.gov]
Sent: Thursday, January 20, 2011 9:29 AM
To: Browner, Carol M.; Sutley, Nancy H.; Sunstein, Cass R.
Subject: Fw: good statements from Dominion in this story

FYI

----- Original Message -----
From: David McIntosh
Sent: 01/20/2011 09:09 AM EST
To: Richard Windsor; Gina McCarthy; Seth Oster; Joseph Goffman; Adora Andy; Brendan Gilfillan; Arvin Ganesan; Michael Moats
Subject: good statements from Dominion in this story

REGULATIONS: EPA's regulatory 'train wreck' sparks little concern beyond Beltway (Thursday, January 20, 2011)
Dina Fine Maron, E&E reporter

Beyond the Beltway, utilities and state regulators are adopting a conciliatory tone as they eye a suite of future regulations on smokestack emissions and water pollution from coal-fired power plants.

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Faggert, though, emphasized that the agency should not wait on its

regulations. Instead of delaying the rules, she said, the industry would like to see EPA consider the regulations in a synchronized manner so companies could plan to comply with various regulations all at once.

She also called for "flexibility" from U.S. EPA to lighten utilities' load whenever possible, such as when choosing whether to designate coal ash as hazardous material.

"Utility regulators are concerned that failure to address such uncertainty in the near term could lead to higher costs and less reliability in the future," agreed Richard Morgan, commissioner of the Washington, D.C., Public Service Commission.

"There are an increasing number of utilities who are pursuing multi-pollutant planning," to address those issues, he said, adding that energy efficiency and fuel switching are on utilities' radar as a hedge against uncertainty.

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Congress gears up for an EPA fight

Sue Tierney, a managing principal for Analysis Group and former assistant secretary for policy at the Department of Energy, said that any delays would further fuel uncertainty.

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Various projections have been presented by the private sector and the Obama administration about future retirements of coal-fired power plants (ClimateWire, Jan. 12). But what factors decisionmakers will weigh more heavily when deciding plants' fates -- EPA's regulations or expectations about a future price on carbon or the cost of natural gas -- is a study in balancing uncertainties, since EPA's rules have not been finalized.

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"We don't want EPA to go too far, too fast," said Michael Catanzaro, a Republican staffer for the Senate Environment and Public Works Committee. He declined to discuss how the Republicans plan to ratchet up their battle on EPA's regulations, but it is in

their cross hairs, he said.

01268-EPA-5539

Richard Windsor/DC/USEPA/US
01/20/2011 10:39 AM

To "Cass Sunstein"
cc
bcc
Subject Re: good statements from Dominion in this story

Feliz ano.

----- Original Message -----
From: "Sunstein, Cass R." [(b) (6)
Sent: 01/20/2011 09:32 AM EST
To: Richard Windsor
Subject: RE: good statements from Dominion in this story

Great and hi Lisa! This is very helpful. Also: Meant to wish you a very happy New Year! ([(b) (6)

-----Original Message-----
From: Windsor.Richard@epamail.epa.gov [mailto:Windsor.Richard@epamail.epa.gov]
Sent: Thursday, January 20, 2011 9:29 AM
To: Browner, Carol M.; Sutley, Nancy H.; Sunstein, Cass R.
Subject: Fw: good statements from Dominion in this story

FYI

----- Original Message -----
From: David McIntosh
Sent: 01/20/2011 09:09 AM EST
To: Richard Windsor; Gina McCarthy; Seth Oster; Joseph Goffman; Adora Andy; Brendan Gilfillan; Arvin Ganesan; Michael Moats
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01268-EPA-5540

Diane Thompson/DC/USEPA/US
01/25/2011 09:06 PM

To "Richard Windsor", "Bob Perciasepe"
cc "Aaron Dickerson"
bcc
Subject Fw: SOTU fact sheets on energy

FYI

From: "Greenawalt, Andrei" [(b) (6)]
Sent: 01/25/2011 09:04 PM EST
To: "'Rod.OConnor@hq.doe.gov'" <Rod.OConnor@hq.doe.gov>; "'Brandon.Hurlbut@hq.doe.gov'" <Brandon.Hurlbut@hq.doe.gov>; "'Missy.Owens@hq.doe.gov'" <Missy.Owens@hq.doe.gov>; "'Laura_Davis@ios.doi.gov'" <Laura_Davis@ios.doi.gov>; Diane Thompson; "'joan.deboer@dot.gov'" <joan.deboer@dot.gov>; "'Karen.Ross@osec.usda.gov'" <Karen.Ross@osec.usda.gov>; "'Jett@osec.usda.gov'" <Jett@osec.usda.gov>
Subject: SOTU fact sheets on energy

Please see attached. [Ex.5 - Deliberative]

From: Lu, Chris
To: Greenawalt, Andrei
Cc: Maisel, Chad P.
Sent: Tue Jan 25 20:43:47 2011
Subject:

[Ex.5 - Deliberative]

[Ex.5 - Deliberative]

[redacted] SOTU factsheet CES.PDFSOTU Factsheet Clean Energy R+D.PDF

01268-EPA-5541

David McIntosh/DC/USEPA/US
01/26/2011 07:13 AM

To Windsor.Richard, Oster.Seth, Ganesan.Arvin, "Bob Sussman", "Bicky Corman", thompson.diane, "Bob Perciasepe", "Lawrence Elworth"
cc
bcc
Subject Fw: SOTU Energy Info

Reading the two attached one-pagers on my Bberry just now, I didn't see anything bad.

From: "Utech, Dan G." (b) (6)
Sent: 01/26/2011 05:06 AM EST
To: David McIntosh; "'Sarah.Bittleman@osec.usda.gov'" <Sarah.Bittleman@osec.usda.gov>
Subject: Fw: SOTU Energy Info

Some additional details on some of the energy pieces. Working on q and a to be circulated later.

From: Utech, Dan G.
To: Utech, Dan G.
Cc: Heimbach, Jay; Papa, Jim; Wilson, Denise R.; Maher, Jessica A.
Sent: Tue Jan 25 22:32:44 2011
Subject: SOTU Energy Info

Attached are additional details on energy proposals outlined in tonight's State of the Union address.

Ex.5 - Deliberative

SOTU factsheet CES.pdfSOTU Factsheet Clean Energy R+D.pdf

01268-EPA-5542

Scott Fulton/DC/USEPA/US
02/01/2011 10:05 AM

To "David McIntosh", "Bob Sussman", "Michael Goo"
cc "Richard Windsor", "Bob Perciasepe", oster.seth
bcc
Subject Fw: As-Filed Brief in American Electric Power

Here's the brief that was filed by the SG on behalf of TVA [redacted] Ex.5 - Deliberative, Attorney-Client [redacted]. Scott

---

From: "Gannon, Curtis (SMO)" [Curtis.Gannon@usdoj.gov]
Sent: 01/31/2011 04:50 PM EST
To: "'Rodgers, Ralph E'" <rerodgers@tva.gov>; "'Cooper, Harriet A'" <hacooper@tva.gov>; "'Gillen, Maria Victoria'" <mvgillen@tva.gov>; "Maginnis, Joan" <jmaginnis@doc.gov>; "'Palfrey, Quentin'" <QPalfrey@doc.gov>; Scott Fulton; Avi Garbow; Sonja Rodman; "'Guzy, Gary S.'" <[redacted] (b) (6) "'Rachel.Jacobson@sol.doi.gov'" <Rachel.Jacobson@sol.doi.gov>; "'Adell.amos@sol.doi.gov'" <Adell.amos@sol.doi.gov>; "'Gregory.woods@dot.gov'" <Gregory.woods@dot.gov>; "'Koh, Harold Hongju'" <KohHH@state.gov>; "'kleinjm@state.gov'" <kleinjm@state.gov>; "Townley, Stephen G" <TownleySG@state.gov>; "'leslie.lagomarcino@ogc.usda.gov'" <leslie.lagomarcino@ogc.usda.gov>; "'timothy.lynch@hq.doe.gov'" <timothy.lynch@hq.doe.gov>; "'alcides.ortiz@osd.mil'" <alcides.ortiz@osd mil>; "Shenkman, Ethan (ENRD)" <Ethan.Shenkman@usdoj.gov>; "Kilbourne, Jim (ENRD)" <Jim.Kilbourne@usdoj.gov>; "Jones, Lisa (ENRD)" <Lisa.Jones@usdoj.gov>; "Pidot, Justin (ENRD)" <Justin.Pidot@usdoj.gov>; "Letter, Douglas (CIV)" <Douglas.Letter@usdoj.gov>; "Byron, H. Thomas (CIV)" <H.Thomas.Byron@usdoj.gov>; "Weiner, Robert (ODAG)" <Robert.Weiner@usdoj.gov>
Cc: "Katyal, Neal (SMO)" <Neal.Katyal@usdoj.gov>; "Kneedler, Edwin S (SMO)" <Edwin.S.Kneedler@usdoj.gov>
Subject: As-Filed Brief in American Electric Power

This attachment is the brief that we have just filed and served in *American Electric Power* .

Thank you again for all of your helpful comments on the drafts that we circulated.

Curtis

Curtis E. Gannon
Assistant to the Solicitor General
U.S. Department of Justice
950 Pennsylvania Ave., N.W., Room 5636
Washington, DC 20530
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Fax (202) 307-4613

10-174tsRespondentTVA.pdf

No. 10-174

In the Supreme Court of the United States

AMERICAN ELECTRIC POWER COMPANY INC., ET AL.,
PETITIONERS

v.

STATE OF CONNECTICUT, ET AL.

ON WRIT OF CERTIORARI
TO THE UNITED STATES COURT OF APPEALS
FOR THE SECOND CIRCUIT

BRIEF FOR THE TENNESSEE VALLEY AUTHORITY AS RESPONDENT SUPPORTING PETITIONERS

NEAL KUMAR KATYAL
Acting Solicitor General
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Attorney
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QUESTIONS PRESENTED

The court of appeals held that States and private plaintiffs may maintain actions under federal common law alleging that defendants—in this case, five electric utilities—have caused, contributed to, or maintained a "public nuisance" by contributing to global warming, and may seek injunctive relief capping defendants' carbon-dioxide emissions at judicially determined levels. The questions presented are:

1. Whether States and private parties have standing to seek judicially fashioned emissions caps on five utilities for their alleged contribution to harms claimed to arise from global climate change caused by more than a century of emissions by billions of independent sources.

2. Whether a cause of action to cap carbon-dioxide emissions can be implied under federal common law where no statute creates such a cause of action, and the Clean Air Act speaks directly to the same subject matter and assigns federal responsibility for regulating such emissions to the Environmental Protection Agency.

3. Whether claims seeking to cap defendants' carbon-dioxide emissions at "reasonable" levels based on a court's weighing of the potential risks of climate change against the socioeconomic utility of defendants' conduct, would be governed by "judicially discoverable and manageable standards" or could be resolved without "initial policy determination[s] of a kind clearly for nonjudicial discretion." *Baker* v. *Carr*, 369 U.S. 186, 217 (1962).

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In the Supreme Court of the United States

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ON WRIT OF CERTIORARI
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BRIEF FOR THE TENNESSEE VALLEY AUTHORITY AS RESPONDENT SUPPORTING PETITIONERS

OPINIONS BELOW

The opinion of the court of appeals (Pet. App. 1a-170a) is reported at 582 F.3d 309. The opinion of the district court (Pet. App. 171a-187a) is reported at 406 F. Supp. 2d 265.

JURISDICTION

The judgment of the court of appeals was entered on September 21, 2009. Petitions for rehearing were denied on March 5, 2010, and March 10, 2010 (Pet. App. 188a-191a). On May 26, 2010, Justice Ginsburg extended the time within which to file a petition for a writ of certiorari to and including July 6, 2010. On June 28, 2010, Justice Ginsburg further extended the time to August 2, 2010, and the petition was filed on that date. The

petition for a writ of certiorari was granted on December 6, 2010. The jurisdiction of this Court rests on 28 U.S.C. 1254(1).

STATEMENT

This case concerns the methods by which the United States will regulate carbon-dioxide emissions. The control of such emissions is of singular importance due to the pernicious effects of global climate change, and the United States Government is committed to combating climate change. In this case, the plaintiffs seek to maintain federal common-law actions against five electric utilities that have allegedly caused, contributed to, or maintained a public nuisance by contributing to global warming, and they seek injunctive relief to reduce defendants' carbon-dioxide emissions to judicially determined levels. When this case began (in July 2004) as well as when it was argued in the court of appeals (in June 2006), the Environmental Protection Agency (EPA) took the view that the Clean Air Act (CAA), 42 U.S.C. 7401 *et seq.*, did not authorize it to issue mandatory regulations to address global climate change, and that, even if it did have the authority to set greenhouse-gas-emissions standards, it was, at least at that time, unwise to do so. See *Massachusetts* v. *EPA*, 549 U.S. 497, 511 (2007).

In the wake of this Court's decision in *Massachusetts* v. *EPA*, EPA's position has dramatically changed. EPA has taken substantial steps to regulate greenhouse-gas emissions under the CAA, consistent with other high-priority efforts by the Executive Branch to develop appropriate policies to combat climate change,[1] and with

[1] See, *e.g.*, Exec. Order 13,514, 3 C.F.R. 248 (2009 Comp.) (making "reduction of greenhouse gas emissions a priority for Federal agencies"); White House Council on Envt'l Quality, *Progress Report of the*

the United States' efforts to address climate change in recent international negotiations.[2] Plaintiffs' suits seeking restrictions on greenhouse-gas emissions through an injunction imposed by a district court should be dismissed, both because they are nonjusticiable and because any federal common-law nuisance action plaintiffs may once have had has been displaced by EPA's actions.

1. a. The CAA establishes a comprehensive framework for regulating air pollution and vests EPA, and to some extent the States and Indian Tribes, with implementing authority. It defines "air pollutant" to include "any air pollution agent or combination of such agents, including any physical, chemical, biological, radioactive * * * substance or matter which is emitted into or otherwise enters the ambient air." 42 U.S.C. 7602(g). Section 202(a)(1) of the CAA provides that the EPA Administrator "shall by regulation prescribe * * * standards applicable to the emission of any air pollutant from any class or classes of new motor vehicles or new motor vehicle engines, which in his judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." 42 U.S.C. 7521(a)(1). In *Massachusetts* v. *EPA*, the Court held that Section 202 permits EPA to "regulate greenhouse-

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Interagency Climate Change Adaptation Task Force: Recommended Actions in Support of a National Climate Change Adaptation Strategy 16 (Oct. 2010) (explaining that efforts "to reduce the impacts of climate change" include both mitigation of its causes and adaptation to its effects), http://www.whitehouse.gov/sites/default/files/microsites/ceq/Interagency-Climate-Change-Adaptation-Progress-Report.pdf.

[2] See, *e.g.*, U.S. Dep't of State, *U.S. Climate Action Report 2010*, at 3, http://unfccc.int/resource/docs/natc/usa_nc5.pdf (noting that as part of the 2009 Copenhagen Accord, the United States proposed to "reduce emissions in the range of 17 percent from 2005 levels by 2020").

gas emissions from new motor vehicles in the event that it forms a 'judgment'" that they "'cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare.'" 549 U.S. at 528 (quoting 42 U.S.C. 7521(a)(1)).

Section 111 of the CAA authorizes EPA to list categories of stationary sources that "cause[], or contribute[] significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare." 42 U.S.C. 7411(b)(1)(A). Once EPA exercises its discretion to list a category of stationary sources, Section 111 directs it to establish performance standards for the emission of pollutants specified by EPA from new (or modified) sources in that category. 42 U.S.C. 7411(b)(1)(B). Furthermore, in some circumstances, once EPA has established such new source performance standards (NSPS) for a particular category of sources, States are required by Section 111(d) to issue performance standards—in accordance with EPA guidelines—for *existing* sources in that category.[3] 42 U.S.C. 7411(d). EPA may issue such standards if a State does not do so. *Ibid.*; see also 40 C.F.R. 60.20-60.29 (establishing procedures for the adoption of state plans).

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[3] Section 111(d) standards for existing sources are required if the NSPS regulate emissions of an air pollutant that is not regulated under Section 112 (42 U.S.C. 7412) and not subject to national ambient air quality standards (NAAQS) by virtue of being a pollutant listed under Section 108 (42 U.S.C. 7408). (Only six pollutants—carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide—have been listed under Section 108. See 40 C.F.R. Pt. 50.) Under Section 111(d), States may apply standards less stringent than those identified in EPA's guidelines if they demonstrate that the application of the guidelines to a facility or class of facilities imposes unreasonable costs, is physically impossible, or presents some other factor that makes less-stringent requirements more reasonable. 40 C.F.R. 60.24(f).

Section 165 of the CAA requires that any new "major emitting facility" (or one to which a major modification is made) must obtain a pre-construction permit to ensure the prevention of significant deterioration (PSD) of air quality. 42 U.S.C. 7475; see generally 75 Fed. Reg. 31,520-31,521 (2010) (discussing PSD provisions pertinent to greenhouse-gas emissions). Such PSD requirements apply to any "pollutant subject to regulation under [the CAA]." 42 U.S.C. 7475(a)(4). The definition of "major emitting facility" includes stationary sources that exceed specified amounts of emissions of any pollutant. 42 U.S.C. 7479(1). A permit application must show that the facility will employ "the best available control technology for each pollutant subject to regulation under [the CAA]." 42 U.S.C. 7475(a)(4).

Finally, Title V of the CAA (42 U.S.C. 7661-7661f) requires operators of major stationary sources to apply for operating permits. Title V generally does not add substantive emissions-control requirements, but a Title V permit must contain all otherwise-applicable requirements imposed by the CAA, and a major stationary source must follow EPA-prescribed procedures in applying for an operating permit. 42 U.S.C. 7661a; see generally 75 Fed. Reg. at 31,521 (discussing Title V permitting provisions pertinent to greenhouse-gas emissions).

b. The Tennessee Valley Authority (TVA) is an Executive Branch agency with responsibility for the multipurpose development of the Tennessee Valley region. 16 U.S.C. 831. Members of its board of directors are appointed by the President with the advice and consent of the Senate. 16 U.S.C. 831a(a)(1). TVA is expressly authorized by federal statute to "produce, distribute, and sell electric power," 16 U.S.C. 831d(*l*), and all of its power programs are self-financed, 16 U.S.C. 831n–4. It

provides electricity to citizens in seven States, 55% of which is generated by fossil-fuel-fired power plants in Tennessee, Alabama, Kentucky, and Mississippi. TVA "[m]ay sue and be sued in its corporate name." 16 U.S.C. 831c(b).

2. Petitioners and TVA (collectively, defendants) are six entities that operate fossil-fuel-fired electric power generation facilities in 20 States. Pet. App. 2a. Respondents are eight States, the City of New York, and three land trusts (collectively, plaintiffs). *Ibid.*

In July 2004, plaintiffs filed two similar complaints in the United States District Court for the Southern District of New York. J.A. 56-116 (States' Compl.); J.A. 117-154 (land trusts' Compl.). Both complaints allege that defendants are substantial contributors to carbon-dioxide emissions—amounting to 10% of such emissions caused by human activities in the United States—and thereby contribute to global warming. J.A. 57, 118. Plaintiffs claim that defendants are liable for creating, contributing to, or maintaining a public nuisance under federal common law (or, in the alternative, state law). J.A. 103-110, 145-153. They seek permanent injunctive relief requiring defendants to abate the alleged nuisance by capping and then reducing their emissions "by a specified percentage each year for at least a decade." J.A. 110, 153.

Defendants moved to dismiss the complaints for lack of jurisdiction and for failure to state a claim upon which relief can be granted. Pet. App. 178a-179a. In September 2005, the district court granted defendants' motions. *Id.* at 171a-187a. It held that both cases "present non-justiciable political questions" because their resolution would "require[] identification and balancing of eco-

nomic, environmental, foreign policy, and national security interests." *Id.* at 187a.

3. On September 21, 2009, a two-judge panel of the Second Circuit reversed. Pet. App. 1a-170a.

a. The court of appeals discussed the six indicia of a political question articulated in *Baker* v. *Carr*, 369 U.S. 186, 217 (1962), and held that plaintiffs' lawsuits do not present a nonjusticiable political question. Pet. App. 23a-41a. With respect to the first *Baker* factor, it held that defendants had forfeited any argument that limiting carbon-dioxide emissions is textually committed to the political Branches under the Commerce Clause, and further held that the case would not interfere with the President's foreign-policy prerogatives because a single court decision in a common-law nuisance action could not "establish a *national* or *international* emissions policy." *Id.* at 24a-25a, 26a. With respect to the second factor—whether there is a "lack of judicially discoverable and manageable standards for resolving" an issue, 369 U.S. at 217—the court reasoned that "federal courts have successfully adjudicated complex common law public nuisance cases for over a century" and that there would be judicially manageable standards here because "[w]ell-settled principles of tort and public nuisance law provide appropriate guidance," Pet. App. 28a, 34a. With respect to the third factor—whether it is impossible to decide an issue "without an initial policy determination of a kind clearly for nonjudicial discretion," 369 U.S. at 217—the court found that there would be no need for any such "policy determination" because this case "appears to be an ordinary tort suit." Pet. App. 38a-39a (internal quotation marks omitted). Finally, the court held that the last three *Baker* factors—which involve the potential for disagreement between the judicial and

political Branches—would not apply because the United States had "no unified policy on greenhouse gas emissions." *Id.* at 40a.

b. The court of appeals then considered three other issues that had not been decided by the district court but that defendants had raised as alternative grounds for affirmance: (1) whether plaintiffs have Article III standing; (2) whether their complaints state a claim under federal common law; and (3) whether the CAA has displaced any such federal common-law claim.

With respect to standing, the court of appeals held that the State plaintiffs have *parens patriae* standing based on their interest in safeguarding public health and natural resources within their borders. Pet. App. 44a-55a. The court also concluded that the States and the land trusts have met the Article III standard articulated in *Lujan* v. *Defenders of Wildlife*, 504 U.S. 555, 560-561 (1992), because (1) they alleged injury in fact as a result of the effects of climate change on their property and proprietary interests, Pet. App. 58a-67a; (2) their allegations that defendants' emissions contribute to climate change satisfy the causation requirement, at least at the motion-to-dismiss stage, *id.* at 67a-73a; and (3) a court could provide effective relief, because reducing defendants' emissions would "*slow* or *reduce*" climate change, *id.* at 75a (quoting *Massachusetts* v. *EPA*, 549 U.S. at 525); see also *id.* at 76a (agreeing that "[e]ven if emissions increase elsewhere, the magnitude of [p]laintiffs' injuries will be less if [d]efendants' emissions are reduced than they would be without a remedy").

Next, the court of appeals held that plaintiffs have stated a claim under federal common law. Pet. App. 77a-123a. Applying Section 821B of the Restatement (Second) of Torts (1977), the court concluded that plaintiffs

stated a claim by alleging that defendants contribute to an "unreasonable interference with public rights," Pet. App. 82a-84a, 121a, including "the right to public comfort and safety, the right to protection of vital natural resources and public property, and the right to use, enjoy, and preserve the aesthetic and ecological values of the natural world," *id.* at 83a-84a.

Finally, the court of appeals held that the CAA had not displaced a federal common-law public-nuisance cause of action seeking to cap and reduce carbon-dioxide emissions that contribute to climate change. Pet. App. 137a-144a. The court's discussion of displacement drew a line between the actual "regulation" of greenhouse-gas emissions and mere "study" or "monitor[ing]" of such emissions. *Id.* at 135a & n.46, 156a. It discussed EPA's 2009 proposed finding in the context of Section 202 of the CAA that greenhouse gases endanger public health and welfare, but said that "[u]ntil EPA completes the rulemaking process, we cannot speculate as to whether the hypothetical regulation of greenhouse gases under the Clean Air Act would in fact speak directly to the particular issue raised" by plaintiffs. *Id.* at 142a (internal quotation marks and alterations omitted). The court observed that "EPA has yet to make any determination that [greenhouse-gas] emissions are subject to regulation under the Act, much less endeavor *actually* to regulate the emissions." *Id.* at 144a. In the absence of "the requisite findings" from EPA, the court concluded that the CAA "does not (1) regulate greenhouse gas emissions or (2) regulate such emissions from stationary sources." *Ibid.* As a result, the court held that plaintiffs' federal common-law claim had not yet been displaced. *Ibid.*

Petitioners and TVA filed petitions for panel or en banc rehearing. The court of appeals denied those petitions on March 5 and 10, 2010. Pet. App. 188a-191a.

4. As discussed in greater detail below (see pp. 46-51, *infra*) in the 15 months since the court of appeals issued its decision, EPA has taken several substantial actions pursuant to its CAA authority to address greenhouse-gas emissions. EPA finalized the proposed rule that the court of appeals discussed—the "endangerment finding" (*i.e.*, that greenhouse-gas emissions are reasonably anticipated to endanger public health and welfare). It also adopted standards governing emissions of greenhouse gases from certain motor vehicles. As a result of those regulations, which took effect on January 2, 2011, carbon dioxide is now a "pollutant subject to regulation under [the CAA]." 42 U.S.C. 7475(a)(4).[4] On December 23, 2010, EPA announced a proposed settlement agreement, under which it would commit to complete, by May 26, 2012, a rulemaking relating to NSPS for greenhouse gases emitted by fossil-fuel-fired electric-utility steam-generating units (*i.e.*, the category of stationary sources at issue in this case).

Thus, EPA's actions have triggered a regulatory cascade that will result in the application of PSD requirements to new and modified stationary sources that emit greenhouse gases. EPA will be required to assess what, if any, NSPS it should issue for various categories of stationary sources and what guidelines it should issue and thus require States to implement with respect to emissions from existing facilities within those categories

[4] On December 10, 2010, the D.C. Circuit denied motions to stay the new regulations pending that court's consideration of petitions for review. See *Coalition for Responsible Regulation* v. *EPA*, Nos. 09-1322, 10-1073, 10-1092.

of stationary sources. As those actions demonstrate, EPA is actively exercising its statutory discretion to determine when and how greenhouse gases from stationary sources (including defendants' power plants) will become subject to emissions standards under the CAA.

SUMMARY OF ARGUMENT

I. A. Plaintiffs' complaints should be dismissed for lack of prudential standing. Plaintiffs bring claims under the federal common law of public nuisance against six defendants alleged to emit greenhouse gases contributing to climate change. But virtually every person, organization, company, or government across the globe also emits greenhouse gases, and virtually everyone will also sustain climate-change-related injuries. Principles of prudential standing do not permit courts to adjudicate such generalized grievances absent statutory authorization, particularly because EPA, which is better-suited to addressing this global problem, has begun regulating greenhouse gases under the CAA. As a result, plaintiffs' suits must be dismissed.

B. Because plaintiffs cannot establish prudential standing, the Court need not—and thus should not—consider whether their allegations satisfy Article III standing requirements at the pleading stage. In any event, although the issue is not free from doubt, plaintiffs' allegations are sufficient to survive a motion to dismiss. The coastal State plaintiffs' allegations closely mirror those the Court found sufficient to establish Article III standing in *Massachusetts* v. *EPA,* 549 U.S. 497 (2007). Those plaintiffs have Article III standing based on their interest in preventing the loss of sovereign territory for which they are also the landowners.

C. The Court also need not, and should not, decide whether plaintiffs' suits are barred by the political-question doctrine. This case does raise separation-of-powers concerns highlighted by the second and third factors used in *Baker* v. *Carr*, 369 U.S. 186 (1962), to describe the political-question doctrine: "a lack of judicially discoverable and manageable standards for resolving it; or the impossibility of deciding without an initial policy determination of a kind clearly for nonjudicial discretion." *Id.* at 217. In the circumstances of this case, however, the principle of prudential standing that bars judicial consideration of generalized grievances, and the recognition that any common-law claims have been displaced by EPA's regulatory actions under the CAA, are more restrained and appropriate grounds on which to rest a decision to dismiss.

II. Any claim for public nuisance that federal common law may otherwise provide to plaintiffs has been displaced by regulatory actions taken by EPA pursuant to the CAA. EPA has issued an endangerment finding and promulgated emissions standards for light-duty motor vehicles, actions which rendered greenhouse gases (including carbon dioxide) subject to regulation under the CAA. EPA has also promulgated a rule to phase in the application of PSD requirements to greenhouse-gas emissions from new and modified stationary sources. EPA has, therefore, spoken directly to the question plaintiffs ask the courts to resolve through federal common law.

ARGUMENT

I. PLAINTIFFS' COMMON-LAW NUISANCE CLAIMS ARE NOT JUSTICIABLE

Petitioners advance two nonmerits grounds for dismissing these suits: that plaintiffs lack standing (Pet. 13-20), and that their suits present nonjusticiable political questions (Pet. 26-31). Those arguments are both rooted in petitioners' legitimate concerns about the unprecedentedly broad nature of plaintiffs' nuisance suits, which would require a federal court, in the course of resolving asserted federal common-law claims against six defendants, to make numerous significant scientific, technical, and policy determinations about whether and how to slow climate change—even though that phenomenon is, by plaintiffs' own account, a result of the actions of innumerable sources of various kinds of emissions from around the world over many decades.

The United States, including TVA, agrees that plaintiffs' common-law nuisance suits present serious concerns regarding the role of an Article III court under the Constitution's separation of powers—especially in light of the representative Branches' ongoing efforts to combat climate change by formulating and implementing domestic policy and participating in international negotiations. Those concerns are, however, best addressed under principles of prudential standing, which constrain federal courts from entertaining generalized grievances that are more appropriately addressed by the representative Branches.

A. Plaintiffs Lack Prudential Standing Because Their Suits Are Generalized Grievances More Appropriately Addressed By The Representative Branches

As this Court has explained, standing doctrine comprises two parts: "Article III standing, which enforces the Constitution's case-or-controversy requirement, and prudential standing, which embodies judicially self-imposed limits on the exercise of federal jurisdiction." *Elk Grove Unified Sch. Dist.* v. *Newdow*, 542 U.S. 1, 11 (2004) (citation and internal quotation marks omitted). While prudential standing limitations are "closely related to Art[icle] III concerns," they are not constitutionally compelled and are "essentially matters of judicial self-governance." *Id.* at 12 (quoting *Warth* v. *Seldin*, 422 U.S. 490, 500 (1975)). "Without such limitations * * * the courts would be called upon to decide abstract questions of wide public significance even though other governmental institutions may be more competent to address the questions and even though judicial intervention may be unnecessary to protect individual rights." *Ibid.* (quoting *Warth*, 422 U.S. at 500). Careful adherence to such principles of judicial self-restraint is especially important when, as here, a court is asked to entertain a cause of action based on federal common law, which is itself fashioned by the Judiciary.

1. Federal courts must refrain from adjudicating generalized grievances like plaintiffs' common-law claims

One principle of prudential standing requires federal courts to refrain from adjudicating "generalized grievances more appropriately addressed in the representative branches." *Newdow*, 542 U.S. at 12 (quoting *Allen* v. *Wright*, 468 U.S. 737, 751 (1984)). Here, plaintiffs' common-law claims are precisely that kind of "general-

ized grievance[]." *Ibid.* This is not a situation in which plaintiffs have invoked a "constitutional or statutory provision" that could "properly * * * be understood as granting persons in the plaintiff[s'] position a right to judicial relief." *Warth*, 422 U.S. at 500. Congress, rather, has vested a federal agency with the power to regulate emissions from power plants and to regulate carbon dioxide as a pollutant, and it has expressly provided for judicial review of EPA's actions in exercising those regulatory powers. See *Massachusetts* v. *EPA*, 549 U.S. at 516 (discussing 42 U.S.C. 7607(b)(1)). Congress has also provided for citizen suits to enforce the emissions standards that EPA establishes or to challenge the agency's failure to perform any nondiscretionary act or duty. See 42 U.S.C. 7604. But those statutory provisions and remedies are not at issue here.

Instead of relying on any CAA standards or cause of action, plaintiffs have elected to sue a handful of defendants from among an almost limitless array of entities that emit greenhouse gases. Moreover, the types of injuries that plaintiffs seek to redress, even if concrete, could potentially be suffered by virtually any landowner, and to an extent, by virtually every person, in the United States (and, indeed, in most of the world). Even if plaintiffs were found to have Article III standing to raise such claims—an issue the Court need not reach—principles of prudential standing counsel strongly in favor of leaving the resolution of such widely shared claims to the representative Branches.

a. Plaintiffs' common-law nuisance claims are quintessentially fit for political or regulatory—not judicial—resolution, because they simultaneously implicate many competing interests of almost unimaginably broad categories of both potential plaintiffs and potential defen-

dants. On the plaintiffs' side, the eight States, one city, and three land trusts in these suits are a tiny subset of those who could allege they are injured by greenhouse-gas emissions that have contributed or will contribute to global climate change. The court of appeals focused largely on plaintiffs' asserted injuries as landowners. See Pet. App. 59a-67a. But plaintiffs' allegations are not unusual in that respect. Global climate change will potentially affect the property interests of most landowners. The court of appeals explained that the effects of climate change come from the land, the sea, and the air, and they will threaten the beaches, the fields, the hills—and almost everywhere in between.[5] Indeed, the court of appeals' analysis of the claims of the land-trust plaintiffs (*id.* at 62a-63a) confirms that nearly all landowners will suffer injuries of the types they allege. And the effects of climate change will not be limited to landowners; they will also be felt by individuals, corporations, and governmental entities throughout the Nation and around the world.

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[5] See Pet. App. 10a, 61a-62a (cataloging alleged "reduction of California's mountain snowpack" and damage to "States with ocean coastlines" and those "bordering the Great Lakes"; noting that "a rise in sea level would * * * accelerate beach erosion," "[w]armer temperatures would threaten agriculture" in other States, and disruption of ecosystems would "affect[] State-owned hardwood forests and fish habitats"). See also *Native Village of Kivalina* v. *Exxon Mobil Corp.*, 663 F. Supp. 2d 863, 868 (N.D. Cal. 2009) (nuisance claims based on allegation that climate change requires relocation of Eskimo village), appeal pending, No. 09-17490 (9th Cir.); *Comer* v. *Murphy Oil USA*, 585 F.3d 855, 861 (5th Cir. 2009) (nuisance claims based on allegation that climate change contributed to property damage caused by Hurricane Katrina), opinion vacated pending reh'g en banc, 598 F.3d 208, appeal dismissed, 607 F.3d 1049 (5th Cir. 2010), petition for mandamus denied *sub nom. In re Comer*, S. Ct. No. 10-294 (Jan. 10, 2011).

Parallel breadth and complexities also characterize the range of potential defendants in suits presenting such common-law claims, because the categories of those who emit carbon dioxide and other greenhouse gases (and thus contribute to climate change as plaintiffs allege) are equally capacious. Plaintiffs' complaints name a few entities that operate power plants in 20 States. But the electric-utility industry comprises many more companies in the United States and abroad, to say nothing of many other sectors of the economy that are also responsible for significant shares of greenhouse-gas emissions. See 75 Fed. Reg. at 31,519 (listing "important sources" of such emissions, including motor vehicles, "industrial processes (such as the production of cement, steel, and aluminum), agriculture, forestry, other land use, and waste management").

b. The multiplicity of potential plaintiffs and defendants is rendered especially troubling by the very nature of common-law public-nuisance claims seeking to slow climate change. The problem is not simply that many plaintiffs could bring such claims and that many defendants could be sued. It is also that essentially any potential plaintiff could claim to have been injured by any (or all) of the potential defendants. The medium that transmits injury to potential plaintiffs is literally the Earth's entire atmosphere—making it impossible to consider the sort of focused and more geographically proximate effects that were characteristic of traditional nuisance suits targeted at particular nearby sources of water or air pollution.[6]

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[6] It is cases of the latter sort on which the court of appeals relied as examples of "the federal courts' masterful handling of complex public nuisance issues." Pet. App. 29a. This Court last recognized a federal common-law cause of action in the pollution context in *Illinois* v. *City*

In the context of climate change, a regulatory solution will be far better suited to addressing the scope of the problem and to fashioning an appropriately tailored set of remedies than a potentially open-ended series of common-law suits in far-flung district courts. Even a single common-law proceeding would be a less efficient, effective, manageable, and accountable means for considering in the first instance (rather than on judicial review of an expert agency's determination) how much the Nation's greenhouse-gas emissions should be reduced to address global climate change, how much of the burden of reducing the Nation's contributions should be borne by the electric-utility industry, which segments of that industry should make which changes, and at what rate such reductions should occur. A court—when no statute or regulation is in place to provide guidance—is simply not well-suited to balance the various interests of, and the burdens reasonably and fairly to be borne by, the many entities, groups, and sectors of the economy that, although not parties to the litigation, are affected by a phenomenon that spans the globe.

c. Establishing appropriate levels for the reduction of carbon-dioxide emissions from power plants "by a specified percentage each year for at least a decade" (as

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of Milwaukee, 406 U.S. 91 (1972) (*Milwaukee I*), which concerned discharges into a particular body of water (Lake Michigan), though it subsequently held that a water-pollution suit recognized in *Milwaukee I* had been displaced by later statutory amendments, see *City of Milwaukee* v. *Illinois*, 451 U.S. 304, 317 (1981) (*Milwaukee II*). The other nuisance cases discussed by the court of appeals long predated the CAA and—unlike this case—also involved only localized rather than global effects. See, *e.g.*, *Georgia* v. *Tennessee Copper Co.*, 206 U.S. 230 (1907). Accordingly, the prudential-standing argument advanced here would not alter the standing analysis for traditional nuisance cases involving such localized grievances.

plaintiffs request, J.A. 110, 153) would inevitably entail multifarious policy judgments, which should be made by decisionmakers who are politically accountable, have expertise, and are able to pursue a coherent national or international strategy—either at a single stroke or incrementally. Cf. *Massachusetts* v. *EPA*, 549 U.S. at 524 ("[Agencies] whittle away at [massive problems] over time, refining their preferred approach as circumstances change and as they develop a more nuanced understanding of how best to proceed."). For such reasons, courts often accord the highest levels of deference to Executive Branch agencies' application of their regulatory and scientific expertise and policy judgment to address such complex problems. See, *e.g.*, *Chevron U.S.A. Inc.* v. *NRDC*, 467 U.S. 837 (1984); *NRDC* v. *EPA*, 571 F.3d 1245, 1251-1253 (D.C. Cir. 2009); *New Eng. Legal Found.* v. *Costle*, 666 F.2d 30, 33 (2d Cir. 1981).

EPA has recognized the complexity and resulting uncertainty that exists about many of the localized effects of climate change. See 74 Fed. Reg. 66,497 (2009) ("[I]n light of existing knowledge * * * not all risks and potential impacts can be quantified or characterized with uniform metrics. There is variety not only in the nature and potential magnitude of risks and impacts, but also in our ability to characterize, quantify and project such impacts into the future."). Although plaintiffs ask the courts to cap and reduce defendants' emissions, the myriad questions associated with developing a judgment about reasonable levels of greenhouse-gas emissions from defendants and the broader industry of which they are a part are more properly answered by EPA. EPA is, after all, the regulatory agency charged by Congress with the responsibility for setting standards for air-pollutant emissions and with significant expertise in the

scientific disciplines that must be brought to bear in establishing appropriate limitations on emissions.

In the CAA, Congress has created a regime under which EPA and state regulators determine the best means of regulating air pollutants. Since this Court held in *Massachusetts* v. *EPA* in 2007 that carbon dioxide falls within that regulatory authority, EPA has taken several significant steps toward addressing the very question presented here. See pp. 46-51, *infra*. That regulatory approach is preferable to what would result if multiple district courts—acting separately and without the benefit of even the most basic statutory or regulatory guidance—were to use common-law nuisance cases as opportunities to sit as arbiters of scientific and technology-related disputes and *de facto* regulators of power plants and other sources of pollution, not just within their districts but nationwide. Cf. *North Carolina ex rel. Cooper* v. *TVA*, 615 F.3d 291, 296 (4th Cir. 2010) (observing, in a suit involving a state common-law claim, that "encourag[ing] courts to use vague public nuisance standards to scuttle the nation's carefully created system for accommodating the need for energy production and the need for clean air" would result in "a balkanization of clean air regulations and a confused patchwork of standards, to the detriment of industry and the environment alike").

The confluence in this case of several factors—including countless potential plaintiffs and defendants, the lack of judicial manageability, and the unusually broad range of underlying policy judgments that would need to be made—demonstrates that plaintiffs' concerns about climate change should be resolved by the representative Branches, not federal courts. Questions about how to regulate and reduce carbon-dioxide emissions are thus

the kind of generalized grievances that are "more appropriately addressed in the representative branches." *Newdow*, 542 U.S. at 12.[7] And EPA is actively addressing how and when to regulate carbon-dioxide emissions —decisions that the CAA in turn makes subject to judicial review. Plaintiffs thus lack prudential standing to assert their claims directly in federal court by seeking to invoke judge-made federal common law.

2. It is appropriate to resolve this case on prudential-standing grounds before considering other threshold grounds

Prudential standing is an issue that may be resolved at the outset of a case. See *Tenet* v. *Doe*, 544 U.S. 1, 7

[7] Despite a similarity in terminology, the prudential-standing analysis articulated here is distinct from, and would not alter, this Court's settled approach to challenges that raise "undifferentiated, generalized grievance[s] about the conduct of government." *Lance* v. *Coffman*, 549 U.S. 437, 442 (2007) (per curiam). This Court has addressed the justiciability of challenges to government action brought by taxpayers or citizens as part of the inquiry into whether a plaintiff has alleged a sufficiently particularized and concrete stake in litigation to establish Article III injury. See *ibid.*; see also *Hein* v. *Freedom from Religion Found.*, 551 U.S. 587, 633-634 & n.5 (2007) (Scalia, J., concurring in the judgment) (concluding that a taxpayer's "'generally available grievance about government'" fails to "satisfy Article III's requirement that the injury in fact be concrete and particularized," notwithstanding prior "dicta describ[ing] the prohibition on generalized grievances as merely a prudential bar") (quoting *Lujan* v. *Defenders of Wildlife*, 504 U.S. 555, 573 (1992)); *DaimlerChrysler Corp.* v. *Cuno*, 547 U.S. 332, 345-346 (2006) (describing federal-taxpayer-standing doctrine as based on Article III); *FEC* v. *Akins*, 524 U.S. 11, 23 (1998) (analyzing Article III injury and considering whether harm is "of an abstract and indefinite nature"). Here, plaintiffs are not asserting the "generalized" interest of a taxpayer or citizen in having the government follow the law. Instead, they assert that their property interests have been damaged largely by the actions of private parties.

n.4 (2005) ("[T]he prudential standing doctrine[] represents the sort of 'threshold question' we have recognized may be resolved before addressing jurisdiction."). Indeed, it is well established that prudential standing may be resolved before Article III standing. See, *e.g.*, *Kowalski* v. *Tesmer*, 543 U.S. 125, 129 (2004) (assuming without deciding the existence of Article III standing in order to address prudential standing); *Newdow*, 542 U.S. at 18 & n.8 (finding that plaintiff "lack[ed] prudential standing to bring this suit in federal court," without addressing Article III standing).[8]

In this case, compelling reasons counsel in favor of addressing prudential standing before other threshold questions, such as Article III standing and the political-question doctrine. It provides an appropriately narrower ground for decision, because a prudential-standing decision would be based on the particular context and circumstances of the claims here, which are asserted under federal common law that is itself fashioned by the courts. Prudential standing also provides a more deferential and restrained basis for dismissing suits like plaintiffs' because that basis for dismissal could be revisited by Congress, to the extent consistent with Article III. As this Court has explained, principles of prudential standing can, "unlike their constitutional counterparts, * * * be modified or abrogated by Congress." *Bennett* v. *Spear*, 520 U.S. 154, 162 (1997); see also *FEC* v. *Akins*, 524 U.S. 11, 20 (1998) (holding that the existence of a statute embodying Congress's intention to authorize the "kind of suit" at issue meant that the plaintiffs

[8] The concurring Justices in *Newdow* disagreed with the conclusion that the plaintiff lacked prudential standing but did not criticize the Court's decision to address prudential standing first. See 542 U.S. at 18-25 (Rehnquist, C.J., concurring in the judgment).

"satisf[ied] 'prudential' standing requirements"); *United Food & Commercial Workers* v. *Brown Group, Inc.*, 517 U.S. 544, 558 (1996) ("prudential limitations are rules of 'judicial self-governance' that 'Congress may remove . . . by statute'") (quoting *Warth*, 422 U.S. at 509).

The restraint and flexibility inherent in prudential-standing doctrine also respond to petitioners' proper insistence that the representative Branches' active role in addressing climate change must be respected. See Pet. 27, 31, 34; see also *Newdow*, 542 U.S. at 12 (prudential-standing restrictions prevent courts from deciding questions "of wide public significance even though other governmental institutions may be more competent to address the questions and even though judicial intervention may be unnecessary to protect individual rights") (quoting *Warth*, 422 U.S. at 500).

The appropriateness of dismissing this case on prudential-standing grounds follows as well from this Court's recognition in *Massachusetts* v. *EPA* that Congress's statutory "authorization" of the "type of challenge to EPA action" present there—but absent in the common-law action here—was "of critical importance to the standing inquiry." 549 U.S. at 516 (citing *Lujan* v. *Defenders of Wildlife*, 504 U.S. 555, 580 (1992) (Kennedy, J., concurring in part and concurring in the judgment)). Had this case fallen within the bounds of a citizen-suit provision like 42 U.S.C. 7604, the existence of that statutory cause of action would mean that Congress had itself eliminated *prudential*-standing limitations (see *Bennett*, 520 U.S. at 162) and had itself diminished to that extent an important concern animating the prudential-standing doctrine: that the representative Branches are otherwise better suited than the federal courts to resolve such matters. When Congress has en-

acted a statute authorizing suit, the prudential-standing inquiry is different because Congress presumably has "at the very least identif[ied] the injury it seeks to vindicate and relate[d] the injury to the class of persons entitled to bring suit." *Lujan*, 504 U.S. at 580 (Kennedy, J., concurring in part and concurring in the judgment).

"The rules of standing, whether as aspects of the Art[icle] III case-or-controversy requirement *or as reflections of prudential considerations* * * *, are threshold determinants of the propriety of judicial intervention" that must be established by "the complainant" who seeks "the exercise of the court's remedial powers." *Bender* v. *Williamsport Area Sch. Dist.*, 475 U.S. 534, 546 n.8 (1986) (quoting *Warth*, 422 U.S. at 517-518) (emphasis added). Thus, before considering the merits of plaintiffs' suits, this Court must assure itself that, quite aside from the requirements of Article III, "judicially self-imposed limits on the exercise of federal jurisdiction" would not be transgressed, *Allen*, 468 U.S. at 751.[9] Plaintiffs' suits would transgress those limits.

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[9] As noted in TVA's brief at the certiorari stage (at 21), the parties did not expressly address the question of prudential standing in the lower courts. Neither did the court of appeals, even though the Second Circuit has held that prudential-standing limitations cannot be waived by the parties. See *Thompson* v. *County of Franklin*, 15 F.3d 245, 248 (1994) (the court's "independent obligation to examine subject matter jurisdiction * * * extends 'to the prudential rules of standing' ") (citation and footnote omitted). In any event, the question is "fairly included" (Sup. Ct. R. 14.1(a)) in the first question presented, which refers to "standing" but is not limited to Article III standing, see Pet. i. And because the question is jurisdictional, this Court could address it even if it had never been raised by the parties. See, *e.g.*, *Newdow*, 542 U.S. at 12-18 (dismissing for lack of prudential standing even though that issue was not raised in the lower courts or in the parties' briefs in this Court).

B. Under *Massachusetts* v. *EPA*, At Least Some Of The State Plaintiffs Have Article III Standing In Their Capacity As Sovereign Landowners

If the Court concludes, as urged above, that plaintiffs lack prudential standing, then the Court need not—and therefore should not—reach the issue of their standing under Article III of the Constitution. See *Pearson* v. *Callahan*, 129 S. Ct. 808, 821 (2009) (following "the older, wiser judicial counsel not to pass on questions of constitutionality unless such adjudication is unavoidable") (internal quotation marks and ellipsis omitted); *PDK Labs. Inc.* v. *United States DEA*, 362 F.3d 786, 799 (D.C. Cir. 2004) (Roberts, J., concurring in part and concurring in the judgment) ("[I]f it is not necessary to decide more, it is necessary not to decide more."). If, however, the Court reaches the Article III question, we believe that, although the question is not free from doubt, the allegations advanced by the coastal States in their capacity as sovereign landowners are sufficient to survive a motion to dismiss under this Court's recent decision in *Massachusetts* v. *EPA*. Some of the coastal States' allegations of potential injuries here are materially similar to those that were found sufficient in *Massachusetts* v. *EPA* to satisfy the requirements for Article III standing. While there are differences between that case and this one, the differences cut both ways and on balance do not deprive plaintiffs of Article III standing at the pleading stage.

1. Like its prudential counterpart, Article III standing serves as a means of determining whether "a litigant is entitled to have a federal court resolve his grievance." *Kowalski*, 543 U.S. at 128. In order to establish Article III standing "[t]o seek injunctive relief," a plaintiff must make three showings: (1) "that he is under threat of

suffering 'injury in fact' that is concrete and particularized [and] actual and imminent, not conjectural or hypothetical"; (2) that the threat is "fairly traceable to the challenged action of the defendant"; and (3) that it is "likely that a favorable judicial decision will prevent or redress the injury." *Summers* v. *Earth Island Inst.*, 129 S. Ct. 1142, 1149 (2009).

In *Massachusetts* v. *EPA*, the Court held that the Commonwealth of Massachusetts had established Article III standing to petition for judicial review of EPA's decision under the CAA not to regulate greenhouse gases emitted by motor vehicles. See 549 U.S. at 516-526. The Court concluded that "[t]he harms associated with climate change are serious and well recognized," that there is "a causal connection between man-made greenhouse gas emissions and global warming," and that "[a] reduction in domestic emissions would slow the pace of global emissions increases" and thus "reduce[] to some extent" the "risk of catastrophic harm" from "the rise in sea levels associated with global warming." *Id.* at 521, 523, 526.

The Court's standing analysis in *Massachusetts* v. *EPA* was carefully limited in two ways. The Court considered only a single kind of plaintiff (a sovereign State) and relied on only a single kind of injury (the loss of state-owned land). With respect to the first limitation, the Court explained that it was "of considerable relevance that the party seeking review here is a sovereign State and not * * * a private individual," and it acknowledged that Massachusetts' "quasi-sovereign interests" entitled it to "special solicitude in [the Court's]

standing analysis." 549 U.S. at 518, 520.[10] The second limitation on the Court's analysis revealed that the "quasi-sovereign interests" it invoked were not of a traditional *parens patriae* nature (*i.e.*, brought on behalf of citizens who had their own injuries).[11] Those interests were instead associated with land over which Massachusetts was *both* the sovereign *and* the owner. When the Court addressed the nature of Massachusetts' concrete injury in fact, it did not rely on anything other than the injury Massachusetts would suffer "in its capacity as a landowner" as "rising seas" swallowed "coastal land" that was not only owned by the Commonwealth but also its "sovereign territory." *Id.* at 522-523 & n.21; see also *id.* at 519 (noting that Massachusetts had a "well-founded desire to preserve its sovereign territory") (citing *Alden* v. *Maine*, 527 U.S. 706, 715 (1999)); *id.* at 523 n.21 (stating that "[o]ur cases require nothing more" than the allegation that rising seas "will lead to the loss of Massachusetts' sovereign territory"); *id.* at 539 (Roberts, C.J., dissenting) (explaining that the majority's decision "applies our Article III standing test to the as-

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[10] The Court did not separately consider the standing of the non-State petitioners in that case, which included local governments and private organizations. See 549 U.S. at 505.

[11] The Court has recognized that "[a] State does not have standing as *parens patriae* to bring an action against the Federal Government." *Alfred L. Snapp & Son, Inc.* v. *Puerto Rico ex rel. Barez*, 458 U.S. 592, 610 n.16 (1982) (citing *Massachusetts* v. *Mellon*, 262 U.S. 447, 485-486 (1923)). Here, although TVA is a defendant, the Court, as in *Massachusetts* v. *EPA*, need not consider whether the States' *parens patriae* allegations would suffice to confer standing apart from the allegations of direct injuries to state-owned property, including the erosion of coastal beaches, because finding that the States have standing in their proprietary capacity is sufficient. See 549 U.S. at 522.

serted injury of the Commonwealth's loss of coastal property").

2. In this case, some of the plaintiff States—including Massachusetts' neighbors, Connecticut and Rhode Island—allege injuries that are materially identical to the one the Court found sufficient to support standing in *Massachusetts* v. *EPA*. The States' complaint alleges that they have suffered and will suffer numerous injuries from climate change, including the same array of threatened injuries catalogued in the National Research Council report cited in *Massachusetts* v. *EPA*. See 549 U.S. at 521. In particular, the complaint contains several allegations about injuries associated with sea-level rise, including allegations that it will inundate coastal property, will "cause billions of dollars of damage to property, including state-owned" property, and will lead to increased erosion of beaches. J.A. 89-92. The complaint specifically alleges that "[a]ccelerated sea-level rise due to unrestrained global warming" threatens to erode beaches "owned by" the coastal States. J.A. 91-92 (identifying state-owned parks and beaches in New York, California, Connecticut, and Rhode Island). Connecticut and Rhode Island border Massachusetts, and it is reasonable to assume at the pleading stage that climate change would affect public coastal property to a similar extent in all three States. Accordingly, like Massachusetts in the earlier case, the coastal States here have adequately alleged a concrete injury in their capacities as sovereign owners of land that is threatened with destruction by sea-level rise associated with climate change.

3. *Massachusetts* v. *EPA* is also instructive with respect to the other two prongs of Article III standing analysis: causation and redressability. With respect to

causation, the Court first explained that agencies, like legislatures, frequently approach problems incrementally, and "[t]hat a first step might be tentative does not by itself support the notion that federal courts lack jurisdiction to determine whether that step conforms to law." 549 U.S. at 524. But the Court then further explained that, in any event, "reducing domestic automobile emissions is hardly a tentative step," because "[j]udged by any standard, U. S. motor-vehicle emissions make a meaningful contribution to greenhouse gas concentrations and hence, according to petitioners, to global warming." *Id.* at 524-525.

Unlike *Massachusetts* v. *EPA*, this case does not involve a challenge to a discrete agency action addressing a problem in an incremental way pursuant to a statutory directive or authorization to proceed in such a manner. Rather, it is plaintiffs themselves, through their choice of defendants, who seek to proceed incrementally, and thereby to have the courts do so in the adjudication of an asserted public nuisance under federal common law. The aspect of the Court's rationale in *Massachusetts* v. *EPA* that focuses on the particular authority and ability of agencies to proceed incrementally therefore is not directly applicable here.

The Court's further reasoning about causation in *Massachusetts* v. *EPA*, focusing on the amount of emissions, however, does appear to be applicable to this case. Under that reasoning, plaintiffs have adequately alleged that defendants' emissions constitute a "meaningful contribution * * * to global warming." 549 U.S. at 525. The States' complaint alleges that defendants annually emit approximately 650 million tons of carbon dioxide. J.A. 84. Although that figure is about one-third of the amount that the Court mentioned in *Massachusetts* v.

EPA, 549 U.S. at 524 (referring to emissions from the entire "transportation sector," not just the smaller amount of automobile emissions that were actually at issue in the case), the Court's conclusion that "more than 1.7 billion metric tons" was a meaningful contribution when "[j]udged by any standard" (*id.* at 524-525) indicates that that amount was not at the outer limit of what would satisfy the causation element of Article III standing in a suit brought by a State alleging substantial loss of sovereign lands.

With respect to redressability, the Court in *Massachusetts* v. *EPA* reasoned that "[w]hile it may be true that regulating motor-vehicle emissions will not by itself *reverse* global warming," it did not follow that the Court "lack[ed] jurisdiction to decide whether EPA has a duty to take steps to *slow* or *reduce* it." 549 U.S. at 525. The Court concluded that the redressability requirement had been satisfied because "[a] reduction in domestic emissions would slow the pace of global emissions increases, no matter what happens elsewhere" in the world with other emitters. *Id.* at 526. In light of that discussion, the court of appeals here was correct in concluding that plaintiffs have adequately alleged—at least under "the lowered bar for standing at the pleading stage"—that "[e]ven if emissions increase elsewhere, the magnitude of [p]laintiffs' injuries will be less if [d]efendants' emissions are reduced than they would be without a remedy." Pet. App. 43a, 76a.[12]

4. Petitioners contend (Pet. 16) that *Massachusetts* v. *EPA* is distinguishable. They stress that the opinion

[12] If the suit were to progress past the pleading stage, questions of injury, causation, and redressability would of course need to be revisited in light of the evidence. See *Lujan* v. *National Wildlife Fed'n*, 497 U.S. 871, 889 (1990).

noted that the statute authorizing judicial review of EPA decisions was "of critical importance to the standing inquiry" in that case because "'Congress has the power to define injuries and articulate chains of causation that will give rise to a case or controversy where none existed before.'" 549 U.S. at 516 (quoting *Lujan*, 504 U.S. at 580 (Kennedy, J., concurring in part and concurring in the judgment)). Here, by contrast, there is no Act of Congress authorizing this cause of action. Plaintiffs have not invoked the CAA's citizen-suit provision. Cf. *Public Interest Research Group* v. *Powell Duffryn Terminals Inc.*, 913 F.2d 64, 71-73 (3d Cir. 1990) (suit for pollutant discharges in excess of amounts allowed by Clean Water Act permit), cert. denied, 498 U.S. 1109 (1991). Nor is there any statute akin, for example, to the Sherman Act (15 U.S.C. 1, 4), authorizing federal courts, at the behest of certain injured parties, to enjoin unreasonable emissions of greenhouse gases.

As the Court has recently explained, Congress's ability to "loosen the strictures of the redressability prong" in the context of a challenge to agency action accounts for the inability to predict with assurance whether the plaintiff would, after securing judicial vindication of his claimed procedural right before the agency, ultimately "be successful in persuading the [agency] to avoid impairment of [the plaintiff's] concrete interests." *Summers*, 129 S. Ct. at 1150; see also *Massachusetts* v. *EPA*, 549 U.S. at 517-518. This case does not involve that kind of uncertainty, because plaintiffs are not challenging an agency's action or failure to act to limit emissions by third parties. Plaintiffs' chains of causation and redressability are *shorter* than the ones in *Massachusetts*, because they seek judicial relief directly from the entities responsible for the allegedly unlawful emissions. For

the same reason, their chains are also shorter than the ones in *Lujan*, because their standing does not "hinge on the response of [a] regulated (or regulable) third party to * * * government action." 504 U.S. at 562.[13]

5. If the Court agrees that, in light of *Massachusetts* v. *EPA*, the coastal States here have adequately alleged Article III standing at the pleading stage be-

[13] Plaintiffs' Article III standing also finds some support in the background proposition that the common law provides for claims against those who contribute to a public nuisance, even when a particular defendant is not the exclusive contributor to the nuisance. See Restatement (Second) of Torts § 840E at 177 (1977) ("[T]he fact that other persons contribute to a nuisance is not a bar to the defendants' liability for his own contribution."); *id*. cmt. b at 177 (public nuisance claim may lie where "each of several persons contributes to a nuisance to a relatively slight extent, so that his contribution taken by itself would not be an unreasonable one and so would not subject him to liability"); *Sprint Communications Co.* v. *APCC Servs., Inc.*, 554 U.S. 269, 274 (2008) ("We have often said that history and tradition offer a meaningful guide to the types of cases that Article III empowers federal courts to consider.").

In *Milwaukee I*, for example, the Court recognized that Illinois could sue Milwaukee for releasing untreated sewage into Lake Michigan. See 406 U.S. at 103-108. In the suit that followed on that claim, the district court discussed the existence of harmful nutrients released into the lake by non-point sources and by point sources in Illinois and Michigan, and held that it would be "sufficient for plaintiffs to show that defendants' nutrient discharges constitute a significant portion of the total nutrient input to the lake." *Illinois ex rel. Scott* v. *City of Milwaukee*, No. 72 C 1253, 1973 U.S. Dist. LEXIS 15607, at *21-*22 (N.D. Ill. 1973), aff'd in part, rev'd in part, *Illinois* v. *City of Milwaukee*, 599 F.2d 151 (7th Cir. 1979), vacated on other grounds, *City of Milwaukee* v. *Illinois*, 451 U.S. 304 (1981). To be sure, *Milwaukee I* involved discharges into a particular body of water, through which the pollution reached the plaintiffs—not, as here, emissions into the Earth's atmosphere that affect plaintiffs only to the extent they add to all other emissions of greenhouse gases worldwide in a manner that allegedly visits harm on plaintiffs. But that distinction goes more to prudential than to Article III standing.

cause, like Massachusetts, they are the owners of sovereign territory that could be destroyed by rising sea levels associated with global warming, then constitutional standing principles would pose no further barrier to this Court's consideration of whether the common-law nuisance claims asserted by plaintiffs have been displaced by the CAA or regulatory actions taken by EPA. See *Massachusetts* v. *EPA*, 549 U.S. at 518 ("Only one of the petitioners needs to have standing to permit us to consider the petition for review."); *Rumsfeld* v. *Forum for Academic & Institutional Rights, Inc.*, 547 U.S. 47, 52 n.2 (2006) ("[T]he presence of one party with standing is sufficient to satisfy Article III's case-or-controversy requirement.").[14]

C. This Case Raises Separation-Of-Powers Concerns Addressed By The Political-Question Doctrine, But Plaintiffs' Lack Of Prudential Standing Provides A More Appropriate Basis For A Dismissal On Grounds Of Nonjusticiability

Concluding that judicial resolution of the merits of plaintiffs' common-law nuisance claims would present substantial separation-of-powers concerns, the district court dismissed both complaints on the ground that they "present non-justiciable political questions." Pet. App.

[14] Of course, if the Court were to conclude that the coastal States lack Article III standing here, then the other plaintiffs would, *a fortiori*, lack standing, whether they are private land trusts that have no "quasi-sovereign interests" (*Massachusetts* v. *EPA*, 549 U.S. at 520), or inland States that allege many potential injuries from climate change but not the actual "loss of * * * sovereign territory" that they own (*id.* at 523 n.21), or a locality (the City of New York) that does not have the same "dignity * * * of sovereignty" that States possess in our federal system (*id.* at 519 (quoting *Alden*, 527 U.S. at 715)). Accordingly, we do not further discuss the other injuries alleged by plaintiffs.

187a. The political-question doctrine, however, is only one mechanism for identifying cases that are not fit for judicial resolution; in the circumstances of this case, the principle of prudential standing that bars judicial consideration of generalized grievances is a more restrained and appropriate ground on which to rest such a decision.

1. The political-question doctrine is animated by separation-of-powers principles. See *Baker* v. *Carr*, 369 U.S. 186, 210 (1962) ("The nonjusticiability of a political question is primarily a function of the separation of powers."). But the same concerns undergird other doctrines, including prudential standing, which, as discussed above, is dispositive here. As this Court has observed:

> All of the doctrines that cluster about Article III—not only standing but mootness, ripeness, political question, and the like—relate in part, and in different though overlapping ways, to an idea, which is more than an intuition but less than a rigorous and explicit theory, about the constitutional and prudential limits to the powers of an unelected, unrepresentative judiciary in our kind of government.

Allen v. *Wright*, 468 U.S. 737, 750 (1984) (quoting *Vander Jagt* v. *O'Neill*, 699 F.2d 1166, 1178-1179 (D.C. Cir.) (Bork, J., concurring), cert. denied, 464 U.S. 823 (1983)); see also, *e.g.*, *Poe* v. *Ullman*, 367 U.S. 497, 508-509 (1961) (plurality opinion) ("Justiciability is of course not a legal concept with a fixed content or susceptible of scientific verification. Its utilization is the resultant of many subtle pressures, including the appropriateness of the issues for decision by this Court and the actual hardship to the litigants of denying them the relief sought."). Like the prudential-standing doctrine, the political-

question doctrine is "deriv[ed] in large part from prudential concerns about the respect [courts] owe the political departments." *Nixon* v. *United States*, 506 U.S. 224, 252-253 (1993) (Souter, J., concurring in the judgment) (citing *Goldwater* v. *Carter*, 444 U.S. 996, 1000 (1979) (Powell, J., concurring in the judgment)). Indeed, the Court could conclude that, in certain gray areas that "cluster about Article III" and call for judicial self-restraint, the political-question doctrine has a distinct, self-imposed prudential component akin to prudential standing. But if this Court finds that plaintiffs lack prudential standing, as we argue above, there is no need to determine whether the political-question doctrine also bars a decision on the merits of their claims.[15]

2. In applying the political-question doctrine, there is no simple and precise test for identifying which questions courts should refrain from addressing lest they "inappropriate[ly] interfere[] in the business of the other branches of Government." *United States* v. *Munoz-Florez*, 495 U.S. 385, 394 (1990). But in *Baker* v. *Carr*, *supra*, the Court identified six guiding factors:

> Prominent on the surface of any case held to involve a political question is found [1] a textually demonstrable constitutional commitment of the issue to a coordinate political department; or [2] a lack of judicially discoverable and manageable standards for resolving it; or [3] the impossibility of deciding with-

[15] Precedent supports resolving questions of standing before those of political question, see *Schlesinger* v. *Reservists Comm. to Stop the War*, 418 U.S. 208, 215 (1974), and the Court should follow that practice here. Cf. *Ruhrgas AG* v. *Marathon Oil Co.*, 526 U.S. 574, 585, 588 (1999) (in choosing "among threshold grounds for denying audience to a case on the merits," it is appropriate to decide a "straightforward" question before a more "difficult and novel" one).

> out an initial policy determination of a kind clearly for nonjudicial discretion; or [4] the impossibility of a court's undertaking independent resolution without expressing lack of the respect due coordinate branches of government; or [5] an unusual need for unquestioning adherence to a political decision already made; or [6] the potentiality of embarrassment from multifarious pronouncements by various departments on one question.

369 U.S. at 217. *Baker* emphasized the "necessity for discriminating inquiry into the precise facts and posture of the particular case, and the impossibility of resolution by any semantic cataloging." *Ibid.* This Court's subsequent cases have not provided much additional guidance. A plurality of the Court recognized that the six *Baker* factors "are probably listed in descending order of both importance and certainty," *Vieth* v. *Jubelirer*, 541 U.S. 267, 278 (2004), but the two cases since *Baker* in which the Court found a political question relied upon the first factor.[16]

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[16] See *Nixon*, 506 U.S. at 229 (questions about the procedures for trying an impeachment are textually committed to the Senate); *Gilligan* v. *Morgan*, 413 U.S. 1, 7 (1973) (powers over "the training, weaponry, and orders of the [National] Guard" are vested in the Legislative and Executive Branches). In *Vieth*, a four-Justice plurality concluded that "political gerrymandering claims are nonjusticiable" under the second *Baker* factor because there are "no judicially discernible and manageable standards for adjudicating" them. 541 U.S. at 281. Justice Kennedy's opinion concurring in the judgment in *Vieth* concluded only that the Court was "require[d] [to] refrain from intervention in this instance" because the plaintiffs had not proposed a suitable "standard[] for measuring the burden a [partisan] gerrymander imposes on representational rights," and it remained possible that a standard could "emerge in the future," *id.* at 311, 317.

3. As the district court held (Pet. App. 187a) and as petitioners argue (Pet. 28), this case does raise concerns highlighted by the second and third *Baker* factors: "a lack of judicially discoverable and manageable standards for resolving it; or the impossibility of deciding without an initial policy determination of a kind clearly for nonjudicial discretion." 369 U.S. at 217. Plaintiffs' theory of liability could provide virtually every person, organization, company, or government with a claim against virtually every other person, organization, company or government, presenting unique and difficult challenges for the federal courts. And resolving such claims would require each court to consider numerous and far-reaching technological, economic, scientific, and policy issues, and to make difficult predictive judgments, in determining whether and to what extent each defendant should be deemed liable under general principles of nuisance law for some share of the injuries associated with global climate change—and therefore be ordered by a court to limit its emissions to some extent.

Those potential difficulties are compounded by the prospect that different district courts entertaining such suits could reach widely divergent results, based, *inter alia*, on different findings of fact that would be subject to appellate review only for clear error, or on different assessments of what is "reasonable," or on different exercises of equitable discretion in fashioning relief. Such suits would lack the benefits of centralized decisionmaking that characterize Executive agency action. Moreover, a judicial decision in one case brought by particular plaintiffs would not assure a final resolution for the defendants involved because other potential plaintiffs would not be bound by the judgment and could instead bring their own suits. Such suits would therefore lack

the certainty and repose that the political Branches can afford through legislative and regulatory action.

The separation-of-powers concerns in this case arise from a confluence of factors, including the unique breadth of plaintiffs' claims; the complex and multifarious policy judgments implicated by the claim that greenhouse-gas emissions from the particular sources selected by plaintiffs unreasonably interfere with public rights; and Congress's enactment, pursuant to its enumerated powers under Article I, Section 8 of the Constitution, of the CAA provisions that authorize EPA to regulate air-pollutant emissions, coupled with EPA's decisions rendering greenhouse-gas emissions subject to regulation under the CAA. Determining appropriate restrictions on greenhouse-gas emissions is a task best suited for resolution by the representative Branches, which possess the requisite scientific and technical expertise and centralized decisionmaking authority, and are politically accountable. Development by the Judiciary of a parallel system of common-law regulation of greenhouse-gas emissions would frustrate and complicate those ongoing regulatory undertakings.

The claims (and defenses) in this case would thus present unique problems for the Judiciary. The difficulty of those claims for judicial resolution—particularly in the absence of a statute adopted by the political Branches assigning such a role to the Judiciary—is more marked in light of the steps that *have* been taken by the political Branches to regulate in this area. The consequence of those steps is that any judicial remedy that might otherwise have existed for a federal common-law nuisance has been displaced by the actions of Congress and EPA. See pp. 42-53, *infra*. Such displacement of federal common law through the actions of the

political Branches is itself a manifestation of the separation of powers. See *City of Milwaukee* v. *Illinois*, 451 U.S. 304, 315 (1981) (*Milwaukee II*) ("Our 'commitment to the separation of powers is too fundamental' to continue to rely on federal common law 'by judicially decreeing what accords with "common sense and the public weal"' when Congress has addressed the problem.") (quoting *TVA* v. *Hill*, 437 U.S. 153, 195 (1978)).

4. Notwithstanding the foregoing, if this case did not involve a challenge to a phenomenon that is so widely caused and has an impact that is so widely experienced (which in this case separately demonstrates that plaintiffs lack prudential standing), and if EPA had not commenced regulating greenhouse gases under the CAA (which demonstrates that any common-law claim has been displaced), the separation-of-powers concerns it presents would markedly diminish.[17] Thus, we believe that, although the Court could properly rely on the political-question doctrine to direct dismissal of this case, a decision on prudential-standing grounds (discussed above) or the displacement analysis (discussed below) would be a more appropriate and tailored means of recognizing why it is appropriate to withhold judicial relief. Those other grounds would also better account for the principal way in which this case differs from

[17] Just as Congress has the power to alter the prudential-standing analysis and the displacement analysis, action by the political Branches can bear on aspects of the political-question doctrine. Congress could, for instance, make the initial policy determinations to allow for adjudication of a common-law nuisance action to address climate change. And EPA could prescribe emissions standards that would—if such standards did not displace federal common law—provide discernible and manageable standards for courts to apply in resolving such cases. Plaintiffs here, however, have relied on the purported *absence* of action by the political Branches as justification for their claims.

most cases presenting a political question: Plaintiffs are not asking the courts to enforce a constitutional or another external standard or norm that is typically in the domain of nonjudicial actors. Compare, *e.g.*, *Vieth*, *supra*. Instead, they ask the judiciary to act in its own domain by applying judicially fashioned federal common law in a new context. While it is of course true, as the court of appeals observed, that "federal common law of nuisance claim[s] * * * have been adjudicated in federal courts for over a century," Pet. App. 38a, this case is of a different order, in the ways discussed above.[18]

The applicability of the political-question doctrine will, to be sure, often be a threshold, non-merits question that should be resolved before a court would otherwise decide a question beyond the proper scope of judicial power. In this case, however, a determination that any common-law cause of action has been displaced (see pp. 42-53, *infra*) would not actually require the Court to do what the political-question doctrine would forbid (*i.e.*, to decide an asserted common-law public-nuisance claim based on alleged contributions to global climate change in the absence of "judicially discoverable and manageable standards" or "an initial policy determination of a kind clearly for nonjudicial discretion"). Such a determination would not involve the impermissible assertion

[18] Declining to address the political-question doctrine's applicability in the circumstances of this case would be analogous to the approach in Justice Kennedy's concurring opinion in *Vieth*. "[E]rr[ing] on the side of caution" because "another case" might propose a suitable standard for evaluating whether a partisan gerrymander burdens representational rights, Justice Kennedy did not find a political question, but nevertheless concluded that the appellants (who proposed no suitable standard of their own) had failed to state a claim on which relief could be granted. 541 U.S. at 311-313 (opinion concurring in the judgment).

of judicial power, but would instead simply acknowledge that, in light of actions already taken by the political Branches, there is no place for judicial relief under the mantle of federal common law. Cf. *Steel Co.* v. *Citizens for a Better Env't*, 523 U.S. 83, 101-102 (1998) ("For a court to pronounce upon the meaning or the constitutionality of a state or federal law when it has no jurisdiction to do so is, by very definition, for a court to act ultra vires.").

Moreover, there is another aspect of this case that would support dismissal. Plaintiffs seek only injunctive relief, which "is a matter of equitable discretion" that "does not follow from success on the merits as a matter of course." *Winter* v. *NRDC*, 129 S. Ct. 365, 381 (2008). Especially because the political-question doctrine involves prudential concerns, the Court could determine that plaintiffs' complaints, because they are not based on any statutory cause of action but rather invoke federal common law, should be dismissed at the outset on equitable grounds that do not require the Court to resolve whether a political question is presented or to decide any political question. Cf. *O'Shea* v. *Littleton*, 414 U.S. 488, 499 (1974) ("[Article III standing] considerations obviously shade into those determining whether the complaint states a sound basis for equitable relief; and even if we were inclined to consider the complaint as presenting an existing case or controversy, we would firmly disagree with the Court of Appeals that an adequate basis for equitable relief against petitioners had been stated."). Such a disposition, in the unique circumstances of a federal common-law claim, would rest on the

distinct separation-of-powers concerns that the case presents.[19]

II. ANY FEDERAL COMMON-LAW CLAIMS HAVE BEEN DISPLACED BY EPA'S REGULATORY ACTIONS UNDER THE CLEAN AIR ACT

If the Court reaches the question, it should hold that plaintiffs cannot state a claim for public nuisance under federal common law because any such claim has been displaced by the actions that EPA has taken under the CAA to regulate carbon-dioxide emissions.

As this Court has explained, even in those few areas where a federal common-law action has already been recognized and persists, it is necessarily "'subject to the paramount authority of Congress,'" which means that a "previously available federal common-law action" will be "displaced" whenever a "scheme established by Congress addresses the problem formerly governed by federal common law." *Milwaukee II*, 451 U.S. at 313, 315 n.8 (quoting *New Jersey* v. *New York*, 283 U.S. 336, 348 (1931)); see also, *e.g.*, *Mobil Oil Corp.* v. *Higginbotham*, 436 U.S. 618, 625 (1978). To assess whether federal common law has been displaced in a given context, "the relevant inquiry is whether the statute '[speaks] *directly* to [the] question' otherwise answered by federal common law." *County of Oneida* v. *Oneida Indian Nation*, 470 U.S. 226, 236-237 (1985) (quoting *Milwaukee II*, 451

[19] See *Quackenbush* v. *Allstate Ins. Co.*, 517 U.S. 706, 731 (1996) ("[F]ederal courts have the power to dismiss or remand cases based on abstention principles * * * where the relief being sought is equitable or otherwise discretionary."); *Sanchez-Espinoza* v. *Reagan*, 770 F.2d 202, 208 (D.C. Cir. 1985) (Scalia, J.) ("Whether or not this is * * * a matter so entirely committed to the care of the political branches as to preclude our considering the issue at all, we think it at least requires the withholding of discretionary relief.").

U.S. at 315) (alterations and emphasis in *Oneida*). Here, regulatory actions that EPA has taken pursuant to its authority under the CAA—largely after the court of appeals' decision in this case—meet that test and have displaced any common-law nuisance claims that plaintiffs might once have had.

This case differs from *Milwaukee II* because there this Court had already recognized the availability of a federal common-law cause of action in *Milwaukee I*, which the Court then found in *Milwaukee II* to have been displaced. Here, the Court has not determined whether a federal common-law cause of action would otherwise be available if justiciability obstacles could be overcome. Whether to recognize in the first instance a federal common-law cause of action to abate emissions that contribute to global warming is a decision that might be informed by the enactment of the CAA, this Court's decision in *Massachusetts* v. *EPA*, and any implementing measures taken by EPA. Because any federal common-law claim that might otherwise have been advanced by plaintiffs has so clearly been displaced, however, the Court need not determine whether federal common law should, absent displacement, provide a cause of action for public nuisance against persons and entities that contribute to climate change.[20]

[20] Whether global climate change should be regarded as a public nuisance cognizable under domestic common law is a novel question, apparently decided for the first time by the court of appeals in this case. In prior public nuisance cases, there was a geographic nexus between those liable and those injured. See, *e.g.*, *Milwaukee I*, 406 U.S. at 93 (defendant's sewage discharges into Lake Michigan, the waters of which were used by Illinois); *Georgia* v. *Tennessee Copper*, 206 U.S. at 238 (noxious gases traveling from defendant's plants "over great tracts of Georgia land"). Cf. *Washington* v. *General Motors Corp.*, 406 U.S. 109, 114, 116 (1972) (calling air pollution a "public nuisance" and noting

1. Federal common law is displaced when an administrative agency takes regulatory action, under the authority of a comprehensive statutory program, to address the issue raised in a putative common-law action. Such displacement can occur when a plaintiff seeks relief that would address the same issue, but in a manner different in character or extent from what the regulatory program provides. See *Milwaukee II*, 451 U.S. at 324 ("The question is whether the field has been occupied, not whether it has been occupied in a particular manner."); see also *Mobil Oil*, 436 U.S. at 623-625 (holding that any federal common-law damages remedy for loss of society had been displaced by the Death on the High Seas Act, which provided damages for pecuniary loss but not for loss of society). And displacement also occurs when an agency, whose comprehensive statutory authority to regulate the subject matter has been triggered, decides to postpone or even forgo the imposition of regulatory standards, where the decision is made

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that "corrective remedies for air pollution * * * necessarily must be considered in the context of localized situations"). The Court has never addressed whether such a nexus is a prerequisite for a public nuisance. In *Missouri* v. *Illinois*, 200 U.S. 496 (1906), the Court recognized that public nuisance law adapts to changing scientific and factual circumstances. In that case, determining whether sewage discharged by Chicago could cause typhoid fever in St. Louis after traveling 357 miles over eight to eighteen days was at the frontier of scientific understanding. See *id.* at 523. The Court acknowledged there was "no pretense" that Missouri had alleged "a nuisance of the simple kind that was known to the older common law," and that the suit "almost necessarily would have failed" if it "had been brought fifty years ago." *Id.* at 522. It held that the then-present evidence did not support Missouri's allegations, *id.* at 526, but it did not suggest that the novel nature of the claim, the difficulty of the scientific question, or the physical attenuation between the release of sewage in Chicago and the alleged spread of disease in St. Louis had placed that claim beyond the common law's reach.

through the exercise of that authority on the basis of a weighing of relevant considerations under the statutory scheme. Courts may not substitute their judgment, under the guise of common law, for the determinations made by federal agencies as to how, when, and whether regulation is appropriate.

Petitioners contend (Pet. 21) that Congress's enactment of the CAA was itself sufficient to displace plaintiffs' common-law claims, without regard to any regulatory actions that EPA has taken pursuant to the CAA. While there is little doubt that the CAA established a "comprehensive" regulatory program, see, *e.g.*, *Chevron U.S.A.*, 467 U.S. at 848, the CAA differs in important respects from the Clean Water Act (CWA), 33 U.S.C. 1251 *et seq.*, which was found to have displaced federal common-law limits on the discharge of pollutants into the waters of the United States. See *Middlesex County Sewerage Auth.* v. *National Sea Clammers Ass'n*, 453 U.S. 1, 11, 14-15 (1981); *Milwaukee II*, 451 U.S. at 317-320. The terms of the CWA directly prohibit the discharge of pollutants into the waters of the United States without authorization from a proper permitting authority. See 33 U.S.C. 1311(a). The terms of the CAA, by contrast, impose few restrictions on the emissions of air pollutants in the absence of regulations promulgated by EPA. This case, however, does not involve the mere enactment of the CAA.

Exercising its regulatory authority under the CAA, EPA has directly entered the field plaintiffs would have governed by common-law nuisance suits. Since January 2, 2011, greenhouse gases have been subject to regulation under the CAA, and EPA is actively exercising its judgment and statutory discretion to determine when and how emissions from different categories of sources

of greenhouse gases will be regulated. As a result, the CAA, as implemented by EPA, speaks directly to the question of how carbon-dioxide emissions should be limited and thus displaces any common-law claims pertaining to that question.

2. In the wake of this Court's decision in *Massachusetts* v. *EPA*, the agency has taken several significant actions to address greenhouse-gas emissions.

a. Two of EPA's recent regulatory actions worked in concert to render greenhouse gases "pollutant[s] subject to regulation under [the CAA]" for purposes of the PSD permitting process that applies to new and modified emitting facilities. 42 U.S.C. 7475(a)(4). First, on December 15, 2009, EPA published a final finding under Section 202 of the CAA that "greenhouse gases in the atmosphere may reasonably be anticipated both to endanger public health and to endanger public welfare." 74 Fed. Reg. at 66,497. That so-called "endangerment finding" also included a determination that carbon-dioxide and other greenhouse-gas emissions from new motor vehicles contribute to the greenhouse-gas air pollution that endangers public health and welfare. *Id.* at 66,537. In making that determination, EPA found that the portion of the transportation sector regulated by Section 202 is responsible for just over 23% of greenhouse-gas emissions in the United States, making it the "second largest emitter within the United States behind the electricity generating sector." *Id.* at 66,499.

Second, on May 7, 2010, EPA (acting with the Department of Transportation's National Highway Traffic Safety Administration) published a joint final rule requiring reductions in greenhouse-gas emissions from light-duty motor vehicles. 75 Fed. Reg. at 25,324. Under Section 202(a)(1) of the CAA, the promulgation of

those new emissions standards followed from EPA's December 2009 endangerment finding. See 42 U.S.C. 7521(a)(1); 75 Fed. Reg. at 25,327. Those standards took effect on January 2, 2011 (for vehicles of model year 2012), and they will become increasingly stringent until model year 2016. *Id.* at 25,329-25,330. EPA exercised its discretion to phase in those standards over that period to allow manufacturers to "incorporate technology to achieve [greenhouse-gas] reductions" and to "plan for compliance using a multi-year time frame, * * * consistent with normal business practice." *Id.* at 25,332.

Because the final light-duty-vehicle standards have taken effect (as of January 2, 2011), EPA now considers greenhouse gases to be "pollutant[s] subject to regulation under [the CAA]," in the sense meant by 42 U.S.C. 7475(a)(4), and therefore subject to Sections 165(a) and 169(1) of the CAA (42 U.S.C. 7475(a) and 7479(1)). See 75 Fed. Reg. at 31,606-31,607 (to be codified at 40 C.F.R. 52.21(b)(49)-(50), effective January 2, 2011) (specifying when greenhouse gases are "subject to regulation"); 75 Fed. Reg. at 17,019, 31,549-31,551 (explaining EPA's construction of the phrase "pollutant subject to regulation"). Those provisions—which apply to stationary sources—require any new or modified "major emitting facility" to obtain a so-called "PSD permit" under the provisions of the CAA designed to prevent significant deterioration of air quality. 42 U.S.C. 7470-7479.[21] In

[21] The CAA applies PSD requirements to a "major emitting facility," 42 U.S.C. 7475(a), which is defined to include any "source with the potential to emit" at least 250 tons per year of "any air pollutant," as well as certain "stationary sources of air pollutants" (including, as most relevant here, fossil-fuel-fired steam electric plants and boilers), if they emit or have the potential to emit at least 100 tons per year. 42 U.S.C. 7479(1). EPA's regulations implement those requirements by applying

order to obtain such a permit, a facility must, among other things, be "subject to the best available control technology for each pollutant subject to regulation under [the CAA]." 42 U.S.C. 7475(a)(4).

The promulgation of the light-duty-vehicle standards also means that EPA considers greenhouse gases to be subject to the permitting requirements under Title V of the CAA. See 42 U.S.C. 7661a(a), 7661(2)(B), 7602(j); 75 Fed. Reg. at 31,551-31,554 (describing EPA's interpretation of Title V's applicability). As the D.C. Circuit has explained, the Title V permitting process "requires that certain air pollution sources, including every major stationary source of air pollution, each obtain a single, comprehensive operating permit to assure compliance with all emission limitations and other substantive CAA requirements that apply to the source." *Environmental Integrity Project* v. *EPA*, 425 F.3d 992, 993 (2005); see also *Virginia* v. *Browner*, 80 F.3d 869, 873 (4th Cir. 1996) (describing Title V permit as "a source-specific bible for [CAA] compliance"), cert. denied, 519 U.S. 1090 (1997). Defendants' power plants are "major stationary source[s] of air pollution" and thus subject to Title V permitting requirements.

By issuing the endangerment finding and light-duty-vehicle rule, and thereby rendering greenhouse gases "subject to regulation" under the existing statutory scheme of the CAA, EPA displaced any federal common-

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them to "major stationary source[s]," 40 C.F.R. 52.21(a)(2), which are defined to include stationary sources that emit at least 100 or 250 tons per year of a "regulated NSR pollutant," 40 C.F.R. 52.21(b)(2)(i), which includes "[a]ny pollutant * * * subject to regulation under the [CAA]." 40 C.F.R. 52.21(b)(50)(iv).

law requirements imposing alternative or additional emissions standards for greenhouse gases.[22]

b. Additional EPA regulatory actions reinforce the conclusion that plaintiffs' common-law claims have been displaced. Recognizing that the light-duty-vehicle rule was going to cause greenhouse gases to be regulated pollutants subject to PSD and Title V permitting requirements, EPA issued a so-called "tailoring rule" on June 3, 2010. See 75 Fed. Reg. at 31,514. That tailoring rule phases in the applicability of PSD requirements to greenhouse gases emitted by stationary sources, discussed above (see pp. 5, 47-48, *supra*), applying those requirements in January 2011 to sources already obtaining permits for other pollutants, and later to additional sources. 75 Fed. Reg. at 31,516.[23] In the tailoring rule,

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[22] As noted above (see note 4, *supra*), on December 10, 2010, the D.C. Circuit denied several motions to stay EPA's endangerment finding, its motor-vehicle-emissions standards for greenhouse gases, its tailoring rule, and its decision addressing the date on which greenhouse-gas emissions became "subject to regulation" under the CAA. The parties in those pending challenges submitted briefing-format proposals to the D.C. Circuit on January 10, 2011.

[23] Pursuant to the first phase of the tailoring rule, sources became subject to the PSD requirements on account of their carbon-dioxide emissions as of January 2, 2011, only if (1) they were already subject to such requirements due to emissions of non-greenhouse-gas air pollutants, and (2) they undertook a modification that would increase their carbon-dioxide emissions by at least 75,000 tons per year while also significantly increasing emissions of non-greenhouse-gas pollutants. 75 Fed. Reg. at 31,516. The second phase of the tailoring rule, beginning on July 1, 2011, "will phase in additional large sources of [greenhouse-gas] emissions." *Ibid.* Similar phases apply in the case of Title V. *Id.* at 31,523-31,524. In the third phase, beginning in July 2013, EPA may regulate additional sources. *Ibid.* The tailoring rule specifies that EPA will engage in further rulemaking to address any remaining PSD requirements, but indicates that no sources or modifications below a

EPA clarified that, in its considered judgment, regulation of greenhouse-gas emissions from stationary sources should proceed in an orderly and phased fashion based on a variety of considerations. Cf. *Massachusetts* v. *EPA*, 549 U.S. at 524. Plaintiffs' attempt to secure court-ordered emissions reductions from emitters of their choosing on their own schedule would be plainly inconsistent with EPA's systematic, phased approach.

In another significant step indicating EPA's active engagement in the process of determining how and when greenhouse-gas emissions will be regulated, EPA announced on December 23, 2010 that it had entered into a proposed settlement agreement in an earlier case about whether the new source performance standards (NSPS) for utility boilers (*i.e.*, power plants like defendants') should include standards for greenhouse-gas emissions.[24] That proposed settlement (which was subject to a 30-day public-comment period that expired on January 31, 2011, see 75 Fed. Reg. at 82,392) would commit EPA to complete a NSPS rulemaking under Section 111 of the CAA (42 U.S.C. 7411). If the settlement is adopted by EPA, the purpose of the ensuing rulemaking would be to consider standards applicable to new and modified facilities; it would simultaneously consider standards under which States would be required (under

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certain size would be made subject to PSD or Title V permitting requirements before April 30, 2016. *Ibid.*

[24] The case—which was brought by, *inter alia*, several of the plaintiffs here—is on voluntary remand from the D.C. Circuit. See *New York* v. *EPA*, No. 06-1322 (Sept. 24, 2007). As discussed in TVA's certiorari-stage brief in this case (at 29-30 & n.19), EPA had previously announced it was "in the process of responding to a remand from the D.C. Circuit requiring it to consider whether to add standards for [greenhouse gases] to the NSPS for utility boilers." 73 Fed. Reg. 44,487 (2008).

42 U.S.C. 7411(d)) to impose regulatory limitations on emissions from *existing* facilities. See p. 4, *supra*. Under the settlement, EPA would issue a proposed rule by July 26, 2011 and promulgate final regulations by May 26, 2012.[25] Thus, if the settlement is formally adopted, EPA will have established a precise time line for deciding whether and to what extent emissions standards under the CAA will apply to the very carbon-dioxide emissions at issue in this case.

3. As the foregoing discussion demonstrates, EPA now regulates greenhouse-gas emissions under the currently existing statutory scheme of the CAA, and it may soon be specifically committed to completing a rulemaking to address greenhouse-gas-emissions standards applicable to defendants' already-existing power plants, even if they are not modified. Thus, it is abundantly clear that the CAA, as it is now being implemented by EPA, "speak[s] directly" (*Milwaukee II*, 451 U.S. at 315 (quoting *Mobil Oil*, 436 U.S. at 625)) to the particular issue presented by plaintiffs' federal common-law nuisance claims about climate change: regulation of greenhouse-gas emissions, and in particular emissions from stationary sources (like defendants' power plants).

The conclusion that EPA's actions have displaced any common-law emissions standards is unaffected by EPA's decision to adopt an incremental approach that will not necessarily lead to standards specifically governing greenhouse-gas emissions from defendants' already-existing power plants (unless they are modified and thus

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[25] The text of the settlement agreement is available at http://www.epa.gov/airquality/pdfs/boilerghgsettlement.pdf. A commitment to complete a rulemaking will not mean that EPA has prejudged the question of what, if any, NSPS will be appropriate; EPA could ultimately exercise its judgment to find the imposition of such standards inappropriate.

require a PSD permit under the new regulations), at least until some time after May 26, 2012. In *Middlesex County Sewerage Authority*, the Court held that the Marine Protection, Research, and Sanctuaries Act of 1972 displaced federal common law immediately and entirely, even though "Congress allowed some continued dumping of sludge" for nine years after the statute was enacted based on its "considered judgment that it made sense to allow entities like petitioners to adjust to the coming change." 453 U.S. at 22 n.32; see also *Massachusetts* v. *EPA*, 549 U.S. at 533 (recognizing that EPA possesses "significant latitude as to the manner, timing, content, and coordination of its regulations"); *id.* at 524 ("Agencies, like legislatures, do not generally resolve massive problems in one fell regulatory swoop. They instead whittle away at them over time, refining their preferred approach as circumstances change and as they develop a more nuanced understanding of how best to proceed.").

Although EPA has not yet done precisely what plaintiffs demand here (*i.e.*, cap defendants' carbon-dioxide emissions and require them to be reduced annually for at least a decade, J.A. 110, 153), that is not the relevant test. As this Court has stated: "Demanding specific regulations of general applicability before concluding that Congress has addressed the problem to the exclusion of federal common law asks the wrong question. The question is whether the field has been occupied, not whether it has been occupied in a particular manner." *Milwaukee II*, 451 U.S. at 324; see also *id.* at 323 ("Although a federal court may disagree with the regulatory approach taken by the agency with responsibility for issuing permits under the Act, such disagreement alone is no basis for the creation of federal common law.");

Illinois v. *Outboard Marine Corp.*, 680 F.2d 473, 478 (7th Cir. 1982) (refusing "to find that Congress has not 'addressed the question' because it has not enacted a remedy against polluters," because that "would be no different from holding that the solution Congress chose is not adequate," and "*Milwaukee II* * * * precludes the courts from scrutinizing the sufficiency of the congressional solution").

Because EPA's regulatory activities speak directly to the issue of greenhouse-gas emissions, any common-law claims seeking to reduce such emissions have been displaced.

CONCLUSION

The judgment of the court of appeals should be reversed.

Respectfully submitted.

NEAL KUMAR KATYAL
Acting Solicitor General
IGNACIA S. MORENO
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Deputy Solicitor General
ETHAN G. SHENKMAN
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Tennessee Valley Authority

JANUARY 2011

01268-EPA-5543

David McIntosh/DC/USEPA/US
02/01/2011 10:39 AM

To Scott Fulton
cc "Bob Sussman", "Michael Goo", "Richard Windsor", "Bob Perciasepe", oster.seth
bcc
Subject Re: Fw: As-Filed Brief in American Electric Power

Thanks Scott. Immediately below I've pasted a series of short excerpts from the Federal Government's brief. [redacted] (b) (5) Deliberative [redacted]

a "previously available federal common-law action" will be "displaced" whenever a "scheme established by Congress addresses the problem formerly governed by federal common law."

Here, regulatory actions that EPA has taken pursuant to its authority under the CAA—largely after the court of appeals' decision in this case—meet that test and have displaced any common-law nuisance claims that plaintiffs might once have had.

Petitioners contend (Pet. 21) that Congress's enactment of the CAA was itself sufficient to displace plaintiffs' common-law claims, without regard to any regulatory actions that EPA has taken pursuant to the CAA.

The terms of the CAA … impose few restrictions on the emissions of air pollutants in the absence of regulations promulgated by EPA. This case, however, does not involve the mere enactment of the CAA.

Exercising its regulatory authority under the CAA, EPA has directly entered the field plaintiffs would have governed by common-law nuisance suits. Since January 2, 2011, greenhouse gases have been subject to regulation under the CAA, and EPA is actively exercising its judgment and statutory discretion to determine when and how emissions from different categories of sources of greenhouse gases will be regulated.

In the wake of this Court's decision in *Massachusetts* v. *EPA*, the agency has taken several significant actions to address greenhouse-gas emissions.

In another significant step indicating EPA's active engagement in the process of determining how and when greenhouse-gas emissions will be regulated, EPA announced on December 23, 2010 that it had entered into a proposed settlement agreement in an earlier case about whether the new source performance standards (NSPS) for utility boilers (*i.e.*, power plants like defendants') should include standards for greenhouse-gas emissions. That proposed settlement (which was subject to a 30-day public-comment period that expired on January 31, 2011, see 75 Fed. Reg. at 82,392) would commit EPA to complete a NSPS rulemaking under Section 111 of the CAA (42 U.S.C. 7411). If the settlement is adopted by EPA, the purpose of the ensuing rulemaking would be to consider standards applicable to new and modified facilities; it would simultaneously consider standards under which States would be required (under 42 U.S.C. 7411(d)) to impose regulatory limitations on emissions from *existing* facilities. See p. 4, *supra*. Under the settlement, EPA would issue a proposed rule by July 26, 2011 and promulgate final regulations by May 26, 2012. Thus, if the settlement is formally adopted, EPA will have established a precise time line for deciding whether and to what extent emissions standards

under the CAA will apply to the very carbon-dioxide emissions at issue in this case.

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-----Scott Fulton/DC/USEPA/US wrote: -----

To: "David McIntosh" <McIntosh.David@epamail.epa.gov>, "Bob Sussman" <Sussman.Bob@epamail.epa.gov>, "Michael Goo" <Goo.Michael@epamail.epa.gov>
From: Scott Fulton/DC/USEPA/US
Date: 02/01/2011 10:05AM
Cc: "Richard Windsor" <Windsor.Richard@epamail.epa.gov>, "Bob Perciasepe" <Perciasepe.Bob@epamail.epa.gov>, oster.seth@epa.gov
Subject: Fw: As-Filed Brief in American Electric Power

Here's the brief that was filed by the SG on behalf of TVA. [redacted] Ex.5 - Deliberative

From: "Gannon, Curtis (SMO)" [Curtis.Gannon@usdoj.gov]
Sent: 01/31/2011 04:50 PM EST
To: "'Rodgers, Ralph E'" <rerodgers@tva.gov>; "'Cooper, Harriet A'" <hacooper@tva.gov>; "'Gillen, Maria Victoria'" <mvgillen@tva.gov>; "Maginnis, Joan" <jmaginnis@doc.gov>; "'Palfrey, Quentin'" <QPalfrey@doc.gov>; Scott Fulton; Avi Garbow; Sonja Rodman; "'Guzy, Gary S.'" <(b) (6) "'Rachel.Jacobson@sol.doi.gov'" <Rachel.Jacobson@sol.doi.gov>; "'Adell.amos@sol.doi.gov'" <Adell.amos@sol.doi.gov>; "'Gregory.woods@dot.gov'" <Gregory.woods@dot.gov>; "'Koh, Harold Hongju'" <KohHH@state.gov>; "'kleinjm@state.gov'" <kleinjm@state.gov>; "Townley, Stephen G" <TownleySG@state.gov>; "'leslie.lagomarcino@ogc.usda.gov'" <leslie.lagomarcino@ogc.usda.gov>; "'timothy.lynch@hq.doe.gov'" <timothy.lynch@hq.doe.gov>; "'alcides.ortiz@osd.mil'" <alcides.ortiz@osd.mil>; "Shenkman, Ethan (ENRD)" <Ethan.Shenkman@usdoj.gov>; "Kilbourne, Jim (ENRD)" <Jim.Kilbourne@usdoj.gov>; "Jones, Lisa (ENRD)" <Lisa.Jones@usdoj.gov>; "Pidot, Justin (ENRD)" <Justin.Pidot@usdoj.gov>; "Letter, Douglas (CIV)" <Douglas.Letter@usdoj.gov>; "Byron, H. Thomas (CIV)" <H.Thomas.Byron@usdoj.gov>; "Weiner, Robert (ODAG)" <Robert.Weiner@usdoj.gov>
Cc: "Katyal, Neal (SMO)" <Neal.Katyal@usdoj.gov>; "Kneedler, Edwin S (SMO)" <Edwin.S.Kneedler@usdoj.gov>
Subject: As-Filed Brief in American Electric Power

This attachment is the brief that we have just filed and served in *American Electric Power* .

Thank you again for all of your helpful comments on the drafts that we circulated.

Curtis

Curtis E. Gannon
Assistant to the Solicitor General
U.S. Department of Justice
950 Pennsylvania Ave., N.W., Room 5636
Washington, DC 20530
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[attachment "10-174tsRespondentTVA.pdf" removed by David McIntosh/DC/USEPA/US]

01268-EPA-5544

Diane Thompson/DC/USEPA/US
02/07/2011 09:51 AM

To Richard Windsor, Bob Perciasepe
cc Seth Oster, Aaron Dickerson
bcc
Subject Fw: remarks at good jobs, green jobs conf next week

FYI

****
Diane E. Thompson
Chief of Staff
U. S. Environmental Protection Agency
202-564-6999
----- Forwarded by Diane Thompson/DC/USEPA/US on 02/07/2011 09:50 AM -----

From: "Greenawalt, Andrei" <(b) (6)
To: Diane Thompson/DC/USEPA/US@EPA, Daniel Kanninen/DC/USEPA/US@EPA, Seth Oster/DC/USEPA/US@EPA, 'Rod O'Connor' <Rod.Oconnor@hq.doe.gov>, "'Hurlbut, Brandon'" <Brandon.Hurlbut@hq.doe.gov>, "Owens, Missy" <Missy.Owens@hq.doe.gov>, "Leistikow, Dan" <Dan.Leistikow@hq.doe.gov>, "'joan.deboer@dot.gov'" <joan.deboer@dot.gov>, "'kathryn.thomson@dot.gov'" <kathryn.thomson@dot.gov>, "jill.zuckman@dot.gov" <jill.zuckman@dot.gov>
Cc: "Zichal, Heather R." <(b) (6) "Stevens, Clark" <(b) (6) "Boots, Michael J." <(b) (6)
Date: 02/04/2011 06:30 PM
Subject: remarks at good jobs, green jobs conf next week

Administrator Jackson, Secretary LaHood, and Secretary Chu are I believe all speaking next week at the Good Jobs, Green Jobs conference here in DC. Ex.5 - Deliberative

Thanks very much and let me know if you have any questions.

Ex.5 - Deliberative

[redacted]

Ex.5 - Deliberative

SOTU factsheet CES.PDF SOTU Factsheet Clean Energy R+D.PDF EV Final Factsheet.pdf Better_Buildings_factsheet.pdf

01268-EPA-5545

Richard Windsor/DC/USEPA/US
02/07/2011 09:44 PM

To "Pete Rouse"
cc
bcc
Subject Fw: Murkowski & Begich response to Bristol Bay EPA review positive

Hi Pete. Hope all is well. Thought I would forward this as an FYI given your personal interest in Alaska issues. Lisa

---

From: Bob Perciasepe
Sent: 02/07/2011 09:40 PM EST
To: Richard Windsor; "Diane Thompson" <thompson.diane@epa.gov>; Bob Sussman; Arvin Ganesan; David McIntosh; Seth Oster; Betsaida Alcantara
Subject: Murkowski & Begich response to Bristol Bay EPA review positive

All:

Kelly Harrell, Executive Director of the Alaska Marine Conservation Council sent these to me. I trust you have all seen these from our internal sources, but I haven't seen until now. There has also been good response from the conservation folks. I spoke with NWF, Trout, Ducks and Audubon earlier. Good work all around, especially this personal effort from Administrator.

Bob P

February 7, 2011

Begich Responds to EPA Review of Large-Scale Development Projects

Begich Responds to EPA Review of Large -Scale Development Projects

U.S. Sen. Mark Begich today issued the following statement after the Environmental Protection Agency (EPA) announced it will review the suitability of large-scale development projects in the Bristol Bay watershed.

“I’ve long said that decisions about large-scale development such as the Pebble Mine must be based on sound science and not people’s fears. I’m pleased the EPA agreed with me not to use its preemptive ‘veto’ authority in the Clean Water Act in favor of a process that will inform the debate over this project.

“I still want to see more details about this process and how it will proceed. As I told Administrator Lisa Jackson this morning, I hope for a fully transparent process, that invites all sides to the table and involves all the affected stakeholders including fishing groups, tribes, Alaska Native Corporations and local communities. I also want to ensure this is a thorough and robust vetting of the issues involved and not just a bureaucratic exercise.

“Bristol Bay is one of Alaska’s most valuable resources and any proposed development within its watershed deserves no less than a rigorous review.”

http://begich.senate.gov/public/index.cfm?p=InNews&ContentRecord_id=963bd403-a9e8-4cea-985f-5ae29ce80773

Murkowski Welcomes EPA Decision to Study Bristol Bay Watershed

WASHINGTON, D.C. – U.S. Sen. Lisa Murkowski, R-Alaska, today commended Environmental Protection Agency officials on their decision to assess the potential impacts of mining and other development projects on the Bristol Bay watershed.

“The EPA’s decision to withhold judgment on the potential environmental impact of projects, like the Pebble Mine, until all the scientific information has been collected and analyzed is a prudent decision,” Murkowski said.

Opponents of the Pebble Mine last year petitioned the EPA to preemptively block the development. EPA Administrator Lisa Jackson called Murkowski today to tell her the agency was instead commissioning further study of the region.

Murkowski, the ranking member of the Senate Energy and Natural Resources Committee and the Interior Appropriations Subcommittee, said the agency’s pronouncement is in keeping with President Obama’s pledge to base his administration’s decisions on the best available science.

“I am committed to letting the science decide whether mining is right for the Bristol Bay region, but any attempt to prejudge a project before the environmental work is finished would be a troubling signal, as well as a clear violation of the environmental review process,” Murkowski said.

Pebble, located in Southwest Alaska to the north of Lake Iliamna, is one of the largest prospects for copper, gold, molybdenum and silver in the world. The companies working on the mine proposal have invested more than $100 million in research, studies and field work in preparation to begin applying for the necessary environmental permits in 2011 or 2012.

Bristol Bay is also home to the world’s largest sockeye salmon fishery, and it is because of the fishery’s importance to the state’s economy and the traditional subsistence activities of local residents that Murkowski has reserved judgment on whether mining should occur until the environmental assessment is completed.

“I remain staunchly committed to protecting the health of the Bristol Bay watershed, but fishing and subsistence alone are not enough to ensure the survival of many of our smallest communities,” Murkowski said. “I will not trade fish for minerals, but I believe that companies willing to invest in our region deserve to be given a fair shake to present their proposals.”

Murkowski told Jackson that she hopes this decision will start the process of improving communication between Alaska officials and the EPA on a host of issues, including Shell’s air permit for its Beaufort Sea exploration plan, Healy coal, ConocoPhillips’ CD-5 oil field and marine air pollution issues.

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http://murkowski.senate.gov/public/index.cfm?p=PressReleases&ContentRecord_id=edafaf75-fd32-474a-8da2-9ece1aebe5b3

01268-EPA-5546

"Rouse, Peter M." <(b) (6) ov>
02/08/2011 07:22 AM

To Richard Windsor
cc
bcc
Subject RE: Murkowski & Begich response to Bristol Bay EPA review positive

Good job. Thanks.

From: Windsor.Richard@epamail.epa.gov [mailto:Windsor.Richard@epamail.epa.gov]
Sent: Monday, February 07, 2011 9:45 PM
To: Rouse, Peter M.
Subject: Fw: Murkowski & Begich response to Bristol Bay EPA review positive

Hi Pete. Hope all is well. Thought I would forward this as an FYI given your personal interest in Alaska issues. Lisa

---

From: Bob Perciasepe
Sent: 02/07/2011 09:40 PM EST
To: Richard Windsor; "Diane Thompson" <thompson.diane@epa.gov>; Bob Sussman; Arvin Ganesan; David McIntosh; Seth Oster; Betsaida Alcantara
Subject: Murkowski & Begich response to Bristol Bay EPA review positive

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"I still want to see more details about this process and how it will proceed. As I told Administrator Lisa Jackson this morning, I hope for a fully transparent process, that invites all sides to the table and involves all the affected stakeholders including fishing groups, tribes, Alaska Native Corporations and local communities. I also want to ensure this is a thorough and robust vetting of the issues involved and not just a bureaucratic exercise.

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http://begich.senate.gov/public/index.cfm?p=InNews&ContentRecord_id=963bd403-a9e8-4cea-985f-5ae29ce80773

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# # #

http://murkowski.senate.gov/public/index.cfm?p=PressReleases&ContentRecord_id=edafaf75-fd32-474a-8da2-9ece1aebe5b3

01268-EPA-5547

Bob Sussman/DC/USEPA/US
02/08/2011 04:41 PM

To Richard Windsor
cc
bcc
Subject Fw: request from the Chair

Ex.5 - Deliberative

Robert M. Sussman
Senior Policy Counsel to the Administrator
Office of the Administrator
(202)-564-7397
US Environmental Protection Agency
----- Forwarded by Bob Sussman/DC/USEPA/US on 02/08/2011 04:41 PM -----

From: "Karimjee, Anhar H." <(b) (6)
To: Bob Sussman/DC/USEPA/US@EPA
Date: 02/08/2011 03:28 PM
Subject: request from the Chair

Hi Bob,
Hope you're doing well. Ex.5 - Deliberative

I wanted to touch base with you 1st to see if you guys want to set it up or if we should organize it and keep you in the loop. Let me know your preference.
Thanks,
Anhar

Anhar Karimjee
Deputy Associate Director for Energy and Climate Change
White House Council on Environmental Quality
p: (b) (6) | (b) (6) | (b) (6)

01268-EPA-5548

Richard Windsor/DC/USEPA/US
02/08/2011 04:53 PM

To Bob Sussman
cc
bcc
Subject Re: request from the Chair

Ex.5 - Deliberative

Bob Sussman

----- Original Message -----
From: Bob Sussman
Sent: 02/08/2011 04:41 PM EST
To: Richard Windsor
Subject: Fw: request from the Chair

Ex.5 - Deliberative

Robert M. Sussman
Senior Policy Counsel to the Administrator
Office of the Administrator
(202)-564-7397
US Environmental Protection Agency
----- Forwarded by Bob Sussman/DC/USEPA/US on 02/08/2011 04:41 PM -----

From: "Karimjee, Anhar H." <Anhar_H._Karimjee@ceq.eop.gov>
To: Bob Sussman/DC/USEPA/US@EPA
Date: 02/08/2011 03:28 PM
Subject: request from the Chair

Hi Bob,
Hope you're doing well. Ex.5 - Deliberative

I wanted to touch base with you 1st to see if you guys want to set it up or if we should organize it and keep you in the loop. Let me know your preference.
Thanks,
Anhar

Anhar Karimjee
Deputy Associate Director for Energy and Climate Change
White House Council on Environmental Quality
p: (b) (6) | f: 202.456.2710 | (b) (6)

01268-EPA-5549

Seth Oster/DC/USEPA/US
02/09/2011 02:19 PM

To "Lisa Jackson"
cc David McIntosh
bcc
Subject Fw: Draft

Administrator -- the blog below is going up on the WH site shortly from Heather. [redacted] Ex.5 - Deliberative

Seth

From: "Stevens, Clark" [redacted] (b) (6)
Sent: 02/09/2011 02:09 PM EST
To: Seth Oster
Subject: Draft

FYI – Let me know if you have any concerns here.

So What Does the Clean Air Act Do?

Posted by Heather Zichal on February 09, 2011

Today, EPA Administrator Lisa Jackson testified before the House Energy and Commerce Committee. In her testimony the Administrator highlighted the agency's ongoing efforts to develop sensible standards that update the Clean Air Act, while ensuring that the landmark law continues to provide Americans the protections from dangerous pollution that they deserve. These reasonable steps will ensure that the air our children breath and the water they drink is safe, while also providing certainty to American businesses.

Despite these pragmatic steps to implement long overdue updates, big polluters are trying to gut the Clean Air Act by asking Congress to carve out special loopholes from air pollution standards.

The Clean Air Act gives the Environmental Protection Agency the necessary tools to protect our families from mercury, arsenic, smog, particulates and carbon dioxide that can cause asthma and lung disease – especially in children. Weakening these standards would allow more pollution in the air we breathe and threaten our children's health. We thought it might be helpful to refresh everyone on how this landmark law affects our country and protects our health.

- **160,000 Lives Saved Last Year**
  In the year 2010 alone, clean air regulations are estimated to have saved over 160,000 lives.

- **More than 100,000 Hospital Visits Avoided Last Year**
  In 2010, clean air standards prevented millions of cases of respiratory problems, including bronchitis and asthma. It enhanced productivity by preventing millions of lost workdays, and kept kids healthy and in school, avoiding millions of lost school days due to respiratory illness and other diseases caused or exacerbated by air pollution.

- **60% Less Pollution in Our Air, Strong Economic Growth and Lower Electricity**

Prices
Since 1970, the Clean Air Act has reduced key air pollutants that cause smog and particulate pollution by more than 60%. At the same time the economy more than tripled. And Since the Clean Air Act Amendments in 1990, electricity production is up and prices are down. In 2009, electric utilities delivered 33 percent more electricity to U.S. households and businesses than in 1990, while nationwide electricity prices were 10 percent lower.

- **Benefits Far Out Weigh Costs**
  Over its forty-year span, the benefits of the Clean Air Act – in the form of longer lives, healthier kids, greater workforce productivity, and ecosystem protections – outweigh the costs by more than 30 to 1.

Heather Zichal is Deputy Assistant to the President for Energy and Climate Change

01268-EPA-5550

Richard Windsor/DC/USEPA/US
02/09/2011 02:26 PM

To Seth Oster, "Lisa Jackson"
cc David McIntosh
bcc
Subject Re: Draft

Tx

From: Seth Oster
Sent: 02/09/2011 02:19 PM EST
To: "Lisa Jackson" <windsor richard@epa.gov>
Cc: David McIntosh
Subject: Fw: Draft

Administrator -- the blog below is going up on the WH site shortly from Heather. [redacted] Ex.5 - Deliberative

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From: "Stevens, Clark" [redacted] (b) (6)
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Heather Zichal is Deputy Assistant to the President for Energy and Climate Change

01268-EPA-5551

David McIntosh/DC/USEPA/US
02/10/2011 10:29 AM

To Richard Windsor
cc "Seth Oster", Michael Goo, Bicky Corman
bcc
Subject Fw: RE: Headline: 'Massive' Closures of U.S. Coal Plants Loom, Chu Says

Hi Administrator. [redacted] Ex.5 - Deliberative [redacted]

-----Forwarded by David McIntosh/DC/USEPA/US on 02/10/2011 10:22AM -----

To: David McIntosh/DC/USEPA/US@EPA
From: "Utech, Dan G." <[redacted] (b) (6)
Date: 02/10/2011 10:09AM
Subject: RE: Headline: 'Massive' Closures of U.S. Coal Plants Loom, Chu Says

We're working w/ DOE on this.

-----Original Message-----
From: McIntosh.David@epamail.epa.gov [mailto:McIntosh.David@epamail.epa.gov]
Sent: Thursday, February 10, 2011 8:59 AM
To: Utech, Dan G.; Heimbach, Jay; [redacted] (b) (6) Papa, Jim
Subject: Headline: 'Massive' Closures of U.S. Coal Plants Loom, Chu Says

Headline: 'Massive' Closures of U.S. Coal Plants Loom, Chu Says | << image 1 >><http://news.vocus.com/click/here.pl?z4034475262&z=1250248928>>< image 2 >><mailto:?subject=News Forwarded: 'Massive' Closures of U.S. Coal Plants Loom, Chu Says...&body='Massive' Closures of U.S. Coal Plants Loom, Chu Says%0A02/09/2011%0ANewsMax - Online%0A%0AFeb. 9 (Bloomberg) -- The U.S. has an aging inventory of coal-fired power plants and many units might be closed before the end of the decade, Energy Secretary Steven Chu said.''We're going to see massive retirements within the next five, eight years,'' C...%0A%0ALink: http://news.vocus.com/click/here.pl?z4034475262&z=1250248928>

Outlet Full Name: NewsMax - Online
News OCR Text: Feb. 9 (Bloomberg) -- The U.S. has an aging inventory of coal-fired power plants and many units might be closed before the end of the decade, Energy Secretary Steven Chu said.

"We're going to see massive retirements within the next five, eight years," Chu said today at a renewable-energy conference in Washington. "Much of our fleet of coal plants is 40 to 50 years old."

President Barack Obama said last month the U.S. should eliminate tax subsidies for fossil-fuel production worth $4 billion a year so it can boost spending on renewable energy and cars that run on alternative fuels, such as electricity.

The U.S. also should require that 80 percent of its electricity comes from "clean" sources, such as wind turbines and nuclear reactors, by 2035, Obama said. Only coal-fired power plants that capture and store their carbon-dioxide emissions would be considered clean under Obama's proposed standard.

“Clean-coal” equipment isn't yet available for large power plants, said Chu, whose Energy Department is funding research into the technology.

The U.S. had 314 gigawatts of coal-fired generating capacity last year, which provided almost half the nation's electricity, according to the Energy Information Administration. One gigawatt of coal-fired capacity can power more than 500,000 average U.S. homes, according to EIA data.

Mercury, Acid Rain

Regulations targeting mercury pollution and chemicals that cause acid rain and smog would trigger the coal-plant closures, not new rules from the Environmental Protection Agency on carbon dioxide and other greenhouse gases linked to climate change or Obama's proposed clean-energy standard, Chu said. He declined to say how many gigawatts of coal capacity face closure.

The EIA predicts plants with 7.7 gigawatts of capacity will close by 2018. Cambridge, Massachusetts-based The Brattle Group, a consulting firm, said in December that 50 to 65 gigawatts of capacity may be closed by 2020 because of environmental regulations. Analysts at Zurich-based bank Credit Suisse Group AG said in September that about 60 gigawatts of coal capacity may be retired.

If Congress approves Obama's clean-energy standard, coal's share of the U.S. electricity market “will shrink a little bit until we develop those technologies that would use coal in a clean way,” Chu said. Nuclear reactors, natural gas-fired plants and renewable sources such as wind turbines and solar panels would expand to make up lost output from coal, he said.

It's likely “smaller, older units” that burn coal “won't be economic under new clean air standards,” said Luke Popovich, a spokesman for the Washington-based National Mining Association, which represents coal mining companies such as Consol Energy Inc. and Peabody Energy Corp.

New coal-fired plants with better pollution controls can be built to replace the closed units while carbon-capture technology is developed, Popovich said in an e-mail.

--Editors: Steve Geimann, John Lear

01268-EPA-5552

Richard Windsor/DC/USEPA/US
02/10/2011 10:43 AM

To David McIntosh, "Gina (Sheila) McCarthy"
cc Seth Oster, Michael Goo, Bicky Corman
bcc
Subject Re: RE: Headline: 'Massive' Closures of U.S. Coal Plants Loom, Chu Says

Tx

From: David McIntosh
Sent: 02/10/2011 10:29 AM EST
To: Richard Windsor
Cc: Seth Oster; Michael Goo; Bicky Corman
Subject: Fw: RE: Headline: 'Massive' Closures of U.S. Coal Plants Loom, Chu Says

Hi Administrator. [redacted] Ex.5 - Deliberative [redacted]

-----Forwarded by David McIntosh/DC/USEPA/US on 02/10/2011 10:22AM -----

To: David McIntosh/DC/USEPA/US@EPA
From: "Utech, Dan G." <[redacted] (b) (6)
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--Editors: Steve Geimann, John Lear

01268-EPA-5553

Gina McCarthy/DC/USEPA/US

02/11/2011 07:23 PM

To Richard Windsor
cc "David McIntosh", "Seth Oster"
bcc
Subject Fw: Boiler MACT

Administrator - [redacted] Ex.5 - Deliberative [redacted]

From: "Milakofsky, Ben" [redacted] (b) (6)
Sent: 02/11/2011 07:09 PM EST
To: Gina McCarthy
Cc: "Greenawalt, Andrei" <[redacted] (b) (6)
Subject: Boiler MACT

Gina,

Hope all is well. The WH is pulling together a senior level meeting to discuss the rollout of Boiler MACT on Monday. The time is shuffling around a bit but will either be at 4 or 5:30 p.m. on Monday in the White House. Right now its set for 4 p.m.

Heather Zichal thought it would be helpful to have you brief the group at the beginning. Are you available to join the beginning of this meeting?

If so, please send your full name, dob, and ssn and I can clear you in.

Thanks so much and have a nice weekend.

-Ben

Ben Milakofsky
White House Cabinet Affairs
Assistant Director
[redacted] (b) (6) (direct)
[redacted] (b) (6) (cell)
[redacted] (b) (6)

01268-EPA-5554

Richard Windsor/DC/USEPA/US
02/11/2011 08:29 PM

To Gina McCarthy
cc "David McIntosh", "Seth Oster", "Bob Perciasepe"
bcc
Subject Re: Boiler MACT

[redacted] Ex.5 - Deliberative

From: Gina McCarthy
Sent: 02/11/2011 07:23 PM EST
To: Richard Windsor
Cc: "David McIntosh" <McIntosh.David@EPA.GOV>; "Seth Oster" <oster.seth@epa.gov>
Subject: Fw: Boiler MACT

Administrator - [redacted] Ex.5 - Deliberative

From: "Milakofsky, Ben" [redacted] (b) (6)
Sent: 02/11/2011 07:09 PM EST
To: Gina McCarthy
Cc: "Greenawalt, Andrei" <[redacted] (b) (6)
Subject: Boiler MACT

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Ben Milakofsky
White House Cabinet Affairs
Assistant Director
[redacted] (b) (6) (direct)
[redacted] (b) (6) (cell)
[redacted] (b) (6)

01268-EPA-5555

Gina McCarthy/DC/USEPA/US

02/11/2011 09:54 PM

To Richard Windsor
cc "David McIntosh", "Seth Oster", "Bob Perciasepe"
bcc
Subject Re: Boiler MACT

[redacted] Ex.5 - Deliberative

From: Richard Windsor
Sent: 02/11/2011 08:29 PM EST
To: Gina McCarthy
Cc: "David McIntosh" <mcintosh.david@epa.gov>; "Seth Oster" <oster.seth@epa.gov>; "Bob Perciasepe" <perciasepe.bob@epa.gov>
Subject: Re: Boiler MACT

[redacted] Ex.5 - Deliberative it?

From: Gina McCarthy
Sent: 02/11/2011 07:23 PM EST
To: Richard Windsor
Cc: "David McIntosh" <McIntosh.David@EPA.GOV>; "Seth Oster" <oster.seth@epa.gov>
Subject: Fw: Boiler MACT

Administrator - [redacted] Ex.5 - Deliberative

From: "Milakofsky, Ben" [redacted] (b) (6)
Sent: 02/11/2011 07:09 PM EST
To: Gina McCarthy
Cc: "Greenawalt, Andrei" <[redacted] (b) (6)
Subject: Boiler MACT

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Ben Milakofsky
White House Cabinet Affairs
Assistant Director
(b) (6) (direct)
(b) (6) (cell)
(b) (6)

01268-EPA-5556

Richard Windsor/DC/USEPA/US
02/12/2011 07:36 AM

To Gina McCarthy
cc "David McIntosh", "Seth Oster", "Bob Perciasepe"
bcc
Subject Re: Boiler MACT

Yup

From: Gina McCarthy
Sent: 02/11/2011 09:54 PM EST
To: Richard Windsor
Cc: "David McIntosh" <McIntosh.David@EPA.GOV>; "Seth Oster" <oster.seth@epa.gov>; "Bob Perciasepe" <perciasepe.bob@epa.gov>
Subject: Re: Boiler MACT

[redacted] Ex.5 - Deliberative

From: Richard Windsor
Sent: 02/11/2011 08:29 PM EST
To: Gina McCarthy
Cc: "David McIntosh" <mcintosh.david@epa.gov>; "Seth Oster" <oster.seth@epa.gov>; "Bob Perciasepe" <perciasepe.bob@epa.gov>
Subject: Re: Boiler MACT

[redacted] Ex.5 - Deliberative

From: Gina McCarthy
Sent: 02/11/2011 07:23 PM EST
To: Richard Windsor
Cc: "David McIntosh" <McIntosh.David@EPA.GOV>; "Seth Oster" <oster.seth@epa.gov>
Subject: Fw: Boiler MACT

Administrator - [redacted] Ex.5 - Deliberative

From: "Milakofsky, Ben" [redacted] (b) (6)
Sent: 02/11/2011 07:09 PM EST
To: Gina McCarthy
Cc: "Greenawalt, Andrei" <[redacted] (b) (6)
Subject: Boiler MACT

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Ben Milakofsky
White House Cabinet Affairs
Assistant Director
(b) (6) (direct)
(b) (6) (cell)
(b) (6) v

01268-EPA-5557

Bob Perciasepe/DC/USEPA/US
02/12/2011 09:28 AM

To Richard Windsor
cc Gina McCarthy, "David McIntosh", "Seth Oster", "Bob Perciasepe"
bcc
Subject Re: Boiler MACT

Gina:

[redacted] Ex.5 - Deliberative

[redacted]

Bob

-----Richard Windsor/DC/USEPA/US wrote: -----

To: Gina McCarthy/DC/USEPA/US@EPA
From: Richard Windsor/DC/USEPA/US
Date: 02/12/2011 07:36AM
Cc: "David McIntosh" <mcintosh.david@epa.gov>, "Seth Oster" <oster.seth@epa.gov>, "Bob Perciasepe" <perciasepe.bob@epa.gov>
Subject: Re: Boiler MACT

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From: Gina McCarthy
Sent: 02/11/2011 09:54 PM EST
To: Richard Windsor
Cc: "David McIntosh" <McIntosh.David@EPA.GOV>; "Seth Oster" <oster.seth@epa.gov>; "Bob Perciasepe" <perciasepe.bob@epa.gov>
Subject: Re: Boiler MACT

[redacted] Ex.5 - Deliberative

From: Richard Windsor
Sent: 02/11/2011 08:29 PM EST

To: Gina McCarthy
Cc: "David McIntosh" <mcintosh.david@epa.gov>; "Seth Oster" <oster.seth@epa.gov>; "Bob Perciasepe" <perciasepe.bob@epa.gov>
Subject: Re: Boiler MACT

I think we can only brief the WH if the rollout plan is near final. How far along is it?

From: Gina McCarthy
Sent: 02/11/2011 07:23 PM EST
To: Richard Windsor
Cc: "David McIntosh" <McIntosh.David@EPA.GOV>; "Seth Oster" <oster.seth@epa.gov>
Subject: Fw: Boiler MACT

Administrator - [redacted] Ex.5 - Deliberative [redacted]

From: "Milakofsky, Ben" [redacted] (b) (6)
Sent: 02/11/2011 07:09 PM EST
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-Ben

Ben Milakofsky

White House Cabinet Affairs

Assistant Director

(b) (6) (direct)

(b) (6) (cell)

(b) (6)

01268-EPA-5558

Gina McCarthy/DC/USEPA/US

02/13/2011 09:35 AM

To Richard Windsor, "Seth Oster", "David McIntosh", "Bob Perciasepe"

cc

bcc

Subject Fw: Boiler mact update

(b) (5)

[redacted]

----- Original Message -----
From: "Zichal, Heather R." [(b) (6)]
Sent: 02/13/2011 06:25 AM EST
To: Gina McCarthy
Subject: Re: Boiler mact update

Sorry for delayed response.

Ex.5 - Deliberative

[redacted]

[redacted]

----- Original Message -----
From: McCarthy.Gina@epamail.epa.gov <McCarthy.Gina@epamail.epa.gov>
To: Zichal, Heather R.
Sent: Sat Feb 12 15:18:35 2011
Subject: Boiler mact update

Ex.5 - Deliberative

[redacted]

01268-EPA-5559

"Sunstein, Cass R." <(b) (6) .gov>
02/14/2011 08:57 AM

To Richard Windsor
cc
bcc
Subject interesting article

You undoubtedly know about this, but maybe worth a quick glance? (Ex.5 - Deliberative [redacted] All best

-- Cass

morgenstern pizer and shih 2002 JEEM.PDF

01268-EPA-5560

Heidi Ellis/DC/USEPA/US
02/15/2011 05:50 PM

To ellis.heidi
cc
bcc Richard Windsor
Subject Wednesday, February 16, 2011 Schedule for Lisa P. Jackson

*** do not copy or forward this information ***

Schedule for Lisa P. Jackson EPA Administrator
Wednesday, February 16, 2011

Notes:

Drivers | Shift Leaders (b) (6), (b) (7)(F) | Staff Contact Heidi Ellis 202-355-5212

08:45 AM - 09:15 AM	Administrator's Office	Daily Meeting
09:30 AM - 09:50 AM	Administrator's Office	1 on 1 with Paul Anastas Ct: Nathan Gentry 564-9084 Staff: Paul Anastas (ORD) Optional: Diane Thompson, Bob Perciasepe, Bob Sussman (OA)
10:15 AM - 11:00 AM	Administrator's Office	Update on Semi-Conductor Industry Issues Cindy Huang - 202-564-1850 Staff: Gina McCarthy, Janet McCabe, Joseph Goffman, Anna Wood, Elliot Zenick (OAR) Steve Page, Michael Ling (OAQPS) Scott Fulton, Avi Garbow (OGC) Optional: Diane Thompson, Bob Perciasepe, Bob Sussman (OA)
11:00 AM - 11:20 AM	Administrator's Office	1 on 1 with Cynthia Giles Ct: Linda Huffman - 202-564-3139 Staff: Cynthia Giles (OECA) Optional: Diane Thompson, Bob Sussman, Bob Perciasepe (OA)
11:30 AM - 12:00 PM	Administrator's Office	Meeting on Boiler MACT Chris Busch - 202-250-8798

		Staff: Bob Perciasepe, Bob Sussman, Jose Lozano, Diane Thompson (OA) Gina McCarthy (OAR) Mathy Stanislaus (OSWER) Scott Fulton (OGC) Seth Oster, Brendan Gilfillan, Stephanie Owens (OEAEE)
12:00 PM - 12:45 PM	Administrator's Office	No Meetings
12:45 PM - 01:00 PM	Ariel Rios	Depart for the WH
01:00 PM - 01:30 PM	WH - West Wing	Meeting with Melody Barnes Ct: Allison Zelman - (b) (6)
01:45 PM - 02:00 PM	White House	Depart for DOI
02:00 PM - 03:00 PM	Department of Interior Building Auditorium of the South Interior Buidling	AGO Reception at DOI *The Administrator may attend this reception. Other attendees: Secretary Vilsack (USDA) -- will arrive at 2:15 PM Secretary Salazar (DOI) Chair Sutley (CEQ)
03:00 PM - 03:15 PM	DOI	Depart for TBD
03:15 PM - 03:30 PM	TBD	Depart for WH
03:30 PM - 05:00 PM	Bullet Room	FYI: Senior Policy Meeting *Bob Perciasepe will lead this meeting.
03:30 PM - 06:00 PM	East Room, White House	AGO Announcement **3:30 PM:** Gates open on cue by Social Office staff. -All Guests proceed to the State Floor. -Cabinet Affairs staff greets and escorts on-stage participants, Secretary Vilsack, Secretary Salazar, and Administrator Jackson to the Green Room. **4:20 PM:** Doors to the East Room are opened. Guests proceed to seats in the East Room. **4:40 PM:** POTUS proceeds to the Green Room. VIP clutch. **4:45 PM:** POTUS delivers remarks with TBD participants on stage behind him. **5:00 PM:** POTUS exits. **5:30 PM:** Stakeholder Call with all the principals.

01268-EPA-5561

Gina McCarthy/DC/USEPA/US

02/17/2011 12:17 PM

To Richard Windsor
cc "Seth Oster"
bcc
Subject Fw: Boiler MACT paper

(b) (5) [redacted]

From: "Cutter, Stephanie" [(b) (6) [redacted]
Sent: 02/17/2011 08:31 AM EST
To: Gina McCarthy
Cc: "Zichal, Heather R." <(b) (6) [redacted] "DeParle, Nancy-Ann M." <(b) (6) [redacted] "Stevens, Clark" <(b) (6) [redacted] "Lane, David" <(b) (6) [redacted]
Subject: Boiler MACT paper

(b) (5) [redacted]

Thank you!

01268-EPA-5562

Richard Windsor/DC/USEPA/US
02/17/2011 12:32 PM

To Gina McCarthy
cc "Seth Oster"
bcc
Subject Re: Fw: Boiler MACT paper

[redacted] Ex.5 - Deliberative [redacted]

Thanks, Lisa

Gina McCarthy Just wanted you to know I received this... 02/17/2011 12:17:45 PM

From: Gina McCarthy/DC/USEPA/US
To: Richard Windsor/DC/USEPA/US@EPA
Cc: "Seth Oster" <oster.seth@epa.gov>
Date: 02/17/2011 12:17 PM
Subject: Fw: Boiler MACT paper

(b) (5) [redacted]

From: "Cutter, Stephanie" [(b) (6)]
Sent: 02/17/2011 08:31 AM EST
To: Gina McCarthy
Cc: "Zichal, Heather R." <(b) (6)> "DeParle, Nancy-Ann M." <(b) (6)> "Stevens, Clark" <(b) (6)> "Lane, David" <(b) (6)>
Subject: Boiler MACT paper

(b) (5) [redacted]

Thank you!

01268-EPA-5563

Gina McCarthy/DC/USEPA/US

02/17/2011 12:39 PM

To Richard Windsor
cc "Seth Oster"
bcc
Subject Re: Fw: Boiler MACT paper

[redacted] Ex.5 - Deliberative

Richard Windsor

----- Original Message -----
From: Richard Windsor
Sent: 02/17/2011 12:32 PM EST
To: Gina McCarthy
Cc: "Seth Oster" <oster.seth@epa.gov>
Subject: Re: Fw: Boiler MACT paper

[redacted] Ex.5 - Deliberative

Gina McCarthy Just wanted you to know I received this... 02/17/2011 12:17:45 PM

From: Gina McCarthy/DC/USEPA/US
To: Richard Windsor/DC/USEPA/US@EPA
Cc: "Seth Oster" <oster.seth@epa.gov>
Date: 02/17/2011 12:17 PM
Subject: Fw: Boiler MACT paper

(b) (5) [redacted]

From: "Cutter, Stephanie" [(b) (6)]
Sent: 02/17/2011 08:31 AM EST
To: Gina McCarthy
Cc: "Zichal, Heather R." <(b) (6)> "DeParle, Nancy-Ann M." <(b) (6)> "Stevens, Clark" <(b) (6)> "Lane, David" <(b) (6)>
Subject: Boiler MACT paper

(b) (5) [redacted]

Thank you!

01268-EPA-5564

Richard Windsor/DC/USEPA/US
02/17/2011 12:44 PM

To Gina McCarthy
cc "Seth Oster"
bcc
Subject Re: Fw: Boiler MACT paper

(b) (5)

Gina McCarthy

----- Original Message -----
From: Gina McCarthy
Sent: 02/17/2011 12:39 PM EST
To: Richard Windsor
Cc: "Seth Oster" <oster.seth@epa.gov>
Subject: Re: Fw: Boiler MACT paper

(b) (5)

Richard Windsor

----- Original Message -----
From: Richard Windsor
Sent: 02/17/2011 12:32 PM EST
To: Gina McCarthy
Cc: "Seth Oster" <oster.seth@epa.gov>
Subject: Re: Fw: Boiler MACT paper

Ex.5 - Deliberative

Gina McCarthy Just wanted you to know I received this... 02/17/2011 12:17:45 PM

From: Gina McCarthy/DC/USEPA/US
To: Richard Windsor/DC/USEPA/US@EPA
Cc: "Seth Oster" <oster.seth@epa.gov>
Date: 02/17/2011 12:17 PM
Subject: Fw: Boiler MACT paper

(b) (5)

From: "Cutter, Stephanie" [(b) (6)
Sent: 02/17/2011 08:31 AM EST
To: Gina McCarthy
Cc: "Zichal, Heather R." <(b) (6) "DeParle, Nancy-Ann M." <(b) (6) "Stevens, Clark" <(b) (6) "Lane, David" <(b) (6)

Subject: Boiler MACT paper

(b) (5) [redacted]

Thank you!

01268-EPA-5565

Richard Windsor/DC/USEPA/US
02/17/2011 01:00 PM

To "Stephanie Cutter"
cc "Seth Oster"
bcc
Subject Boiler MACT Package

Hi Stephanie,

(b) (5) [redacted]

Thanks, Lisa

01268-EPA-5566

"Cutter, Stephanie"
<(b) (6)

02/17/2011 01:04 PM

To Richard Windsor
cc Seth Oster
bcc
Subject RE: Boiler MACT Package

Thanks, Lisa. (b) (5)

-----Original Message-----
From: Windsor.Richard@epamail.epa.gov [mailto:Windsor.Richard@epamail.epa.gov]
Sent: Thursday, February 17, 2011 1:01 PM
To: Cutter, Stephanie
Cc: Seth Oster
Subject: Boiler MACT Package

Hi Stephanie,

(b) (5)

Thanks, Lisa

01268-EPA-5567

Richard Windsor/DC/USEPA/US
02/17/2011 01:10 PM

To "Gina (Sheila) McCarthy"
cc
bcc
Subject Fw: Boiler MACT Package

Hey. (b) (5) [redacted]

----- Original Message -----
From: "Cutter, Stephanie" [(b) (6) [redacted]
Sent: 02/17/2011 01:04 PM EST
To: Richard Windsor
Cc: Seth Oster
Subject: RE: Boiler MACT Package

Thanks, Lisa. (b) (5) [redacted]

-----Original Message-----
From: Windsor.Richard@epamail.epa.gov [mailto:Windsor.Richard@epamail.epa.gov]
Sent: Thursday, February 17, 2011 1:01 PM
To: Cutter, Stephanie
Cc: Seth Oster
Subject: Boiler MACT Package

Hi Stephanie,

(b) (5) [redacted]

Thanks, Lisa

01268-EPA-5568

Gina McCarthy/DC/USEPA/US

02/17/2011 01:46 PM

To Richard Windsor
cc
bcc
Subject Re: Boiler MACT Package

(b) (5)

----- Original Message -----
From: Richard Windsor
Sent: 02/17/2011 01:10 PM EST
To: "Gina (Sheila) McCarthy" <mccarthy.gina@epa.gov>
Subject: Fw: Boiler MACT Package

Hey. (b) (5)

----- Original Message -----
From: "Cutter, Stephanie" [(b) (6)
Sent: 02/17/2011 01:04 PM EST
To: Richard Windsor
Cc: Seth Oster
Subject: RE: Boiler MACT Package

Thanks, Lisa. (b) (5)

-----Original Message-----
From: Windsor.Richard@epamail.epa.gov [mailto:Windsor.Richard@epamail.epa.gov
]
Sent: Thursday, February 17, 2011 1:01 PM
To: Cutter, Stephanie
Cc: Seth Oster
Subject: Boiler MACT Package

Hi Stephanie,

(b) (5)

Thanks, Lisa

01268-EPA-5569

Bob Perciasepe/DC/USEPA/US
02/20/2011 11:55 PM

To Michael Goo, Richard Windsor, Diane Thompson, Bob Sussman, Mathy Stanislaus, Gina McCarthy, Seth Oster, Scott Fulton, David McIntosh
cc
bcc
Subject Re: Completion of OMB Review of utility air toxics rule

Michael

We are signing the Boiler MACT Monday.

Bob

Bob Perciasepe
Deputy Administrator
(o)202 564 4711
(c) (b) (6)

----- Original Message -----
From: Michael Goo
Sent: 02/20/2011 11:30 PM EST
To: Richard Windsor; Diane Thompson; Bob Sussman; Mathy Stanislaus; Gina McCarthy; Seth Oster; Scott Fulton; David McIntosh; Bob Perciasepe
Subject: Fw: Completion of OMB Review of utility air toxics rule

As the email below indicates, OMB has completed review of the air toxics rule.

So we are good to go on that front with signing the rule.

Ex.5 - Deliberative

----- Original Message -----
From: "Mancini, Dominic J." [(b) (6)
Sent: 02/20/2011 11:02 PM EST
To: Nicole Owens; "Higgins, Cortney" <(b) (6)
Cc: Michael Goo; "Fitzpatrick, Michael A."
<(b) (6)
Subject: RE: Reginfo and rules

Hello Nicole,

Thanks for emailing. We have reviewed the final documents uploaded tonight

and I wanted to confirm we are ready to conclude review. I would note, however, that there is a bracketed comment about including a citation on page 4-10 of the boilers rule RIA (the jobs impact section). I certainly would not hold up concluding review over this, but it may be something you want to fix before the rules are published in the Federal Register and you make the RIA available in the docket or on your website.

Ex.5 - Deliberative

Thanks,
Dom

-----Original Message-----
From: Owens.Nicole@epamail.epa.gov [mailto:Owens.Nicole@epamail.epa.gov]
Sent: Sunday, February 20, 2011 10:47 PM
To: Mancini, Dominic J.; Higgins, Cortney
Cc: Nicole Owens
Subject: Reginfo and rules
Importance: High

Hi. Ex.5 - Deliberative Call if you need more info.

Nicole
(b) (6)

01268-EPA-5570

Michael Goo/DC/USEPA/US
02/21/2011 08:15 AM

To Bob Perciasepe, Richard Windsor, Diane Thompson, Bob Sussman, Mathy Stanislaus, Gina McCarthy, Seth Oster, Scott Fulton, David McIntosh
cc
bcc
Subject Re: Completion of OMB Review of utility air toxics rule

Yes sorry. I meant the boiler mact, not the toxics rule.

----- Original Message -----
From: Bob Perciasepe
Sent: 02/20/2011 11:55 PM EST
To: Michael Goo; Richard Windsor; Diane Thompson; Bob Sussman; Mathy Stanislaus; Gina McCarthy; Seth Oster; Scott Fulton; David McIntosh
Subject: Re: Completion of OMB Review of utility air toxics rule

Michael

We are signing the Boiler MACT Monday.

Bob

Bob Perciasepe
Deputy Administrator
(o)202 564 4711
(c) (b) (6)

----- Original Message -----
From: Michael Goo
Sent: 02/20/2011 11:30 PM EST
To: Richard Windsor; Diane Thompson; Bob Sussman; Mathy Stanislaus; Gina McCarthy; Seth Oster; Scott Fulton; David McIntosh; Bob Perciasepe
Subject: Fw: Completion of OMB Review of utility air toxics rule

As the email below indicates, OMB has completed review of the air toxics rule.

So we are good to go on that front with signing the rule.

Ex.5 - Deliberative

----- Original Message -----

From: "Mancini, Dominic J." [(b) (6)
Sent: 02/20/2011 11:02 PM EST
To: Nicole Owens; "Higgins, Cortney" <(b) (6)
Cc: Michael Goo; "Fitzpatrick, Michael A."
<(b) (6)
Subject: RE: Reginfo and rules

Hello Nicole,

Thanks for emailing. We have reviewed the final documents uploaded tonight and I wanted to confirm we are ready to conclude review. I would note, however, that there is a bracketed comment about including a citation on page 4-10 of the boilers rule RIA (the jobs impact section). I certainly would not hold up concluding review over this, but it may be something you want to fix before the rules are published in the Federal Register and you make the RIA available in the docket or on your website.

Ex.5 - Deliberative

Thanks,
Dom

-----Original Message-----
From: Owens.Nicole@epamail.epa.gov [mailto:Owens.Nicole@epamail.epa.gov]
Sent: Sunday, February 20, 2011 10:47 PM
To: Mancini, Dominic J.; Higgins, Cortney
Cc: Nicole Owens
Subject: Reginfo and rules
Importance: High

Hi. Ex.5 - Deliberative
Call if you need more info.

Nicole
(b) (6)

01268-EPA-5571

Michael Goo/DC/USEPA/US
02/21/2011 09:31 AM

To Mathy Stanislaus, Diane Thompson, Richard Windsor, Bob Sussman, Gina McCarthy, Seth Oster, Scott Fulton, David McIntosh, Bob Perciasepe, "Venu Ghanta", "Bicky Corman"
cc "Jose Lozano"
bcc
Subject Re: Completion of OMB Review of Boiler MACT URGENT

OMB has just sent us a formal notice indicating final clearance of the Boiler MACT Package.

----- Original Message -----
From: Mathy Stanislaus
Sent: 02/21/2011 09:01 AM EST
To: Diane Thompson; Richard Windsor; Michael Goo; Bob Sussman; Gina McCarthy; Seth Oster; Scott Fulton; David McIntosh; Bob Perciasepe
Cc: "Jose Lozano" <lozano.jose@epa.gov>
Subject: Re: Completion of OMB Review of utility air toxics rule - URGENT re CONFERENCE CALL

Ok

----- Original Message -----
From: Diane Thompson
Sent: 02/21/2011 07:48 AM EST
To: Richard Windsor; Michael Goo; Bob Sussman; Mathy Stanislaus; Gina McCarthy; Seth Oster; Scott Fulton; David McIntosh; Bob Perciasepe
Cc: "Jose Lozano" <lozano.jose@epa.gov>
Subject: Re: Completion of OMB Review of utility air toxics rule - URGENT re CONFERENCE CALL

Works for me

----- Original Message -----
From: Richard Windsor
Sent: 02/21/2011 07:30 AM EST
To: Michael Goo; Diane Thompson; Bob Sussman; Mathy Stanislaus; Gina McCarthy; Seth Oster; Scott Fulton; David McIntosh; Bob Perciasepe
Cc: "Jose Lozano" <lozano.jose@epa.gov>
Subject: Completion of OMB Review of utility air toxics rule - URGENT re CONFERENCE CALL

Thanks Michael. FOLKS - I am going to have to do a bilateral mtg at 10 am your time. Can we please move our briefing conference call to 10 45 am EST ? Jose is sitting next to me and I am looping him in here. Tx. Lisa

----- Original Message -----
From: Michael Goo
Sent: 02/20/2011 11:30 PM EST
To: Richard Windsor; Diane Thompson; Bob Sussman; Mathy Stanislaus; Gina McCarthy; Seth Oster; Scott Fulton; David McIntosh; Bob Perciasepe
Subject: Fw: Completion of OMB Review of utility air toxics rule

As the email below indicates, OMB has completed review of the air toxics rule.

So we are good to go on that front with signing the rule.

Ex.5 - Deliberative

[redacted]

----- Original Message -----
From: "Mancini, Dominic J." [(b) (6)]
Sent: 02/20/2011 11:02 PM EST
To: Nicole Owens; "Higgins, Cortney" <(b) (6)>
Cc: Michael Goo; "Fitzpatrick, Michael A." <(b) (6)>
Subject: RE: Reginfo and rules

Hello Nicole,

Thanks for emailing. We have reviewed the final documents uploaded tonight and I wanted to confirm we are ready to conclude review. I would note, however, that there is a bracketed comment about including a citation on page 4-10 of the boilers rule RIA (the jobs impact section). I certainly would not hold up concluding review over this, but it may be something you want to fix before the rules are published in the Federal Register and you make the RIA available in the docket or on your website.

Ex.5 - Deliberative

[redacted]

Thanks,
Dom

-----Original Message-----
From: Owens.Nicole@epamail.epa.gov [mailto:Owens.Nicole@epamail.epa.gov]
Sent: Sunday, February 20, 2011 10:47 PM
To: Mancini, Dominic J.; Higgins, Cortney
Cc: Nicole Owens
Subject: Reginfo and rules
Importance: High

Hi. [redacted] Ex.5 - Deliberative [redacted] Call if you need more info.

Nicole
[redacted] (b) (6)

01268-EPA-5572

Richard Windsor/DC/USEPA/US
02/21/2011 09:41 PM

To "Nancy Sutley"
cc
bcc
Subject Fw: Oilmarks Replace Earmarks in Budget; Obama Remains Silent

---

From: David McIntosh
Sent: 02/21/2011 03:55 PM EST
To: Richard Windsor; thompson.diane@epa.gov; Bob Perciasepe; Bob Sussman; "Seth Oster" <(b) (6)>; gilfillan.brendan@epa.gov; andy.adora@epa.gov; Arvin Ganesan; goo.michael@epa.gov; Bicky Corman; Lawrence Elworth; bennett.barbara@epa.gov; garcia.lisa@epa.gov; Daniel Kanninen; Eric Wachter; Scott Fulton; Jose Lozano
Subject: Fw: Oilmarks Replace Earmarks in Budget; Obama Remains Silent

---

From: Jeremy Symons [symons@nwf.org]
Sent: 02/21/2011 03:42 PM EST
To: Jeremy Symons <symons@nwf.org>
Subject: FW: Oilmarks Replace Earmarks in Budget; Obama Remains Silent

From: Jeremy Symons
Sent: Monday, February 21, 2011 2:22 PM
To: Jeremy Symons
Subject: Oilmarks Replace Earmarks in Budget; Obama Remains Silent

Earmarks Give Way to Oilmarks in GOP Spending Bill

0 2/20/2011 // Jeremy Symons //

White House Remains Silent on Clean Air, Clean Water Attacks

new GOP majority in Congress promised to reduce the deficit, but failed to mention they would give **polluters free reign to replace Pork Barrel spending with Oil Barrel favors**. In a week-long marathon of votes, the House spending bill to keep the government running in 2011

became a polluter piñata. Oil companies and other corporate polluters looked on gleefully as their allies in Congress took beating sticks to the Clean Air Act and Clean Water Act. Polluters rejoiced further when the House defeated the one oil amendment that actually would have made a dent in the deficit by removing billions of dollars of taxpayer subsidies for oil companies. In this budget charade, the target became polluter regulators, not polluter subsidies. **This extreme and reckless bill amounts to the largest assault on America's bi-partisan legacy of environmental and wildlife safeguards in history.** The bill was passed by the House on a vote of 235-189, largely along party lines. No Democrats supported the bill and only 3 Republicans voted against it. Click here to see how members voted.

Earmarks Give Way to Oilmarks

An oilmark is a congressional prohibition added to a spending bill that prevents government regulators and watchdogs from ensuring that corporate polluters comply with specific environmental laws. **Oilmarks are measures to handcuff regulators, forcing them to look the other way as polluters endanger the air we breathe, the water we drink, and the lands and waters that nurture fish and wildlife.** As with earmarks, oilmarks are usually attached to spending bills to avoid a full debate and instead protect an unpopular measure as part of a bigger bill that must be signed into law.

The House voted to add oilmark after oilmark to the spending bill, all without adding a single penny in savings to the bottom line budget. **In all, 14 of the 51 amendments voted onto the bill were oilmarks seeking to impose politics over science and common sense public health protections.**

One of the oilmarks (amendment #533) was offered by Rep. Don Young (R-Alaska), who is on the threshold of joining Big Oil's Million Dollar Club with $993,000 in reported contributions from the oil industry over his career, according to Opensecrets.org. His amendment would push aside federal regulators to allow Shell Oil to rush forward with "exploratory drilling" in the Chuckchi and Beaufort Seas off of Alaska's coast. These seas are one of the last undamaged ocean frontiers, home to polar bears and other Arctic wildlife and marine life.

Does this sound familiar? You may recall that "exploratory" drilling was the reassuring term used by BP for the Deepwater Horizon before it dumped millions of gallons of toxic crude into the Gulf, with devastating impacts on wildlife. Did we learn nothing from the disaster? According to the Commission that investigated the disaster, the spill was caused in large part "by failures of government to provide effective regulatory oversight of offshore drilling." Having failed to implement the Commission's recommendations, the House is rushing instead to move in the other direction and open an Alaska-sized loophole in the Clean Air Act and send a clear and intimidating signal to oil regulators that they will be punished by Congress for doing their job. His amendment passed with support of 230 Republicans and 13 Democrats (218 votes are needed to pass). Click here to see how members voted.

Other oilmarks added to the bill with only a few minutes of debate are detailed at the end of this posting. **Koch Industries, a large oil refining company that gave more campaign cash to**

House members than any other oil company this past election, will be one of the largest beneficiaries of weakened pollution standards. Not surprisingly, Americans for Prosperity, a Koch-founded advocacy group, lobbied Congress to support many of these amendments.

Oilmarks added to the bill would:

- Allow 5,000 additional tons of hazardous air pollution and mercury emissions.
- Block new health standards to reduce soot pollution that is particularly harmful to the lungs of our children.
- Block funding for climate change science and sensible regulations to start reducing carbon dioxide pollution from oil refineries and power plants.
- Block science-based restoration of the Chesapeake Bay, Klamath Basin, San Francisco Bay Delta, and Florida waters.
- Block new rules and guidance to prevent hazardous coal ash from entering water supplies as happened in the 2008 Tennessee disaster.
- Block new guidance and rules to protect stream valleys and wetlands from dumping of waste from mountain top removal and other sources.
- Block implementation of the Equal Access to Justice Act, enacted by President Reagan.

The total budget savings for these 14 oilmarks was ZERO dollars. **Not one dime was shaved from the deficit** that was ostensibly the purpose of this bill. To the contrary, they will drive up health care costs and put people out of work. The Clean Air Act is one of the most successful and most thoroughly studied pieces of legislation in history, preventing lung diseases such as asthma and delivering $2 trillion in health benefits while making American industry a leader in environmental technology industries that employ 1.7 million Americans.

Preserving Oil Company Subsidies

While adding all kinds of oilmarks to the spending bill, the House rejected the one amendment, offered by Rep. Markey (D-Mass.), that would have eliminated billions of dollars in taxpayer subsidies to oil companies. Closing a royalty payment loophole for oil companies operating in the Gulf of Mexico could save taxpayers **$53 billion in the coming years, but the amendment (#27) was defeated 251-174.** 226 Republicans and 25 Democrats voted to protect these subsidies. Click here to see how members voted.

The Crushing Weight of Polluter Money in Washington

Not long ago, our government reflected Americans' strong environmental values. When Congress updated the Clean Air Act in 1990 to protect thousands of lives and curb acid rain, the House passed the legislation with an overwhelming vote of 401-25. Today, we instead face bold and unprecedented assaults from Congress seeking to roll back America's legacy of environmental safeguards. As soon as the dust settled on the 2010 elections, GOP House leaders sent a letter to oil companies and 150 other businesses and trade associations asking what regulations they wanted scaled back. What has changed? In 1990, major polluters made $20 million in campaign contributions. Since that time, polluters have used their profits to pour more and more money into buying access and influence in Washington. **Corporate polluters have spent more than a billion dollars on campaign contributions and lobbying in the past two**

years alone.

White House Silent

Fortunately, the voting public still strongly supports America's environmental laws. A recent poll confirms that 77% of Americans, including 61% of Republicans, believe that "Congress should let the EPA do its job." **This attack can be turned back if the public finds out what is happening. It's up to all of us to spread the word and make sure everyone knows what's at stake. But it is troubling that President Obama hasn't yet said anything about this assault on America's bedrock environmental laws.** Importantly, President Obama has threatened to veto the spending bill. But the president is missing an important opportunity to educate the public about the benefits of the Clean Water Act , the Clean Air Act, and the wildlife programs that create jobs and protect our Great Outdoors throughout America. We will continue to see more of these hidden polluters attacks on other pieces of legislation until they are brought from the backrooms of Congress into the light, and nobody has a brighter flashlight than the president.

Oilmarks in the GOP House Spending Bill

[Note: The exact text of amendments can be found in one of two Congressional Record files here and here by searching on the name of the sponsor; similarly, a GOP summary of all 500+ amendments that were filed can be found here; only a portion of the amendments were debated and only 51 were approved by recorded vote.]

Putting Polluter Soot Ahead of Our Children's Lungs

An oilmark added by the House would force EPA to ignore recent scientific studiesconfirming that specific air pollutants — coarse particles, or soot – penetrate deeply into our lungs and trigger asthma attacks in young children. The oilmark, sponsored by Rep. Noem (R-SD), would put a halt to the scientific process established by the Clean Air Act to update the health standards for soot based on the latest science and studies. The standards are the basis of pollution control requirements that oil refiners and other major emitters must adhere to. Here is the text of Rep. Noem's oilmark (Amendment #563), which passed by a vote of 255-168. Click here to see how members voted.

No funds made available by this Act may be used to modify the national primary ambient air quality standard or the national secondary ambient air quality standard applicable to coarse particulate matter under section 109 of the Clean Air Act.

Thousands of Pounds of Mercury and 5,000 Tons of Hazardous Air Pollutants – Seriously?

Another oilmark amendment added to the budget bill would prevent EPA from enforcing a rule that reduces emissions of toxins including mercury, which is an acute threat to fish, wildlife and our health. According to the amendment (#165), sponsored by Rep. Carter (R-TX), "None of the

funds made available by this Act may be used to implement, administer, or enforce the rule entitled 'National Emission Standards for Hazardous Air Pollutants [the cement production industry],'" which is the third-largest industrial source of toxic mercury emissions. The amendment passed 250-177. Click here to see how members voted. The American Lung Association, the American Public Health Association and other public health groups wrote a letter to Congress opposing the amendment. Here's an excerpt:

As the American Academy of Pediatrics notes, "mercury in all of its forms is toxic to the fetus and children, and efforts should be made to reduce exposure to the extent possible to pregnant women and children as well as the general population." Cement plants are the third-largest source of human-caused mercury emissions; rolling back mercury standards for such plants would be a step in exactly the wrong direction. Under the standards, which the Environmental Protection Agency issued in final form in September 2010, cement plants emissions of mercury and other pollutants would fall dramatically, reducing mercury pollution by 16,400 pounds, other hazardous air pollutants by 5,200 tons, and acid gases by 5,900 tons. In addition, EPA calculates that the standards would greatly reduce fine particulate pollution from cement plants, preventing up to 2,500 premature deaths annually and saving up to $18 billion in human health costs.

Clean Water Act Under Attack

One of the most far-reaching oilmarks in the bill was included in the underlying bill unveiled by GOP leaders last week. A letter from 45 of National Wildlife Federation's state affiliates opposing the spending bill explains:

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The spending bill would:

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National Wildlife Federation's mission is to inspire Americans to protect wildlife for our children's future.
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01268-EPA-5573

Richard Windsor/DC/USEPA/US
02/21/2011 09:42 PM

To "Stephanie Cutter"
cc
bcc
Subject Fw: Oilmarks Replace Earmarks in Budget; Obama Remains Silent

Hey Stephanie. FYI.

From: David McIntosh
Sent: 02/21/2011 03:55 PM EST
To: Richard Windsor; thompson.diane@epa.gov; Bob Perciasepe; Bob Sussman; "Seth Oster" <(b) (6)>; gilfillan.brendan@epa.gov; andy.adora@epa.gov; Arvin Ganesan; goo.michael@epa.gov; Bicky Corman; Lawrence Elworth; bennett.barbara@epa.gov; garcia.lisa@epa.gov; Daniel Kanninen; Eric Wachter; Scott Fulton; Jose Lozano
Subject: Fw: Oilmarks Replace Earmarks in Budget; Obama Remains Silent

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From: Jeremy Symons [symons@nwf.org]
Sent: 02/21/2011 03:42 PM EST
To: Jeremy Symons <symons@nwf.org>
Subject: FW: Oilmarks Replace Earmarks in Budget; Obama Remains Silent

From: Jeremy Symons
Sent: Monday, February 21, 2011 2:22 PM
To: Jeremy Symons
Subject: Oilmarks Replace Earmarks in Budget; Obama Remains Silent

Earmarks Give Way to Oilmarks in GOP Spending Bill

0 2/20/2011 // Jeremy Symons //

White House Remains Silent on Clean Air, Clean Water Attacks

new GOP majority in Congress promised to reduce the deficit, but failed to mention they would give **polluters free reign to replace Pork Barrel spending with Oil Barrel favors**. In a

week-long marathon of votes, the House spending bill to keep the government running in 2011 became a polluter piñata. Oil companies and other corporate polluters looked on gleefully as their allies in Congress took beating sticks to the Clean Air Act and Clean Water Act. Polluters rejoiced further when the House defeated the one oil amendment that actually would have made a dent in the deficit by removing billions of dollars of taxpayer subsidies for oil companies. In this budget charade, the target became polluter regulators, not polluter subsidies. **This extreme and reckless bill amounts to the largest assault on America's bi-partisan legacy of environmental and wildlife safeguards in history.** The bill was passed by the House on a vote of 235-189, largely along party lines. No Democrats supported the bill and only 3 Republicans voted against it. Click here to see how members voted.

Earmarks Give Way to Oilmarks

An oilmark is a congressional prohibition added to a spending bill that prevents government regulators and watchdogs from ensuring that corporate polluters comply with specific environmental laws. **Oilmarks are measures to handcuff regulators, forcing them to look the other way as polluters endanger the air we breathe, the water we drink, and the lands and waters that nurture fish and wildlife.** As with earmarks, oilmarks are usually attached to spending bills to avoid a full debate and instead protect an unpopular measure as part of a bigger bill that must be signed into law.

The House voted to add oilmark after oilmark to the spending bill, all without adding a single penny in savings to the bottom line budget. **In all, 14 of the 51 amendments voted onto the bill were oilmarks seeking to impose politics over science and common sense public health protections.**

One of the oilmarks (amendment #533) was offered by Rep. Don Young (R-Alaska), who is on the threshold of joining Big Oil's Million Dollar Club with $993,000 in reported contributions from the oil industry over his career, according to Opensecrets.org. His amendment would push aside federal regulators to allow Shell Oil to rush forward with "exploratory drilling" in the Chuckchi and Beaufort Seas off of Alaska's coast. These seas are one of the last undamaged ocean frontiers, home to polar bears and other Arctic wildlife and marine life.

Does this sound familiar? You may recall that "exploratory" drilling was the reassuring term used by BP for the Deepwater Horizon before it dumped millions of gallons of toxic crude into the Gulf, with devastating impacts on wildlife. Did we learn nothing from the disaster? According to the Commission that investigated the disaster, the spill was caused in large part "by failures of government to provide effective regulatory oversight of offshore drilling." Having failed to implement the Commission's recommendations, the House is rushing instead to move in the other direction and open an Alaska-sized loophole in the Clean Air Act and send a clear and intimidating signal to oil regulators that they will be punished by Congress for doing their job. His amendment passed with support of 230 Republicans and 13 Democrats (218 votes are needed to pass). Click here to see how members voted.

Other oilmarks added to the bill with only a few minutes of debate are detailed at the end of this

posting. **Koch Industries, a large oil refining company that gave more campaign cash to House members than any other oil company this past election, will be one of the largest beneficiaries of weakened pollution standards**. Not surprisingly, Americans for Prosperity, a Koch-founded advocacy group, lobbied Congress to support many of these amendments.

Oilmarks added to the bill would:

- Allow 5,000 additional tons of hazardous air pollution and mercury emissions.
- Block new health standards to reduce soot pollution that is particularly harmful to the lungs of our children.
- Block funding for climate change science and sensible regulations to start reducing carbon dioxide pollution from oil refineries and power plants.
- Block science-based restoration of the Chesapeake Bay, Klamath Basin, San Francisco Bay Delta, and Florida waters.
- Block new rules and guidance to prevent hazardous coal ash from entering water supplies as happened in the 2008 Tennessee disaster.
- Block new guidance and rules to protect stream valleys and wetlands from dumping of waste from mountain top removal and other sources.
- Block implementation of the Equal Access to Justice Act, enacted by President Reagan.

The total budget savings for these 14 oilmarks was ZERO dollars. **Not one dime was shaved from the deficit** that was ostensibly the purpose of this bill. To the contrary, they will drive up health care costs and put people out of work. The Clean Air Act is one of the most successful and most thoroughly studied pieces of legislation in history, preventing lung diseases such as asthma and delivering $2 trillion in health benefits while making American industry a leader in environmental technology industries that employ 1.7 million Americans.

Preserving Oil Company Subsidies

While adding all kinds of oilmarks to the spending bill, the House rejected the one amendment, offered by Rep. Markey (D-Mass.), that would have eliminated billions of dollars in taxpayer subsidies to oil companies. Closing a royalty payment loophole for oil companies operating in the Gulf of Mexico could save taxpayers **$53 billion in the coming years, but the amendment (#27) was defeated 251-174.** 226 Republicans and 25 Democrats voted to protect these subsidies. Click here to see how members voted.

The Crushing Weight of Polluter Money in Washington

Not long ago, our government reflected Americans' strong environmental values. When Congress updated the Clean Air Act in 1990 to protect thousands of lives and curb acid rain, the House passed the legislation with an overwhelming vote of 401-25. Today, we instead face bold and unprecedented assaults from Congress seeking to roll back America's legacy of environmental safeguards. As soon as the dust settled on the 2010 elections, GOP House leaders sent a letter to oil companies and 150 other businesses and trade associations asking what regulations they wanted scaled back. What has changed? In 1990, major polluters made $20 million in campaign contributions. Since that time, polluters have used their profits to pour more and more money into buying access and influence in Washington. **Corporate polluters have**

spent more than a billion dollars on campaign contributions and lobbying in the past two years alone.

White House Silent

Fortunately, the voting public still strongly supports America's environmental laws. A recent poll confirms that 77% of Americans, including 61% of Republicans, believe that "Congress should let the EPA do its job." **This attack can be turned back if the public finds out what is happening. It's up to all of us to spread the word and make sure everyone knows what's at stake. But it is troubling that President Obama hasn't yet said anything about this assault on America's bedrock environmental laws.** Importantly, President Obama has threatened to veto the spending bill. But the president is missing an important opportunity to educate the public about the benefits of the Clean Water Act , the Clean Air Act, and the wildlife programs that create jobs and protect our Great Outdoors throughout America. We will continue to see more of these hidden polluters attacks on other pieces of legislation until they are brought from the backrooms of Congress into the light, and nobody has a brighter flashlight than the president.

Oilmarks in the GOP House Spending Bill

[Note: The exact text of amendments can be found in one of two Congressional Record files here and here by searching on the name of the sponsor; similarly, a GOP summary of all 500+ amendments that were filed can be found here; only a portion of the amendments were debated and only 51 were approved by recorded vote.]

Putting Polluter Soot Ahead of Our Children's Lungs

An oilmark added by the House would force EPA to ignore recent scientific studiesconfirming that specific air pollutants — coarse particles, or soot – penetrate deeply into our lungs and trigger asthma attacks in young children. The oilmark, sponsored by Rep. Noem (R-SD), would put a halt to the scientific process established by the Clean Air Act to update the health standards for soot based on the latest science and studies. The standards are the basis of pollution control requirements that oil refiners and other major emitters must adhere to. Here is the text of Rep. Noem's oilmark (Amendment #563), which passed by a vote of 255-168. Click here to see how members voted.

No funds made available by this Act may be used to modify the national primary ambient air quality standard or the national secondary ambient air quality standard applicable to coarse particulate matter under section 109 of the Clean Air Act.

Thousands of Pounds of Mercury and 5,000 Tons of Hazardous Air Pollutants – Seriously?

Another oilmark amendment added to the budget bill would prevent EPA from enforcing a rule that reduces emissions of toxins including mercury, which is an acute threat to fish, wildlife and

our health. According to the amendment (#165), sponsored by Rep. Carter (R-TX), "None of the funds made available by this Act may be used to implement, administer, or enforce the rule entitled 'National Emission Standards for Hazardous Air Pollutants [the cement production industry],'" which is the third-largest industrial source of toxic mercury emissions. The amendment passed 250-177. Click here to see how members voted. The American Lung Association, the American Public Health Association and other public health groups wrote a letter to Congress opposing the amendment. Here's an excerpt:

As the American Academy of Pediatrics notes, "mercury in all of its forms is toxic to the fetus and children, and efforts should be made to reduce exposure to the extent possible to pregnant women and children as well as the general population." Cement plants are the third-largest source of human-caused mercury emissions; rolling back mercury standards for such plants would be a step in exactly the wrong direction. Under the standards, which the Environmental Protection Agency issued in final form in September 2010, cement plants emissions of mercury and other pollutants would fall dramatically, reducing mercury pollution by 16,400 pounds, other hazardous air pollutants by 5,200 tons, and acid gases by 5,900 tons. In addition, EPA calculates that the standards would greatly reduce fine particulate pollution from cement plants, preventing up to 2,500 premature deaths annually and saving up to $18 billion in human health costs.

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01268-EPA-5574

"Holdren, John P." <(b) (6) gov>
02/22/2011 11:07 AM

To "'John P. Holdren'"
cc
bcc
Subject PowerPoint of my plenary speech to AAAS annual meeting last Friday

Dear Friends – Attached here is a PDF of the PowerPoint from my plenary speech on "Policy for Science, Technology, and Innovation in the Obama Administration – A Mid-Course Update", which I gave Friday evening to an audience of about 2,000 at the annual meeting of the AAAS here. It summarizes quite a lot of what we've been up to in OSTP and PCAST for the past two years – with the remarkable leadership of President Obama -- as well as some of what I hope is coming. A lot is left out (it had to fit in 50 minutes), and I find one of my biggest challenges in this game is squeezing 20 pounds of stuff into a 10-pound bag. Suggestions and other comments including cries of outrage always welcome. My best, John

JOHN P. HOLDREN
Assistant to the President for Science and Technology,
Director, Office of Science and Technology Policy,
Co-Chair, Presidents Council of Advisors on Science and Technology
Executive Office of the President of the United States
email (b) (6)
assistant Karrie Pitzer (b) (6), (b) (6)

2011-02-18_AAAS plenary_JPH_rev5.pdf

Policy for Science, Technology, & Innovation in the Obama Administration: A Mid-Course Update

John P. H_l_r_n

Assistant to the President for Science and Technology
Director, Office of Science and Technology Policy
Co-Chair, President's Council of Advisors on Science and Technology

Plenary Lecture

2011 Annual Meeting of the AAAS

Washington DC • 18 February 2011

"Science is more essential for our prosperity, our security, our health, our environment, and our quality of life than it has ever been before." - President Barack Obama, April 27, 2009

Challenges linked to ST&I: Domestic

- economic recovery & growth: S&T as drivers (infotech, biotech, nanotech, greentech...?)
- health care: better outcomes for all at lower cost
- energy & climate: cleaner, safer energy supply (incl reduced oil imports & GHG emissions)
- other resources & environment: water, land use, coastal zones, toxics, biodiversity, sustainability
- national & homeland security: IED detection & disarming, cyber- & power-grid security, bio-defense, ensuring safety/reliability of shrinking US nuclear stockpile without nuclear testing

Challenges linked to ST&I: Global

- Health: Defeating preventable and pandemic disease
- Development: Eradicating poverty and providing the possibility of sustainable prosperity for all
- Energy-Climate: Providing for societies everywhere the energy their economies need without wrecking the climate their environments need
- Land-Water: Managing the intensifying competition for the world's land & fresh water among food, fiber, fuel, infrastructure/industry, and ecosystem function
- Oceans: Maintaining their ecological integrity & productivity
- WMD: Avoiding use of nuclear and biological weapons

President Obama's views on the challenges

- They're interdisciplinary and interconnected (I&I)
- S&T are not just germane to success but central.
- Centrality means putting S&T in the center of what the federal government thinks, says, and does about these challenges – "Science in its rightful place."
- Success requires not only applying S&T to specific challenges but also nurturing the cross-cutting foundations of strength in S&T.
- I&I mean solutions require partnerships across: federal agencies; branches & levels of government; public, private, & philanthropic sectors; and nations.

The centrality of S&T: What do we need?

- The Economy: innovation that yields better manufacturing techniques, better products & services, and (thus) high-quality, sustainable jobs…
- Health: new IT tools for medical records, doctor-doctor & doctor-patient interaction; better, cheaper diagnostics; faster vaccine development & production; cancer therapies that target only cancer cells…
- Energy: better batteries, cheaper photovoltaic cells, lower-impact biofuels, CO_2 capture & sequestration, safer nuclear fuel cycles, fusion…

What we need from S&T (continued)

- Agriculture: stress-tolerant crop varieties, livestock resistance to disease, farmer access to knowledge & markets through IT
- Climate Change: better monitoring in-situ & from space; better models on faster computers; regional disaggregation of impacts to support adaptation; better scientific communication for public understanding…
- National & Homeland Security: better detection of conventional & nuclear explosives and of clandestine weapons facilities; faster identification of & response to bio-threats; better defenses against cyber-threats…

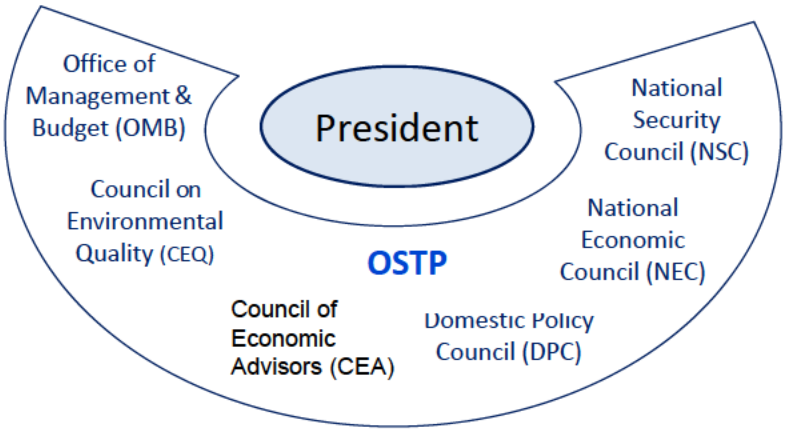
Cross-cutting foundations of strength in S&T

- the institutions that do most basic research
  - research universities, national labs, nonprofits
- other key infrastructure
  - IT/broadband, high-speed computing, energy, transportation, space technology
- science, technology, engineering, & math (STEM) education
- economic & policy conditions conducive to entrepreneurship, innovation, partnerships
  - IPR, financing, tax policy, export policy, immigration policy, transparency & predictability in regulation

The federal support infrastructure for ST&I

- Congress
  - S&T authorizing & appropriations committees
- S&T-rich cabinet departments & their agencies
  - Defense (with DARPA), HHS (w NIH, FDA, CDC), Energy (w ARPA-E), Commerce (w NOAA, NIST), Interior (w USGS), Agriculture (w NIFA), State/OES
- Free-standing S&T-rich agencies
  - NSF, NASA, EPA, FCC, SBA

Federal support infrastructure for ST&I (continued): The Executive Office of the President

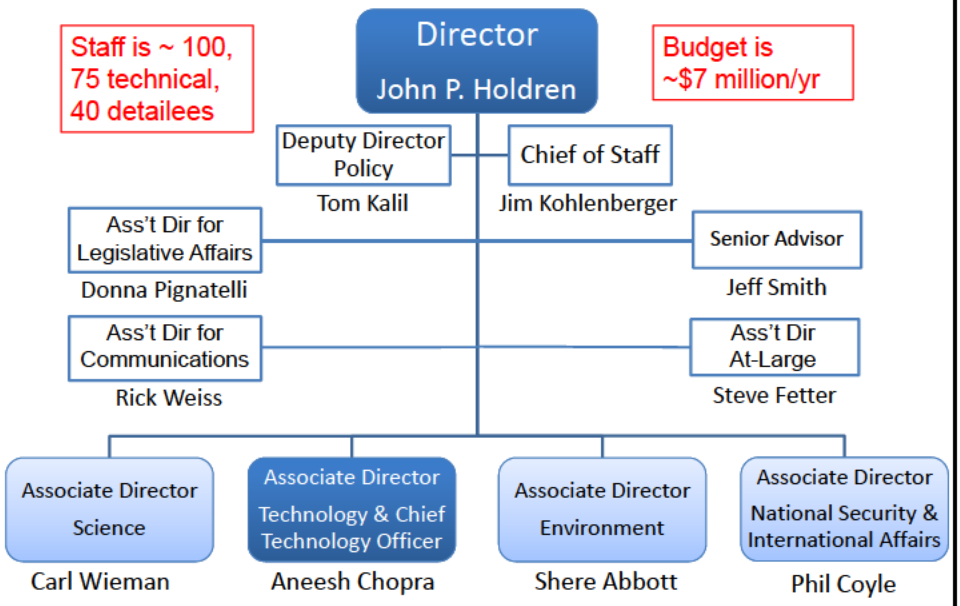


EOP also includes Offices of: Vice President, Chief of Staff, Cabinet Affairs, Communications, Intergovernmental Relations, Public Engagement, Legal Counsel, US Trade Representative, Energy & Climate Change, and more.

Responsibilities of OSTP and the S&T Advisor

- Policy for science and technology
  - Analysis, recommendations, & coordination with other White House offices on R&D budgets & related policies, S&T education and workforce issues, interagency S&T initiatives, broadband, open government, scientific integrity…
- Science and technology for policy
  - Independent advice for the President about S&T germane to all policy issues with which he is concerned

OSTP structure



Under President Obama, both Holdren and Chopra serve as Assistants to the President.

OSTP-managed entities

- National Science & Technology Council (NSTC)
  - Deputy secretaries & undersecretaries of cabinet departments with S&T missions, plus heads of NSF, NIH, NASA, NOAA, NIST, EPA, USGS, CDC
  - Nominally chaired by the President; chaired in practice by the OSTP Director / Science Advisor; administered by OSTP
  - Coordinates S&T activities that cross agency boundaries
- President's Council of Advisors on Science and Technology (PCAST)
  - Co-Chairs J Holdren & E Lander
  - Vice-Chairs W Press & M Savitz
  - 16 other members from academia, industry, NGOs
  - Helps link White House to wider ST&I community

Putting science "in its rightful place": Presidential appointments

- Five Nobel Laureates in science
  - Energy Secretary Chu, OSTP Associate Director for Science Wieman, NCI Director Varmus, PCAST Members Molina and Zewail
- Another 25+ members of the NAS, NAE, IOM, and American Academy of Arts & Sciences
  - Including heads of NIH, NOAA, USGS, FDA, NIFA
- A CTO (Chopra) and a CIO (Kundra) in the White House for the first time
- An engineer running EPA (Lisa Jackson)

ST&I have never been so prominent in leadership positions.

President Obama with his PCAST, NAS Board Room, 4-27-09

"Rightful place": speeches & events

Highlighting ST&I in…

- Speeches throughout the campaign, then Inaugural Address and speeches at: 2009 annual meeting of the NAS, Cairo Egypt, Albany NY, MIT, State of the Union (2010, 2011), Kennedy Space Center, Marquette MI, Portland OR (today!)
- White House events with nat'l middle-school and high-school science & math winners, National Medal of Science and National Medals of Technology & Innovation winners, groups of US astronauts (on 7 occasions), US Nobel Prize winners, math & science teaching & mentoring award winners, PECASE winners.

No president has ever talked as much about ST&I.

With middle-school "Mathletes" in the Oval Office

"Rightful place": PCAST studies undertaken

- PCAST studies requested and completed:
  - The science and technology of 2009-H1N1 Influenza
  - Reengineering the Influenza Vaccine Production Enterprise
  - Assessment of the National Nanotechnology Initiative
  - Prepare and Inspire: K-12 STEM Education
  - Accelerating the Pace of Change in Energy Technologies
  - Realizing the Full Potential of Health IT to Improve Healthcare
  - Designing a Digital Future: Networking and IT R&D
- PCAST studies underway (with more to come):
  - Advanced manufacturing
  - Biodiversity preservation and ecosystem sustainability
  - The science of carbon offsets
  - STEM Higher Education – the first two years

No President has asked PCAST to do so much so soon.

The President and his PCAST

President Obama, VP Biden, and PCAST in the East Wing, 11-04-10

"Rightful place": PCAST studies implemented

PCAST recommendations that are part of the President's 2012 strategy:

- Prepare an additional 100,000 K-12 STEM teachers by the end of the decade
- Launch a new Advanced Research Projects Agency Education (ARPA-ED)
- Initiate improvements to influenza vaccine manufacturing to shorten production timeframe
- Accelerate breakthroughs in advanced manufacturing technologies
- Expand funding for Advanced Research Projects Agency – Energy (ARPA-E) and three new Energy Innovation Hubs
- Accelerate adoption of Electronic Health Records, and develop standards for health information exchange over the internet
- Support research to foster the next revolution in IT, to help transform healthcare, energy efficiency, education, and transportation

This PCAST works for a President who is listening!

"Rightful place": budgets

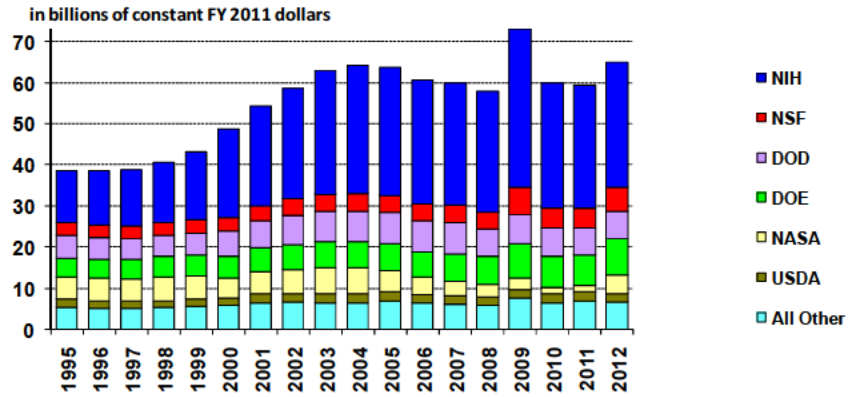
Investments in S&T

- Science got a huge boost in the stimulus/recovery package (American Recovery & Reinvestment Act -- ARRA) and the FY2009 / FY2010 budgets, giving 2009-10 the highest federal research spending ever.
- Total ARRA funds for S&T, including IT & transportation infrastructure, applied energy technology, space exploration, exceeded $100 billion.
- Investment goals announced in 2009: double budgets of basic science agencies in 10 yr; make Research & Experimentation Tax Credit permanent: lift public + private investment in R&D to ≥ 3% of GDP.

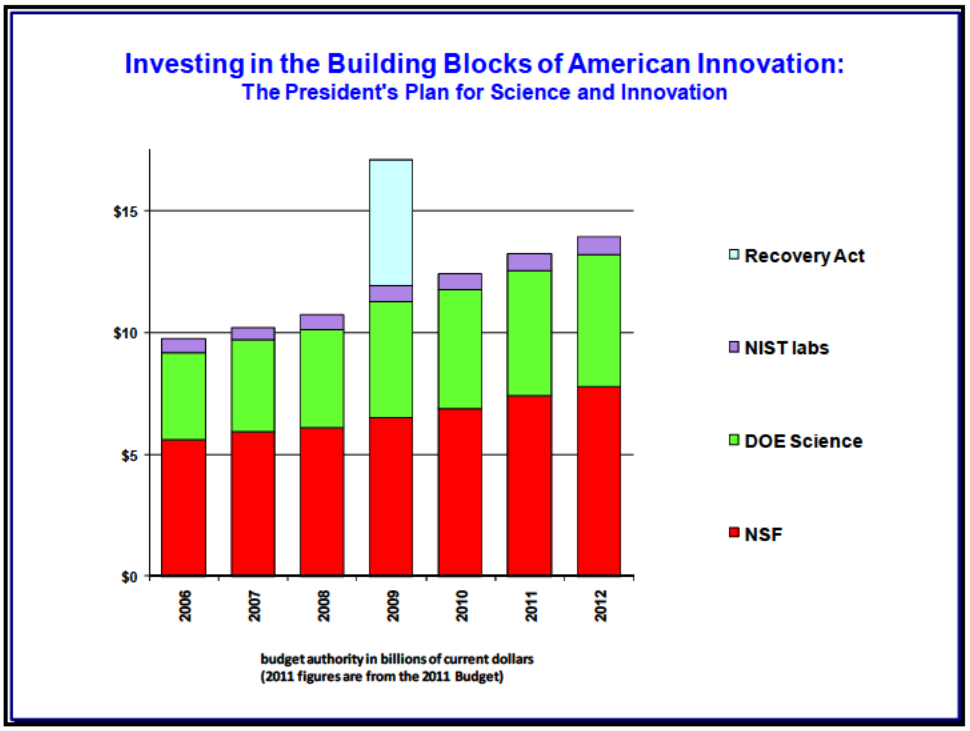
The President's FY2012 R&D Budget

- $147.9B for Federal R&D—up $0.8B from FY2010 enacted
- Nondefense R&D = $66.8B—up $4.1B (6.5 percent)
- Basic & applied research = $66.1B—up $6.9 billion (11 percent)
- NIH—$31.8B (up [illegible] percent)
- DOE total—$13.0B (up 20 percent)
  - DOE's Office of Science—$5.4B (up 10.7 percent)
- NASA—$9.8B (up 6 percent)
- NOAA—$5.5B (up 15.8 percent)
- DHS—$1.05B (up 19 percent)
- National Science Foundation—$7.8B (up 13 percent)
- NIST—$764M (up 15.1 percent)
- Defense Department's R&D portfolio—$76.6B (-4.9 percent)

Winning the Future: Federal Research by Agency, FY 1995-2012

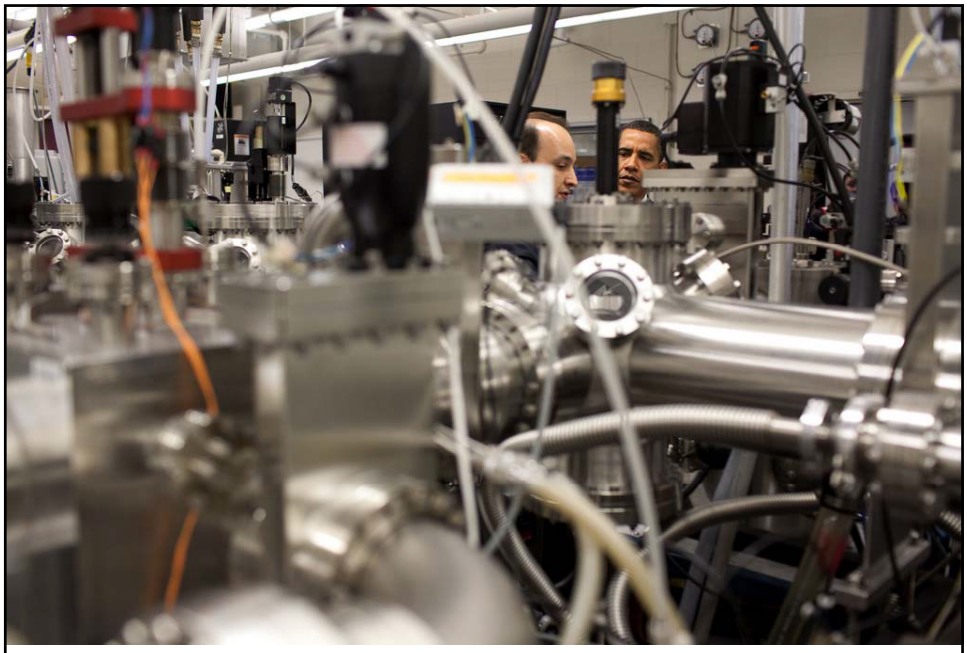


FY 2009 figures include Recovery Act appropriations.
2011 figures are preliminary estimates.
Research includes basic research and applied research.
FEB. '11 OSTP



Initiatives: energy & environment 2009-10

- $80 billion for clean & efficient energy in ARRA
- creation of ARPA-E ($400M in 2009-10, $300M proposed for FY2011), 3 energy-innovation hubs
- first-ever fuel-economy/CO_2 tailpipe standards
- US Global Change Research Program revived, with $2.56 billion proposed for FY2011 (19.4% real increase).
- Interagency task force led by OSTP, CEQ, NOAA on coordination of government's adaptation activities
- Expanded responsibilities for the renamed NSTC Committee on Environment, Natural Resources, and Sustainability
- New National Oceans Policy & National Oceans Council



The President at the MIT Energy Lab, October 2009

Initiatives: energy & env't 2009-10 (continued)

- OMB/OSTP budget letter to agencies (7-21-10)
  - Calls for priority on understanding, mitigating, & adapting to climate change, and for support for the new National Climate Assessment covering these bases.
- Executive Order on Federal Leadership in Environmental, Energy, & Economic Performance (10-09)
  - "to establish an integrated strategy towards sustainability in the Federal Government and to make reduction of greenhouse gas emissions a priority…"
  - designation of agency senior sustainability officers
  - sustainable buildings & acquisition policies
  - targets for GHG reductions in Federal agencies (28% reduction by 2020)

Sustainability “on the ground”: the First Couple planting trees in a DC wetland.

Initiatives: energy & env’t 2011

- FY2012 Budget has $550M for ARPA-E; EERE up 43%; energy hubs doubled 3→6
- Making climate change mitigation & adaptation a priority for initiatives in departments & agencies, employing existing authorities.
- Working with the new Congress on initiatives for accelerating the transition to cleaner & more efficient energy options that bring multiple economic, environmental, & security benefits.
- Working with other major emitting countries to build technology cooperation + individual & joint climate policies for mitigation and adaptation.

President Obama and VP Biden with rooftop PV arrays, Denver

The US Global Change Research Program

- Administered by the USGCRP subcommittee of the NSTC's CENR, w 13 participating dep'ts & agencies
- We are engaged in broadening and strengthening USGCRP's work on:
  - Science: aerosols, precipitation, ice, paleoclimate, regional climate prediction
  - Adaptation: accounting for system effects, economics, behavior, governance issues
  - Integrated Assessment: engaging & meeting the needs of diverse regions, sectors, with the next **National Assessment of Climate Change** underway for 2013 delivery
- 2012 proposed budget = $2.6B, up 19% real

National Oceans Policy

Executive Order 13547, 19 July 2010

- The EO establishes our Nation's first ever ***National Policy for Stewardship of the Ocean, our Coasts, and the Great Lakes***
- Creates an interagency ***National Ocean Council*** to provide sustained, high-level, and coordinated attention to advance the National Policy
- Prioritizes ***9 categories for action*** that seek to address the most pressing challenges facing the ocean, our coasts, and the Great Lakes
- Establishes ***a flexible framework for effective coastal and marine spatial planning*** to address conservation, economic activity, user conflict, and sustainable use of ecosystem services

33

President Obama signing the National Oceans Policy Executive Order (19 July 2010)

National Oceans Policy: The nine categories of action

- Four priority objectives to improve the way we do business:
  - ✓Ecosystem-based management
  - ✓Coastal and marine spatial planning
  - ✓Inform decisions and improve understanding
  - ✓Coordinate and support
- Five areas of special focus:
  - ✓Resiliency/adaptation to climate change and ocean acidification
  - ✓Regional ecosystem protection and restoration
  - ✓Water quality and sustainable practices on land
  - ✓Changing conditions in the Arctic Ocean
  - ✓Ocean, coastal, and Great Lakes observations and infrastructure

35 35

The President's American Innovation Strategy

- Invest in the building blocks of innovation
  - – educate Americans with 21st century skills
  - – strengthen leadership in fundamental research
  - – Building a leading physical infrastructure
  - – develop an advanced IT "ecosystem"
- Promote market-based innovation
  - – accelerate business innovation w R&E tax credit
  - – encourage innovation-based entrepreneurship
  - – grow investments in ingenuity w effective IPR policy
  - – promote innovative, open, competitive markets

The American Innovation Strategy (continued)

- Catalyze breakthroughs for national priorities
  - unleash a clean-energy revolution
  - accelerate [illegible] & advanced mfg
  - develop breakthroughs in space applications
  - drive breakthroughs in health-care technology
  - create a leap forward in educational technologies
- These efforts include increased support for…
  - scientists & engineers early in their careers
  - commercializing university research
  - multidisciplinary & high-risk/high-return research

STEM-education initiatives

- Increased collaboration of White House (OSTP, DPC) with Dept of Education & NSF, HHS, DoD, DOE, NASA
- New national goals: moving American kids from middle to top of international rankings on science & math tests, increasing American proportion of college graduates to first in the world by 2020.
- $4.4 billion "Race to the Top" in the ARRA included preference to states whose [illegible] osals emphasize innovation in STEM education.
- "Educate to Innovate" program (11-09) for K-12 STEM education w $700+ million in private-sector & philan-thropic support; "Change the Equation" added 9-10

The White House Science Fair, 18 October 2010

Initiatives on principles & procedures

- Stem-cell guidelines
  - expanding stem-cell lines that can be used with federal support while respecting ethical boundaries
- Reporting procedures for Federal grants
  - streamlined and made consistent across agencies
- Scientific integrity principles
  - Presidential memo 3-09, add'l guidelines 12-10
  - ensuring openness, transparency, reliance on peer-reviewed science across Federal agencies
- Open government
  - expanded access to databases at every agency


the WHITE HOUSE PRESIDENT BARACK OBAMA
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My Administration is committed to creating an unprecedented level of openness in Government. We will work together to ensure the public trust and establish a system of transparency, public participation, and collaboration. Openness will strengthen our democracy and promote efficiency and effectiveness in Government.
– PRESIDENT OBAMA, 01/21/09
LATEST BLOG POSTS
June 18, 2010 at 1:34 PM EDT
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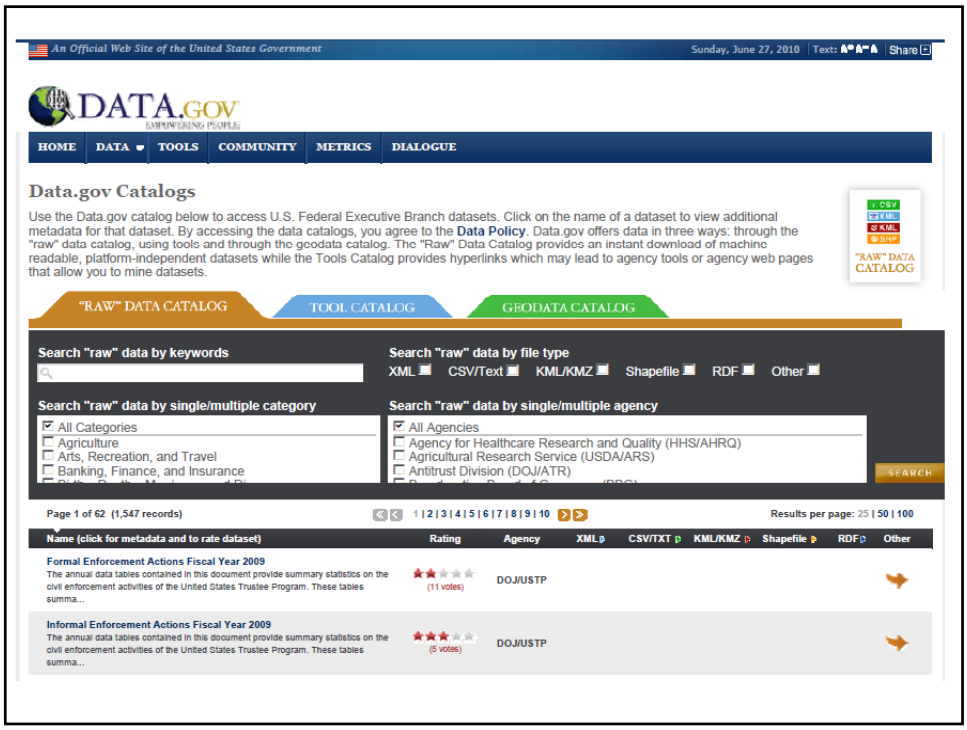
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"RAW" DATA CATALOG
"RAW" DATA CATALOG
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Search "raw" data by keywords
Search "raw" data by file type
XML CSV/Text KML/KMZ Shapefile RDF Other
Search "raw" data by single/multiple category
All Categories
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Search "raw" data by single/multiple agency
All Agencies
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Formal Enforcement Actions Fiscal Year 2009
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Informal Enforcement Actions Fiscal Year 2009
The annual data tables contained in this document provide summary statistics on the civil enforcement activities of the United States Trustee Program. These tables summa...
(5 votes)
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Initiatives: NASA

- The Obama Administration inherited a space program in disarray after years of mismatch of resources and vision.
- The Augustine Committee deemed the Constellation program for crewed missions beyond low Earth orbit (LEO) “unexecutable”.
- Meanwhile Earth science, space science, & aeronautics had been gutted to feed Constellation; the ISS was going to be scrapped in 2016; and the projected gap in ability to transport US astronauts to LEO on US rockets after Shuttle retirement was lengthening.
- The new Administration developed a plan to rebalance NASA’s programs, with longer use of the ISS, more science, more R&D on advanced systems, more diverse destinations for crewed missions, and increased reliance on commercial transport of crew to LEO.
- The new plan was rolled out with the President’s FY2011 Budget and elaborated in a speech by the President at KSC on 4-15-10.

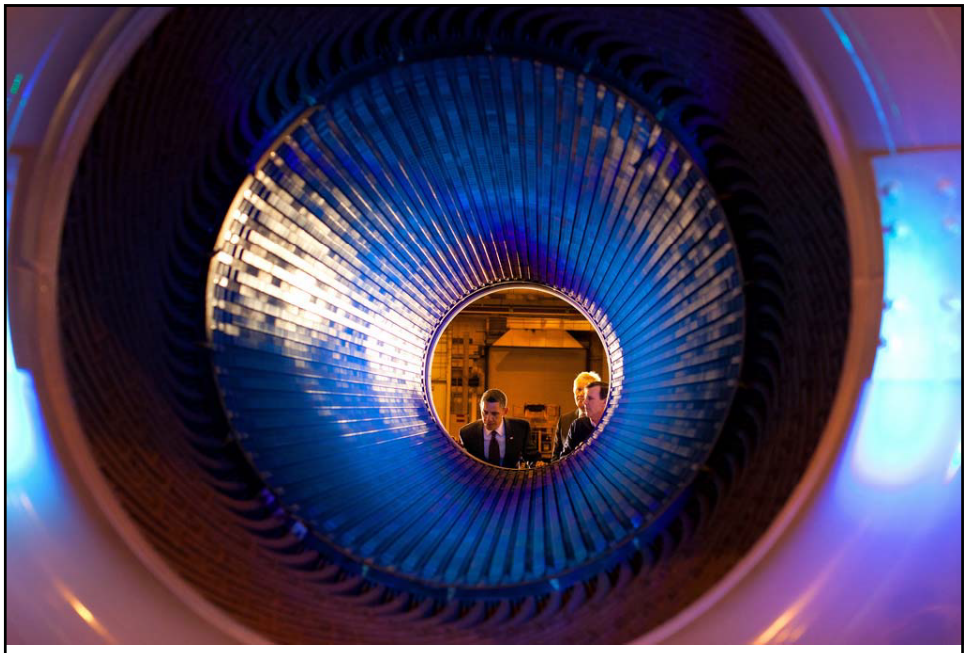
President Obama visits KSC & SpaceX Falcon 9, 4-15-2010

NASA (continued)

- The NASA Authorization Act of 2010 represented a compromise containing much that the President and NASA leadership wanted but reflecting a Congressional preference for using existing technologies and contracts to develop a replacement for Constellation's "heavy lift" rocket by the end of 2016.
- The FY 2012 budget funds every element of the 2010 Act, but there will be arguments about the numbers proposed, some rooted in challenges arising from the lack of a 2011 budget.
- Omens for success of "commercial crew" have been improving, including 2 recent successful launches of the SpaceX company's Falcon 9 rocket (the 2nd one with orbit and on-target splashdown of a dummy crew capsule), and the entry of a Constellation prime contractor into the commercial-crew competition.

Partnerships: working w the private sector

- Firms fund 67% of US R&D, perform 72%.
- Pres Obama has proposed to make the Research & Experimentation tax credit permanent.
- Recovery Act has helped start & grow clean-energy businesses across the country.
- Small Business Innovation Research (SBIR) initiative provides funding from diverse agencies for many avenues of innovation.
- Small business lending bill (signed 9-27-10) increases loans & cuts taxes for entrepreneurs.
- DOE's energy-innovation hubs link national labs, universities, and industry.



President visiting GE Schenectady, 21 January 2011

Partnerships with the private sector (continued)

- Launched Jan. 31, Startup America is facilitating entrepreneurship by increasing the success of high-growth startups that create broad economic growth and quality jobs
  - Aims to accelerate the transfer of new ideas from labs to the market
  - Create new opportunities for small business financing
  - Improve regulatory environment for starting and growing new businesses
- 15 private-sector leaders have committed to Startup America's goal of catalyzing & developing entrepreneurial ecosystems across the Nation
- Last week the President visited Northern Michigan University to unveil the Wireless Innovation and Infrastructure Initiative (Wi3), an ambitious blueprint to connect 98 percent of the US population with 4G wireless
  - *"To attract the best jobs and newest industries, we've got to **out-innovate**, **out-educate**, **out-build** and **out-hustle** the rest of the world." - President Obama at NMU*

Harnessing private innovation: prizes and challenges

- Prizes & challenges harness the ingenuity that lurks in individuals, schools, firms all across the society.
- Sponsors/organizers set an ambitious goal without prescribing the best means to achieve it, pay only for results.
- The Administration's new challenge.gov website provides 1-stop shopping for innovators looking for opportunities.

Prizes and challenges (continued)

- The recent Progressive Insurance / DOE Automotive X-Prize illustrates the leverage in this approach.
  - $10M in prizes for super-fuel-efficient passenger vehicles (over 100 miles per gallon of gasoline equivalent) called forth $100M+ in investments in innovation by competitors.
  - Winning designs achieved up to 200 MPGe.

Automotive X-Prize awards, September 16, 2010

Partnerships: International ST&I cooperation

- Reviving & strengthening the high-level Joint Commission Meetings on S&T cooperation with China, India, Brazil, Japan, S Korea, Russia
- Nurturing the strong S&T cooperation that has long existed with the EU, Canada, Australia, NZ…
- Convening the Multilateral Economic Forum, US-China S&ED, US-Russia Presidential Commission strong ST&I focus
- Streamlining the visa procedures that apply to visiting scientists & technologists
- S&T as a centerpiece of Cairo speech (Science Envoys, centers of excellence) & USAID strategy

Science Envoys: the 1st two cohorts

2009-10 2011-12

Bruce Alberts
Indonesia, Pakistan to come

Rita Colwell
Bangladesh, Malaysia, Vietnam

Elias Zerhouni
Morocco, Libya, Algeria, Tunisia, Qatar, Kuwait, Saudi Arabia

Gebisa Ejeta
South Africa, Tanzania, Ethiopia or Kenya

Ahmed Zewail
Egypt, Turkey, Lebanon, Jordan

Alice Gast
Azerbaijan, Kazakhstan, Uzbekistan or Georgia

http://www.america.gov/science_envoys.html

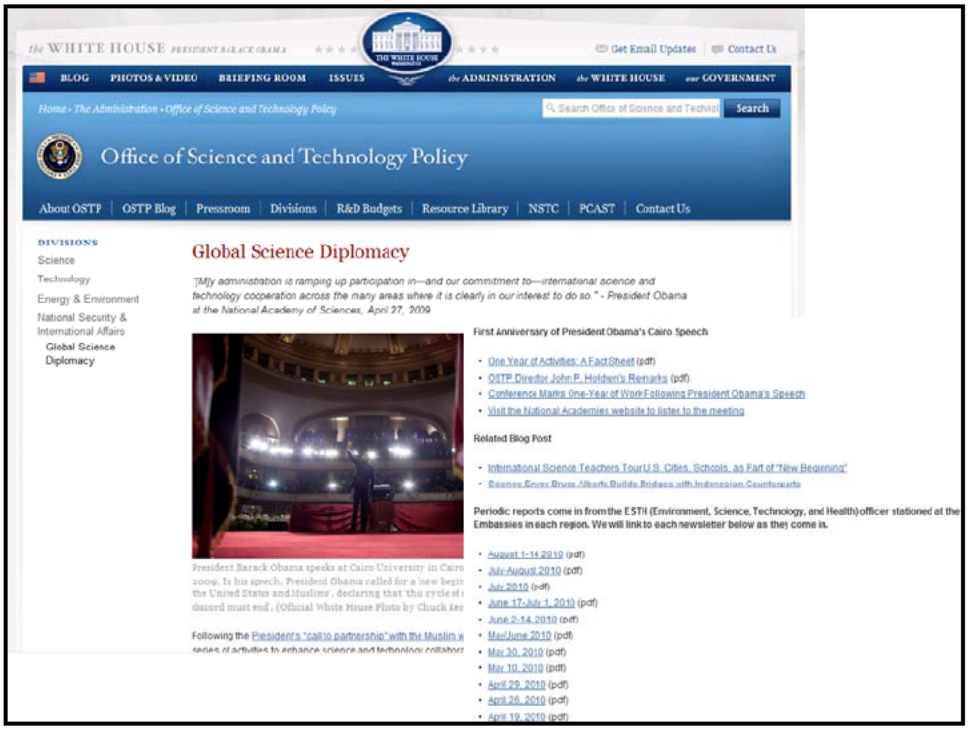
Priorities identified in the 1st round of envoy visits

- Global S&T knowledge-sharing initiative
  - Expand broadband access
  - Electronic libraries
  - Global e-Learning resources for students and teachers
  - Tools for mentoring and collaboration
- Enhance USG coordination, awareness
- Promote academic exchange and sustain collaborations
- Promote centers/networks of excellence

OSTP will sponsor a conference at NAS in spring 2011 on ways to enhance international S&T engagement.

Ongoing expansion of global engagement

- Centers of Excellence being developed in water, climate change, energy
- OSTP and NSC leading a "Global Engagement" policy committee
- State Department allocated 12 new science-officer positions in regional embassies
- New NSTC Subcommittee on International S&T



The linchpin of progress in S&T policy: a committed President

EXECUTIVE OFFICE OF THE PRESIDENT OF THE UNITED STATES
OFFICE OF SCIENCE AND TECHNOLOGY POLICY

01268-EPA-5575

Richard Windsor/DC/USEPA/US
03/01/2011 02:05 PM

To "Sutley, Nancy H."
cc
bcc
Subject Fw:

Rupert Murdoch: News Corp Is Carbon Neutral

First Posted: 03/ 1/11 11:01 AM Updated: 03/ 1/11 11:01 AM

Amazing
Inspiring
Funny
Scary
Hot
Crazy
Important
Weird

Read More: Carbon Neutral, Climate Change, Fox News, Fox News Climate Change, Murdoch Climate Change, News Corp, News Corp Carbon Neutral, News Corp Climate Change, Rupert Murdoch, Media News

WASHINGTON -- The corporate parent of Fox News, the cable network most closely associated with denying the dangers of climate change, has achieved its goal of becoming carbon neutral three years after making the commitment, its top executive, Rupert Murdoch, announced in a letter to News Corp employees obtained by The Huffington Post.

Fox News hosts have routinely ridiculed efforts to reduce the human population's carbon footprint and has mocked environmentalists and politicians for proposing more efficient light bulbs and better inflated tires.

Yet such measures helped News Corp reach its goal, Murdoch told his staff. "[W]e have saved millions of dollars by improving the energy efficiency of our day-to-day operations. Our efficiency projects pay for themselves in less than two years, on average, and span from simple solutions like lighting retrofits and automatic PC shut-down to systemic changes like installing telepresence and videoconferencing technology to reduce the need for air travel," Murdoch wrote.

Murdoch also noted that some of his media properties have been recognized for their committed coverage to the threat facing the planet -- though Fox News did not make that list.

"Most important, throughout this endeavor we have continued to do what we do best: engage our audiences around the world with the most compelling content," he wrote. "Twentieth Century Fox's Ice Age franchise and the most successful film of all time, Avatar, prove that passionate environmental messages can be fodder for both blockbusters and real-world action, like the million trees planted in 2010 through the Avatar Home Tree initiative. National Geographic Channel offers scientifically rigorous programs, like Preserve Our Planet and Great Migrations, that are also visually stunning. The Times of London built on its long history of outstanding science coverage to launch Eureka, a monthly magazine supplement dedicated to science, innovation, and the environment. News Limited recently launched the public face of its award-winning employee-facing One Degree initiative. And The Wall Street Journal's

fourth annual ECO:nomics conference, the leading forum for conversations at the intersection of business and the environment, kicks off tomorrow."

Murdoch hailed his company's leadership in the environmental sustainability movement. "I am proud to announce that News Corporation has reached its first major sustainability milestone: we have become carbon neutral across all of our global operations and we are the first company of our kind to do so," he wrote.

Read the full letter:

> Dear Colleagues,
>
> I am proud to announce that News Corporation has reached its first major sustainability milestone: we have become carbon neutral across all of our global operations and we are the first company of our kind to do so.
>
> We made a bold commitment in 2007 to embed the values of energy efficiency and environmental sustainability into all of our businesses - for the benefit of our communities and our bottom line.
>
> But achieving net zero carbon emissions was never our only goal. Less than four years ago, I invited all of our employees, business partners and audiences to join us in this exciting initiative - and your response has been extraordinary. Today, I'm pleased to share some of our successes across the Company, as well as our long-term commitment to environmental sustainability.
>
> Together, despite some of the toughest markets our industry has ever seen, we have saved millions of dollars by improving the energy efficiency of our day-to-day operations. Our efficiency projects pay for themselves in less than two years, on average, and span from simple solutions like lighting retrofits and automatic PC shut-down to systemic changes like installing telepresence and videoconferencing technology to reduce the need for air travel. The Company's global data center consolidation strategy alone will save approximately $20M per year and reduce data center emissions by almost 15% when completed.
>
> Our support of clean energy - through on-site projects, renewable energy certificates, and carbon credits - spans the globe, from Los Angeles to India. Our UK businesses now procure 100% of their electricity from renewable sources. Dow Jones is close to completing a 4.1MW solar power system on its campus in New Jersey, which will be the largest solar installation of its kind in the United States; at peak, it will provide 50% of the site's electricity needs.
>
> We have provided leadership in our industry, across our supply chain, and among the global business community. Fox Entertainment developed robust carbon footprinting standards and tools for film, television, sports, and event production, as well as a sustainable vendor guide. The standards we set helped lead to a new industry-wide consortium and the online, open-source Green Production Guide. Our initiative has even prompted major suppliers, like paper manufacturer Norske Skog, to set their own ambitious environmental targets. We have collaborated with business partners who were already leading the way, including our DVD supply chain initiative with Wal-mart, which pioneered an eco-case that reduced emissions from raw materials alone by 13% and has become the industry standard. Most recently, we became founding members of the UK-India Business Leaders Climate Group.
>
> Most important, throughout this endeavor we have continued to do what we do best: engage our audiences around the world with the most compelling content. Twentieth Century Fox's Ice Age franchise and the most successful film of all time, Avatar, prove that passionate environmental messages can be fodder for both blockbusters and real-world action, like the million trees planted in 2010 through the Avatar Home Tree initiative. National Geographic Channel offers scientifically rigorous programs, like Preserve Our Planet and Great Migrations, that are also visually stunning. The Times of London built on its long history of outstanding science coverage to launch Eureka, a monthly magazine supplement dedicated to science, innovation, and the environment. News

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News Corp.'s leadership in this area has been recognized by key independent parties, recently earning top marks in the Carbon Disclosure Project's leadership indices and winning big in the Environmental Media Association's 20th annual awards, with top honors going to Avatar and Bones.

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Congratulations and thank you for putting us on the right path. We have come a long way and we have much to do together.

Sincerely,

Rupert Murdoch

01268-EPA-5576

"Sutley, Nancy H." <(b) (6) ov>
03/01/2011 02:06 PM

To Richard Windsor
cc
bcc
Subject Re:

Kind of a jaw dropper

----- Original Message -----
From: Windsor.Richard@epamail.epa.gov <Windsor.Richard@epamail.epa.gov>
To: Sutley, Nancy H.
Sent: Tue Mar 01 14:05:14 2011
Subject: Fw:

Rupert Murdoch: News Corp Is Carbon Neutral

First Posted: 03/ 1/11 11:01 AM Updated: 03/ 1/11 11:01 AM

Amazing
Inspiring
Funny
Scary
Hot
Crazy
Important
Weird
Read More: Carbon Neutral, Climate Change, Fox News, Fox News Climate Change, Murdoch Climate Change, News Corp, News Corp Carbon Neutral, News Corp Climate Change, Rupert Murdoch, Media News

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01268-EPA-5577

Richard Windsor/DC/USEPA/US
03/01/2011 02:13 PM

To "Sutley, Nancy H."
cc
bcc
Subject Re:

Do as I say not as I do. Note - if this is true and not a hoax that they are using carbon markets (offsets) (trading!) to achieve carbon neutrality.

"Sutley, Nancy H." Kind of a jaw dropper ----- Original... 03/01/2011 02:06:19 PM

From: "Sutley, Nancy H." <[redacted] (b) (6)
To: Richard Windsor/DC/USEPA/US@EPA
Date: 03/01/2011 02:06 PM
Subject: Re:

Kind of a jaw dropper

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01268-EPA-5578

Richard Windsor/DC/USEPA/US
03/01/2011 02:26 PM

To scutter
cc
bcc
Subject one more for you

Rupert Murdoch: News Corp Is Carbon Neutral

First Posted: 03/ 1/11 11:01 AM Updated: 03/ 1/11 11:01 AM

Amazing
Inspiring
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Hot
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01268-EPA-5579

Bob Sussman/DC/USEPA/US
03/01/2011 03:14 PM

To Richard Windsor, Nancy Stoner, Shawn Garvin, Shawn Garvin, Cynthia Giles-AA, Seth Oster
cc
bcc
Subject Fw: Next NYT fracking story posted

Robert M. Sussman
Senior Policy Counsel to the Administrator
Office of the Administrator
(202)-564-7397
US Environmental Protection Agency
----- Forwarded by Bob Sussman/DC/USEPA/US on 03/01/2011 03:13 PM -----

From: "Bordoff, Jason E." <(b) (6)
To: Bob Perciasepe/DC/USEPA/US@EPA, Bob Sussman/DC/USEPA/US@EPA, "Hayes, David" <David_Hayes@ios.doi.gov>, "Smith, Christopher A" <Chris.Smith@hq.doe.gov>
Date: 03/01/2011 02:50 PM
Subject: Next NYT fracking story posted

Next NYT fracking story has posted.

http://www.nytimes.com/2011/03/02/us/02gas.html?_r=1&hp=&pagewanted=print

March 1, 2011

Gas Drillers Recycle Wastewater, but Risks Remain

By IAN URBINA

As drilling for natural gas started to climb sharply about 10 years ago, energy companies faced mounting criticism over an extraction process that involves pumping millions of gallons of water into the ground for each well and can leave significant amounts of hazardous contaminants in the water that comes back to the surface.

So, in a move hailed by industry as a major turning point, drilling companies started reusing and recycling the wastewater.

“Water recycling is a win-win,” one drilling company, Range Resources, says on its Web site. “It reduces fresh water demand and eliminates the need to dispose of the water.”

But the win-win comes with significant asterisks.

In Pennsylvania, for example, natural-gas companies recycled less than half of the wastewater they produced during the 18 months that ended in December, according to state records.

Nor has recycling eliminated environmental and health risks. Some methods can leave behind salts or sludge highly concentrated with radioactive material and other contaminants that can be dangerous to people and aquatic life if they get into waterways.

Some well operators are also selling their waste, rather than paying to dispose of it. Because it is so salty, they have found ready buyers in communities that spread it on roads for de-icing in the winter and for dust suppression in the summer. When ice melts or rain falls, the waste can run off roads and end up in the drinking supply.

Yet in Pennsylvania, where the number of drilling permits for gas wells has jumped markedly in the last several years, in part because the state sits on a large underground gas formation known as the Marcellus Shale, such waste remains exempt from federal and state oversight, even when turned into salts and spread on roads.

When Pennsylvania regulators tried to strengthen state oversight of how drilling wastewater is tracked, an industry coalition argued vehemently against it. Three of the top state officials at the meeting have since left the government — for the natural-gas industry.

One executive at a drilling wastewater recycling company said that for all the benefits of recycling, it was not a cure-all.

“No one wants to admit it, but at some point, even with reuse of this water, you have to confront the disposal question,” said Brent Halldorson, chief operating officer of Aqua-Pure/Fountain Quail Water Management, adding

that the wastewater has barium, strontium and radioactive elements that need to be removed.
Mr. Halldorson emphasized that he had not seen high radioactivity readings at the plant he operates in Williamsport, Pa. He said he firmly believed in the benefits of recycling — to reduce the waste produced and water used and to help promote a shift toward natural gas, which burns cleaner than coal for producing electricity.
“But there still needs to be a candid discussion, and there needs to be accountability about where even the recycled wastewater is going,” Mr. Halldorson added.
More than 90 percent of well operators in Pennsylvania use this process, known as hydrofracking, to get wells to produce. From 10 percent to 40 percent of the water injected into each well resurfaces in the first few weeks of the process.
Many states send their drilling waste to injection wells, for storage deep underground. But because of the geological formations in Pennsylvania, there are few injection wells, and other alternatives are expensive. So natural-gas well operators in the state have turned to recycling.
“The technical breakthroughs that have allowed us to lead the nation in water recycling are complemented by a carefully orchestrated water-management system, involving a combination of on-site and off-site treatment, depending on specific geography and economics,” said Kathryn Klaber, president of the Marcellus Shale Coalition, an industry trade group.
State and company records show that in the year and a half that ended in December 2010, well operators reported recycling at least 320 million gallons. But at least 260 million additional gallons of wastewater were sent to plants that discharge their treated waste into rivers, out of a total of more than 680 million gallons of wastewater produced, according to state data posted Tuesday. Those 260 million gallons would fill more than 28,800 tanker trucks, a line of which would stretch from about New York City to Richmond, Va.
While the total amount of recycling occurring in the state is nowhere near the 90 percent that the industry has been claiming over the past year, the practice has undoubtedly been on the rise in recent months. The amount reported recycled in the past six months is roughly 65 percent of the total produced, up from roughly 20 percent during the 12 months before that. At least 50 million additional gallons of wastewater is unaccounted for, according to state records.
The fate of more of the wastewater is unknown because of industry lobbying. In 2009, when regulators tried to strengthen oversight of the industry’s methods for disposing of its waste, the Marcellus Shale Coalition staunchly opposed the effort.
“There is no other industry in Pennsylvania that is required to have a manifest system for residual waste,” industry officials argued, according to notes from a meeting on March 11, 2009, with state regulators and officials from the governor’s office. Under the proposed system, a manifest would have been required so that each load of wastewater was tracked from the well to its disposal, to verify that it was not dumped at the side of the road.
After initially resisting, state officials agreed, adding that they would try to persuade the secretary of Pennsylvania’s Department of Environmental Protection to agree, according to the notes.
In the end, the state's proposed manifest system for tracking was not carried out.
Three of the top state officials in the meeting — K. Scott Roy, Barbara Sexton and J. Scott Roberts — have since left their posts for jobs in the natural-gas industry.
The tracking system that was put in place requires monthly or yearly reports to the state from well operators indicating where their waste was taken, but offers no way for the state to guarantee that the waste actually reached the disposal sites.
The challenges of tracking and disposing all of the industry's drilling waste will not go away soon. At least 50,000 new Marcellus wells are supposed to be drilled in Pennsylvania over the next two decades, up from about 6,400 permitted Marcellus wells now.
Wells also create waste that is not captured by recycling, because operators typically recycle only for the first several months after a well begins producing gas.
Though the amount of wastewater decreases over time, the wells can continue to ooze for decades, long after many of them are abandoned.
“This is important because as the well ages, the fluids that come up from it become more toxic, and the state or companies are even less likely to be tracking it,” said Anthony Ingraffea, a drilling expert and professor of civil and environmental engineering at Cornell University.
State regulators predict that the heaviest burdens are still to come.
“The waste that flows back slowly and continuously over the 20- to 30-year life of each gas well could produce 27 tons of salt per year,” Pennsylvania officials wrote in new rules adopted last August about salt levels in drilling wastewater being sent through sewage treatment plants. “Multiply this amount by tens of thousands of Marcellus gas wells,” they said, and the potential pollution effects are “tremendous.”
In an interview on Sunday, John Hanger, who in January stepped down as secretary of Pennsylvania’s Department of Environmental Protection , pointed to these rules as some of the strongest in the country and cited other accomplishments during his term, including increasing inspections of drilling industry trucks, more than doubling his department’s natural gas staff and improving well-design requirements.
The natural-gas industry uses a number of methods to recycle drilling waste.
Some drillers have used recycling equipment at the well site or truck the water to a dedicated recycling facility. The

wastewater is filtered, evaporated and then distilled, to be used again at the well. Other companies add fresh water to the wastewater, to dilute the salts and other contaminants, before pumping it back in the ground for more hydrofracking.

Any sludge that settles from these various processes is taken to landfills, which in Pennsylvania are equipped with radiation monitors, or sent to injection disposal wells.

But drilling experts say that virtually all forms of recycling still result in liquid waste that can be more toxic than it was after the first use.

"The wastewater that comes up from the well will, without a doubt, increase to some degree in radium and other radionuclides with each new fracking," said Radisav Vidic, an environmental engineering professor and drilling expert at the University of Pittsburgh.

Industry officials said there was no reason for concern about radioactivity levels in wastewater.

"All of our reports indicate that this industry operates within the same standards set forth and observed by all water consumers in Pennsylvania," said Matt Pitzarella, a spokesman from Range Resources-Appalachia, a part of the natural-gas company Range Resources.

Some energy companies have found more profitable options for getting rid of their drilling wastewater.

In West Virginia, for example, environmental regulators and highway officials last year announced plans for the state to start paying around five cents per gallon for gas drilling wastewater known as brine, which tends to be extremely salty, to melt ice on roads.

They planned to buy about 1.2 million gallons of the wastewater at more than 120 sites around the state and to buy more as needed.

West Virginia's water and waste management director, Scott Mandirola, has said that he recognized that the waste may have radioactive contaminants and that some of the waste would find its way to the state's waters.

But he added that it would be highly diluted by rain or snow and that de-icing the roads was important. State officials also said that only wastewater from shallow wells would be used, thereby reducing levels of radioactivity.

Pennsylvania also allows salty brine produced from the wastewater to be spread on roads for dust suppression or de-icing.

More than 155,000 gallons of this wastewater was sent by a drilling company called Ultra Resources to nine towns for dust suppression in 2009, state records show. The water came from two gas wells in Tioga County and contained radium at almost 700 times the levels allowed in drinking water.

"I was told nothing about frack water or any gas-well brines or anything else," said Deborah Kotulka, the secretary of Richmond Township, in Tioga County, whose name appears on the state record. Her township received 101,640 gallons of the water from wells with high radioactivity, those records show.

As gas producers have tried to find new ways to get rid of their waste, they have sought reassurances from state and federal regulators that the industry's exemptions from federal laws on hazardous waste were broad enough to protect them.

In late 2009, for example, officials from an industry trade group, the Pennsylvania Oil and Gas Association, wrote to regulators to confirm that drilling waste, regardless of how it was handled, would remain exempt from the federal law governing hazardous materials. The association said it was asking in case companies sought to distill the waste into salts for de-icing roads.

"The query has monumental significance," Steve Rhoads, then the president of the association, wrote in a September 2009 e-mail to state regulators explaining his members' concerns about any attempt by federal officials to categorize drilling waste as hazardous material. The correspondence was obtained through open-records requests filed with the state.

If drillers were to lose the exemption from federal law that allowed their waste not to be considered hazardous, they would probably be forced, at great expense, to start more rigorously testing the waste for toxicity.

They might also have to do what most other industries do: ship any radioactive sludge or salts that is high in radioactivity to Idaho or Washington, where there are some of the only landfills in the country permitted to accept such waste.

Instead, federal regulators informed the industry that their exemption remained intact, a decision that association officials quickly passed on to their members. State regulators declined to comment on the exchange because it concerns a federal, not state, exemption. Federal officials said the salts were regulated by the states.

"In short," Mr. Rhoads wrote his members, the Environmental Protection Agency has determined that the exemption "remains in effect once the waste is generated, regardless of how the waste is treated or managed."

Jason E. Bordoff
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White House Council on Environmental Quality
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01268-EPA-5580

Bob Sussman/DC/USEPA/US
03/01/2011 03:32 PM

To Richard Windsor
cc
bcc
Subject Fw: Follow up to NYT story

very interesting.

Robert M. Sussman
Senior Policy Counsel to the Administrator
Office of the Administrator
(202)-564-7397
US Environmental Protection Agency
----- Forwarded by Bob Sussman/DC/USEPA/US on 03/01/2011 03:31 PM -----

From: "McConville, Drew" <(b) (6)
To: "Utech, Dan G." <(b) (6) Bob Sussman/DC/USEPA/US@EPA, "Bordoff, Jason E." <(b) (6)
Cc: Bob Perciasepe/DC/USEPA/US@EPA
Date: 03/01/2011 01:02 PM
Subject: RE: Follow up to NYT story

Here's the blog post Dan mentioned from John Hanger (former PA DEP Secretary):

http://www.johnhanger.blogspot.com/

SUNDAY, FEBRUARY 27, 2011
Statement regarding Sunday NYT February 27th Drilling Article
No compromises can be made about the safety of drinking water. The Sunday NYT article raises serious issues that must be definitely resolved immediately.

The most serious issue raised by the NYT is whether or not unhealthy levels of radium are in the drinking water as a result of gas drilling wastewater.

Good reasons exist to believe that the answer is no, including the new drilling wastewater disposal rule that went into effect in August 2010 and the now widespread use of recycling technology to manage at least 70% of drilling wastewater. But belief is not good enough.

We must not drift into a war of competing theories or studies. We need the facts. Pennsylvanians deserve nothing less.

The Pennsylvania Department of Environmental Protection should order today all public water systems in Pennsylvania to test immediately for radium or radioactive pollutants and report as soon as good testing allows the results to the public. Only testing of the drinking water for these pollutants can resolve the issue raised by the NYT.

Moreover, once the results comeback and no matter what the results are, testing should continue on a regular basis at least at the 65 public water systems identified by the NYT.

Why did I not take these steps when I was Secretary is a fair question? One answer is that a much stronger rule governing drilling wastewater discharges became final in August 2010 that limited future drilling wastewater discharges

(See below for much more detail).

But the main reason is that I was not presented with information in the manner that the NYT does in this article. The NYT references confidential reports, anonymous statements supposedly made by EPA scientists, and other material that I have never seen until this article. I was informed by agency radiation experts that the radiation levels were not a threat to truck drivers, workers at sewage treatment facilities or the public. To be clear the buck stopped with me up to January 18th, 2011 and I believe the agency staff were handling this issue in a serious, careful manner. I still believe that to be in the case

But as I said, beliefs are not good enough. Now only testing can resolve one way or another the issue about radium that the NYT raises.

Having said that, some further points about the article need to be made.

1. The piece looks at a three year period and characterizes regulation in Pennsylvania as lax. Lax regulation is the theme or narrative of the piece and virtually all elements and word choices of the article are consistent with that theme.

Buried late in this enormous piece is a paragraph that states that the rules today are much stronger. Shortly after I became Secretary on September 2nd, 2010, I concluded Pennsylvania's rules governing gas drilling and protecting our waters needed to be strengthened. I directed 4 new policies or rules be drafted and completed as soon as possible. All now have been.

2. The 4 strengthening regulatory packages that were barely or not all mentioned in the NYT article included:

First, finalizing protective water withdrawal policies requiring at the time of the drilling application the submittal of a water plan that insured water withdrawals would not damage streams even during droughts.

Second, I ordered a major rule to end Pennsylvania's decades long practice of allowing unlimited amounts of drilling wastewater untreated for total dissolved solids (salts etc) into rivers and streams and won passage of this rule over opposition from the gas industry, the coal mining industry, the Pennsylvania Chamber of Business and Industry, and other supporters of the gas industry.

The new drilling wastewater rule became effective in August 2010 and applies to all sources of TDS pollution, including mining and industrial sources. The rule, however, singles out drilling wastewater for the strongest requirements. The 2010 rule requires new or existing drilling wastewater plants that expand to treat drilling wastewater to the Safe Drinking Water Standard for TDS if it is returned to a river.

The rule does allow plants that had been operating for many decades to conditionally do so if they do not expand and if the river to which they discharge has TDS levels below 75% of the Safe Drinking Water standard of 500 mg/liter. The NYT erroneously suggests that the existing plants if they do not expand can continue operating under the rule no matter their impact on the receiving stream. False. If the receiving stream has TDS increase as a result of the existing plants discharge or other reasons, these existing plants will have to modify how they operate and possibly cease operations.

The drilling wastewater rule is hugely important and must be enforced fully.

Third, I ordered a strengthening across the board of the rules governing drilling well design, materials, construction, monitoring, testing, and disclosure of chemicals. This rule became effective on February 5, 2011 after being begun in 2009. They are state of the art standards. They must be followed and enforced.

Fourth, we enacted a 150 foot buffer requirement from all development for High Quality streams, Pennsylvania's best waters. About 22,000 miles of streams receive this protection or one-quarter of all of Pennsylvania's streams. This rule commenced in 2009 and was final in November 2010.

3. I also concluded in 2008 that the DEP gas staff was too small so we more than doubled the drilling staff from 88 to 202 positions. This substantial staffing increase was paid for by using emergency rulemaking powers to raise the drilling application fee to $5,000 to $10,000 per Marcellus application from the ridiculous amount of $100 that had been set in 1984 and never raised. We hired in 2009 and twice in 2010. We opened a new drilling staff office in Williamsport in 2009 and another in Scranton during 2010.

Pennsylvania is the only state that has hired substantial or any staff for its drilling operation. The NYT does not say that, because it does not fit its narrative of lax Pennsylvania regulation. Indeed, the reporter deliberately did not include a long list of actions by DEP that represented strong enforcement.

4. On these first 3 points, in a sea of ink, the NYT article just says: "Recently Pennsylvania has tried to increase its oversight, doubling the number of regulators, improving well-design requirements and sharply decreasing how much drilling waste many treatment plants can accept or release." Yes, indeed. See the above for some of the details.

5. The NYT piece makes errors when discussing the 2008 high TDS levels on the Mon River. The NYT fails to state that it was state regulators, the Pennsylvania Department of Environmental Protection, at my direction that issued Drinking Water Advisories to the public when TDS levels on the Mon River exceeded the Safe Drinking Water Act secondary drinking water standards.

6. The NYT piece does not state clearly or fully that in October 2008 that DEP issued orders to municipal sewage plants discharging to the Mon River or its tributaries to cut by 95% its drilling wastewater volumes. Those orders were not lifted. The order to cut by 95% drilling wastewater discharges applied to any municipal treatment plant that had been taking drilling wastewater without a specific permit to do so.

Reporting accurately and fully this action plus that DEP issued the Public Water Advisory would not fit with the article's determined narrative of lax regulation. Some themes just cannot be moved no matter what.

7. Near the end of the piece the article argues that DEP has lax regulation. Its major evidence for that proposition is that DEP issues twice as many warning as fines for violations.

Here is what the NYT completely and apparently willfully ignored or placed outside of the main story due to the famous space limitations. It is quite a coincident that the facts or points that were ignored completely or not included in the main story are the ones showing strong regulation.

1. Telling its readers that DEP has issued 1400 violations to the industry just for the period from January 1, 2008 to June 30, 2010.

2. Telling its readers that DEP has issued to companies orders to stop drilling for weeks and months;
other orders to companies to stop fracking for weeks and months; orders to companies to pay fully for all spills and leaks. These orders cost companies tens of millions of dollars and greatly exceed the amount of fines. Fines run into the millions, but the Legislature should raise the maximum amount of fines.

3. Telling its readers that DEP required Cabot Oil and Gas to plug wells and repair wells at the cost of many millions of dollars to remedy a gas migration that impacted 19 water wells.

4. Telling its readers that DEP won a settlement with Cabot that paid the 19 impacted families on average $200,000 per family or twice the market value of the property, while allowing families to keep their property and their mineral rights. Payments and yet another major fine exceeded $4 million in this single action. These payments were won even for 14 of the 19 properties were testing indicated that methane had been removed from the water supplies.

5. Telling its readers that DEP and the State Police do major truck inspection operations, pulling drilling trucks over for inspection. That these repeated operations have put about 40% of the drilling trucks inspected out of service.

6. Telling its readers that the DEP gas drilling regulatory program was reviewed in 2010 by an Independent Auditing organization called STRONGER that includes reviewers from industry, other states, and environmental organizations. The DEP regulatory program received high marks. Of course the reporter did not include the fact of this independent audit in the story.

These are facts and important ones for the public to know and for a good reporter to report. There are still more that could be shared with a reporter interested.

UPDATE
Lastly, though I am quoted in the piece, this reporter never interviewed me prior to the publication of the sunday article. The reporter claims that he told DEP staff that he wanted to interview me. I was never told so and have not confirmed the request. As Secretary, I was interviewed hunreds and probably thousands of times. I made myself totally accessible to reporters. My staff knew that I was available to reporters. This reporter today says he asked Governor Corbett's administration at DEP on January 21st, three days after Governor Rendell and I left office, to confirm the quotation that the reporter strung togehter from some other source. The words that I find myself saying in this piece were said by me somewhere at some time and in some context but they were not said in the context of an interview for this piece. The reporter never called me after January 18th for any purpose including to confirm the quotation that he put together for me. The reporter did not ask the new administration for my contact information after I left office. He made no attempt to reach me from January 18th until the piece was published, including again to confirm the quotation he uses. The reporter did make effort to contact my former colleague Secretary Quigley after he left office and did interview former Secretary Quigley about a week ago.

Update II

Secretary Quigley was a superb Secretary of the Department of Conservation and Natural Resources, the agency charged with managing state parks and state forests. He oversaw gas leasing of state forest land and did a great job in difficult circumstances, including writing a very protective lease for gas drilling on state forests. Secretary Quigley has unmatched dedication and

knowledge about the state forests and parks.

Some confusion exists about the jurisdictions and roles of DCNR and DEP. The DCNR does not regulate the oil and gas industry in Pennsylvania. DEP does. The Department of Environmental Protection enforces the state Oil and Gas Act, the state clean streams law, the federal Clean Water Act, the federal Safe Drinking Water Act, the federal and state clean air laws, the state waste management laws and other provisions of law that apply to gas drilling. DEP promulgates all rules and regulations governing oil and gas drilling.

I suspect that I will have more to say on this soon.

-----Original Message-----
From: Utech, Dan G.
Sent: Tuesday, March 01, 2011 12:08 PM
To: 'Sussman.Bob@epamail.epa.gov'; Bordoff, Jason E.
Cc: McConville, Drew; 'Perciasepe.Bob@epamail.epa.gov'
Subject: Re: Follow up to NYT story

Bob P - we're getting started - let us know if you need the dial in info.

----- Original Message -----
From: Sussman.Bob@epamail.epa.gov <Sussman.Bob@epamail.epa.gov>
To: Bordoff, Jason E.
Cc: McConville, Drew; Perciasepe.Bob@epamail.epa.gov
<Perciasepe.Bob@epamail.epa.gov>; Utech, Dan G.
Sent: Tue Mar 01 11:38:37 2011
Subject: Re: Follow up to NYT story

I'm coming over. bob will be on the phone.

Robert M. Sussman
Senior Policy Counsel to the Administrator Office of the Administrator
(202)-564-7397
US Environmental Protection Agency

From: "Bordoff, Jason E." <[redacted (b) (6)]
To: Bob Sussman/DC/USEPA/US@EPA
Cc: "McConville, Drew" <[redacted (b) (6)] Bob Perciasepe/DC/USEPA/US@EPA, "Utech, Dan G." <[redacted (b) (6)]
Date: 03/01/2011 11:07 AM
Subject: Re: Follow up to NYT story

Just checking if you guys are planning to come over or if we shld just do on phone. Thanks.

Jason E. Bordoff
Associate Director for Energy and Climate Change White House Council on Environmental Quality
p: [redacted (b) (6)] | f: 202.456.0753 | [redacted (b) (6)]

----- Original Message -----
From: Sussman.Bob@epamail.epa.gov <Sussman.Bob@epamail.epa.gov>
To: Bordoff, Jason E.
Cc: McConville, Drew; Perciasepe.Bob@epamail.epa.gov
<Perciasepe.Bob@epamail.epa.gov>; Utech, Dan G.
Sent: Tue Mar 01 08:26:46 2011
Subject: Re: Follow up to NYT story

Jason -- do you want to do the 12:00 mtg in person?

Robert M. Sussman
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(202)-564-7397
US Environmental Protection Agency

From: "Bordoff, Jason E." <(b) (6)
To: Bob Sussman/DC/USEPA/US@EPA, Bob Perciasepe/DC/USEPA/US@EPA
Cc: "Utech, Dan G." <(b) (6) "McConville, Drew" <(b) (6)
Date: 03/01/2011 07:44 AM
Subject: Re: Follow up to NYT story

Thanks Bob

Jason E. Bordoff
Associate Director for Energy and Climate Change White House Council on Environmental Quality
p: (b) (6) | f: 202.456.0753 | (b) (6)

From: Sussman.Bob@epamail.epa.gov <Sussman.Bob@epamail.epa.gov>
To: Bordoff, Jason E.; Perciasepe.Bob@epamail.epa.gov
<Perciasepe.Bob@epamail.epa.gov>
Cc: Utech, Dan G.; McConville, Drew
Sent: Tue Mar 01 06:42:39 2011
Subject: Re: Follow up to NYT story

Jason. Ex.5 - Deliberative

From: "Bordoff, Jason E." [(b) (6)
Sent: 02/28/2011 09:50 PM EST
To: Bob Sussman; Bob Perciasepe
Cc: "Utech, Dan G." <(b) (6) "McConville, Drew"
<(b) (6)
Subject: Follow up to NYT story

Bob: Ex.5 - Deliberative

[redacted]
Ex.5 - Deliberative

01268-EPA-5581

Bob Sussman/DC/USEPA/US
03/01/2011 04:03 PM

To Richard Windsor, Bob Perciasepe, Michael Goo
cc Seth Oster, David McIntosh, Arvin Ganesan
bcc
Subject Fw: Report on the Costs and Benefits of the 1990 Clean Air Act

This study, released to Congress today, presents very significant findings about the costs and benefits of regulation under the CAA. [redacted] Ex.5 - Deliberative [redacted]

[redacted]

Robert M. Sussman
Senior Policy Counsel to the Administrator
Office of the Administrator
(202)-564-7397
US Environmental Protection Agency
----- Forwarded by Bob Sussman/DC/USEPA/US on 03/01/2011 03:59 PM -----

From: Rob Brenner/DC/USEPA/US
To: <[redacted] (b) (6)
Cc: Gina McCarthy/DC/USEPA/US@EPA, Bob Sussman/DC/USEPA/US@EPA
Date: 03/01/2011 01:38 PM
Subject: Report on the Costs and Benefits of the 1990 Clean Air Act

Hi Mike,

Here are the final versions of the study we released today on the Costs and Benefits of the 1990 Clean Air Act.

The history here is that the previous versions of the 812 studies were Reports to Congress and therefore went to OMB for review before they were released. Several years ago Congress dropped the 812 reporting requirement along with numerous other study provisions contained in other pieces of legislation. We decided that the 812 Study has significant value and decided to continue developing it as an EPA report instead of a Report to Congress.

It received extensive review by three external panels of health experts, air quality modelers, and economists (including Nat Keohane). The panels were selected and managed by our Science Advisory Board.

Rob Brenner


110301IntegratedReport.pdf


110301SummaryReport.pdf

The Benefits and Costs of the Clean Air Act from 1990 to 2020

Final Report

U.S. Environmental Protection Agency
Office of Air and Radiation

March 2011

ABSTRACT

Section 812 of the 1990 Clean Air Act Amendments requires the U.S. Environmental Protection Agency to develop periodic reports that estimate the benefits and costs of the Clean Air Act. The main goal of these reports is to provide Congress and the public with comprehensive, up-to-date, peer-reviewed information on the Clean Air Act's social benefits and costs, including improvements in human health, welfare, and ecological resources, as well as the impact of the Act's provisions on the US economy. This report is the third in the Section 812 series, and is the result of EPA's Second Prospective analysis of the 1990 Amendments.

The Clean Air Act Amendments (CAAA) of 1990 augmented the significant progress made in improving the nation's air quality through the original Clean Air Act of 1970 and its 1977 amendments. The amendments built off the existing structure of the original Clean Air Act, but went beyond those requirements to tighten and clarify implementation goals and timing, increase the stringency of some federal requirements, revamp the hazardous air pollutant regulatory program, refine and streamline permitting requirements, and introduce new programs for the control of acid rain and stratospheric ozone depleters. The main purpose of this report is to document the costs and benefits of the 1990 CAAA provisions incremental to those costs and benefits achieved from implementing the original 1970 Clean Air Act and the 1977 amendments.

The analysis estimates the costs and benefits of reducing emissions of air pollutants by comparing a "*with-CAAA*" scenario that reflects expected or likely future measures implemented under the CAAA with a "*without-CAAA*" scenario that freezes the scope and stringency of emissions controls at the levels that existed prior to implementing the CAAA. There are six basic steps undertaken to complete this analysis: 1. air pollutant emissions modeling; 2. compliance cost estimation; 3. ambient air quality modeling; 4. health and environmental effects estimation; 5. economic valuation of these effects; and 6. results aggregation and uncertainty characterization.

The results of our analysis, summarized in the table below, make it abundantly clear that the benefits of the CAAA exceed its costs by a wide margin, making the CAAA a very good investment for the nation. We estimate that the annual dollar value of benefits of air quality improvements will be very large, and will grow over time as emissions control programs take their full effect, reaching a level of approximately $2.0 trillion in 2020. These benefits will be achieved as a result of CAAA-related programs and regulatory compliance actions estimated to cost approximately $65 billion in 2020. Most of these benefits (about 85 percent) are attributable to reductions in premature mortality associated with reductions in ambient particulate matter; as a result, we estimate that cleaner air will, by 2020, prevent 230,000 cases of premature mortality in that year. The

remaining benefits are roughly equally divided among three categories of human health and environmental improvement: preventing premature mortality associated with ozone exposure; preventing morbidity, including acute myocardial infarctions and chronic bronchitis; and improving the quality of ecological resources and other aspects of the environment, the largest component of which is improved visibility.

The very wide margin between estimated benefits and costs, and the results of our uncertainty analysis, suggest that it is extremely unlikely that the monetized benefits of the CAAA over the 1990 to 2020 period reasonably could be less than its costs, under any alternative set of assumptions we can conceive. Our central benefits estimate exceeds costs by a factor of more than 30 to one, and the high benefits estimate exceeds costs by 90 times. Even the low benefits estimate exceeds costs by about three to one.

ESTIMATED MONETIZED BENEFITS AND COSTS OF THE 1990 CLEAN AIR ACT AMENDMENTS

	ANNUAL ESTIMATES			PRESENT VALUE ESTIMATE
	2000	2010	2020	1990-2020
Monetized Direct Compliance Costs (millions 2006$):				
Central [a]	$20,000	$53,000	$65,000	$380,000
Monetized Direct Benefits (millions 2006$):				
Low[b]	$90,000	$160,000	$250,000	$1,400,000
Central	$770,000	$1,300,000	$2,000,000	$12,000,000
High[b]	$2,300,000	$3,800,000	$5,700,000	$35,000,000
Net Benefits - Benefits minus Costs (millions 2006$):				
Low	$70,000	$110,000	$190,000	$1,000,000
Central	$750,000	$1,200,000	$1,900,000	$12,000,000
High	$2,300,000	$3,700,000	$5,600,000	$35,000,000
Benefit/Cost Ratio:				
Low[c]	5/1	3/1	4/1	4/1
Central	39/1	25/1	31/1	32/1
High[c]	115/1	72/1	88/1	92/1
Compliance Costs per Premature Mortality Avoided (2006$):				
Central	$180,000	$330,000	$280,000	Not estimated

[a] The cost estimates for this analysis are based on assumptions about future changes in factors such as consumption patterns, input costs, and technological innovation, which introduce significant uncertainty. The degree of uncertainty associated with many of the key factors, however, cannot be reliably quantified. Thus, we are unable to present specific low and high cost estimates.

[b] Low and high benefits estimates correspond to 5th and 95th percentile results from statistical uncertainty analysis, incorporating uncertainties in physical effects and valuation steps of benefits analysis.

[c] The low benefit/cost ratio reflects the ratio of the low benefits estimate to the central cost estimate, while the high ratio reflects the ratio of the high benefits estimate to the central costs estimate.

TABLE OF CONTENTS

LIST OF ACRONYMS

ACS	American Cancer Society
AEO	Annual Energy Outlook (from the US Department of Energy)
AERMOD	American Meteorological Society/Regulatory Model
AIM	Architectural and Industrial Maintenance
AMI	Acute myocardial infarction
APEEP	Air Pollution Emissions Experiments and Policy analysis model
AQMS	Air Quality Modeling Subcommittee (of the Council)
AMET	Atmospheric Model Evaluation Tool
ANC	Acid Neutralizing Capacity
BenMAP	Environmental Benefits Mapping and Analysis Program
CAA	Clean Air Act of 1970
CAAA	Clean Air Act Amendments of 1990
CAIR	Clean Air Interstate Rule
CAMR	Clean Air Mercury Rule
CARB	California Air Resources Board
CAVR	Clean Air Visibility Rule
CDC	Centers for Disease Control
CGE	Computable General Equilibrium
CMAQ	Community Multi-scale Air Quality [System]
CO	Carbon monoxide
COI	Cost of illness
CONUS	Continental United States (domain in CMAQ model)
Council	Advisory Council on Clean Air Compliance Analysis
C-R	Concentration-Response
CTG	Control Techniques Guideline
CV	Contingent valuation
DDT	Dichlorodiphenyl-trichloroethane
DOE	United States Department of Energy
EC	Elemental carbon
EE	Expert elicitation
EES	Ecological Effects Subcommittee (of the Council)

EGU	Electric Generating Unit
EMPAX-CGE	Economic Model for Policy Analysis – Computable General Equilibrium
EPA	United States Environmental Protection Agency
EUS	Eastern United States (domain in CMAQ model)
EV	[Hicksian] equivalent variation
eVNA	Enhanced Voronoi Neighbor Averaging
FACA	Federal Advisory Committee Act
FASOM	Forest and Agriculture Sector Optimization Model
FRM	Federal Reference Method
GDP	Gross Domestic Product
GHG	Greenhouse gas
HAP	Hazardous Air Pollutant
HAPEM6	Hazardous Air Pollution Exposure Model, Version 6
HDDV	Heavy-Duty Diesel Vehicle
HES	Health Effects Subcommittee (of the Council)
I&M	Inspection and maintenance
IC/BC	Initial and boundary conditions
IMPROVE	Interagency Monitoring of Protected Visual Environments
IPM	Integrated Planning Model
LEV	Low-Emission Vehicle
LML	Lowest measured level
MACT	Maximum Available Control Technology
MAGIC	Model of Acidification of Groundwater in Catchments
MATS	Modeled Attainment Test Software
MCIP	Meteorology-Chemistry Interface Processor
MM5	Fifth Generation Mesoscale Model
MSA	Metropolitan statistical area
NAA	Non-Attainment Area
NAAQS	National Ambient Air Quality Standards
NAICS	North American Industry Classification System
NAPAP	National Acid Precipitation Assessment Program

NEI	National Emissions Inventory
NEMS	National Energy Modeling System
NESHAP	National Emission Standard for Hazardous Air Pollutants
NH_3	Ammonia
NH_4	Ammonium
NMMAPS	National Morbidity, Mortality, and Air Pollution Study
NO_3	Nitrate
NO_x	Nitrogen oxides
NPV	Net present value
NSPS	New Source Performance Standard
O&M	Operation and maintenance
OC	Organic carbon
OTC	Ozone Transport Commission
Pb	Lead
PCB	Polychlorinated biphenyl
PM	Particulate matter
$PM_{2\,5}$	Particulate matter with an aerodynamic diameter less than 2.5 microns
PM_{10}	Particulate matter with an aerodynamic diameter less than 10 microns
PPB	Parts per billion
PRB	Powder River Basin
PSU/NCAR	Pennsylvania State University/National Center for Atmospheric Research
RACT	Reasonably Available Control Technology
RADM/RPM	Regional Acid Deposition Model/Regional Particulate Model
REMSAD	Regulatory Modeling System for Aerosols and Acid Deposition
RfC	Reference concentration
RFP	Rate of Further Progress
RIA	Regulatory Impact Analysis
RSM	Response Surface Model
RUM	Random Utility Model
SAB	Science Advisory Board
SANDWICH	Sulfates, Adjusted Nitrates, Derived Water, Inferred Carbonaceous mass, and estimated aerosol acidity (H+)) process

SCAQMD	South Coast Air Quality Management District
SIP	State Implementation Plan
SMAT	Speciated Modeled Attainment Test
SMOKE	Sparse-Matrix Operator Kernel Emissions
SO_2	Sulfur dioxide
SO_x	Sulfur oxides
SOA	Secondary organic aerosol
STN	Speciation Trends Network
SUV	Sport-Utility Vehicle
TAC	Total Annualized Cost
TSP	Total Suspended Particulates
UVb or UVB	Ultraviolet B radiation
VMT	Vehicle miles traveled
VNA	Voronoi Neighbor Averaging
VOC	Volatile organic compound
VSL	Value of statistical life
WTAC	Willingness-to-accept-compensation
WTP	Willingness-to-pay
WUS	Western United States (domain in CMAQ model)
Φgm^{-3} or $\Phi g/m^3$	Micrograms per cubic meter (unit for $PM_{2\ 5}$ measurement)

ACKNOWLEDGEMENTS

The Project Team for the Second Prospective Study was comprised of EPA staff, and staff from a number of organizations working under contract to EPA. The project manager was Jim DeMocker, Senior Policy Analyst, EPA Office of Air and Radiation. Under EPA direction, Project Team members designed and implemented the study, and authored the study's full report, summary report, and supporting technical reports and technical memoranda. In particular, the full report and summary report of the overall Second Prospective Study were authored by Jim DeMocker of EPA and Jim Neumann of Industrial Economics, Incorporated. Major contributions to the main reports and/or key supporting reports were made by Rob Brenner and Jeneva Craig of EPA; Henry Roman, Jason Price, Maura Flight, Tyra Walsh, Lindsay Ludwig, and Nadav Tanners of Industrial Economics, Incorporated; Leland Deck of Stratus Consulting; Jim Wilson and Frank Divita of E.H. Pechan and Associates; Sharon Douglas and Boddu Venkatesh of ICF International; Neil Wheeler of Sonoma Technologies; and Brooks Depro and Robert Beach of RTI International.

Many current and former EPA and contractor staff also made helpful contributions to the development and/or review of the study. Those who made particularly significant contributions included EPA staff Bryan Hubbell, Neal Fann, Amy Lamson, Lisa Conner, Charles Fulcher, Rich Cook, Joe Touma, Chad Bailey, Ted Palma, Norm Possiel, Brian Timin, Marc Houyoux, Larry Sorrels, Ken Davidson, and Jason Lynch; and contractor staff Andrew Bollman, Maureen Mullen and Kirstin Thesing of E.H. Pechan and Associates; Belle Hudischewskyj, Tom Myers, Yi Hua Wei, and Jay Haney of ICF International; and Martin Ross and Lauren Davis of RTI International.

During all phases of the study, from initial design to final report drafting, the Project Team and the Second Prospective Study benefitted immensely from the thoughtful, rigorous, and expert advice of the Advisory Council on Clean Air Compliance Analysis (Council) and its technical subcommittees. The Council was organized under the auspices of EPA's Science Advisory Board, which provided staff support supervised by Vanessa Vu, Director of the SAB Staff Office. The Designated Federal Official for the final Council reviews was Stephanie Sanzone of the SAB Staff Office. Other SAB Staff Office personnel who assisted in the coordination of Council reviews included Holly Stallworth, Marc Rigas, Ellen Rubin, Angela Nugent, and Anthony Maciorowski.

The Council panel providing final review of the study was chaired by Professor James K. Hammitt of Harvard University. Council members serving during the final review of this report include John Bailar (Chair of the Health Effects Subcommittee), Michelle Bell, Sylvia Brandt, Linda Bui, Dallas Burtraw, Ivan J. Fernandez (Chair of the Ecological Effects Subcommittee), Shelby Gerking, Wayne Gray, D. Alan Hansen, Nathaniel Keohane, Jonathan Levy, Richard L. Poirot, Arden Pope, Armistead (Ted) Russell (Chair of the Air Quality Modeling Subcommittee), and Michael Walsh.

In addition to the Chairs listed above, members of the technical subcommittees serving during the final review of this report included David T. Allen, David Chock, Paulette Middleton, Ralph Morris, James Price, and Chris Walcek; Elizabeth Boyer, Charles T.

Driscoll, Jr., Christine Goodale, Keith G. Harrison, Allan Legge, Stephen Polasky, and Ralph Stahl, Jr.; John Fintan Hurley, Patrick Kinney, Michael T. Kleinman, Bart Ostro, and Rebecca Parkin.

In addition, valuable advice and ideas in the early stages of project design and implementation, as well as review of interim products of the study, were provided by former Council members: Trudy Ann Cameron (former Council Chair), Maureen Cropper (former Council Chair), Lauraine Chestnut, Lawrence Goulder, F. Reed Johnson, Katherine Kiel, Charles Kolstad, Nino Kuenzli, Lester B. Lave, Virginia McConnell, David Popp, and V. Kerry Smith. Former subcommittee members include: Mark Castro, Harvey E. Jeffries, Morton Lippmann, and Scott Ollinger. The Council also consulted with a number of invited experts and past panel members, including Aaron Cohen, John Evans, Christopher Frey, Dale Hattis, D. Warner North, Thomas S. Wallsten, and Ronald Wyzga.

CHAPTER 1 - INTRODUCTION

BACKGROUND AND PURPOSE

Section 812 of the 1990 Clean Air Act Amendments established a requirement that EPA develop periodic reports that estimate the benefits and costs of the Clean Air Act (CAA). The main goal of these reports is to provide Congress and the public with comprehensive, up-to-date, peer-reviewed information on the Clean Air Act's social benefits and costs, including improvements in human health, welfare, and ecological resources, as well as the impact of CAA provisions on the US economy. This report is the third in the Section 812 series, and is the result of EPA's Second Prospective analysis of the 1990 Amendments.

The first report EPA created under this authority, *The Benefits and Costs of the Clean Air Act: 1970 to 1990*, was published and conveyed to Congress in October 1997. This Retrospective analysis comprehensively assessed benefits and costs of requirements of the 1970 Clean Air Act and the 1977 Amendments, up to the passage of the Clean Air Act Amendments of 1990. The results of the Retrospective analysis showed that the nation's investment in clean air was more than justified by the substantial benefits that were gained in the form of increased health, environmental quality, and productivity. The aggregate benefits of the CAA during the 1970 to 1990 period exceeded costs by a factor of 10 to 100.

A second Section 812 report, *The Benefits and Costs of the Clean Air Act: 1990 to 2010*, was completed in November of 1999 and addressed the incremental costs and benefits of the Clean Air Act Amendments (CAAA) enacted by Congress and signed by the President in November of 1990. This First Prospective analysis addressed implementation of the CAAA over the period 1990 to 2010, and found that aggregate benefits of the Amendments alone, excluding provisions in place prior to 1990, exceeded the costs by a factor of four.

Similar to these prior analyses, this document has one primary and several secondary objectives. The main goal is to provide Congress and the public with comprehensive, up-to-date, peer-reviewed information on the CAAA's social costs and benefits, including health, welfare, and ecological benefits. Data and methods derived from the Retrospective and First Prospective analysis have already been used to assist policy-makers in refining clean air regulations over the last several years, and we hope the information continues to prove useful to Congress during future Clean Air Act reauthorizations. Beyond the statutory goals of Section 812, EPA also intends to use the results of this study to help support decisions on future investments in air pollution research. In addition, lessons learned in conducting this analysis will help better target

efforts to improve the accuracy and usefulness of future prospective analyses, generated either as part of this series or as part of EPA's ongoing responsibility to estimate benefits and costs of major rulemakings.

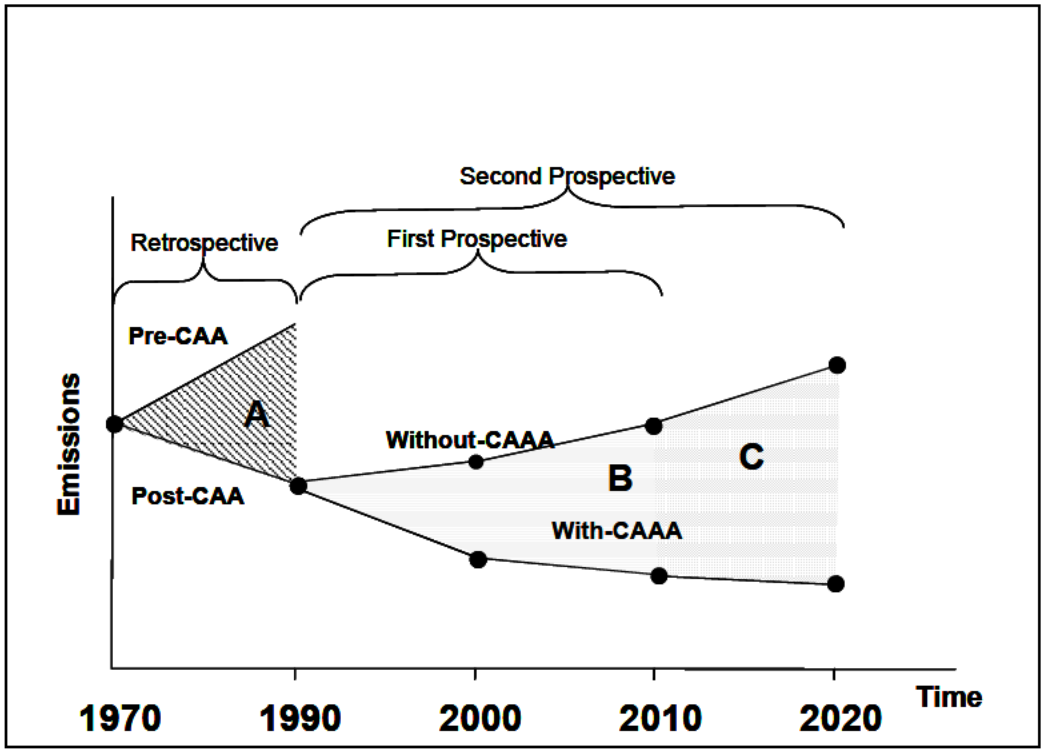
RELATIONSHIP OF THIS REPORT TO OTHER ANALYSES

The Clean Air Act Amendments of 1990 augmented the significant progress made in improving the nation's air quality through the original Clean Air Act of 1970 and its 1977 amendments. The amendments built off the existing structure of the original Clean Air Act, but went beyond those requirements to tighten and clarify implementation goals and timing, increase the stringency of some federal requirements, revamp the hazardous air pollutant regulatory program, refine and streamline permitting requirements, and introduce new programs for the control of acid rain and stratospheric ozone depleters. Because the 1990 Amendments represented an additional improvement to the nation's existing clean air program, the analysis summarized in this report was designed to estimate the costs and benefits of the 1990 CAAA incremental to those costs and benefits assessed in the Retrospective analysis. In economic terminology, this report addresses the marginal costs and benefits of the 1990 CAAA. Figure 1-1 below outlines this relationship among the section 812 Retrospective, the First Prospective, and the Second Prospective.

As illustrated in Figure 1-1, this report effectively updates and augments the First Prospective. This report addresses essentially the same scenario and target variables as the First Prospective, but incorporates a number of significant enhancements. First, this report extends the time period of analysis an additional ten years relative to the First Prospective, covering the period from the signing of the amendments in 1990 through 2020. Second, this report reflects updated cost and emissions estimation methods, including use of a new model suited to nonroad engine regulation and incorporation of the effects of learning-by-doing on projections of direct costs. Third, this report incorporates new information on the benefits of air pollutant regulation, including use of an integrated national-scale air quality model, more comprehensive characterization of ecological benefits, and an air toxics case study. Fourth, the report reflects investments in more comprehensive uncertainty analysis, including quantitative analyses where feasible. Finally, this report incorporates a sophisticated economy-wide model to estimate effects of the CAAA on such measures as GDP, prices, and consumer welfare. The Retrospective analysis employed a similar model for assessing the direct costs of compliance, but for the first time in this study the Agency has explored the economy-wide implications of both the direct costs *and* the health benefits of the CAAA on economic productivity, providing a much more complete picture of the full implications of CAAA regulations.

The scope of this analysis is to estimate the costs and benefits of reducing emissions of criteria pollutants under two scenarios, depicted in schematic form in Figure 1-1 below:

FIGURE 1-1. CLEAN AIR ACT SECTION 812 SCENARIOS: CONCEPTUAL SCHEMATIC



1. An historical, "*with-CAAA*" scenario control case that reflects expected or likely future measures implemented since 1990 to comply with rules promulgated through September 2005[1]; and
2. A counterfactual "*without CAAA*" scenario baseline case that freezes the scope and stringency of emissions controls at their 1990 levels, while allowing for changes in population and economic activity and, therefore, in emissions attributable to economic and population growth.

The Second Prospective analysis required locking in a set of emissions reductions to be used in subsequent analyses at a relatively early date (late 2005), and as a result we were compelled to forecast the implementation outcome of several pending programs. The most important of these was the then-promulgated Clean Air Interstate Rule (CAIR), which took major steps to further reduce SOx and NOx emissions from electric generating units. The rule has subsequently been vacated, and then remanded; EPA is currently considering a proposed rule to modify areas identified by the court as

[1] The lone exception is the Coke Ovens Residual Risk rulemaking, promulgated under Title III of the Act in March 2005. We omitted this rule because it has a very small impact on criteria pollutant emissions (less than 10 tons per year VOCs) relative to the overall impact of the CAAA. The primary MACT rule for coke oven emissions, however, involves much larger reductions and therefore is included in the with-CAAA scenario.

problematic. As a result, the emissions forecasts for electric generating units incorporated in the *with-CAAA* scenario may not reflect the controls that are ultimately implemented in a modified program. We acknowledge and discuss these types of discrepancies and their impact on the outcome of our analysis in the document.

In addition, despite our efforts to comprehensively evaluate the costs and benefits of all provisions of the Clean Air Act and its Amendments, there remain a few categories of effects that are not addressed by the Retrospective or either prospective analysis. For example, this Second Prospective analysis does not assess the effect of CAAA provisions on lead exposures, primarily because the 1990 Amendments did not include major new provisions for the control of lead emissions until the NAAQS for lead was recently revisited and made significantly more stringent; the NAAQS revision was finalized after our emissions inventory development had been completed, too late for inclusion in our analysis. In addition, persistent data and model limitations preclude a full quantitative treatment of some costs and many benefits of other clean air programs. Therefore, while we considered all potentially relevant effects of the Clean Air Act and related programs, the quantitative results we present are not fully comprehensive, even for programs included in our assessment. Other, more modest omissions are acknowledged in the supporting documentation for this effort.[2]

REQUIREMENTS OF THE 1990 CLEAN AIR ACT AMENDMENTS

This Second Prospective analysis, within the limitations discussed above, presents a comprehensive estimate of costs and benefits of the key regulatory titles of the 1990 Clean Air Act Amendments. The 1990 Amendments consist of the following eleven titles:

Title I. Establishes a detailed and graduated program for the attainment and maintenance of the National Ambient Air Quality Standards.

Title II. Regulates mobile sources and establishes requirements for reformulated gasoline and clean fuel vehicles.

Title III. Expands and modifies regulations of hazardous air pollutant emissions; and establishes a list of 189 hazardous air pollutants to be regulated.

Title IV. Establishes control programs for reducing acid rain precursors.

Title V. Requires a new permitting system for primary sources of air pollution.

Title VI. Limits emissions of chemicals that deplete stratospheric ozone.

Title VII. Presents new provisions for enforcement.

Titles VIII through XI. Establish miscellaneous provisions for issues such as disadvantaged business concerns, research, training, new regulation of outer continental

[2] See www.epa.gov/oar/sect812 for a complete list and opportunity to download supporting documentation for this Second Prospective analysis.

shelf sources, and assistance for people whose employment opportunities shift as a result of the Clean Air Act Amendments**.**

As part of the requirements under Title VIII, section 812 of the Clean Air Act Amendments of 1990 established a requirement that EPA analyze the costs and benefits to human health and the environment that are attributable to the Clean Air Act. In addition, section 812 directed EPA to measure the effects of this statute on economic growth, employment, productivity, cost of living, and the overall economy of the United States.

This analysis does not provide updated information on the costs and benefits of CAAA Title V regulations, which were thoroughly assessed in the First Prospective. Although Title V is believed to have yielded benefits in the efficiency of air permitting, those benefits are largely unquantified – as a result, the main effect of including Title V in the First Prospective was to increase the cost estimate by about $300 million. Similarly, we omit further consideration of Title VI regulation of the emissions of stratospheric ozone depleting substances, which was also assessed in the First Prospective. Although regulations under Title VI are continually updated and refined, the major components of Title VI were in place prior to the First Prospective and were thoroughly analyzed as part of that effort, resulting in the finding that the benefits of Title VI vastly exceeded its cost. As a result, EPA chose to focus resources in the Second Prospective on other areas and refinements. Because Titles V and VI have been previously assessed, and because Titles VII through XI are largely procedural and have mostly modest effects on air pollutant emissions and costs, this Second Prospective analysis is focused on the major emissions regulatory programs of the CAAA, which make up Titles I through IV of the statutory language.[3]

ANALYTICAL DESIGN AND REVIEW

TARGET VARIABLE

The Second Prospective analysis compares the overall health, welfare, ecological and economic benefits of the 1990 Clean Air Act Amendment programs to the costs of these programs. By examining the overall effects of the Clean Air Act, this analysis complements the Regulatory Impact Analyses (RIAs) developed by EPA over the years to evaluate individual regulations. We relied on information about the costs and benefits of specific rules provided by these RIAs, as well as other EPA analyses, in order to use resources efficiently. For this analysis, although costs can be reliably attributed to individual programs, the broad-scale approach adopted in this prospective study largely precludes reliable re-estimation of the benefits on a per-standard or per-program level. Similar to the Retrospective and First Prospective benefits analysis, this study calculates

[3] Note that some elements of Title VII enforcement efforts, such as settlements for historical violations of CAA provisions, particularly in the electric utility and petroleum refining sectors, are included in the emissions inventories of the with-CAAA scenario. For more information, see EPA's detailed emissions report supporting this study at www.epa.gov/oar/sect812

the change in incidences of adverse effects implied by changes in ambient concentrations of air pollutants. However, pollutant emissions reductions achieved contribute to changes in ambient concentrations of those, or secondarily formed, pollutants in ways that are highly complex, interactive, and often nonlinear. Although it would be possible to design specific scenarios that focused analyses only on a subset of regulations (for example, all of Title IV), those policy scenarios are not realistic. For example, exclusion of major components of the Federal rules required under the CAAA would then trigger a much greater need for reductions at the local level, in order to achieve NAAQS standards which apply at the metropolitan area scale. Further, emissions reductions achieved by the provisions of each Title, or more broadly by regulations across the CAAA provisions that apply to a specific category of emitting sources, interact with other regulations to affect the benefits implications of any emissions reduction. Therefore, benefits cannot be reliably isolated or matched to provision-specific changes in emissions or costs. Focusing on the broader target variables of overall costs and overall benefits of the Clean Air Act, the EPA Project Team adopted an approach based on construction and comparison of two distinct scenarios, briefly mentioned above: a "*without-CAAA*" and a "*with-CAAA*" scenario. The *without-CAAA* scenario essentially freezes federal, state, and local air pollution controls at the levels of stringency and effectiveness which prevailed in 1990. The *with-CAAA* scenario assumes that all federal, state, and local rules promulgated pursuant to, or in support of, the 1990 CAAA were implemented. This analysis then estimates the differences between the economic and environmental outcomes associated with these two scenarios. For more information on the specific construction of the scenarios and their relationship to historical trends, see Chapter 2 of this document.

KEY ASSUMPTIONS

Similar to the Retrospective and First Prospective analyses, we made two key assumptions during the scenario design process to avoid miring the analytical process in endless speculation. First, as stated above, we froze air pollution controls at 1990 levels throughout the "*without-CAAA*" scenario. Second, we assumed that the geographic distributions of population and economic activity remain the same between the two scenarios, although these distributions could be expected to change over time under both scenarios in response to differences across scenarios in income and air quality.

The first assumption is an obvious simplification. In the absence of the 1990 CAAA, one would expect to see some air pollution abatement activity, either voluntary or due to state or local regulation. It is conceivable that state and local regulation would have required air pollution abatement equal to – or even greater than – that required by the 1990 CAAA, particularly since some states, most notably California, have in the past done so. If one were to assume that state and local regulations would have been equivalent to 1990 CAAA standards, then a cost-benefit analysis of the 1990 CAAA would be a meaningless exercise since both costs and benefits would equal zero. Any attempt to predict how states' and localities' regulations would have differed from the 1990 CAAA would be too speculative to support the credibility of the ensuing analysis. Instead, the *without-CAAA* scenario has been structured to reflect the assumption that states and localities would not

have invested further in air pollution control programs after 1990 in the absence of the federal CAAA. Thus, this analysis accounts for all costs and benefits of air pollution control from 1990 to 2020 and does not speculate about the fraction of costs and benefits attributable exclusively to the federal CAAA. Nevertheless, it is important to note that state and local governments and private initiatives are responsible for a significant portion of these total costs and total benefits. In the end, the benefits of air pollution controls result from partnerships among all levels of government and with the active participation and cooperation of private entities and individuals.

The second assumption concerns changing demographic patterns in response to air pollution. In the hypothetical *without-CAAA* scenario, air quality is worse than the actual 1990 conditions and the projected air quality in the *with-CAAA* scenario. It is possible that under the *without-CAAA* scenario more people, relative to the *with-CAAA* case, would move away from the most heavily polluted areas. Rather than speculate on the scale of population movement, the analysis assumes no differences in demographic patterns between the two scenarios. Similarly, the analysis assumes no differences between the two scenarios with respect to the level or spatial pattern of overall economic activity. Both scenarios do, however, reflect recent Census Bureau projections of population growth and the distribution of population across the country.

ANALYTIC SEQUENCE

The analysis comprises a sequence of six basic steps, summarized below and described in detail later in this report. These six steps, listed in order of completion, are:

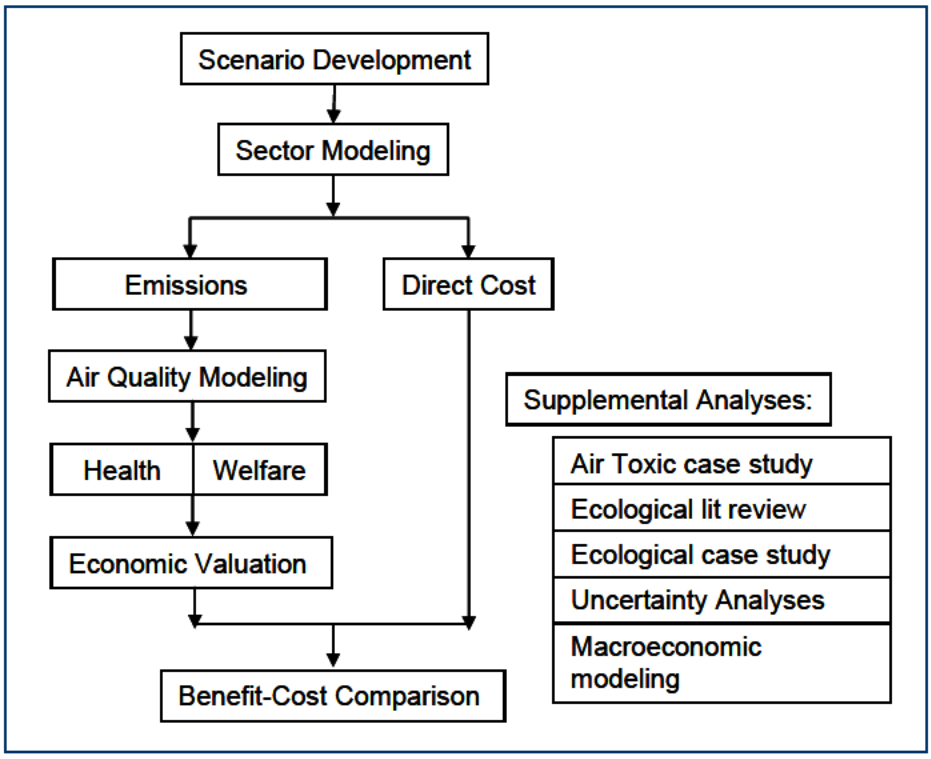
1. emissions modeling
2. direct cost estimation
3. air quality modeling
4. health and environmental effects estimation
5. economic valuation
6. results aggregation and uncertainty characterization

Figure 1-2 summarizes the analytical sequence used to develop the prospective results; we describe the analytic process in greater detail below.

The first step of the analysis is the estimation of the effect of the 1990 CAAA on emissions sources. We generated emissions estimates through a three step process: (1) construction of an emissions inventory for the base year (1990); (2) projection of emissions for the *without-CAAA* case for three target years -- 2000, 2010, and 2020 -- assuming a freeze on emissions control regulation at 1990 levels and continued economic progress, consistent with sector-specific Department of Energy Annual Energy Outlook economic activity projections; and (3) construction of *with-CAAA* estimates for the same three target years, using the same set of economic activity projections used in the *without-CAAA* case but with regulatory stringency, scope, and timing consistent with EPA's CAAA implementation plan (as of late 2005). The analysis reflects application of utility

and other sector-specific emissions models developed and used in various offices of EPA's Office of Air and Radiation. These emissions models provide estimates of emissions of five criteria air pollutants[2] from each of several key emitting sectors. We provide more details in Chapter 2.

FIGURE 1-2. ANALYTIC SEQUENCE FOR THE SECOND PROSPECTIVE ANALYSIS



The emissions modeling step is a critical component of the analysis, because it establishes consistency between the subsequent cost and benefit estimates that we develop. Estimates of direct compliance costs to achieve the emissions reductions estimated in the first step are generated as either an integral or subsequent output from the emissions estimation models, depending on the model used. For example, the Integrated Planning Model used to analyze the utility sector reflects a financially optimal allocation of reductions of sulfur and nitrogen oxides – taking into account the regulatory flexibility

[2] The five pollutants are particulate matter (separate estimates for each of PM_{10} and $PM_{2.5}$), sulfur dioxide (SO_2), nitrogen oxides (NO_x), carbon monoxide (CO), and volatile organic compounds (VOCs). One of the CAA criteria pollutants, ozone (O_3), is formed in the atmosphere through the interaction of sunlight and ozone precursor pollutants such as NO_x and VOCs. We also develop estimates for ammonia (NH_3) emissions. Ammonia is not a criteria pollutant, but is an important input to the air quality modeling step because it affects secondary particulate formation. A sixth criteria pollutant, lead (Pb), is not included in this analysis since airborne emissions of lead were mostly eliminated by pre-1990 Clean Air Act programs - the recent tightening of the Pb NAAQS, necessitated by an enhanced understanding of the effects of even small exposures to airborne lead, was finalized too late to include in our scenarios. However, available estimates of the benefits and costs of the updated Pb NAAQS could be viewed as approximately additive to the results presented here.

inherent in the Title IV trading programs – thereby estimating emissions reductions and compliance costs simultaneously. Direct costs are addressed in Chapter 3.

Emissions estimates also form the first step in estimating benefits. After the emissions inventories are developed, they are translated into estimates of air quality conditions under each scenario. For secondary particulate matter, ozone, and other air quality conditions that involve substantial non-linear formation processes and/or long-range atmospheric transport and transformation, the EPA Project Team employed EPA's Community Multi-scale Air Quality (CMAQ) system. This modeling system, for the first time in the series of Section 812 studies, provides a fully national, integrated analysis of multiple emissions and their interactions. The result is a consistent estimate of air quality for both primary and secondarily formed pollutants, as well as deposition and visibility outcomes that represent the core of the subsequent benefit analyses. Air quality modeling is covered in Chapter 4.

Up to this point of the analysis, modeled conditions and outcomes establish the *without-CAAA* and *with-CAAA* scenarios. However, at the air quality modeling step, the analysis returns to a foundation based on actual historical conditions and data, providing a form of "ground-truthing" of the results. Specifically, actual 2000 historical air quality monitoring data are used to define the baseline conditions from which the *without-CAAA* and *with-CAAA* scenario air quality projections are constructed. We derive air quality conditions under each of the projected years of the *with-CAAA* scenario by scaling the historical data adopted for the base year (2000) by the ratio of the modeled *with-CAAA* and base year air quality. We use the same approach to estimate future year air quality for the *without-CAAA* scenario. This method takes advantage of the richness of the monitoring data on air quality, provides a realistic grounding for the benefit measures, and yet retains analytical consistency by using the same modeling process for both scenarios. The outputs of this step of the analysis are profiles for each pollutant characterizing air quality conditions at each monitoring site in the lower 48 states. This procedure also provided a means for calibrating model results in those grid cells where no monitors exist, combining model results with nearby monitor data to yield a "surface" of air quality that avoids the problems with direct extrapolation of results from monitors not located within a grid cell boundary.

The *without-CAAA* and *with-CAAA* scenario air quality profiles serve as inputs to a modeling system that translates air quality to physical outcomes (e.g., mortality, emergency room visits, or crop yield losses) through the use of concentration-response functions. Scientific literature on the health and ecological effects of air pollutants provides the source of these concentration-response functions. At this point, we derive estimates of the differences between the two scenarios in terms of incidence rates for a broad range of human health and other effects of air pollution by year, by pollutant, and by geographic area.

In the next step, we use economic valuation models or coefficients to estimate the economic value of the reduction in incidence of those adverse effects amenable to monetization. For example, a distribution of unit values derived from the economic

literature provides estimates of the value of reductions in mortality risk. In addition, we compile and present benefits that cannot be expressed in economic terms. In some cases, we calculate quantitative estimates of scenario differences in the incidence of a nonmonetized effect. In many other cases, available data and techniques are insufficient to support anything more than a qualitative characterization of the change in effects. Health effects estimation and valuation are addressed in Chapter 5, and welfare effects, including ecological impacts, visibility, and agriculture and forest productivity effects, and their valuation, are addressed in Chapter 6.

Next, we compare costs and monetized benefits to provide our primary estimate of the net economic benefits of the 1990 CAAA and associated programs, and a range of estimates around that primary estimate reflecting quantified uncertainties associated with the physical effects and economic valuation steps. The monetized benefits used in the net benefit calculations reflect only a portion of the total benefits due to limitations in analytical resources, available data and models, and the state of the science. For example, in many cases we are unable to quantify or monetize the potentially large benefits of air pollution controls that result from protection of the health, structure, and function of ecosystems. In addition, although available scientific studies demonstrate clear links between air quality changes and changes in many human health effects, the available studies do not always provide the data needed to quantify and/or monetize some of these effects. Details are provided in Chapter 7.

In addition to the sequence of analyses outlined in Figure 1-2, which are focused on generating the key target variable of national net monetized benefits, a number of supplemental analyses were also conducted to provide further insights on the impacts of CAAA provisions for natural resources, health, and economic output. The first of these supplemental analyses uses the Second Prospective's national direct cost, health incidence, and health benefits valuation results to conduct further national-scale economy-wide modeling using what is known as a Computable General Equilibrium (CGE) model. The CGE model simulates, in a simplified way, shifts in markets and transactions throughout the economy that might result from CAAA provisions. It is therefore useful in assessing impacts on Gross Domestic Product (GDP), prices, and sector shifts in production (e.g., from "dirty" to "clean" industries). Most past applications of CGEs have focused on the economy-wide implications of the *costs* of complying with regulations – as a result, many prior applications, including the use of CGE in the Retrospective study, tell only half the story. Air pollution regulations not only impose direct costs, but also yield benefits, and at least some of these benefits (e.g., reduced medical expenditures, improved labor productivity owing to better health) affect market transactions in ways that can be assessed in the CGE framework. Not all benefits are amenable to analysis in a CGE, however – for example, nonmarket effects such as willingness-to-pay to avoid pain and suffering of air pollutant-linked disease cannot be incorporated. Nonetheless, this study represents one of the first broad applications of a CGE tool to regulatory costs *and* benefits. More details are provided in Chapter 8.

Two other supplemental analyses represent local-scale case studies of difficult-to-quantify benefits of air pollution regulation. One is a case study of health benefits associated with air toxics control. In prior section 812 studies, benefits of air toxics programs have been largely limited to their effects on criteria pollutant outcomes. For example, many air toxics are also volatile organic compounds, and so contribute to ozone formation, an effect which can be fairly readily quantified. The direct effects of air toxics on health, however, have been more difficult to quantify, partly because of data constraints, and partly because the highly localized effects of air toxics require a level of emissions and air quality modeling resolution that is currently infeasible for a national analysis. The air toxics case study, the results of which are presented in Chapter 5, provides an example of the benefits of air toxics control for a pollutant (benzene) and geographic scope (Houston area) that is both relatively data rich and computationally manageable.

A second case study involves ecological effects, focused on the Adirondack region of New York State. This region was carefully chosen, based on the recommendation of the Advisory Council on Clean Air Compliance Analysis Ecological Effects Subcommittee (Council EES), because of its relatively high sensitivity to the effects of deposited air pollutants, because those same effects are relatively well-studied, and because methods exist to quantify and, in many cases, monetize the benefits of air pollution controls. Using the same emissions and air quality scenarios as in the overall national study, the ecological case study assesses the impact of sulfur and nitrogen deposition in the Adirondack region on aquatic resources, particularly lakes and ponds that support recreational fishing, and on commercial timber resources.

Uncertainty analyses are also conducted at each phase of the analyses. Where applicable, we present the results of a series of quantitative uncertainty analyses that test the effect of alternative methods, models, or assumptions that differ from those we used to derive the primary net benefit estimate. The primary estimate of net benefits and the range around this estimate, however, reflect our current interpretation of the available literature; our judgments regarding the best available data, models, and modeling methodologies; and the assumptions we consider most appropriate to adopt in the face of important uncertainties.

Finally, throughout the report, at the end of each chapter, we discuss the major sources of uncertainty for each analytic step. Although the impact of many of these uncertainties cannot be quantified, we qualitatively characterize the magnitude of effect on our net benefit results by assigning one of two classifications to each source of uncertainty: *potentially major* factors could, in our estimation, have effects of greater than five percent of the total net benefits; and *probably minor* factors likely have effects less than five percent of total net benefits.

The Second Prospective involved a much greater effort in uncertainty analyses than prior reports in this series. Figure 1-3 illustrates the Project Team's approach to uncertainty analysis in the Second Prospective, superimposed on the overall analytic chain for the study presented above. The grey box in Figure 1-3 represents the extent of uncertainty

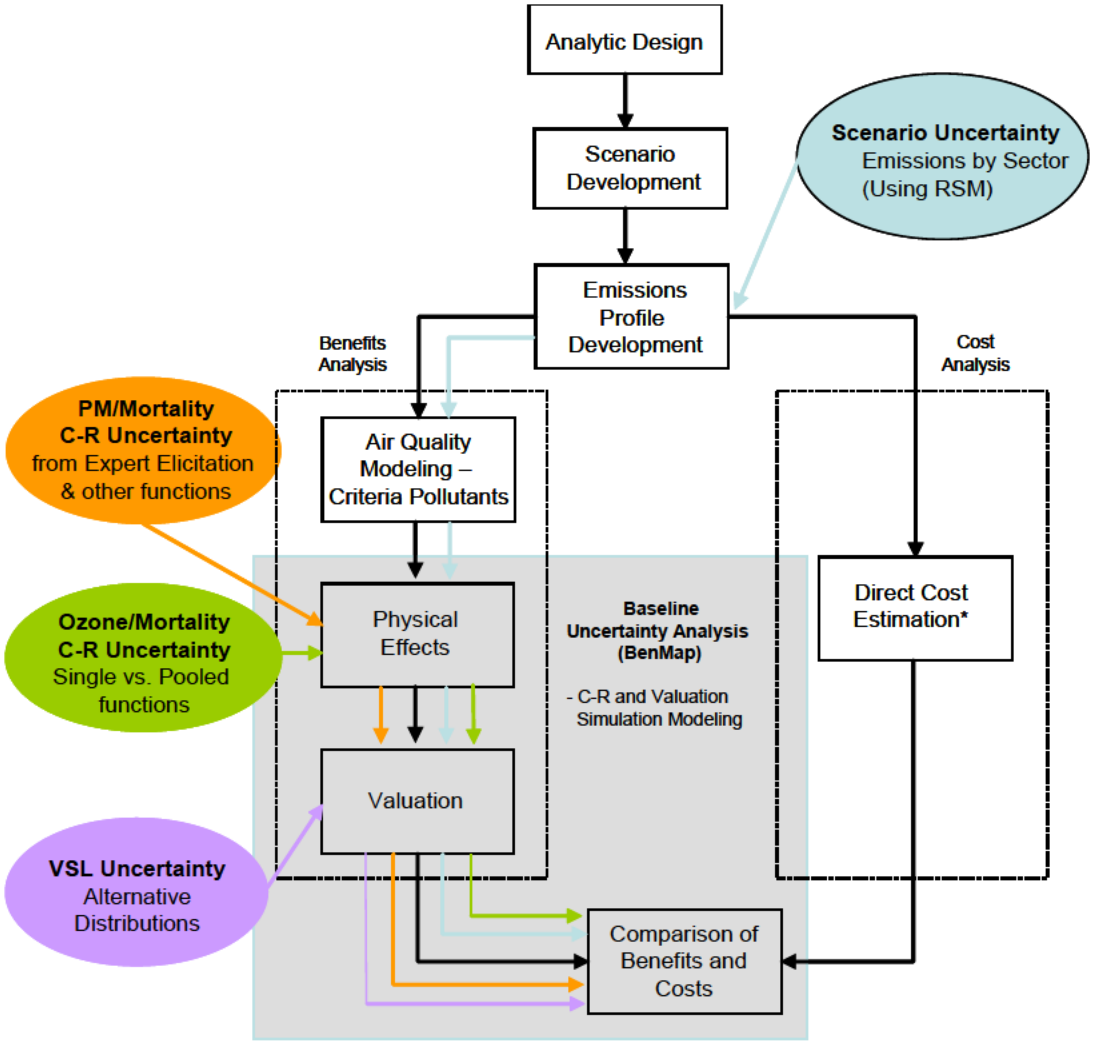
analysis in the first section 812 prospective analysis, which was largely limited to analysis of parameter uncertainty in the concentration-response and valuation steps of the benefits analyses. Those parameter uncertainty analyses have become standard practice in EPA analyses of air pollution program benefits, and are an integral part of the BenMAP benefits assessment tool. The results of the probabilistic modeling of these uncertainties constitute the "primary low" and "primary high" estimates presented in Table 5-7 in Chapter 5 as well as in Chapter 7.

Enhancements employed in the current analysis include both "online" analyses (shown in color), that feed information on uncertainty into the analytical chain at various points and propagate it through the remaining steps in the chain, and separate "offline" analyses and research that provide insights into the uncertainty, sensitivity, and robustness of results to alternative assumptions that are currently most easily modeled outside the main analytical process.

The online analyses consist of the selection of alternative inputs for mortality concentration-response and valuation in BenMAP, as well as an analysis of the effect on benefits of sector specific, marginal changes in PM-related emissions from the core scenarios. This online analysis substitutes EPA's Response Surface Model (RSM) for CMAQ. RSM is a less resource intensive meta-model of CMAQ used to rapidly approximate PM concentrations from alternative emissions inputs. Those analyses are described in much greater detail in the supporting uncertainty analysis report, referenced at the end of this chapter.

The bottom box in Figure 1-3 lists additional offline research and analysis we incorporated into the current study. As with the online analyses, these analyses were chosen because they address uncertainty in key analytical elements or choices that may significantly influence benefit or cost estimates. Most of these are described in this integrated report, some only briefly, but full descriptions of the data, models, and methods applied in these analyses are included in the underlying uncertainty analysis report.

FIGURE 1-3. SCHEMATIC OF UNCERTAINTY ANALYSES



Offline Analyses

1. Dynamic versus Static Population Modeling (Benefits)
2. Cessation lag (Benefits)
3. Differential Toxicity of PM Components (Benefits)
4. Emissions and Air Quality Modeling Uncertainty Literature Review and Qualitative Analysis (Benefits)
5. Unidentified Controls (Costs)
6. Fleet Composition, I&M Failure Rates (Costs)
7. Learning Curve Assumptions (Costs)

* In addition, we perform a computable general equilibrium (CGE) analysis of costs alone and of costs and benefits, but we omit this step from the diagram because we do not conduct uncertainty analyses on the CGE modeling.

REVIEW PROCESS

The 1990 CAA Amendments established a requirement that EPA consult with an outside panel of experts during the development and interpretation of the 812 studies. This panel of experts was originally organized in 1991 under the auspices of EPA's Science Advisory Board (SAB) as the Advisory Council on Clean Air Compliance Analysis (hereafter, the Council). Organizing the review committee under the SAB ensured that highly qualified experts would review the section 812 studies in an objective, rigorous, and publicly open manner consistent with the requirements and procedures of the Federal Advisory Committee Act (FACA). Council review of the present study began in 2003 with a review of the analytical design plan. Since the initial meetings, the Council and its subcommittees have met many times to review proposed data, proposed methodologies, and interim results. While the full Council retains overall review responsibility for the section 812 studies, some specific issues concerning physical effects and air quality modeling were referred to subcommittees comprised of both Council members and members of other SAB committees. The Council's Health Effects Subcommittee (HES), Air Quality Modeling Subcommittee (AQMS), and Ecological Effects Subcommittee (EES) held both in-person and teleconference meetings to review methodology proposals and modeling results and conveyed their findings and recommendations to the parent Council.

REPORT ORGANIZATION

The remainder of the main text of this report summarizes the key methodologies and findings of our prospective study.

Chapter 2 summarizes emissions modeling and provides important additional detail on design of the regulatory scenarios.

Chapter 3 discusses the direct cost estimation.

Chapter 4 presents the air quality modeling methodology and results.

Chapter 5 describes the approaches used and principal results obtained through the human health effects estimation and valuation processes.

Chapter 6 summarizes the ecological and other welfare effects analyses, including assessments of commercial timber, agriculture, visibility, and other categories of effects.

Chapter 7 presents aggregated results of the cost and benefit estimates and describes and evaluates important uncertainties in the results.

Chapter 8 presents estimates of the effect of the Clean Air Act Amendments on economic growth, productivity, prices, household economic welfare, and the overall economy of the United States, through the application of an economy-wide economic simulation model.

Note that additional details regarding the methodologies and results of this study can be found in a series of supporting reports, available at EPA's Section 812 website (www.epa.gov/oar/sect812). These reports include the following:

Emission Projections for the Clean Air Act Second Section 812 Prospective Analysis.

Direct Cost Estimates for the Clean Air Act Second Section 812 Prospective Analysis.

Memorandum to the Files Re Documentation of Second Prospective Study Air Quality Modeling.

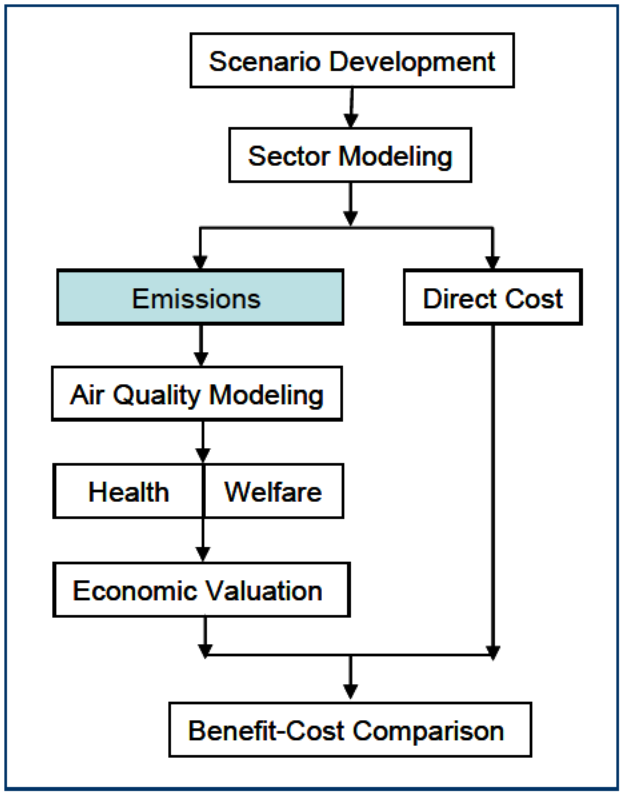
Health and Welfare Benefits Analyses to Support the Second Section 812 Benefit-Cost Analysis of the Clean Air Act.

Effects of Air Pollutants on Ecological Resources: Literature Review and Case Studies.

Section 812 Prospective Study of the Benefits and Costs of the Clean Air Act: Air Toxics Case Study – Health Benefits of Benzene Reductions in Houston, 1990-2020.

Uncertainty Analyses to Support the Second Section 812 Benefit-Cost Analysis of the Clean Air Act.

CHAPTER 2 - EMISSIONS



Estimation of pollutant emissions, a key component of this prospective analysis, serves as the starting point for subsequent benefit and cost estimates. We focused the emissions analysis on six major pollutants that are regulated by the Clean Air Act Amendments: volatile organic compounds (VOCs), nitrogen oxides (NO_x), sulfur dioxide (SO_2), carbon monoxide (CO), particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}), and fine particulate matter ($PM_{2.5}$). Estimates of current and future year ammonia (NH_3) emissions are also included in this study because of their importance in the atmospheric formation of fine particles in the ambient air. For each of these pollutants we projected emissions to the years 2010 and 2020 under two different scenarios:

1. An historical "*with-CAAA*" scenario control case that reflects expected or likely future measures implemented since 1990 to comply with rules promulgated through September 2005; and
2. A counterfactual "*without-CAAA*" scenario baseline case that freezes the scope and stringency of emissions controls at their 1990 levels, while allowing for changes in emissions attributable to economic and population growth.[4]

[4] Implementing this approach has occasionally required some difficult decisions on what constitutes 1990 levels of emissions controls. In general, we have interpreted any rules that were promulgated as final prior to 1990 to be part of *the without-CAAA* scenario baseline. The residential wood stove New Source Performance Standard, however, was promulgated in 1988, but is not part of the *without-CAAA* scenario, because EPA did not certify NSPS compliant wood stoves until 1992. In this

We projected emissions for five major source categories: utilities, or electricity generating units (EGUs); non-EGU industrial point sources; onroad motor vehicles; nonroad engines/vehicles; and area sources, which are smaller, more diffuse sources of pollutants that derive from many sources.[5] Table 2-1 gives examples of emissions sources for each of the five categories examined in this analysis and indicates which major pollutants are targeted by CAAA requirements in each category. The primary purpose of emissions analysis in this study is to estimate how emissions change over time and across our scenarios, so we can estimate costs of reducing emissions and the benefits of those emissions reductions for each of our target years.

TABLE 2-1. MAJOR EMISSIONS SOURCE CATEGORIES

SOURCE CATEGORY	EXAMPLES	POLLUTANTS WITH SUBSTANTIAL EMISSIONS REDUCTIONS FROM CAAA COMPLIANCE
Electricity Generating Units (EGUs)	electricity producing utilities	NO_x, SO_2
Non-EGU Industrial Point Sources	boilers, cement kilns, process heaters, turbines	NO_x, VOC, SO_2, PM_{10} $PM_{2.5}$
Onroad Motor Vehicles	buses, cars, trucks (sources that usually operate on roads and highways)	NO_x, VOC, CO
Nonroad Engines/Vehicles	aircraft, construction equipment, lawn and garden equipment, locomotives, marine engines	NO_x, VOC, CO
Area Sources	agricultural tilling, dry cleaners, open burning, wildfires	NO_x, VOC, PM_{10}, $PM_{2.5}$

This chapter consists of four sections. The first section provides an overview of our approach for developing emissions estimates. The second section summarizes our emissions projections for the years 2000, 2010, and 2020, and presents our estimates of changes in future emissions resulting from the implementation of the 1990 Amendments. The third section compares these results with estimates from the First Section 812 Prospective Analysis. Finally, we conclude this chapter with a summary of the key uncertainties associated with estimating emissions.

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case, perhaps incorrectly, we interpreted the effective date of 1992 as the determining factor in whether the level of emissions stringency in 1990 should include the wood stove NSPS.

[5] Area sources are also commonly referred to as nonpoint sources. We estimated utility and industrial point source emissions at the plant/facility level. We estimated nonroad engine/vehicle, motor vehicle, and area source emissions at the county level.

OVERVIEW OF APPROACH

For four out of the five major source categories described in this report—all except electric generating units—we applied the following general method to estimate emissions:

1. Select a "base" inventory for a specific year. This involves selection of an historical year inventory from which projections will be based.
2. Select activity factors to project growth in the level of pollution-generating activity in the target years. The activity factors should provide the best possible means for representing future air pollutant emissions levels in the absence of controls.
3. Develop a database of scenario-specific emissions control factors, to represent emissions control efficiencies under the two scenarios of interest. The control factors are "layered on" to the projected emissions levels absent controls to estimate future emissions levels, taking into account those controls required for CAAA compliance .

Air pollutant emissions for the fifth category, EGUs, were estimated by application of the Integrated Planning Model (IPM), a model developed by ICF Consulting. IPM estimates EGU emissions in the 48 contiguous states and the District of Columbia through an optimization procedure that considers costs of electricity generation, costs of pollution control, and external projections of electricity demand to forecast the fuel choice, pollution control method, and generation for each unit considered in the model. We used IPM to estimate EGU emissions in both the *with-CAAA* and *without-CAAA* scenarios for 2000, 2010, and 2020.

SELECTION OF BASE YEAR INVENTORY

The *without-CAAA* scenario emission projections are made from a 1990 base year, while the *with-CAAA* scenario emission projections use a base year of 2000. The logic for these base year inventory choices relates to the specific definitions of the scenarios themselves. The *with-CAAA* scenario tracks compliance with CAAA requirements over time; as a result, the best basis for projecting the *with-CAAA* scenario is a current emissions inventory that incorporates decisions made since 1990 to comply with the act. The *without-CAAA* scenario, on the other hand, freezes the stringency of regulation at 1990 levels. The analysis therefore uses 1990 emission rates as a base and adjusts those emissions to account for economic activity over time. We determined that this method was less problematic than basing projections on a recent emissions inventory and trying to simulate the effect of removing CAAA emission controls currently in place. Table 2-2 summarizes the key databases that were used in this study to estimate emissions for historic years 1990 and 2000. Note that, in some cases, we determined that the best representation for year 2000 emissions was actually a later year, either 2002 or 2001. Those decisions are explained below.

TABLE 2-2. BASE YEAR EMISSION DATA SOURCES FOR THE *WITH-* AND *WITHOUT-CAAA* SCENARIOS

SOURCE CATEGORY	*WITHOUT-CAAA* SCENARIO - 1990	*WITH-CAAA* SCENARIO - 2000
Electricity Generating Units (EGUs)	1990 EPA Point Source NEI[1]	Estimated by the EPA Integrated Planning Model for 2001
Non-EGU Industrial Point Sources	1990 EPA Point Source NEI	2002 EPA Point Source NEI (Draft)
Onroad Motor Vehicles	MOBILE6.2 Emission Factors and 1990 NEI VMT Database	MOBILE6.2 Emission Factors and 2000 NEI VMT Database[2]
Nonroad Engines/Vehicles	NONROAD 2004 Model Simulation for Calendar Year 1990	NONROAD 2004 Model Simulation for Calendar Year 2000
Area Sources	1990 EPA Nonpoint Source NEI[3]	2002 EPA Nonpoint Source NEI (Final)

[1] The NEI is EPA's National Emissions Inventory, conducted every three years.
[2] The California Air Resources Board (ARB) supplied estimates for California.
[3] Adjustments were made to the 1990 nonpoint source NEI file for priority source categories.

For EGUs and non-EGU industrial point sources, we estimated 1990 emissions using the 1990 EPA National Emission Inventory (NEI) point source file. This file is consistent with the emission estimates used for the First Section 812 Prospective and is thought to be the most comprehensive and complete representation of point source emissions and associated activity in that year. Similarly, the 1990 EPA NEI nonpoint source file – with a few exceptions – was used to estimate 1990 area source sector emissions.[6]

For base year emissions estimates in the *with-CAAA* scenario, we drew emissions from a variety of sources. Due to resource constraints and the quality of available data, we relied on emissions estimates for years other than 2000. In the case of *with-CAAA* emissions from industrial point sources and area sources, we used the point source and nonpoint source files from the 2002 EPA NEI.[7] We chose the 2002 NEI to represent the year 2000 estimates primarily because the 2002 inventory incorporated a number of refinements in emissions estimation methods that were not included in the previous inventory, which covered 1999 emissions. We judged that the improved quality of the 2002 NEI data justified the small expected difference between emissions for these source categories in

[6] The exceptions are where 1990 emissions were re-computed using updated methods developed for the 2002 National Emissions Inventory (NEI) for selected source categories with the largest criteria pollutant emissions and most significant methods changes.

[7] We used the draft NEI point source file because the final version of that file was not available at the time the analysis was performed. For area sources, we used the final NEI nonpoint source file.

2000 and in 2002. To estimate *with-CAAA* EGU emissions, we used data from a modified version of IPM that retrospectively modeled emissions for the year 2001.[8]

The project team estimated 1990 and 2000 emissions for the onroad and nonroad vehicle/engine sectors independently using consistent modeling approaches and activity estimates. For example, emission factors from EPA's MOBILE6.2 model were used together with data from the 1990 and 2000 NEI vehicle miles traveled (VMT) databases to estimate onroad vehicle emissions for 1990 and 2000. Similarly, EPA's NONROAD 2004 model was used to estimate 1990 and 2000 emissions for nonroad vehicles/engines.

SELECTION OF ACTIVITY FACTORS FOR PROJECTIONS

After specifying base year emissions, we projected emissions to 2000 (for the *without-CAAA* scenario), 2010, and 2020. To model emissions in the absence of controls, our general approach was to multiply an emission factor – derived from base year emissions estimates – by the level of emission-generating activity upon which the emission factor is based. These emission-generating activities vary by source category, but they are generally related to economic activity, such as transportation, energy consumption, and industrial output. Specifically, economic growth projections entered the emissions analysis in three places:

- an electricity demand forecast (included in IPM);
- a fuel consumption forecast for non-utility sectors; and
- economic growth projections that serve as activity drivers for several other sources of air pollutants.

For this analysis, we used fully integrated economic growth, energy demand, and fuel price projections to model economic growth in both the *with-CAAA* and the *without-CAAA* scenarios. The primary advantage of this approach is that it allowed us to conduct an internally consistent analysis of economic growth across all emitting sectors. To implement this integrated approach, we chose the Department of Energy's National Energy Modeling System (NEMS), which is used to produce DOE's Annual Energy Outlook (AEO) projections. Our emissions estimates primarily rely on AEO's 2005 "reference case" scenarios. We supplemented these projections with additional forecasts from other data sources for emissions sources where we determined that AEO's energy and socioeconomic forecasts would not adequately represent growth in emissions-generating activities.[9] Table 2-3 presents the values that we used for the AEO 2005 projections for population, GDP, energy consumption, and oil price values in 2010 and 2020. For reference, the table also presents the historical values for each variable in

[8] Due to resource constraints and model limitations, we relied primarily on a validation analysis EPA conducted on 2001 emissions, rather than developing a new analysis for the year 2000.

[9] These emissions sources include agricultural production-crops, fertilizer application, and nitrogen solutions; agricultural tilling; animal husbandry; aircraft; forest wildfires; prescribed burning for forest management; residential wood fireplaces and wood stoves; and unpaved roads.

2002, as reported in AEO 2005. For each variable, the table shows the implied annual growth rate that AEO 2005 used to project population, GDP, energy consumption, and oil prices from 2002 to 2010 and from 2010 to 2020.[10]

TABLE 2-3. SUMMARY OF KEY DRIVER DATA APPLIED IN EMISSIONS PROJECTIONS

VARIABLE	HISTORICAL DATA	AEO 2005 PROJECTIONS		IMPLIED ANNUAL GROWTH RATE	
	2002	2010	2020	2002-2010	2010-2020
Population (millions)	288.6	310.1	337.0	0.90%	0.83%
GDP (billion 2000 chain-weighted dollars)	$10,075	$13,084	$17,634	3.32%	3.03%
Energy Consumption (quadrillion Btu per year)	97.99	111.27	125.60	1.60%	1.22%
World Oil Price (1999$ per barrel)	$22.17	$23.00	$26.22	0.46%	1.32%

One notable exception to the above involves the specification of $PM_{2.5}$ emissions from non-EGU point sources and area sources. After initially attempting to model $PM_{2.5}$ emissions in the *without-CAAA* scenario in 2000, 2010, and 2020 using the process described above, we determined that the resulting estimates over-attributed emissions reductions to the amendments. We applied two separate approaches to correct these emissions estimates: For emissions from area sources, we projected emissions from the two sectors responsible for the majority of emissions – construction and wood stoves – using source-specific data. For emissions from non-EGU point sources, the project team determined that emissions reductions from CAAA-mandated controls would be negligible in 2000, so we set *without-CAAA* $PM_{2.5}$ emissions equal to *with-CAAA* emissions in that year.

APPLYING CONTROLS TO THE *WITH-CAAA* SCENARIO

To estimate the impact of CAAA controls on projected emissions in the *with-CAAA* scenario, we modeled the application of controls required by CAAA programs, including (among others):

- Title I VOC and NO_x reasonably available control technology (RACT) requirements in ozone nonattainment areas (NAAs);
- Title II on-road vehicle and nonroad engine/vehicle provisions;
- Title III National Emission Standards for Hazardous Air Pollutants (NESHAPs);
- Title IV programs focused on emissions from EGUs.

[10] The table presents 2002 data in order to be consistent with EPA's 2002 NEI, which we used to estimate emissions from industrial point sources and area sources.

- Additional EGU regulations, such as the Clean Air Interstate Rule (CAIR), the Clean Air Mercury Rule (CAMR), and the Clean Air Visibility Rule (CAVR).

As a general rule, we incorporated the effects of CAAA rules promulgated through September 2005.[11] As such, we did not account for the impacts of rules promulgated after that date, such as the revised NAAQS for lead. Additionally, we modeled reductions from rules that have since been vacated, like the Clean Air Mercury Rule (CAMR) and the Clean Air Interstate Rule (CAIR), though CAIR has since been remanded. Rather than attempting to estimate the impacts of whatever rules might replace CAMR and CAIR, we modeled the rules as promulgated because that was the best information available when we made analytic commitments.

A full list of the CAAA programs modeled for each source category is presented in Table 2-4, together with the pollutants targeted by each program. For each source category, we identified factors to use in modeling the effect of emission controls required by the CAAA. For EGUs, onroad motor vehicles, and nonroad engines/vehicles, we used control factors included in the three EPA models we used to estimate base year emissions: IPM, MOBILE, and NONROAD, respectively. For non-EGU industrial point sources and area sources, we relied on control factors developed by the five Regional Planning Organizations funded by EPA to address regional air pollution issues, as well as factors developed by the California Air Resources Board.

[11] One exception is the Coke Ovens Residual Risk rulemaking, promulgated under Title III of the Act in March 2005. We omitted this rule because it has a very small impact on criteria pollutant emissions (less than 10 tons per year VOCs) relative to the *with-CAAA* scenario. The primary Maximum Achievable Control Technology (MACT) rule for coke oven emissions, however, involves much larger reductions and therefore is included in the *with-CAAA* scenario. In addition, we also modeled emissions reductions from local controls implemented to comply with the 8-hour Ozone NAAQS, the $PM_{2.5}$ NAAQS, and the Clean Air Visibility Rule, using the proposed or promulgated forms of these rules as of January 2008.

TABLE 2-4. MAJOR CAAA PROGRAMS MODELED IN THE *WITH-CAAA* SCENARIO

SECTOR	POLLUTANT	CAAA PROGRAMS
Electricity Generating Units (EGUs)	NO_x/SO_2	Title IV acid rain emission allowance program; Clean Air Interstate Rule (CAIR); Clean Air Mercury Rule (CAMR); Cases and Settlements; Additional measures to meet PM and ozone NAAQS;
	NO_x	NOx SIP Call post-2000
Non-EGU Industrial Point Sources	$NO_x/VOC/SO_2$	Measures required to meet PM and ozone National Ambient Air Quality Standards (NAAQS)
	NO_x	Ozone Transport Commission (OTC) small NOx source model rule (where adopted); NOx SIP Call
	VOC	2-, 4-, 7-, and 10-year maximum achievable control technology (MACT) standards;
Onroad Motor Vehicles	$NO_x/VOC/SO_2$	Tier 1 tailpipe standards (Title II); Tier 2 tailpipe standards;
	NO_x/VOC	National and California low-emission vehicle (LEV) program (Title I); Federal and California reformulated gasoline for ozone NAAQS NAAs (Title I); I/M programs for ozone and CO NAAQS NAAs (Title I); NOx and VOC measures included in ozone NAAQS SIPs
	PM/SO_2	Heavy-duty diesel vehicle (HDDV) standards; Diesel fuel sulfur content limits (Title II) (1993); Gasoline fuel sulfur limits; Additional measures to meet new PM NAAQS
Nonroad Engines/ Vehicles	$NO_x/VOC/PM$	Federal Phase I and II compression ignition (CI) and spark-ignition (S-I) engine standards; Federal commercial and recreational marine vessel standards
	NO_x/PM	Federal locomotive standards
	$NO_x/PM/SO_2$	Nonroad Diesel Rule
Area Sources	$NO_x/VOC/PM$	RACT requirements; NOx and VOC measures included in ozone SIPs; Additional measures to meet PM and ozone NAAQS
	NO_x/VOC	Ozone Transport Commission (OTC) model rules (where adopted)
	VOC	2-, 4-, 7-, and 10-year MACT Standards; Federal VOC rules for architectural and industrial maintenance (AIM) coatings, autobody refinishing, and consumer products
Note: See Hubbell et al. (2010) for additional information regarding rules and regulations attributed to the 1990 CAAA.		

EMISSIONS ESTIMATION RESULTS

Table 2-5 summarizes the national emission estimates by pollutant for each of the scenario years evaluated in this study: 2000, 2010, and 2020. As a reference, the table also presents total emissions for each pollutant in 1990. Figures 2-1 through 2-4 provide a detailed breakdown of the emissions reductions in each target year by source category for NO_x, VOC, SO_2, and primary $PM_{2.5}$. We show the breakdown of emissions reductions by source category for these pollutants because they constitute (or are precursors of) the two main air quality impacts that drive the analysis of the benefits of the CAAA: ozone and particulate matter pollution. The table and figures also incorporate our estimates of emissions reductions from local controls required to meet attainment requirements for 8-hour ozone and $PM_{2.5}$ national ambient air quality standards (NAAQS). Reductions needed for compliance, but for which we have not identified a specific pollutant reducing measure or sector to achieve the reduction, are incorporated in Table 2-5 and are presented as a separate category in Figures 2-1 through 2-4, labeled "unidentified measures."

For five of the pollutants examined—NO_x, SO_2, PM_{10}, $PM_{2.5}$, and NH_3—we estimate that emissions in the absence of the amendments would increase steadily from 1990 through 2000, 2010, and 2020, suggesting that emissions controls in place by 1990 would not be sufficient to prevent increases in pollutant emissions due to projected growth in economic activity. For the remaining two pollutants—VOC and CO—emissions decrease between 1990 and 2000 as a result of automobile tailpipe controls enacted prior to 1990, but which have delayed effects through the 1990s, before increasing from 2000 onward.

In the *with-CAAA* scenario, we estimate that emissions of SO_2 and NO_x will decrease steadily from 1990 to 2020, while emissions of VOC, CO, PM_{10}, and $PM_{2.5}$ will decrease from 1990 to 2010 before leveling off between 2010 and 2020. We also estimate that emissions of NH_3 will increase even in the presence of CAAA regulations, though at a slightly slower pace than in the *without-CAAA* scenario. NH_3 is not a specific target of CAAA regulations, but some reductions result from efforts to control other pollutants. The net result of these trends in the two scenarios is that we estimate that emissions reductions, relative to the *without-CAAA* scenario, will increase for all pollutants throughout the 2000 to 2020 period.

As Figure 2-1 shows, we estimate that reductions in NO_x emissions will increase substantially from 2000 to 2010 and from 2010 to 2020. All five major source categories contribute to these reductions in 2010 and 2020, though the largest reductions come from EGUs and on-road motor vehicles. Reductions in NO_x emissions from EGUs are driven largely by cap-and-trade programs, such as Phase II of the Ozone Transport Commission memorandum of understanding and the Clean Air Interstate Rule.[12] In the motor vehicle sector, the large reductions in NO_x emissions in 2010 and 2020 reflect both the delayed

[12] Under Phase II of the OTC memorandum of understanding, eleven eastern states committed themselves to achieving regional reductions in NO_x emissions through a cap-and-trade system similar to the SO_2 trading program established under Title IV of the amendments.

impact of Tier 1 NO_x tailpipe standards as well as the impact of Tier 2 standards, which went into effect in 2004.

Figure 2-2 shows increasing VOC emissions reductions from 2000 to 2020, with contributions from all source categories, with the exception of EGUs. The figure also shows a marked increase in on-road and nonroad emissions reductions between 2000 and 2010, reflecting both the delayed impact of Tier 1 VOC standards and the effect of low-sulfur gasoline regulations. Additionally, about half of the rules affecting nonroad sources came into effect between 2000 and 2010, explaining the increase in emissions reductions during that time. Area sources also show large emissions reductions across all three target years, driven primarily by regulations controlling evaporative emissions from solvents, though residential fireplace and woodstove emissions are also projected to decline as obsolete woodstoves are replaced with low-emitting models required by the CAAA.[13]

In Figure 2-3, SO_2 emissions reductions increase by more than 60 percent between 2000 and 2010, with a smaller increase between 2010 and 2020. Most reductions in SO_2 emissions in all three target years come from EGUs, with smaller contributions from non-EGU point sources and area sources as well. As with reductions in NO_x emissions, the CAIR and the Title IV cap and trade program are partly responsible for SO_2 reductions from EGUs, along with the revised $PM_{2.5}$ NAAQS.

Figure 2-4 presents reductions in $PM_{2.5}$ emissions for the three target years, with a steady increase in reductions from 2000 through 2020, as $PM_{2.5}$ NAAQS requirements ramp up. Reductions in primary fine particulate emissions are expected to come from area sources, nonroad and onroad vehicles, and EGUs. Reductions from area sources are driven largely by the replacement of obsolete residential fireplaces and wood stoves, as well as local controls on construction sites for PM NAAQS compliance. As noted above, we set $PM_{2.5}$ emissions at non-EGU industrial point sources in the *without-CAAA* scenario to be equal to emissions in the *with-CAAA* scenario, so we do not estimate that there will be any significant direct $PM_{2.5}$ emissions reductions from that source category.

[13] As noted earlier in this chapter, the woodstove NSPS was interpreted as part of the differential between the with- and without-CAAA scenarios. NSPS compliance is required only for new units, which in practice are replaced very slowly. We estimate that, almost 20 years after NSPS implementation, in 2010, about 70 percent of the wood stoves in use are pre-NSPS uncertified models; by 2020, we estimate that turnover will reduce non-certified unit usage to just under 65 percent.

TABLE 2-5. EMISSION TOTALS AND REDUCTIONS BY POLLUTANT - ALL SECTORS (THOUSAND TONS PER YEAR)

POLLUTANT	1990	2000			2010			2020		
		WITHOUT-CAAA	*WITH-CAAA*	REDUCTION	*WITHOUT-CAAA*	*WITH-CAAA*	REDUCTION	*WITHOUT-CAAA*	*WITH-CAAA*	REDUCTION
VOC	25,790	24,477	17,798	*6,679*	26,742	14,117	*12,626*	31,288	13,704	*17,584*
NO_x	25,917	26,688	20,837	*5,851*	28,517	13,640	*14,877*	31,740	10,092	*21,647*
CO	154,513	127,093	107,691	*19,403*	134,151	86,705	*47,447*	155,970	84,637	*71,332*
SO_2	23,143	25,129	15,319	*9,810*	26,831	10,347	*16,484*	27,912	8,272	*19,640*
PM_{10}	25,454	26,418	21,143	*5,275*	26,405	20,413	*5,992*	28,280	20,577	*7,702*
$PM_{2.5}$[1]	5,527	5,822	5,489	*333*	5,924	5,241	*682*	6,368	5,297	*1,072*
NH_3	3,656	4,136	3,983	*153*	4,405	4,224	*181*	4,787	4,587	*200*

[1] $PM_{2.5}$ without-CAAA emissions were adjusted from previously reported values by reducing emissions from non-EGU industrial point sources and area sources.

FIGURE 2-1. NO_X REDUCTIONS ASSOCIATED WITH CAAA COMPLIANCE BY SOURCE CATEGORY

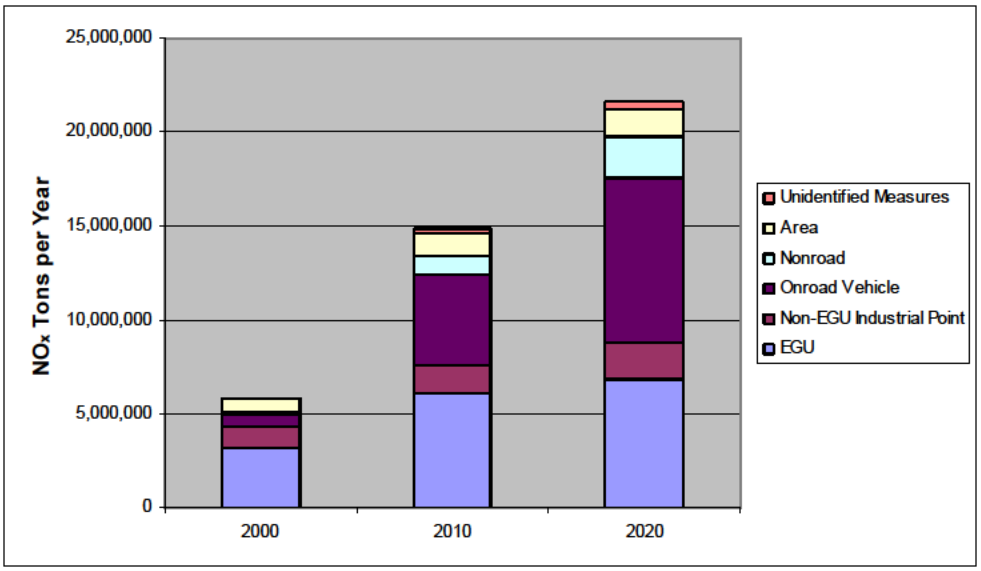


FIGURE 2-2. VOC REDUCTIONS ASSOCIATED WITH CAAA COMPLIANCE BY SOURCE CATEGORY

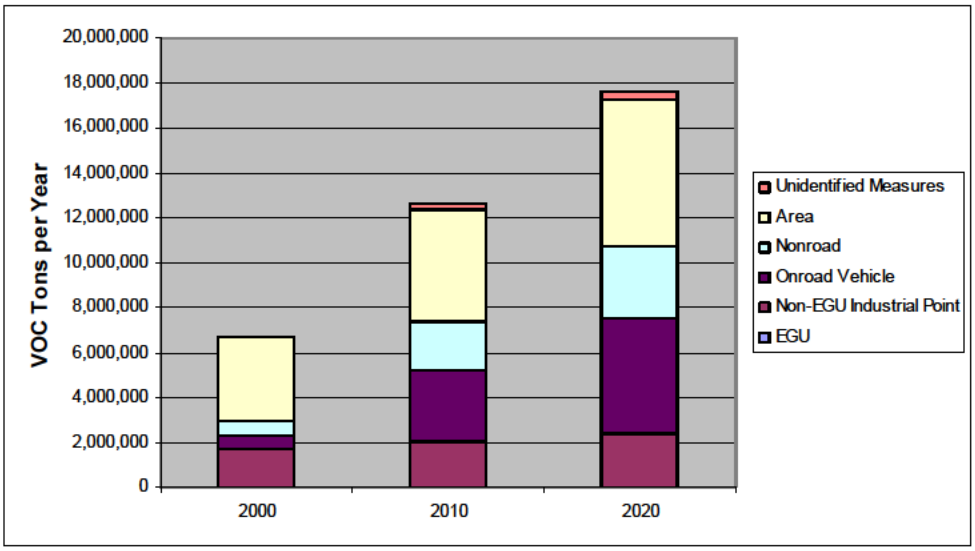


FIGURE 2-3. SO_2 REDUCTIONS ASSOCIATED WITH CAAA COMPLIANCE BY SOURCE CATEGORY

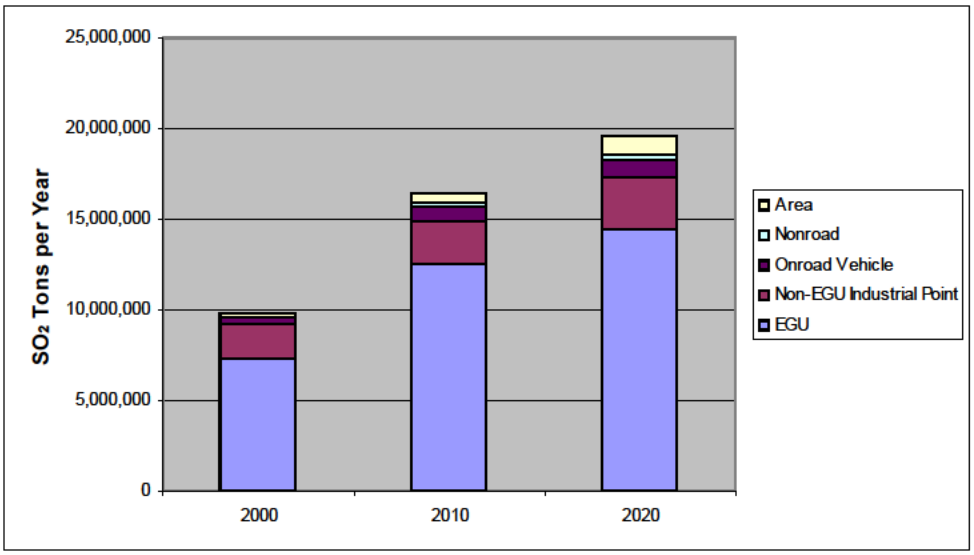
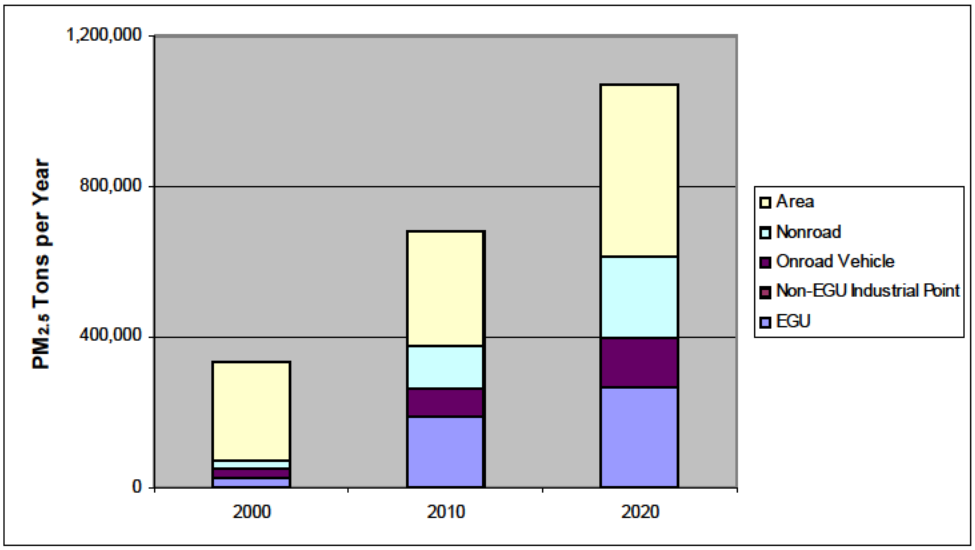


FIGURE 2-4. PRIMARY $PM_{2.5}$ REDUCTIONS ASSOCIATED WITH CAAA COMPLIANCE BY SOURCE CATEGORY



COMPARISON OF EMISSIONS ESTIMATES WITH THE FIRST PROSPECTIVE ANALYSIS

DIFFERENCES IN METHODOLOGY

In comparison with the First Prospective 812 Analysis, the Second Prospective includes a number of refinements and improvements in emissions estimation methods, as well as a different set of regulatory assumptions.

1. *Updated Emissions and Economic Activity Data*: Because the Second Prospective analysis was developed ten years after the First Prospective, it incorporates additional information that was not available when the First Prospective was developed. This information includes *with-CAAA* emissions estimates for the historical year 2000 as well as additional historical trend data used to project economic activity from 1990 to 2000.

2. *Additional Regulatory Requirements*: The Second Prospective Analysis accounts for several major CAA regulations that were not yet promulgated in 1996, when decisions were made about which regulations to include in the First Prospective. These regulations include, but are not limited to, the Clean Air Interstate Rule (CAIR); the Clean Air Visibility Rule (CAVR); Tier II vehicle rules and heavy-duty diesel vehicle rules, and the local controls required for the revised 8-hour ozone and $PM_{2.5}$ NAAQS. Because of this difference, the Second Prospective Analysis models greater emissions reductions in 2000 and 2010 than were predicted in the First Prospective, as we discuss in the following section.

3. *Integrated Economic Modeling Approach*: In the First Prospective Analysis, we relied on a number of modeling tools to project future emissions, including projections of economic activity and population growth from the Bureau of Economic Analysis, and vehicle miles traveled from EPA's MOBILE fuel consumption model. By using fully-integrated economic growth, energy demand, and fuel price projections from DOE's AEO 2005, we were able to achieve a greater degree of internal consistency in the Second Prospective Analysis.

DIFFERENCES IN EMISSIONS RESULTS

Figures 2-5 and 2-6 show estimates from the First and Second Prospective Analyses of cumulative criteria pollutant emissions and emissions reductions for 2000 and 2010, the two years that were modeled in both analyses. The figures present emissions data for the four pollutants presented in Figures 2-1 through 2-4: VOC, NO_x, SO_2, and primary $PM_{2.5}$. As Figure 2-5 shows, the Second Prospective Analysis estimates slightly higher 2000 emissions in the *without-CAAA* scenario, and slightly lower emissions in the *with-CAAA* scenario. VOC and primary $PM_{2.5}$ emissions estimates are approximately the same in both analyses, but the Second Prospective estimates reductions in combined emissions of NO_x and SO_2 of about three million tons more than in the First Prospective. As noted above, most of the difference in SO_2 emissions reductions is attributable to SO_2 controls from CAIR, but there are also substantial additional reductions attributable to reduced

fuel sulfur content regulations. The difference in NO_x emissions reductions is due primarily to differences in the onroad and nonroad engine and EGU rules included in the Second Prospective, but also to corrections made in the Second Prospective to more accurately characterize the impact of the NO_x SIP Call provisions for electric generating units.

In Figure 2-6, the difference between emissions estimates in the First and Second Prospective Analyses is much more noticeable. Although the *without-CAAA* scenario emissions estimates for VOC, NOx, and SO_2 are virtually identical for the two analyses, estimates of *with-CAAA* emissions of these pollutants are all substantially lower in the Second Prospective Analysis than in the First Prospective, yielding a difference in cumulative emissions reductions of about 15 million tons. As discussed above, the Second Prospective estimates much larger emissions reductions primarily because it accounts for a number of major control programs that were not yet in place when the last analysis was published.

FIGURE 2-5. FIRST AND SECOND PROSPECTIVE 2000 EMISSIONS AND EMISSIONS REDUCTIONS (EXCLUDING CO AND PM_{10})

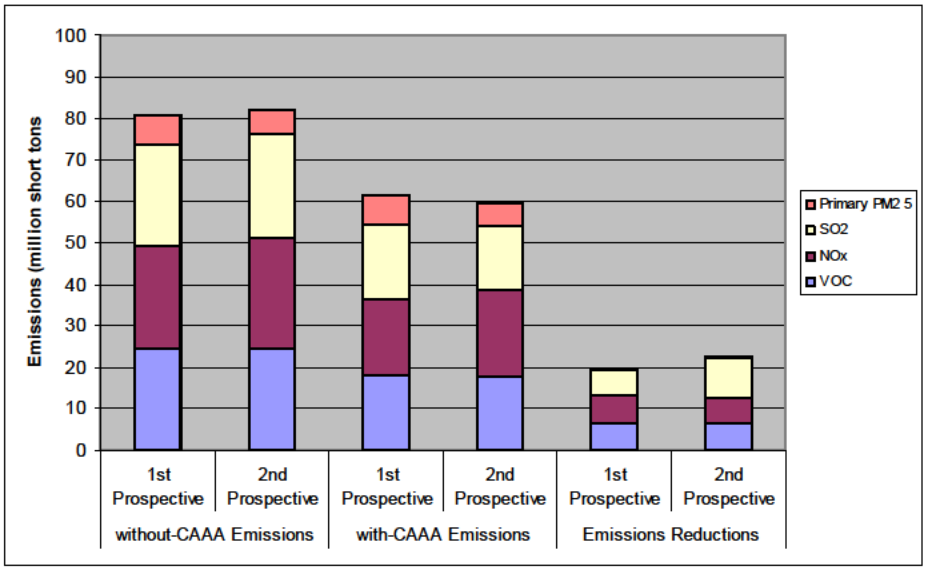
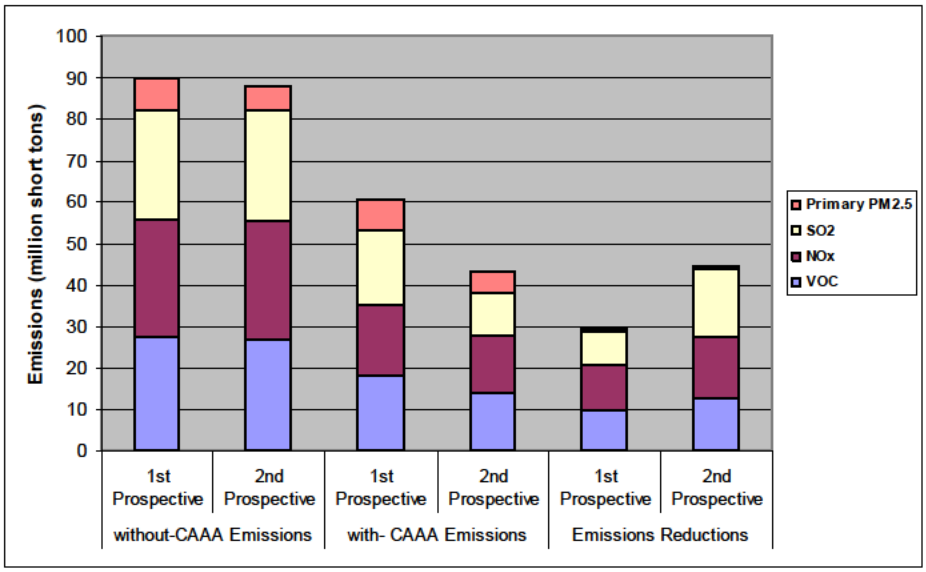


FIGURE 2-6 . FIRST AND SECOND PROSPECTIVE 2010 EMISSIONS AND EMISSIONS REDUCTIONS (EXCLUDING CO AND PM_{10})



UNCERTAINTY IN EMISSIONS ESTIMATES

Table 2-6 lists several sources of uncertainty associated with generating the emissions estimates discussed in this chapter, as well as the expected direction of bias introduced by each uncertainty (if known), and the relative significance of each uncertainty in the overall 812 benefits analysis. These uncertainty sources are organized by the three factors that drive our results: identifying base-year emissions, forecasting growth in emissions-related activity, and modeling emissions controls in future years.

UNCERTAINTIES RELATED TO BASE-YEAR EMISSIONS

We estimated emissions from onroad motor vehicles, nonroad engines, and area sources at the county level, since these source categories are generally not tied to a specific location. Accordingly, our estimates of the spatial location of these emissions are less precise than for EGUs and industrial point sources. This uncertainty affects our ability to model changes in air quality associated with emissions reductions attributed to the CAAA. However, we expect that this uncertainty has a minor impact on the overall net benefit projections of the analysis.

A potentially major factor contributing to uncertainty in emissions estimates is our specification of the *without-CAAA* scenario. The Project Team tested the influence of an alternative scenario specification by first developing a *with-CAAA* scenario using continuous CEM data available on EPA's Clean Air Markets website.[14] Working from this scenario as a base emissions estimate for each EGU, we estimated EGU data for the

[14] U.S. Environmental Protection Agency. Clean Air Markets - Data and Maps <http://camddataandmaps.epa.gov/gdm/> Accessed March 2009.

without-CAAA scenario using an alternative counterfactual approach based on work done by Dr. A. Denny Ellerman of Massachusetts Institute of Technology.[15] The *with-CAAA* results using the alternative EGU data appear very similar to the results using the IPM EGU data, but air quality difference maps indicate that overall $PM_{2.5}$ exposures are slightly lower using the CEM data for the *with-CAAA* scenario in 2000, and $PM_{2.5}$ exposures are substantially higher using the data derived using the Ellerman counterfactual method for the *without-CAAA* scenario compared to the corresponding core scenarios.

These exposure differences carry over into benefits calculations. The health benefits of the CAAA in 2000 arrived at using the alternative EGU emissions are approximately 50 percent greater than the benefits in the 2000 core scenario. For the alternative EGU emissions scenarios, the substantial, 50 percent difference in air quality outcomes and benefits results appears to be derived from our construction of a substantially different *without-CAAA* scenario. The original motivation of the analysis was concern that the spatial pattern of emissions for the *with-CAAA* scenario for 2000 predicted by an IPM run for a historical year differed from the spatial pattern observed in the emissions monitor data for the same year. The analysis illustrated that the difference in benefits results is instead due primarily to differences in the *without-CAAA* scenario among the two alternative scenario specifications. Not surprisingly, uncertainty in estimating a counterfactual scenario is much larger than uncertainty in estimating the factual case, at least for the EGU sector.

UNCERTAINTIES RELATED TO GROWTH FACTORS

When projecting future growth in economic activity, even the most thorough projection model must tolerate a high amount of uncertainty. The factors we used to model growth in this analysis reflect uncertainty both in the economic activity forecasted and in how this activity translates into emissions of criteria pollutants. For example, because the AEO 2005 economic growth projection predates the recent economic downtown, it is possible that we overestimate emissions in both the *with-CAAA* and *without-CAAA* scenarios. However, because we use the same growth factors to project emissions under the *with-CAAA* and *without-CAAA* scenarios, this source of uncertainty probably has a minor effect on our overall net benefits estimates. In addition, we considered projecting emissions under high-growth and low-growth AEO projection scenarios, but we did not find sufficient variation in our conclusions to justify such an analysis. For these reasons, we do not believe this is a significant factor in our results.

[15] Dr. A. Denny Ellerman's approach relies on multiplying a "baseline" pre-Title IV emissions rate by 2001 CEM heat input observations for each electric generating unit.

Similarly, our projected emissions from on-road motor vehicles are based on vehicle fleet compositions included in the MOBILE6.2 model. Any change in fuel prices that might cause a shift away from low-fuel-efficiency vehicles could cause us to overestimate emissions from this sector. However, we expect that the impact of this uncertainty on our estimate of net benefits is minor.

UNCERTAINTIES RELATED TO EMISSIONS CONTROL MODELING

When modeling the *with-CAAA* scenario, we incorporated the effects of rules promulgated through September 2005. Accordingly, we did not fully account for rules promulgated since that time, such as the revised NAAQS for lead, and we modeled reductions from rules that have since been vacated, like the Clean Air Mercury Rule (CAMR) and the Clean Air Interstate Rule (CAIR), though CAIR has since been remanded. We estimated that CAMR would have only a modest impact on the pollutants we examined in this analysis, since mercury controls do not have large co-control benefits with other pollutants. However, our analysis projects that CAIR would have a large impact on NO_x and SO_2 emissions at EGUs in 2010 and 2020. Ultimately, a new rule will be promulgated to replace CAIR, and the emissions reductions, compliance costs, and locations of emissions reductions could all be different from what we modeled in this analysis. As a result, it is unclear whether our analysis overestimates or underestimates the net benefits of CAAA provisions on EGU emissions.

Estimates of emissions of volatile organic compounds are also a source of uncertainty because VOCs can be emitted through fuel combustion—like SO_2 and NO_x—as well as evaporation of volatile materials. Because evaporation rates depend largely on temperature, our estimates of future VOC emissions are influenced by the inherent difficulty of predicting future temperatures. The analysis uses projections of average daily minimum and maximum temperatures in order to predict average VOC emissions, but the resulting estimates do not adequately capture the variability of such emissions. The likely significance of this uncertainty, in terms of its impact on the overall net benefits estimated in this analysis, is probably minor.

Our future-year control assumptions are also a source of uncertainty. The flexibility allowed by the CAAA in achieving air quality standard target emission levels allows for emissions control schemes that may differ significantly from the controls modeled in this analysis. This is particularly true in the case of reductions needed for NAAQS compliance for which we have not identified a specific sector target. This analysis treats those reductions as if they come from area sources, but they could come from any of the five source categories we consider. We are not able to determine the direction of any possible bias caused by this uncertainty, but we do not expect it to have a major effect on our net benefits estimate.

TABLE 2-6. KEY UNCERTAINTIES ASSOCIATED WITH EMISSIONS ESTIMATION

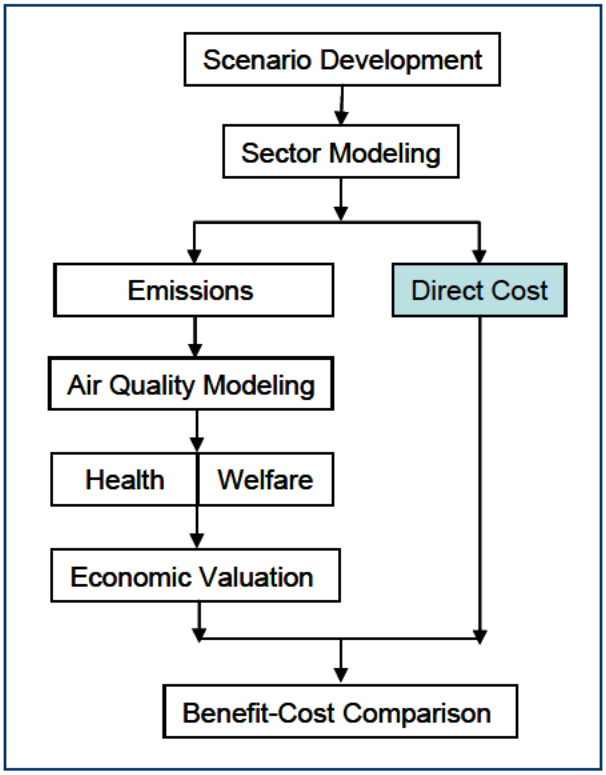
POTENTIAL SOURCE OF ERROR	DIRECTION OF POTENTIAL BIAS FOR NET BENEFITS	LIKELY SIGNIFICANCE RELATIVE TO KEY UNCERTAINTIES ON NET BENEFITS ESTIMATE*
Uncertainties Related To Base-Year Emissions		
Uncertainties in modeling a counterfactual emissions scenario. Estimating EGU emissions using an alternate counterfactual projection approach yielded increases in air quality impacts and health benefits of 50% relative to the core scenario's IPM-generated estimates.	Underestimate. The IPM-based counterfactual generated substantially lower benefits than the alternative counterfactual scenario specification we tested, which was based on published and readily replicated methodologies. It is possible, however, that other counterfactual specifications would yield lower benefits. It is also possible that the direction of effect might be different for other pollutant source categories where this is no accepted basis to generate an alternative counterfactual scenario estimate.	Potentially major. Analysis confirmed that IPM performs well when estimating with-CAAA emissions, but also highlighted a high degree of uncertainty in estimating counterfactual emissions. Similar uncertainties exist for emissions from other emitting sectors. There is no clear way, however, to determine what approach to estimating counterfactual emissions is superior.
Uncertainties in biogenic emissions inputs increase uncertainty in the air quality modeling estimates. Uncertainties in biogenic emissions may be large (± 80%). The biogenic inputs affect the emissions-based VOC/NOx ratio and, therefore, potentially affect the response of the modeling system to emissions changes.	Unable to determine based on current information. The biogenic emissions change overall reactivity, leading to either an underestimate or overestimate of the model's response to emission reductions.	Probably minor. Impacts for ozone and $PM_{2.5}$ results. Both oxidation potential and secondary organic aerosol formation could influence $PM_{2.5}$ formation significantly. However, biogenic emissions are assumed to be unaffected by the CAAA, so this uncertainty should not significantly affect net benefits. Furthermore, ozone benefits contribute only minimally to net benefit projections in this study.
Emissions estimated at the county level (e.g., low-level source and motor vehicle NO_x and VOC emissions) are spatially and temporally allocated based on land use, population, and other surrogate indicators of emissions activity. Uncertainty and error are introduced to the extent that area source emissions are not perfectly spatially or temporally correlated with these indicators.	Unable to determine based on current information.	Probably minor. Potentially major for estimation of ozone, which depends largely on VOC and NO_x emissions; however, ozone benefits contribute only minimally to net benefit projections in this study.

POTENTIAL SOURCE OF ERROR	DIRECTION OF POTENTIAL BIAS FOR NET BENEFITS	LIKELY SIGNIFICANCE RELATIVE TO KEY UNCERTAINTIES ON NET BENEFITS ESTIMATE*
Uncertainties Related To Growth Factors		
Economic growth factors used to project emissions are an indicator of future economic activity. These growth factors reflect uncertainty in economic forecasting as well as uncertainty in the link to emissions. IPM projections may be reasonable regionally but may introduce significant biases locally. Also, the Annual Energy Outlook 2005 growth factors do not reflect the recent economic downturn or the volatility in fuel prices since the fall of 2005.	Unable to determine based on current information.	Potentially major. The same set of growth factors are used to project emissions under both the *Without-CAAA* and *With-CAAA* scenarios, mitigating to some extent the potential for significant errors in estimating differences in emissions. Some specific locations may be more significantly influenced. We estimated gross benefits using AEO low-growth and high-growth scenarios and found differences of ±20%. However, due to nonlinearities in the benefits estimation model, we could not reliably determine in what direction over- or underestimating growth might bias net benefits estimates.
The on-road source emissions projections reflect MOBILE6.2 data on the composition of the vehicle fleet. If recent volatility in fuel prices persists or if fuel prices rise significantly (like they did in 2007 and 2008), the motor vehicle fleet may include more smaller, lower-emitting automobiles and fewer small trucks (e.g., SUVs).	Overestimate	Probably minor. Overall, fuel prices affect fleet composition at the margin, and we expect changes in fleet composition to occur gradually over long periods, suggesting that any effect would take several years to fully manifest.
Uncertainties Related To Emissions Control Modeling		
The *With-CAAA* scenario includes implementation of the Clean Air Mercury Rule (CAMR), which has been vacated, and Clean Air Interstate Rule (CAIR), which was vacated but has since been remanded.	Unable to determine based on current information.	Potentially major. Significance in 2020 will depend on the speed and effectiveness of implementing potential alternatives to CAIR and CAMR. In some areas, emissions reductions are expected to be overestimated, but in other areas, NO_x inhibition of ozone leads to underestimates of ozone benefits (e.g., some urban centers).
VOC emissions are dependent on evaporation, and future patterns of temperature are difficult to predict.	Underestimate. Higher temperatures in the future are more likely than lower temperatures because of climate change, and higher temperature would lead to more emissions in the *without-CAAA* case but controls would keep the *with-CAAA* emissions roughly constant.	Probably minor. The analysis uses meteorological data from 2002 to characterize temperatures during the 30-year period from 1990 to 2020. An acceleration of climate change (warming) could increase emissions but the increase relative to 2002 levels would not likely be significant.

POTENTIAL SOURCE OF ERROR	DIRECTION OF POTENTIAL BIAS FOR NET BENEFITS	LIKELY SIGNIFICANCE RELATIVE TO KEY UNCERTAINTIES ON NET BENEFITS ESTIMATE*
Use of average temperatures (i.e., daily minimum and maximum) in estimating motor-vehicle emissions artificially reduces variability in VOC emissions.	Unable to determine based on current information.	Probably minor. Use of averages will overestimate emissions on some days and underestimate on other days. Effect is mitigated in *With-CAAA* scenarios because of more stringent evaporative controls that are in place by 2000 and 2010.
Uncertainties in the stringency, scope, timing, and effectiveness of *With-CAAA* controls included in projection scenarios.	Unable to determine based on current information.	Probably minor. Future controls could be more or less stringent, widely applicable, or effective than projected. Timing of emissions reductions may also be affected.
The location of the emissions reductions achieved from unidentified measures is uncertain. We currently treat these reductions as if they are achieved from non-point sources, but this may not be correct in all cases.	Unable to determine based on current information.	Probably minor. Impacts from these uncertainties would be localized and would not significantly change the overall net benefit estimate.

CHAPTER 3 - DIRECT COSTS

The costs of complying with the requirements of the Clean Air Act Amendments (CAAA) of 1990 will affect all levels of the U.S. economy. The impact, initially experienced through the direct costs imposed by regulations promulgated under the amendments, will also be seen in patterns of industrial production, research and development, capital investment, productivity, employment, and consumption. The purpose of the analysis summarized in this chapter is to estimate the incremental change in direct annual compliance costs from 1990 to 2020 that are attributable to the 1990 Clean Air Act Amendments.



As a measure of the direct expenditures associated with CAAA compliance, the estimates presented here represent a key stand-alone output of the Second Prospective Analysis. In addition, we use the direct cost estimates presented in this chapter to generated estimates of CAAA-related private costs that will serve as inputs in the computable general equilibrium (CGE) model used to estimate the net social costs of the CAAA on the economy as a whole.[16] Use of a CGE model allows us to estimate how compliance costs—along with expected benefits of the CAAA, such as increased labor supply—

[16] Private costs differ from the direct cost estimates presented in this chapter in two important ways: (1) they reflect private interest rates rather than the 5 percent social discount rate used throughout this report and (2) they reflect transfers (e.g., excise taxes on fuel) not included in our direct cost estimates.

have a net impact on social welfare through interactions with labor markets and other areas of the economy. Further discussion of the CGE modeling conducted to estimate the impacts of the CAAA on net social welfare is presented in Chapter 8.

This chapter consists of four sections. The first section summarizes our approach to estimating direct compliance costs. In the second section we present the results of the cost analysis. In the third section, we discuss how cost estimates in the Second Prospective Analysis differ from those generated for the First Prospective Analysis. We conclude the chapter with a discussion of the major analytic uncertainties, including a summary of the results of quantitative sensitivity tests of key data and assumptions.

OVERVIEW OF APPROACH

The scope of this analysis is to estimate the incremental direct costs for all criteria and hazardous air pollutant regulations issued under CAAA programs. Our approach to estimating the direct costs of CAAA compliance is closely integrated with our estimates of emissions reductions attributable to the amendments. In general, our analysis of compliance costs is driven by the results of our analysis of CAAA-related emissions reductions, and in some cases, costs and emissions reductions are measured concurrently. As with the emissions analysis presented in the previous chapter, we modeled CAAA compliance costs in 2000, 2010, and 2020 by comparing the costs of air pollution abatement in two scenarios:

- An historical "*with-CAAA*" scenario control case that reflects expected or likely future measures implemented since 1990 to comply with rules promulgated through September 2005; and
- A counterfactual "*without-CAAA*" scenario baseline case that freezes the scope and stringency of emissions controls at their 1990 levels, while allowing for changes in emissions attributable to economic and population growth.[17]

In addition, we also estimated costs separately for five major source categories: utilities, or electricity generating units (EGUs); non-EGU industrial point sources; onroad motor vehicles; nonroad engines/vehicles; and area sources. Table 2-1 gives examples of emissions sources for each of the six categories examined in this analysis. Additionally, the cost analysis considers the costs of local controls required to achieve further progress with the 8-hour Ozone NAAQS and the $PM_{2\,5}$ NAAQS as a separate category. Another difference between the emissions analysis and the direct cost analysis discussed in this chapter is that, whereas the emissions analysis considered emissions of six major criteria pollutants (VOCs, NO_x, SO_2, CO, PM_{10}, and $PM_{2\,5}$) and one other pollutant which is not currently regulated under the CAAA in any form (NH_3), the cost analysis addresses CAAA provisions issued to control emissions of both criteria pollutants and hazardous air pollutants (HAPs).[18]

[17] A full list of the regulations incorporated in the *with-CAAA* scenario is presented in Table 2-3.

[18] Except to the extent they are co-controlled by VOC limits or other measures focused on criteria pollutants, reductions in emissions of hazardous air pollutants were omitted because our benefits analysis focuses on the effect of criteria

We estimated direct compliance costs in each source category using one of two approaches:

1. ***Cost Estimates Based on Unit Costs*** – Costs were estimated by collecting information on the costs associated with specific control measures required by CAAA regulations, or costs were calculated using estimates of the average cost per ton of pollutant emission reduced.
2. ***Cost Estimates Based on Optimization*** – Costs were estimated concurrently with emissions estimation through a cost minimizing algorithm that modeled attainment with specified emissions reduction targets. This approach was used for electric generating units, for example, where costs and emissions outcomes are outputs of the Integrated Planning Model.

COST ESTIMATES BASED ON UNIT COSTS

To estimate the cost of compliance CAAA regulations for most source categories, we obtained unit costs of control devices and other measures from various sources. For costs related to the 1-hour Ozone and PM_{10} National Ambient Air Quality Standards (NAAQS), we used cost data from EPA's AirControlNET database. AirControlNET links detailed data on control technologies and pollution prevention measures with EPA's National Emissions Inventory (NEI) to compute the costs associated with source- and pollutant-specific emission reductions. To calculate the cost of emissions controls on nonroad engines and vehicles, we multiplied unit cost estimates by estimates of vehicle/equipment sales and fuel consumption from the 2004 edition of EPA's NONROAD model. The NONROAD model was also used to estimate CAAA-related emissions reductions in this sector, and direct cost estimates were developed consistent with those results. For these nonroad engine and fuel rules, as well as for controls required under other parts of the CAAA, we obtained unit cost estimates from EPA's regulatory impact analyses (RIAs) as well as analyses commissioned by other organizations, such as the Ozone Transport Commission and the California Air Resources Board. Additional details on the specific data sources used to estimate unit costs for each source category are provided in the Second Prospective Cost Report.[19]

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pollutants. Benefits of HAP emissions reductions are discussed in the context of a limited case study, however, in Chapter 5 of this document. In addition, no CAAA emissions control measures are currently targeted to control NH_3 emissions, so no costs for NH_3 control are included in our overall CAAA cost estimates.

[19] See the report, Direct Cost Estimates for the Clean Air Act Second Section 812 Prospective Analysis. Available at www.epa.gov/oar/sect812.

COST ESTIMATES BASED ON OPTIMIZATION

We estimated control costs for EGUs using EPA's Integrated Planning Model (IPM), which determines the utility sector's least-cost strategy for meeting energy and peak demand requirements over a specified period of time, accounting for CAAA-mandated emissions caps. In the process of estimating the SO_2 and NO_x emissions that we discussed in the previous chapter, IPM also produced cost estimates for NO_x, SO_2, and mercury controls at EGUs.

We also used a least-cost optimization process to estimate the costs of local controls required to achieve further progress toward and, ultimately, approximate attainment of the 8-hour Ozone NAAQS. For each designated nonattainment area, we first modeled the application of reasonably available control technology (RACT) and inspection and maintenance (I/M) programs. Then, in areas where further emission reductions were necessary, a least-cost algorithm was used to identify and apply the control measures to meet progress and attainment requirements.[20]

Table 3-1 summarizes the cost estimation methods that we used for each source category, organized by major rules within each category.

ADDITIONAL COST ESTIMATION CONSIDERATIONS

In addition to the general cost estimation methods described above, we also considered additional factors when estimating CAAA compliance costs, such as how to account for cost savings from "learning by doing," how to represent the annual costs of control measures requiring initial capital investment, and how to estimate the costs of required emissions reductions for which control measures have not yet been identified.

Learning – A significant body of literature suggests that the per unit cost of producing or using a given technology declines as experience with that technology increases over time.[21] The mechanism through which these reductions occur is not well understood, as decreases in costs may reflect several different effects, including returns to research and development, productivity spillovers from outside an industry, economies of scale, or efficiency improvements associated with increased experience with a given technology (i.e., learning-curve impacts). Given the multitude of factors that may lead to cost reductions over time, it is unclear whether such reductions should be modeled as learning-curve effects or as some other form of technological change. Nordhaus (2008) suggests that it is difficult to distinguish learning-curve effects from exogenous

[20] For PM NAAQS compliance, an optimization approach was not possible, because target emissions reductions were not available for each non-attainment area. Instead, we developed a model SIP for all PM nonattainment areas, and estimated costs for those measures in the model SIP for each nonattainment area.

[21] These studies include John M. Dutton and Annie Thomas, "Treating Progress Functions as a Managerial Opportunity," Academy of Management Review, 1984, Vol. 9, No. 2, 235-247; Dennis Epple, Linda Argote, and Rukmini Devadas, "Organizational Learning Curves: A Method for Investigating Intra-plant Transfer of Knowledge Acquired Through Learning by Doing," Organizational Science, Vol. 2, No. 1, February 1991; International Energy Agency, Experience Curves for Energy Technology Policy, 2000; and Paul L. Joskow and Nancy L. Rose, "The Effects of Technological Change, Experience, and Environmental Regulation on the Construction Cost of Coal-Burning Generating Units," RAND Journal of Economics, Vol. 16, Issue 1, 1-27, 1985.

technological change and that learning effects, as estimated separately from technological change, will typically be overestimated. Nevertheless, the most detailed peer-reviewed empirical studies examining these cost reductions quantify a "learning rate" for different technologies and industries that represents the percentage reduction in costs associated with each doubling in the cumulative production of a technology. Based on the strength of the evidence in this literature, we incorporated the concept of the learning effect into our assessment of CAAA costs.

TABLE 3-1. COST ESTIMATION METHODS BY SOURCE CATEGORY AND RULE (WHERE APPLICABLE)

SOURCE CATEGORY	COST ESTIMATION METHOD
EGUs	IPM Least-cost optimization
Non-EGU Industrial Point Sources	
Ozone Transport Commission State Model Rules (NO_x/VOC):	Ozone Transport Commission -sponsored 2001 analysis AirControlNET
NO_x SIP Call:	EPA cost estimates (from 1987-1998)
MACT Rules:	AirControlNET
Refinery Cases & Settlements:	
1-hour Ozone NAAQS:	Cost/ton from 1st Prospective
Federal Rules (RACT, Control Technique Guidelines, National VOC Rules):	AirControlNET Least Cost Module SIP control cost estimates;
Additional Measures:	
PM_{10} SIP Measures:	AirControlNET
Onroad Engines and Fuels	
Title I NAAQS Tailpipe & Evaporative Control Standards:	EPA RIA unit costs
California and National LEV:	California Air Resources Board (CARB) unit cost estimates
Fuels:	Unit costs from First Prospective Analysis, EPA RIAs, CARB (for California standards)
I/M Programs:	Costs based on information from current I/M programs
Nonroad Engines and Fuels	EPA RIA Unit Costs applied to sales and fuel consumption data provided by the NONROAD model, consistent with growth projections used to estimate emissions
Area Sources	
Ozone Transport Commission State Model Rules (NO_x/VOC):	Ozone Transport Commission-sponsored 2001 analysis
1-hour Ozone NAAQS:	
RACT & Control Technique Guidelines:	Cost/ton from 1st Prospective
Additional Measures:	AirControlNET
Local Controls	
8-hour Ozone NAAQS:	
RACT & I/M:	AirControlNET
Additional (Identified) Measures:	AirControlNET using a least-cost algorithm
Unidentified Measures:	Assumed $15,000/ton
$PM_{2.5}$ NAAQS:	Model SIP approach with AirControlNET unit costs
Note: Unit costs taken from earlier EPA analyses are inflated to 2006$ and adjusted to account for cost savings from learning curve impacts. Some cost estimates for onroad and nonroad engines and fuel also reflect costs and/or savings from changes in fuel economy. These costs and savings are estimated using AEO 2005 fuel price projections.	

Where possible, we based our learning curve adjustments on learning rates presented in the empirical literature. For some sectors, however, empirical estimates of learning rates were not available. We identified learning rate estimates for SO_2 and NO_x control technologies in the EGU sector and in the onroad vehicle sector, where we used learning rates for vehicle production to estimate the impact of learning on motor vehicle engine controls. For other technologies and industries affected by the amendments, we applied a default learning rate of 10 percent, consistent with the recommendation of the Council that advised EPA on this study.[22,23]

Cost Accounting – The costs presented in this analysis are expressed as total annualized costs (TAC) in 2000, 2010, and 2020. Annualized costs include both operation and maintenance (O&M) costs and, for CAAA provisions that require investment in pollution control equipment, capital investment costs. In order to make appropriate comparisons of costs in 2000, 2010, and 2020, we annualized these investment costs over the expected life of the control equipment, rather than assigning total capital investment costs to the year in which the investment is expected to be made. We applied a discount rate of five percent to annualize capital costs over an estimated equipment life.[24] These annualized capital costs, combined with the annual O&M costs for a given pollution control measure, make up the total annualized cost estimates that we present for the three target years. Because some control measures require more capital investment than others, the degree to which our discount rate assumption affects our cost estimates varies by source category.

For CAAA-related rules that affect fuel economy, we also incorporate fuel savings or losses into our cost estimates. Where possible, we estimate the value of these benefits or costs based on fuel price projections presented in the Energy Information Administration's *Annual Energy Outlook 2005* (AEO 2005). In addition, for rules that affect the fuel economy of an engine over a period of several years, we estimate these benefits or costs as the present value of the fuel economy impacts realized over the entire life of the engine.

Local Controls for NAAQS Compliance – When estimating the costs of compliance with the 8-Hour Ozone and $PM_{2\,5}$ NAAQS, we first estimated the cost of applying known and commercially available control technologies in nonattainment areas. We limited the application of these known controls to those with an estimated cost not exceeding $15,000 per ton for PM and ozone precursors (i.e., SO_2, NO_x, and VOCs). The rationale for incorporating this threshold into the analysis is that controls more costly than $15,000

[22] The Council recommended that we apply a default learning rate of 5 to 10 percent to sectors for which no empirical data are available. We chose 10 percent as a default learning rate because this value is more consistent with the learning rates presented in the empirical literature than the low end of the Council's recommended range.

[23] The Project Team makes no learning curve adjustments for motor vehicle inspection and maintenance programs. Because most states either run centralized inspection centers themselves or regulate the fees charged by decentralized inspection centers, it is unclear whether the learning curve impacts for I&M programs would be significant.

[24] Note that the discount rate we use to annualize capital investment costs is distinct from the discount rate used to calculate the total net present value of costs and benefits incurred through the full 1990 to 2020 study period. The net present value of costs and benefits is examined separately in Chapter 7 where we compare total costs to total benefits.

per ton may not be cost effective. Thus, local air quality agencies would seek reductions from other (unidentified) control measures. This is roughly consistent with the practice of the South Coast Air Quality Management District (SCAQMD 2006) in California, which attempts to identify viable alternatives for any control requirements with an estimated cost exceeding $16,500 per ton. When costs are above this threshold, the SCAQMD also conducts more detailed cost-effectiveness and economic impact analyses of the controls.

For areas projected to remain in nonattainment with the 8-Hour Ozone NAAQS with identified controls, we estimated the costs associated with reducing emissions using additional controls not yet identified. To estimate the cost of these unidentified controls, we assumed that the cost of implementing these measures is $15,000 per ton of pollutant reduced, consistent with the cost threshold for identified controls.

DIRECT COMPLIANCE COST RESULTS

In this section we summarize the compliance cost analysis results by source category. As noted above, the control measures included in this analysis are consistent with our assumptions in the emissions analysis and reflect any post-1990 regulations promulgated (or reasonably anticipated, such as controls to meet RFP requirements) after passage of the 1990 CAAA. In general, the emissions analysis and this cost analysis reflect all of the regulations that were promulgated before September 2005. Similar to the emissions projection analysis, regulations promulgated after September 2005 (e.g., the revised Lead NAAQS) are not reflected in this report, in an effort to make the costs and benefits analyses as consistent as possible.

Table 3-2 summarizes the estimated costs of the CAAA by sector for the three analysis years: 2000, 2010 and 2020. The table shows that the direct compliance costs in 2000 are estimated to be approximately $20 billion and that these costs are dominated by the costs of motor vehicle-related provisions of the CAAA as well as MACT standards and electric utility controls. The major components of motor vehicle-related control costs in 2000 are for emission standards, fuel standards, and vehicle emission inspection programs in nonattainment areas. Motor vehicle emissions standard costs in 2000 are primarily for low emission vehicle programs, Tier 1 tailpipe standards, and on-board diagnostics. Prominent motor vehicle fuel control programs in 2000 include Federal and California reformulated gasoline. These two reformulated gasoline programs are focused primarily in serious, severe and extreme 1-hour ozone NAAQS nonattainment areas.

Table 3-2 shows that the estimated costs of complying with 1990 CAAA provisions are expected to more than double between 2000 and 2010 as areas develop and implement 8-hour ozone and $PM_{2.5}$ NAAQS State Implementation Plans (SIPs). One of the major components of CAAA compliance costs in 2010 is the estimated cost to achieve sufficient reductions of ozone precursor emissions to demonstrate 8-hour ozone NAAQS attainment. As noted above, we estimated 8-hour ozone compliance costs in two phases: first, we estimated the cost of applying known and commercially available control technologies in nonattainment areas; second, we estimated the costs associated with additional emissions reductions required to reach NAAQS attainment using controls not

yet identified, at an assumed cost of $15,000 per ton. There is considerable uncertainty in this element of the cost analysis because it is unclear how individual areas will approach this issue. Because of the significant degree of uncertainty associated with estimating the costs of unidentified controls, this component of the cost analysis is reported separately in Table 3-2.

TABLE 3-2. SUMMARY OF 1990 CAAA COMPLIANCE COSTS BY SECTOR

SOURCE CATEGORY	ANNUAL COST (MILLION 2006$)		
	2000	2010	2020
Electric Utilities	**$1,370**	**$6,640**	**$10,400**
Non-EGU Industrial Point Sources	**$3,130**	**$5,190**	**$5,140**
NO_x SIP Call	$0	$134	$133
MACT	$1,500	$3,010	$2,920
National VOC Rules, RACT, and New CTGs	$439	$464	$534
Refinery Settlements	$0	$295	$324
1-Hour Ozone SIP Measures	$1,030	$1,130	$1,090
PM_{10} SIP Measures	$163	$152	$146
Onroad Vehicles and Fuels	**$14,400**	**$25,700**	**$28,300**
Motor Vehicle Emission Standards	$4,400	$7,650	$7,760
California and National LEV	$562	$2,030	$2,090
Fuels	$4,820	$9,830	$11,200
Motor Vehicle I/M programs	$4,630	$6,250	$7,260
Nonroad Vehicles and Fuels	**$298**	**$359**	**$1,150**
Nonroad Engines/Vehicle Standards	$298	$219	$320
Fuels	$0	$140	$831
Area Sources	**$663**	**$693**	**$766**
RACT and New CTGs	$446	$442	$490
Ozone Transport Commission Model Rules	$134	$181	$212
1-Hour Ozone NAAQS	$82	$70	$64
Local Controls	**$0**	**$5,260**	**$6,180**
8-Hour Ozone NAAQS	$0	$4,270	$4,390
$PM_{2.5}$ NAAQS	$0	$977	$687
Clean Air Visibility Rule	$0	$0	$1,100
Sub-Total Excluding Unidentified Measures	**$19,900**	**$43,900**	**$52,000**
Additional Estimated Costs for Unidentified Controls for 8-Hour Ozone Compliance			
Non-California areas		$8,700	$8,500
California areas		$318	$5,030
TOTAL	**$19,900**	**$53,000**	**$65,500**

Note: All values are rounded to no more than three significant digits.

The growth in costs between 2000 and 2020 partially reflects population growth during this period and the corresponding increase in emissions-generating activity (e.g., increased vehicle miles traveled). Normalized for population growth, annual costs increase from approximately $70 per capita in 2000 to $170 per capita in 2010 and $190 per capita in 2020. These results suggest that annual costs per capita grow by approximately 170 percent between 2000 and 2020, whereas annual costs (not normalized for population) grow by approximately 230 percent during this period.

COMPARISON OF COST ESTIMATES WITH THE FIRST PROSPECTIVE ANALYSIS

In many areas, cost estimation methods in the Second Prospective Analysis were identical to those in the First Prospective, even to the point of using the same unit costs (adjusted for inflation). In general, the Second Prospective improves on the First Prospective by using more current cost estimates (where available) and more advanced least-cost optimization tools. In addition, a major methodological innovation included in the Second Prospective is the adjustment of compliance costs to account for the learning curve effects of increased experience with pollution control measures.

Figure 3-1 shows the estimated compliance costs in 2000 and 2010 from the First and Second Prospective Analyses, organized by source category. Overall, the year 2000 cost estimate presented in Table 3-2 is considerably lower than the corresponding cost estimate in the First Prospective ($27.6 billion), while the 2010 cost estimate presented in Table 3-2 is higher than the corresponding First Prospective estimate ($37.8 billion). Costs for electric utilities and area sources are significantly lower than were estimated in the First Prospective. The significant difference for utilities likely reflects differences in assumptions about the cost of obtaining low-sulfur coal from the Powder River Basin (PRB) in Wyoming. Although the Project Team was aware of the downward trend in PRB coal costs when the First Prospective was completed, this effect was not fully addressed in the data and models available at the time of the First Prospective study.

It is useful to note that the Second Prospective's $1.37 billion estimate for EGU compliance cost in 2000, which represent the pre-CAIR Title IV program requirements, fits well within the range of costs estimated in a series of *ex-post* econometric studies of compliance cost, which yield results of costs in 2000 of $1 to $1.4 billion.[25] In addition, the National Acid Precipitation Assessment Program's (NAPAP) 2005 assessment of the Clean Air Act Title IV requirements provides another basis for evaluating the reasonableness of the EGU cost estimates presented in this report (NSTC 2005). The 2005 NAPAP assessment summarizes the findings of several economic studies that estimated the cost of fully implementing the Title IV SO_2 provisions. According to

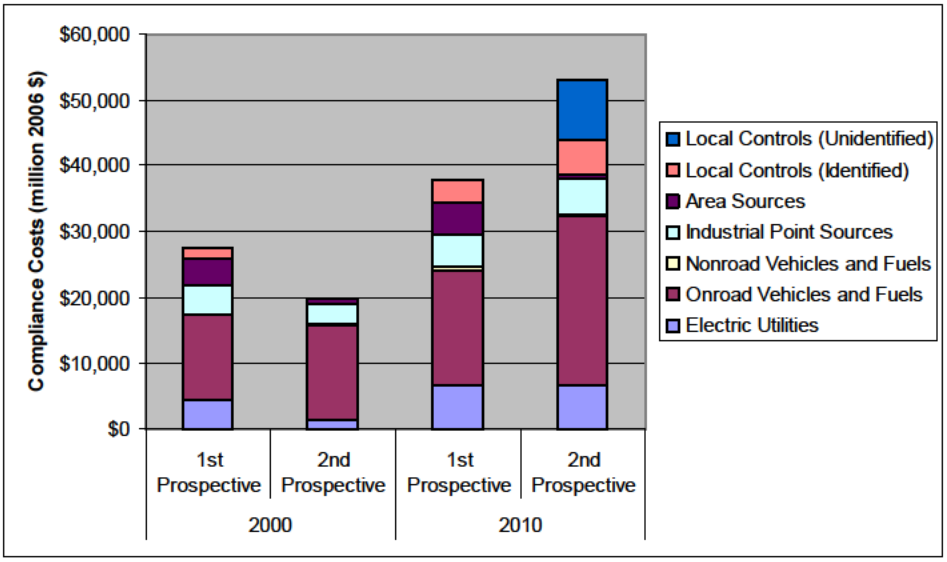
[25] See, for example, A Denny Ellerman, 2003, "Ex Post Evaluation of Tradable Permits: The U.S. SO2 Cap-and-Trade Program," MIT Center for Energy and Environmental Policy Research Working Paper number WP-2003-003, available at: web.mit.edu/ceepr/www/publications/workingpapers_2000_2004.html#2003. Ellerman cites two papers for these estimates: Curtis P. Carlson, Dallas Burtraw, Maureen Cropper, and Karen Palmer, (2000) "SO2 Control by Electric Utilities: What are the Gains from Trade?" Journal of Political Economy, 108 (6):1292-1326; and A. Denny Ellerman, Paul L. Joskow, Richard Schmalensee, Juan-Pablo Montero, and Elizabeth Bailey (2000). Markets for Clean Air: The U.S. Acid Rain Program. Cambridge University Press.

NAPAP, these studies estimate annual costs ranging from $1.2 billion to $2.3 billion for full implementation in 2010, but these estimates exclude the cost of CAIR, CAMR, and some other regulations that are part of the Second Prospective estimate for 2010.[26]

Overall, the Second Prospective cost estimates for 2010 are higher than those estimated for the First Prospective mainly because many federal motor vehicle control programs not included in the First Prospective study *with-CAAA* scenario have been promulgated since the First Prospective was completed. For the same reason, the Second Prospective cost estimates are also higher for motor vehicles in 2000, though to a lesser degree. In addition, cost estimates in the current analysis are higher than in the First Prospective because they include the costs of meeting the 8 hour ozone, $PM_{2.5}$ NAAQS and Clean Air Visibility Rule requirements in 2010. In both 2000 and 2010, estimated costs at area sources are higher in the First Prospective than in the Second Prospective, by roughly a factor of three, even though estimated emissions reductions are roughly a factor of three greater in the Second Prospective. This difference is due primarily to a much lower estimated cost per ton to reduce $PM_{2.5}$ emissions in the Second Prospective – on average, cost per ton of $PM_{2.5}$ reduced is approximately $2,000 in the Second Prospective, and was almost $20,000 in the First Prospective. One reason for the reduction is that the controls in the Second Prospective are better targeted at fine particulate control - controls in the First Prospective were actually focused on sources of PM_{10}, with $PM_{2.5}$ emissions reductions as a co-benefit. In addition, we have learned that pre-2002 NEI emissions estimates for $PM_{2.5}$ were very uncertain, suggesting that perhaps the estimated $PM_{2.5}$ emissions reductions in the First Prospective were understated.

[26] The NAPAP assessment cites a range of $1 billion to $2 billion, in year 2000 dollars. Adjusting for inflation using the GDP deflator, this range increases to $1.2 billion to $2.3 billion in year 2006 dollars.

FIGURE 3-1. FIRST AND SECOND PROSPECTIVE ANNUAL CAAA COMPLIANCE COSTS: 2000 AND 2010



First Prospective cost estimates from U.S. EPA, The Benefits and Costs of the Clean air Act 1990 to 2010, EPA-410-R-99-001, November 1999.

UNCERTAINTY IN DIRECT COST ESTIMATES

In a broad analysis of prospective regulatory impacts it is not possible to verify the accuracy of the full range of assumptions regarding changes in consumption patterns, input costs, and technological innovation used to estimate costs in future scenarios. Moreover, for many of the factors contributing to uncertainty, the degree or even direction of the bias is unknown or cannot be determined. Nevertheless, uncertainties and/or sensitivities can be identified and in many cases the potential measurement errors can be quantitatively characterized. In this section of the chapter, we first discuss several quantitative sensitivity analyses undertaken to characterize the impact of key assumptions on the ultimate cost analysis. The quantitative analyses presented below were chosen either because the parameter in question was a topic of discussion in the Council's review of the direct cost analysis or because we identified the parameter as potentially influential and/or uncertain. We then conclude the chapter with a qualitative discussion of the impact of both quantified and unquantified sources of uncertainty.

QUANTITATIVE SENSITIVITY TESTS

We performed four quantitative sensitivity tests to estimate the impact of alternate assumptions on our overall cost estimates. These tests covered our assumptions regarding the cost of unidentified controls, the composition of motor vehicle sales and fleet fuel efficiency, the failure rate of I/M tests, and the default learning rate applied to

sectors for which we could not identify a rate in the empirical literature. The results of these sensitivity tests on our 2020 cost estimates are presented in Table 3-3.[27]

Local Controls Analysis – Unidentified Controls

As indicated above, when estimating the cost of local controls required for further progress with the 8-hour Ozone and $PM_{2.5}$ NAAQS, we used a cost cap of $15,000 per ton to estimate the costs of identified local controls and also applied a cost of $15,000 per ton to unidentified controls. To assess the sensitivity of the local controls analysis to changes in these values, we estimated the costs of local controls based on a $10,000-per-ton cost cap for identified controls and a $10,000-per-ton estimated cost for unidentified controls. As indicated in Table 3-3, this alternative approach would yield lower cost estimates for both identified local controls and unidentified measures. The estimated costs of identified controls decline when the $10,000 cap is applied because controls that cost between $10,000 and $15,000 per ton are not implemented. In addition, although the application of the $10,000 cost cap increases the emissions reductions to be achieved through unidentified controls (relative to when the $15,000 cost cap is used), reducing the cost of unidentified controls to $10,000 per ton more than offsets the costs associated with these additional emissions reductions. Based on preliminary analyses conducted early in the development of the direct cost estimates, we found that in general higher thresholds do not change the emissions reductions to be achieved by unidentified controls, because few identified controls have a cost per ton higher than the $15,000 threshold used in the analysis. Accordingly, the major effect of increasing the cost cap would be to increase the estimated cost of reductions achieved by unidentified controls, whose cost is estimated based on the dollar per ton cap.

Composition of Motor Vehicle Sales and Fleet Fuel Efficiency

Our analysis of the costs associated with motor vehicle tailpipe and fuel rules is based on sales and fuel efficiency projections from the 2005 version of DOE's *Annual Energy Outlook*. Since the release of AEO 2005, however, fuel prices have been more volatile than in previous years, leading many consumers to shift to more fuel efficient vehicles, and the Department of Transportation revised the Federal Corporate Average Fuel Economy (CAFE) standards. Given these developments, AEO 2008 projects that passenger cars will make up a greater portion of light-duty vehicle sales in 2010 and 2020 than is projected by AEO 2005. AEO 2008 also assumes that the light-duty vehicle fleet will be nearly 15 percent more fuel efficient relative to the projections in AEO 2005. To assess the extent to which our cost estimates for the on-road sector would change under the alternative AEO 2008 assumptions, we estimated the cost of motor vehicle tailpipe and fuel rules for both the 2010 and 2020 target years based on the AEO 2008 data. As indicated in Table 3-3, using AEO 2008 projections increases the estimated cost of motor vehicle tailpipe standards and reduces the estimated cost of motor vehicle fuel rules in 2020. Although the alternative estimated cost of fuel rules is about 9 percent less than the

[27] We present sensitivity test results for 2020 estimates because the differences between the primary cost estimates and the alternative cost estimates discussed in this section are most pronounced in 2020.

primary estimate presented in Table 3-2, the reduction in estimated costs of both tailpipe and fuel CAAA motor vehicle programs in aggregate is more modest, at 3.6 percent.[28]

Vehicle Inspection Failure Rate

Our estimates of the repair costs associated with motor vehicle I&M programs employed program- and year-specific inspection failure rates derived from 2003 and 2004 data for Wisconsin I&M programs. In its June 2007 review of the Draft Direct Cost Report, the Council noted that a 2001 National Research Council report referenced a failure rate about one-seventh the value derived from the Wisconsin data.[29] To assess the sensitivity of the I&M cost analysis to the assumed failure rate for annual dynamometer-based programs, we developed alternative cost estimates for CAAA-mandated I&M programs based on the failure rate reported by the NRC. We found that the estimated cost of these programs declined by more than 40 percent when the alternative failure rates were used in place of those supporting the Second Prospective Cost Report. In addition, as indicated in Table 3-3, using these alternative values reduced total CAAA-related costs for the on-road sector by about 12 percent in 2020. This suggests that the cost estimates for the on-road sector are fairly sensitive to the assumed failure rate for I&M programs, in light of the range of failure rates obtained from readily available data sources.

Default Learning Rate

As discussed above, we adjusted total program costs to account for "learning curve" impacts (i.e., the extent to which the costs of a technology decline as experience with that technology increases over time). Wherever possible, we employed technology- or industry-specific learning rates obtained from the literature. Where industry-specific learning rates were not readily available in the empirical literature, we applied a default rate of 10 percent to the following technologies:

- Selective non-catalytic reduction at electric generating units (EGUs) (O&M costs only);
- Activated carbon injection at EGUs;
- Motor vehicle fuel rules;
- Non-road engine and fuel rules;
- Non-EGU point source controls;
- Area source controls; and
- Local controls: EGU, non-EGU point source, and area source.

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[28] Note that in both our central case estimates and in our sensitivity analysis for fleet composition, the same fleet composition is assumed in the *with-CAAA* and *without-CAAA* scenarios. It is likely that, as compliance costs increase, the CAAA could have a significant effect on fleet composition, but our current analysis does not address that factor.

[29] Committee on Vehicle Emission Inspection and Maintenance Programs, Board on Environmental Studies and Toxicology, Transportation Research Board, National Research Council. *Evaluating Vehicle Emissions Inspection and Maintenance Programs*. 2001.

We tested the sensitivity of the cost analysis to the choice of a default learning rate by re-estimating the total costs of the amendments using alternative default learning rates of 5 and 20 percent for the program areas listed above. The five percent default rate represents the low end of the range recommended by the Council, while the 20 percent value represents the central tendency presented in the peer-reviewed literature for several technologies.[30] For the sensitivity test, we did not adjust the cost estimates of program areas where the empirical literature supplied specific and applicable learning rates. As indicated in Table 3-3, the use of alternative default learning rates had only a small effect on the estimated costs of the amendments in 2020. Using a five percent default learning rate in 2020 increased the estimated cost of the amendments by 3.2 percent, while a 20 percent default learning rate reduced costs by six percent.

TABLE 3-3. RESULTS OF QUANTITATIVE SENSITIVITY TESTS

PROVISION	PRIMARY ANNUAL COST ESTIMATE FOR 2020 (BILLIONS 2006 $)	STRATEGY FOR SENSITIVITY ANALYSIS	ALTERNATIVE 2020 ESTIMATE FROM SENSITIVITY TEST (BILLIONS 2006 $)	PERCENT CHANGE FROM PRIMARY COST ESTIMATE
Local Controls (Identified and Unidentified)	$20.39	$10,000/ton cap on identified controls and $10,000/ton for unidentified controls	$16.79	-17.6%
Motor Vehicle Costs	$28.28	Use AEO 2008 projections of motor vehicle sales and fleet fuel efficiency	$27.25	-3.6%
Motor Vehicle Costs	$28.28	Use Inspection Failure Rates reported by the National Research Council	$24.82	-12.2%
Total Costs (All Source Categories)	$65.48	Use alternate default learning rate of 5 percent	$67.60	3.2%
Total Costs (All Source Categories)	$65.48	Use alternate default learning rate of 20 percent	$61.54	-6.0%

[30] For an analysis of the learning rates estimated in the empirical literature, see John M. Dutton and Annie Thomas, "Treating Progress Functions as a Managerial Opportunity," *Academy of Management Review*, Vol 9, No. 2, 1984.

QUALITATIVE ANALYSIS OF KEY FACTORS CONTRIBUTING TO UNCERTAINTY

In addition to the uncertainties outlined above, we identified several other areas of uncertainty related to the direct compliance costs of the amendments that we did not address quantitatively. These include the Project Team's projections of economic activity, the impact of CAAA compliance on productivity, product quality degradation resulting from the CAAA, the influence of technological innovation on CAAA compliance costs, and the impact of input substitution on the costs of complying with the amendments.

Economic Activity Projections: The cost of the amendments in 2010 and 2020 will depend in large part on the future size and composition of the U.S. economy. If the AEO 2005 economic growth projections used to estimate emissions reductions in 2010 and 2020 underestimate or overestimate economic activity, we could likewise overestimate or underestimate the costs of CAAA compliance. In addition, the particular composition of economic output in 2010 and 2020 may deviate from the AEO 2005 projections, which would also cause our cost projections to differ from the actual costs of the amendments.

Industrial Productivity: As stated in the introduction to this chapter, our cost estimates represent the direct costs of the CAAA, i.e., the expected expenditures of regulated facilities to comply with the amendments. Several peer-reviewed studies have suggested, however, that the direct costs of pollution control measures do not adequately represent the total costs of environmental protection, due to the effects of pollution abatement on industrial productivity.[31] Although our cost estimates do not capture these productivity effects, the literature is not clear on the magnitude and direction of these effects. While some studies have found that pollution control negatively affects productivity, others have found that the productivity impact is positive or ambiguous.[32]

Effects of the CAAA on Product Quality: In addition to increasing the cost of producing goods and services, CAAA requirements may also affect product quality. For example, motor vehicle emission control requirements may reduce the performance of automobiles, and changes in paint formulations (to reduce VOC emissions) may adversely affect how well paint adheres to unfinished surfaces. On the other hand, changes in product quality may also have unquantified benefits – while we capture the fuel saving benefits of many motor vehicle engine changes, the benefits of low-VOC paint in improving indoor air quality and human health are not captured in our estimates. As a result, product quality

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[31] Barbera, A.J. and McConnell, V.D. (1986) "Effects of Pollution Control on Industry Productivity: A Factor Demand Approach." *The Journal of Industrial Economics*. Vol. XXXV, 161-172.

Barbera, A.J. and McConnell, V.D. (1990) "The Impact of Environmental Regulations on Industry Productivity: Direct and Indirect Effects." *Journal of Environmental Economics and Management*. Vol. 18, 50-65.

Gray, W.B. and Shadbegian, R.J. (1994) "Pollution Abatement Costs, Regulation, and Plant-Level Productivity." Center for Economic Studies.

Morgenstern, R.D., Pizer, W.A., and Shih, J-S. (2001) "The Cost of Environmental Protection." *Review of Economics and Statistics* Vol. 83, No. 4, 732-738. (doi:10.1162/003465301753237812).

[32] Barbera and McConnell (1986) found a negative impact of pollution control on productivity, while Barbera and McConnell (1990) and Gray and Shadbegian (1994) found an ambiguous impact, and Morgenstern et al. (1998) found a positive impact.

effects may reduce the welfare of households that consume products affected by the CAAA, or they may improve welfare. Households that substitute to other products due to CAAA-related quality changes (e.g., households that substitute from automobiles to light-duty trucks due to CAAA requirements that affect the performance of automobiles more than light-duty trucks) may also experience welfare losses or gains, as they would have otherwise preferred the product(s) that they would have consumed in the absence of the CAAA but may, in the balance, experience previously unrecognized gains.

Technological Innovation: The CAAA could serve as in impetus for technological innovation in the development of new, low-cost technologies or processes to reduce emissions. As indicated above, our cost estimates reflect the impact of experience-driven improvements in the productivity of existing control technologies—by accounting for learning curve impacts—but not the impact of technological innovation. Because we did not attempt to model technological innovation that might be spurred by incentives to minimize compliance costs, the Second Prospective Analysis may overestimate costs.

Input Substitution: To minimize the cost of complying with the amendments, regulated facilities may alter the mix of inputs used in the production of goods and services. With the exception of fuel switching by EGUs (as part of compliance with the Title IV Acid Rain Program and CAIR), we did not capture input substitution as a control strategy in the Second Prospective Cost Report. Ignoring the possible impact of input substitution could also cause our estimates to overstate CAAA compliance costs.

Table 3-4 lists the key sources of uncertainty noted in the quantitative and qualitative discussions above and indicates—where possible—the expected impact of the uncertainty on the net benefits estimate of the Second Prospective Analysis.

TABLE 3-4. KEY UNCERTAINTIES ASSOCIATED WITH COST ESTIMATION

POTENTIAL SOURCE OF ERROR	DIRECTION OF POTENTIAL BIAS FOR NET BENEFITS	LIKELY SIGNIFICANCE RELATIVE TO KEY UNCERTAINTIES ON NET BENEFITS ESTIMATE[1]
Uncertainty in the maximum per ton costs for local controls to comply with the 8-hour Ozone and $PM_{2.5}$ NAAQS.	Unable to determine based on current information	Probably minor. Our analysis of local controls assumes a maximum cost of $15,000 per ton for local controls implemented to comply with 8-hour Ozone and $PM_{2.5}$ NAAQS requirements.[5] Local areas may implement more costly controls to comply with the NAAQS, but technological innovation may lead to the development of less expensive controls.
Uncertainty in the projected composition of motor vehicle sales and the fuel efficiency of the motor vehicle fleet.	Unable to determine based on current information	Probably minor. We projected the composition of motor vehicle sales and the fuel efficiency of the motor vehicle fleet based on AEO 2005 data. The sensitivity analysis of alternative sales and fuel efficiency projections presented in this report suggests that this uncertainty has a small impact on net benefits.
Uncertainty regarding failure rates for motor vehicle inspections.	Unable to determine based on current information	Probably minor. The repair costs for vehicles that fail emission inspections represent a small fraction of the estimated net benefits of the amendments. The failure rate sensitivity analysis presented in this report suggests that alternative failure rate assumptions could have a large effect on the costs for this component of the CAAA, but only a minor effect on the estimated net benefits of the amendments as a whole.
Costs for some technologies and emissions sectors reflect default assumptions about the rates at which learning affects costs because empirical information is unavailable.	Underestimate	Probably minor. Based on the advice of the Council on Clean Air Compliance Analysis, we used a conservative learning rate of 10 percent for those sectors where no empirical data were available.[2] In contrast, the learning curve literature suggests that the average learning rate is approximately 20 percent, suggesting that learning will reduce costs more than is reflected in the present analysis.[3]
Uncertainties in the economic growth projections that form the basis of the cost analysis.	Unable to determine based on current information	Probably minor. The project team used AEO 2005 economic growth projections, which suggest that the economy will grow at an annual rate of 3.1 percent through 2025.[4] This growth rate is in line with historical GDP growth.
Incomplete characterization of certain indirect costs, such as productivity impacts for regulated industry.	Unable to determine based on current information	Probably minor. The literature on the productivity impacts of the CAAA is unclear with respect to the direction and magnitude of these effects.

POTENTIAL SOURCE OF ERROR	DIRECTION OF POTENTIAL BIAS FOR NET BENEFITS	LIKELY SIGNIFICANCE RELATIVE TO KEY UNCERTAINTIES ON NET BENEFITS ESTIMATE[1]
Product quality degradation associated with emission control technology.	Unable to determine based on current information	Unable to determine based on current information. Conceptually, the potential for CAAA requirements to affect product quality could result in an underestimate or overestimate of the welfare effects of compliance costs, and therefore an indeterminate effect on net benefits. Unfortunately, few studies exist that address the potential product quality effects of CAAA regulations.
Exclusion of the impact of technological innovation and input substitution on compliance costs.	Underestimate	Probably minor. Minimal information is available on the potential effects of technological innovation on costs. Though input substitution is a potential source of cost savings, the analysis primarily models mature industries and compliance strategies which have been established as least-cost compliance paths. In addition, many regulations, such as RACT, are technology-based and may not allow for much input substitution.
Partial estimation of costs for compliance with the $PM_{2.5}$ NAAQS, due to the unavailability of emission reduction targets for non-attainment areas.	Overestimate	Probably minor. The 2006 $PM_{2.5}$ NAAQS RIA estimates that the incremental costs of residual non-attainment (i.e., costs of additional reductions from unidentified controls needed to reach attainment) are approximately $4.3 billion in 2020, yielding total cost estimates that exceed the estimates presented here by a factor of five or more.[6] However, we estimate that the costs of the $PM_{2.5}$ NAAQS represent less than 5 percent of the net benefits of the amendments.[7]
Uncertainty in the emission reduction estimates used to estimate the costs for select rules.	Unable to determine based on current information	Probably minor. Costs for many rules are not dependent on the corresponding emissions reductions (e.g., fuel sulfur limits, tailpipe standards, etc.)
Exclusion of the impact of economic incentive provisions, including banking, trading, and emissions averaging provisions.	Underestimate	Probably minor. Economic incentive provisions can substantially reduce costs, but the major economic programs for trading of sulfur and nitrogen dioxide emissions are reflected in the analysis.

POTENTIAL SOURCE OF ERROR	DIRECTION OF POTENTIAL BIAS FOR NET BENEFITS	LIKELY SIGNIFICANCE RELATIVE TO KEY UNCERTAINTIES ON NET BENEFITS ESTIMATE[1]
Potential for overestimation biases in engineering cost estimates.	Underestimate	Probably minor. A study by Harrington, Morgenstern, and Nelson (1999) evaluated the accuracy of EPA and OSHA estimates of 25 *ex ante* regulatory cost estimates relative to *ex post* studies of actual costs, and concluded that initial cost estimates by EPA tend to overstate costs. The source of these biases include a built-in conservative bias, inaccuracies in estimating the size of the affected universe, the effect of learning on reducing costs, the effect of innovation on reducing costs, and cost-reducing features of regulatory design. Some of these factors are discussed elsewhere in this table. The magnitude of these biases varies substantially, but in no case would we expect the overall impact to exceed five percent of overall net benefits.

[1] The classification of each potential source of error reflects the best judgment of the section 812 Project Team. The Project Team assigns a classification of "potentially major" if a plausible alternative assumption or approach could influence the overall monetary benefit estimate by approximately five percent or more; if an alternative assumption or approach is likely to change the total benefit estimate by less than five percent, the Project Team assigns a classification of "probably minor."

[2] U.S. Environmental Protection Agency Science Advisory Board, EPA-SAB-COUNCIL-ADV-07-002, "Benefits and Costs of Clean Air Act - Direct Costs and Uncertainty Analysis", Advisory Letter, June 8, 2007. Available at http://www.epa.gov/sab/pdf/council-07-002.pdf.

[3] For an analysis of the learning rates estimated in the empirical literature, see John M. Dutton and Annie Thomas, "Treating Progress Functions as a Managerial Opportunity," *Academy of Management Review*, Vol 9, No. 2, 1984.

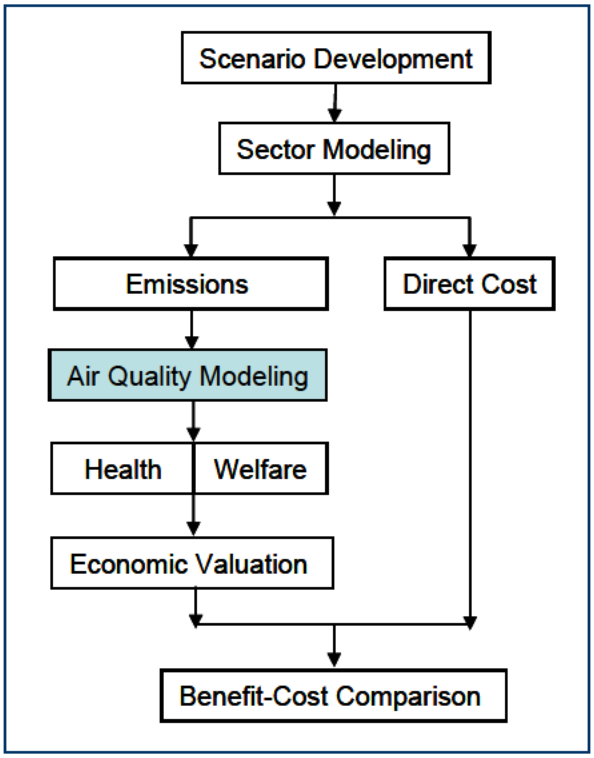
[4] U.S. Department of Energy, Energy Information Administration, *Annual Energy Outlook 2005*, February 2005.

[5] The Project Team uses this maximum unit cost value in two ways. First, the Project Team assumes that local areas would not implement identified controls costing more than $15,000 per ton. Second, the Project Team assumes a cost of $15,000 per ton for unidentified controls.

[6] U.S. Environmental Protection Agency. *Regulatory Impact Analysis for the Particulate Matter NAAQS*. October, 2006.

[7] For detailed estimates of the costs of $PM_{2.5}$ NAAQS compliance, see E.H. Pechan and Associates, Inc. and Industrial Economics, Inc., *Direct Cost Estimates for the Clean Air Act Second Section 812 Prospective Analysis*, prepared for U.S. EPA, March 2009.

CHAPTER 4 - AIR QUALITY BENEFITS



Air quality modeling links changes in emissions to changes in the atmospheric concentrations of pollutants that may affect human health and the environment. A crucial analytical step, air quality modeling is one of the more complex and resource-intensive components of the prospective analysis. This chapter outlines how we estimated future-year pollutant concentrations under both the *with-CAAA* and *without-CAAA* scenarios.

The first section of the chapter begins with a discussion of some of the challenges faced by air quality modelers and a brief description of the models we used in this analysis. The following section provides more details on the specific air quality modeling tools we deployed to estimate future-year ambient concentrations. This methodology section includes a description of how we use modeling results to adjust monitor concentration data and estimate ambient concentrations for years and scenarios where no monitoring yet exists – the projected and counterfactual (*without-CAAA*) target years and scenarios. The third section of this chapter summarizes the results of the air quality modeling and presents the expected effects of the CAAA on future-year pollutant concentrations. A brief discussion of the key uncertainties associated with air quality modeling concludes the chapter.

OVERVIEW OF APPROACH

As we outlined in the First Prospective, air quality modelers face two key challenges in attempting to translate emission inventories into pollutant concentrations. First, they must model the dispersion and transport of pollutants through the atmosphere. Second, they must model pertinent atmospheric chemistry and other pollutant transformation processes. These challenges are particularly acute for those pollutants that are not emitted directly, but instead form through secondary processes. Ozone is the best

example; it forms in the atmosphere through a series of complex, non-linear chemical interactions of precursor pollutants, particularly certain classes of volatile organic compounds (VOCs) and nitrogen oxides (NO_x). We faced similar challenges when estimating PM concentrations. Atmospheric transformation of gaseous sulfur dioxide and nitrogen oxides to particulate sulfates and nitrates, respectively, contributes significantly to ambient concentrations of fine particulate matter. In addition to recognizing the complex atmospheric chemistry relevant for some pollutants, air quality modelers also must deal with uncertainties associated with variable meteorology and the spatial and temporal distribution of emissions.

Air quality modelers and researchers have responded to the need for scientifically valid and reliable estimates of air quality changes by developing sophisticated atmospheric dispersion and transformation models. Some of these models have been employed in support of the development of federal clean air programs, national assessment studies, State Implementation Plans (SIPs), and individual air toxic source risk assessments. In this analysis, we focused our air quality modeling efforts on estimating the impact of with- and without-CAAA emissions on ambient concentrations of ozone, PM_{10}, and $PM_{2.5}$, as well as acid deposition and visibility for each of the target years: 2000, 2010, and 2020. The focus on these pollutants is consistent with the result in the First Prospective that most of the quantified benefits of the CAAA are attributable to PM and ozone. The ideal model for this analysis is a single integrated air quality model capable of estimating ambient concentrations for all of these key pollutants throughout the U.S. In the prior First Prospective study, such a model had not yet been sufficiently developed and tested. This analysis is the first Section 812 prospective analysis to use an integrated modeling system, the Community Multiscale Air Quality (CMAQ) model, to simulate national and regional-scale pollutant concentrations and deposition. The CMAQ model (Byun and Ching, 1999) is a state-of-the-science, regional air quality modeling system that is designed to simulate the physical and chemical processes that govern the formation, transport, and deposition of gaseous and particulate species in the atmosphere.

The emissions data were processed for input to the CMAQ modeling using the Sparse-Matrix Operator Kernel Emissions (SMOKE) emissions processing system (CEP, 2004). The model-ready emission inventories for each scenario and year were then used to obtain base year and target year estimates of the key criteria pollutants, as well as many other species. The air quality modeling analysis was designed to make use of tools and databases that have recently been developed and evaluated by EPA for other national- and regional-scale air quality modeling studies. In particular, model-ready meteorological input files for 2002 were provided by EPA for use in this study. For fine particulate matter ($PM_{2.5}$) and related species, the CMAQ model was applied for an annual simulation period (January through December). A 36-km resolution modeling domain that encompasses the contiguous 48 states was used for the annual modeling. For ozone and related species, the CMAQ model was applied for a five-month simulation period that captures the key ozone-season months of May through September. Two 12-km resolution modeling domains (that when combined cover the key, ozone-significant areas of the contiguous 48 U.S. states) were used for the ozone-season modeling. Altogether,

model-ready emission inventories were prepared and the CMAQ model was applied for a total of 21 simulations (comprising seven core scenarios and three modeling domains).

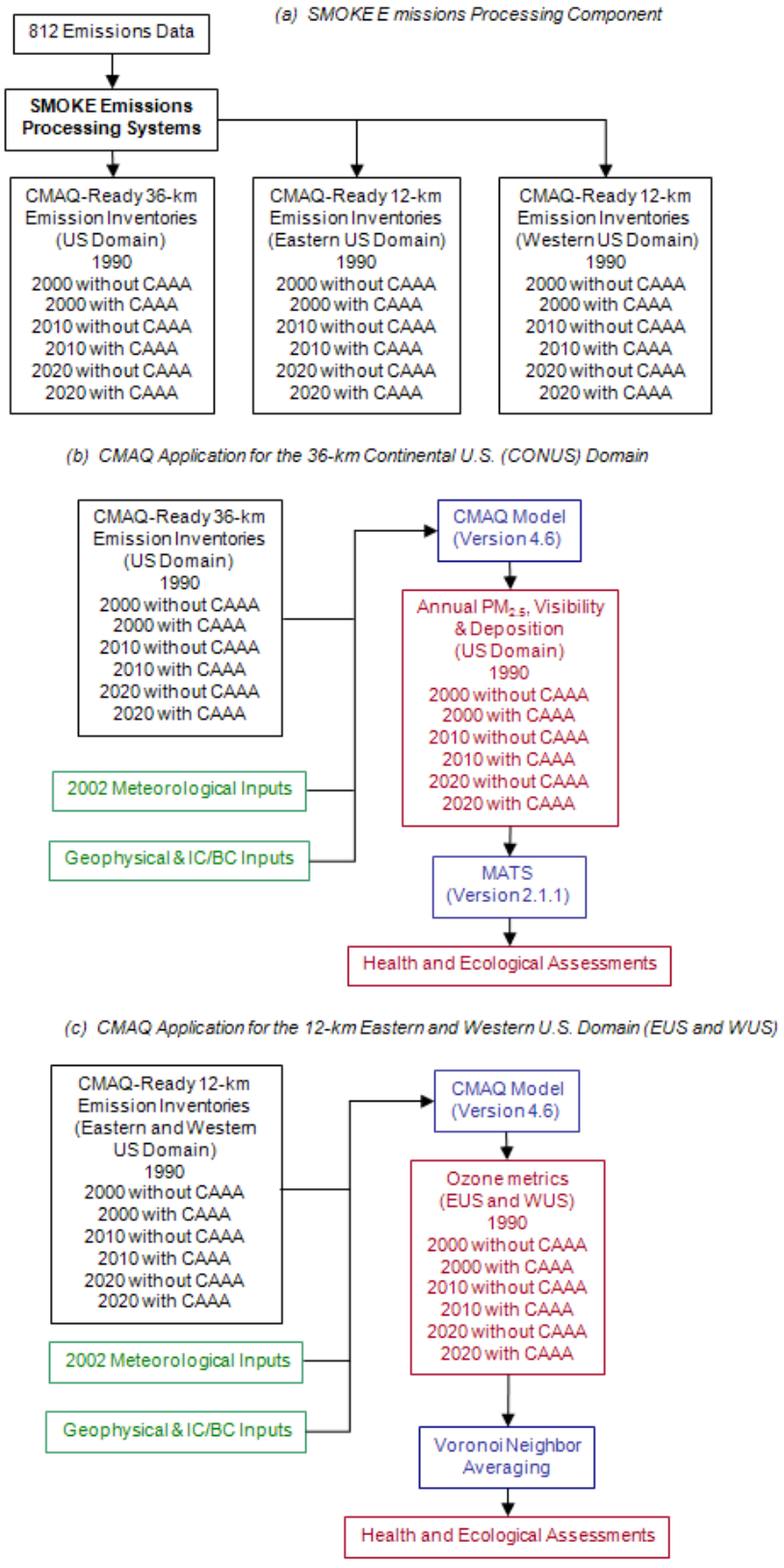
The outputs from the CMAQ model provide the basis for the calculation of health and ecological benefits of the CAA. The airborne criteria pollutants of interest include ozone and fine particulate matter ($PM_{2.5}$), where $PM_{2.5}$ consists of particles less than 2.5 microns in diameter. For health benefits analysis, it has become standard EPA practice to calibrate the CMAQ results monitor data, rather than use the CMAQ results directly – the process is sometimes called, "monitor and model relative adjustment." We follow that approach in this analysis as well, applying a tool called the Modeled Attainment Test Software (MATS) to develop and apply the calibration factors for particulate matter results relative to nearby monitors. For ozone, the MATS procedure is not necessary; instead we use an inverse distance squared weighting procedure called Enhanced Voronoi Neighbor Averaging (eVNA), which calibrates the CMAQ model ozone results by weighing data from monitors closer to the grid cell more heavily than monitors that are further away. The eVNA interpolation and model to monitor calibration process is accomplished within the BenMAP benefits analysis tool, which is described in Chapter 5. Visibility is also an air quality parameter of interest and this was calculated using a variety of the CMAQ output species. In addition, deposition of nitrogen and sulfur was also extracted from the model outputs. An overview of the modeling approach is provided in Figure 4-1, which summarizes the emissions processing and air quality components. The CMAQ modeling components and application of the MATS tool are explained in further detail in the next section.

AIR QUALITY MODELING TOOLS DEPLOYED

THE CMAQ MODELING SYSTEM

The Community Multiscale Air Quality (CMAQ) model is a state-of-the-science, regional air quality modeling system that can be used to simulate the physical and chemical processes that govern the formation, transport, and deposition of gaseous and particulate species in the atmosphere (Byun and Ching, 1999). The CMAQ tool was designed to improve the understanding of air quality issues (including the physical and chemical processes that influence air quality) and to support the development of effective emissions control strategies on both the regional and local scale. The CMAQ model was designed as a "one-atmosphere" model and this concept refers to the ability of the model to dynamically simulate ozone, particulate matter, and other species in a single simulation which captures interaction effects among these pollutants. In addition to addressing a variety of pollutants, CMAQ can be applied to a variety of regions with varying geographical, land-use and emissions characteristics, and for a range of different space and time scales.

FIGURE 4-1. SCHEMATIC DIAGRAM OF SECTION 812 AIR QUALITY MODELING ANALYSIS



The CMAQ model numerically simulates the physical processes that determine the magnitude, temporal variation and spatial distribution of the concentrations of ozone and particulate species in the atmosphere and the amount, timing, and distribution of their deposition to the earth's surface. The simulation processes include advection, dispersion (or turbulent mixing), chemical transformation, cloud processes, and wet and dry deposition. The CMAQ science algorithms are described in detail in Byun and Ching (1999).

The CMAQ model requires several different types of input files. Gridded, hourly emission inventories characterize the release of anthropogenic, biogenic and, in some cases, geogenic emissions from sources within the modeling domain. The emissions represent both low-level and elevated sources and a variety of source categories (including, for example, point, onroad mobile, nonroad mobile, area, and biogenic emissions). The amount, spatial distribution, and temporal distribution of each emitted pollutant or precursor species are key determinants to the resultant simulated air quality values.

The CMAQ model also requires hourly, gridded input fields of several meteorological parameters including wind, temperature, mixing ratio, pressure, solar radiation, fractional cloud cover, cloud depth, and precipitation. A full list of the meteorological input parameters is given in Byun and Ching (1999). The meteorological input fields are typically prepared using a data-assimilating prognostic meteorological model, the output of which is processed for input to the CMAQ model using the Meteorology-Chemistry Interface Processor (MCIP). The prescribed meteorological conditions influence the transport, vertical mixing, and resulting distribution of the simulated pollutant concentrations. Particular meteorological parameters, such as mixing ratio, can also influence the simulated chemical reaction rates. Rainfall and near-surface meteorological characteristics govern the wet and dry deposition, respectively, of the simulated atmospheric constituents.

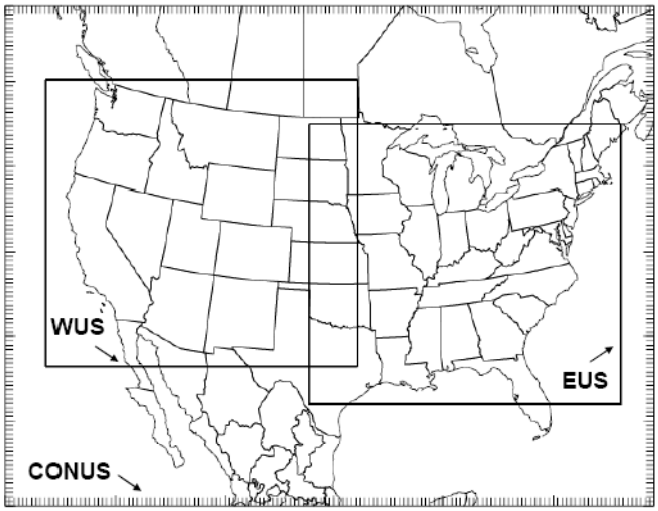
Initial and boundary conditions (IC/BC) files provide information on pollutant concentrations throughout the domain for the first hour of the first day of the simulation, and along the lateral and top boundaries of the domain for each hour of the simulation. Photolysis rates and other chemistry related input files supply information needed by the gas-phase and particulate chemistry algorithms.[33]

[33] The latest available version of CMAQ, version 4.6, was used for this study. This version of the model supports several different gas-phase chemical mechanism, particle treatment, aerosol deposition, and cloud treatment options. All simulations conducted as part of this study used the CB05 chemical mechanism. For particles, the AERO4 particle treatment, which includes sea salt, was applied. Finally, the plume-in-grid feature of CMAQ was not used for this study. More details are available in *Second Prospective Analysis of Air Quality in the U.S.: Air Quality Modeling*, available at www.epa.gov/oar/sect812

CMAQ APPLICATION PROCEDURES FOR THE SECOND PROSPECTIVE ANALYSIS

This specific application of CMAQ includes modeling domain specification and key input files. The three modeling domains that were used for this analysis are shown in Figure 4-2.

FIGURE 4-2. CMAQ MODELING DOMAINS FOR THE 812 MODELING STUDY



NOTE: CONUS IS THE CONTINENTAL US GRID USED FOR PM MODELING; WUS IS THE WESTERN US GRID AND EUS IS THE EASTERN US GRID USED FOR OZONE MODELING.

The 36-km resolution continental U.S. (CONUS) domain is the large area that is covered by the outer grid box in Figure 4-2. The CONUS domain includes 148 x 112 grid cells (the total number of cells is 16,576). The tick marks denote the 36-km grid cells. For this domain, the model was run for the entire 2002 calendar year, using 2002 meteorology but varying the emissions inputs as outlined in each of the Second Prospective scenarios listed in Figure 4-1. In running the model, the annual simulation period was divided into two parts covering January through June and July through December, respectively. Each part of the simulation also includes an additional five start-up simulation days, which are intended to reduce the influence of uncertainties in the initial conditions on the simulation results.

The Eastern U.S. (EUS) domain is comprised of 213 x 188 grid cells (total = 40,044 cells) and the Western U.S. (WUS) domain includes 213 by 192 grid cells (total = 40,896 cells). Together these two domains cover most of the continental U.S. with 12-km horizontal resolution. There is some overlap in the central part of the country. For both the EUS and WUS domains, the CMAQ model was run for the months of May through September. This five-month period is intended to represent the ozone season – runs using this domain provide the ozone inputs for subsequent steps of the analysis. The seasonal simulation period was also divided into two parts covering May and June and July

through September, respectively. Each part of the simulation also includes an additional ten start-up simulation days.

The 36- and 12-km resolution meteorological input files to support modeling in these domains were prepared using the Pennsylvania State University/National Center for Atmospheric Research (PSU/NCAR) Fifth Generation Mesoscale Model (MM5). The MM5 outputs were postprocessed by EPA for input to CMAQ using the Meteorology-Chemistry Interface Processor (MCIP) program. The meteorological input preparation methodology and some information on MM5 model performance are provided by Dolwick et al. (2007). Existing initial condition, boundary condition, land-use and photolysis rate input files prepared by EPA for use in CMAQ modeling for the selected modeling domains and simulation period were used.

After the initial CMAQ results were generated, the original primary PM emissions estimates generated for area and non-EGU point sources were found to be inaccurate due to two issues:

1) As described in Chapter 2, some of the fine particulate emissions estimates derived from the 1990 NEI, on which the *without-CAAA* emissions estimates were based, were discovered to be inconsistent with those from the 2002 NEI, on which the *with-CAAA* emissions estimates were based.

2) The original emissions estimates did not include application of transport factors for area source fine particulate emissions. These transport factors are county-specific adjustment factors that are applied to specific types of emissions estimates to account for the fact that only a fraction of total fugitive dust emissions remain airborne and are available for transport away from the vicinity of the source after localized removal (i.e., some of the particles are captured by the local vegetation or other surface obstructions).

To correct these two errors, we first made the necessary adjustments to the primary PM2.5 emissions estimates for the affected non-EGU point and area sources, focusing on the PM2.5 species that contribute most significantly to primary PM emissions: elemental carbon (EC), organic carbon (OC), and crustal material. We then calculated species-specific adjustment factors for the CMAQ data, re-compiled the species-specific estimates to generate an adjusted version of the original CMAQ results, and then generated new MATS input files. All details of the procedure are described in a memorandum prepared by the Project Team, which was reviewed in detail by the Council's Air Quality Modeling Subcommittee.[34]

[34] Memorandum of June 14, 2010 to Jim DeMocker, EPA, from Tyra Walsh, Henry Roman, and Jim Neumann, Industrial Economics, Inc. (IEc), "Description of the Adjustment to the Primary Particulate Matter Emissions Estimates and the Modeled Attainment Test Software Analysis (MATS) Procedure for the 812 Second Prospective Analysis." The memo is available at www.epa.gov/oar/sect812.

MATS PROCEDURE

Rather than using the direct CMAQ results as the basis for the health and ecological effects analyses, the Project Team conducted additional analyses using a speciated monitor and model calibration technique to generate $PM_{2.5}$ air quality estimates. The $PM_{2.5}$ estimates used in the Second Prospective health analysis were prepared using EPA's Modeled Attainment Test Software (MATS, Version 2.1.1, Build 807). MATS estimates quarterly mean $PM_{2.5}$ chemical component concentrations at monitor locations by conducting a Speciated Modeled Attainment Test (SMAT) analysis. MATS can also estimate quarterly mean concentration estimates for each $PM_{2.5}$ chemical component concentrations at all grid cells in a grid model such as CMAQ.

Five of the six MATS $PM_{2.5}$ concentration estimates for the Second Prospective scenarios were prepared using the MATS' spatial and temporal relative adjustment method. The MATS estimates for the 2000 *with-CAAA* scenario, which represents a historical year for which monitor data are available, used a spatial only relative adjustment method, relying on available monitor data and a single year of CMAQ modeling. The MATS procedure was not applied for the 1990 base year scenario.

MATS estimates the $PM_{2.5}$ concentrations in CMAQ grid cells by interpolating values from nearby monitors using the inverse distance squared weighting option in the Voronoi Neighbor Averaging (VNA) procedure in MATS. This is an algorithm that identifies a set of monitors close to the grid cell (called "neighbors") and then estimates the PM species concentration in that grid cell by calculating an inverse-distance weighted average of the monitor values (i.e., the concentration values at monitors closer to the grid cell are weighted more heavily than monitors that are further away). As noted above, for calibrating ozone model results to nearby monitors, only the VNA component of the procedure is used, because there is no need for the speciated interpolation approach required for PM.

The spatial MATS analysis conducted for the $PM_{2.5}$ estimates used the following input information:

- observed quarterly $PM_{2.5}$ data from 1,232 Federal Reference Method (FRM) monitors with sufficient data in 2002 – sufficient data is defined as at least one quarter of $PM_{2.5}$ data. The year 2002 was used because it corresponds to the vintage of the emissions estimates, which, as described in Chapter 2, were derived from the 2002 National Emissions Inventory;
- observed daily chemically speciated fine particle mass data from both the $PM_{2.5}$ Speciation Trends Network (STN) and the Interagency Monitoring of Protected Visual Environments (IMPROVE) network, providing a total of 273 monitors with sufficient data in 2002[35];

[35] Most FRM monitors (about 75 percent) are not co-located with a speciation monitor. Therefore, we also used data providing speciated PM mass from the STN and IMPROVE monitors. The MATS analysis used speciated data from 273 STN or IMPROVE monitors with at least two valid quarters of speciated data in 2002.

- speciated CMAQ estimates for 6 $PM_{2.5}$ species (SO_4, NO_3, elemental carbon, organic carbon, NH_4, and crustal material) at the 36 kilometer $PM_{2.5}$ CMAQ grid cell level for each of the Second Prospective scenarios (from CMAQ speciated output data files).

The MATS procedure enables the use of monitor data to effectively calibrate the results of air quality modeling for use in subsequent steps of the analysis. To illustrate the effects of the MATS procedure, compare Figure 4-3, which is a scatter plot comparing the direct CMAQ results for those 1,058 $PM_{2.5}$ monitors with at least two quarters of data for 2002, and Figure 4-4, which is a similar scatter plot, comparing the MATS results to the same set of $PM_{2.5}$ monitors. The agreement between monitor and model values in Figure 4-4 is greatly improved by the MATS procedure.

FIGURE 4-3. SCATTER PLOT OF DIRECT CMAQ ESTIMATES AND 2002 $PM_{2.5}$ FEDERAL REFERENCE METHOD (FRM) MONITORS

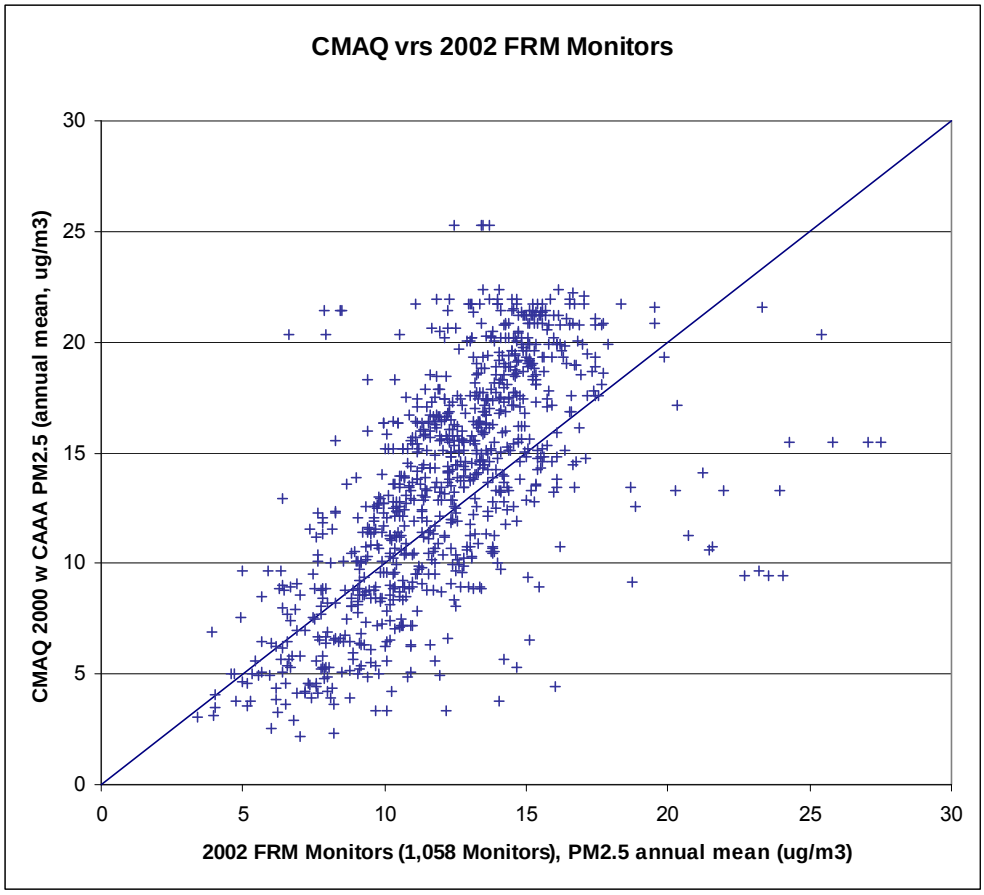
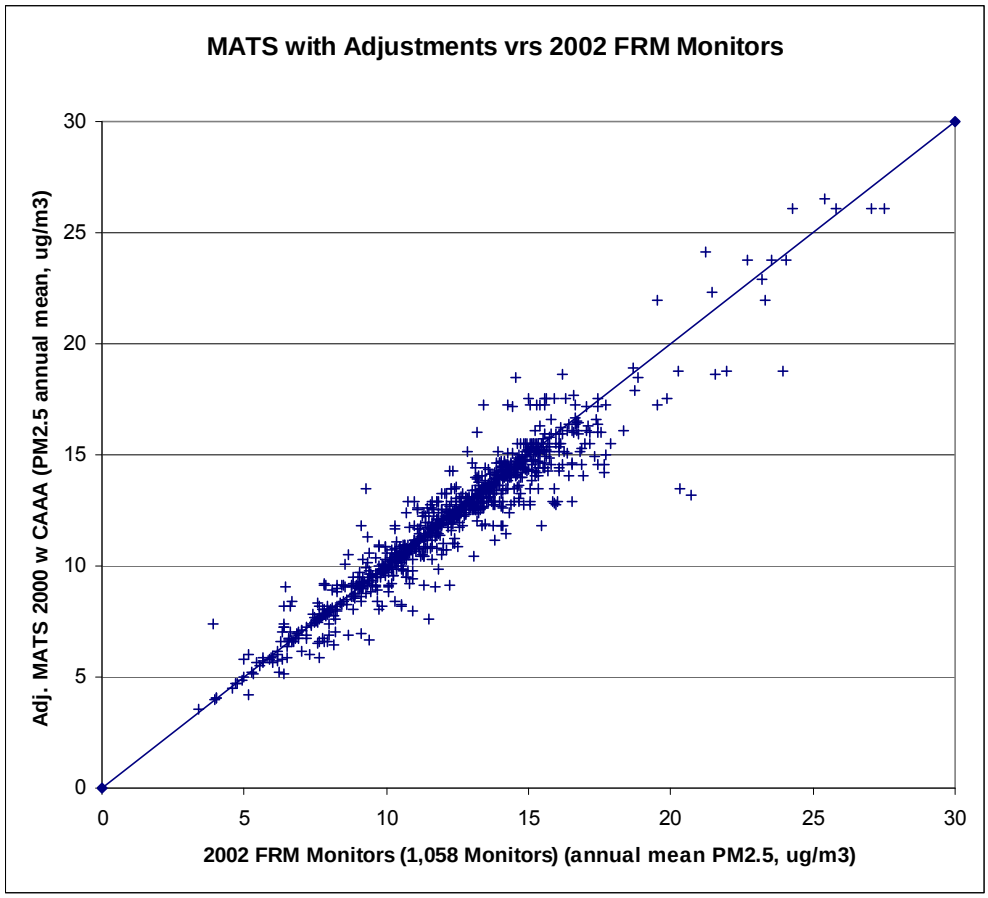


Figure 4-5 provides a further illustration of the effect of the MATS procedure, and the importance of individual PM species in achieving an effective calibration of the CMAQ results to monitor data. The figure provides detailed species-specific CMAQ and MATS results for a CMAQ grid cell in the three largest cities and metropolitan areas in the US – New York, Los Angeles, and Chicago – and for Tucson, Arizona, a much smaller city but

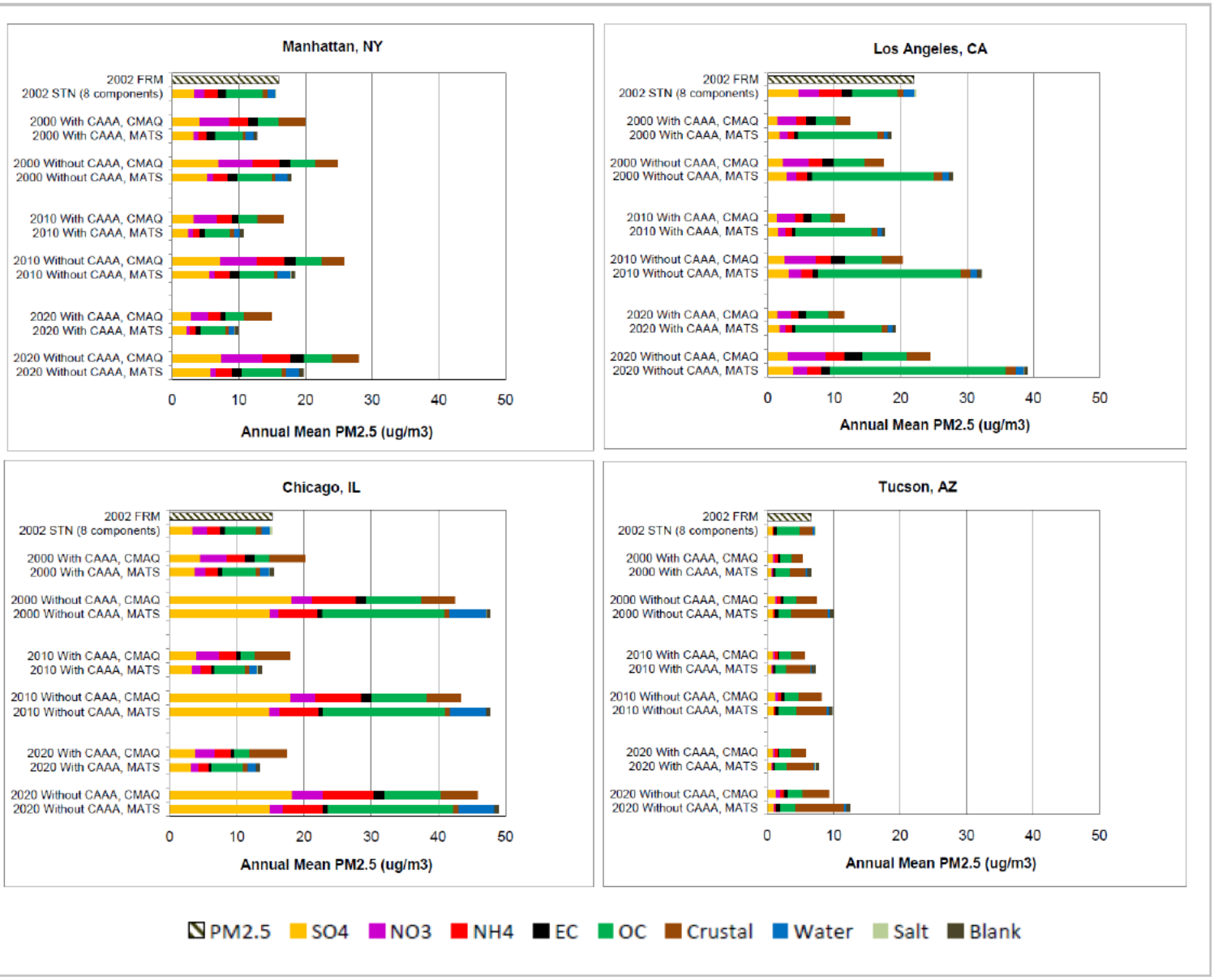
one for which one component of PM, crustal (shown in brown), plays a critical role in our analysis. For each city, the two leftmost bars provide the 2002 FRM and STN annual average $PM_{2.5}$ monitor data for a monitor of that type within the grid cell. FRM monitors provide only total $PM_{2.5}$ mass, while the STN monitors provide data for the seven PM species (plus estimated water) indicated at the bottom of each graph.[36] The remaining 12 bars in each panel show the CMAQ and MATS-adjusted results for the grid cell for the *with-CAAA* and *without-CAAA* scenarios, for target years 2000, 2010, and 2020.

FIGURE 4-4 SCATTER PLOT OF MATS-ADJUSTED CMAQ ESTIMATES AND 2002 $PM_{2.5}$ FEDERAL REFERENCE METHOD (FRM) MONITORS



[36] The STN bar charts include an estimated water component, which the MATS input monitor files include to make STN and IMPROVE monitor data consistent with FRM monitor data. The water component is not an STN component, but was estimated using the SANDWICH (Sulfates, Adjusted Nitrates, Derived Water, Inferred Carbonaceous mass, and estimated aerosol acidity (H^+)) process.

FIGURE 4-5. COMPARISON OF CMAQ, MATS, AND MONITOR DATA FOR FOUR SELECTED CITIES



The Manhattan panel in the upper left corner shows that both the FRM and STN monitors indicate a total PM concentration just greater than 15 $\mu g/m^3$. The next bar shows that the CMAQ data for the 2000 *with-CAAA* simulation overestimates the PM concentration, by about 4 $\mu g/m^3$. Comparing the 2002 STN bar with the 2000 *with-CAAA* CMAQ bar, we see that the CMAQ simulation overestimates most constituents in this location, compared to the monitor data, but underestimates organic matter (or OC, shown in green). The MATS procedure, applied to the STN and CMAQ data, generates species-specific scaling factors that result in a MATS-adjusted concentration for the 2000 *with-CAAA* scenario,

shown in the next bar. As a result, the species-specific constituents in the MATS adjusted bar are in very nearly the same proportion as they appear for the STN monitor.

It would also appear from this figure that MATS "overcorrects" in Manhattan because the 2000 *with-CAAA* MATS bar is lower than the 2002 STN monitor bar. However, the MATS procedure is estimating the concentration at the center of the grid cell, not at the location of the STN monitor. In a 36 km grid cell, the monitor location can be many kilometers away from the center of the grid cell. MATS considers not only monitors in the same grid cell, but also the data at other nearby FRM and STN monitors, and makes a spatial interpolation to estimate concentrations at the grid centroid. The Manhattan STN monitor is near the intersection of four grid cells, which contain a total of 25 FRM and STN monitors, all of which influence the MATS result.

The remaining MATS estimates for Manhattan, for the 2000 *without-CAAA* and the 2010 and 2020 projections, are based on scaling of the corresponding CMAQ simulation by the species-specific factors developed from the 2000 *with-CAAA* to 2002 STN monitor comparison. The effect of MATS in Manhattan is to adjust the CMAQ simulation concentrations downward. Interestingly, the opposite is generally true in Los Angeles, because in that city CMAQ tends to underestimate the monitor data for 2002. The mix of species in both cities is similar in 2002, but strikingly different over time, particularly in the *without-CAAA* scenario, where organic carbon (shown in green) in Los Angeles derives from mobile sources, and sulfates (shown in yellow) in Manhattan derives from long-range transport from coal-burning electric generating units.

In Chicago, the effect of MATS is more complex, and the importance of considering PM species is highlighted. In the *with-CAAA* scenarios, MATS yields a downward adjustment to the CMAQ simulations, because the 2000 *with-CAAA* CMAQ simulation is higher than the 2002 STN monitor value. In the *without-CAAA* scenarios, however, there are much higher *emissions* of organic carbon, because certain OC emissions controls are not in place in the *without-CAAA* simulations that are in place in the *with-CAAA* scenario. Because CMAQ underestimates the ambient OC component in the 2000 *with-CAAA* (shown in green), the factor for OC that is applied to other scenarios yields an increase in concentration in the MATS-adjusted values. That increase is large enough to dominate the overall adjustment across all eight species, yielding an overall $PM_{2\,5}$ mass increase for the *without-CAAA* scenarios relative to the CMAQ data.

The data for Tucson also illustrates the importance of the species-specific scaling factors. If it were not for changes to one PM species, crustal (shown in brown), there would be only a relatively modest difference between the *with-CAAA* and *without-CAAA* scenarios in future years. In Tucson the crustal component derives largely from construction activity, which in this relatively fast growing area of Arizona, and absent more stringent dust control measures, could become a larger issue in the projection years. CAAA controls on fugitive dust emissions in the construction sector, however, yield a substantial difference in this component of PM concentrations, when comparing the *with-CAAA* and *without-CAAA* scenario results. Other species differ much less across scenarios. In many other places like Tucson, the species-specific MATS procedure likely yields a more

accurate projection of the impact of the CAAA than a calibration procedure that did not take into account the impact of these species-specific control strategies.

AIR QUALITY RESULTS

PARTICULATE MATTER

As mentioned above, the CMAQ modeling results for the 36-km continental U.S. (CONUS) modeling domain provide the basis for particulate matter air quality used in the calculation of PM-related health effects and to calculate visibility, as well as sulfur and nitrogen deposition. Summary results are presented in the maps in Figure 4-6 below, representing annual average concentrations across the CONUS domain for each of the seven scenario/target year combinations modeled. The rows of Figure 4-6 show modeled $PM_{2.5}$ concentrations for 2000, 2010, and 2020, contrasting the *without-CAAA* results on the left and the *with-CAAA* results on the right.

As the figure indicates, over the thirty-year 1990-2020 simulation period air quality is projected to worsen somewhat in the absence of CAAA regulations, particularly in the Midwest and California, but with CAAA regulations in place air quality is estimated to improve markedly as early as the year 2000 and to show continued improvements through 2020. In general, the *with-CAAA* results reflect a calibration of the 2002 model year results to monitor values, but as the accompanying Box 4-1 illustrates, such direct comparisons are not possible for the counterfactual *without-CAAA* results. We conclude for the analyses described in the text box that the *without-CAAA* results, with a few exceptions, seem to imply a return of air quality conditions comparable to those that prevailed in the 1980-1990 period prior to implementation of the CAAA. Such comparisons are limited, however, by the sparse $PM_{2.5}$ monitoring data for this period and the uncertainty in adjusting available monitor data for other species. Although the improvements attributed to the CAAA are nationwide, the most substantial gains are made in those areas that had the worst PM air quality in 1990, suggesting the CAAA has been and will continue to be effective in targeting improvements to the areas that would have experienced the worst air quality in the absence of the amendments.

BOX 4-1: EVALUATING THE *WITHOUT-CAAA* SCENARIO RESULTS

The two scenarios used in this study, the *with-CAAA* and *without-CAAA* scenarios, are designed to simulate and forecast air quality conditions in the US as we expect them to unfold with full implementation of the CAAA (the *with-CAAA*), and alternatively as if regulations authorized by the CAAA had not been implemented. In effect, the methods we use tie the *with-CAAA* scenario to monitored air quality in the year 2000, providing some measure of credibility for the air quality conditions reflected in our *with-CAAA* simulation. It is more difficult to evaluate the credibility of the *without-CAAA* scenario, because that scenario simulates hypothetical air quality conditions that cannot be observed. The plausibility of the *without-CAAA* scenario and its differences from the *with-CAAA* scenario nevertheless can be assessed through comparison to other similar air quality conditions.

One possible analog for conditions in the *without-CAAA* scenario is areas outside the US that have not implemented air quality regulations that match the stringency of those in the US. The problem with comparing US to non-US areas is the difficulty of standardizing factors which define air quality, such as meteorology, terrain, and the distribution of air pollutant emission sources. Another major challenge is that monitoring networks for fine particle species are sparse or not available for the annual average measure.

A preferable, though still imperfect, comparison is between *without-CAAA* forecasts and historical concentrations in US cities. A key issue arising for within-US comparisons is that prior to 1990 particulate matter monitors measured total suspended particulates (TSP), or PM_{10}, rather than $PM_{2.5}$. The new PM standard is based on $PM_{2.5}$, which is now recognized as better correlated with adverse health effects. $PM_{2.5}$ is therefore the focus of our air quality simulations. Furthermore, the ratios of TSP and/or PM_{10} to $PM_{2.5}$ vary considerably by location and over time, so a simple transformation of the available monitor data may not be reliable. Nonetheless, it is possible to find times and locations in the historical monitor data where at least two and sometimes all three of these measures were simultaneously collected, providing a means to estimate a time and location-specific ratio that can be used to infer $PM_{2.5}$ values. We use this type of information to develop estimates of historical $PM_{2.5}$ concentration in selected U.S. cities for comparison to our *without-CAAA* scenario projected values.

The table suggests that our estimates of *without-CAAA* $PM_{2.5}$ concentrations in New York, Pittsburgh, and Los Angeles are reasonably consistent with estimated historical concentrations in the 1980 to 1990 pre-CAAA period. In Chicago, however, the *without-CAAA* case yields estimates that are much higher than historical estimates. One reason may be the potentially strong influences of projected uncontrolled sulfur dioxide emissions from electric power plants near Chicago in the *without-CAAA* case. In the absence of Title IV these plants are projected in our study to use relatively high sulfur, locally mined coal and would not have been required to install scrubber technology.

(ANNUAL AVG MICROGRAMS PER CUBIC METER)	ESTIMATED $PM_{2.5}$ CONCENTRATIONS FOR THIS STUDY						ESTIMATED HISTORICAL $PM_{2.5}$		
	2000		2010		2020				
CITIES	W-CAAA	W/O-CAAA	W-CAAA	W/O-CAAA	W-CAAA	W/O-CAAA	1980 (EST)	1990 (EST)	MAXIMUM 1980-90
New York - Manhattan	12.9	20.6	10.9	21.0	10.0	22.1	N/A	22.4	N/A
New York - Queens/Brooklyn	13.2	24.8	11.0	25.2	10.1	26.7	N/A	21.5	N/A
Pittsburgh	14.0	19.2	11.0	19.7	10.0	20.3	29.3	22.3	29.8
Chicago	15.5	47.7	13.7	47.6	13.4	48.9	25.7	20.4	25.7
Los Angeles	18.5	25.5	17.1	29.7	17.5	35.5	38.5	29.4	41.9

FIGURE 4-6. CMAQ SIMULATED AND MATS ADJUSTED ANNUAL AVERAGE $PM_{2.5}$ SPECIES CONCENTRATION (MICROGRAMS PER CUBIC METERS) FOR THE CONUS DOMAIN OUTPUTS FOR THE 1990 TO 2020 PERIOD

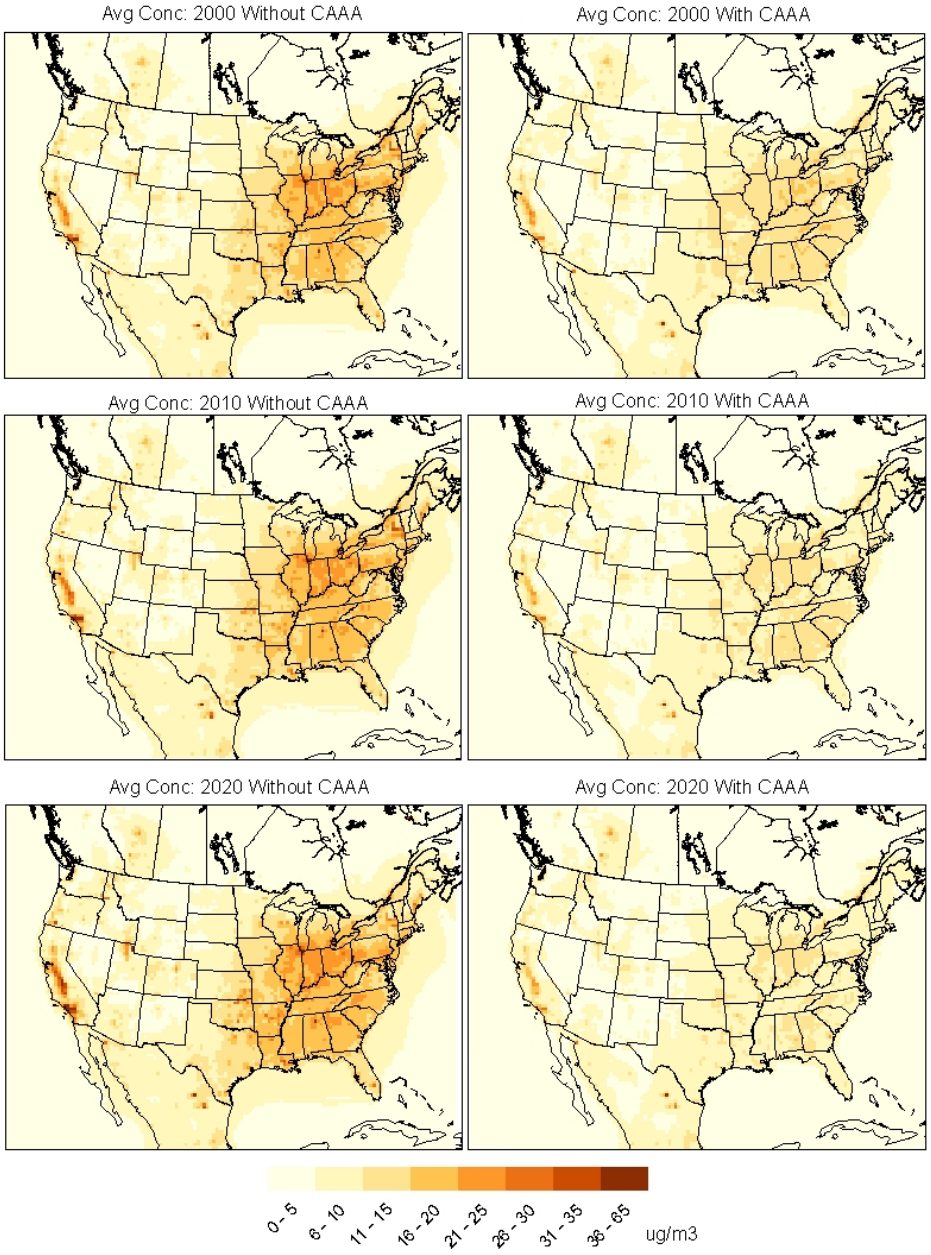
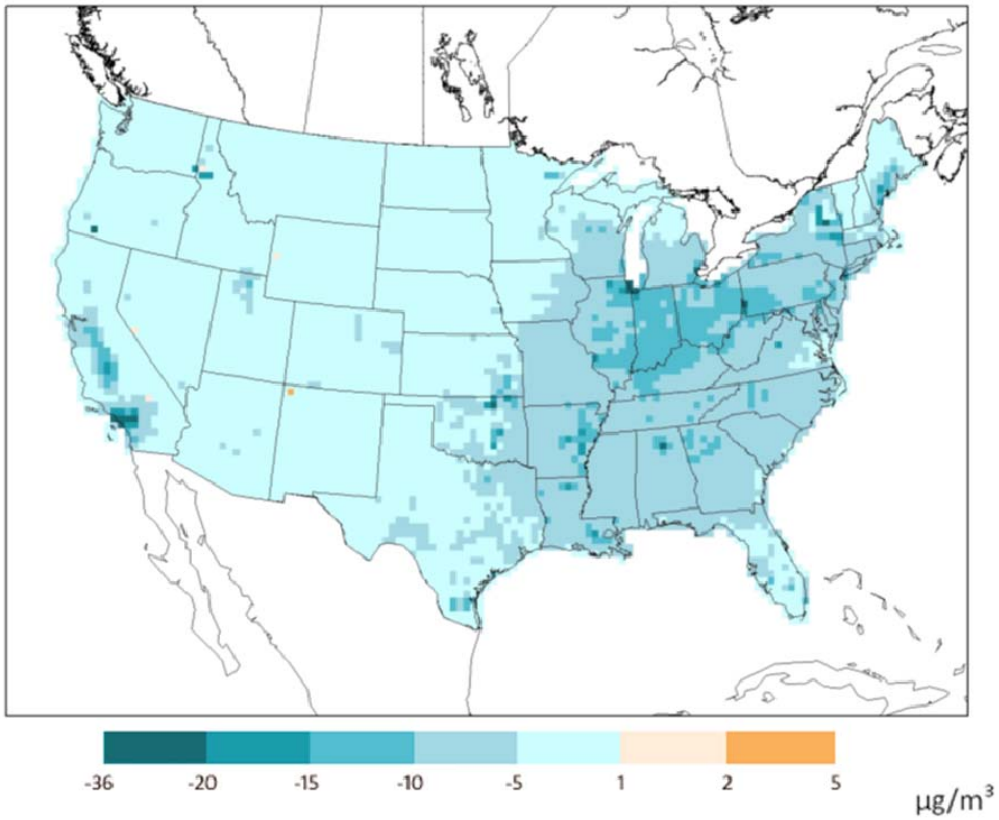


Figure 4-7 makes the gains in 2020 more clear, by illustrating the differences in $PM_{2.5}$ concentrations between the *with-CAAA* and *without-CAAA* scenarios in 2020. The gains in some areas, particularly in the eastern half of the US, in California, and in urban centers nationwide, are dramatic, with reductions of more than 20 $\mu g/m^3$ in some areas. These are consistent with the large decreases in PM precursor emissions for those areas, described in Chapter 2. In some of these areas, the *without-CAAA* scenario concentrations also reach high levels because of the absence of *without-CAAA* controls

(see accompanying text box for a discussion of the *without-CAAA* scenario). There are also some surprisingly large reductions in a few less populous areas, such as, west central Idaho and central Virginia. The reductions in Idaho, as well as in a few other isolated areas of the rural West, are associated with CAAA requirements to limit emissions from agricultural burning operations. The reductions in central Virginia are attributable to local controls on a large coal-burning industrial boiler.

FIGURE 4-7. DIFFERENCE IN CMAQ SIMULATED MATS ADJUSTED ANNUAL AVERAGE $PM_{2.5}$ SPECIES CONCENTRATION (MICROGRAMS PER CUBIC METER) FOR THE CONUS DOMAIN: 2020 WITH-CAAA MINUS 2020 WITHOUT CAAA SCENARIOS



Some areas also experience modest increases in PM concentrations with the CAAA – these areas show up in light orange on the map. Some of the smallest estimated increases, less than 1 µg/m^3, can be introduced by the MATS adjustment procedure, particularly when the locations are far from monitors and/or have very low modeled or monitored concentrations of a PM species. We interpret very small increases such as these as effectively "no change" so adjusted the map legend to group these cells with others where are small benefits.[37] There remain five cells with disbenefits greater than 1

[37] There is one area in northeastern Utah where the MATS procedure yields results for the *without-CAAA* scenario that are so large as to be not plausible. The result was associated with increases in agricultural burning in the w*ithout-CAA* scenario,

$\mu g/m^3$. The three cells of these five with the smallest disbenefit estimates did not have disbenefits in the CMAQ modeling – we therefore conclude that the disbenefit result was introduced by the MATS procedure.

In the remaining two cells, we conclude that implementation of the CAAA led to negative benefits, associated with actual increases in emissions resulting in the with-CAAA case relative to the *without-CAAA* case. The largest disbenefit, of 4.1 $\mu g/m^3$, is in the northwestern corner of New Mexico, in the cell which includes the Four Corners Power Plant, one of the largest coal-burning power plants in the West. The emissions data indicate sulfur dioxide emissions for that plant that are 14,000 tons greater in the 2020 *with-CAAA* case, probably as a combined result of changes in dispatch and sulfur content of coal for this plant, which as of December 2010 does not have a sulfur scrubber. The other cell shows a disbenefit of 1.25 $\mu g/m^3$, and is located in Sweetwater County in south central Wyoming, which includes the Pacificorp-Jim Bridger Power Plant. The air quality result here is also attributable to a difference in sulfur dioxide emissions from a power plant, in this case 2,000 tons greater in the 2020 *with-CAAA* scenario. The dispatch of this unit appears to be identical in both scenarios, so the result is most likely attributable to a marginal reallocation of higher sulfur coal. Note that, as indicated in the *with-CAAA* maps in Figure 4-6, these are areas that nonetheless would continue to experience $PM_{2\,5}$ concentrations below the 15 $\mu g/m^3$ $PM_{2\,5}$ annual standard. These relatively modest and geographically limited exceptions notwithstanding, it is clear that by 2020 the air quality benefits of the CAAA in reducing ambient concentrations of particulate matter are large and widespread.

OZONE

Figures 4-8 through 4-11 present similar CMAQ output data for ozone, with two important differences: (1) the ozone results are reported for the Eastern (EUS) and Western (WUS) 12-km modeling domains; and (2) the results presented are the average of daily maximum 8-hour ozone concentration, in ppb, over the course of a modeled ozone season (May 1 through September 30). The average daily 8-hour maximum may seem like an odd metric for evaluating ozone concentrations, but because this is the metric used in epidemiological estimation of mortality risks of ozone this metric is closely correlated with the major mortality incidence and economic benefits associated with ozone precursor controls. Results for the Eastern US are in Figures 4-8 and 4-9, and for the Western US in Figures 4-10 and 4-11.

For the Eastern US, Figure 4-8 shows a similar pattern for ozone as was illustrated for particulate matter in Figure 4-6. That is, while there are relatively modest increases in

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coupled with otherwise low organic carbon monitor values in nearby monitors – the application of MATS therefore led to unusually high organic carbon and PM2.5 measures for that area. For those three cells, we performed a moving average smoothing procedure to re-estimate the without-CAAA concentrations, using PM estimates from adjoining cells. The adjustment is used only for the purposes of generating the maps in this chapter; for the purposes of health benefits modeling and valuation of benefits, we excluded these three suspect cells. The cells represent very rural, sparsely populated areas in the Wasatch Mountains, and so we believe that excluding them from the benefits calculations is both prudent and has only a modest underestimation effect on the overall health benefits estimates.

ozone concentrations in the absence of the CAAA, the *with-CAAA* maps on the right side of the graphic show significant and widespread gains in air quality throughout the region, with air quality benefits increasing over time. By 2020, Figure 4-9 shows that the difference in ozone concentrations is large in most areas of the east, with gains as large as 30 ppb for this simulated day.

Two other patterns in Figure 4-9 are also worth noting. First, although the region-wide benefits of the CAAA are large, in many urban areas concentrations in the *with-CAAA* case are higher than in the *without-CAAA* case, in some cases near the Gulf Coast and in New York City by as much as 15 to 20 ppb. Second, some of the areas with the largest improvements, such as those in the heart of the Midwest, include pockets of much smaller gains, particularly in some urban centers. In both cases, these results are not unexpected. The complex chemistry of ozone includes a phenomenon known as "NO_x-scavenging", whereby nitrogen oxides, while participating as an ozone precursor, can also serve to scavenge or reduce ozone, particularly during the peak ozone season and in urban centers where ozone levels might otherwise be quite high. The CAAA, in reducing the nitrogen oxide precursors, may in some cases reduce ozone on a regional level while leading to much smaller reductions or even increases in ozone in the center of certain urban areas. This effect explains both these results. Nonetheless, as Figure 4-9 makes clear, the overall area (and population exposed) of ozone reductions is far greater than the corresponding areas with ozone increases.

Ozone results in the Western US, in Figures 4-10 and 4-11, indicate a similar pattern to those for the Eastern US when examining concentrations in urban areas, although in the West the largest ozone air quality gains are restricted to a smaller area, centered in the areas in California that have historically struggled with ozone attainment. In addition, in the Western US there are some more extensive areas in Figure 4-11 with ozone disbenefits attributed to the CAAA, particularly in Los Angeles.[38] Another interesting result, not shown in Figure 4-10, is that we estimate that ozone concentrations will actually increase from 1990 to 2000 in most parts of California, in both the *without-CAAA* and *with-CAAA* scenarios, before reductions in 2010 and 2020 bring ambient levels below those seen in 1990, at least in most areas. This result is largely attributable to the longer attainment deadlines for the severe non-attainment areas in California – our scenario assumes that emissions will increase for some period before aggressive regional mobile source tailpipe standards and non-road fuel and engine standards, and local-scale ozone attainment plans, have their full effect later in our simulation period.

[38] We examined this result further and found that, in cells with the largest disbenefits, the 2020 *without-CAAA* scenario yields concentrations of approximately 45 ppb, while concentrations in outlying areas are as high as 100 ppb or slightly higher. One effect of CAAA controls is to suppress NO_x-scavenging in the city center, where disbenefits are largest, yielding *with-CAAA* concentrations in the 60 to 65 ppb range. The main effect of the CAAA, however, is large decreases in ozone in the outlying areas, to concentrations of 60 to 75 ppb. The net effect on a population weighted basis remains a lowering of overall exposures.

FIGURE 4-8. CMAQ SIMULATED AND VNA ADJUSTED DAILY MAXIMUM 8-HOUR OZONE (PPB) FOR THE EUS DOMAIN

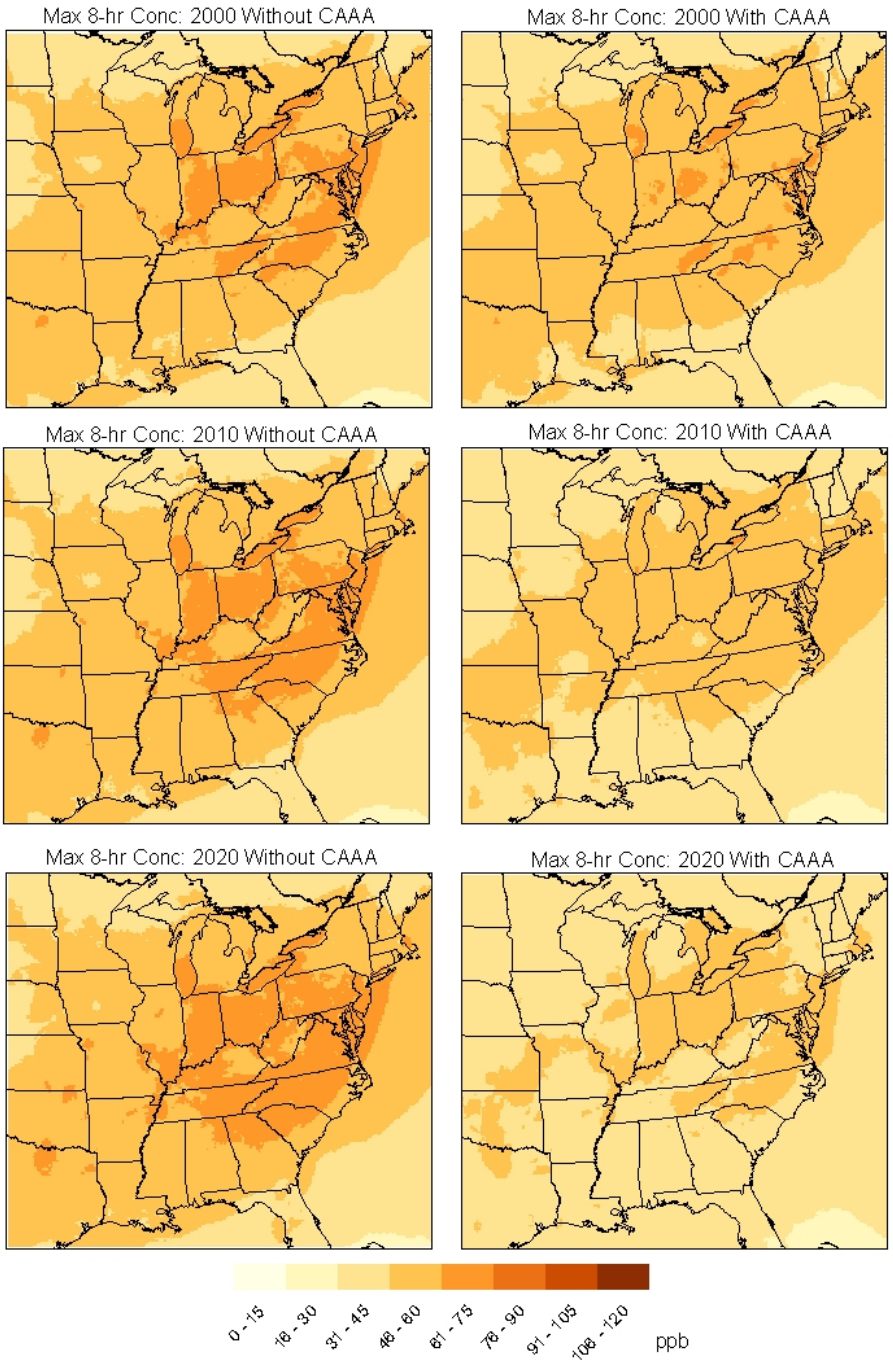


FIGURE 4-9. DIFFERENCE IN SIMULATED DAILY MAXIMUM 8-HOUR OZONE CONCENTRATION (PPB) FOR THE EUS DOMAIN FOR 15 JULY: 2020 WITH-CAAA MINUS 2020 WITHOUT-CAAA SCENARIOS

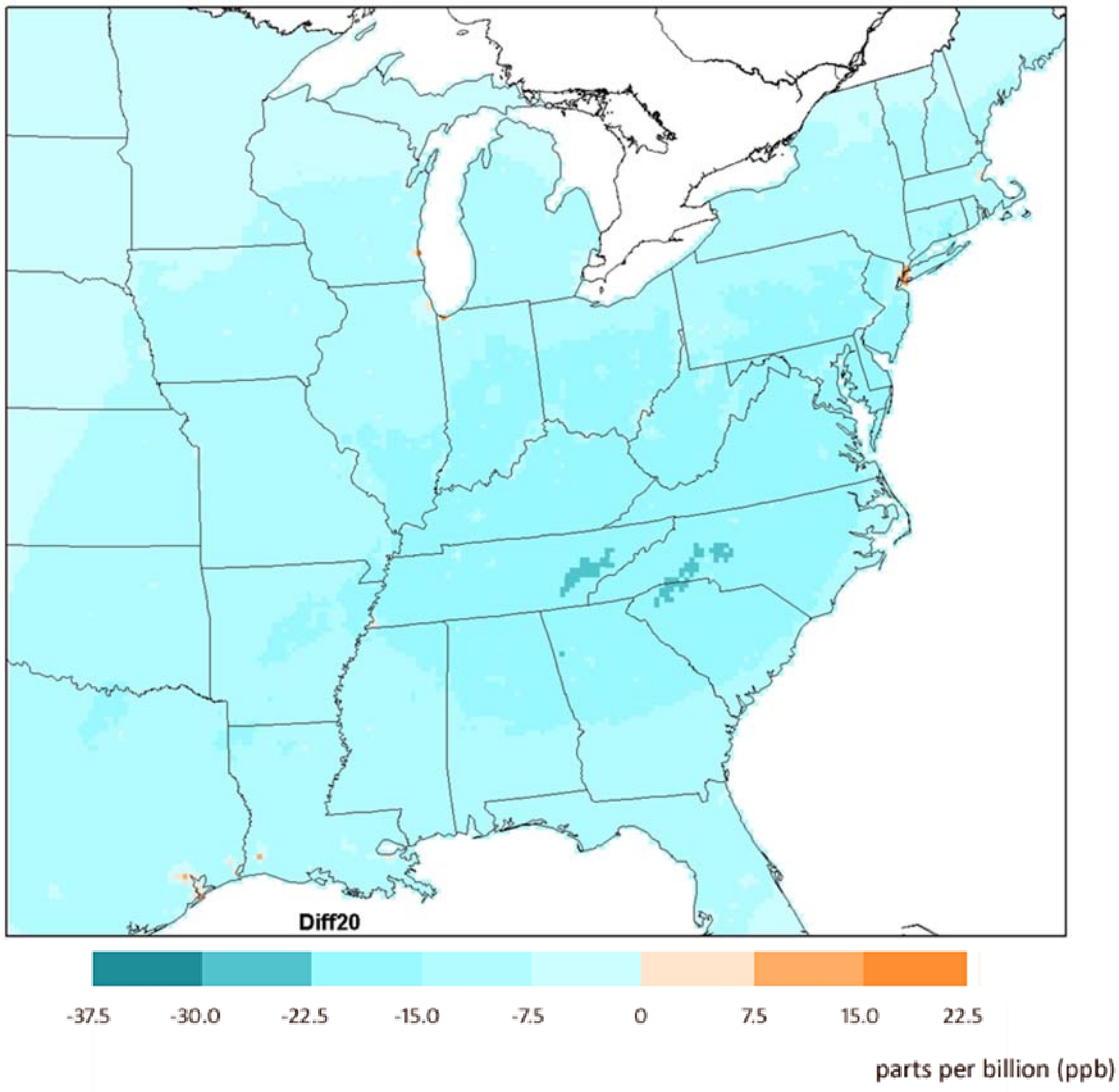


FIGURE 4-10. CMAQ SIMULATED AND VNA ADJUSTED DAILY MAXIMUM 8-HOUR OZONE (PPB) FOR THE WUS DOMAIN

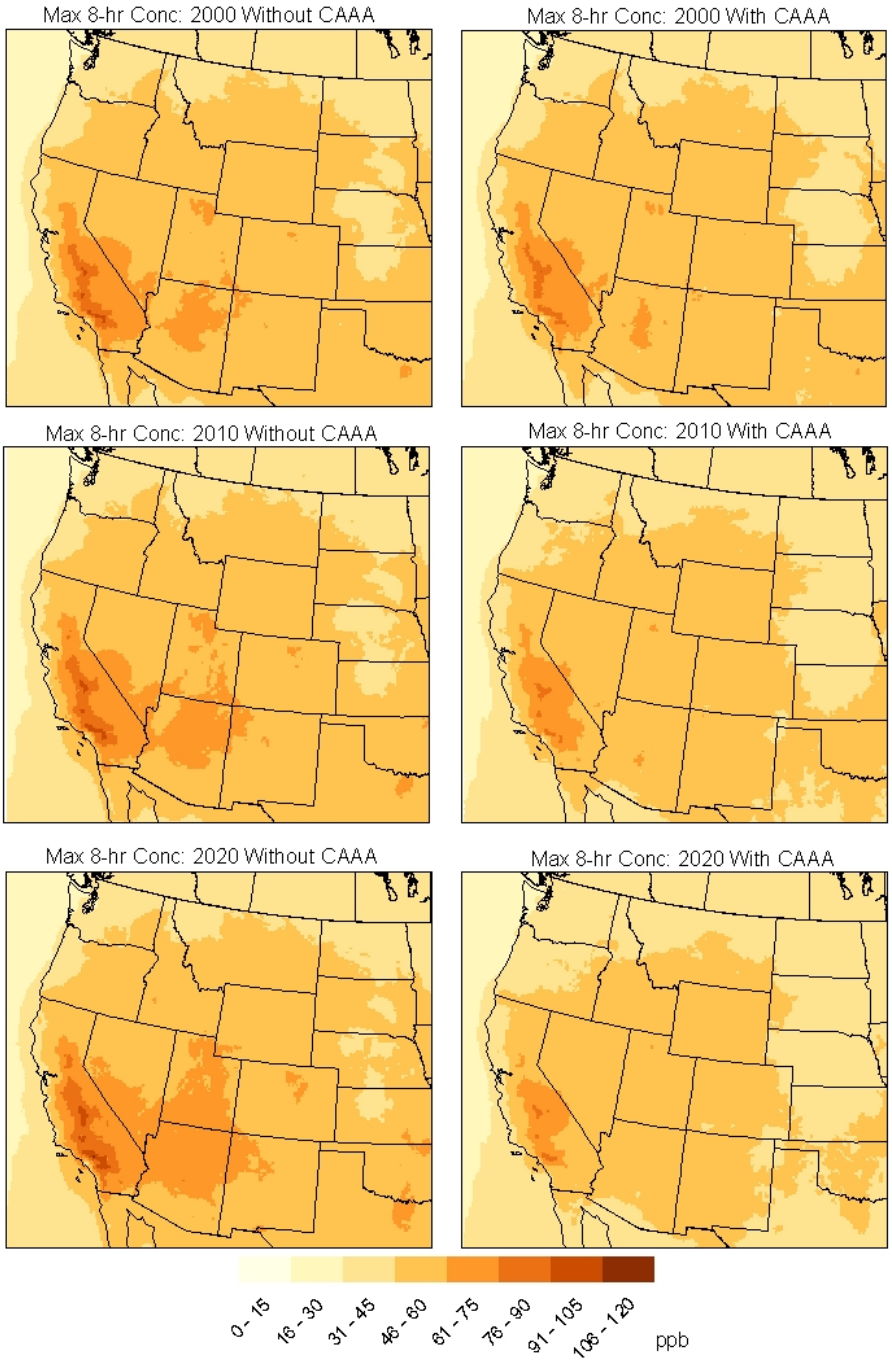
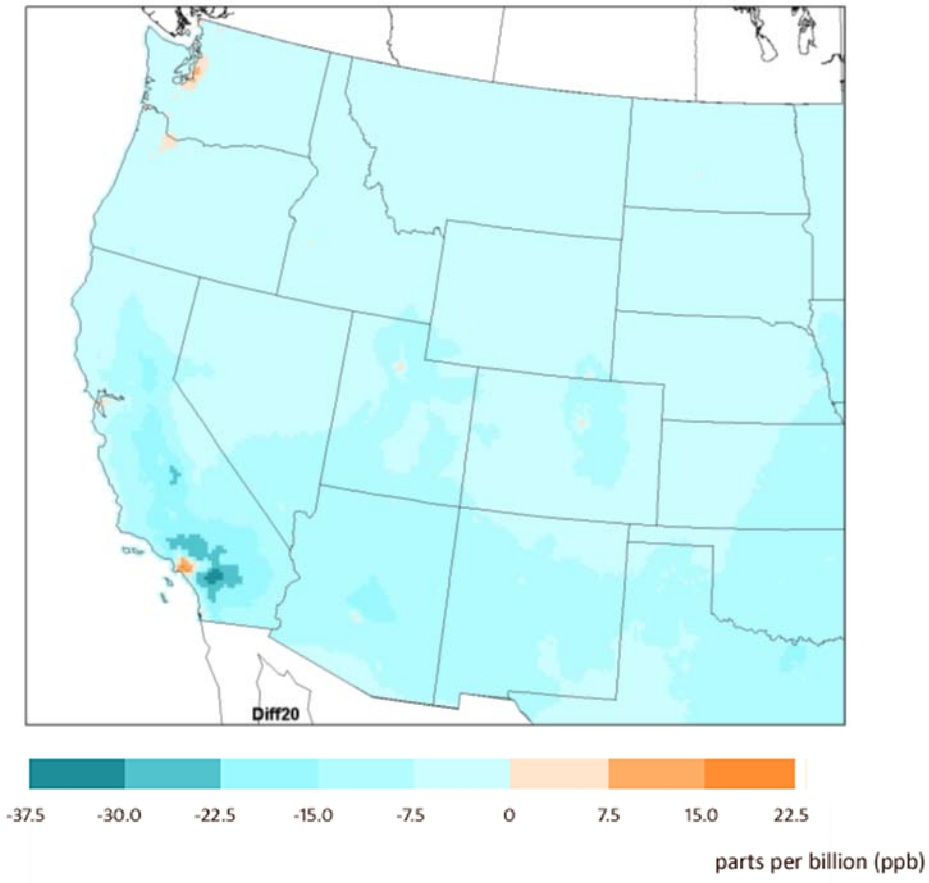


FIGURE 4-11. DIFFERENCE IN SIMULATED DAILY MAXIMUM 8-HOUR OZONE CONCENTRATION (PPB) FOR THE WUS DOMAIN FOR 15 AUGUST: 2020 WITH-CAAA MINUS 2020 WITHOUT-CAAA SCENARIOS



UNCERTAINTY IN AIR QUALITY ESTIMATES

Unlike the air quality modeling conducted over a decade ago for the first Section 812 prospective analysis, which used two different models for ozone and particulate matter, the modeling conducted for the Second Prospective analysis utilized EPA's Community Multiscale Air Quality (CMAQ) model, a "one-atmosphere" model that simulates the chemical formation, transport, and deposition of ozone and particulate matter together in one comprehensive system.[39] The use of this comprehensive air quality modeling system provides a consistent platform for evaluating the expected responses to changes in precursor emissions, reducing many of the uncertainties which pertained in the First Prospective as a result of the limited ability of the models to capture important interaction effects among the ozone and PM precursor pollutants.

[39] Use of an integrated model such as CMAQ for the current study was one of the recommendations made by the Council in their review of the First Prospective analysis.

Nonetheless, air quality modeling is a complex process and, as such, involves many uncertainties. We provide a summary of some of the more important classes of air quality modeling uncertainties in Table 4-1 below. These include a known meteorological bias in the 12-km eastern MM5 domain, which leads to a general tendency to underestimate the monthly observed precipitation; uncertainties in secondary organic aerosol (SOA) chemistry which lead to underestimation of SOA formation in the CMAQ simulations; issues in the detailed CMAQ modeling of some PM precursors; reliance for ozone modeling on a 12-km grid, suggesting NO_x inhibition of ambient ozone levels may be under-represented in some urban areas; and some emissions estimation geographic scale/resolution issues. In all cases but the ozone grid resolution and modeling of SOA formation, the effect of these uncertainties on our estimate of net benefits is of uncertain direction. In addition, in all but one case, modeling of SOA formation, we believe the impact of these uncertainties is probably minor, or of an influence less than five percent of the total net benefits, based on current information. Use of the CMAQ model platform, which has been evaluated in many contexts and used extensively by EPA for broad regulatory analyses such as the Second Prospective, has been a major factor enhancing our understanding of the impact of air quality modeling exercises such as this.

Another factor contributing to our understanding of key uncertainties is that the air quality modeling analysis conducted for the second Section 812 prospective study used national-scale modeling databases originally prepared by EPA for use in other recent modeling exercises conducted to support national rulemaking, including the latest available meteorological and other input databases (for 2002). Given that the modeling databases were originally prepared and utilized by EPA in other analyses, a comprehensive performance evaluation was not undertaken as part of this Section 812 prospective analysis; though the overall projections were assessed using the Atmospheric Model Evaluation Tool (AMET), which showed bias and error statistics for our results were within the acceptable range for model performance.[40] As noted in Table 4-1, biases or uncertainties could be manifest in the simulated concentration fields due to the use of the 36- and 12-km resolution grids, which might not be sufficiently detailed to resolve certain sub-grid scale processes in portions of the modeling domain. All air quality modeling exercises are affected by inherent uncertainties in model formulation, meteorological inputs, and emission inventory estimates. Nevertheless, the modeling was conducted following current EPA guidelines and in a manner consistent with EPA approaches/practice for similar national-scale modeling exercises.

One factor identified in Table 4-1 involves uncertainties associated with corrections to the air quality outputs completed coincident with the Council review of the study outputs. These corrections, reflecting the need to adjust some categories of direct fine particulate emissions for the *without-CAAA* scenario, and to incorporate adjustments to take account of processes that remove fugitive dust from the ambient air at or close to the source of emissions, owing to the effect of forests, vegetation, and urban structures on fugitive dust,

[40] ICF International, Evaluation of CMAQ Model Performance for the 812 Prospective II Study, November 24, 2009, page 31

were necessary because of issues identified through quality control assessments the Project Team completed. As noted in the table, we believe these factors have been addressed through carefully designed *post-hoc* adjustment of the CMAQ results, however in both cases it would have been preferable to have made the adjustments prior to running the CMAQ model. Resource and time limitations unfortunately prevented the Project Team from re-estimating the CMAQ results to account for these adjustments.

Perhaps surprisingly, our assessment is that only one of these factors, uncertainty in secondary organic aerosol formation, constitutes a major source of uncertainty. This result could reflect our inability to apply alternative quantitative air quality modeling tools in this already resource-intensive step in the analytic chain, although it is also clear that the CMAQ model best reflects the state-of-the-art for the type of national scale air quality modeling necessary to support this benefit-cost analysis. As we discuss in Chapter 7, the overall contribution of this step in the analytic chain to uncertainty in net benefits, compared to other steps, may be considerably less, because of the ability to calibrate model results to monitor values for at least the year 2000 *with-CAAA* scenario. It is worth noting, however, that as a whole the air quality modeling process very likely contributes a greater than 10 percent uncertainty, of indeterminate direction, to the overall uncertainty in benefits estimates. In addition, it is clear there are uncertainties introduced by the *ex post* adjustment of some primary PM emissions estimates and the procedure used to re-calibrate the CMAQ air quality to account for this emissions adjustment. Although we argue that the overall effect of this source of uncertainty on the net benefits is probably minor, in some locations ambient PM from primary PM emissions can be more important than secondarily formed fine particles. Overall, we believe that our application of the MATS monitor calibration procedure, which provides a speciated calibration to ensure better agreement between air quality modeling results and comparable monitor data, provides the best attainable consistency between our air quality simulation results and monitored values – the ability to calibrate our results to detailed monitor data in this step of the analytic chain provides considerably greater confidence that our results are "ground-truthed" as much as possible to real world conditions.

TABLE 4-1. KEY UNCERTAINTIES ASSOCIATED WITH AIR QUALITY MODELING

POTENTIAL SOURCE OF ERROR	DIRECTION OF POTENTIAL BIAS FOR NET BENEFITS	LIKELY SIGNIFICANCE RELATIVE TO KEY UNCERTAINTIES ON NET BENEFITS ESTIMATE*
Unknown meteorological biases in the 12-km western and 36-km MM5 domains due to the lack of model performance evaluations.	Unable to determine based on current information.	Probably minor. Other evaluations using 2002 and similar meteorology and CMAQ have shown reasonable model performance, but significant effects on nitrate results in western areas with wintertime $PM_{2.5}$ problems.

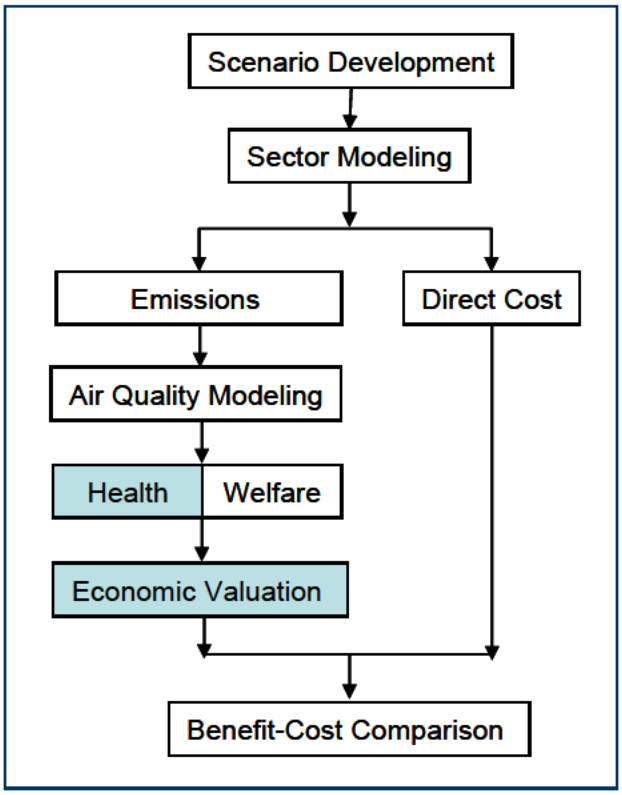
POTENTIAL SOURCE OF ERROR	DIRECTION OF POTENTIAL BIAS FOR NET BENEFITS	LIKELY SIGNIFICANCE RELATIVE TO KEY UNCERTAINTIES ON NET BENEFITS ESTIMATE*
Known metrological biases in the 12-km eastern MM5 domain. MM5 has a cold bias during the winter and early spring, and has a general tendency to underestimate the monthly observed precipitation. MM5's under prediction was greatest in the fall and least in the spring months.	Unable to determine based on current information.	Probably minor. These biases would likely influence $PM_{2.5}$ formation processes, which was modeled on the 36-km domain.
Secondary organic aerosol (SOA) chemistry. CMAQ version 4.6 has known biases (underprediction) in SOA formation.	Underestimate.	Possibly major. The modeling system underpredicts SOA, which has both biogenic and anthropogenic components. Reductions in NOx can reduce both biogenic and anthropogenic SOA and reductions in VOC will reduce anthropogenic SOA. Since both of these precursors are significantly impacted by the CAAA, there may be large benefits from SOA related reductions that are not currently captured by the modeling system.
The CMAQ modeling relies on a modal approach to modeling $PM_{2.5}$ instead of a sectional approach. The modal approach is effective in modeling sulfate aerosol formation but less effective in modeling nitrate aerosol formation than the sectional approach.	Unable to determine based on current information.	Probably minor in the eastern U.S. where annual $PM_{2.5}$ is dominated by sulfate. Potentially major in some western U.S. areas where $PM_{2.5}$ is dominated by secondary nitrate formation.
Limited model performance evaluation of CMAQ for 2002.	Unable to determine based on current information.	Probably minor. While a comprehensive model evaluation was not completed, the overall results of the CMAQ runs for the Second Prospective were assessed using AMET, and bias and error statistics were within acceptable ranges. Further, our application of the MATS procedure provides further assurance that air quality results used in the subsequent health assessments are consistent with available monitor data.

POTENTIAL SOURCE OF ERROR	DIRECTION OF POTENTIAL BIAS FOR NET BENEFITS	LIKELY SIGNIFICANCE RELATIVE TO KEY UNCERTAINTIES ON NET BENEFITS ESTIMATE*
Ozone modeling relies on a 12-km grid, suggesting NO_x inhibition of ambient ozone levels may be under-represented in some urban areas. Grid resolution may affect both model performance and response to emissions changes.	Unable to determine based on current information.	Probably minor. Though potentially major ozone results in those cities with known NO_x inhibition, ozone benefits contribute only minimally to net benefit projections in this study. Grid size affects chemistry, transport, and diffusion processes, which in turn determine the response to changes in emissions, and may also affect the relative benefits of low-elevation versus high-stack controls.
Emissions estimated at the county level (e.g., low-level source and motor vehicle NO_x and VOC emissions) are spatially and temporally allocated based on land use, population, and other surrogate indicators of emissions activity. Uncertainty and error are introduced to the extent that area source emissions are not perfectly spatially or temporally correlated with these indicators.	Unable to determine based on current information.	Probably minor. Potentially major for estimation of ozone, which depends largely on VOC and NO_x emissions; however, ozone benefits contribute only minimally to net benefit projections in this study.
Use of MATS relative response factors to calculate changes in PM2.5	Indeterminate	Probably minor. Using MATS, air quality modeling results were projected in a "relative" sense. In this approach, the ratio of future year model predictions to base year model predictions are used to adjust ambient measured data up or down depending on the relative (percent) change in model predictions for each location. The use of ambient data as part of the calculation helps to reduce uncertainties in the future year predictions, especially if the absolute model concentrations are over-predicted or under-predicted.

POTENTIAL SOURCE OF ERROR	DIRECTION OF POTENTIAL BIAS FOR NET BENEFITS	LIKELY SIGNIFICANCE RELATIVE TO KEY UNCERTAINTIES ON NET BENEFITS ESTIMATE*
Modeling artifacts created by changes in emissions inventory estimation methods between the 1990 inventories used for the *without-CAAA* scenario and the 2002 inventories used for the *with-CAAA* scenarios were mitigated through application of adjustment factors for primary PM from non-EGU point sources, and for the certain subsectors of area sources, in the *without-CAAA* case. Application of these adjustments may result in overestimated or underestimated changes in primary PM contributions to ambient concentrations for these particular sources.	Unable to determine based on current information.	Probably minor. While primary PM can make a significant contribution to ambient PM2.5 in some locations, secondarily formed fine particles dominate the estimates for ambient concentration change in this analysis. In addition, the effect of the inventory adjustments was to significantly reduce the differentials between the control and counterfactual scenarios, implying any residual error is more likely to reflect an underestimation bias than an overestimation bias, particularly since the non-EGU primary PM reductions were adjusted to a scenario differential of zero.
Adjustments to take account of processes that remove fugitive dust from the ambient air at or close to the source of emissions, owing to the effect of forests, vegetation, and urban structures on fugitive dust. Analysis of the chemical species collected by ambient air samplers suggests that the modeling process may overestimate PM-2.5 from fugitive dust sources by as much as an order of magnitude, if not adjusted for this effect. The Project Team incorporated adjustments post-CMAQ modeling but prior to use of PM air quality estimates in subsequent steps of the analysis.	Unable to determine based on current information.	Probably minor. If adjustment factors had been applied as part of the CMAQ modeling, evidence suggests the entrainment effect would have been adequately accounted for. The largely linear processes of direct PM emissions to air quality suggest that our *post-hoc* adjustment should also be adequate to account for this factor. Further assurance that this factor has been accounted for is our application of the MATS monitor calibration procedure, which provides a speciated calibration to ensure better agreement between air quality modeling results and comparable monitor data, and the fact that the adjustment applies to both scenarios, further mitigating the impact of this source of uncertainty.

* The classification of each potential source of error is based on those used in the First Prospective Analysis. The classification of "potentially major" is used if a plausible alternative assumption or approach could influence the overall monetary benefit estimate by approximately 5% or more; if an alternative assumption or approach is likely to change the total benefit estimate by less than 5%, the classification of "probably minor" is used.

CHAPTER 5 - ESTIMATION OF HUMAN HEALTH EFFECTS AND ECONOMIC BENEFITS



A large portion of the overall benefits of the Clean Air Act Amendments (CAAA) of 1990 are due to human health benefits from improved air quality. As part of the Second Prospective analysis of these amendments, we identified and, where possible, estimated the magnitude of health benefits Americans are likely to realize in future years as a result of the CAAA. We express these health benefits as avoided cases of air pollution-related health effects, such as premature mortality, heart disease and respiratory illness. Human health benefits of the 1990 CAAA can be attributed to reduced emissions of criteria pollutants (Titles I through IV), and reduced emission of ozone depleting substances (Title VI), however as highlighted in Chapter 1 the Second Prospective focuses primarily on human health effects attributed to the reduction of criteria pollutants, and within that category, health benefits associated with reduced exposure to fine particulate matter ($PM_{2.5}$) and ozone, as these are the largest contributors to the overall health benefits estimates.

The goal in a benefit-cost analysis such as the Second Prospective is to develop estimates of the monetary value of benefits wherever possible – doing so facilitates comparison and aggregation of monetized health benefits across endpoints. Therefore, we assigned a dollar value to avoided incidences of each health effect. We obtained valuation estimates from the economic literature and report them in "dollars per case avoided." We report each of the monetary values of benefits applied in this analysis in terms of a central estimate and a probability distribution around that value. The statistical form of the probability distribution varies by endpoint.

This chapter presents an overview of our approach to modeling changes in adverse health effects and applying monetary value to these benefits, summarizes the results for major health effect categories and discusses key uncertainties related to the analysis. As noted above, the chapter focuses primarily on the human health effects associated with exposure to criteria pollutants, however we also present the methodology and results of a case study of health benefits from a single air toxic pollutant (benzene) for a particular area of the United States (the Houston metropolitan area).

OVERVIEW OF APPROACH

We estimate the impact of the CAAA on human health by analyzing the difference in the expected incidence of adverse health effects between a "*with-*" and a "*without-CAAA*" regulatory scenario. As described in Chapter 1, the *without-CAAA* scenario assumes no further controls on criteria pollutant emissions aside from those already in place in 1990, while the *with-CAAA* scenario assumes full implementation of the 1990 CAAA. The analysis uses a sequence of linked analytical models to estimate health benefits, also described in Chapter 1, which includes forecasts of implementation activities undertaken in response to the CAAA, estimates of pollutant emissions associated with each scenario (see Chapter 2) and air quality modeling of criteria pollutant emissions under each scenario (see Chapter 4).

Estimating health effects benefits from air quality modeling results involves three key steps, described in greater detail below. The first step involves estimating the exposure of individuals to air pollutants. Although exposure to air pollutants can occur in both outdoor and indoor environments, for our purposes it is appropriate to focus on outdoor air pollution concentrations as a measure of human exposure. The main reason is that, in the second step of our approach, estimating the human response to exposure, the exposure measures used in the epidemiological studies used to derive human response are typically based on outdoor concentrations. These "concentration-response functions" were developed to relate outdoor concentrations to changes in the incidence of health effects and mortality in response to pollutant exposure. The third step, valuation of avoided human health risk, is accomplished by application of estimates from the literature to characterize unit values per case avoided.

A critical tool in EPA's analyses of health benefits is the Environmental Benefits Mapping and Analysis Program (BenMAP), developed and continuously maintained by EPA's Office of Air and Radiation.[41] BenMAP is capable of accepting a wide range of air quality inputs, and then performing exposure analysis that includes calibration of model results to monitor data for historical years, assessing the changes in health effects incidence resulting from those exposures, and estimating the monetized value of those avoided health effects. Health effects in BenMAP are based on differences in two scenarios of exposure, and health effects and valuation estimates reflect the implications of the difference in exposure across scenarios, rather than absolute estimates of incidence

[41] For more information, see the BenMAP *User's Manual and Appendices*, September 2008, Prepared for the Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, NC, by Abt Associates Inc.

associated with in any given scenario. BenMAP required three types of inputs for this analysis: 1) forecasted changes in air quality from the *without-CAAA* to the *with-CAAA* scenarios in 2000, 2010 and 2020; 2) health impact functions that quantify the relationship between the forecasted changes in exposure and expected changes in adverse health effects; and 3) health valuation functions that assign a monetary value to changes in specific health effects. We describe each of these inputs in greater detail below. The outputs of BenMAP for this analysis include central estimates and distributions of health effects incidence and valuation, at the national and county level, for each of the three target years of analysis.

The Project Team also estimates two other outputs related to avoided premature mortality attributed to the CAAA: life-years lost, and changes in life expectancy. EPA developed a separate model, the Population Simulation model, to generate these outputs. As described below, the population simulation approach provides some advantages over the BenMAP model in terms of simulation of the dynamic effects of mortality across a population through time, but also has several significant disadvantages relative to BenMAP in terms of the spatial resolution of pollutant exposure estimates. As a result, the population simulation approach operates as a supplement to the BenMAP-based primary estimates for selected measures of the impact of reducing risks of premature mortality.

EXPOSURE ASSESSMENT

As described in Chapter 4, the Project Team used the Community Multi-scale Air Quality (CMAQ) integrated modeling system to simulate the physical and chemical processes that govern the formation, transport, and deposition of gaseous and particulate species in the atmosphere. The CMAQ results serve as the basis of the air quality inputs required for BenMAP. For particulate matter, the CMAQ model was applied for an annual simulation period (January through December) and utilized a 36-km resolution modeling domain that encompasses the contiguous 48 states. For ozone and related species, the CMAQ model was applied for a five-month simulation period that captures the key ozone-season months of May through September, and used two 12-km resolution modeling domains (that when combined cover the contiguous 48 U.S. states).
We also described in Chapter 4 the adjustment of the CMAQ results generated by combining those results with observed monitoring data, using a method known as the monitor and model relative adjustment procedure. This technique was applied for the PM estimates using a program called the Modeled Attainment Test Software (MATS) (see Chapter 4 for a detailed description of this process). The resulting 36 km grid cell concentrations for PM were then used as inputs for BenMAP. For ozone, a similar adjustment process was completed, but the analysis was done directly within BenMAP, using the enhanced Voronoi Neighbor Averaging (eVNA) procedure.[42] The eVNA and

[42] As noted in Chapter 4, eVNA and VNA are procedures for interpolating values from nearby monitors using inverse distance squared weighting using Voronoi Neighbor Averaging. This is an algorithm that identifies a set of monitors close to the grid cell (called "neighbors") and then estimates the PM species concentration in that grid cell by calculating an inverse-distance weighted average of the monitor values (i.e., the concentration values at monitors closer to the grid cell are weighted more heavily than monitors that are further away). See the BenMAP manual for further information on the eVNA

MATS procedures provide gridded estimates of outdoor air quality at the same grid resolution as the CMAQ results. These procedures also provide a means for calibrating model results in those grid cells where no monitors exist, combining both model results with nearby monitor results to yield a "surface" of air quality that avoids the problems with direct extrapolation of results from monitors not located within a grid cell boundary.

HEALTH IMPACT FUNCTIONS

Health impact functions estimate the change in a health endpoint of interest, such as hospital admissions, for a given change in ambient pollutant concentration. A standard health impact function has four components: 1) the size of the potentially affected population; 2) a baseline incidence rate for the health effect (obtained from a source of public health statistics, such as the Centers for Disease Control, or sometimes from an epidemiological study itself); 3) a concentration-response (C-R) function (derived from epidemiological studies), which relates the change in the number of individuals in a population exhibiting a "response" to a change in pollutant concentration experience to the size of the exposed population; and 4) the estimated change in the relevant pollutant concentration. The first three of these components are discussed in further detail below. The fourth is generated through the air quality modeling and exposure estimation procedure discussed above.

Potentially Affected Populations

Health benefits resulting from the CAAA are related to the change in air pollutant exposure experienced by individuals. Because the expected changes in pollutant concentrations vary from location to location, individuals in different parts of the country may not experience the same level of health benefits. This analysis apportions benefits among individuals by matching the change in air pollutant concentration in a grid cell with the size of the population that experiences that change.

BenMAP incorporates 2000 U.S. Census Bureau block-group population data to determine the specific populations potentially affected by ozone and $PM_{2.5}$. For future years (2010 and 2020), BenMAP scales the 2000 Census-based population estimates using the ratio of forecasted and 2000 county-level population estimates provided by Woods and Poole (2007).[43]

procedure. Abt Associations (2008). *BenMAP: Environmental Benefits Mapping and Analysis Program User's Manual*. Prepared for the U.S. Environmental Protection Agency's Office of Air Quality Planning and Standards, Research Triangle Park, NC, September.

[43] Woods & Poole Economics Inc., 2007. Complete Demographic Database. Washington, DC. http://woodsandpoole.com/index.php.

Baseline Incidence Rates

Baseline incidence rates are needed to convert the relative changes of a health effect in relation to a specific change in air pollution, which are reported in epidemiological studies, into the number of avoided cases. For instance, an epidemiological study might report that for a 10 ppb decrease in daily ozone levels, hospital admissions decrease by three percent. This estimate must then be multiplied by a baseline incidence rate (i.e., an estimate of the number of cases of the health effect per year) and the total population to determine how this three percent decrease translates into the number of fewer cases.

For this analysis, we used nationally-representative age-specific incidence and prevalence rates, where available, for each health endpoint. We obtained these data from a variety of sources, such as the CDC, the National Center for Health Statistics and the American Lung Association. Information from individual epidemiological studies was used if data from other sources were not available, as these data are often specific to the study population and location and therefore may not be as nationally representative.[44] For future years, mortality rates are projected based on available Bureau of the Census projections – other projected baseline incidence rates are generated to be consistent with the projections of population growth incorporated into BenMAP.

Concentration-Response Functions

We calculate the benefits attributable to the CAAA as the avoided incidence of adverse health effects. Such benefits can be measured using C-R functions specific to each health effect. C-R functions are equations that relate the change in the number of individuals in a population exhibiting a "response" (in this case an adverse health effect such as respiratory disease) to a change in pollutant concentration experienced by that population.

$PM_{2.5}$ and ozone have been associated with a number of adverse health effects in the epidemiological literature, such as premature mortality, hospital admissions, emergency room visits, and respiratory and cardiovascular disease. The published scientific literature contains information that supports the estimate of some, but not all, of these effects. Thus, it is not possible currently to estimate all of the human health benefits attributable to the CAAA. In addition, for some of the health effects we do quantify, the current economic literature does not support the estimation of the economic value of these effects. Table 5-1 lists the human health effects of these pollutants that have been identified, indicating which have been included in our benefits estimates and those that we did not quantify. See Chapter 2 of *Health and Welfare Benefits Analyses to Support the Second Section 812 Benefit-Cost Analysis of the Clean Air Act*, for a specific list of the C-R functions used for each health endpoint.

[44] See *Health and Welfare Benefits Analyses to Support the Second Section 812 Benefit-Cost Analysis of the Clean Air Act*, February 2011, for a list of data sources and average baseline incidence rates for each health effect.

TABLE 5-1. HUMAN HEALTH EFFECTS OF OZONE AND $PM_{2.5}$

POLLUTANT/EFFECT	QUANTIFIED AND MONETIZED IN BASE ESTIMATES[A]	UNQUANTIFIED EFFECTS[G,H]—CHANGES IN:
PM/Health[b]	Premature mortality based on both cohort study estimates and on expert elicitation[c,d] Bronchitis: chronic and acute Hospital admissions: respiratory and cardiovascular Emergency room visits for asthma Nonfatal heart attacks (myocardial infarction) Lower respiratory symptoms Minor restricted-activity days Work loss days Asthma exacerbations (asthmatic population) Upper Respiratory symptoms (asthmatic population) Infant mortality	Subchronic bronchitis cases Low birth weight Pulmonary function Chronic respiratory diseases other than chronic bronchitis Morphological changes Altered host defense mechanisms Cancer Non-asthma respiratory emergency room Visits UVb exposure (+/-)[e]
Ozone/Health[f]	Premature mortality: short-term exposures Hospital admissions: respiratory Emergency room visits for asthma Minor restricted-activity days School loss days Outdoor worker productivity	Cardiovascular emergency room visits Asthma attacks Respiratory symptoms Chronic respiratory damage Increased responsiveness to stimuli Inflammation in the lung Premature aging of the lungs Acute inflammation and respiratory cell damage Increased susceptibility to respiratory infection Non-asthma respiratory emergency room Visits UVb exposure (+/-)[e]

a Primary quantified and monetized effects are those included when determining the primary estimate of total monetized benefits of the alternative standards.

b In addition to primary economic endpoints, there are a number of biological responses that have been associated with PM health effects including morphological changes and altered host defense mechanisms. The public health impact of these biological responses may be partly represented by our quantified endpoints.

c Cohort estimates are designed to examine the effects of long-term exposures to ambient pollution, but relative risk estimates may also incorporate some effects due to shorter term exposures (see Kunzli et al., 2001 for a discussion of this issue).

d While some of the effects of short-term exposure are likely to be captured by the cohort estimates, there may be additional premature mortality from short-term PM exposure not captured in the cohort estimates included in the primary analysis.

e May result in benefits or disbenefits.

f In addition to primary economic endpoints, there are a number of biological responses that have been associated with ozone health including increased airway responsiveness to stimuli, inflammation in the lung, acute inflammation and respiratory cell damage, and increased susceptibility to respiratory infection. The public health impact of these biological responses may be partly represented by our quantified endpoints.

g The categorization of unquantified health effects is not exhaustive.

h Health endpoints in the unquantified benefits column include both a) those for which there is not consensus on causality and b) those for which causality has been established but empirical data are not available to allow calculation of benefits.

We rely on the most recently available, published scientific literature to ascertain the relationship between air pollution and adverse human health effects. We use a set of criteria outlined in Table 5-2 to evaluate potential studies to use as the basis for the C-R function. These criteria include consideration of whether the study was peer-reviewed, the study design and location, and characteristics of the study population, among others. In addition, we consider the input of the Council advising EPA for this study, as well the specific advice of the Health Effects Subcommittee (HES) of the Council, which explicitly focused on the health effects estimation component of the study. Overall, the selection of C-R functions for benefits analysis is guided by the goal of achieving a balance between comprehensiveness and scientific defensibility.

Epidemiological studies provide the basis for the C-R functions used in the health impact functions for assessing benefits of the CAAA. These studies also provide an indication of a portion of the uncertainty associated with the C-R function, by reporting a confidence interval around the mean value, which we use to derive a low, central and high estimate of avoided cases. However, this range only represents the statistical error in the estimates, which is related to the study population size and frequency of outcome. Several other sources of uncertainty exist in the relationship between ambient pollution and the health outcomes, including model uncertainty, potential confounding by factors that are both correlated with the health outcome and each other, and potential misclassification of the study population exposures. For a full list of uncertainties related to application of a C-R function to estimate benefits, see the Uncertainty section of this chapter and the Second Prospective Uncertainty Report, *Uncertainty Analyses to Support the Second Section 812 Benefit-Cost Analysis of the Clean Air Act*.

EPA recently conducted an expert elicitation (EE) study, which is the formal elicitation of subjective judgments, in order to more fully characterize the uncertainty surrounding the $PM_{2.5}$/mortality C-R function. This study allowed experts to consider and integrate several sources of uncertainty in the form of a probability distribution of the C-R function. As discussed further below, the EE study results helped to inform our selection of a primary C-R function to estimate avoided premature mortality due to CAAA-related $PM_{2.5}$ exposure reductions.

Avoided premature mortality is the largest contributor to the monetized health benefits of $PM_{2.5}$ and ozone. Therefore, we describe below in further detail the specific C-R functions selected to quantify CAAA-related avoided deaths.

TABLE 5-2. SUMMARY OF CONSIDERATIONS USED IN SELECTING C-R FUNCTIONS

CONSIDERATION	COMMENTS
Peer-Reviewed Research	Peer-reviewed research is preferred to research that has not undergone the peer-review process.
Study Type	Among studies that consider chronic exposure (e.g., over a year or longer), prospective cohort studies are preferred over ecological studies because they control for important individual-level confounding variables that cannot be controlled for in ecological studies.
Study Period	Studies examining a relatively longer period of time (and therefore having more data) are preferred, because they have greater statistical power to detect effects. More recent studies are also preferred because of possible changes in pollution mixes, medical care, and lifestyle over time. However, when there are only a few studies available, studies from all years will be included.
Population Attributes	The most technically appropriate measures of benefits would be based on impact functions that cover the entire sensitive population but allow for heterogeneity across age or other relevant demographic factors. In the absence of effect estimates specific to age, sex, preexisting condition status, or other relevant factors, it may be appropriate to select effect estimates that cover the broadest population to match with the desired outcome of the analysis, which is total national-level health impacts. When available, multi-city studies are preferred to single city studies because they provide a more generalizable representation of the C-R function.
Study Size	Studies examining a relatively large sample are preferred because they generally have more power to detect small magnitude effects. A large sample can be obtained in several ways, either through a large population or through repeated observations on a smaller population (e.g., through a symptom diary recorded for a panel of asthmatic children).
Study Location	U.S. studies are more desirable than non-U.S. studies because of potential differences in pollution characteristics, exposure patterns, medical care system, population behavior, and lifestyle.
Pollutants Included in Model	When modeling the effects of ozone and PM (or other pollutant combinations) jointly, it is important to use properly specified impact functions that include both pollutants. Using single-pollutant models in cases where both pollutants are expected to affect a health outcome can lead to double-counting when pollutants are correlated.
Measure of PM	For this analysis, impact functions based on PM2.5 are preferred to PM10 because of the focus on reducing emissions of PM2.5 precursors, and because air quality modeling was conducted for this size fraction of PM. Where PM2.5 functions are not available, PM10 functions are used as surrogates, recognizing that there will be potential downward (upward) biases if the fine fraction of PM10 is more (less) toxic than the coarse fraction.
Economically Valuable Health Effects	Some health effects, such as forced expiratory volume and other technical measurements of lung function, are difficult to value in monetary terms. These health effects are not quantified in this analysis.
Non-overlapping Endpoints	Although the benefits associated with each individual health endpoint may be analyzed separately, care must be exercised in selecting health endpoints to include in the overall benefits analysis because of the possibility of double-counting of benefits.

PM Mortality C-R Function

The estimated relationship between particulate matter exposure and premature mortality is one of the most important parameters in the overall quantified and monetized benefit estimate for this study. An extensive base of literature exists to support development of the C-R function linking fine particulate matter exposure with premature mortality. Our knowledge of both the potential biological mechanisms linking $PM_{2.5}$ exposure with mortality and the potential magnitude of this effect has grown since the First Prospective was completed as the result of continued research and follow-up of existing study populations. Both short-term and long-term epidemiological studies have been conducted to examine the PM/mortality relationship. Short-term exposure studies attempt to relate short-term (often day-to-day) changes in PM concentrations and changes in daily mortality rates up to several days after a period of elevated PM concentrations. Long-term exposure studies examine the potential relationship between longer-term (e.g., annual) changes in exposure and annual mortality rates. Although positive, significant results have been reported using both of these study types, we rely exclusively on long-term studies to quantify PM mortality effects. This is because cohort studies are able to discern changes in mortality rates due to long-term exposure to elevated air pollution concentrations. This provides a better match to the benefits of air pollution control programs under the CAAA, which are also focused on reducing long-term exposure. These effect estimates may also include some of the mortality changes due to short-term peak exposures.[45] Therefore, the use of C-R functions from long-term studies is likely to yield a more complete assessment of the effect of PM on mortality risk.

Among long-term PM studies, we prefer those using a prospective cohort design to those using an ecologic or population-level design. Prospective cohort studies follow individuals forward in time for a specified period, periodically evaluating each individual's exposure and health status. Population-level ecological studies assess the relationship between population-wide health information (such as counts of daily mortality) and ambient levels of air pollution. Prospective cohort studies are preferred because they are better at controlling a source of uncertainty known as "confounding." Confounding is the mis-estimation of an association that results if a study does not control for factors that are correlated with both the outcome of interest (e.g., mortality) and the exposure of interest (e.g., PM exposure). For example, smoking is associated with mortality. If populations in high PM areas tend to smoke more than populations in low PM areas, and a PM exposure study does not include smoking as a factor in its model, then the mortality effects of smoking may be erroneously attributed to PM, leading to an overestimate of the risk from PM. Prospective cohort studies are better at controlling for confounding than ecologic studies because the former follow a group of individuals forward in time and can gather individual-specific information on important risk factors such as smoking.

[45] See Kunzli et al. (2001) for a discussion of this issue.

Two major prospective cohort studies have been conducted in the U.S.: the American Cancer Society (ACS) study and the Six Cities study. These two cohorts are large, produce consistent results, provide broad geographic coverage and have been independently reexamined and reanalyzed. Strengths of the ACS study over the Six Cities study include greater geographic coverage (50 U.S. cities) and larger sample size. However, a key limitation of this study is a recruitment method that led to a study population with higher income, more education, and greater proportion of whites than the general U.S. population. In addition, available monitoring data was often assigned to all of the individuals within a large metropolitan area, potentially allowing for exposure misclassification.[46] Both of these limitations could imply that the ACS results are potentially biased low. The Six Cities study included a more representative sample of subjects within each community and set up monitors purposefully for the study. It was therefore able to assign exposures at a finer geographic scale. However, this study only included six cities and therefore may not be representative of the entire U.S. population, mix of air pollutants, and other potentially important factors.

The extensive epidemiological literature is complemented by EPA's 2006 expert elicitation (EE) study that asked 12 leading experts in PM health effects to integrate this pool of knowledge with the various sources of uncertainty that hinder our ability to precisely identify the true mortality impact of a unit change in annual $PM_{2.5}$ concentration (IEc, 2006). The results of the expert elicitation study showed three important findings: first, that advances in the scientific literature led many of the interviewed scientists to espouse greater confidence in the linkage between $PM_{2.5}$ exposure and mortality; second, that many of the experts believed that the central estimate of the mortality effect was considerably higher than the Pope et al. (2002) result used in the First Prospective; and third, that most of the experts' uncertainty distributions of the mortality effect reflected a much wider range of possible values, both high and low, than were used in the First Prospective study. The expert elicitation study does not, however, provide an integrated distribution across all 12 experts of possible values for the PM-mortality C-R function.

Based on consultations with the Council's Health Effects Subcommittee (HES), the 812 Project Team developed a distribution of C-R function coefficients (i.e., the percent change in annual all-cause mortality per one $\mu g/m^3$ change in annual average $PM_{2.5}$) for use in the PM-mortality C-R function for the Second Prospective study. This distribution is rooted in the epidemiological studies that most inform our understanding of the PM-mortality C-R function, but reflects the broader findings of the EE study. We based the primary C-R coefficient estimate of the Second Prospective study on a Weibull distribution with a mean of 1.06 percent decrease in annual all-cause mortality per one $\mu g/m^3$. This mean is roughly equidistant between the results of the two most well-studied PM cohorts, the ACS cohort (0.58, as derived from Pope et al., 2002) and the Six Cities cohort (1.5, as derived from Laden et al., 2006), both of whose results have been robust to continued follow-up and extensive re-analysis. Half of the coefficient values in this

[46] Studies have shown that greater spatial resolution of exposures can result in increased effect estimates (Jerrett et al., 2005).

distribution fall between these two studies, one-quarter are higher than the Laden mean estimate, and one-quarter are lower than the Pope mean estimate; however all coefficient values are greater than zero. This distribution is consistent with the EE results described above, showing considerable support for higher values based on results from more recent studies (e.g., the Laden et al. (2006) Six Cities follow-up) and concerns cited by the Council HES that the ACS cohort results may underestimate the true effect. The use of all positive values is consistent with both the increased confidence in a causal link between $PM_{2.5}$ exposure and mortality shown in the EE study and the lack of evidence in general to support a threshold for mortality effects of $PM_{2.5}$ in the U.S. population.[47]

The results of two recently published cohort studies provide additional support for the selection of the Weibull distribution as the primary estimate for the PM Mortality C-R function. The first is a large retrospective cohort study of over 13 million Medicare participants (i.e., those aged 65 and above) throughout the US (Eftim et al. 2008; Zeger et al. 2008). When the entire Medicare cohort was analyzed, authors found a 6.8 percent change in annual all-cause mortality in the eastern US (95% CI: 4.9-8.7) and a 13.2 percent change in the central US (95% CI: 9.5-16.9) per 10 $\mu g/m^3$ change in the long-term (six-year) average annual $PM_{2.5}$. There was no association found in the western US (Zeger et al., 2008). These results are similar to the interquartile range of the Weibull distribution selected for the primary estimate for the Second Prospective. An analysis restricted to those living in the locations corresponding to the ACS and Six Cities cohort study analyses yielded percent changes in annual all-cause mortality per 10 $\mu g/m^3$ of $PM_{2.5}$ of 10.9 (95% CI: 9.0-12.8) and 20.8 (95%CI: 14.8-27.1) respectively, which are somewhat higher than the estimates reported in the original studies (Eftim et al., 2008).[48] One possible explanation for this difference is the lack of control for lifestyle factors in the analyses by Eftim et al., such as smoking, potentially leading to confounded results.

The second study is a prospective cohort of female nurses in the Northeastern and Midwestern regions of the US (Puett et al. 2008 and 2009). An increase of 10 $\mu g/m^3$ of $PM_{2.5}$ in the previous year was associated with a 26 percent increase in annual all-cause mortality (a hazard ratio of 1.26 with a 95% CI ranging from 1.02 to 1.54).[49] This estimate is at the upper end of our primary estimate Weibull distribution (roughly equivalent to the 95th percentile). However, this study covered only two regions of the country and included only females and therefore may not be generalizable to the general population of the US.

A final topic concerns EPA's choice to estimate avoided mortality and morbidity associated with reductions in fine particles using estimates of changes in exposure to fine

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[47] See "Health Effects Subcommittee of the Council. Review of EPA's Draft Health Benefits of the Second Section 812 Prospective Study of the Clean Air Act." (EPA-COUNCIL-10-001), available at http://www.epa.gov/advisorycouncilcaa

[48] Note that these results are based on a slightly different air quality dataset than the analysis of the full cohort. The nationwide estimate is based on a six-year average (2000-2005) and the ACS and Six Cities location-specific results are based on two years of data (2000-2002).

[49] Biennial questionnaires on lifestyle factors were administered to participants, allowing for control of a number of individual-level confounders.

particle mass as the exposure input in the damage function. The implication of this approach is that we assume that all fine particles, regardless of their chemical composition, are equally potent per unit concentration in producing premature mortality and other health outcomes. If it could be shown that fine particle species exhibit significantly differentiated toxicity, then from a benefits analysis perspective, treatment of all fine particle species as equally toxic would lead to biased benefits estimates, because the composition of fine particle mass varies over space and time, as do the fine particle reductions resulting from different air pollutant control strategies. We believe that these biases would likely be minor in an analysis such as the 812 study, which evaluates a blended particle reduction strategy targeting multiple particle types across the entire spectrum of control programs authorized under the Clean Air Act Amendments. Nonetheless, we conducted a careful evaluation of the potential for characterizing uncertainty in the differential toxicity of the components of fine particle pollution.

There exists a limited but growing literature addressing the health effects of various fine particle components, including sulfate, nitrate, elemental carbon (EC), organic carbon (OC), and metals.[50] A number of epidemiological studies, mostly time-series studies, have associated one or more of the components of fine particle pollution individually with mortality; however, so far no clear picture has emerged to implicate specific components as being consistently more toxic than fine particles in general or to classify any individual components of fine particle pollution as non-toxic. However, the epidemiological evidence base is limited by the high correlations among many fine particle components (and between those components and fine particles as a whole). It is difficult to corroborate this evidence toxicologically, given the fact that human exposure to single particle components is not a realistic scenario. The literature base continues to expand, but significant investments in both epidemiological and toxicological research are needed to understand the potentially complex systems of particle interactions that may be responsible for the observed health effects of fine particle pollution.

Thus, while treatment of all fine particle components as equally toxic may lead to biases in benefits estimates, we also acknowledge that any arbitrary assumption about the differential toxicities of specific fine particle types may also lead to biases in benefits estimates. Any of these biases may mask important spatial variation in the distribution of benefits of Clean Air Act programs across the U.S. due to regional variation in fine particle species mixes, which could affect selection of the most health beneficial measures to meet Clean Air Act requirements such as the National Ambient Air Quality Standards. However, the "equal toxicity" fine particle approach is rooted in both biological considerations (i.e., the importance of particle size to toxicity) and in largely consistent findings across an extensive set of epidemiological studies conducted across countries, states, and cities that show $PM_{2.5}$ concentrations are associated with increased mortality and morbidity rates. This consistency of results across a variety of fine particle

[50] For specific examples of research addressing differential toxicity of PM components, see Chapter 5 of *Uncertainty Analyses to Support the Second Section 812 Benefit-Cost Analysis of the Clean Air Act*. http://www.epa.gov/oar/sect812/may10/IEc_Uncertainty.pdf

mixes in different locations implies an equivalence of risk resulting from exposure to fine particle masses with different concentrations of component species. We conclude that the current evidentiary base from the epidemiological and toxicological literatures supports the use of an equal toxicity assumption for the present study, especially since the fine particle pollution reductions estimated herein reflect a variety of fine particle mixtures across different locations and time frames. Furthermore, we conclude that current information does not support specification of alternative concentration-response functions that would be both scientifically sound and useful for development of policy-relevant insights.

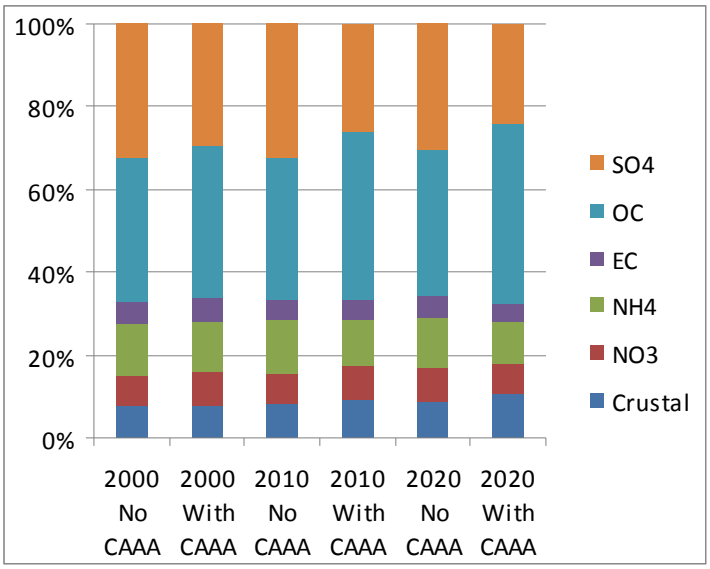
To provide further confidence that the results presented in this chapter are not likely to be substantially affected by the possibility that $PM_{2.5}$ species exhibit differential toxicity, the Project Team developed and evaluated estimates of the overall population-weighted exposure to PM species. The results are presented in Table 5-3 below, and graphically in the two panels of the accompanying Figure 5-1. The results in Figure 5-1indicate that the population-weighted composition of fine particulate matter is affected by the control strategies applied in the CAAA, but the changes are relatively modest.[51] We therefore conclude that, even if species-specific toxicity estimates could be derived from the existing literature, applying them in this study would not have a large effect on the mortality results presented later in this chapter.

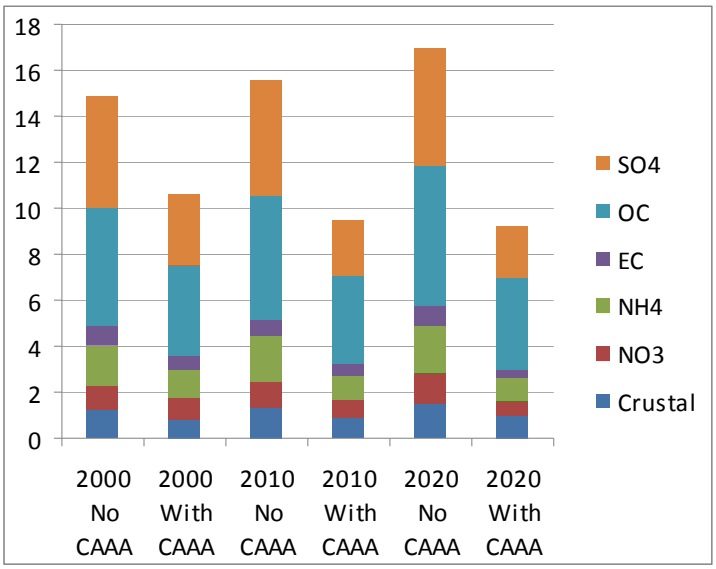
TABLE 5-3. ESTIMATED POPULATION WEIGHTED EXPOSURE FOR $PM_{2.5}$ SPECIES (MICROGRAMS PER CUBIC METER)

	2000 NO CAAA	2000 WITH CAAA	2010 NO CAAA	2010 WITH CAAA	2020 NO CAAA	2020 WITH CAAA
Crustal	1.18	0.82	1.27	0.86	1.51	0.96
NO_3	1.06	0.89	1.17	0.81	1.32	0.69
NH_4	1.87	1.26	1.96	1.03	2.05	0.92
EC	0.74	0.62	0.77	0.48	0.9	0.41
OC	5.18	3.94	5.36	3.86	6.02	3.99
SO_4	4.84	3.11	5.02	2.48	5.17	2.22

[51] Note that data presented in Table 5-3 are for the most important PM2.5 components; some less important species, with lower concentrations, are omitted.

FIGURE 5-1. DISTRIBUTION OF POPULATION WEIGHTED EXPOSURE TO $PM_{2.5}$ SPECIES AS PERCENTAGE OF TOTAL (TOP PANEL) AND IN MICROGRAMS PER CUBIC METER (BOTTOM PANEL)





Ozone Mortality C-R Function

Several recent epidemiological studies suggest that ozone exposure likely contributes to premature mortality.[52] Epidemiological data are also supported by recent human and

[52] See, for example, National Research Council, 2008, *Estimating Mortality Risk Reduction and Economic Benefits from Controlling Ozone Air Pollution.* A key recommendation of this NAS panel was that ozone mortality estimates from available epidemiological studies represent a separate and additive effect to those from PM/mortality epidemiological studies.

animal experimental data, which suggestive evidence for plausible pathways by which the risk of respiratory or cardiovascular mortality could be increased by ambient ozone.

Multiple time-series epidemiological studies explore the relationship between short-term ozone exposure and premature mortality. Most notably, a large multi-city study known as the National Morbidity, Mortality, and Air Pollution Study (NMMAPS) was designed to explore the association between several pollutants, including ozone, and daily mortality that focused on large cities across the US where levels of pollutants were varied (Samet et al., 2000). Three recently published studies based on the NMMAPS database that focus on the ozone/premature mortality relationship include Bell et al. (2004) (95 U.S. cities), Schwartz et al. (2005) (14 U.S. cities), and Huang et al. (2005) (19 U.S. cities).

In addition to these multi-city estimates, C-R functions for short-term ozone mortality can be derived from meta-analyses, which combine the results of several studies. Three meta-analyses were performed to obtain a summary estimate of ozone-related mortality risks and to attempt to describe heterogeneity in risk estimates (Ito et al., 2005; Levy et al., 2005; Bell et al., 2005). Each of these studies used different statistical techniques and datasets and examined statistical concerns, such as confounding, collinearity and possible interaction effects.[53]

In general, effect estimates from the meta-analyses are higher than the NMMAPS-based results. This could potentially be due to publication bias, as the meta-analyses relied solely on published studies, which could be more likely to contain statistically significant results. NMMAPS generally produces lower estimates than other epidemiological time-series studies, however, which could reflect specific methodological choices made by these investigators. Since these studies are associated with different strengths and limitations and no single study emerges as the most suitable to use as the basis for our primary estimate, we opted to use a pooled estimate, equally weighting the C-R functions from all six of these studies.

In addition to time-series epidemiological studies, a limited number of studies examine the cumulative effect of long-term exposure to ozone on mortality. One such recent study (Jerrett et al., 2009) used study population data from the ACS cohort study along with ozone monitoring data and reported a significant association between deaths from respiratory causes and long-term ozone exposure. In a recent review of the 812 Second Prospective Analysis methodology, the Council HES found the use of the Jerrett et al. estimate as the primary estimate premature at this time, due to a lack of corroboration from other cohort studies .[54]

[53] National Research Council (NRC) (2008). Estimating Mortality Risk Reduction and Economic Benefits from Controlling Ozone Air Pollution. The National Academies Press, Washington, DC.

[54] See "Health Effects Subcommittee of the Council. Review of EPA's Draft Health Benefits of the Second Section 812 Prospective Study of the Clean Air Act." (EPA-COUNCIL-10-001), available at http://www.epa.gov/advisorycouncilcaa

HEALTH VALUATION FUNCTIONS

In environmental benefit-cost analyses, the dollar value of an environmental benefit, such as improved health or avoidance of a case of illness, is the dollar amount necessary such that the person would be indifferent between experiencing the benefit and possessing the money. In most cases, the dollar amount required to compensate a person for exposure to an adverse effect is roughly the same as the dollar amount a person is willing to pay to avoid the effect. Therefore, in economic terms, the "willingness-to-pay" (WTP) is the appropriate measure of the value of avoiding an adverse effect. For example, the value of an avoided respiratory symptom would be a person's WTP to avoid that symptom.

For most goods, WTP can be observed by examining actual market transactions. For example, if a gallon of bottled drinking water sells for one dollar, it can be observed that at least those persons who choose to purchase that good are willing to pay at least one dollar for the water. For goods that are not exchanged in the market, such as most environmental goods, valuation is not so straightforward. Nevertheless, a value may be inferred from observed behavior, such as through estimation of the WTP for mortality risk reductions based on observed sales and prices of products that result in similar effects or risk reductions, (e.g., non-toxic cleaners or bike helmets). Alternatively, surveys may be used in an attempt to directly elicit WTP for an environmental improvement. Wherever possible in this analysis, we use estimates of mean WTP. In cases where WTP estimates are not available, we use the cost of treating or mitigating the effect as an alternative estimate.

For example, for the valuation of hospital admissions we use the avoided medical costs as an estimate of the value of avoiding the health effects causing the admission. These costs of illness (COI) estimates generally understate the true value of avoiding a health effect. They tend to reflect the direct expenditures related to treatment and not the utility an individual derives from improved health status or avoided health effect. We use a range of values for most environmental effects, to support the primary central estimate of net benefits. Table 5-4 summarizes the mean unit value estimates that we use in this analysis.

Valuation of Premature Mortality

Some forms of air pollution increase the probability that individuals will die prematurely. We use C-R functions for mortality that express the increase in mortality risk as cases of "excess premature mortality" per year. The benefit provided by air pollution reductions, however, is the avoidance of small increases in the risk of mortality. By summing individuals WTP to avoid small increases in risk over enough individuals, we can infer the value of a statistical premature death avoided.[55] For expository purposes, we express this valuation as "dollars per mortality avoided," or "value of a statistical life" (VSL),

[55] Because people are valuing small decreases in the risk of premature mortality, it is expected deaths that are inferred. For example, suppose that a given reduction in pollution confers on each exposed individual a decrease in mortal risk of 1/100,000. Then among 100,000 such individuals, one fewer individual can be expected to die prematurely. If the average individual's WTP for that risk reduction is $50, then the implied value of a statistical premature death avoided in that population is $50 x 100,000 = $5 million.

even though the actual valuation is of small changes in mortality risk experienced by a large number of people. The economic benefits associated with avoiding premature mortality were the largest category of monetized benefits in the First Prospective Analysis and continue to be the largest source of monetized benefits for this Second Prospective Analysis. Mortality benefits, however, are also the largest contributor to the range of uncertainty in monetized benefits.

Because avoided premature mortality benefits are such an important part of this study's results and findings, the remainder of this section provides an expanded discussion of some of the issues in valuing the avoidance of mortality risks from air pollution. We first discuss some characteristics of an "ideal" measure of the value of mortality risk reductions from air pollution, and then review several dimensions in which the current estimates fall short of the ideal measure for this study. For a more detailed discussion of the factors affecting the valuation of premature mortality see the Uncertainty section of this chapter and the *Uncertainty Analyses to Support the Second Section 812 Benefit-Cost Analysis of the Clean Air Act*.

The health science literature on air pollution indicates that several human characteristics affect the degree to which mortality risk affects an individual. For example, some age groups appear to be more susceptible to air pollution than others (e.g., the elderly and children). Health status prior to exposure also affects susceptibility. At-risk individuals include those who have suffered strokes or are suffering from cardiovascular disease and angina (Rowlatt, et al. 1998). An ideal economic benefits estimate of mortality risk reduction would reflect these human characteristics, in addition to an individual's WTP to improve one's own chances of survival plus WTP to improve other individuals' survival rates.[56] The ideal measure would also take into account the specific nature of the risk reduction that is provided to individuals, as well as the context in which risk is reduced. To measure this value, it is important to assess how reductions in air pollution reduce the risk of dying from the time that reductions take effect onward, and how individuals value these changes. Each individual's survival curve, or the probability of surviving beyond a given age, should shift as a result of an environmental quality improvement. For example, changing the current probability of survival for an individual also shifts future probabilities of that individual's survival. This probability shift will differ across individuals because survival curves are dependent on such characteristics as age, health state, and the current age to which the individual is likely to survive.

[56] For a more detailed discussion of altruistic values related to the value of life, see Jones-Lee (1992).

TABLE 5-4. UNIT VALUES FOR ECONOMIC VALUATION OF HEALTH ENDPOINTS (2006$)

HEALTH ENDPOINT	CENTRAL ESTIMATE OF VALUE PER STATISTICAL INCIDENCE		DERIVATION OF DISTRIBUTIONS OF ESTIMATES
	1990 INCOME LEVEL	2020 INCOME LEVEL	
Premature Mortality (Value of a Statistical Life)	$7,400,000	$8,900,000	Mean Value of Statistical Life (VSL) based 26 wage-risk and contingent valuation studies. A Weibull distribution, with a mean of $7.4 million (in 2006$), provided the best fit to the 26 estimates. Note that VSL represents the value of a small change in mortality risk aggregated over the affected population.
Chronic Bronchitis (CB)	$399,000	$490,000	The WTP to avoid a case of pollution-related CB is calculated as $WTP_x = WTP_{13} \cdot e^{-\beta \cdot (13-x)}$, where x is the severity of an average CB case, WTP13 is the WTP for a severe case of CB, and β is the parameter distribution of WTP for an air pollution-relevant, average severity-level case of CB was generated by Monte Carlo methods, drawing from each of three distributions: (1) WTP to avoid a severe case of CB is assigned a 1/9 probability of being each of the first nine deciles of the distribution of WTP responses in Viscusi et al. (1991); (2) the severity of a pollution-related case of CB (relative to the case described in the Viscusi study) is assumed to have a triangular distribution, with the most likely value at severity level 6.5 and endpoints at 1.0 and 12.0; and (3) the constant in the elasticity of WTP with respect to severity is normally distributed with mean = 0.18 and standard deviation = 0.0669 (from Krupnick and Cropper (1992)). This process and the rationale for choosing it is described in detail in the Costs and Benefits of the Clean Air Act, 1990 to 2010 (EPA, 1999).
Nonfatal Myocardial Infarction (heart attack) 7% discount rate Age 0-24 Age 25-44 Age 45-54 Age 55-65 Age 66 and over	 $84,171 $93,802 $98,366 $166,222 $84,171		No distributional information available. Age-specific cost-of-illness values reflect lost earnings and direct medical costs over a 5-year period following a nonfatal MI. Lost earnings estimates are based on Cropper and Krupnick (1990). Direct medical costs are based on simple average of estimates from Russell et al. (1998) and Wittels et al. (1990). Lost earnings: Cropper and Krupnick (1990). Present discounted value of 5 years of lost earnings (2006$): age of onset: at 7%[a] 25-44 $9,631 45-54 $14,195 55-65 $82,051 Direct medical expenses: An average of (2006$): 1. Wittels et al. (1990) ($141,124—no discounting) 2. Russell et al. (1998), 5-year period ($28,787 at 3% discount rate; $27,217 at 7% discount rate)

HEALTH ENDPOINT	CENTRAL ESTIMATE OF VALUE PER STATISTICAL INCIDENCE		DERIVATION OF DISTRIBUTIONS OF ESTIMATES
	1990 INCOME LEVEL	2020 INCOME LEVEL	
Hospital Admissions			
All respiratory (ages 65+)	$23,711	$23,711	No distributions available. The COI point estimates (lost earnings plus direct medical costs) are based on ICD-9 code level information (e.g., average hospital care costs and average length of hospital stay) reported in Agency for Healthcare Research and Quality, 2000 (www.ahrq.gov). As noted in the text, no adjustments are made to cost of illness values for income growth.
All respiratory (ages 0-2)	$10,002	$10,002	
Chronic Obstructive Pulmonary Disease (COPD) (ages 65+)	$17,308	$17,308	
Asthma Admissions (ages <65)	$10,040	$10,040	
Pneumonia Admissions (ages 65+)	$23,004	$23,004	
COPD, less asthma (ages 20-64)	$15,903	$15,903	
All Cardiovascular (ages 65+)	$27,319	$27,319	
All Cardiovascular (ages 20-64)	$29,364	$29,364	
Ischemic Heart Disease (ages 65+)	$33,357	$33,357	
Dysrhythmia (ages 65+)	$19,643	$19,643	
Congestive Heart Failure (ages 65+)	$19,619	$19,619	
Emergency Room Visits for Asthma	$369	$369	No distributional information available. Simple average of two unit COI values (2006$): (1) $401.62, from Smith et al. (1997) and (2) $336.03, from Stanford et al. (1999). As noted in the text, no adjustments are made to cost of illness values for income growth.

HEALTH ENDPOINT	CENTRAL ESTIMATE OF VALUE PER STATISTICAL INCIDENCE		DERIVATION OF DISTRIBUTIONS OF ESTIMATES
	1990 INCOME LEVEL	2020 INCOME LEVEL	
Respiratory Ailments Not Requiring Hospitalization			
Upper Respiratory Symptoms (URS)	$28.8	$30.7	Combinations of the three symptoms for which WTP estimates are available that closely match those listed by Pope et al. result in seven different "symptom clusters," each describing a "type" of URS. A dollar value was derived for each type of URS, using mid-range estimates of WTP (IEc, 1994) to avoid each symptom in the cluster and assuming additivity of WTPs. In the absence of information surrounding the frequency with which each of the seven types of URS occurs within the URS symptom complex, we assumed a uniform distribution between $10.8 and $50.5 (2006$).
Lower Respiratory Symptoms (LRS)	$18	$19	Combinations of the four symptoms for which WTP estimates are available that closely match those listed by Schwartz et al. result in 11 different "symptom clusters," each describing a "type" of LRS. A dollar value was derived for each type of LRS, using mid-range estimates of WTP (IEc, 1994) to avoid each symptom in the cluster and assuming additivity of WTPs. The dollar value for LRS is the average of the dollar values for the 11 different types of LRS. In the absence of information surrounding the frequency with which each of the 11 types of LRS occurs within the LRS symptom complex, we assumed a uniform distribution between $8.1 and $28.6 (2006$).
Asthma Exacerbations	$50	$54	Asthma exacerbations are valued at $50 per incidence, based on the mean of average WTP estimates for the four severity definitions of a "bad asthma day," described in Rowe and Chestnut (1986). This study surveyed asthmatics to estimate WTP for avoidance of a "bad asthma day," as defined by the subjects. For purposes of valuation, an asthma exacerbation is assumed to be equivalent to a day in which asthma is moderate or worse as reported in the Rowe and Chestnut (1986) study. The value is assumed have a uniform distribution between $18.3 and $82.9 (2006$).
Acute Bronchitis	$416	$512	Assumes a 6-day episode, with the distribution of the daily value specified as uniform with the low and high values based on those recommended for related respiratory symptoms in Neumann et al. (1994). The low daily estimate of $20.5 (2006$) is the sum of the mid-range values recommended by IEc (1994) for two symptoms believed to be associated with acute bronchitis: coughing and chest tightness. The high daily estimate was taken to be twice the value of a minor respiratory restricted activity day, or $118 (2006$). The low and high daily values are multiplied by six to get the 6-day episode values.
Work Loss Days (WLDs)	Variable (U.S. median = $149)		No distribution available. Point estimate is based on county-specific median annual wages divided by 50 (assuming 2 weeks of vacation) and then by 5—to get median daily wage. U.S. Year 2000 Census, compiled by Geolytics, Inc.
Minor Restricted Activity Days (MRADs)	$59	$64	Median WTP estimate to avoid one MRAD from Tolley et al. (1986). Distribution is assumed to be triangular with a minimum of $24 and a maximum of $94, with a most likely value of $59 (2006$). Range is based on assumption that value should exceed WTP for a single mild symptom (the highest estimate for

HEALTH ENDPOINT	CENTRAL ESTIMATE OF VALUE PER STATISTICAL INCIDENCE		DERIVATION OF DISTRIBUTIONS OF ESTIMATES
	1990 INCOME LEVEL	2020 INCOME LEVEL	
			a single symptom—for eye irritation—is $24) and be less than that for a WLD. The triangular distribution acknowledges that the actual value is likely to be closer to the point estimate than either extreme.
School Loss Days	$89	$89	No distribution available. Point estimate is based on (1) the probability that, if a school child stays home from school, a parent will have to stay home from work to care for the child, and (2) the value of the parent's lost productivity. Calculated using U.S. Bureau of Census data. School loss days, similar to cost of illness estimates for emergency room visits and hospital admissions, are not adjusted for changes in longitudinal income.
a These values are presented using a seven percent discount rate for this draft report, however these results will be presented using a five percent discount rate in the final report.			

A survival curve approach provides a theoretically preferred method for valuing the economic benefits of reduced risk of premature mortality associated with reducing air pollution, but the approach does not align well with current estimates of individual willingness to pay to avoid mortal risks. We have adopted the survival curve approach in the population simulation model that we use to generate estimates of life years lost and reduced life expectancy associated with air pollution, but implementing that approach requires that we use a national measure of the change in air pollution exposure, and also does not include a valuation component. As a result, the population simulation model results are not used for the primary results.

The Project Team also considered whether other evidence might support an adjustment to the VSL used in this study, particularly to account for the age of individuals affected. In general, studies of WTP to reduce mortality risk do not provide information on how VSL varies with life expectancy, but there are a few studies that attempt to assess the impact of age on VSL.[57] Some economic models in the theoretical literature suggest that VSL follows an inverted U, rising through middle age and falling at older ages, though this model is only partially supported by the relevant empirical evidence (Johansson 2002, Hammitt 2007). For example, revealed preference studies of the wage-risk literature support the inverted-U hypothesis (Aldy and Viscusi, 2007). These studies are limited, however, in that they necessarily include only employed workers and thereby exclude the elderly and those in poor health. Stated-preference studies, which can include a broader population, yield mixed results. Some suggest little or no effect of age on VSL and others suggest a modest decrease at older ages (Krupnick, 2007). Some studies, such as those by DeShazo (with Cameron, 2004), Chestnut (et al., 2004), and Alberini (et al., 2004) have found the effect of age on VSL to be statistically weak, suggesting a flatter relationship of VSL and age with a decline in VSL at much older ages. Consistent with Hammitt (2007), we conclude that there is insufficient evidence in the empirical VSL literature at this time to support an adjustment to the base VSL for the age of the affected population.

In sum, the economic valuation literature does not yet include good estimates of the value of this particular risk reduction commodity. As a result, in this study we value avoided premature mortality risk using the value of statistical life approach. As in the First Prospective Analysis, we use a mortality risk valuation estimate which is based on an analysis of 26 policy-relevant value-of-life studies (see Table 5-5). Five of the 26 studies are contingent valuation (CV) studies, which directly solicit WTP information from subjects; the remaining studies are wage-risk studies, which base WTP estimates on estimates of the additional compensation demanded in the labor market for riskier jobs.

[57] For a review of these studies, and this issue in particular see, for example, Hammitt (2007), Aldy and Viscusi (2007), and Krupnick (2007).

We used the best estimate from each of the 26 studies to construct a distribution of mortality risk valuation estimates for the section 812 study. A Weibull distribution, with a mean of $7.4 million (in 2006$), provided the best fit to the 26 estimates.

An additional uncertainty that is pertinent for this study's results is the potential bias in using estimates of VSL that correspond to small changes in risk for the relatively larger changes in mortality risk estimated in this study. As the results section below indicates, the large changes in $PM_{2.5}$ that represent the difference between the *with-CAAA* and *without-CAAA* scenarios by 2020 lead to a change in annual mortality risk of approximately 1 in one thousand for adults aged 25 and older, or 7 in ten thousand for all ages, which corresponds to a roughly ten percent change from the national baseline mortality risk of approximately 1 in one hundred.[58] This risk change is large compared to the mean mortality risk faced by subjects in the wage-risk studies that underlie our estimate of VSL – the mean risk for individual studies in our group of 26 varies from 4 in 10,000 to 5 in 100,000, although clearly some individuals in those samples face higher individual risks.[59] Economic theory suggests that individuals' incremental willingness to pay to reduce mortality risk declines with an increasing size of the risk increment, but the rate at which it declines is uncertain.[60] Estimates of differences in VSL across individuals in wage-risk study samples are also not informative, because they reflect variability in individuals' risk tolerance rather than differences in WTP across a population for varying increments of risk reduction. Further, it is not clear whether, in this context, the external risk imposed by air polluters on the exposed population implies that willingness-to-accept-compensation (WTAC) to forgo air quality improvement may be the more relevant measure. There is some theoretical work which suggests that, while valuation of a large risk increment may lead WTP estimates to be overestimated, it may lead WTAC estimates to be underestimated.[61] Although the Project Team remains concerned that there may be a potentially important disparity between the large increment of risk valued in this study and relatively smaller increments of risk valued in the underlying VSL literature, we conclude that the current literature does not provide a sufficient basis to make a quantitative adjustment to our base VSL values to account for this factor.

When valuing premature mortality for PM, we assume a lag between reduced PM exposure and the resulting reductions in incidences of premature mortality.[62] This lag

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[58] Note that we are here reporting the total risk change that results from changes in 2020 exposures. As outlined below, this risk is not immediate - instead we model this risk as occurring with latency over the course of the ensuing 20 years.

[59] See W. Kip Viscusi, 1992, *Fatal Tradeoffs*, (Oxford University Press: New York), Table 4-1.

[60] This issue is discussed to some extent in Thomas J. Kniesner, W. Kip Viscusi, and James P. Ziliak (2010), "Policy relevant heterogeneity in the value of statistical life: New evidence from panel data quantile regressions," *Journal of Risk and Uncertainty* 40:15–31.

[61] See discussion papers provided in support of a recent EPA risk valuation workshop at http://www.epa.gov/air/toxicair/2009workshop.html (accessed November 24, 2010) in particular the papers and presentations by W. Kip Viscusi.

[62] Note that we do not employ a cessation lag for ozone mortality due to our reliance on short-term studies to estimate these benefits.

does not affect the number of estimated incidences, but does alter the monetization of benefits. Because we value the "event" rather than the present risk, in this analysis we assume that the value of avoided future premature mortality should be discounted. The primary estimate reflects a 20-year distributed lag structure, which was recommended by the Council HES (2004). Under this scenario, 30 percent of the mortality reductions occur in the first year, 50 percent occur equally in years two through five, and the remaining 20 percent occur equally in years six through 20. Our valuation of avoided premature mortality applies a five percent discount rate to the lagged estimates over the periods 2000 to 2020, 2010 to 2030 and 2020 to 2040. We discount over the period between the initial PM exposure change (2000, 2010, or 2020) and the timing of the resulting change in incidence.

TABLE 5-5. SUMMARY OF MORTALITY VALUATION ESTIMATES PER STATISTICAL INCIDENCE OF PREMATURE MORTALITY (MILLIONS OF 2006$)

STUDY	TYPE OF ESTIMATE	VALUATION (MILLIONS 2006$)
Kneisner and Leeth (1991) (US)	Labor Market	$ 0.9
Smith and Gilbert (1984)	Labor Market	$ 1.1
Dillingham (1985)	Labor Market	$ 1.4
Butler (1983)	Labor Market	$ 1.7
Miller and Guria (1991)	Contingent Valuation	$ 1.9
Moore and Viscusi (1988a)	Labor Market	$ 3.9
Viscusi, Magat, and Huber (1991b)	Contingent Valuation	$ 4.2
Gegax et al. (1985)	Contingent Valuation	$ 5.1
Marin and Psacharopoulos (1982)	Labor Market	$ 4.3
Kneisner and Leeth (1991) (Australia)	Labor Market	$ 5.1
Gerking, de Haan, and Schulze (1988)	Contingent Valuation	$ 5.2
Cousineau, Lacroix, and Girard (1988)	Labor Market	$ 5.6
Jones-Lee (1989)	Contingent Valuation	$ 5.9
Dillingham (1985)	Labor Market	$ 6.0
Viscusi (1978, 1979)	Labor Market	$ 6.3
R.S. Smith (1976)	Labor Market	$ 7.1
V.K. Smith (1976)	Labor Market	$ 7.2
Olson (1981)	Labor Market	$ 8.0
Viscusi (1981)	Labor Market	$ 10.0
R.S. Smith (1974)	Labor Market	$ 11.1
Moore and Viscusi (1988a)	Labor Market	$ 11.3
Kneisner and Leeth (1991) (Japan)	Labor Market	$ 11.7
Herzog and Schlottman (1987)	Labor Market	$ 14.0
Leigh and Folson (1984)	Labor Market	$ 15.0
Leigh (1987)	Labor Market	$ 16.0
Garen (1988)	Labor Market	$ 20.8
Source: Viscusi, 1992 and EPA analysis.		

HEALTH EFFECTS MODELING RESULTS

This section presents a summary of the differences in health effects resulting from improvements in air quality between the *with-CAAA* and the *without-CAAA* scenarios. Table 5-6 summarizes the CAAA-related avoided health effects in 2020 for each health endpoint included in the analysis and the associated monetary benefits. The mean estimate is presented as the primary central estimate, the 5th percentile observation is presented as the primary low estimate and the 95th percentile is presented as the primary high estimate.[63] In general, because the differences in air quality between the *with-* and *without-CAAA* scenarios are expected to increase from 1990 to 2020 and because population is also expected to increase during that time, the health benefits attributable to the CAAA are expected to increase consistently from 1990 to 2020. More detailed results can be found in *Health and Welfare Benefits Analyses to Support the Second Section 812 Benefit-Cost Analysis of the Clean Air Act*, February 2011.

AVOIDED PREMATURE MORTALITY ESTIMATES

Our analysis indicates that the benefit of avoided premature mortality risk reduction dominates the overall net benefit estimate. This is, in part, due to the high monetary value assigned to the avoidance of premature mortality relative to the unit value of other health endpoints. As described in detail in this chapter, there are also significant reductions in other short-term and chronic health effects and a substantial number of health benefits that we could not quantify or monetize. Mean results for all three target years are provided in Table 5-6, and the mean, primary low, and primary high estimates for 2020 are presented in Table 5-7.

As shown in Table 5-7, our primary central estimate implies that PM and ozone reductions due to the CAAA in 2020 will result in 230,000 avoided deaths, with a primary low and primary high bound on this estimate of 45,000 and 490,000 avoided deaths, respectively. These avoided deaths are valued at $1.8 trillion (2006$), with primary low and primary high bounds on this estimate of $170 billion to $5.5 trillion. To provide some context for these large values, we estimated the per capita risk change and monetized benefits. The estimated 230,000 avoided deaths in 2020 are equivalent to a total annual mortality risk reduction of 6.8 x 10^{-4} for the full estimated US population in 2020. With approximately 2.4 million estimated deaths in 2002, the avoided deaths in 2020 would increase total deaths by about 9.5 percent. The 230,000 avoided deaths are about 16 percent of the total mortality from the top four causes of death in the US in 2002: heart disease (over 600,000 deaths); cancer (over 550,000 deaths); stroke (over 130,000 deaths); and chronic lower respiratory disease (just less than 130,000 deaths). The monetized benefit per capita in 2020 is about $6,000, increasing from $2,700 in 2000 and $4,200 in 2010. Monetized benefits per household would be approximately $16,000 in 2020, increasing from $7,300 in 2000 and $11,000 in 2010.

[63] The distribution of incidence results represent the uncertainty associated with the coefficient of the C-R function for each health endpoint. The distribution around the monetized benefits estimate reflects both uncertainty in the incidence as well as uncertainty associated with the valuation estimate.

TABLE 5-6. MEAN CAAA-RELATED AVOIDED ANNUAL INCIDENCE OF HEALTH EFFECTS AND ASSOCIATED MONETARY VALUATION IN 2000, 2010, AND 2020

		INCIDENCE			VALUATION (MILLIONS 2006$)		
ENDPOINT	POLLUTANT	2000	2010	2020	2000	2010	2020
Mortality							
Mortality - adults 30 and older	PM	110,000	160,000	230,000	$710,000	$1,200,000	$1,700,000
Mortality - infant	PM	160	230	280	$1,300	$1,900	$2,500
Mortality - all ages	Ozone	1,400	4,300	7,100	$10,000	$33,000	$55,000
Morbidity							
Chronic Bronchitis	PM	34,000	54,000	75,000	$14,000	$24,000	$36,000
Non-fatal Myocardial Infarction	PM	79,000	130,000	200,000	$8,100	$14,000	$21,000
Hospital Admissions, Respiratory	PM, Ozone	20,000	41,000	66,000	$290	$640	$1,100
Hospital Admissions, Cardiovascular	PM	26,000	45,000	69,000	$760	$1,300	$2,000
Emergency Room Visits, Respiratory	PM, Ozone	58,000	86,000	120,000	$21	$32	$44
Acute Bronchitis	PM	96,000	130,000	180,000	$42	$61	$94
Lower Respiratory Symptoms	PM	1,200,000	1,700,000	2,300,000	$22	$30	$42
Upper Respiratory Symptoms	PM	980,000	1,400,000	2,000,000	$30	$42	$60
Asthma Exacerbation	PM	1,200,000	1,700,000	2,400,000	$61	$90	$130
Minor Restricted Activity Days	PM, Ozone	49,000,000	84,000,000	110,000,000	$2,900	$4,900	$6,700
Work Loss Days	PM	8,000,000	13,000,000	17,000,000	$1,300	$2,000	$2,700
School Loss Days	Ozone	1,200,000	3,200,000	5,400,000	$110	$290	$480
Outdoor Worker Productivity	Ozone	N/A	N/A	N/A	$30	$100	$170

Note: All incidence and valuation results are rounded to two significant figures. All estimates are annual estimates for individual target years of the analysis. Mortality valuation estimates reflect a delay in mortality incidence from the time of the exposure change in the target year, reflecting application of a 20-year distributed cessation lag as described in the text and a 5 percent discount rate.

It may also be worth noting that most of the changes in mortality risk we estimate occur in locations where both the *with-CAAA* and *without-CAAA* concentrations are above the lowest measured level (LML) in the underlying epidemiological studies. As noted above, standard EPA practice is to estimate PM-related mortality without applying an assumed concentration threshold, and the LML is itself not a threshold either. The LML approach summarizes the distribution of avoided PM mortality impacts according to the baseline $PM_{2.5}$ levels experienced by the population receiving the $PM_{2.5}$ mortality benefit. Unlike an assumed threshold, the LML is a characterization of the fraction of benefits that are more uncertain. In general, our confidence in the estimated PM mortality decreases as we

consider air quality levels further below the LML in the two underlying PM-mortality epidemiological studies, Pope et al. (2002) and Laden et al. (2006).

TABLE 5-7. CAAA-RELATED AVOIDED ANNUAL INCIDENCE OF HEALTH EFFECTS AND ASSOCIATED MONETARY VALUATION IN 2020

		INCIDENCE			VALUATION (MILLIONS 2006$)		
ENDPOINT	POLLUTANT	5TH %ILE	MEAN	95TH %ILE	5TH %ILE	MEAN	95TH %ILE
Mortality							
Mortality[1]	PM, Ozone	45,000	230,000	490,000	$170,000	$1,800,000	$5,500,000
Morbidity							
Chronic Bronchitis	PM	12,000	75,000	130,000	$3,100	$36,000	$130,000
Non-fatal Myocardial Infarction	PM	80,000	200,000	300,000	$6,200	$21,000	$48,000
Hospital Admissions, Respiratory	PM, Ozone	24,000	66,000	110,000	$320	$1,100	$1,800
Hospital Admissions, Cardiovascular	PM	52,000	69,000	84,000	$1,400	$2,000	$2,600
Emergency Room Visits, Respiratory	PM, Ozone	64,000	120,000	180,000	$22	$44	$69
Acute Bronchitis	PM	-7,000	180,000	340,000	-$4	$94	$220
Lower Respiratory Symptoms	PM	1,200,000	2,300,000	3,300,000	$18	$42	$76
Upper Respiratory Symptoms	PM	620,000	2,000,000	3,300,000	$17	$60	$130
Asthma Exacerbation	PM	270,000	2,400,000	6,700,000	$15	$130	$390
Minor Restricted Activity Days	PM, Ozone	91,000,000	110,000,000	140,000,000	$3,800	$6,700	$10,000
Work Loss Days	PM	15,000,000	17,000,000	19,000,000	$2,300	$2,700	$3,000
School Loss Days	Ozone	2,200,000	5,400,000	8,600,000	$190	$480	$770
Outdoor Worker Productivity	Ozone	N/A	N/A	N/A	$170	$170	$170

Notes:
[1] Includes adult and infant mortality for PM and all ages for ozone.
All incidence and valuation results are rounded to two significant figures. Mortality valuation estimates reflect a delay in mortality incidence from the time of the exposure change in the target year, reflecting application of a 20-year distributed cessation lag as described in the text and a 5 percent discount rate.

Using the Pope et al. (2002) study, approximately 98 percent of the mortality impacts occur among populations with exposure to annual mean $PM_{2.5}$ levels at or above the LML of 7.5 $\mu g/m^3$. Using the Laden et al. (2006) study, approximately 91 percent of the mortality impacts occur at or above the LML of 10 $\mu g/m^3$. These analyses confirm that the great majority of the mortality benefits occur at or above the cohort study LMLs.