

ADVISORY COUNCIL ON CLEAN AIR COMPLIANCE ANALYSIS

Review Background and Charge Questions

May 4-5, 2010 Meeting

Review Background

Section 812 of the Clean Air Act Amendments of 1990 (CAAA90) requires the Environmental Protection Agency to evaluate the impacts of the Clean Air Act on the public health, economy and environment of the United States. The Section 812 benefit-cost studies are a unique series of EPA analyses. Unlike routine Regulatory Impact Analyses (RIAs) which focus on the incremental effect of proposed new rules relative to a continually changing, prevailing policy baseline, the 812 studies are intended to evaluate the benefits and costs of the Clean Air Act as a whole relative to a consistent baseline. In addition, Congress expressed its intent that the requirement for comprehensive and rigorous Section 812 studies should encourage and enable EPA to develop and continually refine its capabilities in clean air program assessment. Congress' stated objective was to ensure EPA could provide better information on clean air program benefits and costs in support of the next round of Clean Air Act reauthorization, whenever that might occur.

Section 812 also established the Council on Clean Air Compliance Analysis (the Council) to review and advise the Agency on issues of data, methodology, and utility of the required benefit-cost studies. The Council is supported by three technical subcommittees which advise the Council on emissions and air quality modeling, ecological effects assessment, and human health effect estimation. The technical subcommittees help the Council ensure its advice to the Agency meets the statutory objective of broad, multi-disciplinary review.

The Council subcommittees have each met in recent months to review components of the 812 Second Prospective Study for which they have particular expertise. Now that the three technical subcommittees have completed or nearly completed their reviews, the purposes of the May 4-5, 2010 review meeting of the parent Council are to—

1. review specific supporting analyses for which the Council itself has particular expertise, including the revised direct cost, macroeconomic modeling, welfare effect, economic valuation, and uncertainty analyses;
2. consider the results of reviews by the Council subcommittees; and
3. review a preliminary draft of an overall report which integrates the analytical components comprising the Section 812 Second Prospective Study.

Following the May 4-5 meeting, the 812 Project Team will prepare a revised draft integrated report that draws upon the full range of recent advice from the Council and its subcommittees. This revised 812 Second Prospective Report will be submitted to the Council for final review, along with public outreach and education materials (e.g., a summary brochure, a web-based report with links to underlying reports and data sets, Google Earth visualizations of the 812 Second Prospective Study results).

Charge to the Committee

The Clean Air Act Amendments of 1990 charge the Council to review and make recommendations in three areas: (1) data to be used in the analyses, (2) methodologies used in the analyses, and (3) the overall findings of the study and their validity. For the current Council review, the charge questions are as follows:

Review Charges. EPA respectfully requests that the Council review the draft stand-alone reports and the preliminary draft integrated report components listed in the “Review Documents” section below. Earlier drafts of some of these study elements have been reviewed in whole or in part by the Council or one of its subcommittees (see Table 1). Consistent with the statutory language defining the role of the Council in reviewing the 812 studies, EPA respectfully submits the following charge questions to the Council for the present review:

1. Does the Council support the data choices made by the 812 Project Team for the development of the stand-alone supporting analyses and the integrated report components listed below? If not, are there alternative data sets that should have been used?
2. Does the Council support the methodological choices made for analyzing the data referenced in Charge Question 1? If not, are there alternative methodologies that should have been used?
3. Does the Council have advice regarding potential revisions to the preliminary draft integrated report that might enhance the utility of the final version of the study?

The general charge questions for review of the 812 studies have traditionally been interpreted as an invitation to the Council to evaluate and consider rendering advice on any aspect of the analytical design, implementation, and results which may be considered appropriate by the Council chair. Therefore, EPA welcomes any information or recommendations from the Council on any aspect of the 812 Second Prospective and related efforts, including advice which pertains to the current study or which might improve future Agency efforts pursuant to broad-scale program assessments similar to the present study.

Review Documents

The following documents are submitted for review by the Council during the May 4-5, 2010 meeting:

1. US EPA. *The Benefits and Costs of the Clean Air Act: 1990 to 2020: Preliminary Draft Report*, April 2010.

[Note: This is a preliminary draft. The total benefits estimates are currently undergoing revision and are marked in the draft as “[pending].” As soon as revised estimates are available (and prior to the May 4-5, 2010 meeting), replacement pages will be provided.]

2. Industrial Economics, Inc. *Health and Welfare Benefits Analyses to Support the Second Section 812 Benefit-Cost Analysis of the Clean Air Act: Draft Report*, prepared for U.S. EPA, Office of Air and Radiation, April 2010.

3. Industrial Economics, Inc. *Uncertainty Analyses to Support the Second Section 812 Benefit-Cost Analysis of the Clean Air Act: Draft Report*, prepared for U.S. EPA, Office of Air and Radiation, April 2010.
4. RTI International. *812 Economic Analyses Using the EMPAX-CGE Modeling System: Revised Draft Report*, prepared for ICF International LLC, April 2010.
5. E.H. Pechan & Associates, Inc. and Industrial Economics, Inc. *Direct Cost Estimates for the Clean Air Act Second Section 812 Prospective Analysis: Draft Report*, prepared for U.S. EPA, Office of Air and Radiation, March 2009.

Portions of the review materials have been subject to prior review by the Council and/or its subcommittees. To facilitate the Council’s review on May 4-5, 2010, Table 1 lists prior reviews for components of the review package.

Table 1. Summary of Review Materials and Prior Reviews By Council/Subcommittees

Review Document	Topic Area	Prior Review
1. Integrated Report	Partial preliminary draft overall study report. Chapter 7 will be a template only in the preliminary draft. Change pages with final results to be available on or around April 23.	
2. Benefits Report		
Chapter 1	Introduction	HES (Dec 2009)
Chapter 2	Human Health Effects and Economic Benefits	HES (Dec 2009)
Chapter 3	Visibility Improvements and Economic Valuation	
Chapter 4	Agricultural and Forest Productivity Benefits. FASOM economic value results still pending.	EES (Mar 2010) (physical effects only)
Chapter 5	Materials Damage and Economic Benefits	
Chapter 6	Summary of Primary Benefits	
Appendices	Visibility Benefits by State, Relative Yield Loss Maps and Tables	
3. Uncertainty Report		
Chapter 1	Introduction	HES (Dec 2009)
Chapter 2	Direct Cost-Related Uncertainty	Council (Mar 2007) review of Feb 2007 cost uncertainty white paper

	Chapter 3	Emissions and Air Quality Modeling Uncertainty	AQMS (Feb 2010) review of stand-alone report but not draft chapter
	Chapter 4	Concentration-Response Function Uncertainty	HES (Dec 2009)
	Chapter 5	Differential Toxicity of PM Components	HES (Dec 2009)
	Chapter 6	Particulate Matter / Mortality Cessation Lag	HES (Dec 2009)
	Chapter 7	Dynamic Population Modeling	HES (Dec 2009)
	Chapter 8	Valuation Uncertainty	
	Chapter 9	Conclusions	
	Appendices	Uncertainty Tables from First Prospective, Uncertainty Analysis of Integrated Air Quality Modeling System, Qualitative Uncertainty Summary Tables	HES (Dec 2009) (health-related uncertainty tables only) AQMS (Mar 2010) (emissions and air quality-related uncertainty tables only)
	4. CGE Modeling Report	CGE analyses: cost-only and benefits-adjusted runs	
	5. Direct Cost Report	Revised Mar 2009 version	Council (Mar 2007) review of Feb 2007 direct cost report

Additional Background on Section 812 Analysis and Review Process

In response to Section 812 requirements, EPA has published two studies as Reports to Congress: a Retrospective Study published in November 1997 examining the benefits and costs of the 1970 Clean Air Act and the 1977 Amendments from the period 1970 to 1990, and a First Prospective Study published in October 1999 which evaluated the incremental effects of 1990 Clean Air Act Amendment programs from 1990 to 2010. Currently, EPA's 812 Project Team is nearing completion of the analytical work for a study which updates and extends the First Prospective Study. This new study, commonly referred to as the Second Prospective Study, is similar in scope and design to the First Prospective Study, but incorporates many of the major programs promulgated since the 1999 publication of the First Prospective, applies more up-to-date scientific and economic information, and evaluates effects out to the year 2020.

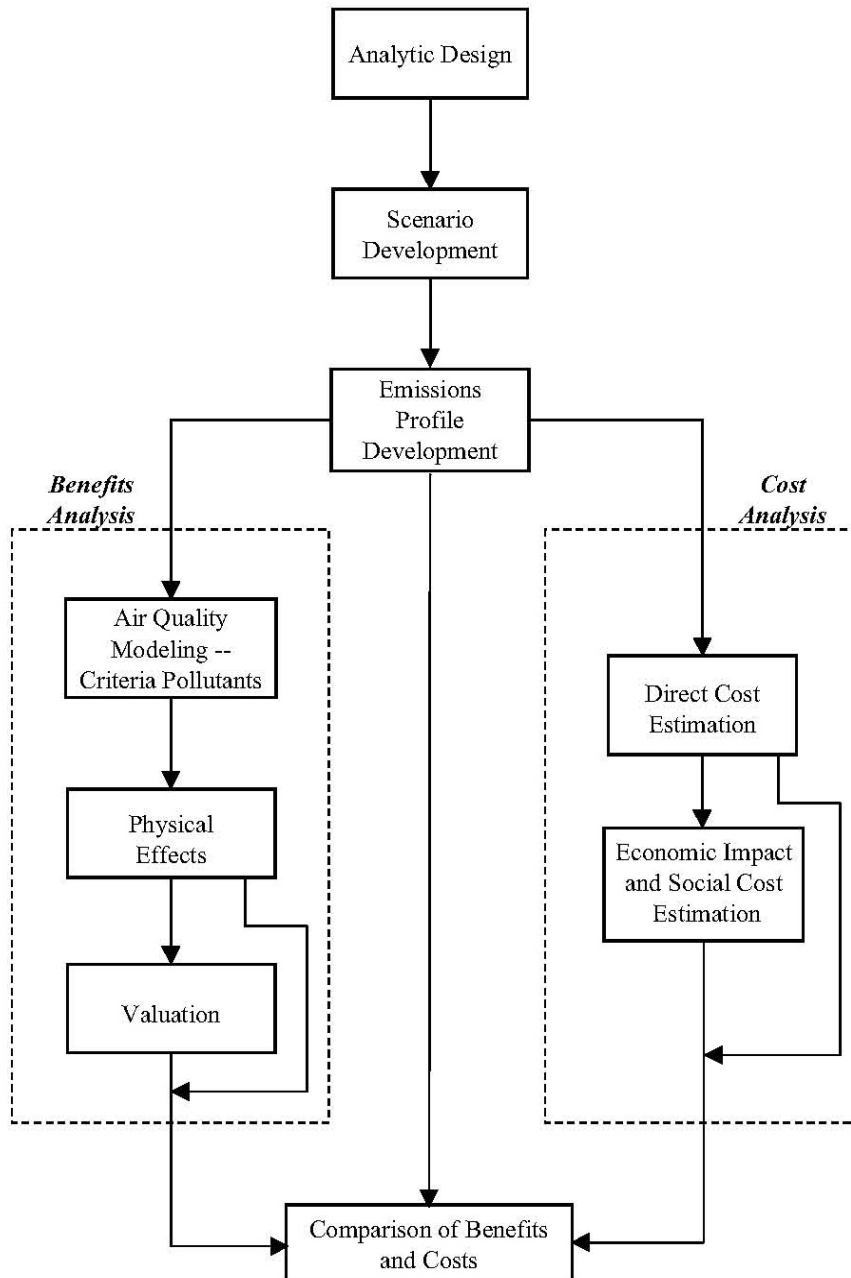
A particularly important feature of the Section 812 studies is the scope, timing, and quality of outside expert review. Section 812 of the Amendments required EPA to convene a panel of outside experts in a range of relevant disciplines to advise the Administrator on the data chosen for the analysis, the selection of models used to conduct the analysis, and the validity and utility of the resulting estimates of Clean Air Act program benefits and costs. EPA is unaware of any similarly comprehensive assessment of government programs which involves such rigorous *ex ante* review of planned methodologies and *ex post* review of analytical results. The quality of

the outside expert reviews conducted throughout the series of studies has immensely improved all three studies, enabling EPA to meet the Congressional objectives of improved EPA analytical capabilities and deeper insights into the effects of Clean Air Act programs.

Organized under the auspices of EPA's Science Advisory Board (SAB), the statutorily-prescribed Advisory Council on Clean Air Act Compliance Analysis (Council) was established in 1991 to provide this multi-disciplinary outside expert review. Subsequently, separate subcommittees were established to advise the parent Council on particular technical aspects of the studies. The Air Quality Modeling Subcommittee (AQMS) was formed to advise the Council on issues of emissions estimation, air quality modeling, and some aspects of exposure modeling. Initially, a single subcommittee was formed to advise the Council on issues associated with estimation of physical effects, including those related to both human health and environmental outcomes. This subcommittee was named the Physical Effects Review Subcommittee (PERS). Later, the name of this subcommittee was changed to the Health and Environmental Effects Subcommittee (HEES), though the disciplinary scope of its review responsibilities remained the same. Eventually, this subcommittee was split into the two separate subcommittees in place today: the Health Effects Subcommittee (HES) responsible for advising the Council on human health effects estimation and the Ecological Effects Subcommittee (EES) responsible for advising the Council on issues associated with estimation of ecological consequences.

To facilitate the *ex ante* review of planned methodologies for the Second Prospective Study, the 812 Project Team published an "analytical blueprint." An initial draft blueprint was developed by the 812 Project Team and submitted for Council, AQMS, HES, and EES review in 2001. Pursuant to the Council's advice, significant revisions were made to the analytical blueprint, and a final version was published in 2003. Following the May 2004 publication of the Council's review of the revised analytical blueprint, the Project Team initiated the analysis.

The core analytical sequence for the Second Prospective Study is summarized in the following exhibit adapted with a slight modification from the May 2003 final analytical blueprint:



This sequence of analytical components is used to estimate the differences in economic, health, and environmental outcomes between two “core scenarios.” The first core scenario, which serves as the analytical baseline, is the “*without-CAAA90*” case. This scenario freezes Clean Air Act and related State and local programs at the levels of scope and stringency which prevailed in November 1990 when the 1990 Amendments were passed, while allowing the population and economy to grow. The core scenario which is contrasted with this baseline case is the “*with-CAAA90*” scenario. For the historical years of the study’s 1990 to 2020 reference period, the *with-CAAA90* case reflects actual CAAA program implementation. For future years, the *with-CAAA90* reflects the Project Team’s judgment at the time the scenarios were locked

regarding the future implementation of Clean Air Act programs. It is the estimates for the incremental change in benefits and costs moving from the *without-CAAA90* case to the *with-CAAA90* case during the 2000, 2010, and 2020 target years which represent the principal analytical outputs of the Second Prospective Study.

In addition to the principal results provided by the core scenarios analysis, a number of supplemental analyses were conducted to provide additional information about Clean Air Act program costs and benefits. These supplemental analyses include:

1. a Hazardous Air Pollutant (HAP) benefits case study, which focused on evaluating the effect of the 1990 Clean Air Act Amendments on benzene emissions and subsequent exposure and risk changes in the Houston MSA;
2. ecological effects case studies which focused on (a) estimating changes in Adirondack lake acidification and resulting improvements in ecological service flows, and (b) characterizing potential effects on standing timber; and
3. a computerized general equilibrium (CGE) analysis assessing the broader economic consequences of the changes in direct compliance expenditures and, to a limited extent, in population health and productivity resulting from 1990 CAA Amendment programs.

All of the major components of the core scenarios analysis and all key supplemental analysis have been documented in stand-alone reports. These stand-alone reports provide detailed descriptions of the methodologies and results for each analytical component, and it is these component-specific reports which have provided the focus for interim reviews by the Council and its technical subcommittees during study implementation.

A single integrated report documenting the overall Second Prospective Study has also been issued as a preliminary draft for review by the Council. Additional ancillary publications, including a summary brochure, a web-based report with links to underlying reports and data sets, and other public education and outreach materials (e.g., Google Earth visualizations of the 812 Second Prospective Study results) will be submitted for Council review along with a revised draft of the main integrated report after May 5.

November 2010 is the 20th anniversary of the passage of the 1990 Clean Air Act Amendments. EPA has set a goal to complete the Second Prospective Study in time for its results to inform discussions and other activities associated with the 20th anniversary of the Act's most recent amendments.

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