CLIMATE CHANGE MITIGATION

EPA'S ROLE IN PRESIDENT OBAMA'S ACTION PLAN

U.S. Environmental Protection Agency

Presented by Joseph Goffman, Ben Hengst and Paul Gunning
Office of Air and Radiation

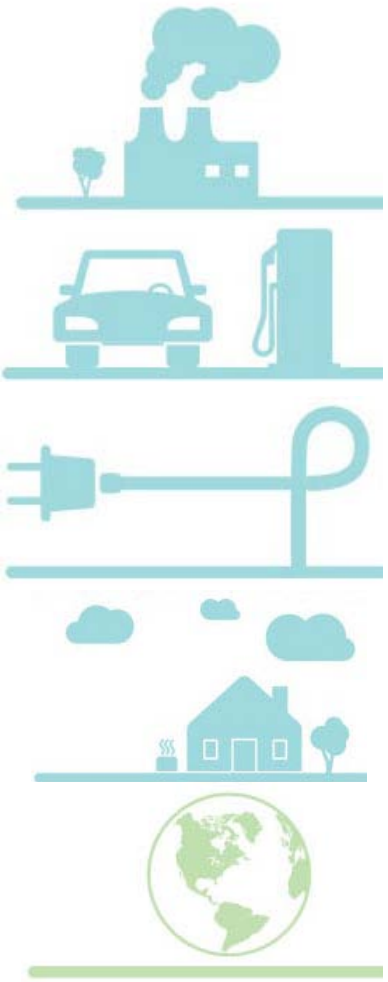
April 3, 2014

PRESIDENT OBAMA'S CLIMATE ACTION PLAN

- Calls on the federal government to work together with states, tribes, cities, industries, consumers and the international community to address one of the greatest challenges of our time.
- Reinforces the federal commitment to:
  - Cutting harmful pollution,
  - Protecting our country from the impacts of climate change, and
  - Leading an international effort to address a changing climate.

EPA MITIGATION ACTIONS UNDER PRESIDENT OBAMA'S PLAN

- Reducing carbon pollution from power plants
- Building a 21st century transportation sector
- Cutting energy waste in homes, businesses, and factories
- Reducing methane and HFCs
- Identifying vulnerabilities of key sectors to climate change
- Leading international efforts to address global climate change



CARBON POLLUTION IS THE BIGGEST DRIVER OF CLIMATE CHANGE

U.S. GREENHOUSE GAS POLLUTION INCLUDES:

CARBON DIOXIDE (CO_2) — 84%

Enters the atmosphere through burning fossil fuels (coal, natural gas, and oil), solid waste, trees and wood products, and also as a result of certain chemical reactions (e.g., manufacture of cement).

FLUORINATED GASES — 2%

Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes.

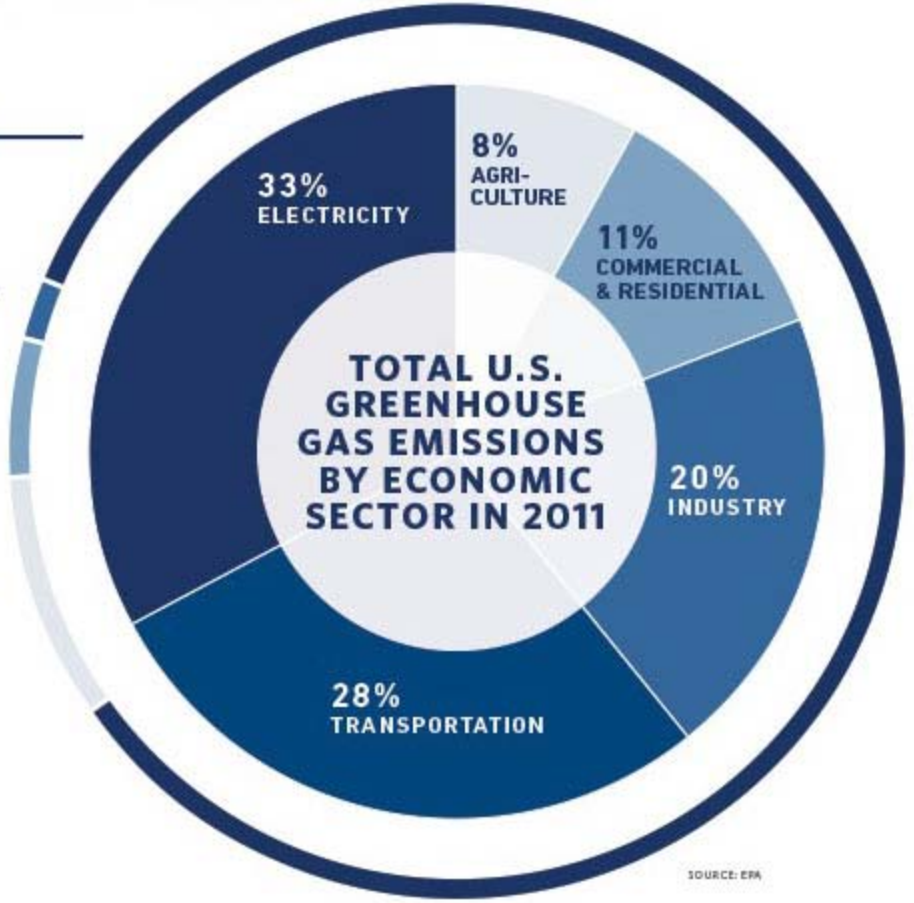
NITROUS OXIDE (N_2O) — 5%

Emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.

METHANE (CH_4) — 9%

Emitted during the production and transport of coal, natural gas, and oil as well as from landfills.

SOURCE: EPA



CARBON STANDARDS FOR NEW POWER PLANTS

- Standards for new power plants under 111(b)
  - Proposal issued on September 20, 2013, published January 8, 2014
    - Follows usual approach to setting New Source Performance Standards
    - Reflects more than 2.5 million public comments on a 2012 proposal and recent trends in the electric power sector
    - Sets separate standards for different types of new power plants
      - Defines Best System of Emission Reduction that is based on adequately demonstrated technologies
  - Public comment period closes on May 9, 2014

CARBON GUIDELINES FOR EXISTING POWER PLANTS

- Guidelines for existing power plants under 111(d)
  - Will follow EPA's normal, open and transparent regulatory process
    - Proposal: June 2014—Currently at OMB for interagency review
    - Final: June 2015
    - State 111(d) Plans: June 2016
  - Existing power plants are different than new power plants
    - Guidelines are expected to be different from, and less stringent than, the proposed standards for new plants.
  - Clean Air Act calls for EPA to work in partnership with states to address emissions from the existing fleet
    - The Clean Air Act offers proven, flexible mechanisms that provide a path forward to address carbon emissions.
    - States will develop plans to meet standards for existing sources.

CARBON GUIDELINES FOR EXISTING POWER PLANTS

- Unprecedented outreach to stakeholders will inform guidelines
  - More than 200 meetings with states, industry and other stakeholders
  - 11 public listening sessions
- Common themes heard from industry and states
  - Maximize flexibility in state plans
  - Consider multi-state options
  - Provide adequate time to submit state plans and to reduce emissions
  - Understand and address the impacts, including costs to utilities and ratepayers
  - Ensure reliability
  - Give credit for early action
  - Avoid stranding assets

BUILDING A 21ST CENTURY TRANSPORTATION SECTOR

- On February 18, 2014, President Obama directed EPA and DOT to develop and issue the next round of GHG and fuel efficiency standards for post-2018 trucks
  - Proposed standards issued by March 31, 2015
  - Final standards issued by March 31, 2016
- Builds on first round of medium- and heavy-duty standards (MY 2014-2018)
- Benefits from first round:
  - Oil: 530 million barrels of oil saved over the lifetime of model year 2014-2018 vehicles
  - GHG: 270 million metric tons CO_2 emissions reductions
  - Fuel Savings: $50 billion in total fuel savings over the lifetimes of these vehicles

BUILDING A 21ST CENTURY TRANSPORTATION SECTOR

- National Car Program
  - EPA and NHTSA jointly developed GHG/fuel economy standards for MY 2012-2016, 2017-2025 cars and trucks
  - Benefits
    - CO_2 emission reductions: 6 billion metric tons (over the lifetime of MY 2012–2025 vehicles)
    - Oil savings: 12 billion barrels (MY 2012–2025 lifetime)
    - Consumers save:
      - Americans save $1.7 trillion at the gas pump (MY 2012–2025 lifetime)
      - For a 2025 vehicle, a consumer's lifetime net gasoline savings is more than $10,000
      - Consumers save $4 in fuel for every $1 spent on technology

BUILDING A 21ST CENTURY TRANSPORTATION SECTOR

- Light Duty Greenhouse Gas: Mid-term Evaluation
  - Technical Review of Out-Year Standards (2022-2025)
  - In coordination with NHTSA and California Air Resources Board (CARB)
  - Data driven, transparent
  - Decision on the whether 2022-2025 standards are appropriate
  - Timing:
    - Technical Assessment Report for public comment by November 2017
    - EPA final determination by April 2018

BUILDING A 21ST CENTURY TRANSPORTATION SECTOR

- Renewable fuels standard
  - Annual volume rules establish required renewable fuel volumes
  - Ongoing evaluation of potential new renewable fuel pathways
- Continued support for public/private partnerships such as SmartWay

CUTTING ENERGY WASTE IN HOMES, BUSINESSES, AND FACTORIES

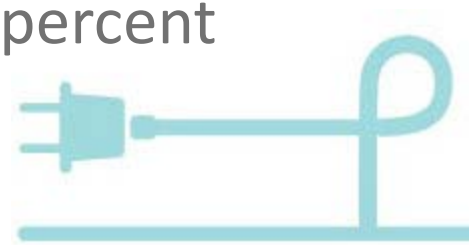
- Climate Action Plan calls for buildings to cut waste and become at least 20 percent more energy efficient by 2020.
- Partnership programs, like Energy STAR, will help achieve this goal.
  - Over ENERGY STAR's 20-year history, our partners and individuals have prevented more than 1.8 billion metric tons of GHGs. And these energy users are saving more than $230 billion on their utility bills.

PRODUCTS

- EPA continues to boost ENERGY STAR performance levels for appliances and products.
  - In 2013, EPA finalized 15 new or revised product specifications including, refrigeration, computers, data center servers and pool pumps.
  - More than 1,500 models from nearly 140 manufacturers were recognized as ENERGY STAR Most Efficient 2013, including televisions, computer monitors, clothes washers, refrigerators, heating and cooling equipment, ventilation and ceiling fans, and windows.

BUSINESSES AND FACTORIES

- Promote EPA's Portfolio Manager Tool and develop and deliver other tools and support.
  - We are launching the 2014 National Building Competition: "Battles of the Buildings," where buildings compete to see which building can save the most energy and water over the course of a year.
  - The Energy STAR Challenge for Industry assists manufacturers of all types in reducing energy use throughout their manufacturing process. Industrial sites that improve their energy efficiency by 10 percent within 5 years are recognized by EPA.

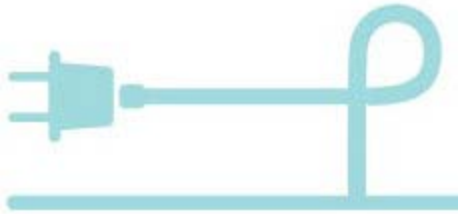


RESIDENTIAL

- Facilitate home energy improvements through:
  - Enhancing the Energy STAR Home Advisor tool to provide homeowners free, customized energy efficiency recommendations and the ability to track their home improvement activities and progress online.
  - Energy STAR's verified HVAC installation program improves the energy efficiency and comfort for homeowners purchasing a new HVAC system.
  - Providing homeowners with detailed DO-IT-YOURSELF guidance and information on how to seal and insulate their homes to improve their homes' efficiency and comfort.
  - Providing information, guidance, and tips to homeowners on maintaining their existing heating and cooling systems to improve efficiency and comfort.

MULTIFAMILY HOUSING

- Support interagency efforts to increase efficiency of multifamily housing.
  - In January, EPA and Freddie Mac signed an agreement that will help cut carbon pollution, while increasing the affordability of multifamily housing properties.
  - Across Federal Agencies, EPA works to:
    - Ensure Energy STAR guidelines are included in HUD's funding requirements.
    - Provide technical guidance for USDA's Energy Efficiency Programs.
  - EPA works with state housing finance agencies to incorporate Energy STAR guidelines into agencies' requirements.
  - EPA is developing a 1-100 ENERGY STAR score and certification to assist multifamily owners and managers with evaluating their energy performance.



REDUCING METHANE

- Interagency Strategy to Reduce Methane Emissions
  - Released on March 28, 2014.
  - Sets forth a plan to reduce both domestic and international menthane emissions.
  - Building on progress to date, EPA will take steps to further cut methane emissions from:
    - Landfills,
    - Coal Mines,
    - Agriculture Sources, and
    - Oil and Gas Sector.
  - Identifies ways to improve methane measurement and monitoring.

OIL AND GAS

- This spring, the Agency plans to release five white papers for technical review by an independent panel of experts and to receive data and technical input from the public.
  - The papers will focus on potentially significant sources of methane and VOC emissions from the oil and gas sector nationwide: hydraulically fractured oil wells, liquids unloading, leaks, pneumatic devices, and compressors.
- Later this year, the Agency will also determine what, if any regulatory authorities will apply to emissions from these sources.
  - If regulatory action is appropriate, EPA would undertake a schedule to ensure completion by the end of 2016.

NATURAL GAS STAR PROGRAM

- EPA is initiating a stakeholder review process on a new, voluntary, facility-based, methane-reduction program for leading oil and gas companies, as an additional element of its successful Natural Gas STAR Program.
  - Through the enhanced Gas STAR Gold Program, EPA will recognize facilities throughout the oil production and the entire natural gas value chain – production, gathering and boosting, processing, transmission, storage, and distribution – that make greater commitments to methane emission reductions.

LANDFILLS AND COAL MINES

- Landfills
  - This summer, EPA will release a proposed update to its current standards for new landfills. Additionally, EPA will issue an advanced notice of proposed rulemaking, to engage industry and stakeholders on a range of approaches for cutting emissions from existing landfills.
  - Through the Landfill Methane Outreach Program, EPA will further reduce methane pollution – partnering with industry, state, and local leaders, many of whom are putting the methane waste to use powering their communities.
- Coal Mines
  - EPA will continue to partner with industry through its Coalbed Methane Outreach Program to reduce institutional, technical, regulatory, and financial barriers to beneficial methane recovery and use at coal mines.

AGRICULTURE

- Agriculture
  - In June, in partnership with the dairy industry, USDA, EPA, and DOE will release a “Biogas Roadmap” outlining strategies to accelerate adoption of methane digesters and other cost-effective technologies to help reduce U.S. dairy sector methane pollution by 25 percent by 2020.

METHANE DATA

- EPA is also working to improve methane pollution data collection and measurement, which will help improve our understanding of methane pollution sources and trends and will enable more effective management opportunities.
- Key steps under the strategy to improve data quality include:
  - Developing new measurement technologies, including lower-cost emissions sensing equipment.
  - Addressing areas of higher uncertainty in bottom-up inventories through additional data collection, direct emission measurements, and research and analysis.
  - Enhancing top-down modeling based on direct measurement of atmospheric concentrations.

REDUCING HFCs

- Address HFCs through domestic action:
  - Use existing Clean Air Act authority of ***Significant New Alternatives Policy (SNAP) Program*** to approve climate-friendly chemicals, prohibit some uses of most harmful chemical alternatives.
  - Provide federal leadership by ***purchasing cleaner alternatives to HFCs*** whenever feasible and by ***transitioning to equipment using safe, more sustainable alternatives.***
- Address HFCs through international action
  - Montreal Protocol

DOMESTIC ACTION - SNAP PROGRAM

- SNAP evaluates and regulates substitutes for ozone-depleting chemicals that are being phased-out under the stratospheric ozone protection provisions of the Clean Air Act.
- SNAP reviews alternatives based on toxicity, flammability, ozone-depletion potential, global warming potential, environmental fate, and other criteria.

DOMESTIC ACTION - SNAP PROGRAM

- EPA is currently planning two separate rulemakings:
  - Rule to expand the list of new climate-friendly alternatives for air conditioning and refrigeration applications.
  - Rule to change the status of certain high-GWP HFCs where lower risk alternatives are available or potentially available.
- EPA held stakeholder meetings and sector specific workshops to engage with industry on these actions.

DOMESTIC ACTION - FEDERAL PROCUREMENT

- EPA is providing educational assistance and technical support to the Office of the Federal Environmental Executive (CEQ/OFEE), which has the primary responsibility for preparing guidance (in coordination with OMB) to Federal agencies related to alternatives to HFCs and procurement of equipment relying on those alternatives.

IDENTIFYING VULNERABILITIES OF KEY SECTORS TO CLIMATE CHANGE

- Interagency Special Report on the Impacts of Climate Change on Human Health in the U.S.
  - Coordinated by U.S. Global Change Research Program (USGCRP) Workgroup on Climate Change and Human Health (CCHHG)
- Product with High Visibility
  - Featured in the President's Climate Action Plan.
  - Policy and public health decision-makers across the country are in need of more definitive, quantitative assessments of the national burden of health impacts projected under climate change.
- Scientific Assessment of Existing Research
  - State-of-the-science on observed and projected climate change impacts on human health in the U.S.
- Interim Report to complement other Assessment Reports

SCOPE OF THE SPECIAL REPORT

- Focus on the United States, and better understanding risks to certain vulnerable populations where possible.
- Further develop climate and health indicators where possible.
- Aggregate and assess current research across multiple health impact areas:
  - E.g., Air quality impacts and extreme weather and climate events.
- Leverage existing modeling and analysis tools in USGCRP agencies to undertake additional quantitative modeling, focused where science is strong and can support national-scale impact projections.
- For additional information, including a draft prospectus: http://globalchange.gov/component/content/article/990.

LEADING INTERNATIONAL EFFORTS TO ADDRESS GLOBAL CLIMATE CHANGE

- Expand bilateral cooperation
- Combat Short-Lived Climate Pollutants
  - Climate and Clean Air Coalition
  - Arctic Council
  - Global Alliance for Clean Cookstoves
- Global Methane Initiative (GMI)
- Montreal Protocol
- Partner to implement ENERGY STAR internationally

LEADING INTERNATIONAL EFFORTS TO ADDRESS GLOBAL CLIMATE CHANGE

- Expand bilateral cooperation through the US-China Climate Change Working Group (CCWG)
  - Established in 2013 and co-chaired by Special Envoy Todd Stern (US) and NDRC Vice Chairman Xie Zhenhua (China)
  - Launched Five US-China Joint Initiatives on managing GHG Emissions in China
    - EPA is implementing two of the five Initiatives based on our expertise and leadership:
      - Collecting and Managing Greenhouse Gas Emissions Data
      - Emission Reductions from Heavy-Duty and other Vehicles (with US DOT)

LEADING INTERNATIONAL EFFORTS TO ADDRESS GLOBAL CLIMATE CHANGE

- Climate and Clean Air Coalition (CCAC)
  - EPA leads/co-leads efforts to reduce SLCPs in four sectors:
    - Oil & Gas: Reduce methane and black carbon emissions from Oil & Natural Gas production; Anticipated launch in 2014.
    - Municipal Solid Waste: Provide technical expertise and lead city-specific efforts to reduce SLCPs.
    - Transportation: Reduce black carbon through a global-low sulfur fuel strategy, country/regional emission standards, and existing fleet improvement through a Green Freight Program.
    - HFCs: Work towards significantly reducing the production/use of high-GWP HFCs through the development, commercialization, and adoption of climate-friendly alternatives.

LEADING INTERNATIONAL EFFORTS TO ADDRESS GLOBAL CLIMATE CHANGE

- Global Methane Initiative (GMI)
  - Through international public-private partnerships, GMI helps develop projects to reduce methane emissions from key sectors: Agriculture, Coal Mines, MSW, Wastewater, and Oil & Gas.
    - In 2012, GMI supported over 600 projects, working with 42 partner countries to reduce methane emissions by ~23 $MMTCO_2e$.
  - In March 2014, GMI EPA staff co-organized and facilitated a large 500 person, two-day biogas workshop in Brazil that featured speakers from Latin-America on key methane issues in Agriculture, Municipal Solid Waste, and Wastewater sectors.

LEADING INTERNATIONAL EFFORTS TO ADDRESS GLOBAL CLIMATE CHANGE

- Montreal Protocol
  - The North American Proposal amendment would:
    - Control HFC production and consumption.
    - Phase-*down*, not phase-*out* HFCs.
    - Control by-product emissions of HFC-23 excluding CDM projects.
    - Complements but leaves unchanged UNFCCC obligations.
  - Supports global efforts to reduce GHGs.
  - The Montreal Protocol provides the experience and expertise to effectively implement an HFC phase-down.

LEADING INTERNATIONAL EFFORTS TO ADDRESS GLOBAL CLIMATE CHANGE

- Work with partner countries to implement ENERGY STAR internationally.
  - Continue engagement with partner countries (EU, Canada, Japan, Taiwan, Australia, New Zealand, Switzerland) through existing agreements to promote specific ENERGY STAR qualified products.
    - Work with non-partner countries (China, India, Mexico) to harmonize efficiency metrics and test methods.
  - EPA coordinated with the Canadian and Mexican governments on efforts to standardize the approaches to measure, track, and assess the energy efficiency of commercial buildings across North America.