Reducing Greenhouse Gases Under the Clean Air Act

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Impetus for Action

- April 2, 2007 U.S. Supreme Court Decided EPA Authority Under Clean Air Act

- May 14, 2007 Executive Order: EPA to work with other Federal Agencies using existing authority

" . . to protect the environment with respect to greenhouse gas emissions from motor vehicles, nonroad vehicles, and nonroad engines, in a manner consistent with sound science . . . "

Policy Target

- President's "20-in-10 Plan":
  - **Reduce U.S. gasoline consumption by 20 percent over the next 10 years**
    - **--35 billion gallons of renewable or alternative fuel by 2017**
    - **--Improve efficiency of cars & light-trucks by up to 4 percent per year**

Overall Policy Approach

- Integrated, Systems Approach
  - Vehicles + Fuels Performance Standards
- Using Existing CAA & EPCA Authorities
- Cover all greenhouse gases
- Starting with Light Duty Highway Vehicles and Fuels
- Trading

Key Elements of CAA Regulation

- "Endangerment" Finding
- Cars and Light Truck Performance Standards
- Fuels Performance Standard

Endangerment Framework under the Clean Air Act

- Endangerment finding is prerequisite to standard setting

- Under section 202:
  - The Administrator shall by regulation prescribe standards applicable to the emission of any air pollutant(s) from motor vehicles, "which in his judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare."

Typical Endangerment Document

1. Introduction, Purpose and Scope
   - Supreme court decision, Executive Order
   - CAA language

2. Profile of Greenhouse Gas Emissions
   - US and global
   - Sectoral breakout
   - Transportation's contribution
   - Historic, current, projected

3. Physical Science & Impacts
   - Observed climate change
   - Attribution to anthropogenic emissions
   - Future projected climate change
   - Impacts by sector, by region, observed, projected

4. Endangerment determination

Human health
Air quality
Agriculture, food production
Forestry
Fresh water resources
Sea level rise, coastal areas
Energy, infrastructure
Ecosystems and wildlife

Approach to Endangerment

- Focus on climate change impacts on the United States
- Rely on consensus-based, peer-reviewed scientific literature
  - IPCC Fourth Assessment Report, 2007
  - CCSP Synthesis & Assessment Products, as available
  - National Research Council reports
  - Peer reviewed regional assessments
  - Other significant peer reviewed studies
- Reflect confidence levels and uncertainties
- Include negative and positive impacts
- Structure and content of assessment will be consistent with the approach taken in the scientific literature
- Federal Agency Expert Review Group

Reducing Ghgs from Vehicles

- President's May 14 Executive Order: Utilize the 20-in-10 proposal as a starting point:
  - reduce projected annual gasoline use by up to 8.5 billion gallons: an estimated 5 percent reduction in gasoline use
  - "Reformed CAFÉ" approach for cars; continued for light trucks
  - Existing Authorities -- Section 202 of Clean Air Act and EPCA
- Up to 4% increase in vehicle efficiency standards in 2010 to 2017
- Extensive collaboration with NHTSA
- Extensive stakeholder input early in program development
- Reliance on the most recent, credible data and information

Collaboration with NHTSA

- 6 EPA-NHTSA Working Groups
  - Technology Assessment Team
  - Product Plan Data Integration Team
  - Program Design and Analysis Team
  - Economic Impact Team
  - Credit Trading Design Team
  - Legal Team
- Dozens of Team meetings, daily basis
- Joint stakeholder meetings
- Overall rule development schedules agreed to

Technological Feasibility Assessment

- EPA and NHTSA teams evaluating ~50 individual vehicle technologies for five car and truck vehicle classes
  - Assessment of GHG reduction, costs, and lead time requirements
    - Example technologies; improved valve trains, improved transmissions (e.g., 6-speed, 7-speed, continuously variable transmission), more efficient air conditioners, turbocharging, diesels, hybrids
  - Utilizing a range of existing data sources
    - E.g. scientific literature, 2002 NAS report, 2004 Northeast State Center for a Clean Air Future report, and other available reports, EPA vehicle certification data, and confidential business submissions from vehicle manufacturers and Tier 1 suppliers
- Working with NHTSA to evaluate program options for stringency and costs

Vehicle Program Design Elements Under Discussion

- Time frame for program
  - Cars model year (MY) 2010 – 2017, trucks MY 2012 – 2017
- Metric: GHG performance standards (CO_2, CH_4, N_2O, HFCs) or MPG?
- Attribute-based standards for cars and trucks
  - Considering "footprint" as well as other potential attributes
- Credit trading program averaging and banking within a single manufacturer's cars and trucks
  - trading between different vehicle manufacturers;
  - trading between vehicle manufacturers & fuel producers
- Compliance and enforcement provisions

Trading Between Fuels and Vehicles

- Interagency discussion continuing on this topic and associated metrics
- Possible Principles for vehicle-fuel trading
  - Provide compliance flexibility and opportunities for lower costs
  - Protect investments by providing certainty for both fuels and vehicles
  - Keep it as simple as possible
  - Avoid effects that reduce environmental integrity

Trading Between Vehicles and Fuels

- Potential Benefits
  - Could reduce overall costs
  - Provides greater flexibility
  - Creates incentive for greater innovation
  - -- A number of fuel providers and auto manufacturers have expressed support for concept
  - Trading between vehicles and fuels can be implemented in a straightforward manner.

Summary--Vehicles

- EPA/NHTSA performing robust assessment of technological feasibility of GHG reduction technologies based on most recent data
- Continuing examination of possible credit trading systems
- Evaluation of the merits of various vehicle attributes for the basis of the standard
- Performance of a thorough analysis of relevant impacts, including
  - energy security valuation
  - GHG emissions reductions and benefits
  - Vehicle Miles Traveled rebound effect
  - Vehicle payback estimations
  - Economic impact analysis
  - Air quality

Reducing Ghgs from Fuel

- President's May 14 Executive Order: Utilize the 20-in-10 proposal as a starting point:
  - 35 Bgal (ethanol equivalent) of renewable and alternative fuels, phased in 2010 to 2017
- We are following the successful process used for first Renewable Fuel Std
  - Close collaboration with DOE and USDA
  - Extensive stakeholder meetings on the structure of the program
  - Extensive meetings with industry on technological feasibility
- Process is ongoing
- Goal is to build as much consensus as possible early on in the rulemaking process

Legal Framework

- To respond to the Executive Order we must use our existing authority
  - CAA 211(o) would allow us to require greater volumes of renewable fuels, but by itself is limited in scope
    - Alternative fuels cannot be included
    - Higher volumes could not be specified prior to 2013
    - Several restrictions (48 state, 1 year credit life, gasoline only, etc.)
  - CAA 211(c) provides additional authority that would allow us to address the limitations of 211(o)
    - allows EPA to set controls on fuels as a means for reducing emissions of an air pollutant that endangers public health or welfare
- Considering using 211(o) to set a minimum volume requirement for renewable fuels
- Considering using 211(c) to set a GHG standard that would require higher volumes of renewable and alternative fuels (metric under discussion)

Build Program Structure Off RFS

- Convert projected volumes of renewable and alternative fuels into appropriate metric
- Utilize compliance structure promulgated under RFS (RINs)
- Make changes to adapt it for use for both the new metric and the existing RFS volume standard.
- Seeking input from refiners and renewable producers to have the program design meet their needs as simply as possible

Averaging, Banking, & Trading

- Flexible, nationwide credit trading
  - With provisions for deficit carryover (credit life under discussion)
- Obligated parties (e.g., refiners) can plan to choose to comply solely through credit purchase if they desire
  - No per-gallon fuel specs
- Could also use credits to comply in at least some unexpected events such as refinery fires
- ABT provisions could be sufficient to address individual company situations
- Situations where further relief may be needed could be focused on National shortfalls in renewable and alternative fuels (e.g., drought)

Addressing Uncertainty: Feasibility Review Concept

- Have used such reviews in the past where we make long-term projections of advances in technology
  - Highway diesel and nonroad diesel engine standards
- For GHG rule could propose to commit to conduct a feasibility review
  - Advancements in cellulosic ethanol technology
  - CTL and carbon sequestration
  - Advances in corn yield
  - Updated projections of market growth
  - Development of distribution and infrastructure capacity
- Could couple it with annual progress reports from renewable and alternative fuel suppliers as done for ultra low sulfur diesel (ULSD) to provide detailed input data
- Allows us to establish in this rule a long term target for investment, while still providing a safety valve for obligated parties should the current forecasts not pan out

Impact Analysis

- Building off the analysis for the RFS rule, but volume targets make the impacts much larger and analysis much more complicated
  - Full feasibility analysis needed
  - Impacts extend overseas
  - Impacts on various sectors of the economy potentially much more significant
- Full RIA
  - Feasibility Analysis
  - Refinery modeling
  - Criteria and toxics emission inventory, air quality, and health benefit impacts
  - Ag sector modeling
  - Economic Impacts
  - Energy Security
  - GHG Lifecycle Analysis, Inventory and Benefits
  - Water and Soil Impacts
- Collaborating with both DOE and USDA in real time
  - Building their input and expertise into the analysis
  - Relying on their data and analyses whenever possible

Summary: Fuels Rule

- Conducting robust assessment of technological feasibility of renewable and alternative fuel volumes, costs and other factors
- Considering a program under 211(c) – Renewable and Alternative mandate - and 211(o) – renewable volume mandate
- Considering options to address uncertainty of long-term projections of economic and technical feasibility
- Considering Broad Trading Regime---Ongoing Interagency Discussion
- Performance of a thorough analysis of relevant impacts, including:
  - GHG emissions reductions and benefits
  - Criteria and toxics emissions, air quality, and health benefit impacts
  - Water and Soil Impacts
  - Fuel Costs
  - Energy security impacts
  - Economic impacts
  - Agricultural sector impacts

Key Cross-Cutting Issues

- Feasibility Analysis
- How to value greenhouse benefits?
- How to value energy security benefits?
- What is the best metric for standards?
- Credit trading between fuel providers and vehicle manufacturers

Overall Schedule

- December 2007 Proposal
- December 2008 Final Rule