



Climate Change and Energy

National and Regional Perspective



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Global Climate Change



❖ Some Key Messages:

- Human activities have led to large increases in heat-trapping gases over the past century
- Global average temperature and sea level have increased, and precipitation patterns have changed
- The global warming of the past 50 years is due primarily to human-induced increases in heat-trapping gases
- Human “fingerprints” also have been identified in many other aspects of the climate system, including changes in ocean heat content, precipitation, atmospheric moisture, and Arctic sea ice
- Global temperatures are projected to continue to rise over this century; by how much and for how long depends on a number of factors, including the amount of heat-trapping gas emissions and how sensitive the climate is to those emissions



Climate Change and Energy

❖ An EPA Priority

- Reducing greenhouse gases (GHG) is a top priority for Administrator Jackson

❖ Some key actions taken:

- Endangerment Finding
- Mandatory Reporting
- Renewable Fuels Standard
- Light-Duty Vehicle GHG Emissions Standards and CAFE Standards
- GHG permitting requirements on large industrial facilities (Tailoring Rule)
- Carbon Capture & Sequestration
- A variety of voluntary and other initiatives





Endangerment Finding

- ❖ **Endangerment Finding:** Current and projected concentrations of the six key well-mixed GHGs in the atmosphere threaten the public health and welfare of current and future generations
- ❖ **Cause or Contribute Finding:** The combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare
- ❖ **Final Rule** published in Federal Register December 15, 2009



Greenhouse Gases (GHGs)

- Carbon Dioxide (CO₂)
- Methane (CH₄)
- Nitrous Oxide (N₂O)
- Hydrofluorocarbons (HFC)
- Perfluorocarbons (PFC)
- Sulfur Hexafluoride (SF₆)



GHG Reporting Rule

Upstream Sources	<ul style="list-style-type: none"> ❖ Suppliers of Coal-based Liquid Fuels ❖ Suppliers of Petroleum Products ❖ Suppliers of Natural Gas and Natural Gas Liquids ❖ Suppliers of Industrial GHGs ❖ Suppliers of Carbon Dioxide (CO₂)
Downstream Sources	<ul style="list-style-type: none"> ❖ General Stationary Fuel Combustion Sources ❖ Electricity Generation ❖ Adipic Acid Production ❖ Aluminum Production ❖ Ammonia Manufacturing ❖ Cement Production ❖ Ferroalloy Production ❖ Glass Production ❖ HCFC-22 Production and HFC-23 Destruction ❖ Hydrogen Production ❖ Iron and Steel Production ❖ Lead Production
Mobile Sources	<ul style="list-style-type: none"> • Vehicles and engines outside of the light-duty sector (light-duty in NPRM to <i>Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Fuel Economy Standards</i>)

Covered GHGs

- Carbon Dioxide (CO₂)
- Methane (CH₄)
- Nitrous Oxide (N₂O)
- Hydrofluorocarbons (HFC)
- Perfluorocarbons (PFC)
- Sulfur Hexafluoride (SF₆)
- **Nitrogen Trifluoride (NF₃)**
- **Hydrofluorinated Ethers (HFE)**

Expressed in metric tons of carbon dioxide equivalent (mtCO₂e)

First report for CY10

Final Rule Published in Federal Register on October 30, 2009

* We delayed inclusion of certain source categories as we consider comments and options



Renewable Fuels Standard (RFS2)

- ❖ **Revision to current RFS (RFS1) as required by the Energy Independence and Security Act (EISA)**
- ❖ **Significant increase in renewable fuels to displace petroleum consumption (36 billion gallons by 2022)**
- ❖ **CO₂ Lifecycle analysis**
- ❖ **Final Rule Signed 2/3/2010**

Lifecycle GHG Thresholds Specified in EISA	
(percent reduction from 2005 baseline)	
Renewable fuel^a	20%
Advanced biofuel	50%
Biomass-based diesel	50%
Cellulosic biofuel	60%

^a The 20% criterion generally applies to renewable fuel from new facilities that commenced construction after December 19, 2007.



Mobile Source GHG/CAFE Proposed Rule

- ❖ First national GHG emissions standards under the Clean Air Act
- ❖ Satisfies requirements under both Federal programs and the standards of California and other states
- ❖ Applies to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016
- ❖ Meet an estimated combined average emissions level of 250 g CO₂ per mile in model year 2016, equivalent to 35.5 mpg if the automotive industry were to meet this CO₂ level all through fuel economy improvements
- ❖ Proposed in Federal Register September 28, 2009





Proposed Tailoring Rule

- ❖ Focused on large facilities emitting over 25,000 tons of CO₂e/year
- ❖ Facilities required to obtain construction permits that would demonstrate they are using the best practices and technologies to minimize GHG emissions
- ❖ The rule proposes new thresholds for greenhouse gas emissions (GHG) that define when Clean Air Act (CAA) permits under the New Source Review (NSR) and title V operating permits programs would be required for new or existing industrial facilities.
- ❖ Would cover nearly 70 percent of the national GHG emissions that come from stationary sources, including those from the nation's largest emitters—including power plants, refineries, and cement production facilities.
- ❖ Small farms, restaurants and many other types of small facilities would not be subject to these permitting programs
- ❖ Proposal in Federal Register on 10/27/09

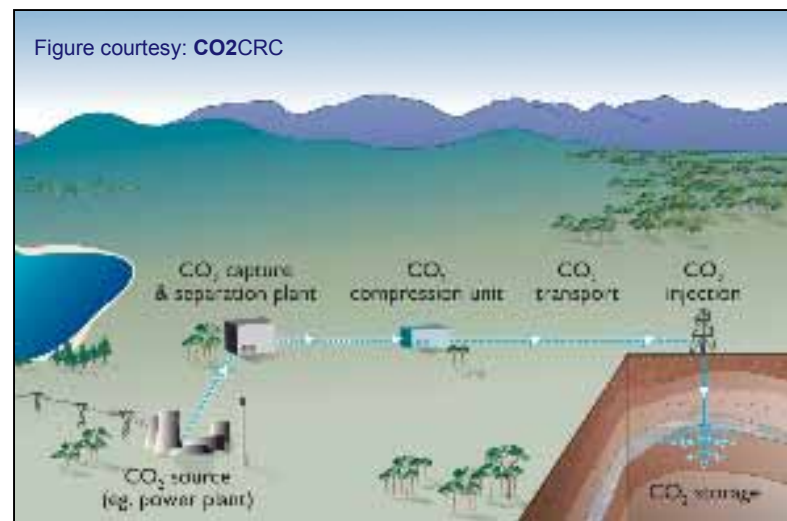




Geologic Sequestration of CO₂

- ❖ Requirements under Safe Drinking Water Act (SDWA) for the underground injection of CO₂ for long-term underground storage

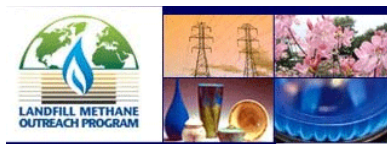
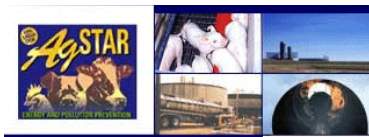
- ❖ Builds on UIC regulatory framework, with modifications based on the unique nature of CO₂ injection



- ❖ Proposed in Federal Register July 25, 2008



Voluntary Programs to Address Energy/Climate



The Smart Way to Save Fuel,
Money, and the Environment



Other Federal Efforts

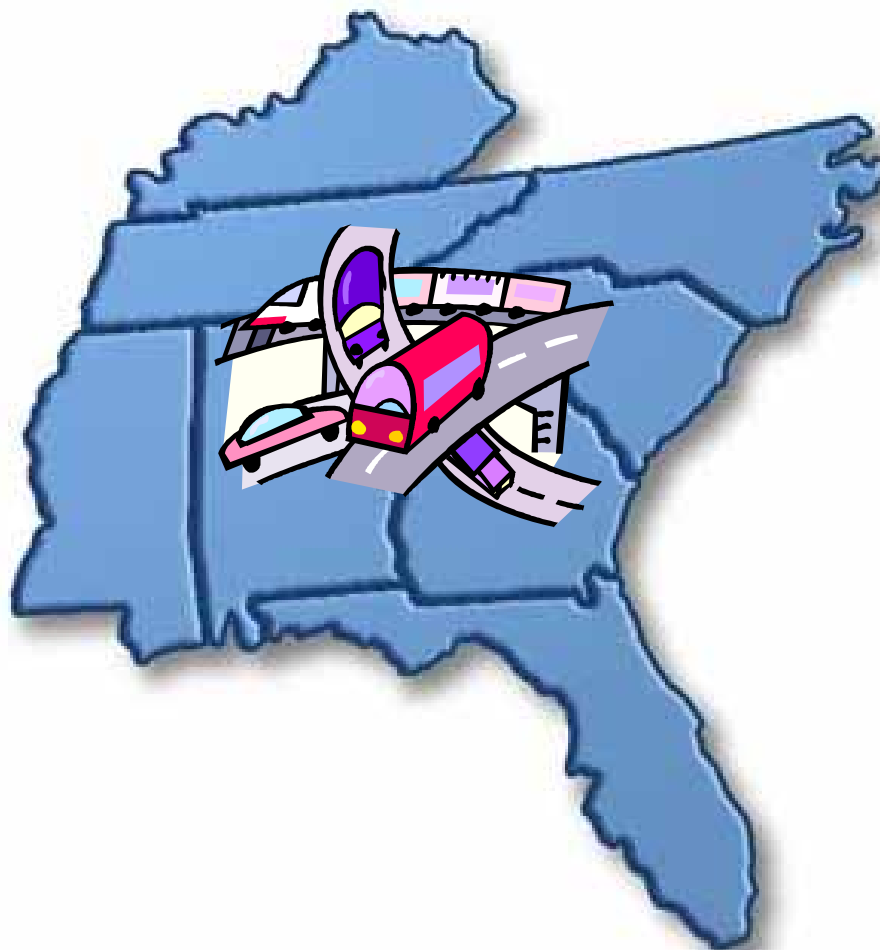
- ❖ **GHG Reduction Target for Federal Operations**
 - Federal Government, the largest energy user in the U.S., will reduce its GHG pollution by 28% by 2020 (2008 as baseline year)

- ❖ **HUD-DOT-EPA Interagency Partnership for Sustainable Communities**
 - An effort to help improve access to affordable housing, more transportation options, and lower transportation costs while protecting the environment in communities nationwide

- ❖ **Re-powering America's Land**
 - Siting Renewable Energy on Potentially Contaminated Land and Mine Sites



What about Region 4?

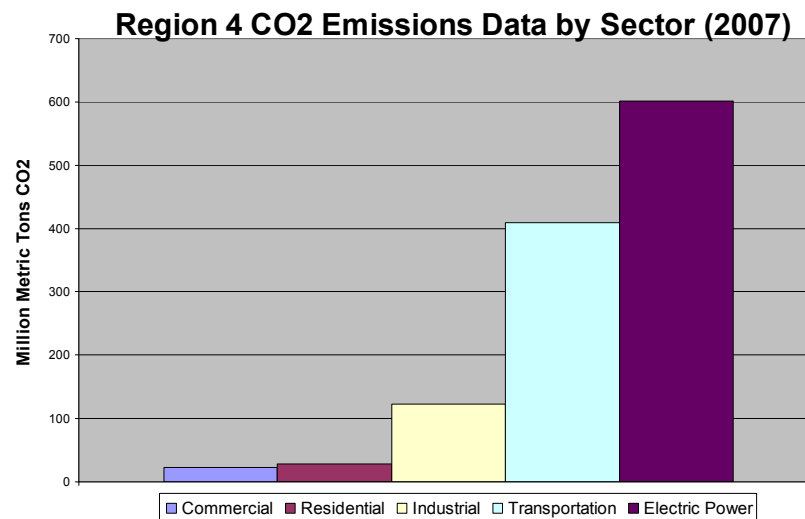




Some key facts about Region 4....

- ❖ Home to 20% of the population (with a large EJ component)
- ❖ We generated about 24% of electricity in U.S. (burning coal is a primary fuel source) in 2007
- ❖ Responsible for about 24% of U.S. CO₂ emissions (from power production) in 2007
- ❖ We use more fuel and drive more miles than any other Region

Energy Information Administration
Federal Highways Administration
U.S. Census Bureau



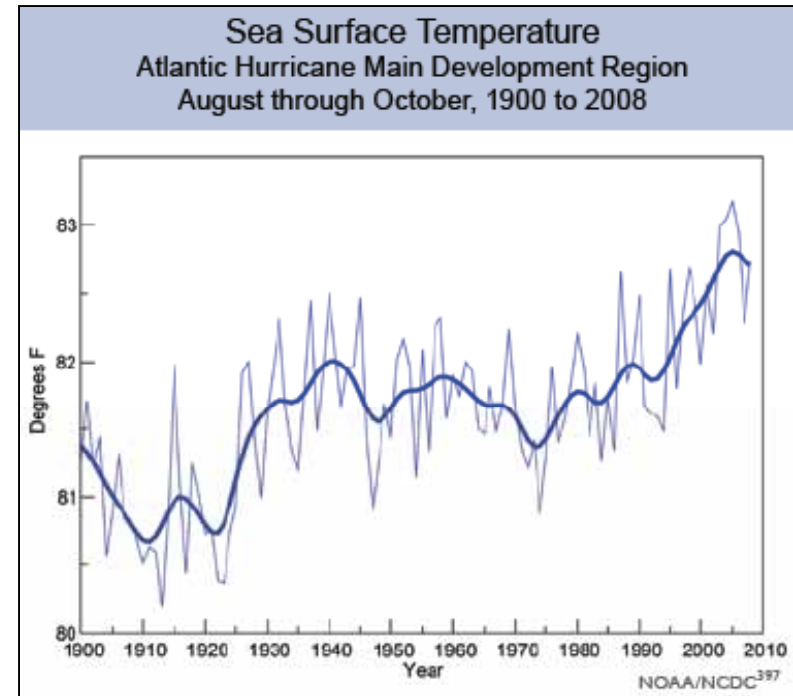


Adaptation to Climate Change Impacts

❖ Many concerns for the Southeast....

- Most coastline in the lower 48 states
- Large at-risk population
- Prone to frequent natural disasters
- Significant forestry, agriculture, infrastructure, and ecosystem resources

❖ Adaptation efforts underway



Ocean surface temperature during the peak hurricane season, August through October, in the main development region for Atlantic hurricanes. Higher sea surface temperatures in this region of the ocean have been associated with more intense hurricanes. As ocean temperatures continue to increase in the future, it is likely that hurricane rainfall and wind speeds will increase in response to human-caused warming.



Questions?

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DRAFT PRESENTATION

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