

Policy Drivers for Research in Climate and Energy

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December 10, 2014





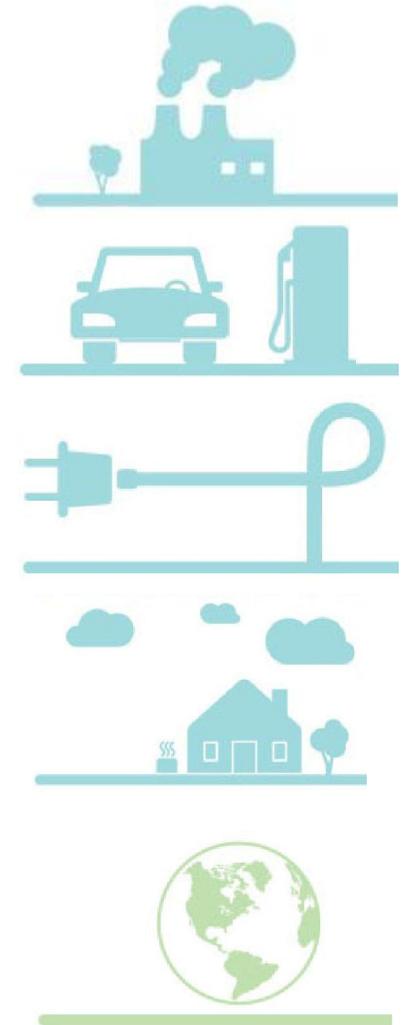
PRESIDENT OBAMA'S CLIMATE ACTION PLAN

- Released on June 25, 2013
- 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 ACTIONS UNDER PRESIDENT OBAMA'S PLAN

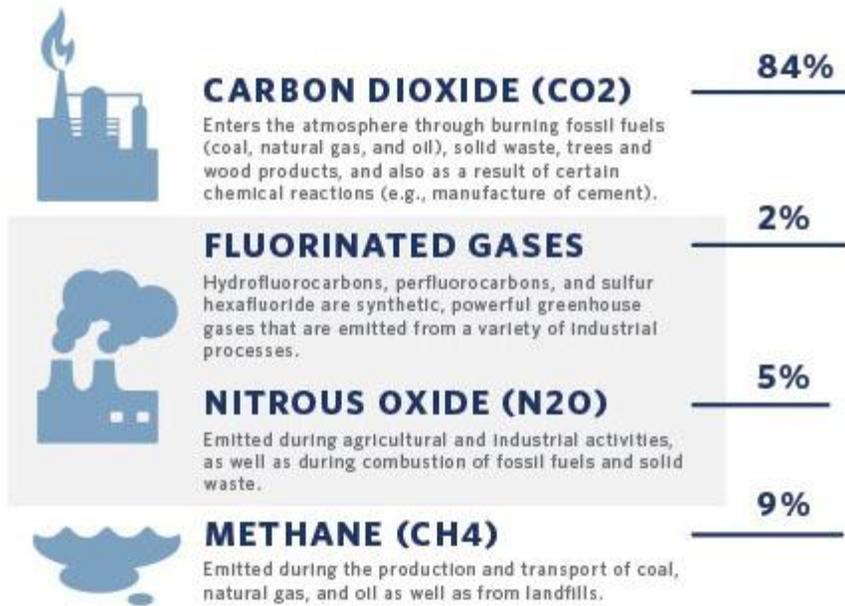
- Reducing carbon pollution from power plants
- Building a 21st century transportation sector
- Cutting energy waste in homes, businesses, and factories
- Reducing methane and HFCs
- Identifying vulnerabilities of key sectors to climate change
- Protecting our country from the impacts of climate change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



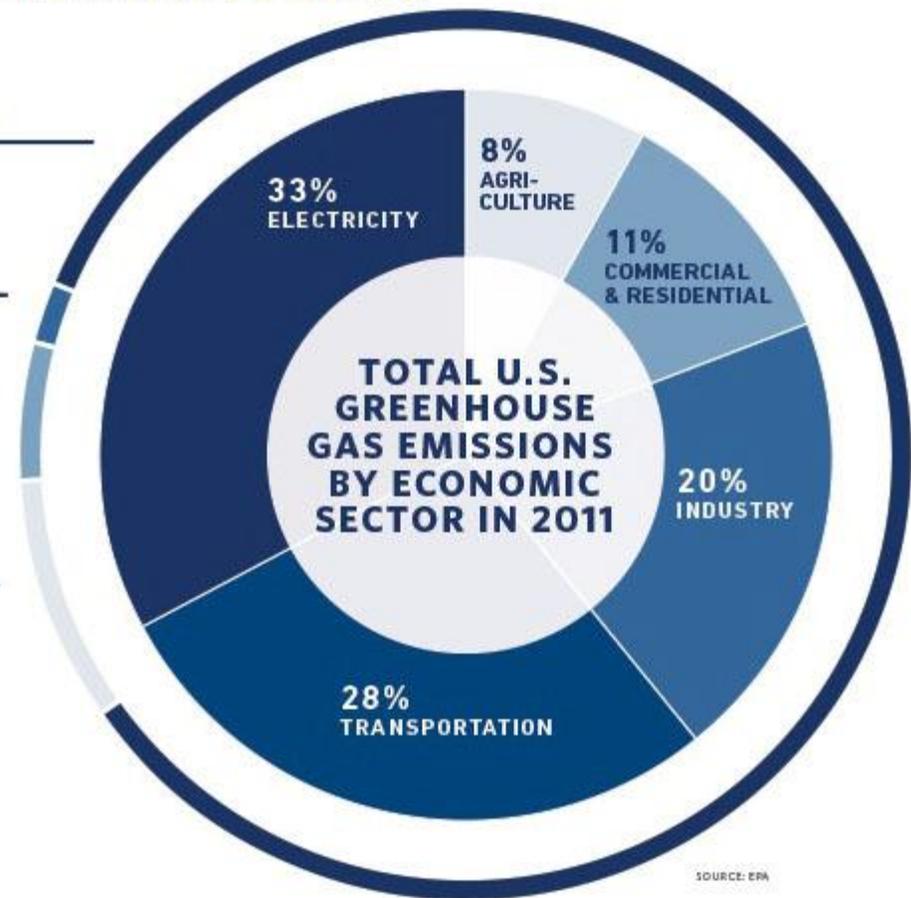
CARBON POLLUTION IS THE BIGGEST DRIVER OF CLIMATE CHANGE



U.S. GREENHOUSE GAS POLLUTION INCLUDES:



SOURCE: EPA



SOURCE: EPA

EPA's proposed Clean Power Plan looks across whole power sector to boost our economy, protect health and environment, & fight climate change.

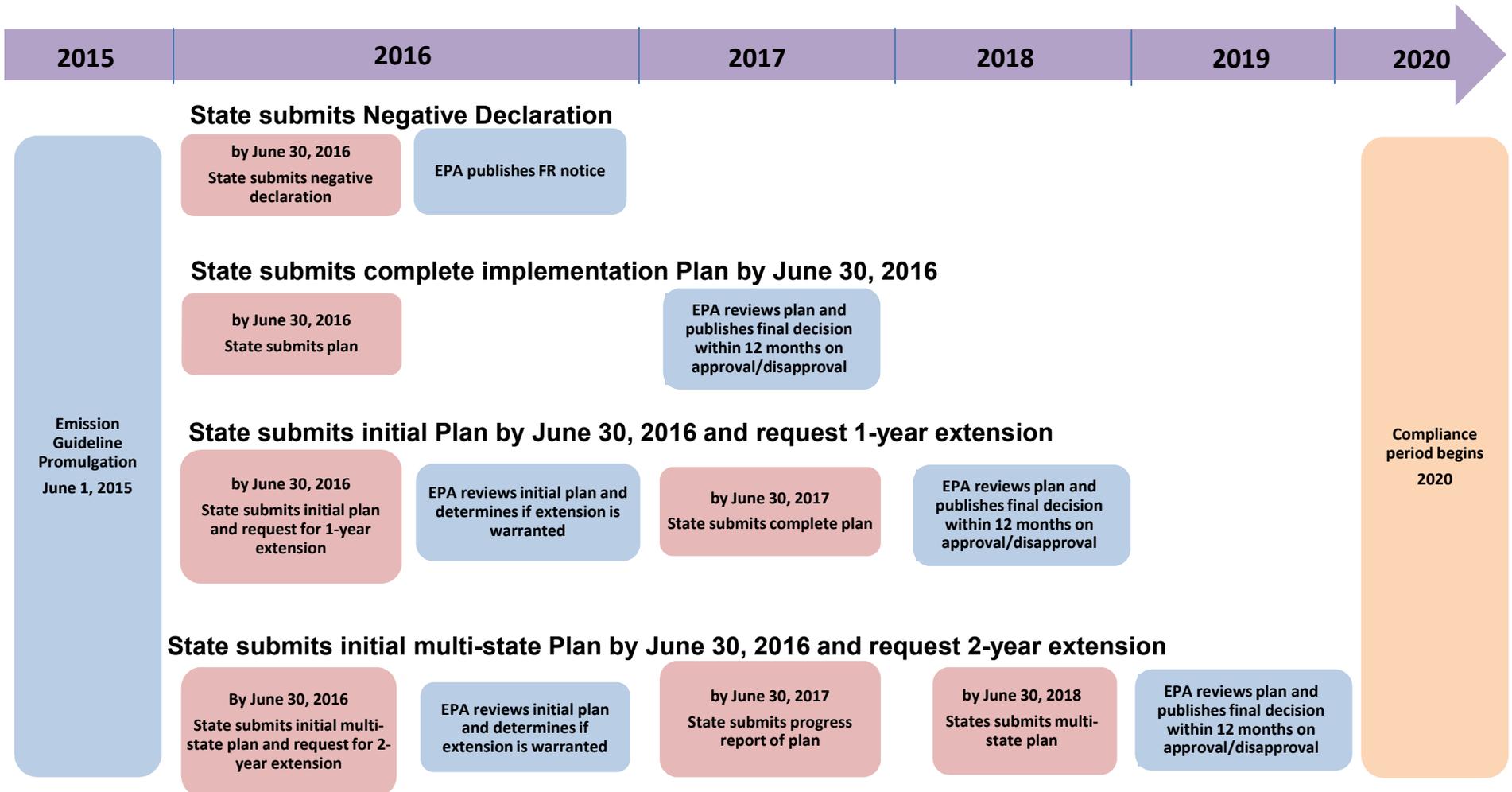
- By 2030, reduce nationwide carbon dioxide (CO₂) emissions, from the power sector by approximately 30% from 2005 levels.
- Maintain an affordable, reliable energy system.
- Cut harmful particle pollution, sulfur dioxide and nitrogen oxides as a co-benefit.
- Provide important health protections to the most vulnerable, such as children and older Americans.
- Lead to health and climate benefits worth an estimated \$55 - \$93 billion in 2030.
- American families will see up to \$7 in health benefits from soot and smog reductions alone for every dollar invested through the Clean Power Plan.

Clean Power Plan—how it works

- The agency's proposal released June 2014:
 - Shaped by public input, present trends, proven technologies, and follows the law
 - Recognizes the progress states, cities and businesses have already made
 - Builds on ongoing efforts
- The proposal aims to cut energy waste and leverage cleaner energy sources by:
 - Setting achievable, enforceable state goals to cut carbon pollution per megawatt hour of electricity generated.
 - Providing a national framework that gives states the flexibility to chart their own customized path to meet the goals in their state plans.
- Public comment period closed December 1, 2014.

Building Block	Strategy EPA Used to Calculate the State Goal	Maximum Flexibility: Examples of State Compliance Measures
1. Make fossil fuel-fired power plants more efficient	Efficiency Improvements	Efficiency improvements Co-firing or switching to natural gas Coal retirements Retrofit CCS (e.g., WA Parish in Texas)
2. Use lower-emitting power sources more	Dispatch changes to existing natural gas combined cycle (CC)	Dispatch changes to existing natural gas CC
3. Build more zero/low-emitting energy sources	Renewable Energy Certain Nuclear	New NGCC Renewables Nuclear (new and up-rates) New coal with CCS
4. Use electricity more efficiently	Demand-side energy efficiency programs	Demand-side energy efficiency programs Transmission efficiency improvements Energy storage

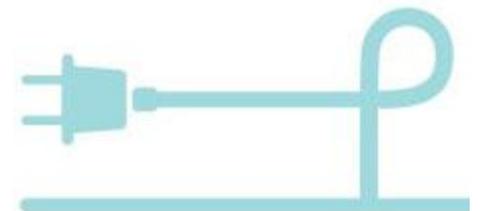
Proposed Implementation Timeline





CUTTING ENERGY WASTE IN HOMES, BUSINESSES, AND FACTORIES

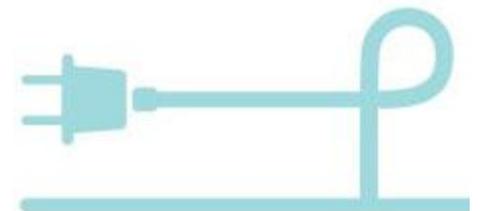
- Climate Action Plan calls for buildings to cut waste and become at least 20 percent more energy efficient by 2020.
- Partnership programs, like ENERGY STAR, will help achieve this goal.
 - Boost energy performance levels of across 70+ product categories and new homes, facilitate home energy improvements
 - Encourage savings through certifications, competitions, and other recognition
 - Continue improvements to ENERGY STAR Portfolio Manager
 - Provide technical guidance and support across sectors, states
- Additional actions across other federal agencies, including DOE, HUD, and USDA





MULTIFAMILY HOUSING

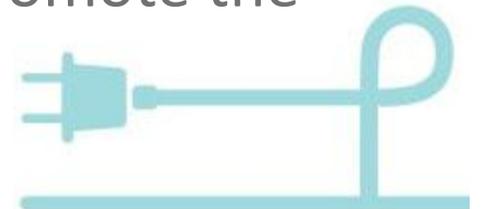
- Supporting interagency efforts to increase efficiency of multifamily housing.
 - In January, EPA and Freddie Mac signed an agreement that will help cut carbon pollution, while increasing the affordability of multifamily housing properties.
 - Based upon data collected by Fannie Mae, EPA recently announced a 1-100 ENERGY STAR score specific to existing multifamily housing.
 - EPA and HUD are encouraging benchmarking in federally-assisted housing, utilizing Portfolio Manager.
 - EPA works with HUD and state housing finance agencies to incorporate ENERGY STAR guidelines into funding requirements.
 - On November 13, EPA recognized 17 apartment and condo buildings across the country as certified existing multifamily housing buildings.





CHP AND RENEWABLE ENERGY

- In support of the President's Climate Action Plan, EPA recently announced a new initiative under Green Power Partnership Program (GPP): the On-site Renewables Challenge.
 - As part of this challenge the GPP will strive to double the use of on-site renewable energy at partner facilities by the end of the decade.
 - Currently, 254 Green Power Partners are using close to one billion kWh of on-site green power annually. The Challenge will aim to double this amount to two billion kWh by the end of 2020.
- Combined Heat and Power (CHP) Partnership also releasing new or updated resources and webinars to promote the deployment of CHP





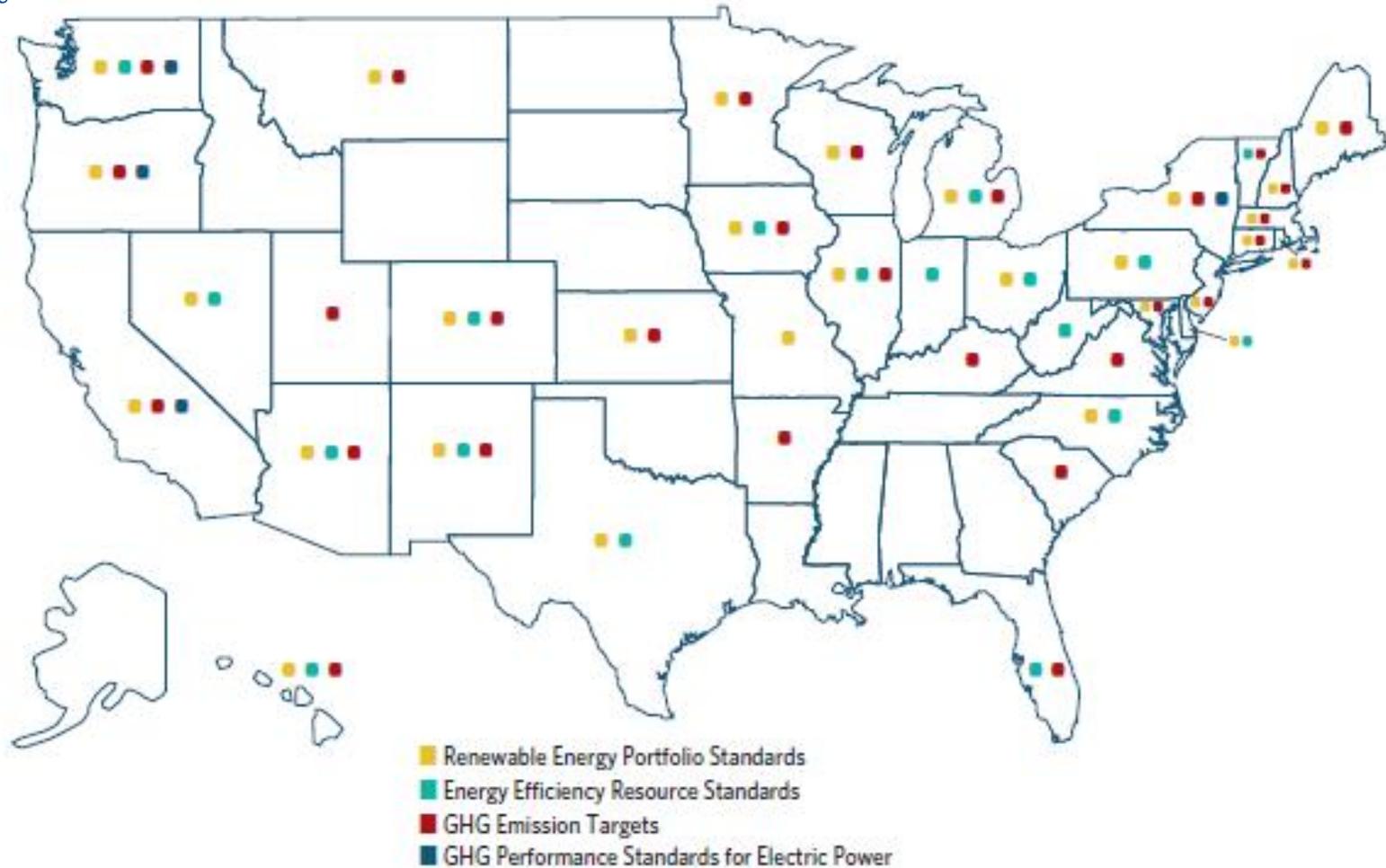
REDUCING METHANE & HFCs

- Interagency Strategy to Reduce Methane Emissions Released on March 28, 2014.
 - Sets forth a plan to reduce both domestic and international methane 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.
- Address HFCs through domestic and international action:
 - Significant New Alternatives Policy (SNAP) Program approves climate-friendly chemicals, prohibits some uses of most harmful chemical alternatives.
 - Provide federal leadership by purchasing cleaner alternatives to HFCs whenever feasible
 - Montreal Protocol





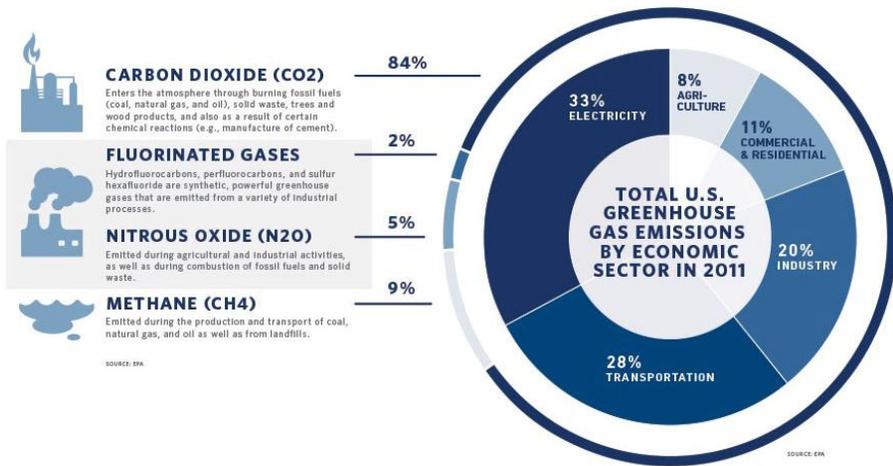
Key State Climate and Energy Policies



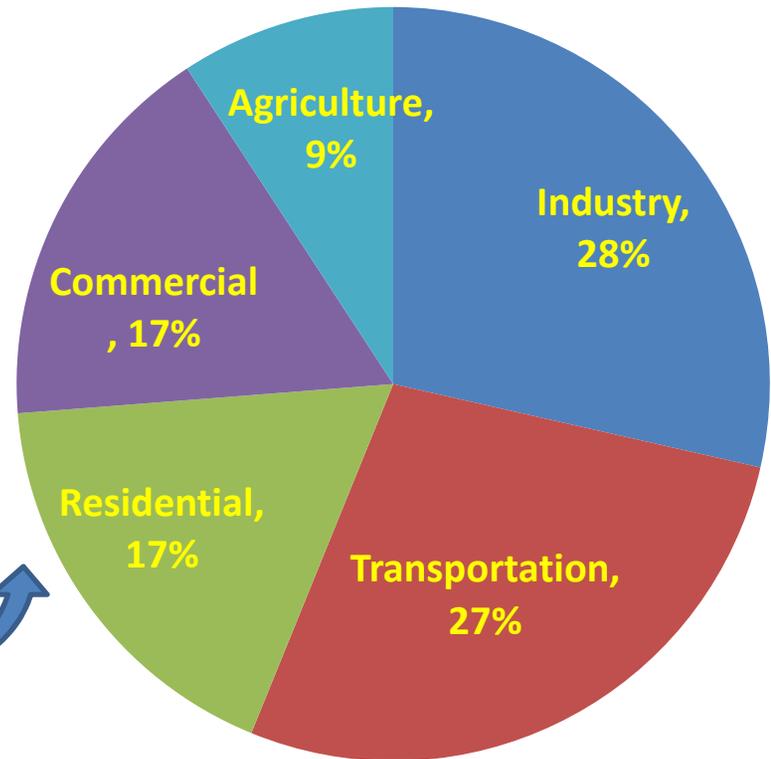
Note: The count is inclusive of mandatory portfolio and resource standards only.

Source: U.S. EPA State and Local Climate and Energy Program, as reported in the Sixth National Communication of the United States of America under the UN Framework Convention on Climate Change ([http://unfccc.int/files/national_reports/annex_i_natcom/submitted_natcom/application/pdf/2014_u.s._climate_action_report\[1\]rev.pdf](http://unfccc.int/files/national_reports/annex_i_natcom/submitted_natcom/application/pdf/2014_u.s._climate_action_report[1]rev.pdf))

EERS Policies Help Reduce GHGs Attributable to Energy Use Across Sectors



**2011 Total Greenhouse Gas Emissions by Sector
with Electricity Apportioned to End Use**



Source: EPA's Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2011
(<http://www.epa.gov/climatechange/ghgemissions/usinventoryreport.html>)

How Does an EERS Typically Deliver Energy Savings?

- An EERS can apply to retail distributors of either electricity or natural gas, or both, depending on the state.
- Utilities or third-party program administrators typically meet multi-year targets for energy savings through energy efficiency programs targeting customer facilities, but also through other approaches, such as peak demand reductions; impacts of building codes; etc.
- The energy, environmental, and economic benefits of EERS are well documented by retrospective evaluations.
- ACEEE found that states generally exceeded their savings targets with overall savings of 20 million MWh surpassing combined 2012 targets of 18 million MWh.

What is the State Efficiency Policy and Program Connection to Behavior?

Priority Areas Identified by the SEE Action's Customer Information and Behavior Working Group

Data Access

1. Assistance for Regulators and Policymakers
2. Appropriate Access to Utility Data and Privacy
3. *Data Security and Communications Standards
4. *Access to Federal Energy Data

Program Design

1. Scale-Up Pilots
2. Outreach to Improve the Understanding of Programs Targeting Behavior Changes
3. Provide Information to Decision-makers
4. Highlight Model Programs
5. Support Additional Research

Measuring Savings

1. *Smart Grid Consumer Behavior Studies
2. Cost-Effectiveness of Behavior Programs
3. Methods for Measuring Savings
4. Validate Experimental Design and Other Existing Methods
5. Examine Persistence of Savings



SEE Action

STATE & LOCAL ENERGY EFFICIENCY ACTION NETWORK

www.seeaction.doe.gov

*Denotes non-SEE Action work

What are Potential Issues to Consider?

- Is there potential for behavior interventions to support greater and/or faster climate and energy benefits?
- Are these benefits in addition to energy efficiency potential estimates focused on greater technology adoption?
- Will the benefits persist?
- How can the opportunities from behavior research be communicated to policy makers?