THE CENTER FOR
CLIMATE STRATEGIES

Executive Summary

Developing and Assessing Economic, Energy, and Climate Security and Investment Options for the US

- ✓ **New Study Identifies Existing Local, State And Federal Policies — Not Cheap Natural Gas Or Economic Downturn — As Largest Driver Behind Declining US Carbon Emissions**
- ✓ **20 New Federal, State, and Local Actions in the US Also Identified to Advance Economic, Energy, and Climate Security As Climate Policy Enters Spotlight Again**

The United States has seen a significant reduction in the amount of climate-changing greenhouse gas (GHG) pollution in recent years. This reduction signals important work to date and a critical opportunity for the near future: if the nation can stay on this path, it can make real progress toward avoiding the worst of climate change impacts, boost the economy, and improve energy security.

Much of the credit for the reduction has been given to the recession and slow economic recovery, as well as to the boom in cheap, domestic natural gas. But that explanation misses a more significant cause of the substantial drop in pollution.

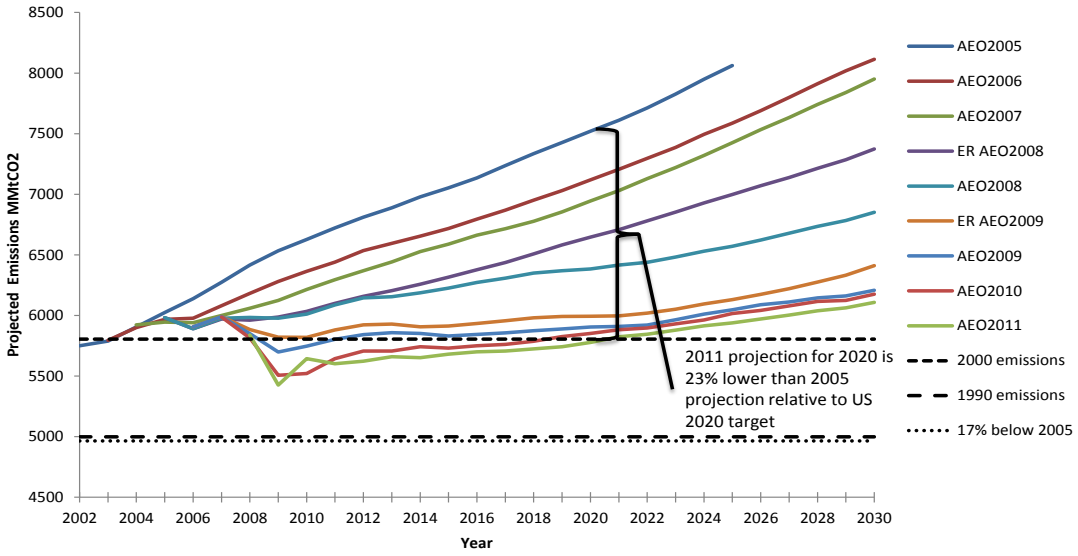
An analysis of the pollution reductions to date — and projected through the rest of the decade — shows that existing local and state government sustainable energy and transportation policies, along with federal initiatives and programs, are together a bigger factor than either natural gas or the economy combined.

These local, state, and national policies were implemented to provide economic, energy, health, and environmental improvements across the United States. They are working.

Our analysis, built on data from the U.S. federal Department of Energy (DOE) Energy Information Administration (EIA)'s Annual Energy Outlook (AEO) and additional analysis, finds that the projections of future carbon pollution and its equivalents have fallen 23 percent from the projections made in 2005. That is a critically important gain, and one that would bring the country's emissions 69 percent of the way to the 2020 climate change goal promised by President Obama.

1800 K Street, NW, Suite 714, Washington, DC 20006
(202) 293-4596 office, (202) 540-9122 fax
www.climatestrategies.us

AEO US CO2 Emissions by Projection Year

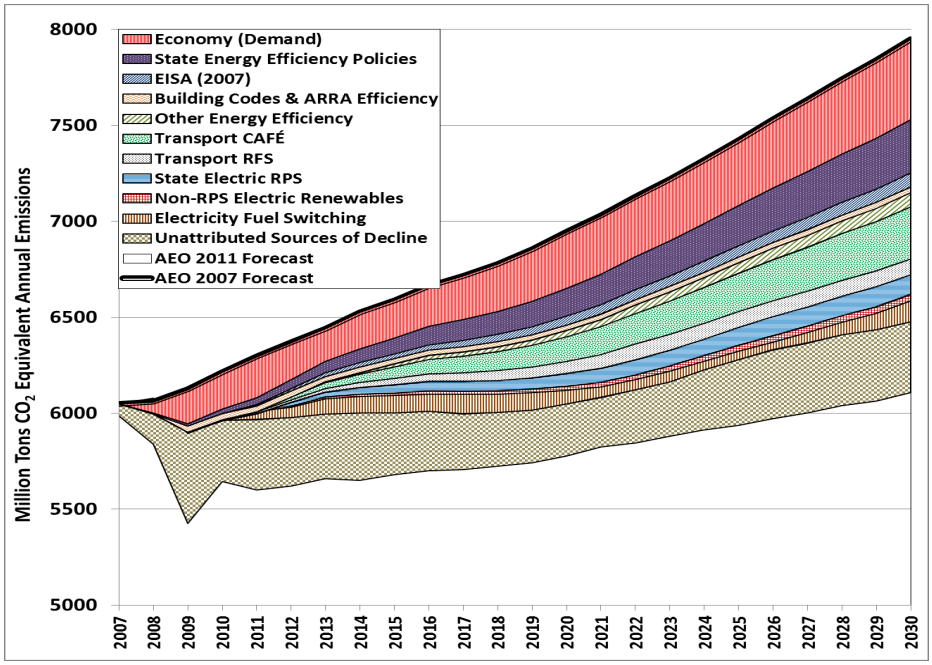


Source: U.S. EIA Annual Energy Outlook for listed years; ER = early release; MMtCO2e = million metric tons carbon dioxide equivalent; AEO= Annual Energy Outlook, US Energy Information Administration

Our analysis concludes that these practical and well-known actions — from city building codes encouraging energy efficiency to state renewable energy standards to national car mileage standards — account for at least 46 percent of the projected reduction in climate-changing pollution by 2020.

In contrast, a weaker economy accounts for 22 percent of the reduction by 2020, while switching to cheaper natural gas accounts for 6 percent of the reduction.

Contributions to AEO projected emissions reductions



This analysis shows that energy and transportation policies on the local, state, and national levels are having a significant, measurable impact on the pollution that drives climate change. They are also providing an effective platform for more action in the future that can address our economic, energy, and environmental needs.

Relative contributions to expected decline in US GHG emissions:

Source	2020	2030
Economy (Demand)	22%	18%
Electricity Fuel Switching	6%	6%
State Electricity RPS	6%	5%
Non-RPS Electricity Renewables	2%	2%
Transport RFS	6%	5%
Transport CAFÉ	11%	15%
Building Codes & ARRA Efficiency	2%	2%
EISA	4%	4%
State EEPS	12%	15%
Other Energy Efficiency	3%	4%
Additional Sources of Decline	27%	26%

KEY FINDINGS

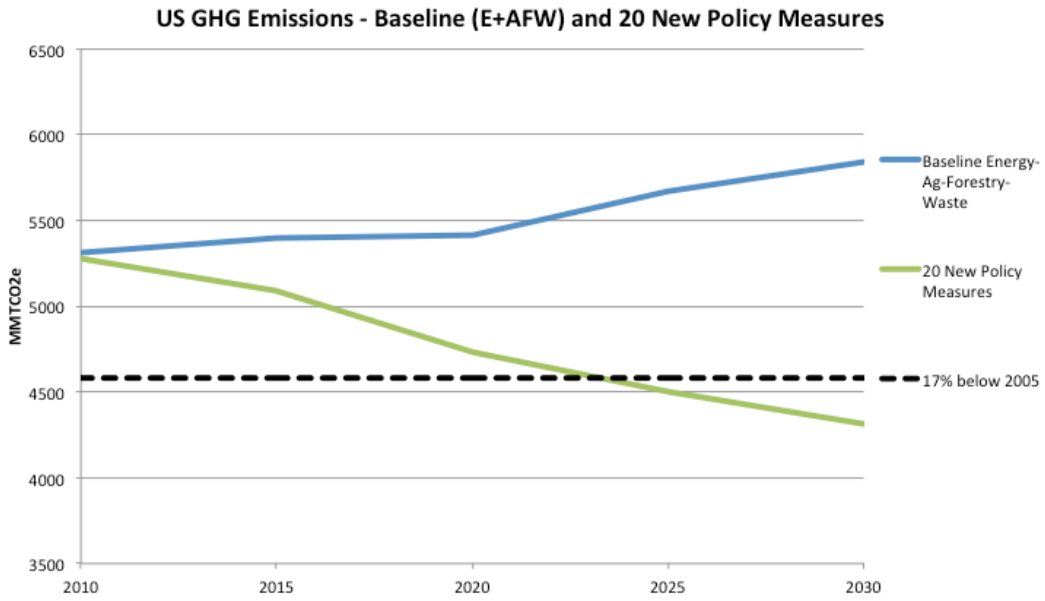
Policies to curb climate-changing pollution are already bringing about significant reductions in carbon dioxide and equivalent GHG emissions. While the economic slowdown and the boom in cheap natural gas have been important factors, a combination of important policies within our energy and transportation sectors at the local, state, and national levels together are proving more powerful drivers.

An analysis of carbon pollution and its equivalents, existing and projected, from 2002 to 2020 and beyond, based on federal data, shows:

- Existing policies enacted by cities, states, and the federal government that reduce carbon pollution — from building codes to automobile and building energy efficiency standards — together with downturn in the economy and cheaper natural gas, will reduce the growth of GHG emissions by 23 percent overall by 2020.
- Together, existing policies, the economic slowdown, and the switch to natural gas would get the US 69 percent of the way to President Obama's 2020 emissions reduction goal: a 17 percent drop from 2007 levels.
- By 2030, eight sustainable energy and transportation policies will account for an increasing share of expected emissions reductions, rising from 46 percent in 2020 to 58 percent in 2030. Additional smaller scale policies and price changes increase this impact to as much as 73 percent.
- When it comes to energy-focused policies alone, state and national incentives and policies to switch to renewable energy will have a bigger impact (7 percent by 2020) than fuel switching (6 percent by 2020) in reducing pollution.
- If other new policies (see below) were enacted across the US, the nation overall would be able to nearly close the pollution gap and meet the national pollution reduction goals of 2020 within a few years after that deadline.

- If these policies were enacted across the US, the study estimates they would create an estimated 1.24 million additional jobs (net) by 2020, cut oil imports by 135 million barrels within 8 years, diversify energy supplies in every sector, reduce peak electricity demand, and bring $88 billion in growth to the GDP by 2020.

Impacts of New Measures on National GHG Goals



EXISTING POLICIES

The existing policies driving the largest share of projected carbon emissions reductions have a variety of goals: strengthen building codes to improve energy efficiency, increase mileage standards for vehicles to save money and oil, among others. Along with those benefits, they also reduce climate-changing pollution.

Our study identified the economy as the single largest driver in cutting emissions, but that together, different policies significantly outweighed it. Projecting beyond 2020 to 2030, the analysis found that the economy accounted for proportionally less reduction in emissions, and policies took up a larger share, or 46 percent, by 2030.

Notably, these policies cross the entire spectrum of government, from federal mileage standards to local building standards to statewide energy portfolio standards.

The analysis found these policies or factors are projected to cut emissions by the following percentages by 2020:

- Economy: 22 percent
- Electricity fuel switching (Inexpensive natural gas): 6 percent
- State renewable electricity portfolio standards: 6 percent
- Non-renewable electricity portfolio standards renewables: 2 percent
- Transportation renewable fuel programs: 6 percent

- Transportation Corporate Average Fuel Economy (CAFE) standards: 11 percent
- Building codes and American Recovery and Reinvestment Act (ARRA) efficiency: 2 percent
- Energy Independence and Security Act of 2007: 4 percent
- State energy efficiency portfolio standards: 12 percent
- Other energy efficiency policies: 3 percent
- Additional sources of decline: 27 percent

Additional sources of decline include the impacts from health and environmental regulations, such as limits on particulate matter, mercury, and sulfur dioxide, as well as the impacts caused by market dynamics of higher oil prices.

NEW POLICIES

The study also analyzed the impact of 20 new major policies in each of our economic sectors that would achieve net positive impacts for better economic, energy, and environmental security.

If implemented across all 50 states, these policies would lower carbon pollution and its equivalents much more rapidly and would help close the gap to the 2020 goal of 17 percent below 2005 emissions by 2023, and would provide the following additional benefits:

- Increase US employment by 1.24 million net new full-time jobs by 2020;
- Grow GDP by $88 billion in 2020 and cumulatively by $1.11 trillion (in net present value) between now and 2030;
- Provide a net societal savings of over $1.44 trillion between now and 2030;
- Reduce US oil imports by 135 million barrels in 2020 and cumulatively by over 5billion barrels between now and 2030;
- Increase US fuel diversity, reduce summer peak demand for electricity, generate direct societal cost savings and reduce US energy intensity (energy use per unit GDP);
- Reduce GHG emissions by about 466 million metric tons of CO_2 equivalent in 2020, and cumulatively by about 13.5 billion metric tons of CO_2 equivalent between now and 2030.

The analysis underscores the need for continued support and development of multi-objective state, local, and national policy actions to reduce climate-changing emissions and avert the most damaging impacts of climate change. It's important to recognize the findings also present solutions in the form of a combination of effective policies in each economic sector, rather than a single tool at one level of government.

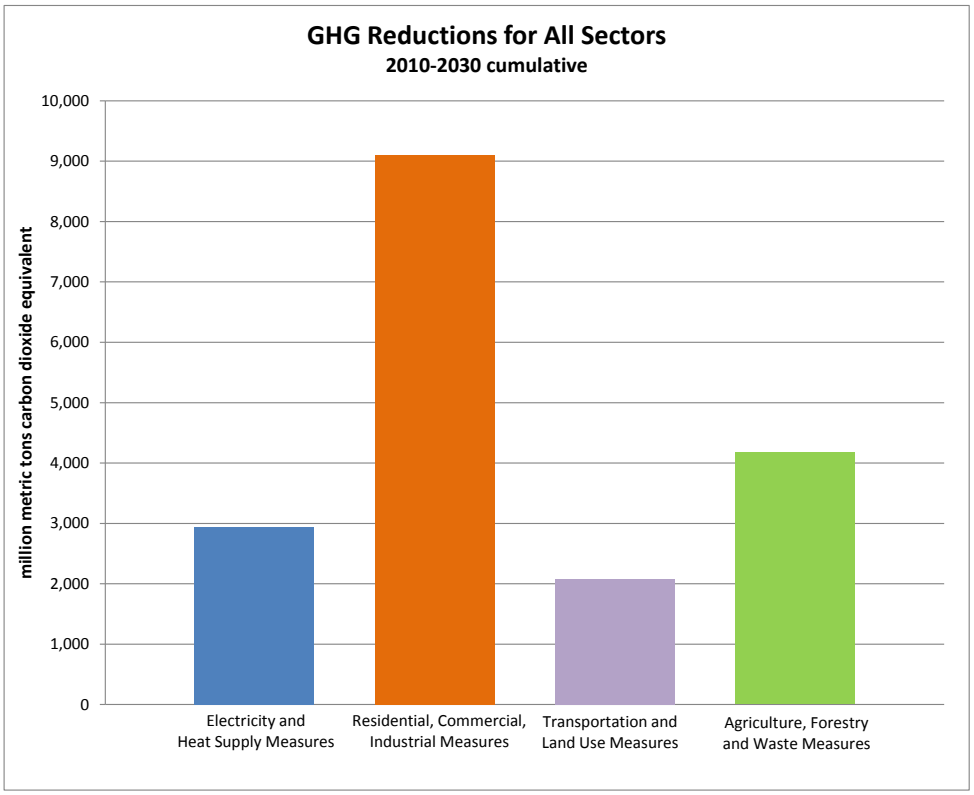
The 2020 goal, while a critical benchmark, is only a step toward the 2050 goal promised by President Obama that seeks to lower emissions to 80 percent below 2005 levels.

The 20 new policies analyzed by the Center were recommended by stakeholders and technical experts across the US, and include:

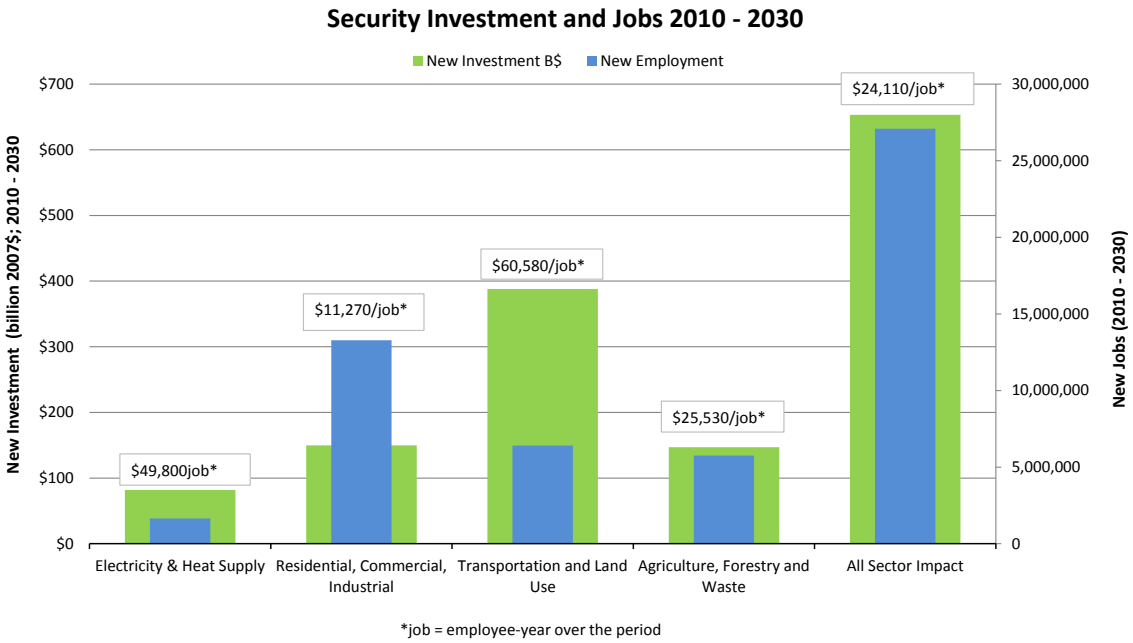
- National Clean Energy Standard
- Incentives for combined heat and power
- Industrial process efficiency and Demand Side Management (DSM) measures
- DSM programs for commercial and residential electricity and natural gas use
- Zero net energy buildings
- Appliance standards

- Advanced building codes for commercial and residential buildings
- Rebates for plug-in hybrid electric and electric vehicles
- National renewable fuel standard
- Smart growth policies for land use
- Expanded public transit
- Anti-idling technologies and practices
- Mode shift from truck to rail
- National CAFE standard/post 2025 targets
- Crop production and nutrient management practices
- Agricultural livestock manure management practices
- Forest retention practices
- Reforestation management practices
- Urban forest management practices
- Integrated waste reduction, recycling, and landfill gas utilization

GHG Impacts

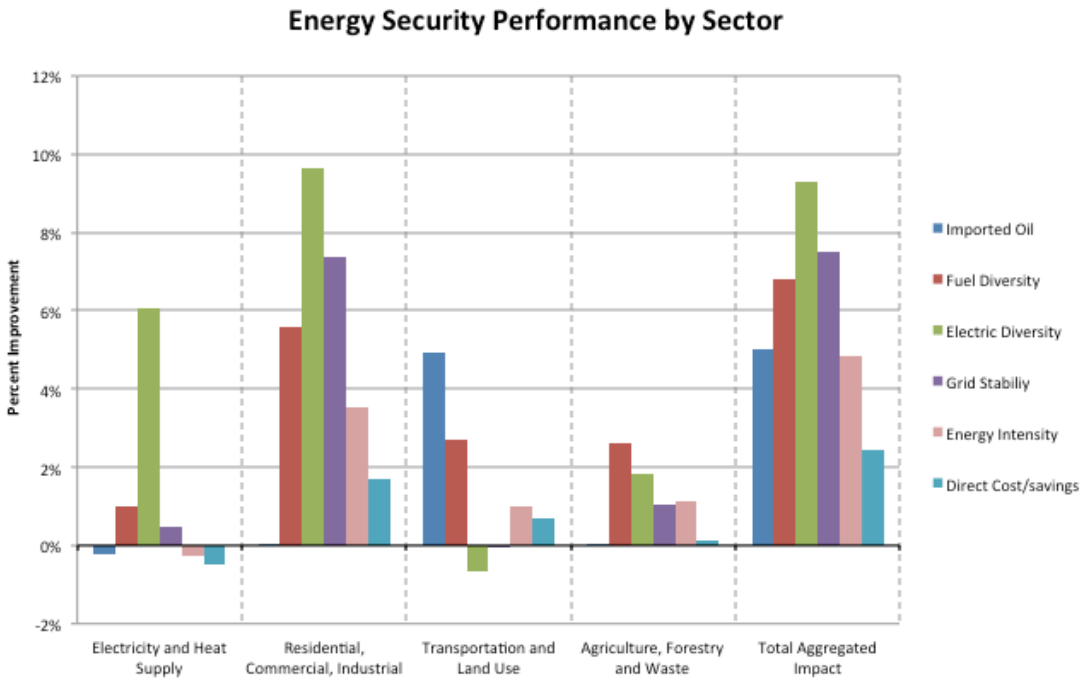


Return on Investment for Job Creation



*job = employee-year over the period

Energy Security Gains



METHODS

The study, "Developing and Assessing Economic, Energy, and Climate Security and Investment Options for the US," by the Center for Climate Strategies identified the significant drivers of emissions forecast changes using state of the art modeling for the economy, price, and policy impacts, including existing local, state, and national energy and transportation policies related to the supply and demand for energy and other resources. To do so, the Center utilized statistical and policy impact analysis to conduct a decomposition analysis of the Energy Information Administration's Annual Energy Outlook projections. This enabled isolation of relative contributions of the economy, specific sector-based policy actions and related market forces, and energy prices.

It also identified 20 specific new policy steps that could be instituted by cities, states, and nationally that would close national GHG pollution gaps, and significantly expand the US economy and energy security. The Center screened results from 20 state-level comprehensive climate and energy plans, combined with national economic and energy security considerations, to identify the top most effective actions in each sector for economic, energy, and climate gains. These actions were further developed and analyzed using state of the art economic and energy modeling tools to design actions that could measurably improve the economy, energy security, and climate protection at the same time.

CONCLUSION

This analysis provides clarity to citizens, policymakers, and elected leaders at all levels of government as to what has worked so far in lowering climate-changing pollution and what is likely to work going forward.

It points out that the combination of actions adopted in each of our economic sectors for multiple reasons and proven at the national, state, and local levels in recent years are providing real progress, and can provide more opportunity in the near future.

That success does not negate the need for a comprehensive, systemic approach to cutting carbon pollution.

While efforts continue to negotiate various national and international policy actions on climate-changing pollution, these findings offer instructive paths for policymakers to consider as effective immediate actions that provide economic growth, energy security, and climate protection benefits at the same time.