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EXECUTIVE SUMMARY
CHANGE IS IN THE AIR: HOW STATES CAN HARNESS ENERGY EFFICIENCY TO STRENGTHEN THE ECONOMY AND REDUCE POLLUTION
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The Opportunity

On June 25, 2013 President Obama called on the U.S. Environmental Protection Agency (EPA) to regulate greenhouse gases from existing power plants. Section 111(d) of the Clean Air Act is the authority on which EPA will base the rule. Several questions that bear on the final rule are still outstanding. How much can we reduce greenhouse gas emissions? At what cost? How readily will states be able to implement these solutions? The language in Section 111(d) gives EPA broad authority, including the opportunity to consider flexible compliance strategies to meet emissions standards. One of the most promising compliance strategies for low-cost pollution abatement is end-use energy efficiency.

In evaluating what the power sector as a whole can achieve, EPA should recognize the leadership the states have already shown in developing their energy efficiency resources rather than imposing an entirely new set of administrative requirements on them. EPA should include efficiency's potential to reduce pollution when setting the emissions standard and allow end-use energy efficiency to qualify as a compliance mechanism in the upcoming regulation. This will help states and the power sector take advantage of the lowest-cost approach to reducing greenhouse gas emissions.

States are ultimately responsible for developing and implementing Section 111(d) plans to reduce carbon dioxide from existing power plants. Together they have decades of experience in successfully implementing—and rigorously measuring and quantifying—efficiency policies and programs as part of the system that meets their power sector demands. They will be able to build on this experience as they tap the substantial efficiency opportunities that remain.

The Approach

This study evaluates the implications of using end-use energy efficiency to reduce greenhouse gas emissions from the power sector. It does so by quantifying the energy, economic, and pollution-reduction impacts of selected energy-saving policies on a state-by-state basis. We evaluate four of the most common and effective energy efficiency policy options available to a state:

- Implement an energy efficiency savings target
- Enact national model building codes
- Construct combined heat and power systems
- Adopt efficiency standards for products/equipment

We assume a scenario in which a state adopts these four policies, and then we quantify the resulting impacts. We rely on actual state experience to estimate the policies' impacts on electricity consumption, the environment, the economy, and jobs. Our findings suggest the minimum amount of CO_2 reductions that could be cost effectively achieved.

Our analysis is not a forecast of what will happen, but a description of the energy, environmental, and economic outcomes of using end-use efficiency in the context of Section 111(d) to reduce greenhouse gases from the power sector. Since we quantify only a subset of the efficiency potential that exists in the states, our results represent a smaller set of savings than what might be addressed in a potential study that considers what is economically or technically achievable.[1] Our analysis is limited to conservative assumptions and adequately demonstrated practices and technologies. All states can readily achieve the levels of energy efficiency we describe.

The Results

If every state adopted the four policies in our scenario, in 2030 carbon dioxide emissions from the power sector would be reduced by 26% relative to 2012 emissions, and power demand would be reduced by 25% relative to 2012. The nation would avoid 600 million tons of carbon dioxide emissions, save over 925 million MWh of electricity, and obviate the need for 494 power plants in 2030.[2]

Our analysis finds that all states would also enjoy considerable economic and environmental benefits under our scenario, since each of them has a great deal of untapped efficiency potential. Table E1 lists the percentage reduction in electricity consumption that each state would achieve in 2030 relative to 2012.

Table E1. Percentage reduction in electricity consumption in 2030 relative to 2012 baseline

Alabama	22%	Illinois	23%	Nebraska	19%	South Carolina	24%
Alaska	35%	Indiana	22%	Nevada	24%	South Dakota	20%
Arizona	39%	Iowa	25%	New Hampshire	31%	Tennessee	26%
Arkansas	22%	Kansas	23%	New Jersey	27%	Texas	25%
California	28%	Kentucky	22%	New Mexico	30%	Utah	27%
Colorado	28%	Louisiana	26%	New York	37%	Vermont	28%
Connecticut	30%	Maine	26%	North Carolina	24%	Virginia	23%
Delaware	23%	Maryland	23%	North Dakota	21%	Washington	23%
District of Columbia	26%	Massachusetts	32%	Ohio	23%	West Virginia	23%
Florida	25%	Michigan	21%	Oklahoma	22%	Wisconsin	24%
Georgia	24%	Minnesota	24%	Oregon	27%	Wyoming	25%
Hawaii	36%	Mississippi	24%	Pennsylvania	23%		
Idaho	23%	Missouri	21%	Rhode Island	25%		
		Montana	23%				

[1] This analysis also does not include the many additional resources states might use to reduce greenhouse gas emissions, such as renewable energy, efficiency upgrades at the power generator, fuel switching, and dispatch shifting.

[2] Based on 500 MW and assuming the national average capacity factor (45%) and 5% line losses.

What would it cost to adopt these policies? It would cost less than business as usual and, since energy efficiency simultaneously meets electricity demand and reduces pollution, it would cost much less than meeting demand and reducing greenhouse gas emissions separately. Energy efficiency is a low-cost solution to multiple challenges. It helps maintain electric system reliability as old power plants retire, meets demand without the expense of building new power plants, and avoids expensive emission control technologies that would needed to keep older, inefficient power plants operating.

Our efficiency scenario would increase national gross domestic product by $17.2 billion in 2030 and produce a net gain of about 611,000 jobs. It would also improve states' economic outlook. While the impact on jobs is larger in some states than others, all 50 states would see net job creation.

Figure E1 compares some of the benefits and costs of a future with energy efficiency policies and one without.

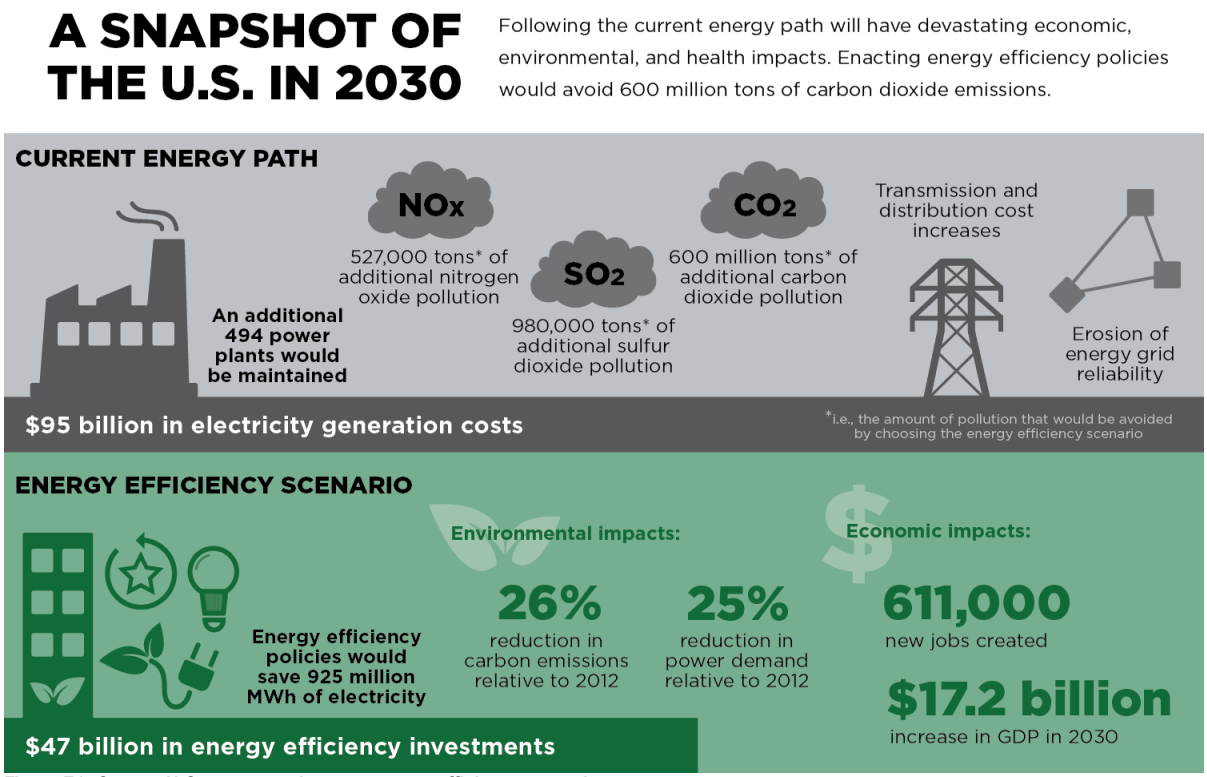

Figure E1. Current U.S. energy path versus energy efficiency scenario

Conclusions

There has been a great deal of speculation about how a Section 111(d) rule should be structured, what it could achieve, and what the impacts of regulation might be on the economy. Our analysis shows the following:

1. An emissions standard set at 26% below 2012 levels can be achieved at no net cost to the economy. This standard will create 611,000 new jobs, and it will have a positive economic impact on the country.

2. The U.S. power sector can significantly reduce greenhouse gases while states maintain the flexibility to make use of all of their energy resources.

3. The policies and technologies included in our analysis have already been tested and are deployable now. The benefits can be quantified. There is no need to delay.

It is also important to note that while end-use energy efficiency has long been cost effective, regulatory and market barriers continue to inhibit increased investments in efficiency policies and programs. Not only should a rulemaking that limits greenhouse gas emissions recognize the emissions benefits of energy efficiency, but it should also be stringent enough to overcome existing market barriers. A rule that sets a weak standard or does not clear the path for efficiency would leave states with more expensive compliance options. As a result, the nation would lose out on the economic benefits we describe.

The United States is a large country with a diversity of natural resources. Some states have coal, while others make use of hydropower, nuclear, wind, or natural gas. Energy efficiency gives states the flexibility to take advantage of the full range of their natural resources while also reducing pollution. It is the one resource they cannot afford to ignore.