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MJB&A Issue Brief ■ June 5, 2012

Proposed Clean Energy Standard Act of 2012 Raises Opportunities as well as Questions

As election year politics compound the complexity of U.S. energy policy-making, clean power market players face questions about the future of existing policies and the prospects for new ones. Federal investment and tax-based support is expiring; state RPS programs are under attack; climate change legislation has failed; and low power prices are cutting into margins for renewable energy developers and fossil-power generators alike. The following issue brief examines the latest significant proposal, the Clean Energy Standard Act of 2012 (S. 2146), reviews key findings from M.J. Bradley & Associates (MJB&A) and U.S. Energy Information Administration (EIA) analyses, and identifies questions to be addressed in future discussions.[1]

Background

Having abandoned his push for a national cap on greenhouse gas (GHG) emissions, President Obama turned his support toward a broader Clean Energy Standard (CES) in the 2011 State of the Union address. Senators Bingaman and Murkowski released a white paper and request for comments in late 2011. In March 2012, Bingaman introduced a bill with the support of nine co-sponsors, but noted that the ambitious legislation is unlikely to move in the current Congress.[2]

Unlike a national renewable electricity standard, a CES achieves emission reductions by requiring that an increasing share of electricity meet generation performance standards for carbon dioxide (CO_2). The proposed bill would support a broad set of fuels in order to win support from a geographically diverse coalition of legislators. Importantly, the measure includes support for nuclear, natural gas, and clean coal in addition to renewable energy resources. Certain older existing units would not qualify, but most newer units would be eligible to generate clean energy credits. Any new generating unit could earn whole or partial credits as long as it has a net CO_2 output of 1,808 lbs per MWh or less.

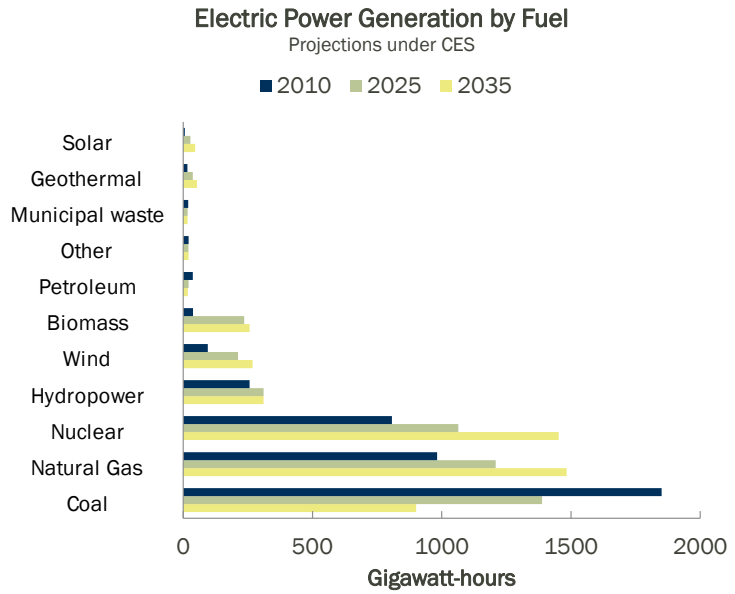
Passage of transformative energy policy in an election year is unlikely, and the CES already faces opposition from higher-carbon power generators, but the proposal has triggered analyses and discussions and provides a foundation for future proposals in the 113th Congress.

[1] EIA Analysis of the Clean Energy Standard Act of 2012, http://www.eia.gov/analysis/requests/bces12/pdf/cesbing.pdf

[2] Senator Bingaman has indicated that he will not run for re-election in 2012.

Figure 1: EIA Electricity Generation Projections Show CES Boosting Biomass, Nuclear, and Renewables, and Forcing Lower Output from Coal and Oil

Compound Annual Growth	
2015-2025	2025-2035
17%	5%
9%	4%
-1%	0%
0%	0%
-6%	-2%
20%	1%
8%	2%
2%	0%
3%	3%
2%	2%
-3%	-4%



(EIA, MJB&A)

Key Takeaways

Projecting the outcomes of the CES is subject to numerous inputs and assumptions in the modeling process. The uncertainties in modeling reflect uncertainty about the future: policy sets the stage, but market costs and technical gains in low-carbon generation and energy storage will also shape the outcomes. The following presents some fundamental insights and questions raised by the EIA and other analyses.

- **Natural gas and biomass could provide a bridge to a nuclear and renewable future.** By design, the Bingaman CES favors zero-carbon fuels such as nuclear, biomass, and wind, over coal and natural gas. In EIA modeling runs, nuclear generation replaces a large share of coal output, and biomass also ramps steeply. But recent history and current cost estimates show that nuclear is expensive to build, and biomass projects have been limited by the reliability of the fuel supplies. Natural gas plants, as the next-cleanest and lowest risk alternative to coal, are projected to take up the remaining slack, which could end up being significant if nuclear and biomass are constrained.
- **Incentive on par with expiring federal tax credits, but may not be enough.** The CES would create a financial incentive for renewables on par with the combined renewable energy credit (REC) prices and the production tax credit (PTC) for wind, but less than the investment tax credit and significantly less than solar REC prices. It would create a new incentive for other forms of generation. But it may not send enough of a price signal to compensate for the development and market risks for nuclear, biomass, and renewable developers.
- **Rate impacts hinge on capacity investment.** The electricity price impacts of the Bingaman CES are likely to be small before 2020 as companies switch to cleaner resources as part of their efforts to comply with new EPA regulations. EIA projects that the policy pushes power prices above the reference case by 4 percent in 2025 and 18 percent in 2035. MJB&A's own projections show a modest surplus of clean energy credits in the early years when the target is low, creating a reserve that helps mitigate price impacts until the target increases in later years.
- **Alternative Compliance Payment (ACP) caps cost risk.** EIA projects the clean energy credit price in 2025 will be 32 percent below the ACP (3.3 vs. 4.9 ¢ per kWh), but will reach the ACP by

2035. The starting ACP of 3.0¢ per kWh implies a *marginal* CO_2 price cap of $37 per metric tonne, but increases to 8.0¢ per kWh ($97 per tonne CO_2) by 2035 (2010$). (Since the CES only covers a portion of electricity sales, this would not impact generation economics in the same way as a sector-wide emissions cap.)

- **Renewables grow to only 13 percent of output under EIA projections.** Among non-hydro renewables, EIA projects that solar and wood/biomass undergo the steepest increases in output over the first decade, with biomass growing at a compound annual rate of 20 percent and solar at 17 percent. Wind and geothermal grow at 8 and 9 percent, respectively. Nonetheless, wind and biomass each account for 6 percent and solar for 1 percent of total generation by 2035.

Key Questions

- **Balancing timing against costs**. Generators and retailers would need to balance various factors in terms of when and how to generate, purchase, or use clean energy credits. The unlimited banking provision provides an incentive to exploit near-term economic opportunities to generate credits and would likely lead to a surplus in the early years of the program. Analogous to the experience in the U.S. Acid Rain Program where coal operators delayed more expensive investments in scrubber retrofits by switching to lower sulfur coals, shifting utilization between coal plants and existing gas generation capacity may provide an economic strategy for building a bank of clean energy credits.
- **Regional impacts**. Because of the complexity of rules around utility exemptions, deductions of older nuclear and hydropower output from the obligation, and regional variations in the existing grid mix, the impact of the CES would vary from state to state. The EIA analysis takes a high-level view of the impacts and does not attempt to, in their words, "disentangle" the various regional complexities, which will be difficult to decipher.
- **Market operations.** The Bingaman proposal directs DOE to determine how to operate clean energy credit markets. While vertically integrated power retailers will have a clear line of sight to generators, transacting clean energy credits within power pools will be complicated by the diverse mix of fuel types and CO_2 intensities that could be represented in any given megawatt-hour in the market. A key question is how independent power producers, with clean energy resources, would capture the value of the credits they generate.
- **Pre-emption of other EPA rules.** In a May 17th committee hearing on the CES, Senator Bingaman agreed that it may be necessary to add a pre-emption provision to the CES. This would suspend certain overlapping EPA rules if the CES were to be approved and implemented. The scope of this pre-emption remains an open question.
- **Interplay with other policies and agency actions.** The CES would have the same directional impact as other policies not captured in EIA's baseline analysis, such as the Mercury and Air Toxics Standard (MATS) and New Source Performance Standards for GHGs. All of the policies would boost demand for clean generation relative to GHG-intensive generation and would complement, rather than conflict with, each other. But the timing of implementation for the other rules will have a direct bearing on the supply of clean energy credits. Moreover, action by key agencies such as the NRC, FERC, BLM, state PUCs, and others will be essential to facilitate nuclear permitting, transmission siting, reliability reviews, and other steps in the transition.
- **Treatment of biomass and Combined Heat and Power (CHP).** The proposal calls for further study of the impacts of biomass, as well as further review by DOE of the appropriate treatment of thermal output from CHP units. It also calls for greater research into the lifecycle emissions of natural gas.

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