

**STATEMENT OF**  
**HOWARD GRUENSPECHT**  
**ACTING ADMINISTRATOR**  
**U.S. ENERGY INFORMATION ADMINISTRATION**  
**U.S. DEPARTMENT OF ENERGY**  
**BEFORE THE**  
**COMMITTEE ON ENERGY AND NATURAL RESOURCES**  
**UNITED STATES SENATE**  
**May 17, 2012**

Mr. Chairman and Members of the Committee, I appreciate the opportunity to appear before you today to discuss recent analysis of the proposed Clean Energy Standard Act of 2012 (CESA) by the U.S. Energy Information Administration (EIA).

EIA is the statistical and analytical agency within the U.S. Department of Energy. It collects, analyzes, and disseminates independent and impartial energy information to promote sound policymaking, efficient markets, and public understanding regarding energy and its interaction with the economy and the environment. EIA is the Nation's premier source of energy information and, by law, its data, analyses, and forecasts are independent of approval by any other officer or employee of the United States Government. Therefore, our views should not be construed as representing those of the Department of Energy or other federal agencies.

**Projected Impacts of the CESA**

At the request of Chairman Bingaman, EIA analyzed the potential impact of the proposed CESA legislation on the development of future electricity markets and projected carbon dioxide (CO<sub>2</sub>) emissions from electricity generation. Our report, issued earlier this month, is provided as an attachment to this testimony. The CESA analysis scenario is referred to in the report as the BCES12 case,

to distinguish these results from those we reported on in November of 2011 regarding a closely-related set of proposals. Please note, however, that the details of CESA vary significantly from the details of the clean energy standard (CES) policies that EIA has previously reported on, including the treatment of small utilities, credit banking, excluded generation, and alternative compliance payments. This report is based on EIA's Annual Energy Outlook 2012 Early Release Reference case.

As might be expected from the underlying structure of the proposal, generation fueled by nuclear energy, natural gas, and non-hydro renewable sources all increase, as shown in Figure 1 of the attached report. This is a direct result of the ability of nuclear and renewable generation to earn credits toward meeting the target, and the partial crediting of natural gas generation toward meeting the target. In contrast, most coal generation is not able to earn credits, so its use declines. Although the CESA proposal has specific language allocating credits for both combined heat and power (CHP) and carbon capture and sequestration (CCS) technologies, neither plays a significant role in compliance. CHP generation does increase moderately, but growth is limited by a number of factors, including the limited period in which CHP facilities can earn their full, net value for each qualifying credit, as well as the small size of the CHP market relative to the bulk electricity supply market.<sup>1</sup> CCS technologies are projected to remain less competitive than other qualifying sources.

The approach to awarding credits to generation in the proposal is directly tied to the carbon intensity of each technology, or the tons of carbon emitted per kilowatt-hour generated. As a result, projected CO<sub>2</sub> emissions in the electric power sector in 2035 are 44 percent below the projected Reference case level and 44 percent below their level as of 2005, as shown in Figure 3 of the attached report. Although impacts of the proposal are largely felt within the electric power sector, there are opportunities for certain combined heat and power projects in other sectors to contribute to overall CO<sub>2</sub> emissions reductions. Projected energy-related emissions for all sectors in 2035 are about 18 percent lower than in the Reference case. Nearly all of these overall reductions occur in the electric power sector.

The CESA proposal allows affected electricity retailers to bank any excess credits earned in a given year, and use them toward compliance indefinitely into the future. This banking option encourages early compliance efforts and provides for relatively stable growth in the credit price. In addition, affected companies may pay an "alternative compliance payment" (ACP) at any time in lieu of procuring qualifying generation. However, use of the ACP is projected to be limited, absent constraints on the rapid expansion of nuclear power. The projected credit price starts at around \$20 per megawatt-hour (MWh) in 2015, rising to almost \$80 per MWh by 2035 (both in real 2010 dollars).

Impacts on electricity prices over the next decade are minimal, but price impacts then rise, as shown in Figure 4 of the attached report. Projected national average electricity prices start to rise after 2020. National average electricity prices are less than 5 percent above those in the AEO 2012 Early Release Reference case through 2025, but by 2035 they are 18 percent above the Reference case level. Impacts on natural gas prices are felt the most in the early years, and are gradually ameliorated over time. Increasing the dispatch of existing natural gas plants provides a quick, low-cost route for early

---

<sup>1</sup> CESA also includes a provision that provides additional CES credits to CHP facilities for displaced heat load under procedures to be established by the Secretary at a later date. That provision was not modeled.

compliance efforts, but the value of natural gas as a compliance option is significantly reduced as the clean energy target share starts to exceed the credit value for this resource. That is, a resource that can only earn 50 percent of a credit is less valuable at achieving an 80 percent target than a resource earning more than 80 percent of a credit.

### **Variability of Regional Impacts**

Impacts on electricity prices are not the same everywhere in the country, as the stock of existing clean energy capacity and opportunities for additions to clean energy capacity vary across states and regions. In addition, even within a given state or region, electricity price impacts may vary substantially between customers served by covered and exempt retailers. “Small” electricity retailers, as defined in the proposal, are exempt from requirements to purchase credits, and thus do not have to recover direct compliance costs in their rates. Covered retailers, however, may have to pass-on these direct compliance costs.

Full analysis of the impacts of the small retailer exemption is beyond the resolution of this analysis. However, we were able to assess the general price impact contours, which vary depending on the State-level regulatory structure in place, regulator discretion, the clean energy target level, and the relative share of the load that is served by covered versus exempt retail utilities. In addition, net compliance costs are affected by whether or not a given retail utility, exempt or covered, owns qualifying resources and has excess credits to sell into the market. EIA’s results suggest that there is a potential for a large divergence in prices paid by customers of covered and exempt sellers as the target increases. By 2030, CES-induced compliance costs could result in electricity price levels that are about 3 percent to 30 percent higher for covered retailers than for exempt retailers in the same region.

### **Other Uncertainties in the Analysis**

As with all projections, there is considerable uncertainty about how market conditions and technology cost and performance will evolve over time. This analysis only looked at the potential impacts of a CES under one set of assumptions. While we are relatively confident, based on this and previous EIA analyses, that a CES will lead to increased reliance on generation from natural gas, nuclear, renewables and, potentially, fossil plants with CCS, the exact mix of technologies chosen could vary significantly under alternative assumptions.

While projecting the future of national energy markets is inherently uncertain, two factors stand out as key uncertainties in this analysis. First, there is uncertainty about the ability of the nuclear industry to ramp up quickly even with the incentives that will be provided by CESA. While new nuclear capacity is once again under construction in the United States, a very rapid ramp-up could prove to be challenging, especially if problems affecting the operation of the existing fleet of nuclear plants or cost overruns and/or schedule delays in the building of new plants occur and result in reduced generating company or

public support for nuclear power. Sensitivity analyses of a scenario with no additional nuclear plants built beyond the Reference case capacity indicate that a mix of natural gas, wind, and solar generation would largely compensate for the lack of qualifying nuclear generation. Such a scenario would also result in use of the ACP for compliance in lieu of qualifying generation.

Second, the proposal does not specify a credit value for generation from biomass resources. While many analysts take the view that the use of sustainable biomass fuels should result in net zero carbon emissions over a long period of time, there is disagreement in the literature about the impact and importance of near-term carbon emissions from these resources and the possibility that sustainable biomass fuels could have adverse indirect effects even over an extended time period. CESA requires the Secretary of Energy to determine appropriate credit values for biomass feedstocks based on a proposed study from the National Academy of Sciences (NAS). Absent a ruling from the Secretary or the results of the NAS study, EIA assumed that biomass would earn a full CES credit for each MWh of generation. This assumption is consistent with prior EIA reports and analysis that assumes biomass to be a net-zero carbon resource. Sensitivity analysis of scenarios with a half or zero credit for biomass indicate that biomass-based compliance would shift to natural gas and other renewable resources, with little impact on credit prices.

## **Conclusion**

As I noted at the outset, while EIA does not take policy positions, its data, analyses, and projections are meant to assist policymakers in their energy deliberations. EIA has often responded to requests from this Committee and others for data and special analyses, and I want to assure you that we stand ready to do so over the coming weeks and months.

This concludes my testimony, Mr. Chairman and Members of the Committee. I would be happy to answer any questions you may have.