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My name is Larry Parker. On behalf of the Congressional Research Service (CRS), Brent Yacobucci and I would like to thank the Committee for its invitation to testify here today. S. 2191would establish a cap-and-trade program to reduce U.S. greenhouse gas emissions through the year 2050.[1] While CRS takes no position on the bill, CRS has just completed a review and synthesis of six studies that attempt to project the costs of S. 2191 to the year 2030 or 2050. It is difficult (and some would consider it unwise) to project costs up to the year 2030, much less beyond. The already tenuous assumption that current regulatory standards will remain constant becomes more unrealistic, and other unforeseen events (such as technological breakthroughs) loom as critical issues which cannot be modeled. Hence, ***long-term cost projections are at best speculative, and should be viewed with attentive skepticism.*** In the words of the late Dr. Lincoln Moses, the first Administrator of the Energy Information Administration: "There are no facts about the future."[2]

Models cannot predict the future, but they can indicate the sensitivity of a program's provisions to varying economic, technological, and behavioral assumptions that may assist policymakers in designing a greenhouse gas reduction strategy. The various cases CRS examined do provide some important insights on the costs and benefits of S. 2191 and its many provisions. We have summarized these insights into seven points:

First, if enacted, the ultimate cost of S. 2191 would be determined by the response of the economy to the technological challenges presented by the bill. The bill provides numerous research and development, deployment, regulatory, and price incentives for technology innovation to reduce greenhouse gas emissions. The potential for new technology to reduce the costs of S. 2191 is not fully analyzed by any of the cases examined, nor can it be. The process of technology development and dissemination is not sufficiently understood at the current time for models to replicate it with any long-term confidence. In the same vein, it is difficult to determine whether the various incentives provided by S. 2191 are directed in the most optimal manner.

Second, a considerable amount of low-carbon electric generating capacity would have to be built under S. 2191 in order to meet the reduction requirement. The cases presented here do not agree on the amount of new generating capacity necessary under S. 2191 or the mix of fuels and technologies that would be employed. The estimated amount of capacity constructed depends on the cases' assumptions about the need for new capacity, and replacement/retirement of existing capacity under S. 2191, along with consumer demand response to the rising prices and incentives contained in the bill.

Third, the cases suggest that the carbon capture and storage bonus allowance allocation provided under S. 2191 would be effective in encouraging deployment of carbon capture and storage technology, accelerating development by 5-10 years. However, the cases disagree on

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[1] CRS Report RL34489, *Climate Change: Costs and Benefits of S. 2191*, by Larry Parker and Brent Yacobucci.

[2] Lincoln E. Moses, Administrator, Energy Information Administration, *Annual Report to Congress: 1977, Volume II* (1978).

whether the bonus amount provided by S. 2191 is sufficient, or needs to be extended additional years.

Fourth, the cases generally indicate that domestic carbon offsets and international carbon credits could be valuable tools for entities covered by S. 2191 not only to potentially reduce costs, but combined with the bill's provisions permitting the banking of allowances, to provide companies more time to develop long-term investment and strategic plans, and to pursue new technologies. Cost could be lowered further by allowing greater availability of domestic offsets and international credits and with a broader definition of eligible international credits. A more direct path for permitting use of international credits would also reduce one of the more important cost uncertainties revealed by the cases' varying interpretations of S. 2191's international credit eligibility requirements and their projected price.

Fifth, the proposed Carbon Market Efficiency Board could have an important effect on the cost of the program through its power to increase the availability of domestic offsets and international credits. The cases generally do not consider the Board in their analyses but, one can infer from the results that the most important power that the Board may have is the ability to increase the availability of domestic offsets and international credits (although the Board would not have the authority to change the eligibility requirements for domestic offsets or international credits). In this sense, the Board's powers could mesh with the previous insight about the importance of offsets and banking to the cost-effectiveness of S. 2191. However, the Board is primarily designed to deal with short-term volatility due to episodic events in the allowance market and has only short-term powers. Whether it could coordinate a longer term strategy, if necessary, with its proposed authority is not known.

Sixth, the proposed Low Carbon Fuel Standard could significantly raise fuel prices and limit supply. The effects would depend on what fuels are included in the LCFS, the level of emissions reductions achieved by alternatives, and the ability of suppliers to produce those alternatives. If plug-in hybrid vehicles or large amounts of cellulosic biofuel are available early, or if certain fuels such as aviation fuel are excluded from the mandate, the costs could be lower.

Seventh, S. 2191's potential climate-related environmental benefit is best considered in a global context and the desire to engage the developing world in the reduction effort. It is in this context that the United States and other developed countries agreed both to reduce their own emissions to help stabilize atmospheric concentrations of greenhouse gases and to take the lead in reducing greenhouse gases when they ratified the 1992 United Nations Framework Convention on Climate Change (UNFCCC). **This global scope raises two issues for S. 2191: (1) whether S. 2191's greenhouse gas reduction program and other provisions would be considered sufficiently credible by developing countries so that schemes for including them in future international agreements become more likely, and (2) whether S. 2191's reductions meet U.S. commitments to stabilization under the UNFCCC and occur in a timely fashion so that global stabilization may occur at an acceptable level.**

Thank you. We will be glad to answer any questions you may have.

Attachment: CRS Report RL34489, *Climate Change: Costs and Benefits of S. 2191*, by Larry Parker and Brent Yacobucci