

**--Tentative and preliminary draft; for discussion purposes only--**

**Provide tax incentive to reduce carbon emissions from  
base load electricity generation facilities**

**Present Law and Background**

There is still disagreement related to whether and how to address the increase in global anthropogenic greenhouse gas (GHG) emissions. However, there is a growing consensus in the United States among experts in the energy industry, environmental organizations and the Department of Energy that the long-term solution to a low-GHG emissions energy future will include continuous reliance on abundant and low-cost electricity from coal.

According to the National Coal Council, coal provided fuel for 18.5 percent of total U.S. energy consumption and 43 percent of United States electric power generation in 2013. However, the amount of coal-supplied energy in the U.S. continues to drop at a rapid, and unprecedented, rate. During the first quarter of 2016, coal usage was at its lowest level since 1981. The reduced usage is likely to continue due persistent low natural gas prices as well as potentially due to new and pending state and federal CO<sub>2</sub> emission requirements—in particular those under the Clean Power Plan.

The reduction in coal production has a negative impact on the local economies of many coal-producing states, a negative impact on the nation's base-load generation capacity and grid reliability, and a negative economic impact on consumers across the United States. According to the American Coalition for Clean Coal Electricity, the 22 states that generate, on average, less than 8 percent of their electricity from coal pay an average 12.95 cents per kilowatt hour (kWh) for their electricity, which is 24 percent more than the national average price for electricity. However, the 15 states that, on average, generate nearly 70 percent of their electricity from coal pay on average 9.10 cents per kWh, which is 13 percent less than the national average.

To comply with environmental regulations, while also ensuring a vibrant domestic coal industry, improved CO<sub>2</sub> reduction technology is necessary, including carbon capture, utilization and sequestration (CCUS). However, despite the fact that CCUS could enable continued reliance on domestic fossil fuels in a carbon-constrained future, CCUS development is lagging, and has not benefited from to the level of investment provided to intermittent renewable energy production. According to the analysis by the staff of the Joint Committee on Taxation, between 2010 and 2014 there were approximately \$37.3 billion of federal tax expenditures for incentives for intermittent renewable energy generation, while there was just over \$1 billion provided for credits for CCUS.

CCUS technologies generally are in the early stages of development and are highly complex in nature, requiring significant technical and financial risks for developers and investors. On the other hand, renewable systems, which were considered similarly immature only a few years ago, have seen a rapid growth in recent years, in part due to a combination of federal and state incentives that lessen the financial risk as well as many state-level mandates. To encourage the deployment of cleaner coal-fired power plants, similar public policy initiatives are necessary, not only for CCUS, but for a broader suite of technologies that can reduce CO<sub>2</sub> emissions from the existing fleet immediately.

Congress enacted the section 45Q tax credit in 2008 to support the development of technology for carbon capture and sequestration (CCS) from coal fired plants. The provision provides a tax credit of \$20 per ton of CO<sub>2</sub> “eliminated from an industrial source that would otherwise be released into the atmosphere.” The current effort by the coal industry and environmental coalition is to permanently extend the tax credit and increase its value into the \$30–50 per ton range in order to provide sufficient incentive to support additional investment by industry.

Because of the long period required to recover the capital costs of CCS technology, section 45Q primarily is a longer-term effort, which may be particularly effective in supporting the technology for new power plant construction. Some newer plants may also be interested in implementing CCS with the proposed 45Q incentives, but this leaves a gap in the technology options for reducing CO<sub>2</sub> emissions from the sizeable existing fleet of 300 gigawatts of 50 year-old plants. Although some of these plants may face retirement, others could operate for years and offer an opportunity to apply innovative clean coal technologies as they continue to be responsible for producing a significant portion of the country’s electrical energy. There currently is no incentive to invest in technology to reduce carbon emissions from the existing fleet. Yet, the availability of technology to address CO<sub>2</sub> emissions from these older plants could significantly help meet environmental goals while maintaining the reliability and diversity of the U.S. electrical grid. This is especially true as plant owners must make plans for generation in the midst of uncertainties related to GHG policies.

The most cost-effective way to reduce carbon emissions from an existing plant is to increase its generation efficiency. The higher the plant operating efficiency, the lower the CO<sub>2</sub> emissions per unit of power generated. An added advantage of reducing emissions through efficiency gains is that CO<sub>2</sub> reductions are not tied to capture and sequestration, thus extending the number of plants to which efficiency-improving technologies could be applied.

Congress should enact policies to provide a tax incentive to reduce CO<sub>2</sub> emissions that would complement the incentives envisioned by section 45Q. The benefits of such a proposal would include:

- Providing economic incentives for near-term reduction in GHG emissions,
- Supporting the development of technology to help existing facilities meet pending carbon reduction regulations,
- Enhancing grid reliability,
- Helping to maintain a more balanced fuel resource utilization portfolio to stabilize future cost of electricity,
- Adding and saving jobs not only in the coal and power industries, but also the hundreds of thousands of manufacturing jobs that rely on inexpensive and reliable electricity, and
- Continue United States leadership on innovation and technology development that can be deployed globally in the future and increase the options available to minimize GHG emissions.

### **Description of Proposal**

The proposal would provide a production tax credit equal to [\$30] for each ton of CO<sub>2</sub> emission reduction that a qualified coal-fired electricity generating facility achieves during a ten-year period attributable to the implementation of an emission reduction technology. The amount of CO<sub>2</sub> emission reduction would be determined by comparing the amount of CO<sub>2</sub> emissions per net megawatt (MW) of electricity produced during a base period at the facility to the same ratio for the each month during the ten-year period. Any change in the ratio would be multiplied by the net MW hours of electricity produced during the month to determine the amount of CO<sub>2</sub> emission reductions for the month.<sup>1</sup> The tons of CO<sub>2</sub> emission reduction for the taxable year would be determined by taking all applicable months into account. This tonnage amount would then be multiplied by \$30 to determine the amount of credit allowed for the year.

The base period would be the 24-month period beginning January 1, 2015, and ending December 31, 2016. The Secretary of the Treasury would have the authority to make appropriate adjustments to the base period for a facility to the extent circumstances indicate that the initial base period is not representative of emissions for such facility (e.g., if the facility was idle for a significant period during 2015 and 2016).

The measurement of net MWs of electricity generated for a period would be consistent with the information that is required to be provided with respect to the generating facility to the Department of Energy's Energy Information Agency. The measurement of CO<sub>2</sub> emissions for a period would be consistent with the

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<sup>1</sup> The calculation of emission reductions can be expressed as follows:

$$\text{CO}_2 \text{ (Reduced)} = \{(\text{CO}_2/\text{net MW-h})_{\text{month}} - (\text{CO}_2/\text{net MW-h})_{\text{baseline}}\} \text{ times } (\text{net MW-h})_{\text{month}}$$

information that is required to be provided to the Environmental Protection Agency under the program for continuous emission monitoring systems.

A qualified coal-fired electricity generating facility is any facility located in the United States or a U.S. possession that is designed to burn primarily coal to generate electricity and that has a nameplate capacity of at least 25 MW.

The credit would be allowed only if a professional engineer certifies that the emission reduction claimed by the taxpayer reasonably resulted from the use of a qualified technology. A qualified technology would be any technology or process designed to reduce CO<sub>2</sub> emissions. Merely switching fuels from coal to natural gas or utilizing different grades of coal from the base period to the current period would not constitute the use of a qualified technology.

Further, the qualified facility would have to account for any CO<sub>2</sub> emissions it generates as it operates to improve generation efficiency. For example, coal can produce electricity more efficiently (resulting in less CO<sub>2</sub> emissions) if excess moisture is removed from the coal prior to combustion. If a technology used a carbon-based fuel to produce heat to dry coal, the emissions generated during processing the coal would be added to the CO<sub>2</sub> emissions of the power generating facility. However, the use of waste heat from the generating facility to dry coal would not result in incremental CO<sub>2</sub> emissions that would have to be added to the plant's CO<sub>2</sub> emissions. In a similar manner, if a low-or zero-onsite-emissions energy source were used to improve efficiency, as in the case of using concentrated solar energy for feedwater heating, there would be no requirement to modify the net electrical output in the calculation of the overall reduction of CO<sub>2</sub> emitted.

Other examples of qualified technologies would include, but would not be limited to, the following:

- Increases in boiler efficiency, for example, by
  - Reducing sensible heat losses
  - Reducing latent heat losses
  - Reducing radiation and convective heat losses
- Increases in turbine efficiency
- Increases in electrical efficiency
- Reduction in parasitic and system losses
- Improved combustion efficiency
- Improved instrumentation and controls

The Treasury Department, in consultation with the Department of Energy and the Environmental Protection Agency, would be encouraged to publish a list of qualified technologies.

The credit with respect to a qualified coal-fired electricity generating facility would be allowed for the ten-year period beginning with the first full month after

the qualified technology is implemented with respect to the facility. The amount of the credit would be indexed annually for inflation. The credit would be part of the general business credit.

The credit would be allowed to the owner of the qualified coal-fired electricity generating facility. Pursuant to procedures established by the Secretary, the owner could allocate the credit to either the operator of the facility or the person primarily responsible for designing the qualified technology.

The proposal would be effective for qualified technologies implemented after the date of enactment and before [insert date].