



## Memorandum

To: House Energy & Commerce Committee

May 5, 2020

Re: Labor Recommendations on Draft Committee CLEAN Future Bill

We are writing as the unions most at risk of job losses resulting from the passage of comprehensive federal climate change legislation. Labor unions have long supported the adoption of an economy-wide program to reduce CO<sub>2</sub> and other greenhouse gas (GHG) emissions, covering all major sectors of the U.S. economy, including transportation, electric power, industrial, commercial, and residential. We support the Committee's efforts to craft such federal legislation to meet the challenge of climate change. But we are concerned that the overall regulatory framework being developed for the electric power sector in the draft CLEAN Future Act will lead to significant job losses impacting our members and their communities, with no significant resources or future opportunities to provide for any meaningful way to replace those lost jobs with equivalent jobs or income.

In late 2018, our unions joined together to present our unified position on key design elements that should be included in federal legislation to establish a comprehensive, economy-wide GHG reduction program. As set forth in our position paper (attached hereto) that was distributed to the Committee and elsewhere in the House and Senate, we advocated for the establishment of a comprehensive federal framework for reducing GHG emissions across all sectors of the economy based on a Waxman-Markey-type allowance trading program. This type of allowance trading framework is a good starting point for the design of future climate change legislation because it can deliver with environmental certainty and integrity substantial GHG reductions nationwide while also

creating strong incentives for deploying emerging new technologies for achieving those emission reductions from the major sectors of the U.S. economy.

Unions supported the Waxman-Markey legislation in 2009, and contributed to the design of the bill's provisions to award nearly \$150 billion in bonus allowances to support the demonstration and deployment of emerging new carbon capture, utilization and storage (CCUS) technologies on the electric generating fleet. Extensive deployment of CCUS at new and retrofit coal and natural gas power plants is an effective means to advance us toward a clean energy economy, as recognized by the Intergovernmental Panel on Climate Change (IPCC). Moreover, the widespread deployment of CCUS technologies on utility and industrial sources can also be a source of millions of new highly-paid skilled union jobs in the United States. Renewable energy, by contrast, is mainly dependent on lower-paid, non-union jobs that do not support families, provide health care benefits, or allow a worker to build a career.

We are mindful also of the position advanced by the ten union members of the AFL-CIO Energy Committee with respect to the job impacts of the Green New Deal, which serves as a model for key elements of the draft Committee bill:

We welcome the call for labor rights and dialogue with labor, but the Green New Deal Resolution is far too short on specific solutions that speak to the jobs of our members and the critical sectors of our economy. It is not rooted in an engineering-based approach and makes promises that are not achievable or realistic.

We will not accept proposals that could cause immediate harm to millions of our members and their families. We will not stand by and allow threats to our members' jobs and their families' standard of living go unanswered.<sup>1</sup>

#### A Clean Energy Standard Destroys Jobs

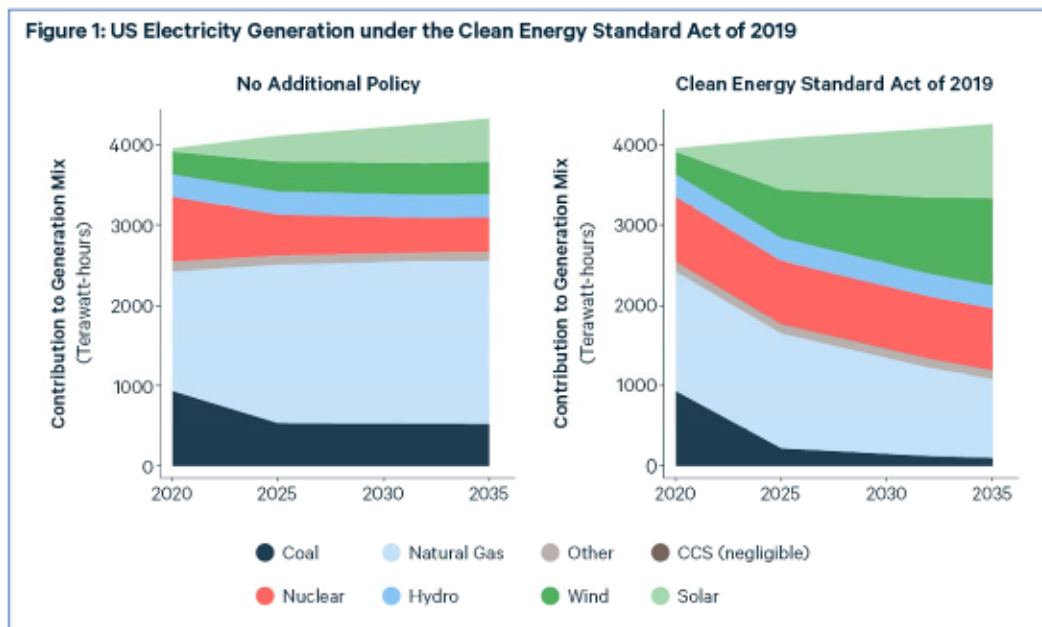
The Committee solicited input from stakeholders before selecting a Clean Energy Standard (CES) as the regulatory framework for reducing CO<sub>2</sub> emissions from the electric generation sector. Our unions and a diverse array of stakeholders - ranging from American Electric Power to the Natural Resources Defense Council - recommended to the Committee the adoption of an allowance-based cap and trade program as the most effective and efficient way to reduce future electric power emissions.

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<sup>1</sup> AFL-CIO Energy Committee, March 9, 2019, letter to Honorable Edward Markey and Honorable Alexandria Ocasio-Cortez.

We agree. An allowance trading program offers the best design options for advancing CCUS technology and job creation in a climate bill through a generous bonus allowance program with phased-in timing of emission targets. Bonus allowances can complement Section 45Q tax credits, increasing the financial incentive for electric generators to employ CCUS for underground storage or for enhanced oil recovery. Both the IPCC and the International Energy Agency (IEA) have determined that aggressive global emission reduction targets called for by the Paris Climate Change Agreement simply cannot be achieved without widespread deployment of CCUS technologies across the electric power and major industrial sectors worldwide.<sup>2</sup>

Analyses by Resources for the Future (see chart below) of previous CES bills show that a stringent clean energy mandate would not advance CCS, would eliminate most of the coal fleet over the next five years, and, by implication, would lead to near-term widespread unemployment across the coal, electric power, and rail sectors. Moreover, unlike a cap-and-trade system with allowance set-asides or a carbon tax, a CES program that simply mandates the progressive adoption of clean energy generation, by definition, can never produce a revenue stream that can be dedicated for meaningful labor adjustment programs such as compensation for lost wages and benefits and community redevelopment.



Source: Resources for the Future, Projected Effects of the Clean Energy Standard Act of 2019 (May 2019).

<sup>2</sup> See, e.g., IEA, World Energy Outlook 2019, at <https://www.iea.org/reports/world-energy-outlook-2019#fuels-choices> (sustainable development scenario requires ~5 Gigatons of CO2 to be removed by CCS by 2050 to achieve zero CO2 emissions.)

We also are concerned that the Committee's proposal provides significant incentives for the electric power sector to shut down existing coal-fired generating units and switch to high-efficient gas-fired generation in the early years of the program. This incentive for the early shutdown of coal plants is created by providing partial clean energy credits to existing and new natural gas simple or combined cycle generating technologies without the installation of any emission controls so long as those gas units can achieve emissions rates below 0.82 metric tons of CO<sub>2</sub> per MWh.

We are likewise concerned about the impacts of the alternative compliance payment (ACP) on the economic viability of the nation's coal generation units. The average coal unit emits about 1.0 metric tons of CO<sub>2</sub> per MWh, and thus would receive no clean energy credits for the electricity that it generates under the CES program. As a result, coal-fired units would be left with no choice but to purchase credits on the open market or make payments at escalating ACP fee levels in order to have a market for their generation.

Based on 2018 EPA emissions data from EPA's Clean Air Market Division, the \$22/ton ACP fee in 2022 translates to an added cost of more than \$4 per MWh for the average coal plant. This fee increases each year, thereby further increasing the added cost of electricity generated by each coal unit. If an electric utility does not have ready access to new zero-carbon energy sources, the potential consequence of this fee would be large-scale retirements of the coal fleet - and massive disruption to workers and communities - within just a few years. Both natural gas combined cycle and single cycle turbines would avoid any penalties under the ACP to the extent that their emission rates are below 0.82 metric tons per MWh

Another important design issue relates to the timeframe for implementation of the clean energy mandate. The Committee's CES proposal imposes a steep and stringent mandate that begins in 2022 and rapidly escalates each year thereafter until it achieves 100 percent net clean energy by 2050. To minimize immediate adverse impacts on the existing coal fleet, assure reliability of electric grid, and facilitate an effective transition for American workers, it is critically important to set a glide path for the CES mandate that reflects the cost and availability of technologies (such as CCUS and hydrogen generation) for reducing CO<sub>2</sub> emissions from both existing and new dispatchable, baseload generation. For this reason, we recommend that the start of the clean energy mandate begin no sooner than ten years following the enactment of legislation. This additional time is needed to complete demonstration of CCUS and other new technologies that are now emerging for reducing or avoiding CO<sub>2</sub> emissions from electric generating facilities. Furthermore, at a minimum, the CES program should

provide a waiver or similar safe harbor of at least [10] years from clean energy requirements for those existing coal plants that commit to install CCUS technologies within a specified time period.

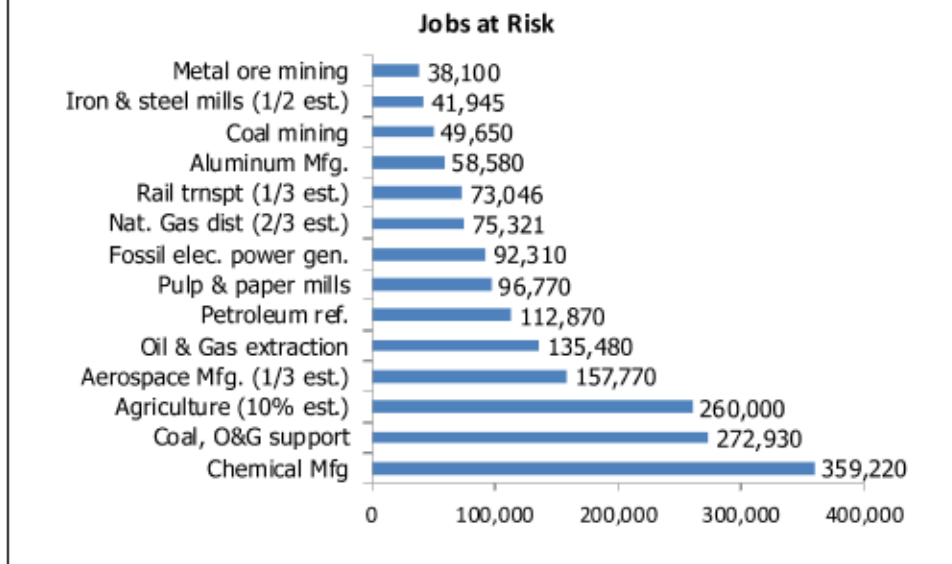
We recognize the importance of providing a feasible means for power generators to continue to rely on fossil fuels for a portion of their generation portfolios. We strongly recommend that the Committee modify the draft bill to provide robust financial incentives for the extensive deployment of CCUS technologies on both natural gas and coal units.

### Net Zero Targets Put Jobs at Risk

The draft bill advocates achieving net-zero GHG emissions by 2050, with most regulatory decisions left to future EPA regulations and state implementation plans. For example, many of the control measures necessary for achieving this level of reduction are not specified for the transportation, commercial residential, manufacturing and other industrial sectors of the economy. We are very concerned that the implementation of these control measures and policies – while not specified in bill – could lead to massive unemployment across many energy-intensive industry sectors with further harmful economic and social impacts to their supporting industries and communities.

Our preliminary assessment is that some two million direct jobs in 15 carbon-intensive industries may be at risk of significant job loss with policies adopting a net zero GHG policy (see chart below), along with seven million indirect jobs in supporting industries and communities. The direct wages and benefits paid to workers in these 15 industries amounted to some \$175 billion in 2017, based on data from the Bureau of Labor Statistics and the Department of Labor. As discussed below, we recommend that the Committee pursue modeling to better define the magnitude of the macroeconomic impacts of a net zero GHG policy on the U.S. economy and American workers.

## Two million direct jobs at risk with net zero climate policies in 15 carbon-intensive industries



### Green Jobs Will Not Offset Job Losses

Recent estimates on the job impacts of a Green New Deal suggest that job growth in energy conservation and related sectors may more than offset direct job losses in the energy supply sectors.<sup>3</sup> We strongly disagree with these findings. Most importantly, these estimates are not based on credible macroeconomic modeling, which is necessary to evaluate the potential net job and other economic impacts of a true net zero policy scenario.

Most economic analyses of large-scale carbon reductions have relied on the DOE/EIA model using carbon tax proxies for the plethora of sector-specific policies and programs needed to achieve a net-zero outcome. The DOE/EIA model is a useful tool for assessing the impacts of incremental energy policy changes, such as higher oil prices or more stringent renewable energy standards. However, it is not designed, and thus not capable, to measure the impacts of transformational policies affecting the structure and composition of virtually all U.S. industries that produce or depend on fossil fuels.

<sup>3</sup> See, M. Brown and M. Ahmadi, "Would a Green New Deal Add or Kill Jobs," *Scientific American*, December 17, 2019, available at <https://www.scientificamerican.com/article/would-a-green-new-deal-add-or-kill-jobs1/>.

The results of current modeling reveal that a carbon tax of \$60/ton would reduce only 37% of U.S. CO<sub>2</sub> emissions by 2050. The transportation and industrial sectors would each continue to emit more than one billion tons of CO<sub>2</sub> by 2050.<sup>4</sup> The economic costs and job impacts of reducing emissions in these sectors to net zero levels are unknown. As a result, it would require sophisticated economic modeling analyses of a carbon tax far higher than \$60/ton and other extreme regulatory mandates for achieving net zero GHG emissions across the entire economy. For these reasons, we strongly recommend that the Committee rely on advanced modeling analyses in order to obtain better information on the economic and job consequences of adopting a net zero GHG emissions target for the entire U.S. economy.

We note that some 1.0 million to 1.5 million job-years in the energy supply sector are projected to be lost each year from 2020 to 2050 with just a \$60 carbon tax.<sup>5</sup> Obviously, more severe job impacts would likely occur as the \$60 carbon tax escalates over time to achieve a net zero target. Robust funding for labor adjustment programs, including compensation for lost wages and benefits for those unable to find equivalent work opportunities, as well as broader community assistance, should be provided by the Committee bill. This worker relief should be an essential element of any comprehensive national climate change legislation considered by Congress.

#### Enhanced DOE R&D Support Is Essential

A dramatic increase in DOE funding for second generation carbon capture technologies is needed to reduce its cost and increase its prospects for use by electric generating and industrial sources of CO<sub>2</sub> emissions in a large-scale carbon reduction program. Such federal financial support is critically important due to the very high costs of the early commercial-scale demonstration projects. More federal and private resources will therefore be needed to advance CCS and other transformational carbon-reducing technologies to commercial feasibility for industrial and electric power applications in the timeframes contemplated by the Committee's proposal.

In other words, the successful commercial demonstration of these technologies over the next five to ten years is essential for decarbonizing the electric power sector by 2050. Federal financial incentives will be a key for assuring success in these R&D efforts.

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<sup>4</sup> See *id.*, at Carbon Emission Impacts by Sector (chart).

<sup>5</sup> *Id.*, at Job Impacts by Sector (chart).

## An Energy Transition Fee

The draft bill lacks a mechanism for generating funds sufficient to address the need for accelerated demonstration and deployment of CCS technologies on electric power and industrial sources. Significant funding also is required for labor adjustment, including compensation for lost wages and benefits for workers unable to find comparable employment, and community redevelopment needs. The sheer number of industries impacted by a net zero carbon target suggests that the draft bill would generate substantial offshoring of carbon-intensive industries in competitive international markets, as well as large-scale closures of support industries with extremely adverse consequences for affected workers, families and communities.

We suggest that the Committee consider the creation of an Energy Transition Fee as a revenue source to address both advanced energy technology needs and labor adjustment and community assistance. A modest "wires charge" on retail electric power sales, similar to that employed in the 2009 Waxman-Markey bill, could generate hundreds of billions of dollars during the 2022-2050 period. Alternatively, an "upstream" fee of as little as 10 cents per Million BTU on domestic fossil energy production and fossil energy imports could generate revenues comparable to a wires charge set at 2.5 mills (\$0.0025) per kWh.

Attached Tables 1 and 2 provide supporting details on the potential revenue streams associated with a wires charge (Table 1) or a BTU-based Energy Transition fee (Table 2). For a wires charge, we used the 2020 DOE/EIA Low Renewables Cost scenario to project potential revenues. The BTU fee calculations are based on the 2020 EIA Reference Case. The table below summarizes these findings in constant 2019 dollars. We recommend that either fee be implemented on a constant dollar basis to reflect future inflation.

The alternative fees would generate comparable amounts of revenue over the 2022-2050 period: an estimated \$305 billion (2019 \$) for a wires charge of 2.5 mills per kWh, and \$325 billion (2019 \$) for a \$0.10/MMBTU fee on domestic and imported fossil energy. The wires charge would be the equivalent of some 2.4% of the power industry's projected total revenues over this period, based on EIA data. It would be collected by retail providers as a pass-through charge on consumer electric bills.



**Illustrative Revenue Streams Potentially Associated with a Wires Charge  
or BTU Energy Transition Fee on Fossil Energy Production and Imports  
(In billion 2019 \$)**

	2022	2030	2040	2050	2022-2050
Wires charge @2.5 mills/kWh (2019 \$)					
Revenue	\$9.6	\$10.0	\$10.8	\$11.9	\$305
BTU fee on fossil energy @\$0.10/MMBTU (2019 \$)					
Domestic oil revenues	\$2.9	\$3.0	\$2.9	\$2.5	\$84
Domestic dry and liquids nat. gas revenues	\$4.6	\$5.0	\$5.3	\$5.5	\$148
Domestic coal revenues	\$1.2	\$1.1	\$1.1	\$1.1	\$32
Total domestic revenues	\$8.7	\$9.1	\$9.2	\$9.0	\$264
Imported crude oil revenues	\$1.5	\$1.4	\$1.5	\$1.7	\$44
Imported gas & liquids revenues	\$0.6	\$0.6	\$0.6	\$0.6	\$17
Total imported fossil revenues	\$2.1	\$2.0	\$2.1	\$2.3	\$62
Total domestic and imported revenues	\$10.9	\$11.1	\$11.3	\$11.4	\$325

Implementation of an Energy Transition Fee

We suggest that the Secretary of Energy be charged with the assessment and collection of revenues generated by a wires charge or by a fee on fossil energy production and imports. Collection of either fee should commence as soon as feasible with the proceeds divided appropriately between two trust funds:

- 1) An Advanced Energy Technology Research, Development and Demonstration Trust Fund managed by DOE, assigned to advance lower-cost carbon reduction programs for electric power and industrial sources, including direct support for the demonstration and accelerated deployment of advanced CCS technologies on industrial facilities and natural gas and coal generating units; and

2) A Labor and Community Energy Transition Trust Fund, administered by the Department of Labor, charged with providing financial assistance and social welfare benefits for workers and communities impacted by unemployment associated with compliance with the Clean FUTURE Act; the Trust Fund may disburse funds through block grants to state labor and community development entities.

Collection of the fees on an expedited basis would provide a head start for the accumulation of trust fund revenues in advance of their subsequent disbursement. Our recommendation for a later initial compliance date with reasonable CES glide path requirements would allow for both additional time to develop advanced carbon removal technologies and the accumulation of sufficient revenues in both trust funds to accommodate support for CCUS deployments and worker and community adjustment programs.

#### International Cooperation on Industrial Performance Standards

The draft Committee bill defers decisions on GHG performance standards and other regulations for dozens of major emitting industries to future EPA rules and state implementation plans. The adoption of these new GHG reduction requirements will be critical to achieving a net zero GHG emission target. We note that many of the heavy industries subject to these future regulations operate in competitive international markets. The U.S. should not put itself at risk of the loss of millions of industrial jobs through foreign competition and offshoring to countries with less aggressive carbon standards and regulations.

We suggest that the Committee consider this bill as a vehicle for initiating a broad multilateral dialogue with our principal international competitors in basic industries such as steel, aluminum, paper, chemicals, petrochemicals and refined petroleum products. The bill could direct EPA, the Departments of State and Commerce, and the International Trade Representative to engage in multilateral negotiations among all members of the Paris Climate Change Agreement to establish globally-applicable GHG performance standards for these commodities (*e.g.*, pounds of CO<sub>2</sub> per ton of refined aluminum ingot) and other major industrial GHG emission sources. Such an approach could help to provide a level playing field for internationally competitive industries, reducing the need for a border adjustment mechanism.

## State Climate Plans

The draft bill would establish a new federal-state framework for regulating CO<sub>2</sub> and methane emissions through state climate plans. Modeled after the “state implementation planning” process for achieving national ambient air quality standards under the Clean Air Act, this new framework would establish an economy-wide regulatory program that would require each state to achieve net-zero emissions from all CO<sub>2</sub> and methane emissions within the state by 2050.

While having many questions about how this state planning process would work, we are identifying one particular concern regarding the extremely broad authority provided to EPA to serve as the federal regulatory backstop for those states that fail to adopt or implement adequate state climate plans for achieving their applicable CO<sub>2</sub> and methane standards.

In particular, we are concerned that EPA would have broad and undefined authority to impose increasingly stringent control measures on covered emissions sources within the state, such as emission offset requirements for new and modified sources and additional across-the-board annual reduction mandates in order to keep the state on track for meeting its net-zero emissions target.

In addition, the bill would authorize EPA to impose a “federal backstop carbon fee” (*i.e.*, carbon tax) that would apply to distributors of covered fuels, as well as all EGUs and other major stationary sources within the state. Notably, the carbon tax would automatically apply within 180 days from the date that a state fails to submit a climate plan or EPA disapproves such a plan in whole or part. The amount of the carbon tax is not specified in the draft bill, but rather would be set by EPA at a dollar amount which modeling predicts with a high degree of confidence will reduce emissions in the state in a timely manner.

While supporting the establishment of an economy-wide GHG reduction program, we believe that further direction and guidance needs to be provided in the federal legislation on how the GHG reduction requirements are to be implemented by states and EPA for the purpose of achieving the net-zero emissions targets set in the draft bill.

## Reliability Concerns

It is essential that any climate legislation embrace an “all of the above” approach that will preserve essential baseload energy resources while enhancing and modernizing the electric transmission grid. If our nation continues the current trend of removing

additional coal and nuclear baseload power from the grid, we may be faced with an electric reliability crisis because intermittent renewables and backup battery storage have never been demonstrated on a regional, much less a national scale. Wind turbines in the Upper Midwest are shut down when the temperature drops below minus 20 degrees. Battery storage from solar resources in Hawaii has been curtailed on cloudy days.

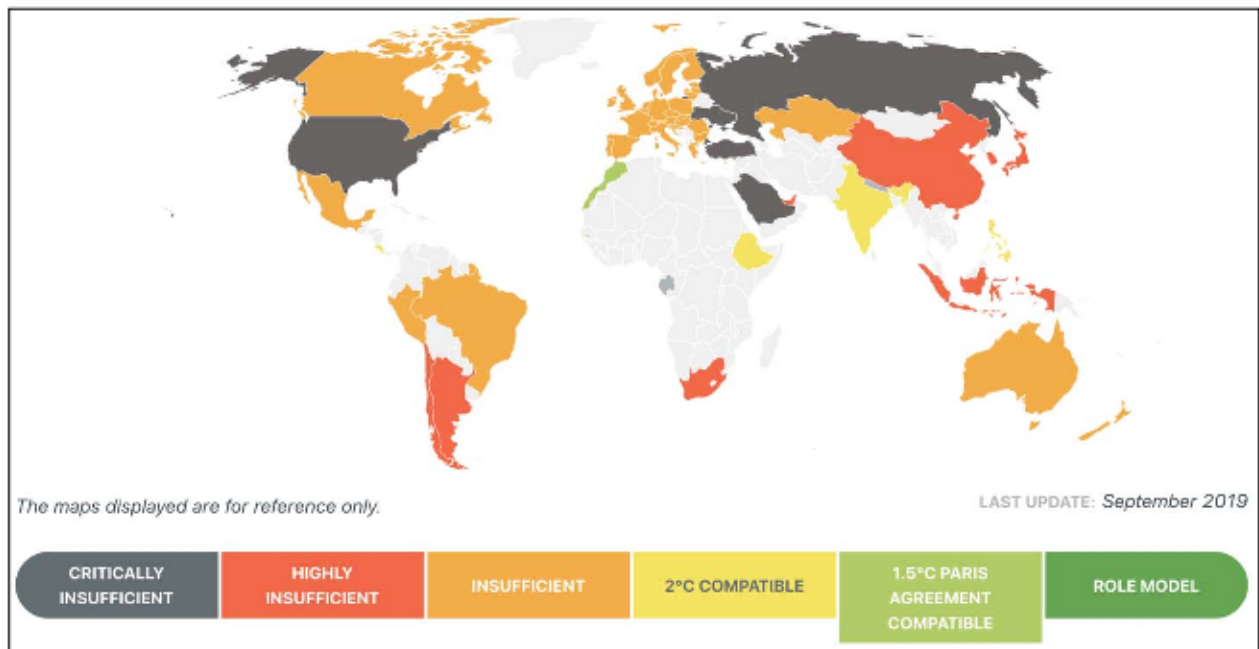
### Paris Implementation

Several of our unions have been engaged as NGOs in the UN FCCC climate process for many years. We are concerned that the Committee's objective of setting standards based on achieving the aspirational 1.5 degree Paris target, rather than the "well below" 2.0 degree target,<sup>6</sup> may not be matched by comparable actions by the international community, including many of our critical international competitors. China, for example, has indicated that it is not prepared to go beyond its initial Paris commitment of reaching "peak" carbon emissions by 2030.<sup>7</sup> There is no indication that China, Russia, Korea, Mexico, Brazil or other major competitors are prepared to implement policies consistent with a target to achieve net zero GHG emissions by 2050. Most of the Paris signatories, as indicated by the map below, are far from meeting their initial pledges.

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<sup>6</sup> Article 2 of the Paris Agreement states the agreement of Parties to include:  
"Holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change;"

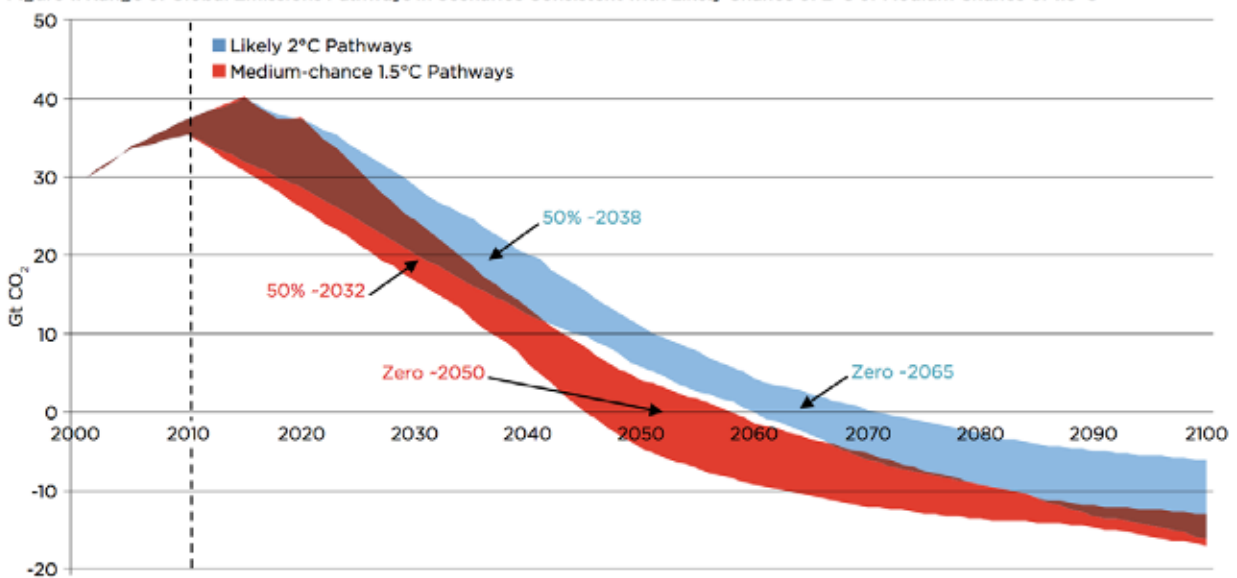
<sup>7</sup> See, Bloomberg News, "China Avoids Calls for Bold Action as Climate Warnings Escalate," (November 27, 2019). Available at: <https://www.bloomberg.com/news/articles/2019-11-27/amid-rising-climate-alarms-china-keeps-calm-and-carries-on>



Source: <https://www.vox.com/energy-and-environment/2019/11/5/20947289/paris-climate-agreement-2020s-breakdown-trump>

The choice of a 1.5 degree or 2.0 degree pathway has major implications for the timing associated with net zero compliance. As shown in the chart below, the 1.5 degree pathway requires net zero compliance on a global basis by 2050. The 2.0 degree pathway provides additional time to 2065 before net zero GHG must be achieved by all nations. This additional time may be critical for the development of the transformational technologies for reducing and avoiding GHG emissions that many industries will need to meet the bill's aggressive targets.

Figure 1: Range of Global Emissions Pathways in Scenarios Consistent with Likely Chance of 2°C or Medium Chance of 1.5°C<sup>18</sup>



Sources: Joeri Rogelj et al

Source: <https://www.vox.com/energy-and-environment/2019/11/5/20947289/paris-climate-agreement-2020s-breakdown-trump>

### Support for a Middle Ground

We strongly agree with the need for a middle ground in the climate change debate. As Congress moves forward in developing responsible climate change legislation, the Committee should recognize that changes in the electric power sector – principally through lower natural gas prices and new EPA regulations - already have led to the loss of some 60 Gigawatts of coal generating capacity, along with tens of thousands of jobs in mining, rail transport, and the electric generation sector. The electric power sector is on track to meet or exceed their 2025 Paris targets. The transportation and industrial sectors, by contrast, have not achieved similar progress and in many cases simply lack available cost-effective technologies to reduce emissions to the levels contemplated by net zero by 2050.

We appreciate your consideration of these views. We stand ready to assist in the development of climate legislation that advances technology, protects workers and their communities, and moves the nation forward on an aggressive course of carbon mitigation.

INTERNATIONAL BROTHERHOOD OF BOILERMAKERS, IRON SHIP BUILDERS, ET AL.

INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS

INTERNATIONAL ASSOCIATION OF IRON WORKERS, ET AL.

SMART - TRANSPORTATION DIVISION

TRANSPORTATION • COMMUNICATIONS • UNION, IAM

UNITED ASSOCIATION OF PLUMBERS, PIPEFITTERS, ET AL.

UNITED MINE WORKERS OF AMERICA

**Table 1**  
**Assessment of Potential Revenues Available Through a Wires Charge on All Retail Sales of Electricity**  
**DOE/EIA 2020 Low Renewables Cost Case**

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
<b>Total Net Electricity Generation by Fuel (Bil. KWh)</b>																			
Coal	985	900	854	817	758	732	691	727	725	726	723	719	715	713	715	709	697	683	681
Petroleum	17	16	12	12	12	11	11	10	10	9	9	9	9	8	8	8	8	8	8
Natural Gas	1,558	1,554	1,640	1,632	1,636	1,617	1,623	1,640	1,626	1,607	1,592	1,571	1,575	1,586	1,592	1,610	1,594	1,589	1,571
Nuclear Power	807	793	780	766	768	771	757	679	679	679	680	680	681	682	674	658	651	652	653
Renewables	772	844	919	1,024	1,104	1,166	1,242	1,291	1,326	1,373	1,427	1,477	1,510	1,532	1,566	1,610	1,686	1,747	1,814
Other	21	21	24	24	24	24	24	24	24	24	23	23	23	23	23	23	23	23	23
<b>Total Net Electricity Generation</b>	<b>4,161</b>	<b>4,128</b>	<b>4,228</b>	<b>4,275</b>	<b>4,302</b>	<b>4,321</b>	<b>4,348</b>	<b>4,371</b>	<b>4,390</b>	<b>4,418</b>	<b>4,453</b>	<b>4,480</b>	<b>4,514</b>	<b>4,545</b>	<b>4,579</b>	<b>4,618</b>	<b>4,659</b>	<b>4,703</b>	<b>4,749</b>
<b>Net Generation to the Grid</b>	<b>3,988</b>	<b>3,942</b>	<b>4,029</b>	<b>4,069</b>	<b>4,091</b>	<b>4,106</b>	<b>4,127</b>	<b>4,143</b>	<b>4,157</b>	<b>4,178</b>	<b>4,208</b>	<b>4,229</b>	<b>4,256</b>	<b>4,282</b>	<b>4,310</b>	<b>4,343</b>	<b>4,377</b>	<b>4,415</b>	<b>4,453</b>
<b>Total Electricity Sales</b>	<b>3,762</b>	<b>3,730</b>	<b>3,809</b>	<b>3,844</b>	<b>3,865</b>	<b>3,884</b>	<b>3,901</b>	<b>3,918</b>	<b>3,933</b>	<b>3,955</b>	<b>3,981</b>	<b>4,004</b>	<b>4,027</b>	<b>4,052</b>	<b>4,079</b>	<b>4,113</b>	<b>4,145</b>	<b>4,177</b>	<b>4,212</b>
<b>Potential revenues for labor adjustment and advanced energy technology funds (Mills per kWh)</b>																			
<b>In billions of 2019 \$</b>																			
\$0.001/kwh				\$3.84	\$3.87	\$3.88	\$3.90	\$3.92	\$3.93	\$3.95	\$3.98	\$4.00	\$4.03	\$4.05	\$4.08	\$4.11	\$4.14	\$4.18	\$4.21
\$0.0025/kwh				\$9.61	\$9.66	\$9.71	\$9.75	\$9.80	\$9.83	\$9.89	\$9.95	\$10.01	\$10.07	\$10.13	\$10.20	\$10.28	\$10.36	\$10.44	\$10.53
<b>In billions of current \$</b>																			
\$0.001/kwh				\$4.09	\$4.20	\$4.31	\$4.42	\$4.53	\$4.64	\$4.77	\$4.90	\$5.03	\$5.17	\$5.31	\$5.46	\$5.62	\$5.78	\$5.95	\$6.12
\$0.0025/kwh				\$10.23	\$10.50	\$10.77	\$11.05	\$11.33	\$11.61	\$11.92	\$12.25	\$12.58	\$12.92	\$13.27	\$13.64	\$14.04	\$14.45	\$14.87	\$15.31
<b>EIA projected nominal price of electricity all users (cents/kWh)</b>																			
	\$10.4	\$10.5	\$10.7	\$10.9	\$11.1	\$11.5	\$11.9	\$12.3	\$12.6	\$12.9	\$13.1	\$13.4	\$13.7	\$13.9	\$14.2	\$14.5	\$14.7	\$15.0	\$15.3
<b>Projected total revenues all users (Bil. current \$)*</b>																			
				\$418.4	\$430.8	\$445.0	\$462.7	\$481.2	\$497.0	\$511.6	\$522.2	\$535.5	\$549.9	\$564.2	\$581.2	\$594.4	\$611.2	\$626.5	\$643.5
<b>*Inflation Factor at 2.1%/yr (1995-2020 US CPI Avg.)</b>																			
	1.00	1.02	1.04	1.06	1.09	1.11	1.13	1.16	1.18	1.21	1.23	1.26	1.28	1.31	1.34	1.37	1.39	1.42	1.45

2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2022-2050
668	666	660	657	654	650	644	639	638	627	622	620	610	
8	7	7	7	7	6	6	6	6	6	6	6	6	
1,567	1,568	1,599	1,606	1,603	1,607	1,606	1,620	1,604	1,624	1,617	1,607	1,605	
644	627	599	600	601	595	587	562	554	521	512	502	493	
1,887	1,947	1,997	2,037	2,092	2,154	2,228	2,305	2,392	2,479	2,564	2,654	2,742	
22	22	22	21	21	21	20	19	18	17	15	13	12	
4,795	4,838	4,884	4,929	4,979	5,034	5,091	5,150	5,213	5,273	5,336	5,403	5,467	
4,493	4,528	4,567	4,604	4,645	4,692	4,740	4,788	4,840	4,889	4,940	4,995	5,048	
4,248	4,280	4,315	4,349	4,386	4,429	4,468	4,513	4,558	4,601	4,647	4,696	4,746	
\$4.25	\$4.28	\$4.32	\$4.35	\$4.39	\$4.43	\$4.47	\$4.51	\$4.56	\$4.60	\$4.65	\$4.70	\$4.75	\$122.33
\$10.62	\$10.70	\$10.79	\$10.87	\$10.97	\$11.07	\$11.17	\$11.28	\$11.40	\$11.50	\$11.62	\$11.74	\$11.86	\$305.82
\$6.30	\$6.49	\$6.68	\$6.87	\$7.07	\$7.29	\$7.51	\$7.75	\$7.99	\$8.23	\$8.49	\$8.76	\$9.04	\$178.77
\$15.76	\$16.21	\$16.69	\$17.18	\$17.69	\$18.23	\$18.78	\$19.37	\$19.97	\$20.58	\$21.23	\$21.90	\$22.60	\$446.93
\$15.6	\$15.9	\$16.2	\$16.5	\$16.8	\$17.0	\$17.4	\$17.8	\$18.2	\$18.5	\$18.9	\$19.3	\$19.6	
\$661.5	\$678.9	\$697.9	\$717.1	\$737.0	\$754.9	\$778.8	\$802.9	\$828.6	\$852.9	\$880.1	\$906.4	\$930.3	\$18,703
1.48	1.52	1.55	1.58	1.61	1.65	1.68	1.72	1.75	1.79	1.83	1.87	1.90	

Pct of total revs

1.0%  
2.4%



**Table 2**  
**Assessment of Potential Revenues from a \$0.10/MMBTU BTU Fee on Domestic Fossil Energy Production and Imported Fossil Energy**  
**DOE/EIA AEO 2020 Reference Case**

(Quadrillion Btu, unless otherwise noted)

Supply, Disposition, and Prices	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
<b>Domestic Production (Quadrillion BTUs)</b>																
Crude Oil and Lease Condensate	25.61	27.47	28.49	29.28	29.44	29.65	29.64	29.79	29.78	29.52	29.53	29.75	29.89	30.09	30.07	29.86
Natural Gas Plant Liquids	6.60	7.23	7.38	8.15	8.20	8.27	8.38	8.54	8.69	8.76	8.77	8.74	8.73	8.69	8.66	8.69
Dry Natural Gas	35.03	36.03	37.33	37.59	37.85	38.33	39.29	39.96	40.15	40.69	40.98	40.93	41.11	41.42	41.78	42.30
Coal	13.57	12.30	11.92	12.10	11.53	11.43	10.96	11.37	11.35	11.25	11.17	11.15	11.10	11.08	11.14	11.06
<b>Total</b>	<b>80.81</b>	<b>83.04</b>	<b>85.13</b>	<b>87.13</b>	<b>87.01</b>	<b>87.68</b>	<b>88.27</b>	<b>89.67</b>	<b>89.96</b>	<b>90.22</b>	<b>90.46</b>	<b>90.58</b>	<b>90.82</b>	<b>91.27</b>	<b>91.65</b>	<b>91.92</b>
<b>Fee Revenues at @\$0.10/MMBTU (Bil. 2019 \$/yr)</b>																
<b>Domestic Production</b>																
Crude Oil and Lease Condensate	\$2.6	\$2.7	\$2.8	\$2.9	\$2.9	\$3.0	\$3.0	\$3.0	\$3.0	\$3.0	\$3.0	\$3.0	\$3.0	\$3.0	\$3.0	\$3.0
Natural Gas Plant Liquids	\$0.7	\$0.7	\$0.7	\$0.8	\$0.8	\$0.8	\$0.8	\$0.9	\$0.9	\$0.9	\$0.9	\$0.9	\$0.9	\$0.9	\$0.9	\$0.9
Dry Natural Gas	\$3.5	\$3.6	\$3.7	\$3.8	\$3.8	\$3.8	\$3.9	\$4.0	\$4.0	\$4.1	\$4.1	\$4.1	\$4.1	\$4.1	\$4.2	\$4.2
Coal	\$1.4	\$1.2	\$1.2	\$1.2	\$1.2	\$1.1	\$1.1	\$1.1	\$1.1	\$1.1	\$1.1	\$1.1	\$1.1	\$1.1	\$1.1	\$1.1
<b>Total (Bil. 2019 \$)</b>				\$8.7	\$8.7	\$8.8	\$8.8	\$9.0	\$9.0	\$9.0	\$9.0	\$9.1	\$9.1	\$9.1	\$9.2	\$9.2
<b>Total (Bil. Current \$)*</b>				\$9.3	\$9.5	\$9.7	\$10.0	\$10.4	\$10.6	\$10.9	\$11.1	\$11.4	\$11.7	\$12.0	\$12.3	\$12.6
<b>Imports (Quadrillion BTUs)</b>																
Crude Oil	15.55	15.96	14.75	14.68	14.72	15.42	14.74	15.57	14.86	15.26	15.02	14.41	14.09	14.06	13.63	14.34
Petroleum and Other Liquids	4.82	4.87	4.25	4.22	4.25	4.26	4.09	3.83	3.77	3.59	3.52	3.56	3.54	3.54	3.57	3.55
Natural Gas	2.79	2.74	2.51	2.50	2.40	2.38	2.45	2.57	2.46	2.24	2.20	2.18	2.24	2.21	2.11	2.08
<b>Total</b>	<b>23.17</b>	<b>23.56</b>	<b>21.51</b>	<b>21.40</b>	<b>21.37</b>	<b>22.06</b>	<b>21.29</b>	<b>21.97</b>	<b>21.09</b>	<b>21.09</b>	<b>20.74</b>	<b>20.14</b>	<b>19.87</b>	<b>19.81</b>	<b>19.31</b>	<b>19.97</b>
<b>Fee Revenues at @\$0.10/MMBTU (Bil. 2019 \$/yr)</b>																
<b>Imports</b>																
Crude Oil	\$1.6	\$1.6	\$1.5	\$1.5	\$1.5	\$1.5	\$1.5	\$1.6	\$1.5	\$1.5	\$1.5	\$1.4	\$1.4	\$1.4	\$1.4	\$1.4
Petroleum and Other Liquids	\$0.5	\$0.5	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4
Natural Gas	\$0.3	\$0.3	\$0.3	\$0.2	\$0.2	\$0.2	\$0.2	\$0.3	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2
<b>Total (Bil. 2019 \$)</b>	<b>\$2.3</b>	<b>\$2.4</b>	<b>\$2.2</b>	<b>\$2.1</b>	<b>\$2.1</b>	<b>\$2.2</b>	<b>\$2.1</b>	<b>\$2.2</b>	<b>\$2.1</b>	<b>\$2.1</b>	<b>\$2.1</b>	<b>\$2.0</b>	<b>\$2.0</b>	<b>\$2.0</b>	<b>\$1.9</b>	<b>\$2.0</b>
<b>Total (Bil. Current \$)*</b>	<b>\$2.3</b>	<b>\$2.4</b>	<b>\$2.2</b>	<b>\$2.3</b>	<b>\$2.3</b>	<b>\$2.4</b>	<b>\$2.4</b>	<b>\$2.5</b>	<b>\$2.5</b>	<b>\$2.5</b>	<b>\$2.6</b>	<b>\$2.5</b>	<b>\$2.5</b>	<b>\$2.6</b>	<b>\$2.6</b>	<b>\$2.7</b>
<b>Total Fee Revenues at @\$0.10/MMBTU (Bil. 2019 \$/yr)</b>																
<b>Total (Bil. 2019 \$)</b>				\$10.9	\$10.8	\$11.0	\$11.0	\$11.2	\$11.1	\$11.1	\$11.1	\$11.1	\$11.1	\$11.1	\$11.1	\$11.2
<b>Total (Bil. Current \$)*</b>				\$11.6	\$11.8	\$12.2	\$12.4	\$12.9	\$13.1	\$13.4	\$13.7	\$13.9	\$14.2	\$14.6	\$14.8	\$15.3
<b>*Inflation Factor at 2.1%/yr (1995-2020 US CPI Avg.)</b>																
	1.00	1.02	1.04	1.06	1.09	1.11	1.13	1.16	1.18	1.21	1.23	1.26	1.28	1.31	1.34	1.37

2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2022-2050
29.68	29.41	29.01	28.69	28.53	28.85	29.04	29.06	28.95	28.62	28.15	27.62	27.03	26.49	25.88	24.80	
8.73	8.71	8.63	8.59	8.57	8.60	8.61	8.61	8.62	8.58	8.54	8.47	8.44	8.45	8.39	8.19	
42.53	42.79	43.06	43.33	43.57	43.94	44.15	44.37	44.61	44.82	44.98	45.20	45.57	46.02	46.38	46.62	
10.96	10.90	10.89	10.79	10.74	10.71	10.68	10.67	10.67	10.66	10.64	10.70	10.68	10.67	10.65	10.68	
91.91	91.80	91.59	91.40	91.42	92.10	92.48	92.71	92.85	92.69	92.31	91.99	91.72	91.64	91.30	90.28	
\$3.0	\$2.9	\$2.9	\$2.9	\$2.9	\$2.9	\$2.9	\$2.9	\$2.9	\$2.9	\$2.8	\$2.8	\$2.7	\$2.6	\$2.6	\$2.5	\$84
\$0.9	\$0.9	\$0.9	\$0.9	\$0.9	\$0.9	\$0.9	\$0.9	\$0.9	\$0.9	\$0.9	\$0.8	\$0.8	\$0.8	\$0.8	\$0.8	\$25
\$4.3	\$4.3	\$4.3	\$4.3	\$4.4	\$4.4	\$4.4	\$4.4	\$4.5	\$4.5	\$4.5	\$4.5	\$4.6	\$4.6	\$4.6	\$4.7	\$123
\$1.1	\$1.1	\$1.1	\$1.1	\$1.1	\$1.1	\$1.1	\$1.1	\$1.1	\$1.1	\$1.1	\$1.1	\$1.1	\$1.1	\$1.1	\$1.1	\$32
\$9.2	\$9.2	\$9.2	\$9.1	\$9.1	\$9.2	\$9.2	\$9.3	\$9.3	\$9.3	\$9.2	\$9.2	\$9.2	\$9.2	\$9.1	\$9.0	\$264
\$12.8	\$13.1	\$13.3	\$13.6	\$13.9	\$14.2	\$14.6	\$15.0	\$15.3	\$15.6	\$15.8	\$16.1	\$16.4	\$16.7	\$17.0	\$17.2	\$382
14.51	14.29	15.28	15.24	15.24	15.07	15.52	15.27	15.40	15.74	16.22	15.57	16.71	17.51	17.74	17.06	
3.56	3.55	3.61	3.64	3.67	3.70	3.76	3.79	3.82	3.85	3.92	3.99	4.00	4.06	4.14	4.26	
2.06	2.04	2.07	2.06	2.07	2.07	2.07	2.06	2.05	2.02	2.01	2.00	2.01	1.99	1.99	1.99	
20.13	19.88	20.95	20.94	20.98	20.85	21.35	21.11	21.26	21.61	22.15	21.57	22.73	23.57	23.87	23.31	
\$1.5	\$1.4	\$1.5	\$1.5	\$1.5	\$1.5	\$1.6	\$1.5	\$1.5	\$1.6	\$1.6	\$1.6	\$1.7	\$1.8	\$1.8	\$1.7	\$44
\$0.4	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4	\$0.4	\$11
\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$0.2	\$6
\$2.0	\$2.0	\$2.1	\$2.1	\$2.1	\$2.1	\$2.1	\$2.1	\$2.1	\$2.2	\$2.2	\$2.2	\$2.3	\$2.4	\$2.4	\$2.3	\$62
\$2.8	\$2.8	\$3.0	\$3.1	\$3.2	\$3.2	\$3.4	\$3.4	\$3.5	\$3.6	\$3.8	\$3.8	\$4.1	\$4.3	\$4.5	\$4.4	\$90
\$11.2	\$11.2	\$11.3	\$11.2	\$11.2	\$11.3	\$11.4	\$11.4	\$11.4	\$11.4	\$11.4	\$11.4	\$11.4	\$11.5	\$11.5	\$11.4	\$325
\$15.6	\$15.9	\$16.4	\$16.7	\$17.0	\$17.5	\$18.0	\$18.4	\$18.8	\$19.2	\$19.6	\$19.9	\$20.5	\$21.0	\$21.5	\$21.6	\$471
1.39	1.42	1.45	1.48	1.52	1.55	1.58	1.61	1.65	1.68	1.72	1.75	1.79	1.83	1.87	1.90	



## Preliminary Labor Positions on Climate Change Legislation

We appreciate the opportunity to comment on the design of a new federal climate change policy. Unions have participated in all major climate legislative developments since the 1997 Kyoto Protocol, and were involved in the drafting of the CCS technology and other provisions of the 2009 Waxman-Markey climate bill. Labor also supported the bipartisan Bingaman-Specter climate bill introduced in the Senate in 2007.

We have consistently advocated for a comprehensive, economy-wide legislative solution to climate change because the Clean Air Act is not an appropriate vehicle for addressing the multi-sector emission reductions or aggressive technology incentives needed to meet climate targets. Legislation also is essential for crafting appropriate worker adjustment assistance programs to address job displacement impacting families and communities.

We are concerned about the adverse job implications of potential carbon tax legislation. Carbon taxes create inherent uncertainties about market responses, differential sectoral impacts, and the lack of assurance that advanced emission mitigation technologies such as carbon capture, utilization and storage (CCUS) could be deployed in time to avert massive dislocation of workers in the petroleum, coal, rail, and mining sectors. Any carbon tax legislation necessarily must include significant revenue set-asides for worker adjustment and community redevelopment assistance. More than 1.5 million workers are directly employed in vulnerable fossil fuel-related industries, with annual wages and benefits of some \$130 Billion. Many more indirect jobs are in support industries and communities.

We also have grave concerns about unrealistic solutions such as those advocated in the "Green New Deal" and by proponents of the "Keep It in the Ground" ideology. Any legislation addressing the complex issues of carbon emission reduction must recognize and address: a) the tremendous impact such legislation will have on millions of fossil fuel-reliant jobs across

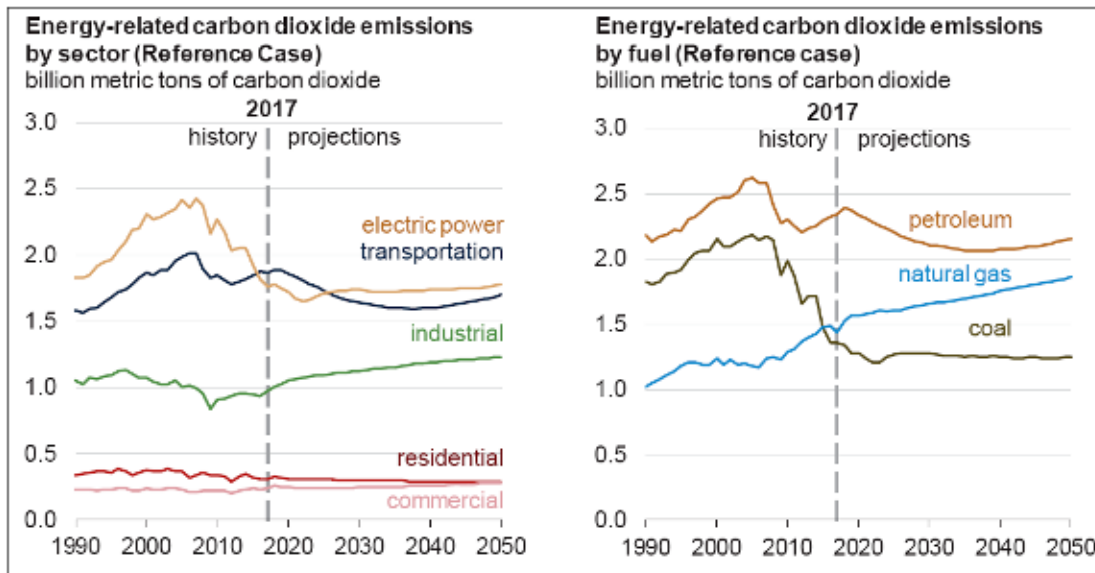
America; and b) the costs and full recompense required to mitigate the effects of the loss of those jobs on workers, families and communities.

### Principles for Carbon Legislation

We view an emission allowance trading program such as that developed in the 2009 Waxman-Markey bill as a good starting point for discussions about future climate legislation. Improving upon that bill could offer strong technology incentives while delivering significant longer-term emission reductions.

We offer the following principles to aid in the design of comprehensive, economy-wide climate legislation:

- All major emitting sectors (utilities, industrial, transportation) should be covered by a national emission allowance trading program based on an upstream allocation of allowances (i.e., to utility generating units, gas pipelines, oil refineries, etc.)
- An initial first phase cap should not be imposed sooner than 10 years following enactment of legislation, to allow adequate time for compliance planning and investments in controls, including enhanced private and federal investments in CCUS technologies needed for both coal and natural gas at utility and industrial plants.
- We support the development of a bonus allowance program similar to that employed in Waxman-Markey to encourage deployment of advanced CCUS technologies at new and retrofit coal and natural gas-fueled plants. Bonus allowances would complement the tax incentives for CCUS that Congress recently enacted in 45Q legislation, enhancing the prospects for application of advanced CCUS technologies.
- Analyses by the UN Intergovernmental Panel on Climate Change and the International Energy Agency conclude that the aggressive global emission reductions envisioned by the Paris Agreement cannot be achieved without widespread application of CCUS technologies in developed and developing nations, for all fossil fuels used by both the power generation and energy-intensive industrial sectors.
- Each sector covered by the legislation should have its own cap, measured in tons of CO<sub>2</sub> or by emissions efficiency measures such as grams of CO<sub>2</sub> per mile for the vehicle fleet. The transportation sector is now the largest source of CO<sub>2</sub> emissions, so an aggressive program of reductions would be needed to meet targets such as those envisioned by the Paris Agreement.
- The rate of decline for any cap (sectoral or national) needs to be assessed in light of the cost and availability of technologies for reducing CO<sub>2</sub>. In the case of electric utilities, a longer time frame for reductions can be justified based on the need for accelerated commercial demonstration and deployment of CCUS technologies. The transportation sector also requires long lead-times due to the gradual rollover of vehicle fleets.
- DOE's current projections of sectoral CO<sub>2</sub> emissions from 2017 to 2050 show the increasing importance of addressing emissions from the industrial sector, and the preponderance of future emissions from petroleum and natural gas sources:



- A single federal trading program with an aggregate cap based on sectoral emissions reductions is preferable to state-by-state caps. Interstate trading of emission allowances should be allowed.
- Emission allowances should be distributed without cost to emitting entities, similar to the Title IV acid rain program. Free allowances should be distributed based on formulae incorporating historical heat input data.
- We oppose allowance auctions as they constitute a form of double taxation on emitting sectors: first, compliance must be achieved through investments in control measures, and second, allowances must be purchased through an auction system. An auction-based program is simply a carbon tax in disguise, subsidizing renewables and other zero - or low-emitting sources.
- Maintaining fuel diversity among fossil, nuclear, and renewable resources is the key to a resilient electrical grid, and to the political and economic viability of national climate change legislation.
- The fewest possible limitations should be placed on emission banking and borrowing to reduce overall compliance costs. Similarly, a broad variety of domestic and international offsets should be available, including initiatives to help reduce deforestation.
- The DOE Fossil Energy budget must be dramatically expanded to accelerate the development and commercialization of second-generation CCUS technologies.
- Regardless of the form of national climate legislation, workers in adversely impacted industries must be assured of a robust package of compensation with comparable retirement and health care benefits coupled to expanded worker retraining and similar transition programs.