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Rep. Kathy Castor, Committee Chair
House Select Committee on the Climate Crisis
H2-359 Ford Building
Washington, DC 20515

Rep. Garret Graves, Ranking Member
House Select Committee on the Climate Crisis
H2-359 Ford Building
Washington, DC 20515

VIA EMAIL: ClimateCrisisRFI@mail.house.gov

Re: Request for Information

Dear Chairwoman Castor and Ranking Member Graves,

We welcome the opportunity to comment on the House Select Committee's request for information regarding the need for a comprehensive, national and international approach to addressing the threat of global climate change. The Utility Workers Union of America, AFL-CIO (UWUA) represents more than 50,000 workers in the electric, gas, nuclear, and water utility sectors. Our members operate utility infrastructure throughout the United States.

In the energy sector specifically, our members maintain electric generation assets including nuclear, coal, natural gas, and liquid-fueled powerplants, as well as utility scale wind farms, solar arrays, and energy storage facilities including those based on both battery and pumped hydrologic technologies. Outside of generation, our members maintain the grid including substation operations, above and below-ground line crews, and even tree-trimming crews. There is not an aspect of power generation, transmission, or distribution which Utility Workers do not have a hand in maintaining and operating. Our members have proudly kept the lights on in America since the early part of the 20th Century.

It is a truism at this point that the manner in which the United States and, indeed, the world, generates electricity is evolving rapidly. In America, ever more coal and nuclear assets are being taken offline every year, with natural gas and renewable generation expanding. Abroad, other countries are expanding coal and nuclear power alongside gas and renewables as their rapidly growing economies demand ever more energy to make them function.[i] The change is truly global, non-linear, and complex as different regions must grapple with their own politics, economics, natural resources, and available technologies to design a system that makes sense for them.

Because of our union's deep immersion in the energy sector, the UWUA recognizes that global climate change is happening, and that it is the result of man-made carbon emissions. Our union is made up of highly skilled, technically-minded people whose every day work involves thinking like an engineer, a mechanic, a scientist. We understand perfectly well the science behind the crisis facing humanity and, in seeking solutions, we again look to the science. We ask, how do we engineer our way through this challenge not, how do we argue or vote our way out of this.

In responding to the Committee's Request for Information, therefore, there are three key questions that stand out, from our union's perspective, to begin answering this challenge.

Challenge One: Recommendations for a Clean Energy Standard

Generally speaking, there has come to be an unfortunate view that climate change is a political issue rather than a technical problem, thus often limiting proposed policy solutions to short-sighted, ideologically-driven approaches. The truth is that ideology can, and does, overlook technology-driven climate solutions, resulting in inadequate national climate policy.

A key change that must be brought to the table therefore, is a technology-neutral, science-driven approach to lowering emissions. Most recently we have seen this embodied in legislation introduced by Senator Tina Smith and Congressman Ben Ray Lujan, circumventing the politics around *which* technology should play the greatest part in reducing emissions, and instead focusing on acknowledging a role for *all* power generation sources. Styled the '*Clean Energy Standard Act of 2019*' (S. 1359 and H.R. 2597), this legislation follows the international science on climate change which is that, given our starting point, and the timelines involved, an 'all of the above' approach to energy generation is non-optional – all technologies will need to be employed in order to have maximum effect on curbing climate change.

As it stands now, global carbon emissions grew last year, reaching an all-time high of 600 million tons, evidence that old, zero-sum philosophies grounded in reducing carbon emissions to zero have failed in a big way. Thus, the second key to a clean energy standard – in addition to tech-neutrality - is that we must adopt a *net* zero emissions philosophy. This idea acknowledges that carbon emissions will continue to happen, but that a variety of existing and new carbon reduction and removal technologies will be needed to compensate.

The science speaks for itself. According to the Intergovernmental Panel on Climate Change (IPCC), reaching and sustaining net zero global emissions would effectively halt global warming in the immediate term.

This crucial change in thinking, to taking a science-based, tech-neutral, net zero approach to reducing emissions can hold the worst-case climate change scenarios at bay, based on actual climate science. Equally as important, it gets us out of the zero-sum political thinking inherent in imagining a world without carbon emissions at all. Human civilization is deeply complex and will always have a carbon cost, no matter our best intentions.

Taking this approach, a deliberately engineered mix of carbon capture technology, carbon sinks, nuclear power, renewable energy, energy efficiency, energy storage and low-carbon transportation options would all play a role in achieving net zero emissions. Simply shilling for a favored technology will not do – such an approach does not follow the science, nor acknowledge the economics, timelines, or politics intertwined in addressing climate change. Getting to net zero will require a role for all technologies and saying otherwise is simply another form of climate science denial.

For example, carbon capture technology could broadly decarbonize power generation including both natural gas and coal-fired plants as well as heavy industries such as steel, cement and ethanol manufacturing to cite obvious

examples. Indeed, the U.S. is at the forefront of developing carbon capture and storage systems, accounting for 16 of the 22 largest commercial projects built over the past half-century.

According to the science, attempting to keep global warming in check without robust, global use of carbon capture systems would increase overall global costs by nearly 140 percent, according to the IPCC. It's not a "nice to have" it is a "must have" if we want to win this fight.

The list goes on through other technologies — wind, solar, nuclear, hydropower, literally all of the above — not a question of picking winners and losers, but a matter of overcoming the political hurdles to incorporate each of them into a global carbon solution. Cooperation has never been so imperative to achieving a human goal.

Challenge Two: Supporting Workers During the Decarbonization Transition

While the need to manage carbon emissions at scale, globally, is urgent and we must decarbonize our economy, we must also do so in a manner that does not *crash* the economy. For many years, change has been occurring as generation assets of various types have been removed or added to the grid, both here in the U.S. and globally, leading to both reductions and increases in carbon emissions – changes that occur almost randomly in the absence of a comprehensive, technology-based engineering plan for how to curb emissions overall.

As our union's members have witnessed in many communities, the closure of a powerplant – for our members this has meant both coal and nuclear facilities to date - means the loss of many hundreds of highly skilled and highly compensated jobs for working people directly employed in the operation and maintenance of these large facilities. As these plants are often situated in areas that make them the best source of high-quality employment for many miles around, the challenges these workers often face in seeking new, equivalent employment can range from difficult to nearly insurmountable, as was experienced by our members most recently at UWUA Local 175 in southern Ohio which went through the simultaneous closure of two powerplants in one county.[ii]

Of course, the follow-on effects to the communities, with the loss of many thousands of jobs indirectly supported by these plants, the shuttering of small businesses dependent on the middle-class workers in the power sector as their customers, as well as the impact on town and county budgets after the loss of significant portions of their annual tax revenues due to the closure of these large plants have all added up to a landscape of cultural and personal destruction. Too often, the culmination of these effects leads to real tragedy due to the ever-growing mis-use of prescription medications, and the spreading pandemic of substance abuse so commonly found in many of these devastated areas, particularly across the industrial Midwest and Appalachia.

While it has been demonstrated that it is possible to craft national policy to address the challenges faced by workers and communities impacted by changes in energy generation, this, unfortunately, has been done almost entirely outside of the United States to date. Accordingly, when looking for models to follow in designing an American policy response to these challenges, we must look outside our borders. Two countries, in particular, stand out as examples of federal and regional governments bringing together diverse stakeholders to craft – and implement – robust policy. In both Canada and Germany, elected officials and affected communities have worked to produce a body of work that can be instructive.

First, in Canada, a National Task Force on Just Transition for Canadian Coal Power Workers and Communities was formed and developed national policy to guide how that country will scale down its coal industry over time. The full report can be found here:

http://publications.gc.ca/collections/collection_2019/eccc/En4-361-2019-eng.pdf

The task force's key guiding principles can be summarized as follows:

1) Affected workers and communities must be at the heart of decision-making surrounding transition;

2) Unions and employers must play a key role in supporting the transition;

3) Affected populations must be kept informed in near-real time as to public policy in order to best empower them to develop personal strategies for the transition;

4) Government action can support those workers choosing to remain in the workforce in finding new opportunities, and enable others to retire with dignity;

5) Drawing down the coal industry will cause ripple effects throughout affected communities, including the loss of local tax revenue, the closure of local businesses, and challenges funding public services;

6) There is a national duty of care that must be recognized and honored in assisting affected workers and communities.

Second, in Germany, the Federal Ministry for Economic Affairs and Energy undertook the creation and implementation of national policy to move its economy away from the use of coal. Their full report can be found here:

https://www.bmwi.de/Redaktion/EN/Publikationen/commission-on-growth-structural-change-and-employment.pdf?__blob=publicationFile&v=3

Similar to the work in Canada, the German effort is grounded in a number of core principles. Specifically, the policy emphasized that reduction of coal-fired generation can only succeed if a range of stakeholder requirements are reconciled, including:

1) The retention and creation of new jobs protected by collective bargaining agreements in affected regions;

2) Secure and affordable power and heat must be available to all people, at all times;

3) Coal-dependent regions and communities must be economically developed and offered new prospects to ensure they remain live-able regions;

4) The benefits and burdens of transition must be equitably distributed;

5) Stakeholders must be able to reliably plan for the long-term, and the competitiveness of national industries, commerce, and skilled tradespeople must be protected;

6) A broadly-accepted social consensus is necessary to ensure a balanced and equitable transition to new energy systems.

At the UWUA, we will continue to fight for the survival of all our facilities, the employment of workers, and the stability of communities wherever we see hope for the future. In many instances, technology enabling the large-scale decarbonization of coal-fired powerplants still holds the potential to change the economics of coal, enabling it to compete with other, currently less-expensive fuel options, and the opportunity for these workforces to make their contribution in the fight against global climate change, all while preserving the culture and social fabric of families and communities, their schools, churches, and way of life that, once lost, can never be replaced.

However, as we continue those efforts, we will also continue to emphasize that workers and communities

thrown into turmoil by facility closures must not be left behind. It is time for our nation to recognize the contribution made by these workers to build the nation. This value to our society, delivered by domestic energy sector workers, has been acknowledged previously during the 1970's as a product of the national response to the Middle Eastern oil embargo and subsequent energy crisis. During that crisis it was understood that, during a period of rapid adaptation, it was vital that policies affecting certain segments of the population should be implemented with demonstratable fairness. Today's energy transformation and should be no different.

America must come to terms with the fact that entire regions, and ways of life, are changing too rapidly for individuals and small communities to adapt on their own. Now is the time for our society to recognize, honor, and support the people and places that have made modern life possible for all of us and the excuse that such efforts are too difficult, expensive, or politically charged are belied by the work done in other nations. These national obligations can, and must, be carried out to ensure an equitable transition in America's energy system.

Challenge Three: How to Accelerate Development and Deployment of Carbon Removal Technology to Help Achieve Negative Emissions

Carbon Capture Technology

One particular technology that, again, according to the IPCC, is indispensable to our ability to combat a changing climate is carbon capture. In their reporting the IPCC has stated that less than 50 percent of their climate models can achieve a 450 ppm CO2 target by the year 2100 without the widespread use of carbon removal technologies in power generation and industrial processes. For those models that do achieve the goal without its use, the price increases by 138 percent.[iii] Given the number of challenges already facing us, placing yet another one in the form of an enormous price tag in the way, seems obviously counterproductive.

The emerging carbon-usage sector is developing and deploying technologies that capture carbon emissions from industrial and powerplant sources, as well as through direct air capture, and convert them into useful materials such as plastics, chemicals, cement, or jet fuel to give a few examples, or use it in processes such as enhanced oil recovery which leave the CO2 permanently sequestered from the atmosphere. Today there are more than 300 carbon capture and storage operations globally, 53 of which are in the United States, including some of the world's most technologically innovative projects such as the Petra Nova project in Texas.[iv]

Other examples of the use of this technology in the U.S. include natural gas processing facilities, nitrogen fertilizer production, and even ethanol production. In the power sector, a prominent example of decarbonization is at the Boundary Dam facility in Saskatchewan, Canada, a retrofit of a coal-fired unit that today captures up to one million tons of carbon dioxide per year.[v] In New Mexico, plans are in motion to retrofit the San Jan Generating Station in Farmington with carbon capture technology to remove up to 90 percent of its carbon emissions and extend the life of the facility beyond its previously announced 2022 closure date.[vi] If completed, this would not only reduce emissions, but also preserve thousands of local jobs and an almost existential source of tax revenue for the local communities.

In North Dakota, the Project Tundra initiative aims to build the world's largest carbon capture facility at the Milton R. Young Station, operated by the Minnkota Power Cooperative to capture 90 percent of the carbon emissions from the Station's Unit 2 generator and permanently sequester it in a geologic formation more than a mile underground.[vii] The technology is real and, in some applications in the energy industry has been in large-scale use since the 1970s.

Some of our own union members in three coal-fired powerplants in Wyoming have witnessed growing interest in their facilities from the petroleum industry who view them as potential sources of carbon dioxide for use in the state's energy production.[viii] Though closure dates have been announced for some – though not all - units over the next 10 years,[ix] building a project there that harnessed what is otherwise a waste product could not only change the emissions profile of a given plant, it could change its economics by monetizing the carbon dioxide,

alter its role in overall energy production, and keep it in operation. For our members whose livelihoods and rural communities depend on the high-quality jobs and tax revenue from these facilities, such a change could potentially preserve their entire way of life.[x]

Direct Air Capture

There are deeper opportunities in the power sector, however, not just to remove carbon from current processes of power generation but also to use power generation to drive technologies necessary to actively remove existing carbon dioxide from the atmosphere. Known as direct air capture, this technology extracts carbon directly from the air and, once captured, it can be used in manufacturing or permanently sequestered below ground just as carbon from power generation or industrial sources.

Such systems would simply be scaling up technologies already used in naval and aeronautics applications to scrub carbon dioxide from the air in submarines and spacecraft in order to prevent such closed environments from becoming toxic. The chemical process is well-known, the difference would be in scale and, in the need for the power sector to play a role in meeting the power demands of large-scale versions.

There are several advantages to this technology. First, such systems can literally be placed anywhere, eliminating the costs of transporting carbon dioxide and potentially providing a source for job in rural areas that have been hard hit by the loss of other industry. Second, the modular design of these systems is such that they can be gradually scaled while maintaining a relatively small physical footprint – they could even be located on former industrial sites. Third, moving companies and sectors not only to net-zero emission but all the way to net-negative emissions could be required with this type of affirmative carbon removal. Even for carbon-intensive processes, therefore, a combination of carbon capture and carbon removal technologies could wholly obviate the carbon impact of such activity.

There are currently large-scale commercial development efforts for this technology in the United States, Canada, Switzerland, the Netherlands, and Iceland.[xi] As we build the engineering ecosystem needed to control carbon emissions, direct air capture can, and must, be considered as a part of this solution.

Conclusion

In summary, we see reason for optimism, but also reasons to be cautious. The technology already exists to retain and build-out low- or zero-carbon power generation, there is nothing which needs to be invented from scratch, only systems which need to be scaled, improved or, in some cases, simply retained. As an institution, our union has striven to hew to the science both as to the causes of climate change and to the technologies necessary, and capable, of dealing with the challenge.

As Utility Workers, we are at the front lines of the power sector, and closest to the changes that are occurring. Like a lineman faced with a downed high voltage line, we are cautious, but prepared to step in and deal with the problem based on a clear-eyed view of the technologies involved. If done thoughtfully, reducing carbon emissions in the U.S. power sector can be an opportunity to create and retain high quality jobs, preserve communities and combat climate change.

We thank you again for the opportunity to be a part of the Committee's efforts and look forward to working with the Committee as we move into the future.

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