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WRITTEN TESTIMONY

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Thank you, Chairman Tonko, Ranking Member Shimkus, and distinguished members of the subcommittee. My name is Lee Anderson, and I am the Government Affairs Director for the Utility Workers Union of America, AFL-CIO (UWUA). The Utility Workers Union represents around 50,000 workers in the electric, gas, nuclear and water utility sectors. Our members operate utility infrastructure throughout the United States.

In the power 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, and 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.

Let me also be clear in stating the Utility Workers Union recognizes 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 answering this question, there are both opportunities, and challenges, in the power sector.

Cleaner Powerplants Can Save Communities

One point is clear - the need to manage carbon emissions at scale, globally, is urgent. We must decarbonize our economy but, we must do so in a manner that does not crash local and regional economies. For many years, change has been occurring as energy 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 means the loss of many hundreds of jobs for working people directly employed in the operation and maintenance of these large facilities. Recognizing that power 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 who experienced the simultaneous closure of two powerplants in one county.[i]

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 misuse 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.

This is why, 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, particularly through science. Technology enabling the large-scale decarbonization of coal-fired powerplants 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.

Unfortunately, although our Union has advocated for many years for national policy to assist workers, their families, and their communities in navigating the changes happening in the energy industry, to date very little has been done at either the national or state level. Overwhelmingly, change has simply meant one catastrophic event after another played out at the human level in community after community as people are forced to deal with the loss of some of the highest quality jobs in the national economy.

Although we will continue to call on policy leaders to work towards a system that addresses the needs of workers and communities in the aftermath of plant closures, the reality is that this remains almost entirely a hypothetical, one that is meaningless for those who have already lost their jobs, and for those who will continue to do so unless we can harness technology to retain the assets that make these jobs possible.

In the meantime, workers with few or no easy alternatives continue to be left behind. Personal calamity, whether due to divorce, bankruptcy, substance abuse, or simply the diaspora of families and the economic, social, and physical collapse of communities has occurred time and again as deindustrialization has played out across the U.S. That a lowered life expectancy in the U.S., and the rise of 'deaths of despair' has come to seem normal speaks volumes regarding the current failure of public policy to manage changes in the economy. We choose instead to live at the mercy of 'creative destruction' – an impersonal force that is certainly destructive but is no way creative.

For the UWUA as a Union, our number one priority is the representation and well-being of our members, members who enjoy a solid, middle-class lifestyle because of the work the UWUA has done for many decades to craft the agreements with employers that make that possible. The middle class did not come into being by accident, it was created and grown by the labor movement over the course of the last century, a process that continues to this day.

For our members the best outcome will always be to keep their families and communities intact but, this outcome requires retaining the anchor institutions – in our case powerplants – that make that possible. When facilities close, very soon families disperse, towns hollow out and what's left behind are empty desks in the schools, empty pews in the churches, and empty coffers in local government budgets.

What this means for our members, then, is that utilizing carbon capture technology can change not only the chemical profile of a powerplant, but also its economics, and can change a waste product – carbon dioxide – into a valuable commodity that can help stabilize a facility and, by extension, its workforce, their families, and their communities. Alternatives that could come into play after a facility closure, assuming public policy were to actually be created, while at least theoretically important, will never serve to prevent all of the economic and social unraveling that happens in the wake of mass job loss.

Addressing Global Climate Issues Requires Engineering Solutions

For our union, the polestar in understanding the science of climate change, and the appropriate response to it, is the Intergovernmental Panel on Climate Change (IPCC).[ii] Bringing together the world's leading climate scientists to understand the problem, and the necessary responses, reflects our approach to day-to-day power sector work and seems the obvious starting point.

Unfortunately, after three years of relatively little change, global carbon emissions grew last year, reaching an all-time high of 600 million tons[iii] evidence that old philosophies grounded in reducing carbon emissions to zero have failed in a big way. As a result, a mainstream consensus is growing that a new approach, one that adopts a *net* zero emissions philosophy is needed. Human civilization is deeply complex and will always have a carbon cost, no matter our best intentions. Accepting this truth about the world as it is, not as we wish it to be, acknowledges that carbon emissions will continue to happen, but that a variety of low-carbon power generation, carbon reduction, and carbon removal strategies will be needed to compensate for them as an engineering, not political proposition.

This crucial course averts the worst-case climate change scenarios, based on actual climate science. Equally as important, it gets us out of the zero-sum thinking inherent in imagining a world without carbon emissions at all. To get there, particularly in achievable timeframes, an engineered mix of carbon capture technology, nuclear power, renewable energy, energy efficiency, and energy storage options would all play a role in achieving net zero emissions. That is the science – getting to net zero will require a role for all technologies and saying otherwise is simply climate science denial.

USE IT Moves Carbon Capture Forward

As we see, the emerging 'carbontech' sector is developing and deploying technologies that capture carbon emissions from industrial and power plant sources, as well as through direct air capture, and convert them into useful materials and products. By leveraging technological innovation and market forces, carbontech can play a significant role in the deployment of carbon capture and removal technologies and in decarbonization generally.

Building on recent landmark reform of the federal 45Q tax credit to incentivize deployment of carbon capture technology, the USE IT Act will foster continued development and deployment of carbon capture by authorizing the EPA Administrator to coordinate with the Secretary of Energy on furthering research, development and demonstration of carbon utilization and direct air capture technologies. The bill would also support collaboration between federal, state and non-governmental interests to facilitate planning and deployment of pipelines to transport CO2 for ultimate storage or beneficial use.

With passage of the USE IT Act, we can help to advance next generation carbon capture and utilization technologies to transform CO2 into a beneficial resource and economic opportunity while reducing emissions and – crucially – creating and preserving American jobs, working families, and their communities.

In order to make this work, industry will have to build new pipelines, or extend already existing pipelines to transport carbon dioxide from where it is captured to where it may be stored or used. The existing network of CO2 pipelines – some 5,000 miles – is simply not enough. We need more pipelines to transport CO2 to oil fields and to other locations for storage and utilization purposes. The economic incentive to build at the scale required – certainly in the early going – would come from additional oil production via Enhanced Oil Recovery (EOR), a process that involves injecting CO2 into aging oil fields to increase recovery. Thousands of jobs can be created through the construction of this infrastructure alone and the operation and maintenance of the entire system, from CO2 production, to transport, to storage and utilization would create and preserve many thousands more.

Carbon Capture Deployment Is Just Beginning

According to the IPCC, wide-scale use of carbon capture technology is indispensable to our ability to combat a changing climate. 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.[iv] 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.[v]

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.[vi] 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.[vii] 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.[viii] 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.[ix] Though closure dates have been announced for some – though not all - units over the next 10 years,[x] 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.[xi]

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.[xii] 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 for the opportunity to be a part of today's proceedings and look forward to working with the Committee as we move into the future.

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