UTILITY WORKERS UNION OF AMERICA

JAMES SLEVIN
PRESIDENT

PATRICK M. DILLON
EXECUTIVE VICE PRESIDENT

MICHAEL COLEMAN
SECRETARY-TREASURER

JOHN DUFFY
VICE PRESIDENT

Affiliated with A.F.L.-C.I.O.

1300 L STREET, N.W.
SUITE 1200
WASHINGTON, D.C. 20005
202-899-2851
202-899-2852 FAX
www.uwua.net

WRITTEN TESTIMONY

Lee Anderson
Government Affairs Director, Utility Workers Union of America
Before the 116th Congress, House Committee on Energy and Commerce
Subcommittee on Energy
Role of the Power Sector in Creating a 100 Percent Clean Economy in the United States
Rayburn House Office Building, Room 2322
Wednesday, October 20, 2019

Thank you, Chairman Rush, Ranking Member Upton, 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 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 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. 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.

Let me be clear on one point very early on – the Utility Workers Union 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. You do not repair high-voltage power lines at 3:00 AM in a driving rainstorm by making wishes about how you would like things to be. You do that, and go home safely, by knowing the science behind what you are doing, and why.
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.

Opportunities

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.

Carbon Capture Technology

One such technology that, 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.[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.

Nuclear Power

Currently, there are still more than 90 nuclear powerplants in operation across the U.S. and, taken together, this fleet already provides over half of America's carbon-free electricity.[xiii] Further, according, again, to the IPCC, the science on nuclear shows that nuclear energy's life cycle carbon emissions are comparable to wind energy and are lower than solar, geothermal, and hydropower sources.[xiv] At a time when growing economies are demanding more power than ever, the need to bring large sources of reliable power on line in a small footprint, using the existing grid could not be more compelling.

Unfortunately, our union's experience is increasingly informed by the closure of nuclear facilities. To date, UWUA members have lost some of the best jobs in the power sector due to nuclear closures in California, Massachusetts, and Michigan, with additional closures slated to occur at an additional facility in Michigan, as well as New York. Rather than looking to the existing nuclear fleet as an already built source of zero carbon

energy, critical to decarbonizing the economy, we are losing these facilities and, for the most part, replacing their generation capacity with natural gas capacity, leading to a net rise in carbon emissions.

At the state level, some initiatives have been successful in keeping nuclear resources on the grid but, this is a far cry from the national effort necessary and coming at a time when new generations of nuclear technology are being developed and built abroad. Though, naturally, much public policy work remains to be done on long-term solutions for existing nuclear waste, modern technologies are dissimilar from those developed during the Cold War. Some, in fact, are even designed to use previously 'spent' nuclear fuel, thus providing a means to turn a waste product into an energy resource.

Renewable Energy

America's demand for renewable energy is growing dramatically. Increasingly, state policies are calling for more wind, solar and battery storage capacity. As a result, some utilities are ramping up efforts to expand renewable energy outputs in the coming years and we must train a new renewable energy workforce.

At the UWUA, our Power for America Training Trust (P4A) has been upskilling and training individuals for careers in the utility sector for over a decade. As a leading training center in Michigan, its mission is to provide individuals with the highest quality training in an ethical, respectful and responsive manner that meets the needs of the industry and the global marketplace.

The peer-to-peer training model used at P4A provides specialized instruction to enhance skill levels, promotes safety training and educates individuals on emerging technology to increase productivity. The program has grown from two participating employers to 12 over the years. In partnership with one utility in particular, Consumers Energy, P4A has developed the country's first Department of Labor-certified apprenticeship program in renewable energy. Unlike many other renewable training programs, which revolve predominantly around wind energy, the P4A apprenticeship includes training in wind, solar, and battery technologies.

Further, since 2015, P4A has trained over 650 military veterans for careers in the utility industry. P4A in partnership with Chicago-based Peoples Gas launched the Utility Worker Military Assistance Program after identifying a critical need to create a pathway for veterans into skilled careers. Since then the program has expanded to include several other companies across the region, including Michigan's Consumers Energy.

The training-to-placement program model provides veterans with the in-the-field training and classroom instruction they need to enter the utility industry and employment at completion of their training. Jobs in the utility industry, particularly in renewable energy, are an especially good fit for the skills many veterans have right out of the military.

Challenges

Managing the Energy Transition

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 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 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 experienced the simultaneous closure of two powerplants in one county.[xv]

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.

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 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. For nuclear communities, the case is even more plain – retaining zero carbon power generation on the grid is imperative if we are not to take steps backward in addressing climate change.

As we continue to grapple with these on-the-ground realities we will 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. 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.

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.

ENDNOTES

[i] *China Plans the Most New Coal Power Projects Globally*, Aljazeera.com, September 19, 2019
https://www.aljazeera.com/ajimpact/china-plans-coal-power-projects-globally-190919081115665.html

[ii] *Global Warming of 1.5C. An IPCC Special Report on the Impacts of Global Warming*, IPCC 2018
https://www.ipcc.ch/sr15/

[iii] *The Solar Singularity: 2019 Update (Part 3)*, Greentechmedia.com, May 1st 2019
https://www.greentechmedia.com/articles/read/the-solar-singularity-2019-update-part-3#gs.95u1nh

[iv] *Synthesis Report of the IPCC Fifth Assessment: Climate Change 2014*, IPCC 2014
https://www.ipcc.ch/report/ar5/syr/

[v] *Carbon Capture Projects Map*, Third Way, July 18, 2018
https://www.thirdway.org/graphic/carbon-capture-projects-map

[vi] *Boundary Dam Power Station*, Saskpower.com, SaskPower, 2014
https://www.saskpower.com/Our-Power-Future/Our-Electricity/Electrical-System/System-Map/Boundary-Dam-Power-Station

[vii] *New Mexico City Aims to Keep Open San Juan Coal-Fired Power Plant*, Associated Press, August 16, 2019
https://www.sltrib.com/news/environment/2019/08/16/new-mexico-city-aims-keep/

[viii] *Project Tundra*, Minnkota Power Cooperative, 2019
https://www.projecttundrand.com/

[ix] *Pacificorp May Have Buyer For Its Dave Johnston Plant*, Argus Media, March 25, 2019
https://www.argusmedia.com/en/news/1872332-pacificorp-may-have-buyer-for-its-dave-johnston-plant

[x] *Pacificorp Details Early Bridger, Naughton Coal Closures*, WyoFile, October 3, 2019
https://www.wyofile.com/pacificorp-details-early-bridger-naughton-coal-closures/

[xi] *Opinion: Energy – The FUTURE of Wyoming*, Sweetwater NOW, Chauffe Schirmer, Financial Secretary, UWUA Local 175
https://www.sweetwaternow.com/opinion-energy-future-wyoming/

[xii] *Direct Air Capture, a Carbon180 Fact Sheet*, Carbon180, 2019
https://static1.squarespace.com/static/5b9362d89d5abb8c51d474f8/t/5c5bc23b419202c2a4d1a8f6/1549517373480/DAC+Fact+Sheet+2019_final_web.pdf

[xiii] *Nuclear Powers the U.S. With Clean Energy*, Nuclear Energy Institute, 2019
https://www.nei.org/fundamentals/nuclear-powers-us-with-clean-energy

[xiv] *Ibid*.

[xv] *Forced to Choose Between a Job – and a Community*, ProPublica, May 23, 2018
https://www.propublica.org/article/adams-county-ohio-coal-forced-to-choose-between-a-job-and-a-community