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Good Afternoon, my name is Roxanne Brown and I’m the Assistant Legislative Director for the United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied Industrial and Service Workers International Union, or USW. Thank you for the opportunity to be here today. The USW represents 1.2 million active and retired workers. It is the largest industrial union in North America representing workers in steel and other metals, mining, plastics, rubber, glass, paper, refining and many other industrial sectors. We also represent workers at utilities - such as the 1200 USW members employed at National Grid here in Massachusetts.

This afternoon I’d like to highlight a few challenges our union sees in our nation’s energy distribution systems, particularly in the Northeast, and some of the opportunities that exist around repairing and upgrading some of the critical infrastructure systems in the twenty-one PJM, ISO-NE and NYISO states.

Inadequate Natural Gas Pipeline Infrastructure in New England

As a manufacturing union, access to affordable and reliable energy is critical to the companies that employ USW members. The industrial sector consumes one-third of the nation’s electric power, more energy than any other sector. Electricity is used to power manufacturing processes, such as powering electric motors, fan pumps and air compressors. According to the Energy Information Agency (EIA), electricity powers about 89 percent of motors in manufacturing.

Over the past five years, the manufacturing sector has begun shifting from fuels like coal and oil to power their facilities to natural gas. This shift has been caused in part by policies – such as the Environmental Protection Agency’s Boiler Maximum Achievable Control Technology, or Boiler MACT rule - which required industrial facilities to invest in emissions control technologies

to reduce their rates of hazardous air pollutants, and also by the onset of the shale gas boom, which presented a lower-cost energy option for domestic manufactures.

Natural gas production in the U.S. increased 33 percent between 2011 and 2013. Some projections estimate total demand for natural gas to increase by more than 75 percent above current market levels by 2035. In 2014, the U.S. experienced an uptick in manufacturing investments as industries like chemicals, glass, fertilizer and paper began to experience the benefits of an affordable supply of energy. While manufacturers in some regions of the country benefited from the low-cost of natural gas, manufacturers in New England, specifically in the pulp and paper sector, suffered as a constant stream of pulp and paper facilities have had to either shutdown, or enact work stoppages due to the lack of supply and capacity of natural gas and the effect that has had on energy costs.

On February 6, 2014, Great Northern Paper (GNP) in East Millinocket, ME announced that 212 workers would be laid off. The company cited high energy costs and market pressures as the chief reasons. The workers at GNP – who are represented by USW – make paper for newspapers, fliers, inserts, manuals, catalogs and paperback novels.

Several pulp and paper facilities in the Northeast have had to negotiate natural gas supply arrangements where natural gas is trucked in from as far as the Gulf region at sometimes quadruple the cost of natural gas in other regions of the country with adequate pipeline infrastructure.

Additionally, during times of peak demand and cold weather, these mills are often asked by ISO New England to shed load so that it can be used on the grid. When facilities shed electrical load, USW members are impacted with short hours or laid off.

The energy infrastructure challenge in New England has persisted for more than a decade, and is increasingly problematic as energy costs are steadily rising (and winters are getting colder) for industrial and residential users. New England currently has the nation's highest natural gas prices. In 2013, New England ratepayers paid \$3.6 billion more than they should have in energy costs than they would have if there had been enough pipeline infrastructure in place to meet demand. Without increased energy capacity in New England, USW members will likely see more layoffs at industrial facilities in the region.

These mill closures not only impact the immediate workers who are laid off, the loss of tax base and income also impacts the communities in which these facilities are located – many of which, in the case of pulp and paper, are in rural areas.

Methane Leaks and Pipeline Repair

The challenges with New England's pipeline infrastructure are not limited to its impacts on manufacturing facilities. In the 2015, our nation's infrastructure was ranked 12th in the world by the World Economic Forum in their Global Competitiveness Report. While the report assessed U.S. infrastructure as a whole, our energy infrastructure was a significant cause of the low

ranking. Fifty percent of the U.S.'s natural gas pipelines were constructed in the 1950's and 1960's with some built even earlier. Roughly three percent of our nation's gas distribution mains are made of cast or wrought iron and were built in the first half of the 20th century. We really didn't need the World Economic Forum to tell us that our systems are failing as each year we are witnessing the sometimes fatal effects of our dated natural gas infrastructure system as the leaks that exist within these systems are becoming more apparent. There are over 1.25 million miles of distribution pipelines in service today and more than 100,000 miles of leak-prone pipe made of aging materials such as cast iron and bare steel – which leak methane at a level upward of 50 times that of advanced materials being installed today – underneath our nation's cities and towns. While there are efforts by distribution operators to monitor and repair these leaks, the rate of leaks is startling. Natural gas distribution pipes lose 64 billion cubic feet of natural gas per year - equivalent to total gas use in the state of Maine. Reported data on leaks removed or repaired in 2009 indicate there were 0.12 leaks repaired per mile of mains (about one leak for every eight miles of main), and 0.47 per mile of service lines (about one leak for every two miles of service line). According to the EPA, roughly 80 billion cubic feet per year of methane escapes along the nation's natural gas interstate pipeline system accounting for more than \$240 million worth of wasted natural gas per year.

Leaking pipes and systems are a hazard not just for communities, but for workers – like my members – who do the monitoring and repair work on these systems each day. They also have a devastating effect on our environment as, pound for pound, atmospheric methane is orders of magnitude more potent than carbon dioxide and is the second largest contributor to climate change (estimated at 10 percent of total US greenhouse gas emissions). These leaks are also highly prevalent in cities such as Boston, New York, Philadelphia, and Washington, D.C.

At the current rate of progress, it could take 30 years or longer to repair and replace these vulnerable segments of our distribution pipe systems, which account for up to a third of the nation's total uncombusted methane leaking into the atmosphere. Compounding the issue, practices vary widely from state to state when it comes to leak detection and repair (LDAR). Many leak responses or repairs, while averting threats to workers and communities from explosion hazards, are designed to vent natural gas directly into the air for months or even years with little regard to climate change impacts.

Current efforts to repair and replace the most leak-prone segments of our natural gas distribution system creates nearly \$9 billion of economic activity nationwide and creates and supports 86,000 jobs (direct, indirect and induced) economy-wide per year.ⁱ For example, adding a \$1.5B investment to this activity then could be expected to create and sustain an estimated 100,300 jobs economy-wide each year. These jobs include supply chain jobs in manufacturing as steel pipe, pumps, valves, tanks and other products critical for our energy infrastructure are made by USW members in the U.S. To ensure domestic manufacturers and manufacturing workers play a role in repairing and updating our natural gas pipeline infrastructure, where public dollars are used in state and federal infrastructure investments,

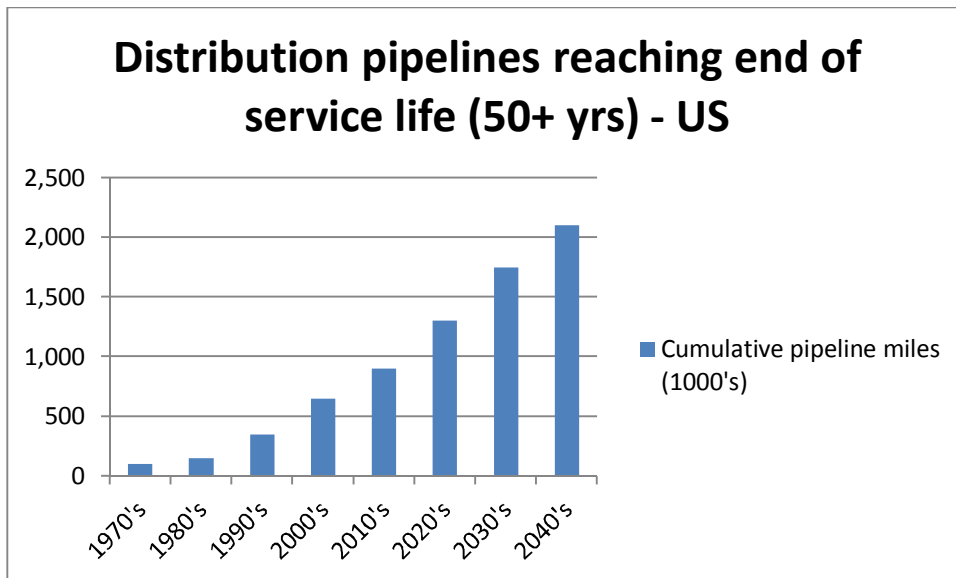
aggressive implementation of domestic procurement preferences must be incorporated. Americans tax dollars should be used to create American jobs. Maximizing domestic content in infrastructure investments creates 33 percent more American manufacturing jobs. This is particularly critical at a time when the domestic steel industry has lost 13,500 jobs in the 2015-2016 period.

“First generation” plastic pipe (generally identified as installed in the 1960’s through the early 1980’s) can become brittle over time, leading to cracking, reduced pressure capacity, and more leaks. Frontline gas workers - like our members employed at National Grid – report that it can be very difficult to identify what types and where older plastics are present in community gas systems.

Most programs to modernize leak-prone pipe are on a 20 or 30 year trajectory, or even longer. Accelerating modernization efforts has the upside of mobilizing economic activities sooner than later. An estimated 13,300 jobs are created or sustained for each \$1 billion of accelerated investment in the repair and replacement.ⁱⁱ

Accelerating upgrades to the more than 100,000 miles of the nation’s older leak-prone pipe to a 10 year timeframe could potentially create and sustain an estimated 250,000 jobs in a decade compared to business as usual, in addition to generating \$37B in additional GDP, saving \$4.4B in wasted gas and averting 81 million tons-equivalent of CO2 over ten years.ⁱⁱⁱ

These estimates address the oldest and most leak-prone sections of the nation’s natural gas distribution system. The need for modernization will continue, given the miles of pipe expected to reach the limits of their service life in decades to come.



Source: Pipeline and Hazardous Materials Safety Administration

Worker Safety

I'd like to also stress the importance of worker safety as states and utilities engage in efforts to repair, upgrade and modernize our energy systems.

The work on these systems is critical to protect our nation's communities. The people on the frontlines of this work are our union's members at National Grid as well as other workers. This work requires a high-level of oversight, skill and training and we emphasize that utilities engaged in this work utilize not only a fully-staffed workforce to perform the work, but a fully-trained workforce as well. Neither our nation's communities nor our workers can afford shortcuts. Unionized gas workers are eminently qualified to identify and repair leaks and implement methane-reducing technologies, and have strong training and qualification programs that ensure upgrades and repairs are done safely and effectively.

Our union and our members are committed to ensuring that the best processes and technologies are implemented to ensure high standards for safety, training and worker qualification.

The Pipeline and Hazardous Materials Safety Administration (a subset of the US Department of Transportation) maintains oversight of both intrastate and interstate natural gas activities and has recently introduced several programs to improve safety and industry standards, but often faces resource challenges in exercising its oversight role. Given the tenuous state of much of our natural gas infrastructure and the non-uniform process of updating it across the states, it is critically important to fully fund PHMSA's work.

Conclusion

From building out natural gas pipeline infrastructure in New England to repairing and upgrading our nation's natural gas infrastructure to prevent methane leaks, our union sees tremendous opportunities within these challenges. We are very supportive of the Quadrennial Energy Review process, and are eager to see an acceleration of best practices, advanced technology, and investment incentives across the natural gas sector.

It is imperative to continue building support among the public, private sector, and policymakers (to include members of Congress) to fund infrastructure projects at the state and federal levels, for the inclusion of strong domestic procurement language and so that strong state and federal approaches to reduce natural gas leaks and methane emissions advance to implementation. Success of federal initiatives, such as natural gas provisions of the QER, and the ability of PHMSA to enforce safety and accountability, are key to achieving measurable progress in fixing natural gas leaks and effectively upgrading our infrastructure.

Thank you.

ⁱ BlueGreen Alliance, “Repairing America’s Aging Pipelines,” 2013. http://www.bluegreenalliance.org/news/publications/NaturalGas_BiFold_R8_HighRes.pdf

ⁱⁱ Jobs estimate model using the following sources: Wichita State University Center for Economic Development and Business Research, “Oil and Gas Multipliers,” 2012. <http://www.cedbr.org/content/2012/OilGasMultipliers.pdf>; Pipeline and Gas Journal, “Billions Needed To Meet Long-Term Natural Gas Supply, Demand,” 2009. <http://pipelineandgasjournal.com/billions-needed-meet-long-term-natural-gas-infrastructure-supply-demands?page=show>; Black and Veatch, “Jobs and Economic Benefits of Midstream Infrastructure Development,” 2012. <http://www.ingaa.org/File.aspx?id=17744>; and field interviews with the United Association – Union of Plumbers, Fitters, Welders and Service Techs

ⁱⁱⁱ BlueGreen Alliance, “Interconnected: The Economic and Climate Change Benefits of Accelerating Repair and Replacement of Natural Gas Distribution Pipelines,” 2014. <http://www.bluegreenalliance.org/news/publications/document/Interconnected-Report-vFINAL.pdf>