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HOUSE OF REPRESENTATIVES
COMMONWEALTH *of* PENNSYLVANIA

House Democratic Policy Committee Hearing
POWERING PA: 21st Century Jobs

Hosted by state Representative Pam Snyder

Wednesday, Feb. 24, 2021 | 2 p.m.

2 p.m. – 2:25 p.m.

Zach Smith, External Affairs Manager
CONSOL Energy

2:25 p.m. – 2:50 p.m.

Jackson Kusiak, Solar Energy Consultant
Solar States

Micah Gold-Markel, Founder
Solar States

Joe Morinville
Energy Independent Solutions

2:50 p.m. – 3:15 p.m.

Jim Welty, Vice President of Government Affairs
Marcellus Shale Coalition

3:15 p.m. – 3:40 p.m.

Matt Tripoli, Director
Project Development for CS Energy

3:40 p.m. – 4 p.m.

John Bane, Director of Government Affairs
EQT Corporation



Pennsylvania House Democratic Policy Committee
Powering PA: 21st Century Energy Jobs
February 24, 2021

Testimony of:
Zach Smith
Director of External Affairs
CONSOL Energy, Inc.

Chairman Bizarro, members of the House Policy Committee, I am Zach Smith, Director of External Affairs for CONSOL Energy, Inc. I appreciate the opportunity to provide testimony on the jobs that drive the economy in Southwestern PA, the prospect of growth for those jobs, and the reason we need to promote and sustain jobs in the coal industry.

Coal's Economic Impact in Pennsylvania

You don't have to look hard to see coal's contribution to Pennsylvania's economic success. Coal mining helps drive the Pennsylvania economy, supporting nearly 18,000 jobs, contributing \$4.7 billion annually to the state's economy, and serving as the cornerstone of economic development for many of Pennsylvania's rural communities over the last two centuries¹.

Pennsylvania produced over 50 million short tons of coal in 2019, making it the third largest coal-producing state in the nation². The coal industry is the top employer in Greene County³. Taxes that the industry generates account for one-third of the County's budget⁴.

Overview of CONSOL Energy

CONSOL, a Pennsylvania-based publicly traded company, is a leading, low-cost producer of high-quality bituminous coal, focused on safely and responsibly producing coal in the Appalachian Basin. Together with our predecessors, we have been mining the coal that has

¹ "The Economic Impact of the Coal Industry in Pennsylvania", Allegheny Conference on Community Development, April 2019.

² Rankings: Coal Production 2019, EIA, <https://www.eia.gov/state/rankings/?sid=PA#series/48>.

³ https://www.workstats.dli.pa.gov/Documents/Top%2050/Greene_County_Top_50.pdf

⁴ <https://www.co.greene.pa.us/department-finance>

powered economic progress in the U.S. and around the world since 1864. The Company's ability to efficiently produce and deliver large volumes of high-quality coal at competitive prices is related to the strategic location of our mines and our team's commitment to safety, compliance, innovation, and continuous improvement. The quality of the coal we mine at the Pennsylvania Mining Complex is among the best in the world – because of its high energy content, lower carbon intensity, and unique physical properties, our coal can be used in thermal, metallurgical, and alternative applications.

CONSOL's assets include the Pennsylvania Mining Complex (PAMC), the CONSOL Marine Terminal located in the Port of Baltimore, the Itmann Mine in Wyoming County, WV, and more than 1 billion tons of undeveloped reserves. We are proud to call Greene and Washington Counties home to our Pennsylvania Mining Complex, the largest producing underground coal mining operation in North America, and also home to many of our employees and their families.

Jobs in the Coal Industry

Coal has a long history in Pennsylvania, dating back to the mid-18th century. There are distinct differences with the bituminous coal from a longwall mine, like CONSOL operates, compared to the Northeast anthracite regions, and other room-and-pillar or surface mining operations across the state. All coal is not equal. Depending on the characteristics some coal is used for metallurgical or industrial applications like steel making and some is used for thermal applications like electric generation⁵. Generally, the bulk of our employees develop, mine, and produce the coal underground where it travels via conveyor belt above ground where the coal is cleaned and processed at our preparation plant, before being loaded on to trains for delivery to our customers, typically along the East Coast. Our miners have diverse backgrounds, ranging from just out of high school to 4-year engineering degrees, to people working on their Master's or PHD's. For mining and terminal operations, we seek candidates with mining, mechanical, or electrical certifications, underground work experience, or education -typically in mining engineering. Above ground we have professional employees and contractors working on facility

⁵ <https://www.eia.gov/energyexplained/coal/>

planning, construction, environmental restoration, and land resource management in addition to our various administrative functions.

Despite the perception, the coal industry has innovated and adapted over the last three decades thanks to a relentless focus on safety and continuous improvement. Our miners work in a high tech, highly controlled, highly automated environment. Our longwall operators are trained to run the shearer -which is the main piece of longwall mining equipment- with a remote control under hydraulic shields that track movement and adjust automatically, our roof bolters and continuous miners utilize and analyze big data to increase efficiencies, while the workforce above ground track and monitor the quality and characteristics of the coal. These advances have been made through years of improvements and focus on technology and innovation.

The overwhelming majority of our employees live in the region with their kids going to local schools, shopping at local supermarkets, and spending their money at local stores. It's our sincere commitment to keep them safe, but also to keep them employed. Which is why we are working so hard to invest in the evolution of technology and the future of our company.

Current State of Play

Coal still plays a valuable role in our energy mix and will continue to do so for the foreseeable future. The U.S. has vast supplies of coal, estimated that recoverable coal reserves total 252 billion tons. At current rates of consumption, the nation's coal reserves would last for nearly 400 years.⁶ Coal still generates roughly 20% of the electricity in the United States⁷. Recent issues in Texas and other parts of our nation's electric grid, have highlighted the importance of having reliable, baseload generation⁸. However, it is evident that the industry must embrace new technology and new markets if there is going to be a sustainable future for coal that can thrive throughout the 21st century. We just may have to think about coal a little different.

⁶ <https://www.eia.gov/energyexplained/coal/how-much-coal-is-left.php>

⁷ <https://www.eia.gov/outlooks/aeo/>

⁸ <https://rtoinsider.com/rto/grid-operators-historic-arctic-blast-191942/>

Future of Coal

CONSOL is a leader in innovation and technology initiatives that have helped continually move the coal industry forward for over 100 years⁹. Building on that legacy, over the past few years, we have built a portfolio of projects focused on alternative uses of coal, especially in the low-to-no emissions categories, which, if they come to fruition, can sustain our current mining jobs and promote new opportunities in downstream manufacturing.

Advanced PFBC Power Plant with Carbon Capture and Storage

A CONSOL led project that is intended to design the coal-based power plant of the future, which can be commercially viable and demonstrated in the U.S. power generation market in the next 5-10yrs¹⁰. This project is in partnership with the U.S. Department of Energy's Coal FIRST Program and utilizes an advanced pressurized fluidized bed combustion power plant with carbon capture and storage. It will be primarily burning waste coal and will be supplemented with biomass. The project aims to capture and permanently sequester 97% of CO2 emissions and by utilizing BECCS (bioenergy with carbon capture and storage) technology, can make this a net-neutral or net negative CO2 powerplant. This is a tremendous opportunity for the region to reinvent the way coal can be used to sustainably generate electricity, use waste coal to eliminate an environmental liability and reduce risk, significantly advance the state of carbon capture technology, demonstrate BECCS on a commercial scale and provide needed advances for carbon storage opportunities in the region with benefits extending far beyond just this project. A project of this magnitude fits in with recent public and private initiatives and coalitions including Pennsylvania signing a memorandum expressing a commitment to establish and implement a regional CO2 transport infrastructure plan¹¹.

⁹ <http://www.consolenergy.com/about/our-history>

¹⁰ <https://www.energy.gov/fe/project-descriptions-coal-first-initiative-invests-80-million-net-zero-carbon-electricity-and>

¹¹ <https://www.governor.pa.gov/newsroom/pennsylvania-joins-6-states-in-commitment-to-plan-for-co2-transport-infrastructure/>

CFOAM

CONSOL invested in a WV-based company called CFOAM which utilizes the qualities of coal to produce high-performance carbon foam, which can be used in markets such as composite tooling, thermal insulation, and fire proofing¹². A recent Department of Energy grant will allow CFOAM to adjust its manufacturing process which if successful, could lead to a reduction in CFOAM's manufacturing cost, cycle time, and capacity, opening new markets in areas such as building and structural applications. These types of markets have potential to create drastic new demand for U.S. coal, which means preserving mining jobs, creating manufacturing jobs, while creating an entirely new environmental profile for coal.

Coal-to-Plastics Composites

CONSOL is partnering with a team led by Ohio University aiming to develop engineered composite materials, such as high-performance decking boards, from coal¹³. These materials require less energy—resulting in lower manufacturing costs and emissions than commercial, wood plastic composite products. The global plastic composite market is undergoing tremendous growth, and this initiative has the potential to open new, sustainable markets for U.S. coal.

Summary

With the support of the U.S. Department of Energy and the National Energy Technology Labs, private industry, and academia we can invest in next generation coal projects. According to the National Coal Council report¹⁴ from 2019, alternate uses of coal will benefit coal miners, coal mining communities, domestic manufacturing, strengthen our international competitiveness and help secure America's role as a global leader in a future where carbon-based advanced materials and carbon-based lightweight manufacturing is poised to grow dramatically. Mine-site carbon product manufacturing will not only improve the economics and logistics of the U.S.

¹² <http://investors.consolenergy.com/2020-01-08-CONSOL-Energy-Announces-Investment-in-Coal-to-Products-Space>

¹³ <https://www.ohio.edu/news/2021/01/professor-jason-trembly-awarded-1-million-grants-sustainable-construction-materials>

¹⁴ <https://www.nationalcoalcoalouncil.org/studies/2019/NCC-COAL-IN-A-NEW-CARBON-AGE.pdf>

coal industry but can revitalize communities that have been negatively impacted by the recent downturn in U.S. coal demand and production. Developing coal-to-products industries will enable our nation to not only bring back mining jobs while creating high wage manufacturing jobs. Society will also benefit from reduced emissions enabled through the use of durable, lightweight, high-performance, high-efficiency coal-derived advanced carbon products used in aerospace, automotive, renewable energy, construction, and numerous other industries.

To summarize, I just want to reiterate the importance of the transformational work ongoing in the coal space, that often times is overlooked when we talk broadly about the coal industry. These opportunities have great implications for value creation and sustainability but also is a way to protect current coal jobs, promote new manufacturing type opportunities and jobs for our Pennsylvania workforce and communities, while unlocking other positive environmental benefits of coal.

I greatly appreciate the opportunity to be able to speak about the importance of the coal from a macro perspective, but also about the importance it plays for our employees and our communities.

Thank you,

Zach Smith
Director of External Affairs
CONSOL Energy, Inc.

Panelist Bios:

Jackson Kusiak

Jackson is a Solar Energy Consultant and Solar Installer with Solar States, a solar installation and education company based in Philadelphia. Jackson is a community organizer and has been focused on renewable energy policy for 10 years. He advocates for living wage solar industry job growth.

Micah Gold-Markel

After running a successful software business for 16 years, a light went on in Micah's head: connect sustainable energy, education, and economic development using solar energy as the basis to tie it all together. So Micah founded Solar States in 2008 to put this plan into action. The company, a certified B Corporation, is taking the opportunity to affect positive environmental and economic change by making a commitment to solar energy installation and education. In addition to installing solar arrays on schools, homes, and commercial buildings, Solar States works to connect students from our region with the green-collar economy through training and jobs, investing in the region's future, and our local economy.

Joe Morinville

Mr. Morinville has been an entrepreneur and independent consultant since 1997. He is the Founder and President of Energy Independent Solutions, LLC, aka EIS Solar, Western PA's leading alternative energy developer with over 700 successful projects, including the region's largest, most complicated, greenest and most interesting. Founded in 2008, EIS Solar designs builds and develops projects involving solar electric, wind, solar hot water, off-grid battery systems, battery backup systems, DC micro-grids, EV Chargers as well as consults on energy efficiency and building performance. Mr. Morinville is the Founder/Director of Oil Free Farms, a nonprofit dedicated to assisting small and medium agricultural facilities in becoming energy independent through conservation and alternative energy generation. Additionally, he designed and is currently overseeing the construction of the first Microgrid Powered Airport, Pittsburgh International Airport.

Testimony

1. Solar is one of the fastest growing sectors in the country + state. We are poised to grow quickly and add tens of thousands of jobs in PA if the industry can see the price signals and longer term support from good policy through the AEPS program. The solar industry has added jobs and continued to grow even during the pandemic. From a Sales perspective, higher SREC prices are critical for bringing down the payback period for solar. The economic considerations for buying solar in neighboring states (NJ, MD, NY) and better and payback periods are much shorter due to higher AEPS standards and the impact of higher (and in some cases fixed) SREC prices.
2. The Solar industry offers family supporting wages for permanent skilled jobs. Solar States is running several solar vocational training programs and employing young

people coming right out of high school, college grads, and people coming home from prison. Wages start at or above \$15 / hr and the industry allows the opportunity for people to move up the occupational ladder - to lead a crew or be an operations manager without requiring a college degree. There are many different forms of employment that are possible in and around the solar industry, for people from all walks of life, including construction/installation, sales/marketing, operations, permitting, and engineering. Solar projects require truck deliveries, fencing, civil and electrical engineering and places for installation crew to buy coffee and lunch. It is also an industry with a rural, urban and suburban footprint. It is flourishing in all types of markets. In that regard the industry is an especially good match for Pennsylvania and there are indeed solar companies and employment opportunities. all across the state, with much more poised to come.

3. Growth in the renewable energy sector sustains Agriculture and other vital economies. Land leases with solar developers bring new, predictable/fixed and lucrative income streams to farmers and family farms. These land leases are helping to keep farms afloat land owned by the family. This type of arrangement can work with utility scale, grid scale and community solar. Solar projects are often financed with a bond posted to the local municipality to ensure funds are there to remove the solar system at the end of the term, if that is desired. The result is that there are not unexpected and negative financial impacts on other landowners. If Community Solar legislation were to pass, rural farmers and landowners will benefit from enhanced prospects for solar leasing, and rate-payers in rural communities will benefit from inexpensive and locally generated energy, installed by local companies with local labor. There are additional economic benefits from a growing solar industry:
 - a. Resiliency of the local grid is reinforced by adding solar energy. This positive impact will be magnified as more solar as well as battery storage systems come online in greater number.
 - b. Agri-voltaics are the practice of growing crops intentionally under solar arrays, which in addition to producing energy generate a pleasant and effective growing climate that is more moist and shaded than a traditional planted field: The growth potential of agri-voltaics is enormous as farmers can still use the land for pasture, species habitat, and/or intentional soil replenishment. If removed, solar leaves no contamination behind and poses no danger to livestock or wildlife.
 - c. Downstream jobs: Solar projects also stimulate growth in related construction sectors - roofing, electrical upgrades, insulation, energy efficiency, and operations and maintenance. Investing in solar brings downstream benefits.
4. Solar projects are quick to deploy and many projects are shovel ready or poised for permits. Solar projects will proceed quickly compared to many other types of infrastructure.
5. Pennsylvania is at risk of missing the boat compared to much more robust solar markets in nearby states. Solar States - whether looked at in terms of hours worked, or revenue in dollars - spends 40%-50% of our time and efforts in New Jersey and Maryland. We

are employing, generally speaking, Pennsylvanians when we do solar in other states. These states have the same weather conditions and building stock, but better solar incentives. Many solar companies and financiers are waiting in the wings for the price signals to get projects off the ground in PA.

6. Solar, wind, battery storage and a diversified energy sector can help with grid resiliency. *We don't want to end up like Texas.* Distributed generation and battery storage prepare homeowners to weather storms and rolling blackouts. Diversification of energy production can protect us against spikes in demand and the loss of any one single energy source due to an extreme weather event. Climate change is going to increase the likelihood of extreme weather events. We need to protect against the possibility of grid failure with diversification and resiliency as key components to our energy systems. Solar companies are also installing battery systems, and equipping people with car chargers for electric vehicles. We are a necessary part of any 21st century energy sector build out. We are also going to miss a huge opportunity to inject substantial economic development and investment in the Commonwealth if we do not embrace this 21st century energy sector.

7. RGGI - The governor has prioritized RGGI as part of his efforts to improve our environment and support the transition to a more diverse and resilient energy industry in Pennsylvania. We believe that improvements to the AEPS will support many of the same goals without generating as much opposition as it appears has been lodged against RGGI. We also endeavour to have the economic benefits of solar investment in the Commonwealth remain an area of bipartisan support. That's the spirit in which we are speaking up in support for improvements to solar policy in our state today.

Pennsylvania

Key Figures

Total Solar Installed

664.34 MW

76.13 MW in 2019

National Ranking

21st

Ranks 25th in 2019

Solar Jobs¹

4,231

Ranks 18th in 2019

Growth Projection

1,108.33 MW over the next 5 years

Ranks 28th



Enough solar installed to power:

81,273 homes



Percentage of state's electricity from solar:²

0.31%



Price decline over the last five years:

45%

There are **395** solar companies operating in Pennsylvania.³



96

Manufacturers



201

Installers/
Developers



98

Others

The 15 Fastest-Growing Jobs in America

If you're looking for an occupation that's in demand, check out these 15 hot jobs.



By **Maryalene LaPonsie**, Contributor Sept. 21, 2020, at 11:53 a.m.

Solar Photovoltaic Installer

Projected job growth: 51%

Median salary: \$44,890

Renewable energy continues to garner strong interest, and solar photovoltaic installers should have ample job opportunities in the years to come, particularly in sunny



RENEWABLE ENERGY = JOBS

Currently, **Pennsylvania has almost 10,000 renewable energy jobs** across the whole supply chain – from solar installers, wind turbine technicians to engineers, sales people, manufacturers, construction workers, financing and beyond, but we're only 39th in renewable jobs per capita in 2018 for both solar and wind. States such as **Massachusetts** –with half of our population- has more than twice the number of renewable energy workers because of their policies.



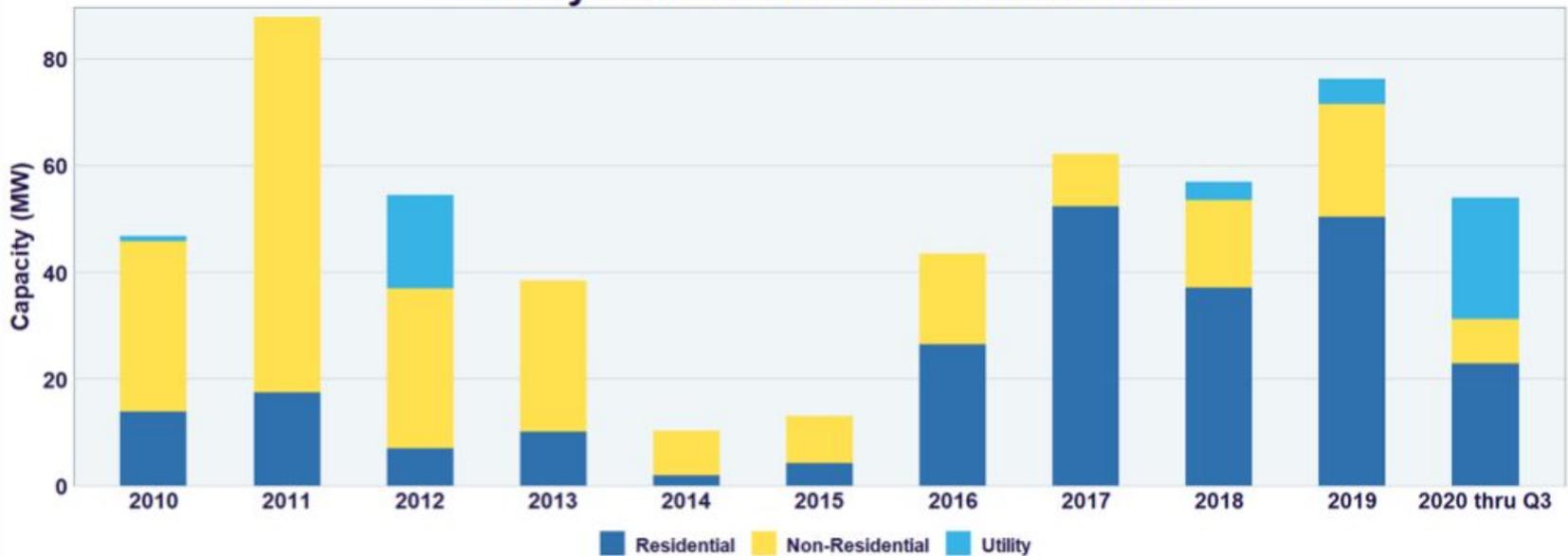
Regional Renewable Energy Goals



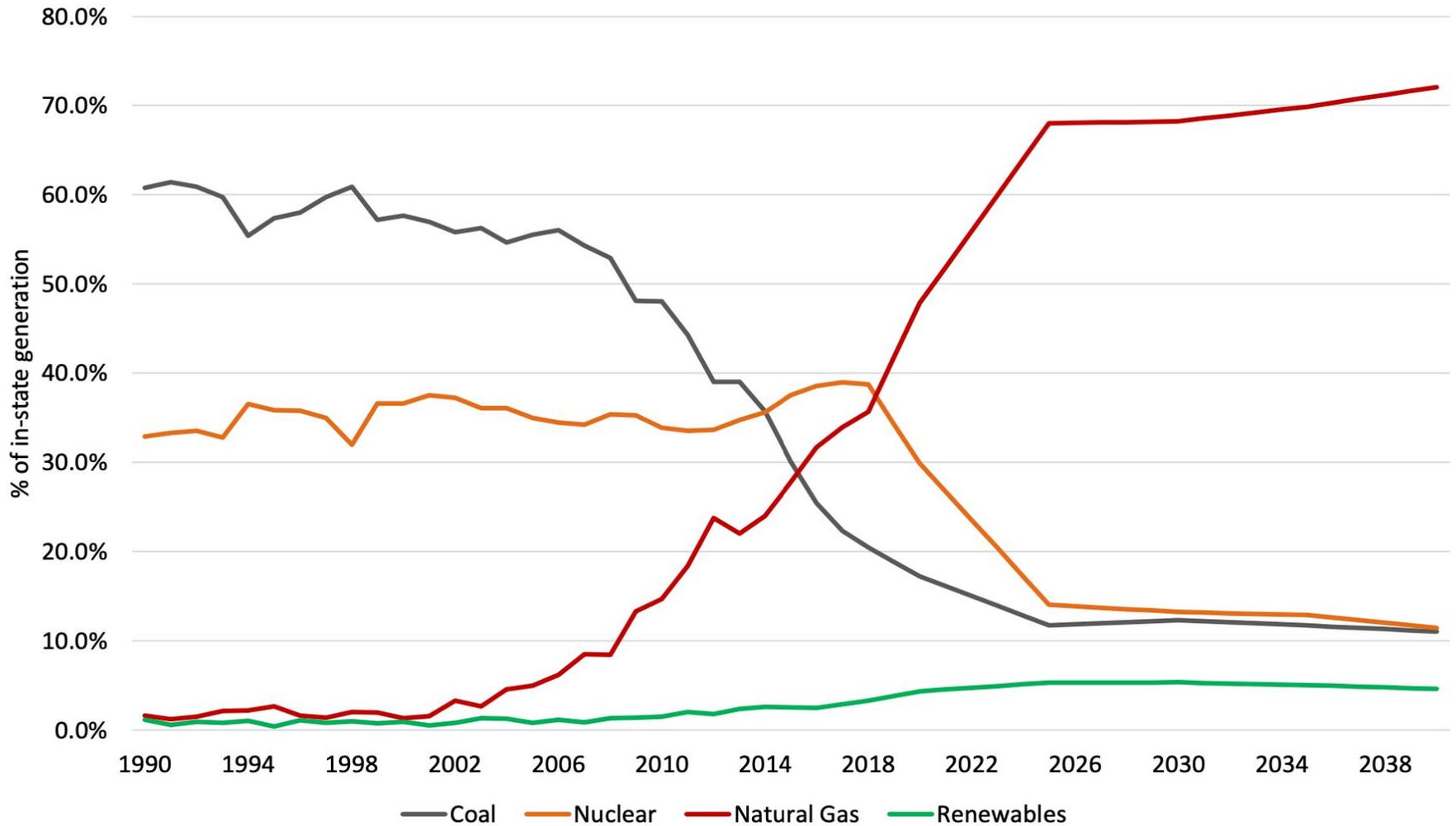


The solar industry has invested \$2,073.04 million in Pennsylvania, including \$180.93 million in 2019

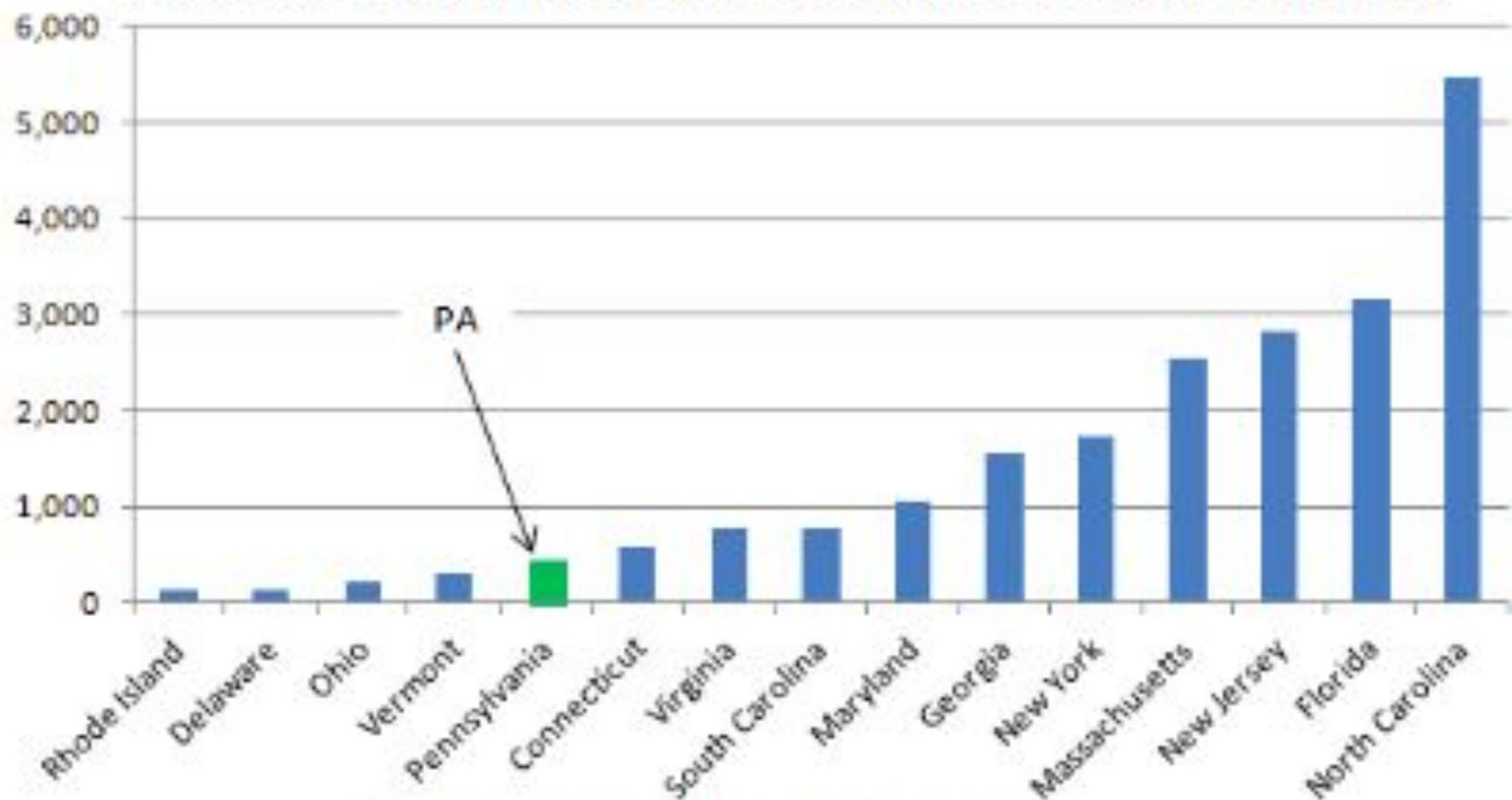
Pennsylvania Annual Solar Installations



Putting forecasted generation into perspective



Total Solar Capacity (MW_{DC}) Installed by State on the East Coast



Nat. Solar Energy Industries Assoc. Q1 - 2019

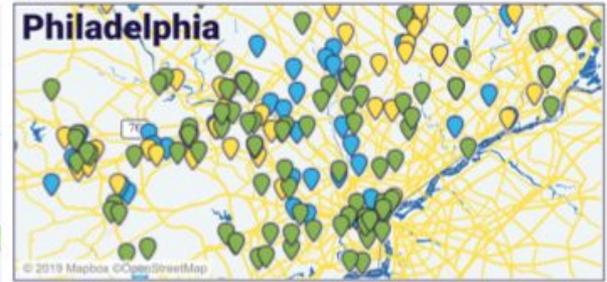
Preserving PA's Agricultural Economy and Sustaining Family Farms!



Community Solar
and **Agri-voltaics**
have great growth
potential.

They would bring in
much needed revenue
for farmers while
enhancing the land
and upgrading
agricultural buildings.

Solar Companies in Pennsylvania



- Installer
- Manufacturer
- Other

Let's talk about Texas...





February 24, 2021

I am Joe Morinville, founder and president of EIS solar located in Pittsburgh PA. We have been in business since 2008, have built around 7MW of PA solar, over 700 projects mostly in Western PA and have about 14MW in our current pipeline being built in 2021.

Our market focus is Distributed Generation, which means behind the meter, or on your home or business. This contrasts with utility scale which is the utility building a large field of solar to directly export into the grid like a coal plant would do. The benefit of distributed generation is we create energy at its point of use. This reduces strain in grid infrastructure by dispersing demand and is more efficient than centralized plants because there are not energy losses from miles of transmission wires between the power plant and your home.

All of our 35 full time permanent employees live and work in PA. They are paid an average of more than \$20/hour and enjoy full benefits, healthcare, vacation, 401k etc. I believe three of them had prior experience in solar. Finding we had no available trained workforce to fill our growth needs, we hired and trained people with no experience to work in this new industry. Engineers, construction workers, sales, and administrative, Solar creates career opportunities in PA for Pennsylvanians.

Why are distributed solar jobs different than pipeline jobs, fracking or cracker plants? They aren't temporary. Once a well or pipeline is created it serves for decades with little interaction. The cracker plant is creating over 10,000 jobs during construction, but post construction will only be around 400. This is similar with utility scale solar, it requires a ton of construction jobs during the building of the plant but after, it is more akin to a gas well, low labor intensive long term maintenance.

Distributed solar jobs are not short-term construction jobs because the number of sites is so immense and diverse. Each site, home, small business, factory, farm, is different. Each must be custom designed and engineered and each needs a construction crew to build it. Think back to when we first invented HVAC...every building needed the systems designed and installed. It created hundreds of thousands of jobs that are still here today. Solar is similar to this industry but moving at a much faster pace.

One thing solar offers that no other energy source offers is true energy independence. Look at TX last week. My home runs on solar and has a battery backup. It doesn't matter if the windmills freeze, if the gas plants pipes freeze, if the coal supply is restricted, I have my own power. When the world is dark, I have lights and heat as do many of my clients. You cannot do this with coal, gas or nuclear. Because of this trait, solar is the fastest growing form of energy in



the United States. It is not being purchased by fringe green organizations, it is being purchased by homeowners across the political spectrum, farmers who want to harvest the sun and business owners hedging against inflating energy costs. Solar is the one energy power plant that anyone can own and anyone can add a battery and protect their children from an unstable grid during freezing temperatures.

Solar is not at odds with fossil fuels, I would argue it's the other way around. Solar and gas pair well together in projects like the Pittsburgh Airport where we are powering and hardening this public facility using both resources. Solar cheaply creates the energy to offset the consumption where shale wells pump the airports own gas out and burn it in on site generators the power the demand needs. Together the airport will save 10's of thousands of dollars yearly, create the most hardened airport in the world and not use one cent of taxpayer money to do it. We can work with gas and not against them.

The issue is how fossil fuels and legislators view solar. They say we cannot pick winners, we cannot subsidize energy. And I agree. The issue is the winners have been picked since 1917 and they are all fossil fuels. The first energy subsidy, still on the books today, was implemented in PA in 1917 to encourage gas exploration and development. Over the next 90 years fossil fuel subsidies grew at a prodigious rate, on what appears to be a near parabolic curve. Every year we subsidized more. First because we needed an energy grid to grow this great nation but then it became so engrained in our economic models that subsidy started to no longer be considered subsidy. It was now called 'tax policy'. We built this nations energy grid on fossil fuel and nuclear subsidies and we are still running on it today.

Now solar has arisen and the game changer, market disrupter, the great disaggregator of the power grid moving it back from the hyper dependent monolithic grid we created through these subsidies to a dispersed and individually controlled grid with a million micro generation plants all owned by individuals and businesses rather than huge corporations and what does the legislature and status quo industry say...'hey we can't pick winner here.'

The truth is they are saying 'We can only pick the same winners we have been picking for the last 100 years and we still need to keep picking them so no disrupter can change the status quo'. That is the issue with energy policy today. Solar wants no subsidy, we want all subsidy removed completely and all energy to stand on its own. But that means legislators need to remove 3.5 billion in fossil fuel subsidy yearly in PA alone just to level the playing field with solar. REMOVE, not ADD. No legislator has the stomach for this so it will never be removed.

In 2019 fossil fuels in PA alone were subsidized by 3.5 Bil according to a study released yesterday. The cracker plant alone subsidized Shell to the tune of 3.6 billion to create 350 permanent jobs after construction, on the site of Horsehead that employed 500 full time



workers before Shell bought it. I am no math wizard but those kinds of numbers just don't make sense. By contrast, all alternative energies combined in the state of PA since the dawn of time have received about \$250mil. Shell, who has multibillion quarterly profits was subsidized for one single project, 14 times the amount all alternative energy subsidies in our states history. So who is the winner that was picked?

Solar wants a fair playing field. We bring a ton to the table, jobs, more stable power grid, customer choice, and energy independence for the country and the citizens who live in it. But it cant be done when all other energy sources enjoy massive subsidy and a political and corporate climate that is all on their side. We need a fair field. So either get rid of theirs or balance ours and we will make the rest happen, hundreds of thousands of jobs, billions in private investment and no chance of TX issues ever happening here.

If I had more time I would show you how increasing solar actually generates more tax revenue for the state than any proposed cost, decreases rates for consumers and surges economic impact. But I need an hour or so for that rather than this ten-minute window so I will stop here and answer your questions.

To summarize, PA needs more jobs and grid stability coming out of the pandemic and solar provides both. Help me help you get PA back on track.

Joe Morinville

Energy Independent Solutions

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Carnegie PA 15106

Office (888) OFF OIL1

Cell (412) 855 7620

www.EISSolar.com

Joe@EISSolar.com

House Democrat Policy Committee

Jobs in the Energy Sector

Introduction of MSC

Natural Gas Development has paved the way for American Energy Security

- Less reliance on foreign sources of energy, more reliant on our own
- And we do it right

PA is a world class player in Natural Gas Development

- 2nd Largest natural gas producer in US
- Nearly 20% of natural gas production in country
- 33 of 67 counties with at least 1 active well
- But the benefits are realized by all Pennsylvanians
 - o Lower energy costs
 - o Cleaner air
 - o Economic progress

Natural Gas Industry Job Opportunities Abound

- Upstream and midstream development has revitalized our workforce
- API estimates oil and natural gas jobs nearly 500k in PA alone (direct, indirect and induced)
- According to the Economic Policy Institute – the Oil & Gas industry has one of the highest indirect job employment multipliers of any business sector at 5.43

Jobs that Pay

- USDOE released a report last September (2020)
 - o Average direct job in O&G industry earned \$112k
 - More than double the national average of \$51k
 - o Non-supervisory job \$88k
- Whether high school diploma, college degree or graduate degree, there are good paying jobs

The building trades understand this partnership

- o National Association of Building Trade Unions released results of a survey of their members last summer:
 - In short, union members prefer O&G industry jobs, because they said...
 - higher paying,
 - provide better health and retirement benefits,
 - have more long-term job growth opportunities,
 - more stable careers
- o Union halls are filled – Free apprenticeship programs
 - **IUOE 66**
 - 2010 -- 10% unemployment
 - Within a year to a year and a half, went from 10% unemployment to over employment.
 - They had to look for people.
 - **Steamfitters Local 449**

- \$18.5 million training center
- Marcus Hook – \$200M investment and PLA agreement with Steamfitters Local 420, Electricians Local 654, and Laborers Local 413 – 1200 construction jobs

Job opportunities go far beyond upstream and midstream development.

- Downstream development presents significant opportunities that we'd like to bolster:
 - Shell Cracker – feedstock to manufacturing regrowth
 - root chemical for plastics, resins, adhesives and synthetic products used in every aspect of modern life
 - The boon is the long-term benefit of having this plant in western PA and the corresponding jobs that can be created
 - Local Resource Manufacturing tax credit
 - Foundation of today's agricultural industry – more jobs
 - LNG facility in Wyalusing
 - International and domestic exports
- Reshoring manufacturing lost to China is the biggest job opportunity presented by natural gas development

Jobs are the heart of the natural gas industry

- Most employed by the industry are Pennsylvanians working in the very communities in which their families live, where they send their kids to school, hunt and fish
- We need to embrace the opportunities
- Look forward to working with you to promote these good paying jobs and the significant opportunities for life-long careers



Testimony Submitted to the Democratic Policy Committee

Hearing on Powering PA/21st Century Energy Jobs

Submitted by:

Matthew Tripoli, PE – Director, Project Development

February 24, 2021

Thank you Chairman Bizzarro and members of the House Democratic Policy Committee for extending the opportunity for me to participate on behalf of CS Energy in today's hearing focused on 21st Century Energy Jobs in Pennsylvania.

CS Energy, LLC is a NJ-headquartered engineering, procurement, and construction contractor (EPC) that has been involved in the solar industry for over ten years. To date we have been responsible for over 1,000 MW's of utility-scale and commercial solar installations across 18 states. CS has over 170 employees across our operations and an operating office in Allentown. In 2020 we were recognized as the [Top US Commercial Solar Installer](#) by global research firm Woods Mackenzie, and named the [#2 Solar + Storage Installer](#) in the country by *Solar Power World*. Additionally, we are proud to have been recently selected as EPC for a 15 MWac solar project providing power to the Borough of Chambersburg. The project, which is expected to go online this summer, will provide about 10% of the Boroughs electricity for the next twenty years.

CS Energy is proud to be on the forefront of the diversification of our nation's energy infrastructure to include more distributed and sustainable renewable power sources to help combat climate change. We are routinely a leader in solar installations throughout New England, in New York and in New Jersey and look forward to increasing opportunities to do business and hire workers in Pennsylvania.

Pennsylvania has a strong legacy in the production of electricity

Historically Pennsylvania has been a national leader in the generation of electricity and the production of energy more broadly. Pennsylvania currently ranks as the third largest supplier of electric generation in the US and has historically exported a large portion of this generated power to neighboring states. Every year going back to at least 1990 more than 30% of the electricity generated by power plants in Pennsylvania has been exported (source EIA). Pennsylvania's historic role and position as an exporter of a valuable product for major population centers in neighboring states has created investment in Pennsylvania communities and high-quality jobs and benefits for Pennsylvanians.

According to the Energy Futures Initiative and the National Association of State Energy Officials, in 2018 more than 19,000 Pennsylvanian's were directly employed in power generation (US Energy and Employment Report 2019). Additionally, the group forecasted 8% year over year growth in the sector for Pennsylvania, which is higher than the national average.

The last decade has seen a dramatic shift in the fuel mix of PA's generation fleet. Deregulation or restructuring of PA's electric sector combined with the development of the Marcellus and Utica Shale plays has resulted in a dramatic increase in the use of Natural gas. In 2000, more than 60% of the electricity generated in Pennsylvania came from coal-fired power plants. Today, coal's position has eroded to 20% of in-state power generation, while natural gas now makes up approximately 40% of in-state generation.

Pennsylvania historically has also been a leader in the adoption of new forms of energy, from the Drake well, to the US's first commercial-scale nuclear reactor at Shippingport. In 2004, Pennsylvania became one of the first states in the US to adopt an important energy policy tool called a portfolio standard. PA's Alternative Energy Portfolio Standard Act (AEPS) requires electric companies operating in the commonwealth to procure an increasing percentage of their generation supply from alternative and renewable sources of power generation in the region. Pennsylvania's policy was adjusted slightly in

2007 and 2017 to incentivize more in-state development of these facilities but has largely remain untouched since 2004. The law's targets first started increasing in 2007 and plateau without further legislative action this year at a requirement for procurement of 8% renewable power generation.

Pennsylvania's Neighbors, once customers for exported power, are aggressively pursuing home-grown renewable sources of power

Since the adoption of PA's AEPS in 2004, our neighboring states have been acting aggressively to expand their own programs to diversify their energy supply and ensure the development of their own in-state power generation. State's across the US are competing to be leaders in the fight against climate change, to attract investment and build 21st century jobs.

New York adopted the Climate Leadership and Community Protection Act in 2019 to drastically reduce greenhouse gas emissions, including mandates to achieve 70% of its power generation carbon-free by 2030 and 100% by 2040. New York's plans focus almost exclusively on in-state power generation development and includes extensive commitments to large offshore wind farms and new power lines to bring hydroelectric power to the Empire State from Canada.

New Jersey's own Clean Energy Act mandates 50% renewable electricity by 2030 and 100% by 2050. The State is also competing to become a leader in the adoption of offshore wind. NJ's program includes extensive targets for in-state solar power and energy storage development.

Maryland's 2019 Clean Energy Job Act also targets 50% renewable electricity by 2030 and includes programs to fast track offshore wind development. Maryland's program also includes significant targets for in-state solar development.

In short, all of the States that have historically been markets for PA's exported electricity are aggressively pursuing policies and programs that ensure that their states see significant in-state investments in new sources of renewable power and the related growth of in-state employment in 21st century energy jobs. These states also see offshore wind power on the eastern seaboard as a massive new source of employment and clean power generation.

Pennsylvania has resources to diversify our energy mix

In short, while Pennsylvania's energy industry has seen a dramatic transformation over the last twenty years to dependence on new efficient natural gas power plants, the state's historical position as a regional leader in the generation of electricity is not set in stone. Recent events affecting the electrical grids in TX and CA also make it clear that there is value and resilience in diversity of energy supply. Many of the strengths that have powered PA generation for decades also support diversification of our grid to expanded uses of renewable electricity and the development of 21st century energy jobs.

As the fifth most populous US State and a hub for commercial and industrial activity Pennsylvania has a tremendous demand for in-state consumption of electricity. Despite activity underway in neighboring states, programs targeted at ensuring that renewables make up an increasing proportion of this in-state electricity consumption can drive investment and employment in Pennsylvania. Senators Haywood and Laughlin are expected to introduce legislation in the near future that will modestly increase the percentages required by the 2004 AEPS through 2026. Not only will this legislation help get PA's nearly 10,000 renewable energy workers back to full employment as part of recovery from COVID, but the

expansion will support an increase in employment due to the gradually increasing targets and required in-state facility construction.

Pennsylvania has a tremendous network of electrical transmission lines and other infrastructure and the land areas necessary to drive renewables construction. Across the US, renewable power generation development is most successful where it can utilize or repurpose existing infrastructure. Renewable power plants are generally smaller in capacity than conventional thermal plants, and as a result are often distributed across wider geographic areas. Pennsylvania's existing network that has supported power generation for decades cuts across nearly the entire commonwealth presenting a unique opportunity for geographically diverse economic development. Community solar is another potential program that can take advantage of this geographic diversity through existing infrastructure. HB531 which was intended to create rules for community solar in Pennsylvania did not move forward last session despite widespread bipartisan support. Adoption of similar legislation in this session could stimulate extensive demand for in-state renewable energy jobs and investment.

Pennsylvania has world-class educational institutions that are already responding to student and industry interest in 21st century energy jobs. From Penn State's Energy, Business, and Finance program to Penn College's recently rebranded Clean Energy Center, institutions throughout the commonwealth are creating and investing in programs to help drive students into these needed careers to prepare tomorrow's workforce. Enhanced renewable energy and energy efficiency investment opportunities in Pennsylvania can help keep more of these students in-state following graduation.

Pennsylvania, a historic power generation leader, can also lead in the development of 21st Century Energy Jobs

The competition to attract and retain 21st century energy jobs while responding to the climate and COVID crisis is underway in earnest. Pennsylvania is well positioned with many inherent advantages due to geographic position and historical strength in the sector, but has lost its first-mover status when compared to peer and neighboring states. Thoughtful policy and program adoptions are an important part of enhancing the likelihood of the commonwealth's success in creating these jobs. CS Energy looks forward to supporting continued efforts by Pennsylvania's legislative leaders to develop an enact 21st Century energy policies and programs.



**TESTIMONY OF JOHN BANE, DIRECTOR OF GOVERNMENT AFFAIRS
EQT CORPORATION
PENNSYLVANIA HOUSE DEMOCRATIC POLICY COMMITTEE
FEBRUARY 24TH, 2021**

Chairman Bizzarro, Representative Snyder, Members, and staff, thank you for the opportunity to testify before your committee this afternoon. My name is John Bane and I am the Director of Government Affairs at EQT Corporation.

EQT's operations go back to 1878 when the first commercial natural gas well was drilled in Murrysville, PA. Now headquartered in Pittsburgh, EQT is a leading independent natural gas company with operations focused in the cores of the Marcellus and Utica Shales in the Appalachian Basin. We operate in Pennsylvania, Ohio, and West Virginia. We have 623 full time employees, 529 of whom are in Pennsylvania.

Now the largest producer of natural gas in the country, EQT produces the equivalent of approximately 1/60th of the energy feedstock of domestic utilities. That means that for every hour that you have your lights on, that you work on your computer, or that you connect with friends and family digitally, we are responsible for one minute of that time.

At EQT, our core values are teamwork, trust, evolution, and heart. Our values are evident in the way we operate and in how we interact with each other and the community each day. EQT has a longstanding commitment to the safety of our employees, contractors, and communities, and to the reduction of our overall environmental footprint.

We seek to continuously improve the way we produce environmentally responsible, reliable, low-cost energy by leveraging a culture that prioritizes operational efficiency, technology, and sustainability.

From our recruitment processes to our robust benefits package, learning and development opportunities and technology-driven work environment, we aim to attract and retain the brightest minds in the industry. Since we rely on people with a broad range of skills, supported by sophisticated technology to operate our business, we believe that attracting and retaining unique, driven, and diverse talent leads to more innovation and greater overall business success.

During an employee's tenure with EQT, starting on day one, we aim to provide the resources needed to enhance their skills and knowledge, and to promote a culture where employees feel empowered to advance their education and career.

This begins with our new-hire orientation, where employees learn about our culture, organization, benefits, leadership competencies, performance expectations and other available resources to help them

succeed. Orientation also reinforces our commitment to workplace safety, ethical conduct, and environmental stewardship.

Following orientation, employees receive additional training as needed to develop the skills necessary to perform their job tasks safely and effectively. This includes mandatory and work-specific trainings, but we also offer optional participation in seminars, workshops, and certification programs to ensure that employees are always prepared for their job tasks.

Employees also continually work with their managers or supervisors to identify other appropriate training opportunities as they grow their careers with EQT. Some employees may seek to expand their formal education, and our Education Assistance Program provides financial assistance to those who enroll in degree programs and satisfy established grade requirements.

As you have heard, we offer many training and education options for our employees; however the growth of the natural gas industry and our commitment to the use of new technologies pose some challenges to our recruitment efforts. Since we have streamlined our company over the past several years and currently have 15 departments within EQT, it has become difficult to recruit new employees with expertise in business intelligence and platforms such as Salesforce.

One way we are exploring new recruitment opportunities to partner with institutes of higher education in 2021 to support Pennsylvanians to consider working in the natural gas industry. This includes recruiting interns who can work throughout our organization as they begin charting their career paths.

As EQT continues to evolve in the digital work environment we feel that it is critical for the leaders in the Commonwealth to support the attraction of new businesses that will lead to the creation and retention of high paying, highly skilled jobs in the field of natural gas production. We look forward to partnering with the Commonwealth in its efforts to foster the growth of a skilled work force and a robust economy.

I am happy to take any questions the committee may have.