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HOUSE DEMOCRATIC POLICY COMMITTEE
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House of Representatives
COMMONWEALTH OF PENNSYLVANIA

HOUSE DEMOCRATIC POLICY COMMITTEE HEARING
Topic: Clean Renewable Energy
Carbondale Area JR/SR High School – Carbondale, PA
July 17, 2019

AGENDA

2:00 p.m. Welcome and Opening Remarks

2:10 p.m. Dave Althoff
Director of the Energy Programs Office
Pennsylvania Department of Environmental Protection
2:20 p.m. *Questions & Answers*

2:40 p.m. Panel of Environmental Groups:
- Rob Altenburg
  Director
  PennFuture Energy Center
- Jen Quinn
  Legislative and Political Director
  Sierra Club Pennsylvania

3:00 p.m. *Questions & Answers*

3:20 p.m. Julian Boggs
Policy Director
Keystone Energy Efficiency Alliance
3:30 p.m. *Questions & Answers*

3:50 p.m. Closing Remarks

Testimony of

David Althoff, Director of Energy Programs Office

Pennsylvania Department of Environmental Protection

Democratic Policy Committee

Hearing to Discuss Wind Energy

July 17, 2019

Good afternoon. My name is David Althoff, and I am the Director of the Energy Programs Office in the Department of Environmental Protection (DEP). I would like to thank you for the opportunity to appear before you today to discuss wind energy, how wind energy relates to Pennsylvania's Climate and Clean Energy Goals, and the Department's role in regulating wind energy.

Pennsylvania Wind Energy Overview

Pennsylvania currently has 726 utility-scale wind turbines installed at 24 sites, totaling 1,369 MW. This puts Pennsylvania 18th in the United States in installed wind capacity. In 2018, wind energy provided 1.7 percent of all in-state electricity production, powering the equivalent of over 347,000 homes. According to the 2017 Alternative Energy Portfolio Standard Annual Report, Pennsylvania has the potential to generate enough wind electricity to power the equivalent of 1.6 million average American homes. Pennsylvania has the potential to host 43,000 MW of wind energy capacity at the current design hub height of 110 Meters.

Wind farms generate electricity without emitting any air pollution, consuming any water, contributing thermal load to rivers, requiring mining, drilling, or transportation of fuel to the generation site.

Additionally, as stated in Governor Wolf's Clean Energy Week Proclamation of September 21, 2018, there are nearly 3,000 Pennsylvanians employed in the wind energy field across the commonwealth.

DEP's Role in Wind Energy Development

DEP has both a policy and a regulatory role in wind energy development. DEP works closely with wind farm developers to facilitate the permitting process and encourages zero emitting energy resources which benefit both public health and the environment.

As a part of DEP's regulatory role of electricity generating sources, DEP regulates impacts of construction rather than specific operations of generating entities. For wind farms, DEP has regulatory authority ensure impacts to water and wetlands from road building and construction activities are minimized. DEP permitting activities occur through our six Regional Offices and cover the areas and land where the project will take place. DEP issues permits only to projects that meet all requirements and provide documentation showing that developers have properly coordinated with all other applicable government agencies. These agencies may include the Pennsylvania Department of Conservation and Natural Resources, PA Game Commission, PA Fish and Boat Commission, and US Fish and Wildlife Service. As part of a normal permit application, the applicant or consultant must include documentation showing that an online PNDI Environmental Review was completed (or submitted a "Large Project" review request) and any conflicts were resolved with the required agencies before submitting the permit application to DEP.

Pennsylvania's Alternative Energy Portfolio Standard

DEP also provides programmatic support to Wind energy development through its role in administering Pennsylvania's Alternative Energy Portfolio Standard (AEPS), enacted in 2004 and administered by the Public Utility Commission (PUC) in cooperation with the Department. The AEPS requires that 18 percent of electric power comes from alternative and renewable resources by 2021, including a Tier I requirement in which 8 percent comes from renewable resources like solar and wind.

Each year, DEP's Energy Programs Office works together with the PUC and the AEPS administrator to conduct an environmental compliance review to ensure all facilities with environmental permits are maintaining operations in compliance with all applicable environmental standards. In addition, DEP assists the PUC in ensuring that all energy resources meet the requirements of the AEPS act and work together to review data and trends to gain insight into the energy marketplace within Pennsylvania.

The Portfolio standard has helped to grow the clean energy industry in Pennsylvania, while providing support for the deployment of clean energy options to Pennsylvania businesses and homeowners. As mentioned, over 1,300 megawatts of wind power have been installed in Pennsylvania partly due to the inclusion of these resources as part of the Portfolio Standard. In addition, these renewable resources have brought in billions of dollars in capital investment in Pennsylvania.

AEPS Program Trends

The 2017 reporting year identified several trends. It is notable that for the Tier I non-solar requirement, which drives the substantial majority of the AEPS program's investments, 26 percent of credits were generated in Pennsylvania, 27 percent were generated in Illinois, and 24 percent were generated in Virginia. Wind energy produced

nearly half of the retired Tier 1 credits and 80 percent of those credits were generated from outside of Pennsylvania. Hydro, biomass energy and landfill gas produced most of the rest of the Tier I credits. Overall, the cost of the Tier I non-solar requirement (7.5 percent of the 8 percent requirement) was $98 million. In practical terms, this means that roughly $26 million was invested in renewable energy credits (RECs) generated within Pennsylvania, while $73 million was invested in RECs generated elsewhere.

For the Solar PV requirement, 39 percent of retired credits originated in Pennsylvania, while 48 percent came from North Carolina, 5 percent came from Ohio, and 4 percent came from Virginia. The remaining other 4 percent came from several other states.

Looking forward, the number of solar credits generated from sources out-of-state is expected to drastically decrease due to the passage of Act 40 of 2017, which "closed the borders" on solar credits by only allowing facilities located within Pennsylvania to be eligible for solar credits. This Act allows the AEPS program to support more in-state investment in new solar deployments rather than support existing out-of-state solar installations.

Furthermore, expanding that eligibility requirement to all Tier I resources would increase the development of in-state alternative energy resources. As only 26 percent of all Tier I credits retired in 2017 were generated in Pennsylvania, "closing the borders" for the remaining Tier I resources, such as wind, would allow Pennsylvanians to maximize the environmental and economic benefits that are currently being received by other states.

Opportunity for Program Improvement

When the original AEPS act was passed 15 years ago, Pennsylvania took a position as a leader in alternative energy development. Pennsylvania's alternative energy portfolio

standard has been critical in helping to grow clean energy resources both in-state and in the PJM region. This has helped to diversify Pennsylvania's electricity generation portfolio over the last 15 years. In fact, after the AEPS Act was passed, a goal set to install over one gigawatt of wind resources in Pennsylvania. That goal that was achieved while leading wind development east of the Mississippi in the early part of the century.

However, there is still significant room for improvement. Since the AEPS legislation passed in 2004, nearby states have set more aggressive renewable targets, such as Maryland and New Jersey at 50 percent renewable energy by 2030 and Delaware at 25 percent renewable energy by 2026.

Other states have also included aspects of their portfolio standard that incentivizes energy innovation and development of a clean energy economy. Additions to an alternative energy portfolio standard could include storage technologies. These technologies would bridge the intermittency of solar and wind technologies, build more local distributed generation projects that result in additional resiliency into the grid, and create microgrid systems.

As part of the Department's responsibility to provide recommendations to the AEPS program and given that the AEPS program is one of Pennsylvania's critical clean energy policies, the Department included analysis of potential adjustments to the AEPS Act in the Pennsylvania Solar Future Plan and the updated 2018 Climate Action Plan.

Pennsylvania Solar Future Plan

In November 2018, the Department released Pennsylvania's Solar Future Plan, which presented 15 strategies to increase solar generation to 10 percent of in-state electricity

consumption by 2030. The Solar Future Plan recommends increasing the solar carve out to between 4 percent-8 percent by 2030.

Some of these strategies include:

- Increasing the AEPS solar carve out,
- Enabling community solar,
- Creating uniform siting and land use policies,
- Providing opportunities for alternative ratemaking,
- Increasing access to capital,
- Developing a price for carbon,
- Creating tax incentives,
- Employing long term contracts,
- Modernizing the grid, and
- Allowing for virtual net metering.

Analysis conducted as a part of the Solar Future Plan predicts that greenhouse gas (GHG) emissions would likely decrease by 9.3 percent if the Solar Future goals are met. As they are both zero emitting resources, the analysis for a 10 percent wind requirement would expect to return a similar result. Additionally, the analysis projects an increase of 65,000-100,000 jobs across the commonwealth by 2030.

Pennsylvania's Climate Action Plan

In April 2019, Governor Wolf released the Pennsylvania Climate Action Plan, which includes over 100 actions that government, businesses, and citizens can take to both mitigate and adapt to climate change.

The Plan set targets in line with Governor Wolf's Executive Order 2019-01 aimed at reducing statewide GHG emissions 26 percent from 2005 levels by 2025 and 80 percent by 2050. If all states achieved similar GHG reduction targets, and other nations met comparable goals, climate science analysis suggests that global temperature rise could be kept below the 2-degree Celsius threshold cited by experts as the level beyond which dire consequences would occur, including sea level rise, superstorms, and crippling heat waves.

The Department's analysis team quantitively modeled 15 of the actions, including actions such as increasing the Alternative Energy Portfolio Standard (AEPS), investing in renewable energy generation, increasing energy conservation and energy efficiency, and more. Using just those 15 actions, the analysis team projected GHG emissions would decrease 21 percent from 2005 levels by 2025 and 36 percent by 2050.

Specifically, the team quantified a number of actions related to the electricity generation sector. Three of those actions are as follows:

- Increasing Alterative Energy Portfolio Standard Tier 1 targets which includes renewable energy such as wind to 30 percent by 2030, with a 6 percent solar carve out, and then increasing that target again to a 50 percent by 2050.
- Implementing a policy to maintain zero carbon nuclear generation at current levels, whether through zero emissions credits, inclusion in the AEPS, or some other mechanism.
- Limiting carbon emissions through an electricity sector carbon cap and trade program, like the Regional Greenhouse Gas Initiative.

The analysis team found that implementing those three actions could have significant environmental benefits. In fact, the analysis in the Climate Action Plan states that just

increasing the AEPS Tier I target to those 30 percent and 50 percent levels would reduce in-state emissions an average of 16 million metric tons of CO2 equivalent per year from 2020-2050.

Conclusion

Wind energy and solar energy, as two zero-emissions resources, are critical to helping Pennsylvania's electricity sector to trend toward zero emissions, a trend that must continue if Pennsylvania is to meet its climate goals.

As we near 2021, the Department is encouraged to see the legislature looking ahead to ensure Pennsylvania continues to grow its in-state clean electricity generating resources while supporting next generation alternative energy and renewable energy technologies. We look forward to continuing to work with the legislature to provide input on how the AEPS Act and implementation of the recommendations in the Climate Action Plan can help Pennsylvania not only reduce emissions, but also maintain our status as an energy leader by increasing competitiveness with neighboring states in the development and deployment of clean and alternative energy resources.

7/17/2019

Testimony of Jen Quinn
Representing the Pennsylvania Chapter of the Sierra Club
Before the Pennsylvania House Democratic Policy Committee

Introduction

Good afternoon, my name is Jen Quinn, and I am the Legislative and Political Director for the Pennsylvania Chapter of the Sierra Club . Established in 1892, the Sierra Club is the oldest and largest grassroots non-profit environmental organization in the country.

Our mission is to explore, enjoy, and protect the wild places of the Earth and to practice and promote the responsible use of the Earth's resources and ecosystems. We currently have over 30,000 members in Pennsylvania, and these members have a strong interest in clean energy and limiting carbon pollution and its associated climate impacts.

Carbon Pollution in Pennsylvania

Our Commonwealth is a significant emitter of climate disrupting carbon pollution. We rank second in the nation in fracked gas production and third in coal production.[1] We are also globally significant polluters. Pennsylvania emitted more energy-related carbon pollution in 2015 than all but 23 nations.[2] It is therefore imperative that we do our fair share as a Commonwealth to significantly reduce our greenhouse gas emissions in order to avoid potentially disastrous levels of climate disruption.

Several studies have projected the impacts that climate change will have here in the Commonwealth, including by the Department of Environmental Protection (DEP) (as mandated by Act 70 of 2008)[3], the US Environmental Protection Agency (EPA)[4], and the National Conference of State Legislatures (NCSL).[5] Some key findings are as follows:

- Our climate will be warmer and wetter, with an estimated 3°C (5.4°F) temperature increase and 8-10% annual precipitation increase by 2050.

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[1]US Energy Information Administration, 2017 production.

[2]International Energy Administration Atlas of Energy.

[3]Shortle, J, D Abler, S Blumsack, A Britson, K Fang, A Kemanian, P Knight, M McDill, R Najjar, M Nassry, R Ready, A Ross, M Rydzik, C Shen, S Wang, D Wardrop, S Yetter. 2015. Pennsylvania Climate Impacts Assessment Update. The Pennsylvania State University, University Park.

[4] US EPA. 2016. What Climate Change Means for Pennsylvania. EPA 430-F-16-040.

[5]National Conference of State Legislators. 2008. Pennsylvania: Assessing the Costs of Climate Change.

- Tidal portions of the Delaware River could rise enough to inundate parts of Penn's Landing, the Philadelphia Airport, and nearby neighborhoods during regular high tides. Saltwater could move upstream far enough to contaminate major drinking water intakes.
- More frequent heavy rain events will cause frequent flash flooding along inland rivers throughout the state. In areas with many steep slopes, landslides will be more common due to the combination of heavier rains and more frequent winter thawing. Higher temperatures generally mean stronger wind events that lead to more power outages. Precipitation from extremely heavy storms has already increased 70% in the Northeast region since 1958.
- Rising water temperatures make algal blooms on Lake Erie, which can be toxic to fish and humans, more frequent and severe.
- Agricultural production is expected to suffer, with losses expected to be greatest in corn (PA's most important crop) as well as milk and beef (which together account for a third of Pennsylvania's $7.4 billion in annual agricultural production).
- Human health will be impacted in a variety of ways. Premature deaths due to extreme heat will increase. Ground level ozone (or smog) levels will increase with temperature and exacerbate respiratory problems. New insect-borne diseases are likely to emerge. As winters warm, more ticks become infected with Lyme disease making humans more susceptible when they go outside.
- Pennsylvania's downhill ski and snowboard resorts are not expected to remain economically viable past mid-century.

The most vulnerable Pennsylvanians already do and will continue to shoulder the greatest burden from these climate impacts - not just those in urban areas but many of our rural, elderly, and low income residents as well.

Policies to Promote Clean Energy

The clock is ticking in our fight against climate change. The Intergovernmental Panel on Climate Change (IPCC) concludes we have just a decade to significantly reduce carbon emissions, and until 2050 to reach net zero emissions. Limiting carbon pollution and expanding the development of renewable energy must be an essential part of any plan to address climate change.

Pennsylvania's clean energy targets - established in 2004 through the Alternative Energy Portfolio Standards (AEPS) - are inadequate and in need of significant updates. Additionally, these targets will plateau in 2018 and will cease to drive investment. A mere 8% of our electricity must come from Tier 1 sources, specifically, a meager 0.5% of our electricity must come from solar and the remaining 7.5% from other renewable sources like wind, low-impact hydropower, and geothermal. An additional 10% of our electricity must come from Tier 2 non-renewable sources like waste coal and garbage incineration.

Of the 30 existing renewable portfolio standards nationwide (29 states and Washington, D.C.), Pennsylvania has the weakest renewable percentage target.[6] Our neighbors, New York and New Jersey have 50% targets and Maryland and Delaware have 25% targets. Pennsylvania can and must do better. Renewable portfolio standards are critical in driving the clean energy economy and even with our meager standards, Pennsylvania has over 9,200 renewable energy

[6] https://www.nrdc.org/sites/default/files/media-uploads/rps_map_from_lbnl_report.pdf

jobs, including 4,846 solar energy jobs.[7] Establishing a 10% solar electricity goal by 2030 would result in 60,000 to 100,000 more jobs throughout the Commonwealth as well as a net economic benefit of over $1.6 billion annually.[8] Massachusetts has half the population of Pennsylvania, but it has more than four times as many solar jobs (nearly 20,000), largely because it established a goal of 1600 MW of solar energy by 2020.

A good next step would be for Pennsylvania to join the Regional Greenhouse Gas Initiative (RGGI), which is a multi-state effort that caps carbon emissions from the electric sector and allows states to invest the proceeds from allowance sales.

There are some in the legislature that are saying RGGI and AEPS are duplicative and if Pennsylvania joins RGGI, AEPS should be repealed. These programs are complimentary, not duplicative. Actively investing in carbon-free electricity sources lowers the price of carbon allowances, which are ultimately paid by consumers. Conversely, putting a price on carbon pollution helps level the playing field for carbon-free electricity and lowers the cost of compliance with the AEPS. In current RGGI states, carbon limits and renewable goals work together to ensure that wholesale power markets deliver outcomes that are consistent with states' public policy priorities, like pollution reduction and economic development.

Another step in the right direction would be allowing community solar in Pennsylvania. Currently, 19 states and the District of Columbia allow community solar programs where consumers that are not able to install solar can subscribe to a portion of a solar installation located somewhere else in their community and receive a credit on their utility bill for their share of the power produced. Enacting legislation to allow community solar projects in the state could lead to a 26% increase in solar jobs, $706.4 million in local economic benefits, and $361.6 million in earnings for employees of solar companies.[9]

We should also be focusing on the electrification of the transportation sector and the build-out of electric vehicle charging infrastructure. Electric vehicles (EVs) transfer energy from the grid to the wheels at 59-62% efficiency, a far greater efficiency than an internal combustion engine (ICE) that transfers energy from tank to wheels at only 17-21% efficiency.[10] Even with our fossil fuel heavy grid mix, driving an EV produces less carbon pollution than driving an ICE in just about all parts of the country and as more renewable energy comes online, this net benefit will increase and ultimately achieve carbon neutrality.

Additionally, expanding electric vehicle charging infrastructure will lead to more people driving electric vehicles. In 2017, only 12,000 EVs were sold in Pennsylvania, and that's largely due to 'range anxiety'. We have over 250,000 miles of roads in the commonwealth, but have fewer than 500 charging stations. More charging stations at strategic, accessible locations could pave the way toward a clean, modern, and accessible transportation future.

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[7] Clean Jobs Pennsylvania 2019. https://www.e2.org/reports/clean-jobs-pennsylvania-2019/

[8] https://www.e2.org/wp-content/uploads/2019/06/E2-Clean-Jobs-Pennsylvania-2019.pdf

[9] Coalition for Community Solar Access. http://www.communitysolaraccess.org/pennsylvania-introduces-bipartisan-community-solar-legislation/

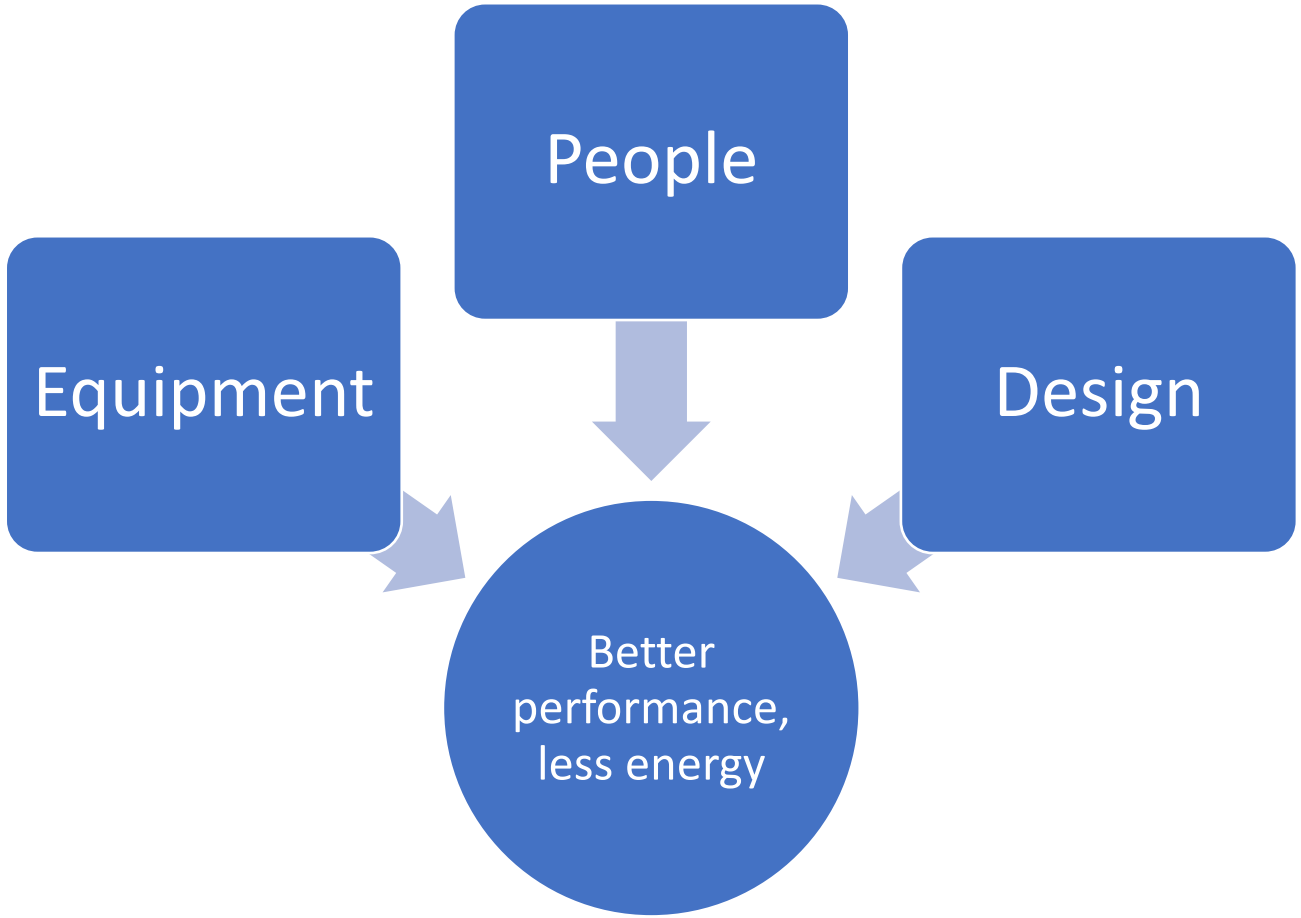
[10] US Dept. of Energy and US Environmental Protection Agency: https://www.fueleconomy.gov/feg/evtech.shtml

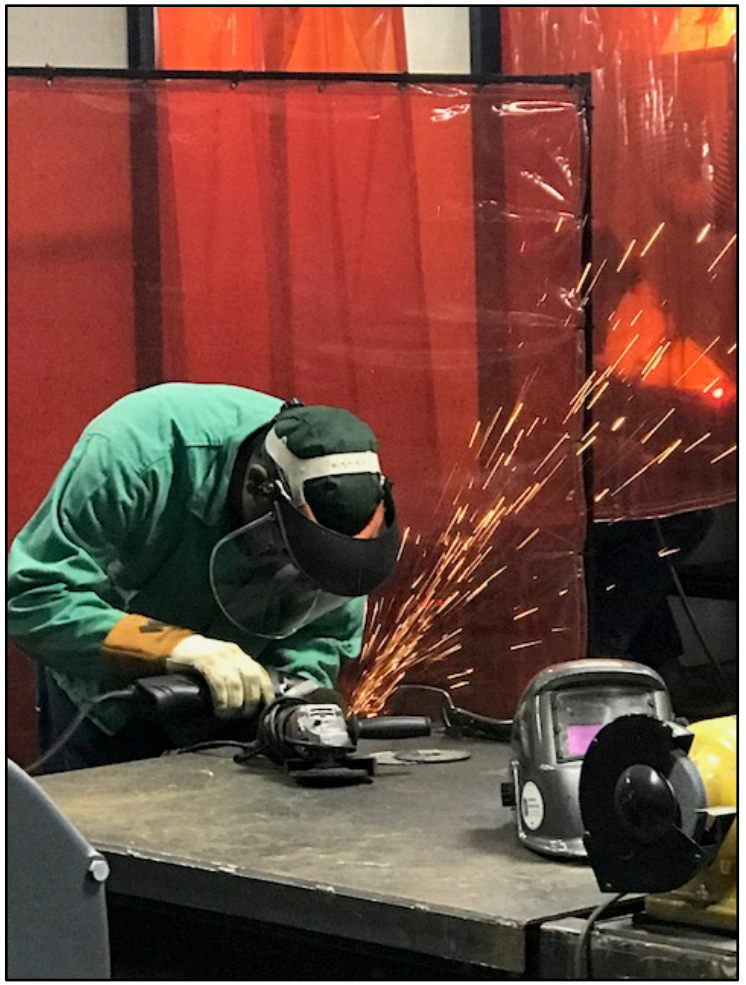
Clean energy and energy efficiency have the potential to create hundreds of thousands of jobs in Pennsylvania, if we can muster the political will to go down that path. As lawmakers, we urge you to do so, and we are ready to support you in any way we can.

Energy Efficiency Policy In PA

Julian Boggs
Policy Director
Keystone Energy Efficiency Alliance
jboggs@keealliance.org

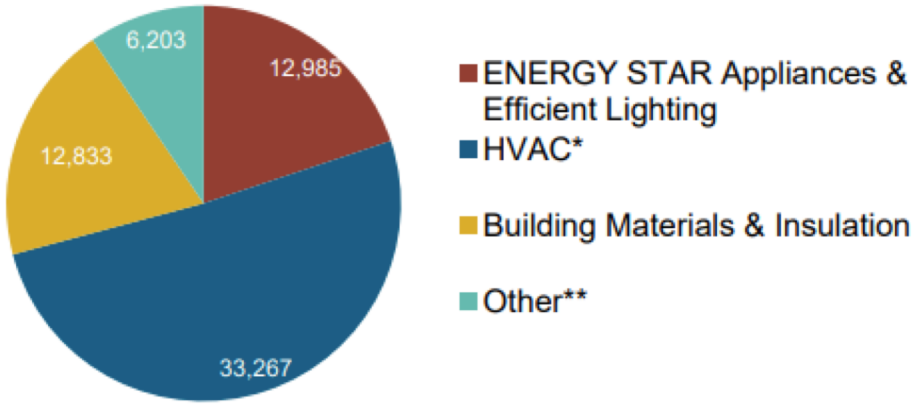
What is Energy Efficiency?



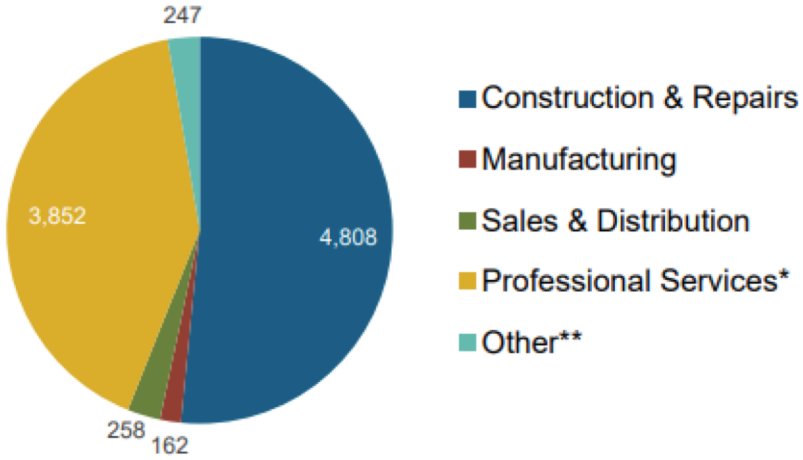


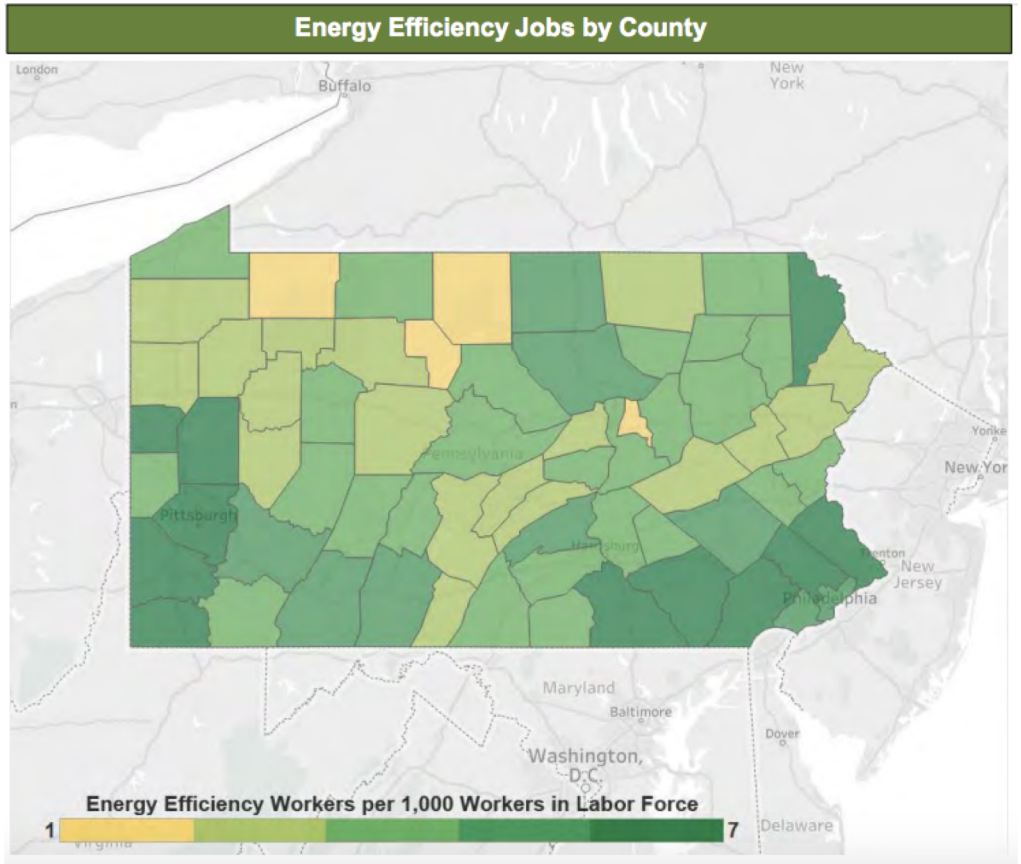
Energy Efficiency Industry - More Detail

Jobs by Sector



Firms by Supply Chain





Benefits of Energy Efficiency

- Jobs
- Energy Savings
- Performance
- Environment

Energy Efficiency in PA by the numbers

$14.4 billion	• Total electricity costs in 2017 (US EIA)
$6.4 billion	• Act 129 benefits from 2009-2016 (PA PUC)
68,820	• Energy efficiency jobs in 2018 (E2 & KEEA)
-$127	• Cost per ton of GHG reduced via energy efficiency (PA DEP)

PA Energy Efficiency Policy Snapshot

Utility Programs (Act 129)

- Provides rebates and incentives for energy efficiency improvements

C-PACE (Commercial Property Assessed Clean Energy)

- Allows local financing programs for commercial efficiency projects

GESA & Performance Contracting

- Allows for long term contracts to finance upgrades of public buildings

Federal Low-income Weatherization Assistance

- Efficiency upgrades for income-eligible residents

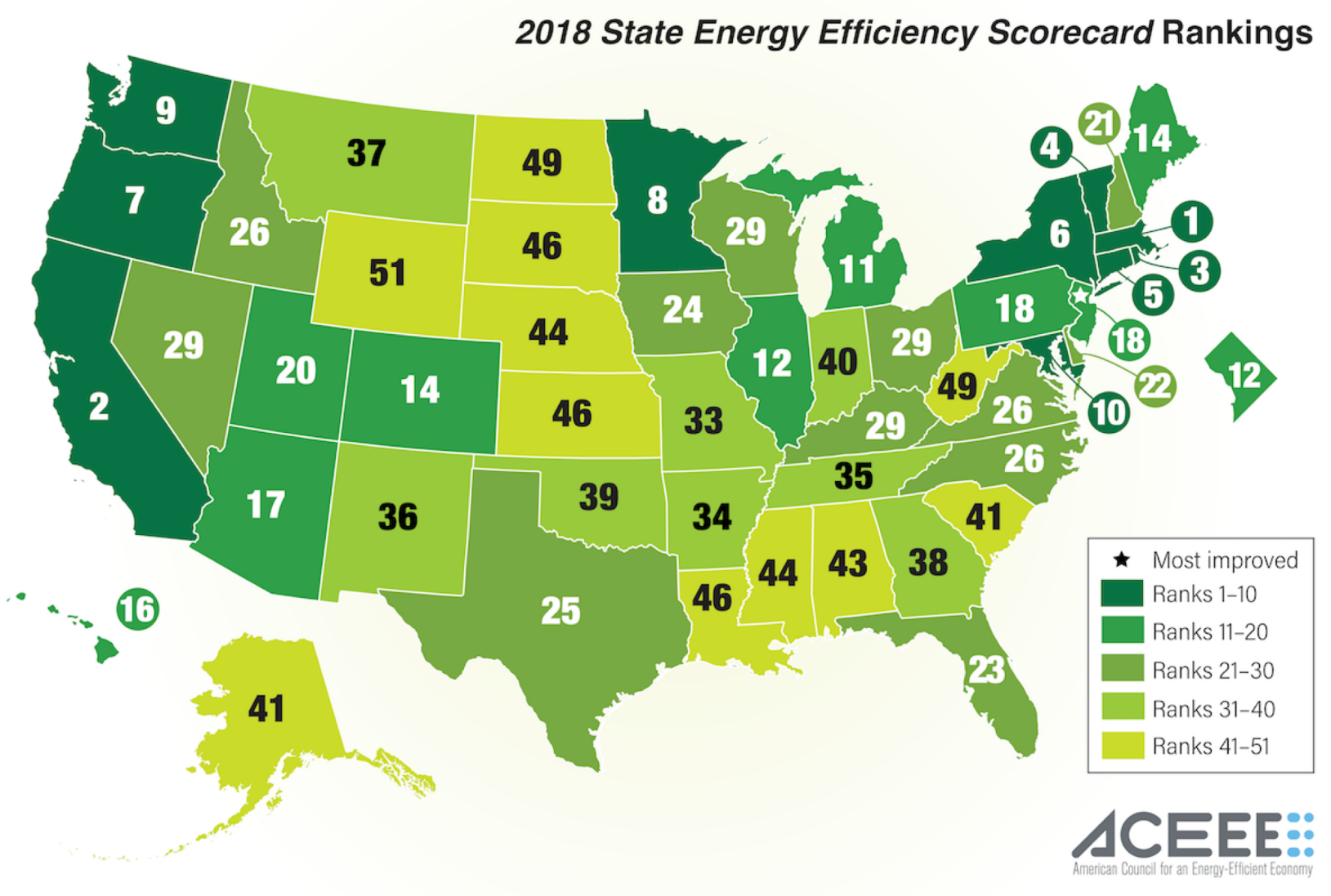
Building Energy Codes

- Pennsylvania recently strengthened energy codes to meet the 2015 international standard

Federal Appliance Standards

- US DOE is rolling back existing minimum standards for lighting and appliances; some states are enacting their own standards

How Pennsylvania's Efficiency Policy Stacks Up



Opportunities to strengthen energy efficiency

- Expand utility energy efficiency programs
- Update standards and codes as technology changes
- Improve access to financing
- Workforce development

We are your resource for energy efficiency

KEEA

KEYSTONE ENERGY EFFICIENCY ALLIANCE

National & Regional Partners & Allies

ADVANCED ENERGY ECONOMY

ACEEE

American Council for an Energy-Efficient Economy

ALLIANCE

FOR INDUSTRIAL EFFICIENCY

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