Testimony of Robert Altenburg
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Before the Pennsylvania Senate Consumer Protection and Professional Licensure and Senate Environmental Resources and Energy Committee

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Good morning Chairman Tomlinson, Chairman Yaw, and members of the committees, my name is Robert Altenburg and I am the director of the Energy Center at Citizens for Pennsylvania's Future, also known as PennFuture. We are a statewide environmental nonprofit with offices in Harrisburg, Philadelphia, Pittsburgh, and Mt. Pocono. Since our founding in 1998, we have promoted clean energy and energy efficiency across Pennsylvania, and we continue to support a robust Alternative Energy Portfolio Standard program for Pennsylvania.

Background

When our current Alternative Energy Portfolio Standard (AEPS) law was enacted in 2004, the expiration of the rate caps established during electrical restructuring were causing significant spikes in monthly bills for electric consumers. Part of the problem was that relying on just two sources of energy—coal and nuclear—for over 90 percent of our generation created a significant exposure to volatility in prices.[1]

With the advent of shale gas in Pennsylvania, coal and nuclear dropped to 61 percent of the generation by 2017 while gas increased from about 5 percent to over 34 percent. Competition, gas subsidies, and a glut of gas has kept electric prices down for ratepayers, and has resulted in gas moving rapidly toward becoming our dominant generation source. The average age of conventional coal units in PA is about 46 years old, compared to a grid-wide average of 48. With no new plants coming online, gas is likely to replace much of this capacity. (While nuclear plants will be around longer, their average age is 39--more than halfway through their licenced period.)

Over-reliance on a single energy source not only creates financial risks, it also raises issues of reliability. This is particularly true in the gas generation sector where power plants, for the most part, do not enter into firm contracts for gas delivery. They purchase their fuel off the spot market and, in times of transmissions constraints like the 2014 Polar Vortex, are in direct competition with the fuel used for home heating, hot water, and other purposes. These risks

[1] U.S. Energy Information Administration, Net Generation by State by Type of Producer by Energy Source 1990 -- 2017.

alone make investing in alternatives a reasonable policy choice, but they may be dwarfed by the larger risk from climate change.

More Clean Generation is Necessary

Last October, the Intergovernmental Panel on Climate Change (IPCC) released a special report finding that to have a reasonable chance at keeping global warming below 1.5℃ we will need to reduce emissions by 45 percent from 2010 to 2030 and reach net-zero emissions by 2050.[2] This is a significantly more aggressive pathway than our nationally determined contributions under the Paris agreement (26 to 28 percent from 2005 to 2030), or the pathway recently proposed by Governor Wolf (Meeting the Paris goals, then 80 percent by 2050). While these will all be challenging targets for the Commonwealth to reach, we believe the environmental rights amendment of the Pennsylvania Constitution obligates the Commonwealth to act. And action is required—although we have made some progress towards these goals, proceeding with business-as-usual isn't a sufficient response.

Based on Energy Information Administration (EIA) data for 2016 we may have already reduced emissions by about 17 percent from 2010 levels.[3] This is mostly the result of coal-fired power plants retiring and being replaced by natural gas plants. Since that data was released, two of the three units at the Bruce Mansfield coal-fired power plant in Beaver County have already retired and the third unit is expected to retire in 2021.[4] That combined with the planned transition of the Brunner Island plant in York County from coal to gas could bring us to a total reduction of more than 20% from 2010 levels.

Unfortunately, counting on such retirements is not a sustainable pathway to reaching the IPCC goals. Replacing one fossil fuel with another rapidly leads to diminishing returns. With the retirement of those two plants, we will only have five large coal plants remaining, and we may have already reached the point where carbon pollution from the natural gas sector in Pennsylvania exceeds the carbon pollution from our coal plants. If we are going to reach these goals, we need to rapidly expand clean renewable generation.

Nuclear Power is not a Path to Growth

The fact that two of our five nuclear power plants, Three Mile Island (TMI) and Beaver Valley, are scheduled to retire raises those concerns. If the generation from those plants is replaced by natural gas, it will effectively un-do almost all the progress we will have made with the recent coal retirements and the renewable generation developed through the AEPS. There are bills the legislature, HB 11 (Mehaffie) and SB 510 (Aumet), that seek to preserve our nuclear plants,

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[2] IPCC, Global Warming of 1.5℃ (Oct, 2018). *Available at:* https://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf

[3] US EIA, Pennsylvania Carbon Dioxide Emissions from Fossil Fuel Consumption (1980 – 2016).

[4] PJM Interconnection LLC, Generation Deactivations, *Available at:* https://www.pjm.com/planning/services-requests/gen-deactivations.aspx

but these bills are simply delaying action—they do nothing to improve the chances that when those plants eventually do retire that they will be replaced with clean renewable generation.

While proponents of these nuclear bills claim they will help expand wind and solar generation our calculations are not nearly so optimistic. We don't expect any solar facilities to opt into Tier 3 when solar credits are much more valuable, and while it is conceivable that a wind facility could opt into tier 3, it's possible nuclear facilities will generate all of the allowable credits. In the best-case scenario, it appears that the bills on the table would be the equivalent of expanding the existing Tier 1 standed by one percent, or less.

While there is value in preserving carbon-free generation like Pennsylvania's nuclear fleet, the bills currently under consideration are a very expensive solution to the problem. A report recently released by the PJM market monitor estimates that the five nuclear plants in Pennsylvania will be making net profits in excess of $200 million by 2021. While Three Mile Island is predicted to be losing in excess of $70 million, the remaining four facilities appear to be profitable. That's not an argument against properly valuing the nuclear fleets carbon generation, but it does raise the argument that the bill should more broadly support nuclear *and* renewable energy generation sources. New renewable energy generation would be a far cheaper option, so balancing the nuclear legislation with increasing renewables in Tier 1 could lower the overall price tag of the bill.

We have heard from proponents of the nuclear bills currently in the legislature that they consider AEPS "flawed" because it does not include all carbon-free generation. While it is true that the lack of a price on carbon in Pennsylvania is one of many policies that act as a subsidy for fossil fuels[5], AEPS is best suited to encourage growth of renewable generation and innovative technologies like carbon capture and storage, not to correct market flaws. Adding significant new expenses through a Tier 3 without growing clean generation may also act as a fossil fuel subsidy in that it would discourage movement toward cleaner electric vehicles and there would be less incentive to replace dirty fossil fuels with electricity for home heating and industrial uses.

The Need to Expand our Alternative Energy Portfolio Standards

Whether we are looking for job growth, more clean generation, or a diverse energy mix in Pennsylvania, expanding and extending the state's Alternative Energy Portfolio Standard (AEPS) law will help get us to those goals. Currently AEPS requires 8 percent of our electricity to come from cleaner "Tier 1" sources by 2021 with 0.5 percent coming from solar photovoltaic (PV) systems.[6] By comparison, New Jersey[7] and New York[8] have 50 percent targets while Maryland[9] and Delaware[10] have 25 percent targets.

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[5] PennFuture, Fossil Fuel Subsidy Report (2016)
[6] 66 Pa.C.S. 2814.
[7] N.J. Rev. Stat. §48:3-49 *et. seq.*
[8] NY PSC Order Case 03-E-0188.
[9] Md. Public Utilities Code Ann. § 7-701 *et seq.*

PUC Commissioner Andrew Place recently provided an analysis which showed, for example, that all of the generation from Three Mile Island could be replaced by Tier 1 resources for less that the $60 to $90 Million in forward costs the Independent Market Monitor predicts TMI will be otherwise unable to recover.[11] Not only is that route a cheaper solution, it also helps to grow family-sustaining jobs and create a more sustainable power sector.

A recent report from the National Association of State Energy Officials (NASEO) showed that solar alone already accounts for well over 4,000 jobs in Pennsylvania with much less than one percent of our generation (450MW installed). Nuclear generation records about the same number of jobs, but it also is responsible for almost 40 percent of our generation (10GW).[12] While sustaining jobs is always an important concern, if we are to grow employment in the state, investing in an expanded AEPS to drive more renewable energy may be the most effective pathway to that future.

We also have more than enough potential to significantly expand clean renewable generation in the state. Today's solar panels generate far more electricity than the cells that were available as recently as ten years ago. As a result, the land area we would need to obtain ten percent of our generation from solar in Pennsylvania is less than half the area of our state's abandoned mine lands.[13] When we add the potential for rooftop solar, covering parking lots, and other areas like brownfields, we have an incredible solar resource in the state we are not currently using.

While we have the potential, other states are doing a better job at bringing in clean energy businesses. Currently New York, New Jersey, Maryland, Delaware, Connecticut, and Virgina all have more generation than Pennsylvania—even tiny Massachusetts has more than four times the amount of solar generation and more than twice the number of solar jobs. This is largely driven by more favorable state policies including higher portfolio standards, incentives to enter into long-term contracts for generation, and tools like community solar that make solar generation accessible to more homes and businesses.

The recently introduced SB 600 addresses a number of these issues by expanding our AEPS target to 30 percent by 2030 with specific provisions for distributed solar, grid-scale solar, and including long-term contracting provisions along with tighter alternative compliance payments to help lower costs. Paired with other bills like HB 531 (Kaufer) to enable community solar in the state, Pennsylvania could once again be a clean energy leader.

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[10] Del. Code Ann 26 § 351 *et seq.*
[11] Commissioner Andrew Place, Analysis of Pennsylvania Nuclear Plants and Available Policy Alternatives, (Mar. 6, 2019)
[12] NASEO & EFI, Energy Employment by State, 2019.
[13] PA DEP, *Pennsylvania's Solar Future Plan*, Executive Summary, pg. Xiv. (2018).