PennFuture Energy Center for Enterprise and the Environment

610 N. Third St.
Harrisburg, PA 17010

March 30, 2016

VIA ELECTRONIC FILING
Patrick McDonnell, Director
PA DEP, Policy Office
PO Box 2063
Harrisburg, PA 17105-2063

RE: Climate Change Action Plan

Dear Mr. McDonnell,

Citizens for Pennsylvania's Future (PennFuture), a statewide environmental advocacy organization focusing on air, land, water, and energy issues impacting Pennsylvania, appreciates this opportunity to provide comments to the Pennsylvania Department of Environmental Protection (Department) in support of the recent publication of the *Draft 2015 Climate Change Action Plan Update* (Plan)[1] pursuant to The Pennsylvania Climate Change Act[2] (the Act).

For decades, the United States has been a leading emitter of the carbon pollution that causes climate change. As a nation, we have a moral and ethical responsibility to also be part of the solution. This presents an opportunity for Pennsylvania. Rather than a business-as-usual model where pollution is viewed as the cost of progress, **Pennsylvania can become a leader in efficiency and clean energy technologies that will allow us to reach our goals while growing our economy**.

We applaud the steps DEP has already taken and hope, through this plan, that work continues. In that spirit, we submit the attached comments.

Sincerely,

Robert C. Altenburg
Director, PennFuture Energy Center

[1] 46 Pa.B. 624 (Jan. 30, 2016).
[2] 71 P. S. §§ 1361.1—1361.8.

Identification of GHG emission and sequestration trends and baselines in this Commonwealth.

Consideration of global warming potential

In its inventory development process, the Department based its calculations on methane (CH4) having a global warming potential (GWP) of 25 times that of CO2. The 2007 Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC)[3] used a GWP of 25 for the 100-year time horizon and a GWP of 72 for the 20-year time horizon, but more current information is now available. **The Department should consider updating the global warming potential estimate used in this analysis.**

In 2015 the IPCC released its fifth assessment report (AR5). This report found that over a 20-year time horizon CH4 has a global warming potential of 86 times that of CO2 when you consider climate-carbon feedbacks or 84 times CO2 without feedbacks. Over the longer 100-year time horizon CH4 has a potential of 34 times CO2 with feedbacks and 28 times CO2 without feedbacks.[4]

In updating to the AR 5 estimates, the Department should consider including climate carbon feedbacks, which have recently been confirmed.[5] Addition of these feedbacks results in a 2% increase in GWP over for a 20-year time horizon. Over the 100-year time horizon the feedbacks have an even more significant impact raising the GWP of CH4 by over 20%. If the Department elects to continue reporting using the 100-year time horizon, inclusion of feedbacks is increasingly important.

The Department should consider reporting using a 20-year time horizon. The Plan does not discuss the rationale for selecting a 100-year time horizon over a 20-year time horizon in its

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[3] Forster, P. *et al.* *"Changes in Atmospheric Constituents and in Radiative Forcing". In: Climate Change 2007: The Physical Science Basis.* IPCC AR4, WG1, Chap. 2, pg. 212.

[4] Mygre, G. *et al. "Anthropogenic and Natural Radiative Forcing" In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. pg 715.

[5] Egbert H. van Nes, Marten Scheffer, Victor Brovkin, Timothy M. Lenton, Hao Ye, Ethan Deyle, George Sugihara. "*Causal feedbacks in climate change*" Nature Climate Change, 2015; *available at;* http://www.nature.com/nclimate/journal/v5/n5/full/nclimate2568.html

calculations, so we are unable to provide feedback on the decisionmaking process. We recommend the Department include a justification to support the time horizon it selects.

We note that the projections included in the action plan elements extend to 2030 (15-years). We agree that this is a reasonable target year because it aligns with the federal Clean Power Plan. We also recognize the difficulty to make accurate projections beyond such a time frame. We question however why the Department chose a global warming potential time horizon of 100 years when The 20-year horizon was available, aligned more closely with the time frame used in the Department's projections, and has a lower uncertainty range than the 100-year estimate[6].

Emission Inventory Considerations

We noted several issues with the inventory estimates that raise questions concerning the accuracy of the numbers reported.

Recent research used satellite data and surface concentrations to suggest that "U.S. methane emissions have increased by more than 30% over the 2002–2014 period."[7] The inventory presented, on the other hand, shows an almost 12 percent decrease in CO2e over that period. While we understand Methane and CO2e are not directly comparable, a large increase in methane emissions should be noticeable in key sectors.

In the Plan, the Department used emission factors to estimate natural gas production emissions for the entire industry at 5.65 MMTCO2e for 2012.[8] The Department has published a separate 2012 emissions inventory based on self-reported data from just the unconventional natural gas operators which reported 6.76 MMTCO2e of emissions in 2012.[9] Both of these inventories appear to be basing their estimates on outdated emission factors rather than direct observation

In the case of the later inventory, for example, the guidance document containing instructions on estimating fugitive emissions from natural gas production was released in November, 1995.[10] This estimation methodology predates the development of unconventional natural gas extraction, raising questions as to its accuracy. While this likely impacts the results, it is difficult to judge

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[6] Joos, F., et al., *Carbon dioxide and climate impulse response functions for the computation of greenhouse gas metrics: a multi-model analysis*, Atmos. Chem. Phys. Discuss, (Mar. 8, 2013)
[7] Turner, A. J., D. J. Jacob, J. Benmergui, S. C. Wofsy, J. D. Maasakkers, A. Butz, O. Hasekamp, and S. C. Biraud (2016), A large increase in U.S. methane emissions over the past decade inferred from satellite data and surface observations, Geophys. Res. Lett., 43, 2218–2224, doi:10.1002/2016GL067987.
[8] Plan at 27.
[9] *Available at*: http://www.dep.pa.gov/Business/Air/BAQ/BusinessTopics/Emission/Pages/Marcellus-Inventory.aspx
[10] US EPA, OAQPS, Protocol for Equipment Leak Emission Estimates, EPA-436/R-95-017 (November, 1995).

the magnitude of the problem as reporting companies are not asked details regarding the methodology they used.

Despite projected increases in population,[11] declining costs for natural gas from its peak in 2006, [12] and programs to subsidize natural gas development and use, the inventory data is showing a 17 percent decline in residential natural gas use from 1990 to 2012. This once again raises a question as to the accuracy of the inventory data.

We recommend the department continue its efforts to develop accurate inventories, but where there are deficiencies, we suggest the department highlight those issues and clearly document the methodologies used.

Evaluation of cost-effective strategies for reducing or offsetting GHG emissions from various sectors in this Commonwealth.

Encouraging Clean Renewable Generation

We support suggestions in the Plan to expand clean renewable generation.

While we are supportive of reinvesting in the PA Sunshine program, we note that solar installation companies favor self-sustaining programs over short-term grant programs. While both can be effective at increasing the number of clean energy systems that are installed, we believe longer term programs are more effective at developing local clean energy business and expanding jobs in this area.

We also note that on February 11, 2016 the PA Public Utility Commission (PUC), by a 3-2 vote, approved changes to the net metering provisions within the PUC regulations. These provisions echo many of the restrictions on net metering being promoted nationwide by groups opposing expansion of clean renewable energy. These will not only create direct limits on the size of renewable energy systems that may be installed, but they will also create a chilling effect on new installations.

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[11] PA State Data Center Estimates. See: *https://pasdc.hbg.psu.edu/Default.aspx*

[12] U.S. Energy Information Administration, Pennsylvania Price of Natural Gas Delivered to Residential Customers. (Feb. 29, 2016) *available at: https://www.eia.gov/dnav/ng/hist/n3010pa3a.htm.*

In general, we oppose any changes to the rule that are contrary to the statutory goals of expanding the deployment of renewable energy within Pennsylvania. We are particularly concerned with those provisions that negatively impact small business and residential customers. Key provisions we oppose include the following:

- Adding additional caps on the size of net metered systems.
- Opening the door for new fees to be charged to customer-generators denying them the full retail value of the power they generate.
- Adding restrictions impacting virtual net metering and community solar.

Should these changes survive the regulatory review process and go into effect, we ask the Department consider recommending legislative changes that would ensure Pennsylvania regains its position as an attractive location to site clean renewable energy.

Act 129 Expansion

Energy efficiency represents the cleanest, cheapest, and fastest method of emissions reduction. The cheapest kilowatt is the one that is not used. The benefits of demand-side energy efficiency include reduced energy costs for consumers, reduced demand on the grid, job creation, workforce development, and improved health of our citizens and our environment. We applaud the DEP for including recommended actions related to energy efficiency in this plan.

PennFuture supports the continuation and expansion of the Act 129 Energy Efficiency Program. Data from Phase I of the plan has shown it returns between two and three dollars in benefits for every dollar spent. This calculation used a very restrictive total resource cost (TRC) test that does not consider health and environmental benefits and, prior to Phase III, does not consider savings in natural gas or water that result from the installation of efficiency measures. We would like to recommend and the Act supports that DEP encourage the Public Utility Commission (PUC) to expand the TRC test to include non-energy benefits such as health, safety, and welfare savings and the social cost of carbon.

Currently, Act 129 is far from achieving all of the cost-effective energy efficiency measures available. This is, for the most part, the result of an investment cap that limits spending on efficiency to two percent of 2006 utility sales. Because of inflation, this is effectively a declining cap. Act 129 should either be modified to remove this cap, or Pennsylvania should develop additional programs to incentivize efficiency measures beyond Act 129. Further, the cap prevents the Electric Distribution Companies (EDCs) from achieving deeper energy efficiency savings through comprehensive measures which we have advocated for throughout the comment

process. Considering that consumers are already tripling their investment, it does not make good business sense to keep such a restrictive spending cap.

Finally, we thank DEP for approving of our recommendation that the Act 129 program be expanded to include natural gas utilities. Natural gas accounts for 51% of home heating and the Plan recommends increased fuel switching from oil to natural gas. There is a large amount of energy savings potential that we are failing to capture and the natural gas utilities even noted that during the PUC's alternative ratemaking process. By including natural gas, consumers will be able to cut down their heating bills while simultaneously reducing GHG emissions. In the most recent Northeast Energy Efficiency Partnership (NEEP) 2016 Regional Roundup of Energy Efficiency Policy, Pennsylvania is one of two states noted as "lagging," and is the *only* state in the region to not have an energy efficiency program covering natural gas distribution utilities.

Building Efficiency

A large majority of Pennsylvania's buildings were built prior to the implementation of building codes in the mid-1970s. Thus, we have enormous energy savings potential in our building sector. Studies have shown that increasing building efficiency alone results in dramatic ghg emission reductions. Increasing energy efficiency in Pennsylvania's buildings would result in energy savings, reduce greenhouse gas emissions, and grow the economy. A 2014 Keystone Energy Efficiency Alliance (KEEA) study shows that the Commonwealth is home to over 4,200 clean energy businesses, many of which are small, local businesses that combined employ a total of over 57,000 workers. Encouraging greater energy efficiency would encourage more of those businesses to come to our state and hire our workers.

PennFuture is a member of the Pennsylvania Energy Code Collaborative and our current focus is increasing compliance with the 2009 codes. Current numbers suggest that Pennsylvania could see about $1.2 million in savings in the first year alone if we achieve greater compliance with the existing energy codes. More efficient buildings also reduce the need for more generation from power plants which in turn reduces CO2 and other pollutant emissions.

We also strongly support the recommendation to adopt and use the most up-to-date building code. Up-to-date building codes save Pennsylvanians money through improved energy efficiency. In fact, according to the U.S. Department of Energy, the 2015 Universal Construction Code (UCC) would save consumers between $4,000-$24,000 over the course of a 30-year mortgage (as compared to the 2009 UCC), all while reducing air pollution and greenhouse gas emissions.

The UCC also includes provisions to improve resiliency in the face of increasing natural disasters and flooding. The state's 2015 Pennsylvania Climate Impacts Assessment Update indicates flooding, such as that seen during Hurricane Sandy and Hurricane Ivan, will increase. The costs of these disasters are borne by our state's homeowners and taxpayers. The 2015 codes include many flood-related provisions, including changes to the 2015 International Residential Code supported by the U.S. Federal Emergency Management Agency's Superstorm Sandy analysis report.

Finally, up-to-date codes spur innovation and investment in the manufacturing sector. Pennsylvania is home to building sector manufacturing companies like Eaton, Tyco and Lutron, contributing jobs for Pennsylvania residents and tax dollars to the municipalities in which they are located. In fact, Pennsylvania manufacturer members of the National Electrical Manufacturers Association alone represent over 14,000 jobs. We should be doing all we can to encourage this sector, rather than deferring to investment in other states that are embracing safer, greener building practices.

By failing to adopt the updated codes during the past two cycles, we have failed to achieve greater energy savings, increase the safety of our citizens, and missed out on GHG emission reductions. If we continue on this road, we are trapping Pennsylvania with outdated infrastructure for many years to come.

The DEP also mentions the Tenant Star program in its recommendations. While we support this recommendation and believe that the program has potential, it has not been put into practice.

Access to Information

We support the recommendations related to providing consumers with better access to energy savings information. While energy disclosure requirements at the time of sale are one option, voluntary opportunities also exist, such as including "green" and energy-related fields in the Commonwealth's twenty-some multi-listing services (MLS). It is important to note that home inspectors are not legally certified to tell their clients whether or not elements of their home are compliant with the building codes.

Having improved information allows actors in real estate transactions to make more informed decisions. It also provides an avenue for appraisers to identify comparable properties on which to justify the increased value of a home or building resulting from energy improvements, which today are not recognized in many MLS databases. At its 2015 annual conference, the Council of MLS announced that over half of its members now offer fields including energy-related

information, yet this type of information is not yet available statewide in Pennsylvania. Only one MLS (Lehigh Valley) has energy data fields.

PennFuture supports the use of the Home Energy Score (HES), a rating developed by the Department of Energy to serve a similar purpose to the miles-per-gallon rating for a new vehicle, allowing purchasers to make informed decisions about the long-term costs of owning a home. HES uses an easy to interpret 1-10 scale that weighs the energy efficiency features of a home and would "keep it simple" as DEP recommends.

Similarly, BPI-2101 Standard Requirements for a Certificate of Completion for Residential Energy Efficiency Upgrades (published September 2013) provides another way of documenting home energy upgrade improvements in a home. This is a Building Performance Institute standard that is supported by the U.S. DOE's Home Performance with ENERGY STAR program.

The HES, BPI-2101 certificate, and/or other energy-related information about a home can feed into the regional multi-list service (MLS). These measures are important steps to recognizing the value of energy efficiency in the market. As compared to a mandated energy standard, which may be politically unpalatable, these certifications and greening the MLS provide home buyers and sellers with the necessary information to make rational market decisions.

Finally, in 2016, the Northeast Energy Efficiency Partnership (NEEP) led the creation of a database that will enable the automatic population of green data fields in multiple listing services in the northeast when information from rating programs like DOE's Home Energy Score is available. This database is called the Home Energy Labeling Information eXchange (HELIX). Although Pennsylvania is not a participating state in the project, it is worthwhile to monitor this project since its outcomes can be game changing for the industry.

Energy Efficiency Financing[13]

While energy efficiency improvements can result in significant monetary savings, the upfront cost can be an insurmountable barrier to the average homeowner. We support the recommended actions in the plan that will empower these homeowners to achieve greater energy savings in their homes. Those recommendations include reinvesting in the Keystone HELP program to make it ultimately self-sustaining; incentivizing the greater use of energy efficient mortgages; allowing for on-bill repayment and property assessed clean energy (PACE); and encouraging energy savings performance contracting.

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[13] See "A Policy Maker's Guide to Energy Upgrades" page 12-21 https://www4.eere.energy.gov/seeaction/system/files/documents/Residential%20Policymakers%20Guide_093015_v2.pdf.