



pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION



Bureau of Air Quality

Proposed Rulemaking - CO₂ Budget Trading Program 25 Pa. Code Chapter 145, Subchapter E

Environmental Quality Board Meeting
September 15, 2020

Tom Wolf, Governor

Patrick McDonnell, Secretary

Purpose of the Proposed Rulemaking

- The purpose of this proposed rulemaking is to reduce emissions of carbon dioxide (CO₂), a greenhouse gas and major contributor to climate change impacts, in a manner that is protective of public health, welfare and the environment.
- The Department projects that 188 million short tons of CO₂ that would have been emitted over the next decade would be avoided by implementing this proposed rulemaking.
- This proposed rulemaking is a significant component in achieving Pennsylvania's goals to reduce greenhouse gas emissions. Although this proposed rulemaking will not solve global climate change, it will aid this Commonwealth in addressing its share of the impact, joining other states and countries that are addressing their own contributions.

Significance of CO₂ Emissions

- According to the most recent data from the United States Energy Information Administration, Pennsylvania's electricity generation sector is one of the top five in CO₂ emissions in the country.
- In 2017, Pennsylvania generated net greenhouse gas emissions equal to 233.20 million metric tons CO₂ equivalent Statewide, the vast majority of which are CO₂ emissions.
- In the context of the world, Pennsylvania's electricity generation sector alone emits more CO₂ than many entire countries including Greece, Colombia, Sweden, Israel, Singapore, Austria, Peru and Portugal.

Climate Impacts in Pennsylvania

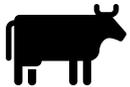
Changing climate patterns have caused and will continue to cause impacts in Pennsylvania to public health, infrastructure, emergency services, and major economic contributors like agriculture, tourism, and recreation.



PennDOT has experienced record breaking impacts from floods and landslides that have cost over \$125.7 million extra for infrastructure replacement in 2018 alone.



Higher temperatures lead to higher concentrations of ground-level ozone, which can lead to increased asthma rates.



Farmers are already experiencing direct crop damage from increasingly intense precipitation events. Heat stress may lead to declines in dairy production and summer flowering crop yields.



Pennsylvania already has the highest number of cases of Lyme disease in the nation, triple the number from just 10 years ago. This increase is possibly due to the western expansion of Lyme-bearing ticks and warmer winters that are leading to higher tick populations.

Air Quality

- Climate change will increase levels of ground-level ozone pollution through changes in weather and increased ozone precursor emissions.
- Ozone is an irritant and repeated exposure to ozone pollution for both healthy people and those with existing conditions may cause a variety of adverse health effects, including difficulty in breathing, chest pains, coughing, nausea, asthma, throat irritation and congestion.
- An increase in ground-level ozone levels due to climate change would interfere with continued attainment of the ozone National Ambient Air Quality Standards.

Climate Change Impacts Assessments

- As required under the Pennsylvania Climate Change Act (71 P.S. § 1361.1—13.61.8), the Department prepares a report on the potential impact of climate change in Pennsylvania.
- 2009- 1st Climate Change Impacts Assessment showed that Pennsylvania was already experiencing some of the harmful effects of climate change.
- 2015- Updated Climate Change Impacts Assessment showed that Pennsylvania has undergone a long-term warming trend and due to increased GHG emissions, current warming trends are expected to increase at an accelerated rate.
- 2020- Updated Climate Change Impacts Assessment states that the expected disruptions to Pennsylvania's climate and impacts on climate sensitive sectors remain as dire as presented in 2015.

PA Participation in the Regional Greenhouse Gas Initiative (RGGI)

RGGI is a partnership between Northeastern and mid-Atlantic states...



...Designed to cap and reduce carbon emissions from fossil fuel fired power plants.

The electricity sector is the 2nd leading source of Greenhouse Gas Emissions in PA.



By 2025

Participating in RGGI will help PA reach our greenhouse gas emissions goals...

By 2050



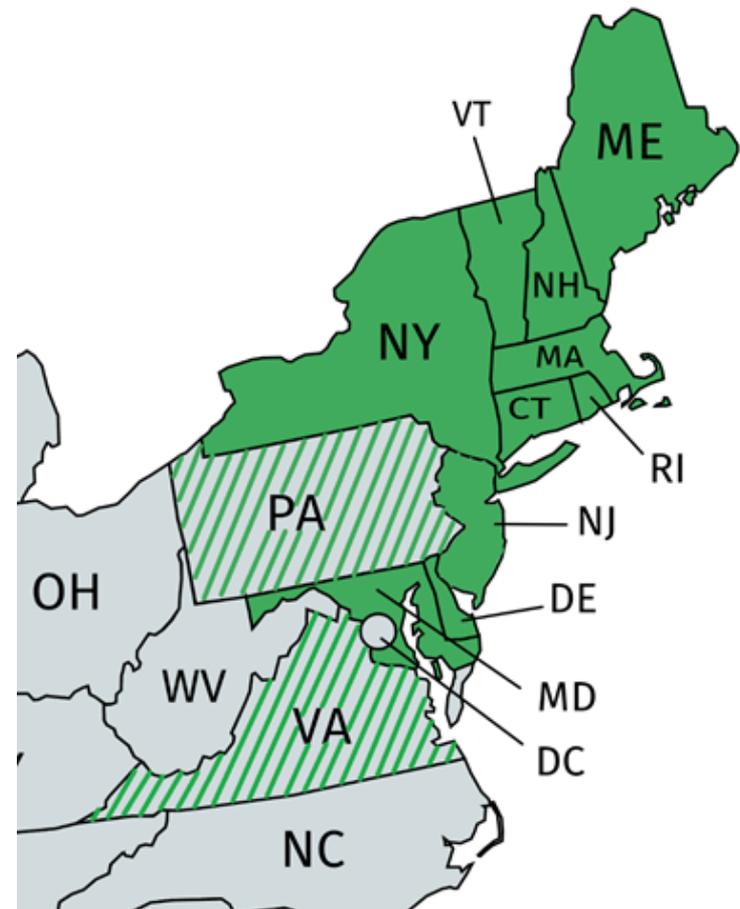
Since 2005, RGGI states have significantly reduced their power sector CO₂ pollution.

...And help PA combat climate change.



Regional Greenhouse Gas Initiative

- 10 Independent State Programs
 - PA and VA not yet participating
- Cap on CO₂ emissions from power sector
- Most CO₂ allowances sold at auction
- Markets are Linked through:
 - Consistent Regulations
 - Reciprocal Acceptance of CO₂ allowances
- No central RGGI Authority
 - States oversee program jointly
 - DEP & PUC on Executive Board
 - RGGI Inc. provides administrative and technical support



Cap and Trade and Cap and Invest (RGGI)

Require sources to turn in allowances for CO₂ emissions.

Only issue a specific number of allowances.

Allow sources to trade allowances.

Invest proceeds from allowance auctions into air pollution reduction programs.

Cap and Trade

Cap and Invest

History of Cap and Trade

- 1995- Pennsylvania participated in the first national cap and trade program in the United States, the Acid Rain Program.
- 1999 to 2002- Pennsylvania participated in the Ozone Transport Commission's NOx Budget Program, an allowance trading program designed to reduce summertime NOx emissions from EGUs to reduce ground-level ozone, which included all the current states participating in RGGI.
- 2000- The Board promulgated the NOx Budget Trading Program in Chapter 145, Subchapter A.
- 2008- The Board promulgated the Clean Air Interstate Rule (CAIR) NOx and SO2 Trading Programs in Chapter 145, Subchapter D.

Environmental Benefits of RGGI

When power plants pollute less....



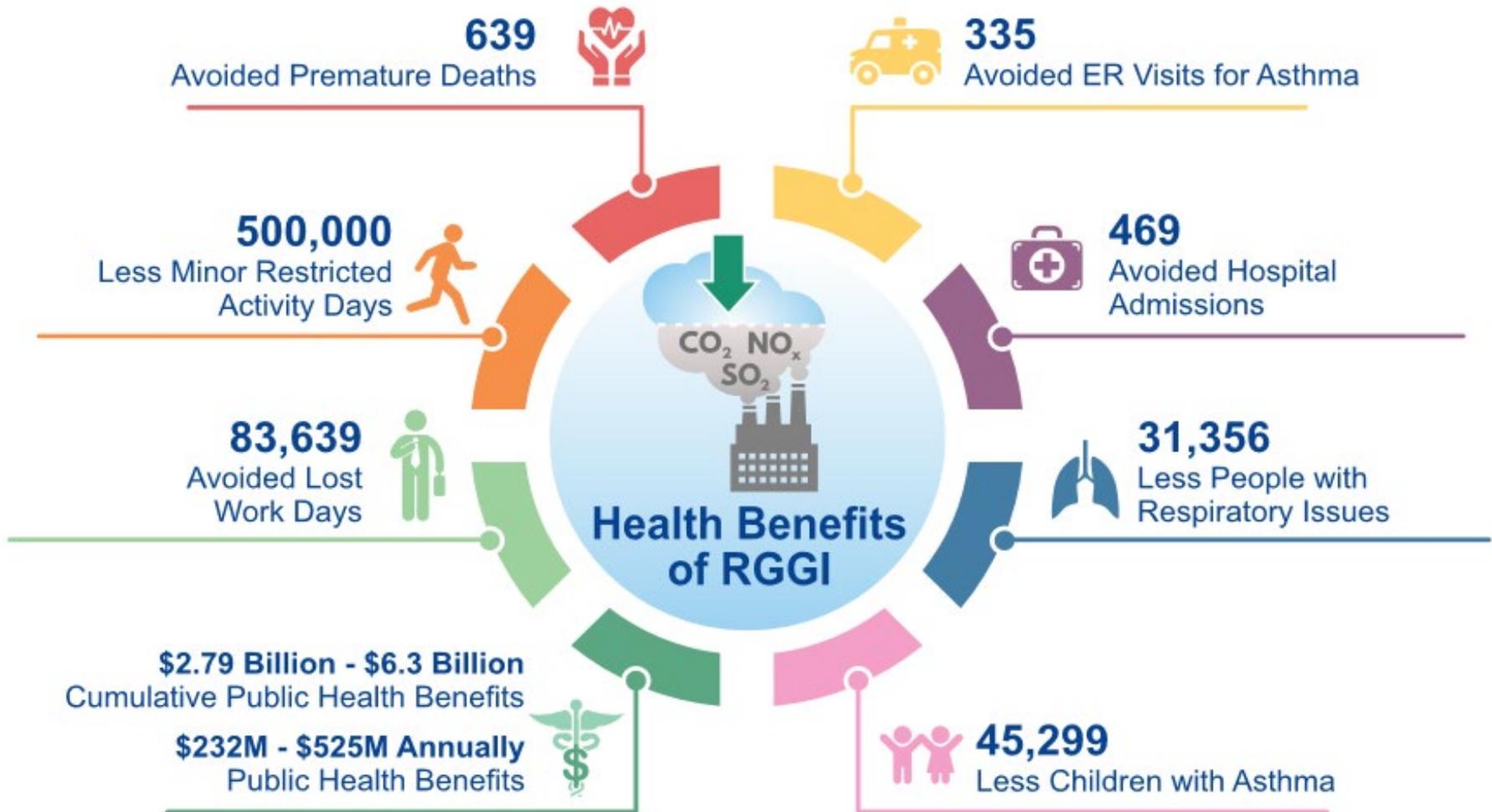
CO₂ Decreases by 188 Million Tons

SO₂ Decreases by 67,000 Tons

NO_x Decreases by 112,000 Tons

Air and Water are Cleaner. People are Healthier.

Health Benefits of RGGI



Economic Benefits of RGGI

- ***Generates Jobs:*** Net increase of over 30,000 jobs in PA by 2030.
- ***Grows the Economy:*** Gross State Product (GSP) increases by \$1.9 billion by 2030.
- ***Lower energy bills:*** Slight increase in the short-term with greater energy bill savings in the future.
- ***Pennsylvania remains a leading electricity exporter with a diverse generation mix***
- ***Slight Decrease in Disposable Household Income****: on the order of a decline of .017% by 2030 – and then an increase by 2033.

**Not reflective of the health or other societal benefits related to emissions reductions.*

Structure of the Proposed Rulemaking

§§ 145.301–145.307 General Provisions

§§ 145.311–145.316 Requirements for Authorized Account Representatives

§§ 145.321–145.323 Permit Requirements

§§ 145.331–145.332 Compliance Certification

§§ 145.341–145.343 CO₂ Allowance Allocations

§§ 145.351–145.358 CO₂ Allowance Tracking System (COATS)

§§ 145.361–145.363 CO₂ Allowance Transfers

§§ 145.371–145.377 Monitoring, Reporting & Recordkeeping Requirements

§§ 145.381–145.382 Auction of CO₂ CCR and ECR Allowances

§§ 145.391–145.397 CO₂ Emissions Offset Projects

§§ 145.401–145.409 CO₂ Allowance Auctions

Calculating CO₂ Allowance Budget

Year	Budget	Decline (Tonnage)	Annual Decline (Percentage)
2020			
2021			
2022	78,000,000		
2023	75,510,630	2,489,370	-3.19%
2024	73,021,260	2,489,370	-3.30%
2025	70,531,890	2,489,370	-3.41%
2026	68,042,520	2,489,370	-3.53%
2027	65,553,150	2,489,370	-3.66%
2028	63,063,780	2,489,370	-3.80%
2029	60,574,410	2,489,370	-3.95%
2030	58,085,040	2,489,370	-4.11%
2022-2030 Total Reduction:		19,914,960	-25.532%
25.532% reduction from 2022:	58,085,040		
Total tonnage reduction:	19,914,960		
Annual tonnage reduction:	2,489,370		

§ 145.304 Applicability & Covered Sources

What does the CO₂ Budget Trading Program Establish?

Creates a cap-and-invest program for CO₂ emissions from the power sector.

What are the Affected Sources § 145.304 ?

Fossil fuel-fired Electric Generating Units (power plants)

- 25 MWe or more nameplate capacity AND
- Sends >10% of gross generation to the grid.

Limited Exemptions for CHP § 145.305

- An otherwise qualifying EGU (25 MW+) that supplies ≤ 10% of its gross generation to any entity.
- An otherwise qualifying co-generation EGU (25 MW+) that supplies ≤ 15% of its annual total useful energy to any entity- not including energy sent to an interconnected manufacturing facility.



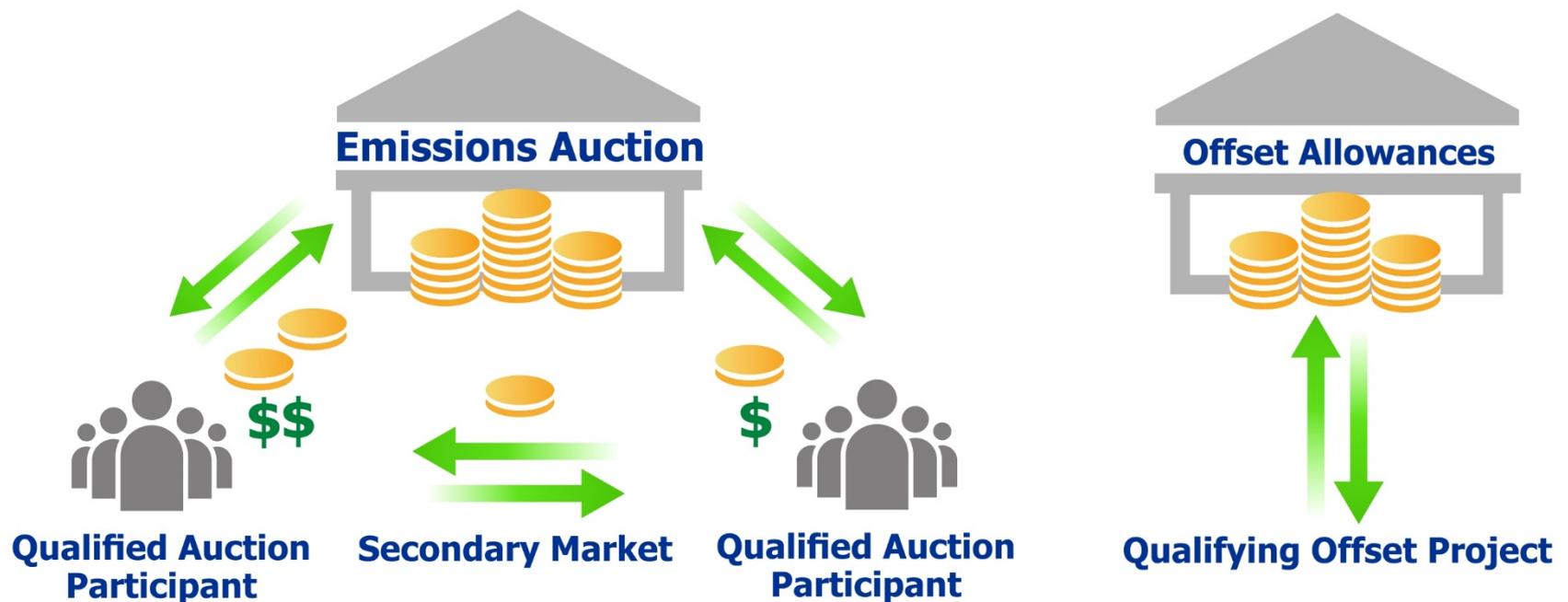
Compliance Requirements

1. Title V Permit Modifications
2. Establish CO₂ Allowance Tracking System (COATS) Account
3. Emissions Monitoring (EPA's Clean Air Market Division)
4. Recordkeeping & Reporting
5. Application for Allowances from Qualifying Set-Asides (optional)
6. Transfer of Required Allowances to Compliance Account
 - a) 50% during interim control periods
 - b) 100% at the close of the control period

Allowance Transfer Deadline: *Midnight of March 1st is the deadline by which CO₂ allowances must be submitted for recordation in a CO₂ budget source's compliance account in order for the source to meet the CO₂ requirements of § 145.306(c).*

Options for Compliance

Affected Sources must obtain the number of CO₂ allowances
– equal to the amount of CO₂ they emit –



Auction Proceeds

- Invested to further support the CO₂ Budget Trading Program and reduce greenhouse gas emissions.
- As provided under section 9.2(a) of the Air Pollution Control Act, this Commonwealth's auction proceeds will be held in a subaccount within the Clean Air Fund, which is administered by the Department "for the use in the elimination of air pollution."

Investment Plan

- The Department plans to develop a draft investment plan for public comment outlining reinvestment options separate from this proposed rulemaking.
- Potential investments in:
 - Energy efficiency
 - Renewable energy
 - Greenhouse Gas Abatement

Waste Coal Set-Aside Account

A general account established by the Department for the allocation of CO₂ allowances in an amount sufficient to provide CO₂ allowances equal to the legacy emissions from all waste coal-fired units under § 145.342(i).

Defining Legacy Emissions

1. The amount of CO₂ emissions in tons equal to the highest year of CO₂ emissions from a waste coal-fired unit during the 5-year period beginning January 1, 2015 through December 31, 2019 as determined by the Department. § 145.302
2. The Department has determined that legacy emissions are equal to 9,300,000 tons of CO₂ emissions. § 145.342
3. Any undistributed CO₂ allowances are transferred to the Strategic Use set-aside each year.

Strategic Use Set-Aside Account

A general account established by the Department for the distribution of CO₂ allowances to encourage energy efficiency measures, promotion of renewable or noncarbon-emitting energy, and carbon emissions abatement.

Set-Aside Criteria and Functionality

1. The strategic use set-aside allocation will consist of undistributed CO₂ allowances from the waste coal set-aside account.
2. Distributions may be made from the set-aside account for the use in elimination of air pollution including projects that:
 - a) Encourage and foster promotion of energy efficiency measures.
 - b) Promote renewable and non-carbon emitting energy technologies.
 - c) Stimulate investment in development of innovative carbon emissions abatement technologies with significant carbon reduction potential.

Cogeneration Set-Aside Account

A general account established by the Department for the allocation of CO₂ allowances for retirement in an amount equal to the adjustment of the compliance obligation of a cogeneration unit.

Set-Aside Eligibility Criteria for Qualifying Facilities

1. Units must be located in PA and be subject to the CO₂ Budget Trading Program.
2. Must meet definition of Cogeneration Unit.
 - a) An electric-generating unit that simultaneously produces both electric and useful thermal energy from the same primary energy facility.
3. Completion of a compliance obligation adjustment application including:
 - a) Documentation that CO₂ budget unit is a cogeneration unit.
 - b) Identify the compliance account for the CO₂ budget unit.
 - c) Identify the allocation year for which the adjustment is being requested.
 - d) Calculations and supporting data to determine compliance adjustment.
4. Department makes a compliance obligation adjustment determination.

RGGI Benefits Pennsylvania

- ✓ **Decreases Emissions:** CO₂ emissions will decrease by more than 10x when compared to future emissions without program participation.
- ✓ **Lowers Electricity Prices:** By 2030 electricity prices with RGGI participation will be lower than they would have been otherwise.
- ✓ **Bolsters Energy Exports:** By 2030 PA electricity exports exceed and continue to climb well above future export capabilities without RGGI.
- ✓ **Reduces Healthcare Costs:** Reductions in pollutants are estimated to save Pennsylvanians billions of dollars in avoided healthcare costs.
- ✓ **Improves Quality of Life:** Less deaths, hospitalizations and ER visits due to cardiac and respiratory issues exacerbated by poor air quality- especially for children.
- ✓ **Generates Jobs:** Reinvestment of RGGI proceeds into the economy will result in a net increase in jobs of over 30,000 in this Commonwealth by 2030.
- ✓ **Grows the Economy:** Gross State Product (GSP) in Pennsylvania by 2030 will increase by \$1.9 billion.

Public Outreach

- The Department met with numerous groups including- businesses, residents, labor, environmental groups, legislators, owners and operators of affected sources, industry groups and environmental justice stakeholders during the development of this proposed rulemaking.
- This proposed rulemaking was discussed with the following advisory committees- AQTAC, CAC, SBCAC, CCAC, EJAB, Oil and Gas TAB
- Based on feedback from the advisory committees, during the comment period the Department is seeking specific comments on:
 - Ways to address equity and environmental justice concerns in this Commonwealth.
 - Approaches to assist the transition of workers and communities in a just and equitable manner.
 - Ways to appropriately address the benefits of cogeneration.

Recommendation and Public Participation

The Department recommends the Board adopt the proposed rulemaking with a 60-day public comment period and 5 virtual public hearings.



Bureau of Air Quality

Krish Ramamurthy, Deputy Secretary
Office of Waste, Air, Radiation and Remediation

kramamurth@pa.gov

Jennie Demjanick
Bureau of Regulatory Counsel

jdemjanick@pa.gov

Allen Landis
DEP Policy Office
alllandis@pa.gov

