

**PROPOSED RULEMAKING  
ENVIRONMENTAL QUALITY BOARD  
[25 PA. CODE CH. 145]**

**CO<sub>2</sub> Budget Trading Program**

The Environmental Quality Board (Board) proposes to amend Chapter 145 (relating to interstate pollution transport reduction) to read as set forth in Annex A. This proposed rulemaking would add Subchapter E (relating to CO<sub>2</sub> budget trading program) to establish a program to limit the emissions of carbon dioxide (CO<sub>2</sub>) from fossil fuel-fired electric generating units (EGUs), with a nameplate capacity equal to or greater than 25 megawatts (MWe).

This proposed rulemaking is given under Board order at its meeting of **DATE**.

**A. *Effective Date***

This proposed rulemaking will be effective upon final-form publication in the *Pennsylvania Bulletin*.

**B. *Contact Persons***

For further information, contact Virendra Trivedi, Chief, Division of Permits, Bureau of Air Quality, Rachel Carson State Office Building, P.O. Box 8468, Harrisburg, PA 17105-8468, (717) 783-9476; or Jennie Demjanick, Assistant Counsel, Bureau of Regulatory Counsel, Rachel Carson State Office Building, P.O. Box 8464, Harrisburg, PA 17105-8464, (717) 787-7060. Information regarding submitting comments on this proposed rulemaking appears in Section J of this preamble. Persons with a disability may use the Pennsylvania AT&T Relay Service, (800) 654-5984 (TDD users) or (800) 654-5988 (voice users). This proposed rulemaking is available on the Department of Environmental Protection's (Department) web site at [www.dep.pa.gov](http://www.dep.pa.gov) (select "Public Participation," then "Environmental Quality Board (EQB)").

**C. *Statutory Authority***

This proposed rulemaking is authorized under section 5(a)(1) of the Air Pollution Control Act (APCA) (35 P.S. § 4005(a)(1)), which grants the Board the authority to adopt rules and regulations for the prevention, control, reduction and abatement of air pollution in this Commonwealth. Section 6.3(a) of the APCA (35 P.S. § 4006.3(a)) also authorizes the Board by regulation to establish fees to support the air pollution control program authorized by this act and not covered by fees required by section 502(b) of the Clean Air Act (CAA).

**D. *Background and Purpose***

The purpose of this proposed rulemaking is to reduce anthropogenic emissions of CO<sub>2</sub>, a greenhouse gas (GHG) and major contributor to climate change impacts, in a manner that is protective of public health, welfare and the environment. This proposed rulemaking would establish the Commonwealth's participation in the Regional Greenhouse Gas Initiative (RGGI), a

regional CO<sub>2</sub> Budget Trading Program. This proposed rulemaking would establish a CO<sub>2</sub> Budget Trading Program for this Commonwealth which is capable of linking with similar regulations in states participating in RGGI (“participating states”). These CO<sub>2</sub> Budget Trading Program regulations together make up the regional CO<sub>2</sub> Budget Trading Program or “RGGI.”

This proposed rulemaking would effectuate least cost CO<sub>2</sub> emission reductions for the years 2022 through 2030. The declining CO<sub>2</sub> Emissions Budget in this proposed rulemaking directly results in CO<sub>2</sub> emission reductions of around 20 million short tons in this Commonwealth as well as emission reductions across the broader PJM regional electric grid. However, the Department projects that 188 million short tons of CO<sub>2</sub> that would have been emitted over the next decade are avoided by this Commonwealth’s participation in RGGI. According to data from the United States Energy Information Administration (EIA), this Commonwealth generates the 4<sup>th</sup> most CO<sub>2</sub> emissions from EGUs in the country. Since CO<sub>2</sub> emissions are a major contributor to regional climate change impacts, the Department developed this proposed rulemaking to establish this Commonwealth’s participation in a regional approach that significantly reduces CO<sub>2</sub> emissions and this Commonwealth’s contribution to regional climate change.

#### *Request for Comments*

The Board will provide for a comment period for a minimum of 60 days and hold public hearings in impacted areas of this Commonwealth, as required under the APCA. During the comment period, the Department is seeking comment on potential approaches for the implementation of this proposed rulemaking that would address equity and environmental justice concerns in this Commonwealth. The Department is also seeking comment on potential approaches that would assist the transition of workers and communities in a just and equitable manner as this Commonwealth continues on a path to cleaner electricity generation. Lastly, the Department is seeking comment on ways to appropriately address the benefits of cogeneration in this Commonwealth, including the allocation of CO<sub>2</sub> allowances similar to the waste coal set-aside provision.

#### *Climate Change Impacts and the Greenhouse Effect*

Like every state in the country, this Commonwealth has already begun to experience adverse impacts from climate change, such as higher temperatures, changes in precipitation, and frequent extreme weather events, including large storms, flooding, heat waves, heavier snowfalls, and periods of drought. These impacts could alter the many fundamental assumptions about climate that are intrinsic to this Commonwealth’s infrastructure, governments, businesses and the stewardship of its natural resources and environment. If not properly accounted for, changes in climate could result in more frequent road washouts, higher likelihood of power outages, and shifts in economic activity, among other significant impacts. Climate change can also affect vital determinants of health such as clean air, safe drinking water, sufficient food, and secure shelter. These vital determinants are particularly affected by the increased extreme weather events, in addition to decreased air quality and an increase in illnesses transmitted by food, water, and disease carriers such as mosquitos and ticks. If these impacts are to be avoided, GHG emissions must be reduced expeditiously.

The impacts of climate change are vast and what was predicted ten years ago is being confirmed today. Climate change impacts are being caused by the emission and atmospheric concentration of GHGs, namely CO<sub>2</sub>. Scientists have confirmed that increased CO<sub>2</sub> emissions from human activity are causing changes to global climate. Ninety-seven% of the actively publishing climate scientists agree that climate warming trends over the past century are extremely likely due to human activities. Major scientific institutions including the U.S. National Academy of Sciences, the U.S. Global Change Research Program (USGCRP), the American Medical Association, the American Association for the Advancement of Science, and many others endorse this position. In the Fifth Assessment Report of the International Panel on Climate Change (IPCC) released in 2014, the IPCC concluded that, “human influence on the climate system is clear, and recent anthropogenic emissions of GHGs are the highest in history.” See IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.

While CO<sub>2</sub> is a necessary element of life on Earth and acts as a fundamental aspect of nearly every critical system on the planet, CO<sub>2</sub> in high concentrations in the atmosphere leads to the greenhouse effect. The greenhouse effect occurs when CO<sub>2</sub> (and other GHG) molecules absorb solar energy and re-emit infrared energy back to the Earth’s surface. This absorption and re-emitting of infrared energy is what makes certain gases trap heat in the lower atmosphere, not allowing it to go back out to space. The greenhouse effect disrupts the normal process whereby solar energy is absorbed at the Earth’s surface and is radiated back through the atmosphere and back to space. Maintaining the surface temperature of the Earth depends on this balance of incoming and outgoing solar radiation. See the National Aeronautics and Space Administration, “The Causes of Climate Change,” <https://climate.nasa.gov/causes/>.

Global temperatures are increasing due to the greenhouse effect. Significantly changing the global temperature has impacts to every other weather and climate cycle occurring across the world. For instance, global average sea level, which has risen by about 7–8 inches since 1900 (with about 3 inches of that increase occurring since 1993), is expected to rise at least several inches in the next 15 years and by 1–4 feet by 2100. The impacts of increased GHGs in the atmosphere, including extreme weather and catastrophic natural disasters, have become more frequent and more intense. Extreme weather events also contribute to deaths from extreme heat or cold exposure and lost work hours due to illness. The World Health Organization expects climate change to cause around 250,000 additional deaths globally per year between 2030-2050, with additional direct damage costs to health estimated to be around \$2-4 billion per year by 2030. Based on the overwhelming scientific evidence, these harms are likely to increase in number and severity unless aggressive steps are taken to reduce GHG emissions.

### *Climate Change Impacts Assessments*

In 2009, the Department released its first Climate Change Impacts Assessment and Climate Change Action Plan, as required under the Pennsylvania Climate Change Act (71 P.S. § 1361.1—13.61.8). The 2009 Climate Change Impacts Assessment showed that this Commonwealth was already experiencing some of the harmful effects of climate change. That same year, under CAA section 202(a)(1), 42 U.S.C.A. § 7521(a)(1), the EPA issued an “Endangerment Finding,” that six GHGs — CO<sub>2</sub>, methane, nitrous oxide, hydrofluorocarbons,

perfluorocarbons, and sulfur hexafluoride — endanger both the public health and the public welfare of current and future generations by causing or contributing to climate change. See 74 FR 66496 (December 15, 2009). The 2009 Endangerment Finding is further reinforced by the findings of the USGCRP’s Fourth National Climate Assessment (NCA4) which is consistent with the Commonwealth’s 2015 and 2020 Climate Change Impacts Assessments.

In 2015, the Environment and Natural Resources Institute at Penn State University released an updated Climate Change Impacts Assessment for the Department. The 2015 Climate Change Impacts Assessment found that this Commonwealth has undergone a long-term warming of more than 1.8°F over the prior 110 years, and that due to increased GHG emissions, current warming trends are expected to increase at an accelerated rate with average temperatures projected to increase an additional 5.4 degrees by 2050. This warming will have potential adverse impacts related to Pennsylvania agriculture, forests, aquatic ecosystems, water resources, wildlife and public health. In this Commonwealth, average annual precipitation has increased by approximately 10% over the past 100 years and, by 2050, is expected to increase by an additional 8%, with a 14% increase during the winter season.

In particular, climate change will worsen air quality relative to what it would otherwise be, causing increased respiratory and cardiac illness. Air quality impacts from climate change are due to the combination of pollutants emitted from anthropogenic sources and weather conditions. Climate change can potentially also worsen water quality, affecting health through consumption of diminished quality drinking water and through contact with surface waters during outdoor recreation. The risk of injury and death from extreme weather events could also increase as a consequence of climate change. Additionally, climate change could affect the prevalence and virulence of air-borne infectious diseases such as influenza. In April 2020, the Environment and Natural Resources Institute at Penn State University released an updated Climate Change Impacts Assessment for the Department, which states that the expected disruptions to this Commonwealth’s climate and impacts on this Commonwealth’s climate sensitive sectors remain as dire as presented in the 2015 Climate Change Impacts Assessment.

On November 23, 2018, the USGCRP released the NCA4, a scientific assessment of the national and regional impacts of natural and human-induced climate change. See U.S. Global Change Research Program, “Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II,” (D.R. Reidmiller et al. eds., 2018), <https://nca2018.globalchange.gov/>. The NCA4 represents the work of over 300 government and non-government experts, led by experts within the U.S. Environmental Protection Agency (EPA), the U.S. Department of Energy and eleven other federal agencies. The NCA4 shows how the impacts of climate change are already occurring across the country and emphasizes that future risks from climate change will depend on the decisions made today. It is worth noting that the NCA4 mentions that the Northeast region is a model for other states, as it has traditionally been a leader in GHG mitigation action.

By 2035, the NCA4 projects that the Northeast will see the largest temperature increase in the country of more than 3.6°F on average higher than the preindustrial era. This would occur as much as two decades before global average temperatures reach a similar milestone. The changing climate of the Northeast threatens the health and public welfare of its residents and will lead to health-related impacts and costs, including additional deaths, emergency room visits and

hospitalizations, higher risk of infectious diseases, lower quality of life and increased costs associated with healthcare utilization. Mosquitoes, fleas and ticks and the diseases they carry have been a particular concern in the Northeast in recent years. Scientists have linked these diseases, specifically tick-related Lyme disease, to climate change.

Climate change also threatens to reverse the advances in air quality that the states in the Northeast, including this Commonwealth, have worked so hard to achieve over the past couple of decades. In particular, climate change will increase levels of ground-level ozone pollution in the Northeast 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, throat irritation and congestion. In addition, people with bronchitis, heart disease, emphysema, asthma and reduced lung capacity may have their symptoms exacerbated by ozone pollution. Asthma, in particular, is a significant and growing threat to children and adults in this Commonwealth. The NCA4 refers to this reversal as a “climate penalty” and projects it could cause hundreds more ozone pollution-related deaths per year.

Over the past several decades, the Department has made substantial progress in decreasing ground-level ozone pollution in this Commonwealth, including limiting precursor emissions. However, Bucks, Chester, Delaware, Montgomery and Philadelphia counties are designated as marginal nonattainment areas for the 2015 ozone national ambient air quality standards (NAAQS). See 83 FR 25776 (June 4, 2018). There is still more work that needs to be done to reduce emissions in these nonattainment areas and to avoid backsliding on the improvements to air quality across this Commonwealth. An increase in ground-level ozone levels due to climate change would interfere with continued attainment of the ozone NAAQS, hinder progress in marginal nonattainment areas and put public health and welfare at risk.

#### *Immediate Action is Needed to Address this Commonwealth’s Contribution to Climate Change*

Given the urgency of the climate crisis, including the significant impacts on this Commonwealth, the Board determined that concrete, economically sound and immediate steps to reduce GHG emissions are necessary. As one of the top GHG emitting states in the country, the Board has a compelling interest to reduce GHG emissions to address climate change and protect public health, welfare and the environment. Based on the most recent data from the EPA’s State Inventory Tool, in 2017, this Commonwealth generated net GHG emissions equal to 233.20 million metric tons CO<sub>2</sub> equivalent (MMTCO<sub>2</sub>e) Statewide, the vast majority of which are CO<sub>2</sub> emissions. In the context of the world, this Commonwealth’s electricity generation sector alone emits more CO<sub>2</sub> than many entire countries including Greece, Colombia, Sweden, Israel, Singapore, Austria, Peru and Portugal. See Joint Research Centre, European Commission, “JRC Science for Policy Report: Fossil CO<sub>2</sub> emissions of all world countries,” 2018, <https://ec.europa.eu/jrc/en/publication/fossil-co2-emissions-all-world-countries-2018-report>.

Historically, the electricity generation sector has been the leading source of CO<sub>2</sub> emissions in this Commonwealth. Based upon data contained in the Department’s 2020 GHG Inventory, 29% of this Commonwealth’s total GHG emissions are produced by the electricity generation sector. In recent years, this Commonwealth has seen a shift in the electricity generation portfolio mix,

resulting from market forces and the establishment of alternative energy goals, and energy efficiency targets. Since 2005, this Commonwealth's electricity generation has shifted from higher carbon-emitting electricity generation sources, such as coal, to lower and zero emission generation sources, such as natural gas, wind and solar. At the same time, overall energy use in the residential, commercial, transportation, and electric power sectors has reduced.

However, looking forward, the Department projects CO<sub>2</sub> emissions from the electricity generating sector will increase due to reduced switching from coal to natural gas, the potential closure of zero carbon emitting nuclear power plants, and the addition of new natural gas-fired units in this Commonwealth. The Three Mile Island nuclear power plant already closed on September 20, 2019, amounting to a loss of 818 MW of carbon free generation. However, the modeling conducted for this proposed rulemaking predicts no further nuclear power plant retirements through 2030 with implementation of this proposed rulemaking. Without this proposed rulemaking, this Commonwealth's nuclear fleet may remain at-risk of closure. In fact, the Beaver Valley nuclear power plant, responsible for 1,845 MW of carbon free generation, recently withdrew its closure announcement, specifically citing this Commonwealth's intended participation in RGGI as a key determinant in continuing operations.

This proposed rulemaking is necessary to ensure CO<sub>2</sub> emissions continue to decrease and at a rate that shields this Commonwealth from the worst impacts of climate change. RGGI plays an important role in providing a platform whereby this Commonwealth can reduce CO<sub>2</sub> emissions using a market-based approach. As the electricity generation sector remains one of the leading sources of CO<sub>2</sub> in this Commonwealth, it is imperative that emissions continue to decrease from that sector.

#### *The Commonwealth's GHG Emission Reduction Goals*

On January 8, 2019, Governor Wolf signed Executive Order 2019-01, *Commonwealth Leadership in Addressing Climate Change and Promoting Energy Conservation and Sustainable Governance*. This Executive Order set the first ever climate change goal for this Commonwealth to reduce net GHG emissions from 2005 levels by 26% by 2025 and 80% by 2050. These climate change goals align this Commonwealth with the reduction targets under the Paris Agreement aimed at keeping global temperature rise below the 2-degree Celsius threshold. According to climate experts, the 2-degree Celsius threshold is the level beyond which dire global consequences would occur, including sea level rise, superstorms and crippling heat waves.

On April 29, 2019, the Department issued a Pennsylvania Climate Action Plan that identified GHG emission trends and baselines in this Commonwealth and recommended cost-effective strategies for reducing or offsetting GHG emissions. The Climate Action Plan determined that reducing the overall carbon intensity of the electricity generated in this Commonwealth is one of the most critical strategies for reducing GHG emissions. The Climate Action Plan also identified many different strategies and actions that all Pennsylvanians can take to combat climate change. According to the Climate Action Plan, one of the most cost-effective emissions reduction strategies is to limit CO<sub>2</sub> emissions through an electricity sector cap and trade program. This Commonwealth participating in a cap and trade program is expected to result in the largest near-term reduction in emissions and was deemed cost-effective relative to the social cost of carbon.

The Climate Action Plan modeled a cap and trade program that requires a carbon cap equal to a 30% reduction from 2020 CO<sub>2</sub> emissions levels by 2030, which is equivalent to RGGI stringency.

On October 3, 2019, Governor Wolf signed Executive Order 2019-07, *Commonwealth Leadership in Addressing Climate Change through Electric Sector Emissions Reductions*, which directed the Department to use its existing authority under the APCA to develop this proposed rulemaking to abate, control or limit CO<sub>2</sub> emissions from fossil fuel-fired electric power generators. The Executive Order also directed the Department to present this proposed rulemaking to the Board by July 31, 2020. On June 22, 2020, Governor Wolf amended the Executive Order to extend the deadline to September 15, 2020. As directed by the Executive Order, this proposed rulemaking establishes a CO<sub>2</sub> budget consistent in stringency to that established by the participating states, provides for the annual or more frequent auction of CO<sub>2</sub> emissions allowances through a market-based mechanism, and is sufficiently consistent with the RGGI Model Rule such that CO<sub>2</sub> allowances may be traded with holders of allowances from other states.

Considering that this Commonwealth has the fourth leading CO<sub>2</sub> emitting electricity generation sector in the country, this proposed rulemaking is a significant component in achieving the Commonwealth's goals to reduce GHG 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 impacts. The statutory authority for this proposed rulemaking, the APCA, is built on a precautionary principle to protect the air resources of this Commonwealth for the protection of public health and welfare and the environment, including plant and animal life and recreational resources, as well as development, attraction and expansion of industry, commerce and agriculture. In order to be proactive, this proposed rulemaking is needed to address this Commonwealth's contributions to climate change, particularly CO<sub>2</sub> emissions. The Board determined to address CO<sub>2</sub> emissions through a regional initiative because regional cap and trade programs have proven to be beneficial and cost-effective at reducing air pollutant emissions. In fact, this Commonwealth has and continues to participate in successful regional cap and trade programs.

#### *History and Success of this Commonwealth's Participation in Cap and Trade Programs*

In the 1990 CAA Amendments, the United States Congress determined that the use of market-based principles, such as emissions banking and trading are effective ways of achieving emission reductions. According to the EPA, emissions trading programs are best implemented when the environment and public health concerns occur over a relatively large geographic area and effectively designed emissions trading programs provide flexibility for individual emissions sources to tailor their compliance path to their needs. The EPA has also determined that reducing emissions using a market-based system provides regulated sources with the flexibility to select the most cost-effective approach to reduce emissions and has proven to be a highly effective way to achieve emission reductions, meet environmental goals, and improve human health. In contrast to traditional command and control regulatory methods that establish specific emissions limitations and technology use with limited or no flexibility, cap and trade programs harness the economic incentives of the market to reduce pollution. The Board has a decades-

long history of promulgating regulations that have established this Commonwealth's participation in successful cap and trade programs.

Beginning in 1995, this Commonwealth participated in the first national cap and trade program in the United States, the Acid Rain Program, which was established under Title IV of the 1990 CAA Amendments and required, in part, major emission reductions of sulfur dioxide (SO<sub>2</sub>) through a permanent cap on the total amount emitted by EGUs. For the first time, the Acid Rain Program introduced a system of allowance trading that used market-based incentives to reduce pollution. The Acid Rain Program reduced SO<sub>2</sub> emissions by 14.5 million tons (92%) from 1990 levels and 16.0 million tons (93%) from 1980 levels. The undisputed success of achieving significant emission reductions in a cost-effective manner led to the application of the market-based cap and trade tool for other regional environmental problems.

From 1999 to 2002, this Commonwealth participated in the Ozone Transport Commission's (OTC) NO<sub>x</sub> Budget Program, an allowance trading program designed to reduce summertime NO<sub>x</sub> emissions from EGUs to reduce ground-level ozone, which included all of the current states participating in RGGI. According to the OTC's NO<sub>x</sub> Budget Program 1999-2002 Progress Report, NO<sub>x</sub> Budget Program units successfully reduced ozone season NO<sub>x</sub> emissions in 2002 by nearly 280,000 tons, or about 60%, from 1990 baseline levels, achieving greater reductions than required each year of the program. Based on the success of the OTC's NO<sub>x</sub> Budget Program and the Acid Rain Program, in 2003 the EPA implemented a regional NO<sub>x</sub> cap and trade program under the NO<sub>x</sub> SIP Call, which closely resembled the OTC NO<sub>x</sub> Budget Program. The EPA again noted the cost savings of achieving emissions reductions through trading.

Beginning in 2009, the EPA's NO<sub>x</sub> Budget Trading Program was replaced by the Clean Air Interstate Rule (CAIR) trading program, covering 28 eastern states, which required further summertime NO<sub>x</sub> reductions from the power sector as well as SO<sub>2</sub> reductions. Finally, in 2015 CAIR was replaced by the Cross-State Air Pollution Rule trading program.

#### *Authority to regulate CO<sub>2</sub> Emissions through a Cap and Trade Program*

While the Department developed this proposed rulemaking under the direction of Executive Order 2019-07, the Board has the authority to promulgate this proposed rulemaking under the APCA. Through the APCA, the Legislature granted the Department and the Board the authority to protect the air resources of this Commonwealth, which is inclusive of controlling CO<sub>2</sub> pollution. CO<sub>2</sub> falls under the definition of "air pollution" in section 3 of the APCA (35 P.S. § 4003). The Board has the authority under section 5(a)(1) of the APCA to adopt rules and regulations for the prevention, control, reduction and abatement of air pollution in this Commonwealth. As mentioned previously, numerous sources, including the EPA, the Penn State University, the USGCRP and the IPCC, have confirmed that CO<sub>2</sub> emissions cause harmful air pollution that is inimical to the public health, safety and welfare, as well as human, plant and animal life. CO<sub>2</sub> is also a GHG and the largest contributor to climate change. Thus, regulating sources of CO<sub>2</sub> emissions is necessary to protect the public health and welfare from harmful air pollution and to address climate change.

As mentioned previously, this Commonwealth has and continues to participate in cap and trade programs. Specifically, the Board promulgated the NO<sub>x</sub> Budget Trading Program in Chapter 145, Subchapter A (relating to NO<sub>x</sub> Budget Trading Program) and the CAIR NO<sub>x</sub> and SO<sub>2</sub> Trading Programs in Chapter 145, Subchapter D (relating to CAIR NO<sub>x</sub> and SO<sub>2</sub> Trading Programs). See 30 Pa.B. 4899 and 38 Pa.B. 1705. Both subchapters were promulgated under the broad authority of section 5(a)(1) of the APCA, as is this proposed rulemaking.

### *Regional Greenhouse Gas Initiative (RGGI)*

RGGI is a cooperative regional market-based cap-and-trade program designed to reduce CO<sub>2</sub> emissions from fossil fuel-fired EGUs. RGGI is currently composed of ten northeastern states, including Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island and Vermont. Since its inception on January 1, 2009, RGGI has utilized a market-based mechanism to cap and cost-effectively reduce CO<sub>2</sub> emissions that cause climate change. Because CO<sub>2</sub> from large fossil fuel-fired EGUs is a major contributor to regional climate change, the participating states developed a regional approach to address CO<sub>2</sub> emissions. This regional approach resulted in a Model Rule applicable to fossil fuel-fired EGUs with a nameplate capacity equal to or greater than 25 MWe. RGGI is implemented in the participating states through each state's independent CO<sub>2</sub> Budget Trading Program regulations, based on the Model Rule, which link together.

RGGI is a “cap and trade” program that sets a regulatory limit on CO<sub>2</sub> emissions from fossil fuel-fired EGUs and permits trading of CO<sub>2</sub> allowances to effect cost efficient compliance with the regulatory limit. RGGI is also referred to as a “cap and invest” program, because unlike traditional cap and trade programs, RGGI provides a “two-prong” approach to reducing CO<sub>2</sub> emissions from fossil fuel-fired EGUs. The first prong is a declining CO<sub>2</sub> emissions budget and the second prong involves investment of the proceeds resulting from the auction of CO<sub>2</sub> allowances to further reduce CO<sub>2</sub> emissions.

### *CO<sub>2</sub> Emissions Budget and CO<sub>2</sub> Allowance Budget*

Each participating state has an annual CO<sub>2</sub> emissions budget which sets the total amount of CO<sub>2</sub> emitted from fossil fuel-fired EGUs in a year. What is commonly referred to as the “RGGI cap” on emissions is a reference to the total of all the state CO<sub>2</sub> emissions budgets. This proposed rulemaking includes a declining annual CO<sub>2</sub> emissions budget, which starts at 78,000,000 tons in 2022 and ends at 58,085,040 tons in 2030. This is anticipated to reduce CO<sub>2</sub> emissions in this Commonwealth by 31% compared to 2019. The declining annual CO<sub>2</sub> emissions budget is equivalent to the CO<sub>2</sub> allowance budget, which is the number of CO<sub>2</sub> allowances available each year. A CO<sub>2</sub> allowance represents a limited authorization by the Department or a participating state under the CO<sub>2</sub> Budget Trading Program to emit up to one ton of CO<sub>2</sub>. The number of CO<sub>2</sub> allowances available each year decreases along with the CO<sub>2</sub> emissions budget.

One of the benefits of participating in a regional market-based program is that CO<sub>2</sub> allowances are fungible across the participating states. Although this Commonwealth has an established CO<sub>2</sub> allowance budget for each year, this Commonwealth's CO<sub>2</sub> allowances are available to meet the compliance obligations in any other participating state and vice versa. Therefore,

CO<sub>2</sub> emissions from this Commonwealth's power sector are not "capped" by the CO<sub>2</sub> emissions budget, meaning they are not limited to strictly the amount of this Commonwealth's CO<sub>2</sub> allowances. This provides additional compliance flexibility and the regional market assists in achieving least cost compliance for all participating states.

*Consistent with Framework of the RGGI Model Rule*

As mentioned previously, the participating states developed a Model Rule to use as the framework for each state's independent CO<sub>2</sub> Budget Trading Program regulation. The development of the RGGI Model Rule was supported by an extensive regional stakeholder process that engaged the regulated community, environmental non-profits and other organizations with technical expertise in the design of cap and trade programs. The Board is familiar with the structure of the RGGI Model Rule, because it was drafted based on the language in the EPA's NO<sub>x</sub> Budget Trading Program rule in 40 CFR Part 96 (relating to NO<sub>x</sub> budget trading program and CAIR NO<sub>x</sub> and SO<sub>2</sub> trading programs for state implementation plans), which the Board used as a model for Chapter 145, Subchapter A.

States that participate in RGGI develop regulations that are compatible with the RGGI Model Rule to ensure consistency among the individual programs. Key areas of compatibility include alignment of the main program elements, stringency of the CO<sub>2</sub> allowance budgets and consistency of regulatory language. This consistency is necessary to ensure the fungibility of CO<sub>2</sub> allowances across the participating states, which supports the regional trading of CO<sub>2</sub> allowances and the use of a CO<sub>2</sub> allowance issued in one participating state for compliance by a regulated source in another participating state.

This proposed rulemaking therefore adopts the main program elements of the RGGI Model Rule, including the definitions, applicability, standard regulatory requirements, monitoring and reporting requirements, the CO<sub>2</sub> Allowance Tracking System (COATS), the emissions containment reserve, the cost containment reserve and the CO<sub>2</sub> emissions offset project provisions. The CO<sub>2</sub> allowance budgets in this proposed rulemaking are sufficiently stringent to align with RGGI's goal of reducing CO<sub>2</sub> emissions by 30% from 2020 to 2030. This proposed rulemaking also contains regulatory language consistent with the RGGI, Inc. auction platform, the online platform used to sell CO<sub>2</sub> allowances. RGGI, Inc. is a nonprofit corporation created to provide technical and administrative support services to the participating states in the development and implementation of their CO<sub>2</sub> Budget Trading Programs. Each participating state is also allotted two positions on the Board of Directors of RGGI, Inc. Under this proposed rulemaking, RGGI, Inc. may act as the agent for the Department.

Each participating state's regulation provides for the distribution of CO<sub>2</sub> allowances from its CO<sub>2</sub> allowance budget. The majority of CO<sub>2</sub> allowances are distributed at auction and each CO<sub>2</sub> allowance sold at auction returns proceeds from the sale to that state to invest in energy efficiency, renewable energy, and GHG abatement programs. Some states have elected to designate a limited amount of CO<sub>2</sub> allowances to be "set-aside" in a designated account and distributed to advance individual state policy goals and objectives. Since this proposed rulemaking is consistent with the RGGI Model Rule, the Commonwealth's CO<sub>2</sub> allowances will

have equal value to the CO<sub>2</sub> allowances held in the other participating states, meaning they may be freely acquired and traded across the region.

Although CO<sub>2</sub> allocation provisions may vary from state to state, to be consistent with the RGGI Model Rule each participating state allocates a minimum of 25% of its CO<sub>2</sub> allowance budget to a general account from which CO<sub>2</sub> allowances will be sold or distributed in order to provide funds for energy efficiency measures, renewable or noncarbon-emitting energy technologies, and CO<sub>2</sub> emissions abatement technologies, as well as programmatic costs. Consistent with the RGGI Model Rule, this proposed rulemaking establishes a general account from which CO<sub>2</sub> allowances will be sold or distributed, which is labeled as the Department's air pollution reduction account. Each year, the Department will allocate CO<sub>2</sub> allowances representing 100% of the tons of CO<sub>2</sub> emitted from the Commonwealth's CO<sub>2</sub> allowance budget to the air pollution reduction account, except for the CO<sub>2</sub> allowances that the Department has set aside for a designated purpose as discussed in the following section. CO<sub>2</sub> allowances in the air pollution reduction account will be sold or distributed in order to provide funds for use in the elimination of air pollution and programmatic costs.

#### *Modifications from RGGI Model Rule*

While this proposed rulemaking is sufficiently consistent with the Model Rule and corresponding regulations in the participating states, the Board also accounts for the unique environmental, energy and economic intricacies of this Commonwealth. This provides the Board the flexibility to limit CO<sub>2</sub> emissions from fossil fuel-fired EGUs in a way that aligns with the other participating states, while tailoring this proposed rulemaking to this Commonwealth's energy markets. In this proposed rulemaking, the Board made modifications from the language in the Model Rule to include permitting requirements and definitions specific to this Commonwealth, as well as stylistic changes. The Board also made adjustments to the language, including the adjustment for banked allowances and control periods, to reflect the timing of this Commonwealth's participation in RGGI. In addition to these modifications, there are five main areas in which this proposed rulemaking differs from the Model Rule.

First, under § 145.342(i) (relating to CO<sub>2</sub> allowance allocations) of this proposed rulemaking, the Department will set aside 9,300,000 CO<sub>2</sub> allowances at the beginning of each year for waste coal-fired units located in this Commonwealth. The Board is establishing this waste coal set-aside in this proposed rulemaking because waste coal-fired units provide an environmental benefit of reducing the amount of waste coal piles in this Commonwealth. Reducing waste coal piles is a significant environmental issue in this Commonwealth, because waste coal piles cause air and water pollution, as well as safety concerns. Waste coal-fired units burn waste coal to generate electricity thereby reducing the size, number and impacts of these piles otherwise abandoned and allowed to mobilize and negatively impact air and water quality in this Commonwealth. In recent years, waste coal-fired units have struggled to compete in the energy market, due in part to low natural gas prices, and several units have shut down or announced anticipated closure dates. Given the environmental benefit provided, the Board determined that it is necessary to assist owners or operators of waste coal-fired units with meeting their compliance obligation under this proposed rulemaking. This legacy environmental issue from

this Commonwealth's long history of coal mining further underscores why it is vital to not leave additional environmental issues, like climate change, for future generations to solve.

By providing a set aside, as opposed to an exemption, the CO<sub>2</sub> emissions from waste coal-fired units are included in this Commonwealth's CO<sub>2</sub> emissions budget and owners or operators of waste coal-fired units are still required to satisfy compliance of all the regulatory requirements in this proposed rulemaking. After reviewing the last 5 years of CO<sub>2</sub> emission data from waste coal-fired units, the Department determined that the CO<sub>2</sub> allowance set aside should be equal to the total of each waste coal-fired unit's highest year of CO<sub>2</sub> emissions from that 5-year period. That total is 9,300,000 tons of CO<sub>2</sub> emissions. Thus, the Department will set aside 9,300,000 CO<sub>2</sub> allowances annually. Each year, the Department will allocate the CO<sub>2</sub> allowances directly to the compliance accounts of the waste coal-fired units equal to the unit's actual emissions. However, if the waste coal-fired units emit over 9,300,000 tons of CO<sub>2</sub> emissions sector-wide in any year, then the units must acquire the remaining CO<sub>2</sub> allowances needed to satisfy their compliance obligation.

Second, this proposed rulemaking also includes the establishment of a strategic use set-aside allocation under § 145.342(j). By April 1 of each calendar year, the Department will allocate any undistributed CO<sub>2</sub> allowances from the waste coal set-aside to the strategic use set-aside account. Since generation from waste coal-fired units has been declining in this Commonwealth, waste coal fired-units may emit less than 9,300,000 tons each year and the Department will be left with undistributed CO<sub>2</sub> allowances. Under the strategic use set-aside, the Department will allocate these undistributed CO<sub>2</sub> allowances directly to eligible projects that eliminate air pollution. The Board is establishing the strategic use set-aside particularly to encourage and foster promotion of energy efficiency measures, promote renewable or noncarbon-emitting energy technologies, and stimulate or reward investment in the development of innovative carbon emissions abatement technologies.

Third, this proposed rulemaking includes a set-aside provision under § 145.342(k) for cogeneration units, including combined heat and power systems (CHP). The Board is establishing this set-aside because cogeneration units concurrently produce electricity and useful thermal energy, making them energy efficient and environmentally beneficial. Under the cogeneration set-aside, the Department will adjust the compliance obligation of a cogeneration unit by reducing the total CO<sub>2</sub> emissions by an amount equal to the CO<sub>2</sub> that is emitted as a result of providing useful thermal energy or electricity, or both, supplied directly to a co-located facility during the allocation year. The Department will only provide CO<sub>2</sub> allowances in this set-aside equal to the compliance adjustment. The cogeneration unit will be responsible for obtaining the remaining CO<sub>2</sub> allowances needed to satisfy the unit's compliance obligation. Unlike the waste coal set-aside, the Department would not distribute CO<sub>2</sub> allowances directly to the unit, but rather retire CO<sub>2</sub> allowances on behalf of the unit in order to reduce its compliance obligation. Also, cogeneration units must fill out an application and provide information to the Department to receive a compliance adjustment.

Fourth, under § 145.305 (relating to limited exemption for CO<sub>2</sub> budget units with electrical output to the electric grid restricted by permit conditions) of this proposed rulemaking, the Board provides additional flexibility in the form of a limited exemption for cogeneration units that are

interconnected and supply power to a manufacturing facility. A cogeneration unit that supplies less than 15% of its annual total useful energy to the electric grid, not including energy sent to the interconnected manufacturing facility, does not have a compliance obligation under this proposed rulemaking. The owner or operator of the cogeneration unit claiming this limited exemption must have a permit issued by the Department containing a condition restricting the supply to the electric grid. This limited exemption is in addition to the exemption in the RGGI Model Rule for fossil fuel-fired EGUs with a capacity of 25 MWe or greater that supply less than 10% of annual gross generation to the electric grid. The Board is including this additional exemption for cogeneration units that primarily send energy to an interconnected manufacturing facility because these cogeneration units provide a CO<sub>2</sub> emission reduction benefit. These units provide useful thermal energy, a byproduct of electricity generation, to the manufacturing facility which helps prevent the need for the facility to run additional boilers onsite to generate electricity which in turn avoids additional CO<sub>2</sub> emissions.

Lastly, this proposed rulemaking adds regulatory language on the procedure for auctioning CO<sub>2</sub> allowances, which is not contained in the RGGI Model Rule. Several participating states have also added auction procedure language to their CO<sub>2</sub> Budget Trading Program regulations or developed separate auction regulations. By including the auction procedure in this proposed rulemaking, the Board seeks to ensure that auction participants fully understand the auction process and the associated requirements.

In the auction procedure section of this proposed rulemaking, § 145.401 (relating to auction of CO<sub>2</sub> allowances), the Board states that the Department will participate in multistate CO<sub>2</sub> allowance auctions in coordination with other participating states based on specific conditions. First, a multistate auction capability and process must be in place for the participating states. A multistate auction must also provide benefits to this Commonwealth that meet or exceed the benefits conferred on this Commonwealth through a Pennsylvania-run auction process. Additionally, the multistate auction process must be consistent with the process described in this proposed rulemaking and include monitoring of each CO<sub>2</sub> allowance auction by an independent market monitor. Since the multistate auctions conducted by RGGI, Inc. satisfy all four of the conditions, the Department will participate in the multistate auctions. However, the Board also states that if the Department finds these four conditions are no longer met, the Department may determine to conduct a Pennsylvania-run auction. By including the ability to conduct a Pennsylvania-run action in this proposed rulemaking, the Board provides for flexibility in case the benefits of the multistate auctions diminish in the future.

#### *Compliance and the RGGI CO<sub>2</sub> Allowance Tracking System (COATS)*

Under § 145.304 (relating to applicability) of this proposed rulemaking, the owner or operator of a fossil-fuel-fired EGU with a nameplate capacity equal to or greater than 25 MWe that sends more than 10% of its annual gross generation to the electric grid would have a compliance obligation. These regulated EGUs are referred to as “CO<sub>2</sub> budget units” and a facility that includes one or more CO<sub>2</sub> budget units is a “CO<sub>2</sub> budget source.” Under § 145.306 (relating to standard requirements) of this proposed rulemaking, the owner or operator of each CO<sub>2</sub> budget source will be required to have a permit under Chapter 127 (relating to construction, modification, reactivation and operation of sources) which incorporates the requirements of the

CO<sub>2</sub> Budget Trading Program. The owner or operator will be required to operate the CO<sub>2</sub> budget source and each CO<sub>2</sub> budget unit at the source in compliance with the permit.

Based on the most recent data from the EPA's Clean Air Market Division, the EIA and the Department's emission inventory, the Department estimates that as of the end of 2019, 57 CO<sub>2</sub> budget sources (facilities) with 140 CO<sub>2</sub> budget units (EGUs) would have a compliance obligation under this proposed rulemaking. However, due to the dynamic nature of the electricity generation sector, the number of covered facilities will likely change by the implementation date, January 1, 2022, of this proposed rulemaking. The Department projects based on announced closures and future firm capacity builds that on January 1, 2022 there will be 62 CO<sub>2</sub> budget sources with 150 CO<sub>2</sub> budget units with a compliance obligation under this proposed rulemaking. The Department conducted an analysis of power sector emissions and the facilities that meet the applicability criteria in this proposed rulemaking and determined that around 99% of this Commonwealth's power sector CO<sub>2</sub> emissions would be covered under this proposed rulemaking.

Within the participating states and under this proposed rulemaking, the owner or operator of a CO<sub>2</sub> budget unit must obtain one CO<sub>2</sub> allowance for each ton of CO<sub>2</sub> emitted from the CO<sub>2</sub> budget unit each year. The owner or operator may use a CO<sub>2</sub> allowance issued by any participating state to demonstrate compliance with any state's regulation, including this proposed rulemaking. RGGI operates on three-year control periods for compliance, meaning full compliance is evaluated at the end of each three-year control period. As described under § 145.306(c), at the end of a control period, the owner or operator is required as a permit condition to hold enough CO<sub>2</sub> allowances in their compliance account to cover the CO<sub>2</sub> budget source's CO<sub>2</sub> emissions during the period. The owner or operator must also show interim control period compliance during each of the first two calendar years of a control period. During each interim control period, the owner or operator must hold CO<sub>2</sub> allowances equal to 50% of CO<sub>2</sub> emissions in the compliance account for the CO<sub>2</sub> budget source. As outlined under § 145.355 (relating to compliance), at the end of the control period or interim control period, CO<sub>2</sub> allowances will be deducted from each CO<sub>2</sub> budget source's compliance account to cover each of the CO<sub>2</sub> budget unit's CO<sub>2</sub> emissions at the source for the control period or interim control period.

All owners or operators of CO<sub>2</sub> budget sources are required to open a compliance account in COATS in order to transfer and hold CO<sub>2</sub> allowances for compliance purposes. The Department will use COATS to determine compliance with this proposed rulemaking by comparing the covered emissions of a CO<sub>2</sub> budget source with the CO<sub>2</sub> allowances held in its compliance account. COATS is a publicly accessible platform that records and tracks data for each state's CO<sub>2</sub> Budget Trading Program, including the transfer of CO<sub>2</sub> allowances that are offered for sale by the participating states and purchased in the quarterly auctions. On the COATS website, the public can view and download reports of RGGI program data and CO<sub>2</sub> allowance market activity. COATS is used to allocate, award and transfer CO<sub>2</sub> allowances, to certify and provide CO<sub>2</sub> allowances for compliance-related tasks, and to register and submit applications and reports for offset projects.

Under § 145.352 (establishment of accounts) of this proposed rulemaking, any person may apply to open a general account for the purpose of holding and transferring CO<sub>2</sub> allowances by

submitting a complete application for a general account to the Department or its agent. A general account can be used for the receipt, transfer, and banking of CO<sub>2</sub> allowances in COATS, but unlike a compliance account, it does not provide for the CO<sub>2</sub> allowance compliance deduction process outlined in this proposed rulemaking. A compliance account is associated with an electric generation facility regulated under a state CO<sub>2</sub> Budget Trading Program, a CO<sub>2</sub> budget source. These accounts are used for compliance with the requirements of each state's CO<sub>2</sub> Budget Trading Program. Only one compliance account will be assigned to each CO<sub>2</sub> budget source. An applicant must have either a general or compliance account to participate in CO<sub>2</sub> allowance auctions. CO<sub>2</sub> allowances can be "banked" meaning they may be held for future compliance as they have no expiration date.

CO<sub>2</sub> allowances may be acquired through purchases in quarterly multistate auctions, through secondary markets, or by obtaining CO<sub>2</sub> offset allowances. Once a CO<sub>2</sub> allowance is purchased in an auction, it can then be resold in the secondary market. The secondary market assists with compliance by allowing CO<sub>2</sub> allowances to be traded in between quarterly auctions. As previously mentioned, every auction is overseen by an independent market monitor. Trading in the secondary market is also monitored by an independent market monitor in order to identify anticompetitive conduct. The quarterly multistate auction process continues each consecutive year of the CO<sub>2</sub> Budget Trading Program with fewer CO<sub>2</sub> allowances distributed into the auctions by the participating states each year.

### *Offsets*

As an additional compliance option under this proposed rulemaking, owners or operators of CO<sub>2</sub> budget sources may complete an offset project to reduce or avoid atmospheric loading of CO<sub>2</sub> or CO<sub>2</sub> equivalent (CO<sub>2</sub>e) emissions. CO<sub>2</sub>e refers to the quantity of a given GHG, other than CO<sub>2</sub>, multiplied by its global warming potential. By completing an offset project, the owner or operator will generate CO<sub>2</sub> offset allowances which can be used to offset a portion of the CO<sub>2</sub> budget source's emissions. A CO<sub>2</sub> offset allowance is equivalent to a CO<sub>2</sub> allowance, however a CO<sub>2</sub> offset allowance represents a project-based GHG emission reduction outside of the electric generation sector. This project must be in addition to not in place of an existing legal requirement. Under § 145.355(a)(3) of this proposed rulemaking, consistent with the RGGI Model Rule and the regulations in the participating states, the number of CO<sub>2</sub> offset allowances available to be deducted for compliance purposes may not exceed 3.3% of the CO<sub>2</sub> budget source's CO<sub>2</sub> emissions for a control period or interim control period.

As described under § 145.395 (relating to CO<sub>2</sub> emissions offset project standards), the three eligible offset categories include landfill methane capture and destruction projects, projects that sequester carbon due to reforestation, improved forest management or avoided conversion, and projects that avoid methane emissions from agricultural manure management operations. Each of the three offset categories are designed to further reduce or sequester emissions of CO<sub>2</sub> or methane within the northeast region. In the RGGI Model Rule, the participating states cooperatively developed prescriptive regulatory requirements for each of the offset categories that have been incorporated into this proposed rulemaking. These requirements ensure that awarded CO<sub>2</sub> offset allowances represent CO<sub>2</sub>e emission reductions or carbon sequestration that are real, additional, verifiable, enforceable and permanent.

Under § 145.393 (relating to general requirements) of this proposed rulemaking, offset projects must be located in this Commonwealth or partly in this Commonwealth and partly within one or more of the participating states, provided that the majority of the CO<sub>2</sub>e emission reductions or carbon sequestration occurs in this Commonwealth. Massachusetts, New Hampshire and Rhode Island have determined not to award CO<sub>2</sub> offset allowances, but CO<sub>2</sub> budget sources located within those states may use CO<sub>2</sub> offset allowances awarded by a participating state, including this Commonwealth. By recognizing CO<sub>2</sub>e emission reductions and carbon sequestration outside the electric generation sector and this Commonwealth's CO<sub>2</sub> emissions budget, offset projects provide compliance flexibility and create opportunities for low-cost emission reductions and other co-benefits across various sectors. Thus, including offset projects in this proposed rulemaking provides two crucial benefits, an additional compliance option for owners or operators and the potential for this Commonwealth to further reduce GHG emissions.

### *Auction Proceeds*

The auction proceeds are an integral part to carrying out the primary purpose of this proposed rulemaking which is to reduce CO<sub>2</sub> emissions in this Commonwealth in an economically efficient manner. By requiring the attainment of CO<sub>2</sub> allowances, this proposed rulemaking establishes a monetary obligation per ton of CO<sub>2</sub> emitted from a CO<sub>2</sub> budget source. The value of CO<sub>2</sub> allowances is used to further support the CO<sub>2</sub> Budget Trading Program and reduce GHG emissions and any associated costs related to achieving the emission reduction goals. The CO<sub>2</sub> allowances purchased in the multistate auctions generate proceeds that are provided back to the participating states, including this Commonwealth, for investment in initiatives that will further reduce CO<sub>2</sub> emissions. The amount of revenue generated each year is a function of the CO<sub>2</sub> allowance budget and the CO<sub>2</sub> allowance price. Each participating state determines how best to invest auction proceeds to provide public health benefits and further reduce GHG emissions. Historically, RGGI-funded programs, including energy efficiency, clean and renewable energy, GHG abatement and direct bill assistance programs, have saved consumers money and helped support businesses, all with a net positive economic impact.

As provided under section 9.2(a) of the APCA (35 P.S. § 4009.2(a)), 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." Section 9.2(a) of the APCA authorizes the Department to establish separate accounts in the Clean Air Fund as may be necessary or appropriate to implement the requirements of the APCA. Under section 9.2(a) of the APCA, the Board was required to adopt a regulation for the management and use of the money in the Clean Air Fund. The Board adopted Chapter 143 (relating to disbursements from the Clean Air Fund) to provide for the monies paid into the Clean Air Fund to be disbursed at the discretion of the Secretary for use in the elimination of air pollution. See 25 Pa. Code § 143.1(a). The full and normal range of activities of the Department are considered to contribute to the elimination of air pollution, including purchase of contractual services and payment of the costs of a public project necessary to abate air pollution. See 25 Pa. Code § 143.1(b). The investment of auction proceeds is discussed further under Section F.

### *Benefits*

In addition to decreasing CO<sub>2</sub> emissions and addressing this Commonwealth's contribution to regional climate change impacts, this proposed rulemaking would provide numerous benefits to public health and welfare and the environment. The benefits include job creation and worker training, decreased incidences of asthma, respiratory illness and hospital visits, avoidance of premature deaths, avoidance of lost work and school days due to illness, and future electric bill savings. This Commonwealth will also see a decrease in harmful NO<sub>x</sub>, SO<sub>2</sub> and particulate matter (PM) emissions, as well as ground level ozone pollution. This will particularly benefit those most often impacted by marginal air quality, such as low income and environmental justice communities. Emerging evidence links chronic exposure to air pollution with higher rates of morbidity and mortality from COVID-19. As such, reductions in CO<sub>2</sub> emissions are even more significant now more than ever before. The COVID-19 pandemic has resulted in a renewed focus on climate change, local air quality impacts, and opportunities for economic development, all areas where RGGI participation can provide value. The benefits of this proposed rulemaking are discussed further under Section F.

### *RGGI Provides Regulatory Certainty*

This proposed rulemaking provides regulatory certainty for CO<sub>2</sub> budget sources in this Commonwealth. Although RGGI is a market-based approach, there are also price fluctuation protections that are built into the auction platform to help ensure that CO<sub>2</sub> allowance prices are predictable. Specifically, there are auction mechanisms that identify a precipitous increase or decrease in price, and trigger what are referred to as the Cost Containment Reserve (CCR) and Emissions Containment Reserve (ECR). The CCR process triggers additional CO<sub>2</sub> allowances to be offered for sale in the case of higher than projected emissions reduction costs. Similarly, states implementing the ECR, including this Commonwealth, will withhold CO<sub>2</sub> allowances from the auction to secure additional emissions reductions if prices fall below the established trigger price, so that the ECR will only trigger if emission reduction costs are lower than projected. This provides predictability in terms of both the cost of compliance for covered entities, and a relatively predictable stream of revenue for each participating state. CO<sub>2</sub> allowances may also be purchased through the secondary market when costs are low and held for future compliance years.

### *Public Outreach*

As required under the Regulatory Review Act and further emphasized by Executive Order 2019-07, the Department conducted a robust public outreach effort including the business community, energy producers, energy suppliers, organized labor, environmental groups, low-income and environmental justice advocates and others to ensure that the development and implementation of this program results in reduced emissions, economic gains and consumer savings.

Additionally, the Department, working with the Public Utility Commission, engaged with PJM Interconnection to promote the integration of this program in a manner that preserves orderly and competitive economic dispatch within PJM and minimizes emissions leakage. The Department has also been an active participant in PJM's Carbon Pricing Senior Task Force (CPSTF) which was established to discuss potential process or rule changes necessary to integrate a regional or sub-regional carbon pricing mechanism into PJM's wholesale electricity markets.

The Department consulted with the Air Quality Technical Advisory Committee (AQTAC) and the Citizens Advisory Council (CAC) in the development of this proposed rulemaking. On December 12, 2019, the Department presented concepts to AQTAC on a potential rulemaking to participate in RGGI. The Department returned to AQTAC on February 13, 2020 to discuss the preliminary draft Annex A. At the April 16, 2020 AQTAC meeting, the Department provided a brief update on the development of this proposed rulemaking. In response to requests from committee members for more opportunities to learn about the CO<sub>2</sub> Budget Trading Program, on April 23, 2020, the Department presented on and provided the modeling results associated with this proposed rulemaking in a Special Joint Informational Meeting of AQTAC and CAC. The meeting was held via a webinar and over 225 members of the public were able to listen to the modeling results. Anyone interested in hearing the modeling results can also watch the meeting at any time through a link on the Department's website.

AQTAC was established under section 7.6 of the APCA (35 P.S. § 4007.6) to provide technical advice at the request of the Department on policies, guidance and regulations. On May 7, 2020, this proposed rulemaking was presented to AQTAC for review and technical advice before the Department moved this proposed rulemaking forward to the Board for consideration. The meeting was held via a webinar and over 200 members of the public had the opportunity to listen to the discussion and to request to provide comments. The AQTAC members were divided on whether to submit a formal letter of concurrence and ultimately declined to do so without a majority decision. The Department will continue to seek technical advice from AQTAC and address member questions and concerns throughout the rulemaking process.

The opportunity to provide public comment on this proposed rulemaking to AQTAC members was provided on three occasions, at the February 13, 2020, April 16, 2020, and May 7, 2020 AQTAC meetings.

Under section 7.6 of the APCA, the Department is required to consult with CAC in the development of the Department's regulations and State Implementation Plans. On November 19, 2019, the Department presented concepts to CAC on a potential rulemaking to participate in RGGI. The Department returned to CAC on February 18, 2020 for an informational presentation on a preliminary draft Annex A. The Department also conferred with CAC's Policy and Regulatory Oversight Committee concerning this proposed rulemaking on May 8, 2020. At the May 19, 2020 CAC meeting, this proposed rulemaking was presented to CAC for review before the Department moved this proposed rulemaking forward to the Board for consideration. The CAC members ultimately declined to submit a formal letter of concurrence with the Department's recommendation to move this proposed rulemaking forward to the Board for consideration. The Department will continue to consult with CAC and address member questions and concerns throughout the rulemaking process.

The opportunity to provide public comment on this proposed rulemaking to CAC members was provided on three occasions, at the November 19, 2019, February 18, 2020, and May 19, 2020 CAC meetings.

Under section 7.8 of the APCA (35 P.S. § 4007.8), the Small Business Compliance Advisory Committee (SBCAC) is required to review and advise the Department on rulemakings which affect small business stationary sources. The Department provided informational presentations on this proposed rulemaking to SBCAC on January 22, 2020 and April 22, 2020. On July 22, 2020, the Department presented this proposed rulemaking to SBCAC for review and advice on the potential small business stationary source impact of this proposed rulemaking. During the presentation, the Department mentioned that it has estimated that ten small business stationary sources, as defined under section 3 of the APCA (35 P.S. § 4003), may need to comply with this proposed rulemaking. Of those ten sources, seven are estimated to be waste coal-fired power plants. The Department also mentioned that it has included in this proposed rulemaking a CO<sub>2</sub> allowance set-aside provision to assist all waste coal-fired power plants located in this Commonwealth with their compliance obligation. The SBCAC ultimately voted not to concur with the Department’s recommendation to move this proposed rulemaking forward to the Board, with 4 opposed and 3 in support. The Department will continue to seek advice from SBCAC on the small business stationary source impact of this proposed rulemaking and address member questions and concerns throughout the rulemaking process.

Additionally, the Department provided an informational presentation to the Environmental Justice Advisory Board on May 21, 2020 and had further engagement with Environmental Justice stakeholder groups such as the Chester Environmental Partnership and EJ Stakeholders Group. The Department also provided informational presentations on this proposed rulemaking to the Climate Change Advisory Committee on February 25, 2020 and the Oil and Gas Technical Advisory Board on May 20, 2020.

The Department has also met with various stakeholders to receive additional input on this proposed rulemaking on numerous occasions throughout the development process. In particular, the Department met with environmental groups, residents, businesses, legislators, owners and operators of affected sources, industry groups and environmental justice stakeholders during the development of this proposed rulemaking.

## **E. Summary of Regulatory Requirements**

### *GENERAL PROVISIONS*

#### *§ 145.301. Purpose*

This section establishes the purpose of the CO<sub>2</sub> Budget Trading Program.

#### *§ 145.302. Definitions*

This section establishes definitions for the following terms: “account number,” “acid rain emissions limitation,” “acid rain program,” “adjustment for banked allowances,” “administrator,” “agent,” “air pollution reduction account,” “allocate or allocation,” “allocation year,” “allowance auction or auction,” “ascending price, multiple-round auction,” “attribute,” “attribute credit,” “automated data acquisition and handling system,” “award,” “beneficial interest,” “bidder,” “boiler,” “CEMS—continuous emission monitoring system,” “COATS—CO<sub>2</sub>

allowance tracking system,” “COATS account,” “CO<sub>2</sub> allowance,” “CO<sub>2</sub> allowance auction or auction,” “CO<sub>2</sub> allowance deduction or deduct CO<sub>2</sub> allowances,” “CO<sub>2</sub> allowances held or hold CO<sub>2</sub> allowances,” “CO<sub>2</sub> allowance price,” “COATS account,” “CO<sub>2</sub> allowance transfer deadline,” “CO<sub>2</sub> authorized account representative,” “CO<sub>2</sub> authorized alternate account representative,” “CO<sub>2</sub> budget emissions limitation,” “CO<sub>2</sub> budget permit condition,” “CO<sub>2</sub> budget source,” “CO<sub>2</sub> Budget Trading Program,” “CO<sub>2</sub> budget unit,” “CO<sub>2</sub> CCR allowance or CO<sub>2</sub> cost containment reserve allowance,” “CO<sub>2</sub> CCR trigger price or CO<sub>2</sub> cost containment reserve trigger price,” “CO<sub>2</sub> ECR allowance or CO<sub>2</sub> emissions containment reserve allowance,” “CO<sub>2</sub> ECR trigger price or CO<sub>2</sub> emissions containment reserve trigger price,” “CO<sub>2</sub>e—CO<sub>2</sub> equivalent,” “CO<sub>2</sub> offset allowance,” “cogeneration set-aside account,” “cogeneration unit,” “combined cycle system,” combustion turbine,” “commence commercial operation,” “commence operation,” “compliance account,” “control period,” “CSAPR,” “CSAPR—NO<sub>x</sub> annual trading program,” “CSAPR NO<sub>x</sub> ozone season trading program,” “CSAPR SO<sub>2</sub> group 1 trading program,” “CSAPR SO<sub>2</sub> group 2 trading program,” “decay rate,” “descending price, multiple-round auction,” “discriminatory price, sealed-bid auction,” “electronic submission agent,” “eligible biomass,” “excess emissions,” “excess interim emissions,” “general account,” “GWP—global warming potential,” “gross generation,” “interim control period,” “legacy emissions,” “life-of-the-unit contractual arrangement,” “maximum potential hourly heat input,” “minimum reserve price,” “monitoring system,” “nameplate capacity,” “notice of CO<sub>2</sub> allowance auction,” “operator,” “owner,” “participating state,” “Pennsylvania CO<sub>2</sub> budget trading program adjusted budget,” “Pennsylvania CO<sub>2</sub> budget trading program base budget,” “qualified participant,” “receive or receipt of,” “recordation, record or recorded,” “reserve price,” “reviewer,” “source,” “strategic use set-aside account,” “ton or tonnage,” “undistributed CO<sub>2</sub> allowance,” “uniform-price, sealed-bid auction,” “unit,” “unit operating day,” “unsold CO<sub>2</sub> allowance,” “useful thermal energy,” “waste coal,” “waste coal-fired,” and “waste coal set-aside account.” These defined terms are used in the substantive provisions of Subchapter E.

#### *§ 145.303. Measurements, abbreviations and acronyms*

This section establishes the measurements, abbreviations and acronyms used in Subchapter E.

#### *§ 145.304. Applicability*

This section establishes that this proposed rulemaking would apply to the owner or operator of a CO<sub>2</sub> budget unit that, at any time on or after January 1, 2005, served or serves an electricity generator with a nameplate capacity equal to or greater than 25 MWe. A CO<sub>2</sub> budget source is any source that includes one or more CO<sub>2</sub> budget unit.

#### *§ 145.305. Limited exemption for CO<sub>2</sub> budget units with electrical output to the electric grid restricted by permit conditions*

This section establishes a limited exemption and compliance requirements for a CO<sub>2</sub> budget source that has a permit issued by the Department containing a condition restricting the supply of the CO<sub>2</sub> budget unit’s annual electrical output to the electric grid to no more than 10% of the annual gross generation of the unit, or restricting the supply less than or equal to 15% of its

annual total useful energy to any entity other than the manufacturing facility to which the CO<sub>2</sub> budget source is interconnected.

*§ 145.306. Standard requirements*

This section establishes the standard permit, monitoring, CO<sub>2</sub>, excess emissions and recordkeeping and reporting requirements. This section also establishes liability for the CO<sub>2</sub> authorized account representative and the owner or operator of a CO<sub>2</sub> budget source or CO<sub>2</sub> budget unit.

*§ 145.307. Computation of time*

This section establishes the computation of any time period scheduled under the CO<sub>2</sub> Budget Trading Program.

*CO<sub>2</sub> AUTHORIZED ACCOUNT REPRESENTATIVE FOR A CO<sub>2</sub> BUDGET SOURCE*

*§ 145.311. Authorization and responsibilities of the CO<sub>2</sub> authorized account representative*

This section establishes the authorization and responsibilities of the CO<sub>2</sub> authorized account representative.

*§ 145.312. CO<sub>2</sub> authorized alternate account representative*

This section establishes the requirements for the designation of no more than one CO<sub>2</sub> authorized alternate account representative to act on behalf of the CO<sub>2</sub> authorized account representative.

*§ 145.313. Changing the CO<sub>2</sub> authorized account representative and the CO<sub>2</sub> authorized alternate account representative; changes in the owner or operator*

This section establishes the process and requirements for changing the CO<sub>2</sub> authorized account representative or the CO<sub>2</sub> authorized alternate account representative. This section also establishes the process and requirements for changes in the owner or operator.

*§ 145.314. Account certificate of representation*

This section establishes the elements of a complete account certificate of representation for a CO<sub>2</sub> authorized account representative or a CO<sub>2</sub> authorized alternate account representative.

*§ 145.315. Objections concerning the CO<sub>2</sub> authorized account representative*

This section establishes the procedure for objections concerning the CO<sub>2</sub> authorized account representative.

*§ 145.316. Delegation of authority to make electronic submissions and review information in COATS*

This section provides for a CO<sub>2</sub> authorized account representative or a CO<sub>2</sub> authorized alternate account representative to delegate their authority to make an electronic submission in COATS.

#### *PERMITS*

##### *§ 145.321. General requirements for a permit incorporating CO<sub>2</sub> Budget Trading Program requirements*

This section establishes the requirement for each CO<sub>2</sub> budget source to have a permit issued under Chapter 127 that incorporates the CO<sub>2</sub> Budget Trading Program requirements.

##### *§ 145.322. Submission of an application for a new, renewed or modified permit incorporating CO<sub>2</sub> Budget Trading Program requirements*

This section establishes the process and deadlines for the CO<sub>2</sub> authorized account representative to submit a complete permit application to the Department.

##### *§ 145.323. Contents of an application for a permit incorporating CO<sub>2</sub> Budget Trading Program requirements*

This section establishes the required contents of a complete permit application.

#### *COMPLIANCE CERTIFICATION*

##### *§ 145.331. Compliance certification report*

This section establishes the requirement for a CO<sub>2</sub> authorized account representative of a CO<sub>2</sub> budget source to submit to the Department a compliance certification report for each control period. The section includes the required contents of the report and compliance certification.

##### *§ 145.332. Department action on compliance certifications*

This section provides for the Department or its agent's review of compliance certifications, the ability to conduct independent audits of submissions and to deduct or transfer CO<sub>2</sub> allowances based on the information in the compliance certification.

#### *CO<sub>2</sub> ALLOWANCE ALLOCATIONS*

##### *§ 145.341. Pennsylvania CO<sub>2</sub> Budget Trading Program base budget*

This section establishes the Pennsylvania CO<sub>2</sub> Budget Trading Program declining base budget for the years 2022 through 2030 and each succeeding calendar year. For example, in 2022, the Pennsylvania CO<sub>2</sub> Budget Trading Program base budget is 78,000,000 tons and by 2030 and each succeeding calendar year, the Pennsylvania CO<sub>2</sub> Budget Trading Program base budget is

58,085,040 tons.

§ 145.342. CO<sub>2</sub> allowance allocations

Subsection (a) establishes that the Department will allocate CO<sub>2</sub> allowances representing 100% of the tons for each allocation year from the Pennsylvania CO<sub>2</sub> Budget Trading Program base budget to the air pollution reduction account, less those allowances set aside each allocation year.

Subsection (b) establishes the Department's set-aside accounts for waste coal, strategic use and cogeneration.

Subsection (c) establishes the Pennsylvania CO<sub>2</sub> Budget Trading Program adjusted budget for the allocation year 2022 and each succeeding calendar year.

Subsection (d) establishes the cost containment reserve (CCR) allocation and the process by which the Department will allocate CO<sub>2</sub> CCR allowances, separate from and additional to the Pennsylvania CO<sub>2</sub> Budget Trading Program base budget to the air pollution reduction account.

Subsection (e) establishes the emissions containment reserve (ECR) and the process by which the Department will convert and transfer any CO<sub>2</sub> allowances that have been withheld from any auction into the Pennsylvania ECR account.

Subsection (f) provides for the Department to determine whether to make an adjustment for banked allowances and the formula to be used.

Subsection (g) provides for the Department to establish the Pennsylvania CO<sub>2</sub> Budget Trading Program adjusted budget for an allocation year and the formula to be used.

Subsection (h) requires the Department to publish notice in the *Pennsylvania Bulletin* of the CO<sub>2</sub> Budget Trading Program adjusted budget for the allocation year, if the Department determines to adjust the budget for banked allowances.

Subsection (i) establishes the process for the waste coal set-aside allocation, including the establishment of a general account, allowance transfers, compliance allocation, an exception or exceedance of legacy emissions or 9,300,000 tons during a calendar year, and the set-aside termination. This subsection applies to waste coal-fired units located in Pennsylvania that commenced operation on or before the effective date of this rulemaking, that are subject to the CO<sub>2</sub> Budget Trading Program requirements.

Subsection (j) establishes the process for the strategic use set-aside allocation, including the establishment of a general account, allowance transfers and allocation to eligible projects for the use in the elimination of air pollution. The strategic use set-aside allocation will consist of undistributed CO<sub>2</sub> allowances from the waste coal set-aside account.

Subsection (k) establishes the process for the cogeneration set-aside allocation, including applicability, the establishment of a general account, the required compliance obligation

adjustment application, the compliance obligation adjustment determination and the retirement and transfer of CO<sub>2</sub> allowances.

*§ 145.343. Distribution of CO<sub>2</sub> allowances in the air pollution reduction account*

This section describes how the Department will distribute CO<sub>2</sub> allowances held in the air pollution reduction account. With the exception of CO<sub>2</sub> allowances held in a set-aside account, the Department will make available all CO<sub>2</sub> allowances for purchase or auction each allocation year. The proceeds of the auction will be used in the elimination of air pollution in accordance with the APCA and Chapter 143 and for programmatic costs associated with the CO<sub>2</sub> Budget Trading Program.

*CO<sub>2</sub> ALLOWANCE TRACKING SYSTEM*

*§ 145.351. CO<sub>2</sub> Allowance Tracking System (COATS) accounts*

This section describes the nature and function of compliance and general accounts. Compliance accounts are only for CO<sub>2</sub> budget sources, while any person may have a general account.

*§ 145.352. Establishment of accounts*

This section provides for the establishment of a compliance account by the Department or its agent upon receipt of a complete account certificate of representation. This section also provides for any person to apply to open a general account by submitting a complete application to the Department or its agent that includes the required contents listed in this section. This section establishes the requirements for the authorization of a CO<sub>2</sub> authorized account representative, changing a CO<sub>2</sub> authorized account representative or a CO<sub>2</sub> authorized alternate account representative, changes in persons with ownership interest, objections concerning a CO<sub>2</sub> authorized account representative, delegation by a CO<sub>2</sub> authorized account representative and a CO<sub>2</sub> authorized alternate account representative, and account identification.

*§ 145.353. COATS responsibilities of CO<sub>2</sub> authorized account representative and CO<sub>2</sub> authorized alternate account representative*

This section allows submissions to the Department or its agent pertaining to a COATS account to be only submitted by the CO<sub>2</sub> authorized account representative or CO<sub>2</sub> authorized alternate account representative for the account.

*§ 145.354. Recordation of CO<sub>2</sub> allowance allocations*

This section establishes the deadlines for the Department or its agent to record and assign a serial number to the CO<sub>2</sub> allowances allocated for the air pollution reduction account, the waste coal set-aside account, the strategic use set-aside account and the cogeneration set-aside account

*§ 145.355. Compliance*

This section establishes the requirements for allowances available for compliance deduction, deductions for compliance, allowance identification, deductions for excess emissions, recordation of deductions, and action by the Department on submissions.

*§ 145.356. Banking*

This section allows a CO<sub>2</sub> allowance that is held in a compliance account or a general account to be banked or in other words to remain in the account until the CO<sub>2</sub> allowance is deducted or transferred.

*§ 145.357. Account error*

This section allows the Department or its agent to correct and notify a CO<sub>2</sub> authorized account representative of an error in a COATS account.

*§ 145.358. Closing of general accounts*

This section allows the CO<sub>2</sub> authorized account representative of a general account to instruct the Department or its agent to close a general account and for a general account that shows no activity for 1 year or more and does not contain any CO<sub>2</sub> allowances to be closed. This section also describes the notification procedure for the closure.

*CO<sub>2</sub> ALLOWANCE TRANSFERS*

*§ 145.361. Submission of CO<sub>2</sub> allowance transfers*

This section establishes the requirements for a CO<sub>2</sub> authorized account representative to submit a CO<sub>2</sub> allowance transfer to the Department for recordation.

*§ 145.362. Recordation*

This section establishes the requirements and process for the Department to record a CO<sub>2</sub> allowance transfer.

*§ 145.363. Notification*

This section establishes the processes for notification of recordation and non-recordation of a CO<sub>2</sub> allowance transfer and allows for the resubmission of a CO<sub>2</sub> allowance transfer for recordation.

*MONITORING, REPORTING AND RECORDKEEPING REQUIREMENTS*

*§ 145.371. General monitoring requirements*

This section establishes the monitoring requirements that an owner or operator or CO<sub>2</sub> authorized account representative of a CO<sub>2</sub> budget unit must comply with, including applicable sections of 40 CFR Part 75 (relating to continuous emission monitoring). This section also includes the

requirements for installation, certification and data accounting, compliance dates for recording, reporting and quality-assuring data from the monitoring system, reporting data and prohibitions.

*§ 145.372. Initial certification and recertification procedures*

This section establishes the conditions for an exemption from the initial certification requirements, the applicability of recertification, the process for petitions, the certification and recertification requirements, the approval process for initial certification and recertification, the procedures for loss of certification, initial certification and recertification procedures for low mass emissions units and certification and recertification procedures for an alternative monitoring system.

*§ 145.373. Out-of-control periods*

This section establishes the quality assurance requirements and the audit decertification procedure.

*§ 145.374. Notifications*

This section establishes the requirement for a CO<sub>2</sub> authorized account representative for a CO<sub>2</sub> budget unit to submit written notice to the Department and the Administrator in accordance with 40 CFR 75.61 (relating to notifications).

*§ 145.375. Recordkeeping and reporting*

This section establishes the recordkeeping and reporting requirements including monitoring plans, certification applications and quarterly reports.

*§ 145.376. Petitions*

This section establishes the process and requirements for submitting a petition to the Department or the EPA Administrator requesting approval to apply an alternative monitoring requirement.

*§ 145.377. CO<sub>2</sub> budget units that co-fire eligible biomass*

This section establishes reporting and data calculation requirements for the CO<sub>2</sub> authorized account representative of a CO<sub>2</sub> budget unit that co-fires eligible biomass as a compliance mechanism under the CO<sub>2</sub> Budget Trading Program.

*AUCTION OF CO<sub>2</sub> CCR AND ECR ALLOWANCES*

*§ 145.381. Purpose*

This section allows the Department or its agent to specify additional information in the auction notice for each auction, including the time and location of the auction, auction rules, registration deadlines and any additional information deemed necessary or useful.

### *§ 145.382. General Requirements*

This section establishes the required contents of an auction notice. This section also includes tables with the CCR trigger price and the ECR trigger price for the years 2023 through 2030. This section also establishes the process for the sale of CCR allowances, implementation of the reserve price and withholding ECR allowances from an auction.

## *CO<sub>2</sub> EMISSIONS OFFSET PROJECTS*

### *§ 145.391. Purpose*

This section allows the Department to award CO<sub>2</sub> offset allowances to sponsors of CO<sub>2</sub> emissions offset projects that have reduced or avoided atmospheric loading of CO<sub>2</sub>, CO<sub>2</sub> equivalent or sequestered carbon. CO<sub>2</sub> offset allowances must be real, additional, verifiable, enforceable and permanent within the framework of a standards-based approach.

### *§ 145.392. Definitions*

This section establishes definitions for the following terms: “AEPS—Alternative energy portfolio standards,” “anerobic digester,” “anaerobic digestion,” “anaerobic storage,” “biogas,” “conflict of interest,” “forest offset project,” “forest offset project data report,” “forest offset protocol,” “independent verifier,” “intentional reversal,” “market penetration rate,” “offset project,” “project commencement,” “project sponsor,” “regional-type anaerobic digester,” “reporting period,” “reversal,” “system benefit fund,” “total solids,” “unintentional reversal,” “verification” and “volatile solids.” These defined terms are used in the substantive provisions of §§ 145.391—145.397 (relating to CO<sub>2</sub> emissions offset projects).

### *§ 145.393. General requirements*

This section establishes the requirements for an offset project to qualify for the award of CO<sub>2</sub> offset allowances, including the three eligible offset project types, offset project location requirements, the project sponsor, general additionality requirements, maximum allocation periods for offset projects, offset project audits, as well as ineligibility of an offset project due to noncompliance.

### *§ 145.394. Application process*

This section establishes the requirement for a project sponsor to establish a general account and to submit a consistency application, including the deadlines and required contents of the consistency application and the process for the Department’s action on consistency applications.

### *§ 145.395. CO<sub>2</sub> emissions offset project standards*

This section establishes the eligibility, offset project description, calculation and monitoring and verification requirements for the categories of offset projects, landfill methane capture and

destruction, sequestration of carbon due to reforestation, improved forest management or avoided conversion and avoided methane emissions from agricultural manure management operations.

*§ 145.396. Accreditation of independent verifiers*

This section establishes the standards for accreditation of independent verifiers, the required contents of an application for accreditation, the process for Department action on applications for accreditation, reciprocity of independent verifiers across participating states and the required conduct of an accredited verifier.

*§ 145.397. Award and Recordation of CO<sub>2</sub> offset allowances*

This section describes the process for awarding and recording CO<sub>2</sub> offset allowances. This section also establishes the deadlines for submittal of monitoring and verification reports, the required contents of monitoring and verification reports, the prohibition against filing monitoring and verification reports in more than one participating state and the process for Department action on monitoring and verification reports.

*CO<sub>2</sub> ALLOWANCE AUCTIONS*

*§ 145.401. Auction of CO<sub>2</sub> allowances*

This section establishes that the Department will participate in a multistate CO<sub>2</sub> allowance auction in coordination with other participating states. However, the Department may determine to conduct a Pennsylvania-run auction if the conditions for participating in a multistate auction are no longer met. The Department may delegate implementation and administrative support for any CO<sub>2</sub> allowance auction and retains its authority to enforce compliance with the CO<sub>2</sub> Budget Trading Program and control over the proceeds.

*§ 145.402. Auction format*

This section establishes the format of a CO<sub>2</sub> allowance auction, the lot of CO<sub>2</sub> allowances and the reserve price.

*§ 145.403. Auction timing and CO<sub>2</sub> allowance submission schedule*

This section establishes the timing of a CO<sub>2</sub> allowance auction, the availability of CO<sub>2</sub> allowances held in the air pollution reduction account and the requirement for an auction to include a CCR reserve and trigger price.

*§ 145.404. Auction notice*

This section establishes the requirement for notice to be provided of each CO<sub>2</sub> allowance auction and the required contents of the notice.

*§ 145.405. Auction participant requirements*

This section establishes the eligibility requirements to participate in a CO<sub>2</sub> allowance auction as a bidder.

*§ 145.406. Auction participant qualification*

This section establishes the requirement for the submittal of a qualification application, the deadline for submittal, the required contents of a qualification application, the process for Department review of a qualification application and changes in qualification status.

*§ 145.407. Submission of financial security*

This section establishes the requirement for a qualified applicant to provide financial security to the Department to participate in a CO<sub>2</sub> allowance auction as a bidder and the process for requesting return of the financial security.

*§ 145.408. Bid submittal requirements*

This section establishes the requirements and limitations of bid submittals.

*§ 145.409. Approval of auction results*

This section establishes the requirement for an independent monitor to observe the conduct and outcome of each auction and issue a report to the Department. If the Department approves the outcome of an auction based on the contents of the report, the Department will transfer and record the CO<sub>2</sub> allowances to successful bidders and make available the auction clearing price and the number of CO<sub>2</sub> allowances sold in the auction.

**F. *Benefits, Costs and Compliance***

The CO<sub>2</sub> emission reductions accomplished through implementation of this proposed rulemaking would benefit the health and welfare of the approximately 12.8 million residents and the numerous animals, crops, vegetation and natural areas of this Commonwealth by reducing the amount of climate change causing pollution resulting from the regulated sources.

*Reduction of CO<sub>2</sub> Emissions*

This proposed rulemaking includes a CO<sub>2</sub> emission budget which declines by approximately 20 million short tons from 2022 to 2030. However, this Commonwealth will experience CO<sub>2</sub> emission reductions of around 188 million tons as a direct result of participation in RGGI. This results in CO<sub>2</sub> reductions in this Commonwealth and a net benefit to the entire PJM region. The Department's modeling shows that this Commonwealth makes these significant emission reductions while maintaining historic electric generation levels, enhancing this Commonwealth's status as a leading net energy exporter, and creating economic opportunities.

The CO<sub>2</sub> emission reductions resulting from this proposed rulemaking are substantial and are the catalyst needed to meet the climate goals for this Commonwealth, as outlined in Executive Order 2019-01, to reduce net GHG emissions Statewide by 26% by 2025 from 2005 levels and by 80% by 2050 from 2005 levels. A predicted reduction of 13.6 million metric tons of CO<sub>2</sub> by 2025 due to this Commonwealth's potential participation in RGGI provides significant assurance that along with prudent investments of auction proceeds and other GHG abatement activities, this Commonwealth will remain on track to reach the 2025 net GHG reduction goal.

Historically, the RGGI program has experienced some emissions leakage. Emissions leakage is the shifting of emissions from states with carbon pricing to states without carbon pricing. The Department's modeling indicates that there may be some future emissions leakage in terms of additional fossil fuel emissions outside of this Commonwealth's borders. Despite the leakage, this Commonwealth's participation in RGGI would result in a net emissions reduction of 86.9 million tons of CO<sub>2</sub> across PJM for the period between 2020 and 2030. Additionally, the Department has been an active participant in PJM's CPSTF which is conducting additional modeling in an effort to better understand and control leakage across the entire PJM region.

The participating states together, including this Commonwealth, will achieve regional CO<sub>2</sub> emissions reductions of 30% by 2030. According to data from the World Bank, by 2022 based on Gross Domestic Product (GDP), the participating states would comprise the third largest economy in the world. These CO<sub>2</sub> emission reductions are even more significant when viewed from this collective impact. Reductions in CO<sub>2</sub> emissions will help decrease the adverse impacts of climate change on human health, the environment and the economy. Specifically, CO<sub>2</sub> emission reductions may decrease costs from extreme weather events and climate-related ailments that also result in increased health care costs.

#### *Health Benefits of this Proposed Rulemaking*

According to the NCA4, climate-driven changes in weather, human activity and natural emissions are all expected to impact future air quality across the United States. Many emission sources of GHGs also emit air pollutants that harm human health. Controlling these common emission sources would both mitigate climate change and have immediate benefits for air quality and human health. The energy sector, which includes energy production, conversion, and use, accounts for 84% of GHG emissions as well as 80% of emissions of NO<sub>x</sub> and 96% of SO<sub>2</sub>. Specifically, mitigating GHGs can lower emissions of SO<sub>2</sub>, NO<sub>x</sub>, PM, ozone and PM precursors, and other hazardous pollutants, reducing the risks to human health from air pollution.

While this proposed rulemaking requires CO<sub>2</sub> emission reductions, co-pollutants will also be reduced, because multiple pollutants are emitted from fossil fuel-fired EGUs. While the benefits of the cumulative CO<sub>2</sub> emission reductions will be tremendous, the Department also estimates that this proposed rulemaking will lead to a reduction of co-pollutants as well. This proposed rulemaking would provide public health benefits due to the expected reductions in emissions of CO<sub>2</sub> and the ancillary emission reductions or co-benefits of SO<sub>2</sub> and NO<sub>x</sub> reductions. The Department's modeling projects cumulative emission reductions of 112,000 tons of NO<sub>x</sub> and around 67,000 tons of SO<sub>2</sub> over the decade.

The Department used the EPA’s Regional Incidence-per-Ton methodology which calculates total avoided incidences of major health issues, and calculation of avoided lost work and school days due to reduced emissions. Through 2030, it is estimated that between 283 and 641 premature deaths will be avoided in this Commonwealth due to emission reductions resulting directly from this proposed rulemaking. Children and adults alike will suffer less from respiratory illnesses, 30,000 less incidences of upper and lower respiratory symptoms which leads to reduced emergency department visits and avoided hospital admissions. Healthier children will be able to play more, as incidences of minor restricted-activity days decline on the order of almost 500,000 days between now and 2030. Adults would be healthier as well which results in over 83,000 avoided lost workdays due to health impacts. The public health benefits to this Commonwealth of these avoided SO<sub>2</sub> and NO<sub>x</sub> emissions range between \$2.79 billion to \$6.3 billion by 2030, averaging between \$232 million to \$525 million per year.

A 2017 independent study by Abt Associates, a global research firm focused on health and environmental policy, on the “Analysis of the Public Health Impacts of the Regional Greenhouse Gas Initiative, 2009-2014” showed that participating states gained significant health benefits in the first six years of RGGI implementation alone. From 2009-2014, the participating states avoided around 24% of CO<sub>2</sub> emissions that would have otherwise been emitted during that period, resulting in around \$5 billion in avoided health related costs. See Abt Associates, “Analysis of the Public Health Impacts of the Regional Greenhouse Gas Initiative, 2009-2014,” January 2017, <https://www.abtassociates.com/sites/default/files/files/Projects/executive%20summary%20RGGI.pdf>. Since this proposed rulemaking would lead to a 31% reduction of projected CO<sub>2</sub> emissions, or avoided emissions, over the next decade, this Commonwealth is likely to see similar gains in health benefits.

A recent study led by researchers from the Columbia Center for Children's Environmental Health at Columbia University Mailman School of Public Health (“Columbia study”), published on July 29, 2020, on the “Co-Benefits to Children’s Health of the U.S. Regional Greenhouse Gas Initiative” indicates that the health benefits from RGGI are even more significant than estimated in 2017 by Abt Associates. The Columbia study concluded that the co-pollutant reductions resulting from RGGI have provided considerable child health benefits to participating and neighboring states. In particular, between 2009-2014, RGGI resulted in an estimated 537 avoided cases of childhood asthma, 112 avoided preterm births, 98 avoided cases of autism spectrum disorder, and 56 avoided cases of term low birthweight. Those child health benefits also have significant economic value, estimated at \$199.6–358.2 million between 2009 and 2014 alone. However, the researchers note that the actual health benefits are even greater than estimated because the analysis does not capture the future health benefits related to reductions in childhood PM<sub>2.5</sub> exposure and mitigating climate change, such as fewer heat-related illnesses or cases of vector-borne disease to which children are especially vulnerable. See Frederica Perera, David Cooley, Alique Berberian, David Mills, and Patrick Kinney, “Co-Benefits to Children’s Health of the U.S. Regional Greenhouse Gas Initiative,” *Environmental Health Perspectives*, Vol. 128, No. 7, July 2020, <https://ehp.niehs.nih.gov/doi/10.1289/EHP6706>.

### *Benefits of Continued Waste Coal Pile Remediation*

While this Commonwealth’s participation in RGGI will have tangible health, environmental and

economic benefits, the inclusion of the waste coal set-aside has the additional benefit of avoiding unintended impacts to this generation sector, so that the environmental benefits of continuing to remediate this Commonwealth's legacy waste coal piles may continue. For context, since 1988 a total of 160.7 million tons of waste coal has been removed and burned to generate electricity, with an additional 200 million tons of coal ash beneficially used at mine sites. Of this Commonwealth's over 13,000 acres of waste coal piles cataloged by the Department, 3,700 acres have been reclaimed with roughly 9,000 acres remaining. Additionally, of the piles that remain, approximately 40 of them have ignited, and continually burn which significantly impacts local air quality.

### *Benefits of Cogeneration and CHP Systems*

As discussed previously, this proposed rulemaking provides a set-aside and limited exemption for cogeneration or CHP which will benefit existing systems while encouraging new installations in this Commonwealth. CHP systems use energy efficiently by simultaneously producing electricity and useful thermal energy from the same fuel source. CHP captures the wasted heat energy that is typically lost through power generation, using it to provide cost-effective heating and cooling to factories, businesses, universities and hospitals. CHP systems are able to use less fuel compared to other fossil fuel-fired EGUs to produce a given energy output. Less fuel being burned results in fewer air pollutant emissions, including CO<sub>2</sub> and other GHGs. In addition to reducing emissions, CHP benefits the economy and businesses by improving manufacturing competitiveness through increased energy efficiency and providing a way for businesses to reduce energy costs while enhancing energy reliability.

### *Benefits of RGGI Participation*

As previously mentioned, cap and trade programs have an established track record as economically efficient, market-driven mechanisms for reducing pollution in a variety of contexts. Other countries and states have found that cap and trade programs are effective methods to achieve significant GHG emission reductions. RGGI is one of the most successful cap and trade programs and it is well-established with an active carbon trading market for the northeastern United States. This successful market-based program has significantly reduced and continues to reduce emissions. The participating states have collectively reduced power sector CO<sub>2</sub> pollution by over 45% since 2009, while experiencing per capita GDP growth and reduced energy costs. The program design of RGGI would enable the Board to regulate CO<sub>2</sub> emissions from the power sector in a way that is economically efficient thereby driving long-term investments in cleaner sources of energy.

Part of what makes RGGI economically efficient is that it is a regional cap and invest program, which allows EGUs to achieve least-cost compliance by buying and selling allowances in a multistate auction or in regional secondary markets. RGGI CO<sub>2</sub> allowances are fungible across the participating states, meaning that though this Commonwealth would have an established allowance budget for each year, this Commonwealth's allowances are available to meet the compliance obligations in any other RGGI state and vice versa. Therefore, CO<sub>2</sub> emissions from this Commonwealth's power sector are not limited to strictly the amount of this Commonwealth's CO<sub>2</sub> allowances. This cooperation allows EGUs more flexibility in terms of

compliance and allows the market to continue to signal entrance and exit of generation. Though each state has its own annual allocation, compliance occurs at the regional level rather than on a state-by-state basis. In this respect, the market assists in achieving least cost compliance for all participating states.

Another benefit of participating in multistate auctions run by RGGI, Inc. is that RGGI, Inc. has retained the services of an independent market monitor to monitor the auction, CO<sub>2</sub> allowance holdings, and CO<sub>2</sub> allowance transactions, among other activities. The market monitor provides independent expert monitoring of the competitive performance and efficiency of the RGGI allowance market. This includes identifying attempts to exercise market power, collude, or otherwise manipulate prices in the auction and/or the secondary market, making recommendations regarding proposed market rule changes to improve the efficiency of the market for RGGI CO<sub>2</sub> allowances, and assessing whether the auctions are administered in accordance with the noticed auction rules and procedures. The market monitor will monitor bidder behavior in each auction and report to the participating states any activities that may have a material impact on the efficiency and performance of the auction. The participating states, through RGGI, Inc., release a Market Monitor Report shortly after each CO<sub>2</sub> allowance auction. The Market Monitor Report includes aggregate information about the auction including the dispersion of projected demand, the dispersion of bids, and a summary of bid prices, showing the minimum, maximum, average and clearing price and the CO<sub>2</sub> allowances awarded.

RGGI has helped the participating states create jobs, save money for consumers, and improve public health, while reducing power sector emissions and transitioning to a cleaner electric grid. In an independent and nonpartisan evaluation of the first three control periods in RGGI, the Analysis Group, one of the largest economic consulting firms globally, found that the participating states experienced economic benefits in all three control periods, while reducing CO<sub>2</sub> emissions. The participating states added between \$1.3 billion and \$1.6 billion in net economic value during each of the three control periods. The participating states also showed growth in economic output, increased jobs and reduced long-run wholesale electricity costs. See Analysis Group, “The Economic Impacts of the Regional Greenhouse Gas Initiative on Northeast and Mid-Atlantic States,” <https://www.analysisgroup.com/Insights/cases/the-economic-impacts-of-the-regional-greenhouse-gas-initiative-on-northeast-and-mid-atlantic-states/>.

A recent report from the Acadia Center, a nonprofit organization committed to advancing the clean energy future, entitled “The Regional Greenhouse Gas Initiative: Ten Years in Review,” shows that CO<sub>2</sub> emissions from power plants in the participating states have decreased 47%, which is 90% faster than in the rest of country. The participating states were able to achieve that significant reduction while the GDP grew by 47%, outpacing the rest of the country by 31%.

RGGI has also driven substantial reductions in harmful co-pollutants, making the region’s air cleaner and its people healthier. Additionally, proceeds from RGGI auctions generated nearly \$3.3 billion in state investments from 2009 to 2019. See Acadia Center, “The Regional Greenhouse Gas Initiative 10 Years in Review,” 2019, [https://acadiacenter.org/wp-content/uploads/2019/09/Acadia-Center\\_RGGI\\_10-Years-in-Review\\_2019-09-17.pdf](https://acadiacenter.org/wp-content/uploads/2019/09/Acadia-Center_RGGI_10-Years-in-Review_2019-09-17.pdf).

For comparison, according to the Department's 2019 GHG Inventory Report from 2005 to 2016, this Commonwealth reduced its net emissions by 33.5% while the participating states reduced CO<sub>2</sub> pollution from covered sources by over 45% over the same period. Additionally, this reduction was achieved while the region's per-capita GDP has continued to grow, highlighting the synergies between environmental protection and economic development.

Additionally, this proposed rulemaking may create economic opportunities for clean energy businesses. By establishing a cost for emitting CO<sub>2</sub>, and pricing this externality into the energy market, the CO<sub>2</sub> Budget Trading Program will provide a market incentive for developing and deploying technologies that improve the fuel efficiency of electric generation, generate electricity from non-carbon emitting resources, reduce CO<sub>2</sub> emissions from combustion sources and encourage carbon capture and sequestration. The energy efficiency sector is the largest component of all energy jobs in this Commonwealth and the renewable energy sector contains some of the fastest growing jobs in the country.

#### *Investment of Auction Proceeds Benefits Consumers and the Economy*

The proceeds generated from this proposed rulemaking would be invested into programs that would reduce air pollution and create positive economic impacts in this Commonwealth. The Department plans to develop a draft plan for public comment outlining reinvestment options separate from this proposed rulemaking. However, the Department conducted modeling to estimate the economic impacts of this proposed rulemaking. The Department analyzed the net economic benefits of the program investments using the Regional Economic Model, Inc. (REMI) model. The extensive economic modeling will help the Department determine the best ways to invest the auction proceeds in this Commonwealth to maximize emission reductions and economic benefits. The modeling anticipates that in the first year of participation in RGGI, approximately \$300 million in auction proceeds will be generated for the use in the elimination of air pollution in this Commonwealth. The auction proceeds would be spent on programs related to the regulatory goal, and the Department modeled a scenario in which the proceeds are invested in energy efficiency, renewable energy and GHG abatement.

The proceeds will aid this Commonwealth in the transition toward a clean energy economy. In 2015, the EPA noted that the energy market was moving toward cleaner sources of energy and states needed to make plans for and invest in the next generation of power production, particularly considering that current assets and infrastructure were aging. By strategically investing the proceeds, this Commonwealth can help ensure that, as new investments are being made, they are integrated with the need to address GHG pollution from the electric generation sector. See 80 FR 64661, 64678 (October 23, 2015). These energy transitions are occurring both in this Commonwealth and nationally.

Nationally, the last ten years have seen coal's position steadily erode due to a combination of low electricity demand, mounting concern over climate, and increased competition from natural gas and renewables. The same is true for coal generation in this Commonwealth. Since 2005, electricity generation in this Commonwealth has shifted from higher carbon-emitting electricity generation sources, such as coal, to lower and zero emissions generation sources, such as natural gas, and renewable energy. Between now and 2030, coal generation is expected to decline

dramatically. In 2010, coal generation represented 47% of this Commonwealth's generation portfolio and is expected to decline to roughly 1% of this Commonwealth's generation portfolio in 2030. This shift away from coal-fired generation occurs irrespective of this Commonwealth's participation in RGGI. Anticipating the need for transition, for these communities and employees, auction proceeds can be used to mitigate these impacts and assist communities and families through the energy transition. This could include repowering of the existing coal-fired power plants to natural gas, investments in worker training or other community-based support programs.

The Department would invest a portion of the proceeds in energy efficiency initiatives because energy efficiency is a low-cost resource for achieving CO<sub>2</sub> emission reductions while reducing peak demand and ultimately reducing electricity costs. Lower energy costs create numerous benefits across the economy, allowing families to invest in other priorities and businesses to expand. Energy efficiency savings can be achieved cost-effectively by upgrading appliances and lighting, weatherizing and insulating buildings, upgrading HVAC and improving industrial processes. Additionally, all consumers benefit from energy efficiency programs, not just direct program participants because focused investment in energy efficiency can lower peak electricity demand and can decrease overall electricity costs which results in savings for all energy consumers. Additionally, energy efficiency projects are labor-intensive which create local jobs and boost local economy. For instance, projects involving home retrofits directly spur employment gains in the housing and construction industries.

Investing a portion of the auction proceeds into energy efficiency initiatives is also crucial to addressing the impacts of climate change on consumers. According to the NCA4, rising temperatures are projected to reduce the efficiency of power generation while increasing energy demands, resulting in higher electricity costs. Energy efficiency will help lessen those impacts by putting downward pressure on both demand and electricity costs.

Historically, the participating states have invested a significant portion of their auction proceeds in energy efficiency programs. According to RGGI's 2017 Investment Report, over the lifetime of the installed measures, the investments made in energy efficiency in 2017 alone are projected to save participants over \$879 million on energy bills, providing benefits to more than 291,000 participating households and 2,600 participating businesses. The investments are also projected to further avoid the release of 6.6 million short tons of CO<sub>2</sub> pollution.

The Department would also invest a portion of the proceeds in clean and renewable electricity generation, such as energy derived from clean or zero emissions sources including geothermal, hydropower, solar and wind. Clean and renewable energy systems reduce reliance on fossil fuels and provide climate resilience benefits, including reduced reliance on centralized power. They also offer the opportunity to save money on electricity costs by installing on-site renewable energy and also reduce power lost through transmission and distribution. Investing in clean and renewable projects will help this Commonwealth meet its climate goals, drive in-state investments and job creation, and lessen the pressure on the CO<sub>2</sub> allowance budget by generating more electricity without additional emissions.

The participating states invested 14% of their 2017 auction proceeds in clean and renewable energy projects. Over the lifetime of the projects installed in 2017, these investments are projected to offset \$329.6 million in energy expenses for nearly 500 households and businesses. The investments are also projected to avoid the release of 1.2 million short tons of CO<sub>2</sub> emissions.

The Department would also invest a portion of the proceeds in GHG abatement initiatives. GHG abatement includes a broad category of projects encompassing other ways of reducing GHGs, apart from energy efficiency and clean and renewable energy. Examples of potential programs in this Commonwealth include abandoned oil and gas well plugging, electric vehicle infrastructure, carbon capture, utilization and storage, combined heat and power, energy storage, repowering projects and vocational trainings, among others.

For reference, in 2017, an estimated 14% of RGGI investments were made in GHG abatement programs and projects. For the duration of the project lifetime, those investments are expected to avoid over 431,000 short tons of CO<sub>2</sub> emissions across the region.

The Department modeled an investment scenario with 31% of annual proceeds for energy efficiency, 32% for renewable energy and 31% for GHG abatement, and 6% for any programmatic costs related to administration and oversight of the CO<sub>2</sub> Budget Trading Program (5% for the Department and 1% for RGGI, Inc). These programmatic costs are in line with the historical amounts reserved by the participating states.

The results of the modeling show that this proposed rulemaking will not only combat climate change and improve air quality, but also provide positive economic value to this Commonwealth. The modeling estimates that from 2022 to 2030, this proposed rulemaking would lead to an increase in Gross State Product of \$1.9 billion and a net increase of 27,752 jobs in this Commonwealth. The Department's modeling also indicates that investments from this proposed rulemaking would spur an addition of 9.4 gigawatts (GW) of renewable energy and result in a load reduction of 29 Terawatt hours of electricity from energy efficiency projects.

#### *Benefits of Cap and Trade v. Traditional Command and Control*

In 2003, the EPA issued "A Guide to Designing and Operating a Cap and Trade Program for Pollution Control," in which the EPA detailed the benefits of cap and trade programs and the advantages they provide over more traditional approaches to environmental regulation. By establishing an emissions budget, cap and trade programs can provide a greater level of environmental certainty than other environmental policy options. The regulated sources, across the region, must procure allowances to cover emissions or risk being penalized for lack of compliance. Traditional command and control regulations, on the other hand, tend to rely on variable emission rates and usually only regulated existing or new sources. However, under cap and trade programs, new and existing sources must comply with the emissions budget. A cap and trade program may also encourage sources to achieve emission reductions in anticipation of future compliance, resulting in the earlier achievement of environmental and human health benefits. In fact, the Department's modeling shows that this is occurring as this Commonwealth prepares to participate in RGGI in 2022.

The EPA also noted in the guide that banking of allowances, which this proposed rulemaking allows, provides an additional incentive to reduce emissions earlier than required. Banking provides flexibility by allowing sources to save unused allowances for use in a later compliance period when the emissions budget is lower and the costs to reduce emissions may be higher. With command-and control, the regulating authority specifies sector-wide technology and performance standards that each of the affected sources must meet, whereas cap and trade provides sources with the flexibility to choose the technologies that minimize their costs while achieving their emission target. Cap and trade programs also provide more accountability than a command and control program. Under this proposed rulemaking and other cap and trade programs, sources must account for every ton of emissions they emit by acquiring allowances. On the other hand, command and control programs tend to rely on periodic inspections and assumptions that control technology is functioning properly to show compliance. See EPA, “Tools of the Trade: A Guide to Designing and Operating a Cap and Trade Program for Pollution Control,” June 2003, EPA430-B-03-002, <https://www.epa.gov/sites/production/files/2016-03/documents/tools.pdf>.

### *Compliance Costs*

This proposed rulemaking applies to owners or operators of fossil fuel-fired EGUs, with a nameplate capacity equal to or greater than 25 MWe. This proposed rulemaking is designed to effectuate least cost CO<sub>2</sub> emission reductions for the years 2022 through 2030. In addition to purchasing CO<sub>2</sub> allowances and completing offset projects to generate CO<sub>2</sub> offset allowances, CO<sub>2</sub> budget units may reduce their compliance obligations by reducing CO<sub>2</sub> emissions through other alternatives such as heat rate improvements, fuel switching and co-firing of biofuels.

To comply with this proposed rulemaking, each CO<sub>2</sub> budget unit will need to acquire CO<sub>2</sub> allowances equal to its CO<sub>2</sub> emissions. If CO<sub>2</sub> allowances are purchased through the multistate auctions, the owner or operator of a CO<sub>2</sub> budget unit will pay the auction allowance price, currently around \$5 per ton, for each ton of CO<sub>2</sub> the unit emits. As mentioned previously, reserved CO<sub>2</sub> CCR allowances can be released into the auction if allowance prices exceed predefined price levels, meaning emission reduction costs are higher than projected. The total cost of purchasing allowances will therefore vary per unit based on how much CO<sub>2</sub> the unit emits and the allowance price. The owner or operator may also purchase CO<sub>2</sub> allowances on the secondary market where they could potentially purchase CO<sub>2</sub> allowances at a price lower than the RGGI allowance price. CO<sub>2</sub> allowances also have no expiration date and can be acquired and banked to defray future compliance costs.

Since the Department will allocate CO<sub>2</sub> allowances to waste coal-fired units each year up to 9,300,000 allowances sector-wide, waste coal-fired units will incur minimal compliance costs. Owners or operators of waste coal-fired units will only need to purchase CO<sub>2</sub> allowances if the set-aside amount is exceeded. However, waste coal-fired units still have to comply with the other components of the regulation, including incorporating the CO<sub>2</sub> budget trading programs into their permits.

The requirements this proposed rulemaking would establish will require the owner or operator of an applicable source to submit a complete application for a new, renewed or modified permit and pay the associated fee. The application must be submitted by the later of 6 months after the effective date of this rulemaking or 12 months before the date on which the CO<sub>2</sub> budget source, or a new unit at the source, commences operation.

The Department estimates that the costs related to monitoring, recordkeeping and reporting will be minimal as this proposed rulemaking utilizes current methods and, in most instances, will require no additional emissions reporting. For instance, the continuous emission monitoring required under this proposed rulemaking is already in existence at the regulated source and the necessary emissions data is currently reported to the EPA. There may be minimal programmatic costs related to the submittal of compliance certification reports and auction, account, and offset project related forms.

Compliance costs will vary by CO<sub>2</sub> budget unit as the amount of CO<sub>2</sub> emitted is the primary driver of compliance costs. Overall CO<sub>2</sub> emissions are impacted by operational decisions such as run time, and by emissions intensity which varies by fuel type, and abatement technology employed. Additionally, certain sources may be eligible for set-aside allowances at no cost.

In 2022, this Commonwealth's CO<sub>2</sub> emissions from CO<sub>2</sub> budget sources are estimated to be 57 million short tons. Given the 3-year compliance schedule, all 57 million CO<sub>2</sub> allowances will not need to be purchased in the first year. The total amount of allowances available will decline as the amount of CO<sub>2</sub> emissions in this Commonwealth decline.

As CO<sub>2</sub> budget sources would need one allowance for each ton of CO<sub>2</sub> emitted, the owners or operators would need to acquire 57 million CO<sub>2</sub> allowances at the estimated 2022 allowance price of \$5.58 (2017\$/Ton). If these CO<sub>2</sub> allowances were all purchased at quarterly multistate auctions in 2022, the total purchase cost would be \$318 million. The CO<sub>2</sub> budget sources would then most likely incorporate this compliance cost into their offer price for electricity. The price of electricity is then passed onto electric consumers. However, that does not mean that \$318 million will be passed onto this Commonwealth's electric consumers.

#### *Electric Consumer Impact*

Historically, this Commonwealth has exported a third of its electricity generation, and that will continue into the future. In fact, if this Commonwealth participates in RGGI, electricity exports will increase even more than business-as-usual. Therefore, it can be expected that at least a third of the cost of compliance would be borne by out-of-state electric consumers. In 2022, this Commonwealth's net electricity exports are estimated at 68,000 gigawatt hours (GWh), representing 31% of this Commonwealth's 2022 electricity generation of 217,476 GWh. As a result, without factoring in the strategic investment of auction proceeds, the remaining 69% of the cost of compliance or \$219 million would be borne by this Commonwealth. This percentage is also dependent on the CO<sub>2</sub> emissions intensity of the exported generation. However, this does not mean that electric consumers in this Commonwealth will therefore pay \$219 million. There are several other factors involved in determining the impact on consumer electric bills.

According to the EIA's Annual Energy Outlook from January 2020, the major components of the United States average price of electricity in 2019 were 58% generation, 29% distribution and 13% transmission costs. This proposed rulemaking would only impact the generation portion of a consumer electric bill, which is a little more than half of the bill. The Department's modeling estimates that over the next decade wholesale energy prices will stay in between a range of an increase of 3% and a decrease of 3% as a result of this proposed rulemaking. That amounts to a roughly 1.5% increase or decrease in the average retail electricity rate, which is less than the swing in prices traditionally seen as a result of seasonal fluctuations in the energy market.

The average residential electric consumer in this Commonwealth spends from \$97.04 to \$136.60 per month depending on whether they heat their homes with electricity or another fuel source. Although electricity rates vary in this Commonwealth by Electric Distribution Company service territories, these bill amounts represent the average electricity rates across this Commonwealth.

If this proposed rulemaking is implemented and this Commonwealth begins participating in RGGI in 2022, residential electric consumer bills will increase by an estimated 1.5% in the short-term. This amounts to an additional \$1.46 to \$2.05 per month depending on the home heating source. However, the Department's modeling shows that this minor increase is temporary. As a result of the revenue reinvestments from the auction proceeds, by 2030, energy prices will fall below business-as-usual prices resulting in future consumer electricity cost savings. This means electric consumers will see greater electric bill savings in the future than if this proposed rulemaking were not implemented.

#### *Compliance Assistance Plan*

The Department will continue to educate and assist the public and the regulated community in understanding the proposed requirements and how to comply with them throughout the rulemaking process. The Department will continue to work with the Department's provider of Small Business Stationary Source Technical and Environmental Compliance Assistance. These services are currently provided by the Environmental Management Assistance Program (EMAP) of the Pennsylvania Small Business Development Centers. The Department has partnered with EMAP to fulfill the Department's obligation to provide confidential technical and compliance assistance to small businesses as required by the APCA, Section 507 of the CAA (42 U.S.C.A. § 7661f) and authorized by the Pennsylvania Small Business and Household Pollution Prevention Program Act (35 P.S. §§ 6029.201—6029.209).

In addition to providing one-on-one consulting assistance and on-site assessments, EMAP also operates a toll-free phone line to field questions from Pennsylvania small businesses, as well as businesses wishing to start up in, or relocate to, Pennsylvania. EMAP operates and maintains a resource-rich environmental assistance website and distributes an electronic newsletter to educate and inform small businesses about a variety of environmental compliance issues.

#### *Paperwork Requirements*

The recordkeeping and reporting requirements for owners and operators of applicable sources under this proposed rulemaking are minimal because the records required align with the records

already required to be kept for emission inventory purposes and for other federal and state requirements.

## **G. Pollution Prevention**

The Pollution Prevention Act of 1990 (42 U.S.C.A. §§ 13101—13109) established a National policy that promotes pollution prevention as the preferred means for achieving state environmental protection goals. The Department encourages pollution prevention, which is the reduction or elimination of pollution at its source, through the substitution of environmentally friendly materials, more efficient use of raw materials and the incorporation of energy efficiency strategies. Pollution prevention practices can provide greater environmental protection with greater efficiency because they can result in significant cost savings to facilities that permanently achieve or move beyond compliance.

This proposed rulemaking would help ensure that the citizens of this Commonwealth would benefit from reduced emissions of CO<sub>2</sub> from regulated sources. Reduced levels of CO<sub>2</sub> would promote healthful air quality and ensure the continued protection of the environment and public health and welfare.

## **H. Sunset Review**

This Board is not establishing a sunset date for this proposed rulemaking, since it is needed for the Department to carry out its statutory authority. The Department will closely monitor this proposed rulemaking after promulgation as a final-form rulemaking in the *Pennsylvania Bulletin* for its effectiveness and recommend updates to the Board as necessary.

## **I. Regulatory Review**

Under section 5(a) of the Regulatory Review Act (71 P.S. § 745.5(a)), on DATE, the Department submitted a copy of this proposed rulemaking to the Legislative Reference Bureau for publication in the *Pennsylvania Bulletin* and to the Independent Regulatory Review Commission (IRRC) and the Chairpersons of the House and Senate Environmental Resources and Energy Committees. In addition to submitting this proposed rulemaking, the Department has provided IRRC and the House and Senate Committees with a copy of a detailed Regulatory Analysis Form prepared by the Department. A copy of this material is available to the public upon request.

Under section 5(g) of the Regulatory Review Act, IRRC may convey any comments, recommendations or objections to the proposed rulemaking within 30 days of the close of the public comment period. The comments, recommendations or objections must specify the regulatory review criteria in section 5.2 of the Regulatory Review Act (71 P.S. § 745.5b) which have not been met. The Regulatory Review Act specifies detailed procedures for review, prior to final publication of the rulemaking by the Department, the General Assembly and the Governor.

## **J. Public Comments**

Interested persons are invited to submit to the Board written comments, suggestions, support, or objections regarding this proposed rulemaking. Comments, suggestions, support, or objections must be received by the Board by DATE.

Comments may be submitted to the Board by accessing the Board's online comment system at <http://www.ahs.dep.pa.gov/eComment>.

Comments may also be submitted by e-mail to [RegComments@pa.gov](mailto:RegComments@pa.gov). A subject heading of this proposed rulemaking and a return name and address must be included in each transmission.

If an acknowledgement of comments submitted online or by e-mail is not received by the sender within 2 working days, the comments should be retransmitted to the Board to ensure receipt. Comments submitted by facsimile will not be accepted.

Comments may also be submitted to the Board by mail or express mail. Written comments should be mailed to the Environmental Quality Board, P.O. Box 8477, Harrisburg, PA 17105-8477. Express mail should be sent to the Environmental Quality Board, Rachel Carson State Office Building, 16th Floor, 400 Market Street, Harrisburg, PA 17101-2301.

#### **K. Public Hearings**

The Board will hold public hearings for the purpose of accepting comments on this proposed rulemaking. The hearings will be held at \_\_\_ p.m. on the following dates:

\_\_\_\_\_ (blank) \_\_\_\_\_

Persons wishing to present testimony at a hearing are requested to contact the Environmental Quality Board, P.O. Box 8477, Harrisburg, PA 17105-8477, (717) 787-4526 at least 1 week in advance of the hearing to reserve a time to present testimony. Oral testimony is limited to 5 minutes for each witness. Witnesses are requested to submit three written copies of their oral testimony to the hearing chairperson at the hearing. Organizations are limited to designating one witness to present testimony on their behalf at each hearing.

Persons in need of accommodations as provided for in the Americans with Disabilities Act of 1990 should contact the Board at (717) 787-4526 or through the Pennsylvania AT&T Relay Service at (800) 654-5984 (TDD) or (800) 654-5988 (voice users) to discuss how the Board may accommodate their needs.

PATRICK McDONNELL,  
Chairperson