

**FINAL-FORM RULEMAKING
ENVIRONMENTAL QUALITY BOARD
[25 PA. CODE CH. 145]**

CO₂ Budget Trading Program

The Environmental Quality Board (Board) amends Chapter 145 (relating to interstate pollution transport reduction) to add Subchapter E (relating to CO₂ budget trading program) to establish a program to limit the emissions of carbon dioxide (CO₂) from fossil fuel-fired electric generating units (EGU) located in this Commonwealth, with a nameplate capacity equal to or greater than 25 megawatts (MWe) as set forth in Annex A.

This final-form rulemaking was adopted by the Board at its meeting of **DATE**, 2021.

A. Effective Date

This final-form rulemaking will be effective upon 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) 787-7196. Persons with a disability may use the Pennsylvania AT&T Relay Service, (800) 654-5984 (TDD users) or (800) 654-5988 (voice users). This final-form rulemaking is available on the Department of Environmental Protection's (Department) web site at www.dep.pa.gov (select "Public Participation," then "Environmental Quality Board").

C. Statutory Authority

This final-form 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 the APCA and not covered by fees required by section 502(b) of the Clean Air Act (CAA) (42 U.S.C.A. § 7661a(b)).

D. Background and Purpose

The purpose of this final-form rulemaking is to reduce anthropogenic emissions of CO₂, a greenhouse gas (GHG) and major contributor to climate change impacts, in a manner that is protective of public health, welfare and the environment in this Commonwealth. This final-form rulemaking would reduce CO₂ emissions from sources within this Commonwealth and establish the Commonwealth's participation in the Regional Greenhouse Gas Initiative (RGGI), a regional

CO₂ Budget Trading Program. This final-form rulemaking would establish a CO₂ Budget Trading Program for this Commonwealth which is capable of linking with similar regulations in states participating in RGGI (participating states). These independently promulgated and implemented CO₂ Budget Trading Program regulations together make up the regional CO₂ Budget Trading Program or RGGI.

This final-form rulemaking would effectuate least cost CO₂ emission reductions for the years 2022 through 2030. The declining CO₂ Emissions Budget in this final-form rulemaking directly results in CO₂ 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 97—227 million short tons of CO₂ that would have been emitted by EGUs in this Commonwealth over the next decade are avoided by participation in RGGI. According to data from the United States Energy Information Administration (EIA), this Commonwealth generates the fifth most CO₂ emissions from EGUs in the country. Since CO₂ emissions are a major contributor to regional climate change impacts, the Department developed this final-form rulemaking to establish this Commonwealth's participation in a regional approach that significantly reduces CO₂ emissions and this Commonwealth's contribution to regional climate change.

RGGI equity principles

Throughout the development and implementation of this final-form rulemaking, the Commonwealth is committed to striving to develop a power sector carbon-reduction program and investment strategy, through RGGI, that embodies a set of equity principles. These equity principles advance the Department's commitment to equity and were developed by the Department with input from environmental justice stakeholders, including the Department's Environmental Justice Advisory Board (EJAB). First, the Commonwealth will strive to inclusively gather public input using multiple methods of engaging the public, especially environmental justice communities and meaningfully consider that input in making decisions related to the design and implementation of the power sector carbon-reduction program and disseminate any final decisions that are made that affect such impacted communities in a timely manner. Second, the Commonwealth will strive to protect public health, safety and welfare, mitigating any adverse impacts on human health, especially in environmental justice communities and seek to ensure environmental and structural racism are not replicated in the engagement process. Third, the Commonwealth will strive to work equitably and with intentional consideration to distribute environmental and economic benefits of auction proceeds in communities that have been disproportionately impacted by air pollution. As part of this third principle, the Commonwealth will seek to address legacy impacts related to emissions and pollution in vulnerable populations and among environmental justice communities. The Commonwealth will also develop and provide data about emissions in environmental justice communities to inform the investment process. The development of an Annual Air Quality Impact Assessment is discussed further under the subsection titled "Modifications from RGGI Model Rule." Lastly, as part of the third principle, the Commonwealth will strive to provide access to investment programs for all members of the community, especially low-income communities.

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 10 years ago is being confirmed today. Climate change impacts are being caused by the emission and atmospheric concentration of GHGs, namely, but not exclusively, CO₂. Scientists have confirmed that increased CO₂ emissions from human activity are causing changes to global climate. Ninety-seven percent 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 United States National Academy of Sciences, the United States 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 CO₂ is a necessary element of life on Earth and acts as a fundamental aspect of nearly every critical system on the planet, CO₂ in high concentrations in the atmosphere leads to the greenhouse effect. The greenhouse effect occurs when CO₂ (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

Since 2009, the Department has released Climate Change Impacts Assessments, as required under the Pennsylvania Climate Change Act (71 P.S. §§ 1361.1—1361.8), which have underscored the critical need to take action to reduce GHG emissions and address climate change. The Department’s climate change impact assessments are available at <https://www.dep.pa.gov/Citizens/climate/Pages/CCAC.aspx>. On May 5, 2021, the Department with support from ICF and Penn State University, released the most recent Pennsylvania Climate Impacts Assessment. The 2021 Pennsylvania Climate Impacts Assessment found that the average annual temperature Statewide will continue to rise and is expected to increase by 5.9°F (3.3°C) by midcentury compared to a baseline period of 1971-2000. Additionally, this Commonwealth could experience more total average rainfall, occurring in less frequent but heavier rain events. Extreme rainfall events are projected to increase in magnitude, frequency, and intensity, while drought conditions are also expected to occur more frequently due to more extreme, but less frequent precipitation patterns.

There will also be more frequent and intense extreme heat events with temperatures expected to reach at least 90°F on 37 days per year on average across the State, up from the 5 days during the baseline period. Days reaching temperatures above 95°F and 100°F will become more frequent as well. These increasing temperatures will continue to alter the growing season and increase the number of days that individuals and businesses will have to run air conditioning. As heat waves become increasingly common, individuals will be more susceptible to health and economic risks. This is particularly true for vulnerable populations, including low-income populations, the elderly, pregnant women, people with certain mental illnesses, outdoor workers, and those with cardiovascular conditions. Most notable from the 2021 Pennsylvania Climate Impacts Assessment is that climate change will not affect all Pennsylvanians equally. Some may be more at risk because of their location, income, housing, health, or other factors. As shown by all of the Pennsylvania Climate Change Impacts Assessments, climate risks and related impacts in Pennsylvania could be severe, potentially causing increased infrastructure disruptions, higher risks to public health, economic impacts, and other changes, unless actions are taken by the Commonwealth to avoid and reduce the consequences of climate change.

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. 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 agriculture, forests, aquatic ecosystems, water resources, wildlife and public health across this Commonwealth. 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 2009, the Department released its first Climate Change Impacts Assessment which 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 United States Environmental Protection Agency (EPA) issued an "Endangerment Finding," that six GHGs—CO₂, 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 EPA's 2009 endangerment finding particularly concerned GHG emissions released from motor vehicles. However, in 2015, the EPA issued an endangerment finding for GHG emissions released from new EGUs through the promulgation of its regulation concerning "Standards of Performance for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units." See 80 FR 64509 (October 23, 2015). On January 19, 2021, the D.C. Circuit Court of Appeals affirmed that the endangerment finding issued for new EGUs provided a sufficient basis for the EPA's regulation controlling GHG emissions from existing EGUs, commonly known as the "Affordable Clean Energy Rule or ACE rule" in its decision vacating the rule and remanding it back to the EPA. See *Am. Lung Ass'n v. Env't Prot. Agency*, 985 F.3d 914, 977 (D.C. Cir. 2021). In other words, the EPA made a source-specific finding that GHG emissions, principally CO₂, from EGUs endanger public health and welfare and cause or contribute to climate change. Additionally, the EPA's Endangerment Findings are further reinforced by the findings of the USGCRP's Fourth National Climate Assessment (NCA4) which is consistent with the Commonwealth's 2015, 2020, and 2021 Climate Change Impacts Assessments. While these Federal studies inform the Department's decision to regulate CO₂ emissions within this Commonwealth, they are not determinative because this final-form rulemaking is being promulgated by the Board under the authority of the APCA, not the CAA.

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 United States 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 EPA, the United States Department of Energy and 11 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 2 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 few 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 threat of asthma is particularly pronounced in Philadelphia, which has especially high asthma prevalence and hospitalization rates – affecting approximately one out of four children in West Philadelphia alone. Asthma disproportionately affects African Americans and those below or near the poverty line, highlighting key environmental justice considerations for pollution control. See U.S. EPA Region 3, EPA Mid-Atlantic Recognizes First Asthma Community Champion, May 2021, <https://www.epa.gov/newsreleases/epa-mid-atlantic-recognizes-first-asthma-community-champion>. 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 2018, this Commonwealth generated net GHG emissions equal to 227.04 million metric tons CO₂ equivalent (MMTCo_{2e}) Statewide, the vast majority of which are CO₂ emissions. In the context of the world, this Commonwealth's electricity generation sector alone emits more CO₂ than many entire countries including Greece, Sweden, Israel, Singapore, Austria, Peru and Portugal. See Joint Research Centre, European Commission, "JRC Science for Policy Report: Fossil CO₂ emissions of all world countries," 2020, <https://publications.jrc.ec.europa.eu/repository/handle/JRC121460>.

Historically, the electricity generation sector has been the leading source of CO₂ 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. The Department's GHG inventory and related information is available at <https://www.dep.pa.gov/Citizens/climate/Pages/CCAC.aspx>. 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 CO₂ 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 final-form rulemaking predicts no further nuclear power plant retirements through 2030 with implementation of this final-form rulemaking. Without this final-form rulemaking, this Commonwealth's nuclear fleet may remain at-risk of closure. In fact, on March 13, 2020, Energy Harbor, the owner of the Beaver Valley nuclear power plant, responsible for 1,845 MW of carbon free generation, withdrew its closure announcement, specifically citing this Commonwealth's intended participation in RGGI as a key determinant in continuing operations.

This final-form rulemaking is necessary to ensure CO₂ 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 CO₂ emissions using a market-based approach. As the electricity generation sector remains one of the leading sources of CO₂ 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 Tom Wolf signed Executive Order 2019-01, Commonwealth Leadership in Addressing Climate Change and Promoting Energy Conservation and Sustainable Governance, codified at 4 Pa. Code §§ 5.1001—5.1009. 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 Department's climate action plans are available at <https://www.dep.pa.gov/Citizens/climate/Pages/CCAC.aspx>. 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 CO₂ 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 CO₂ emissions levels by 2030, which is equivalent to RGGI stringency.

On October 3, 2019, Governor Tom Wolf signed Executive Order 2019-07, Commonwealth Leadership in Addressing Climate Change through Electric Sector Emissions Reductions, codified at 4 Pa. Code §§ 7a.181—7a.183, which directed the Department to use its existing authority under the APCA to develop a rulemaking to abate, control or limit CO₂ emissions from fossil fuel-fired electric power generators. This Executive Order also directed the Department to present a proposed rulemaking to the Board by July 31, 2020. On June 22, 2020, Governor Tom Wolf amended this Executive Order to extend the deadline to September 15, 2020. As directed by this Executive Order, this final-form rulemaking establishes a CO₂ budget consistent in stringency to that established by the participating states, provides for the annual or more frequent auction of CO₂ emissions allowances through a market-based mechanism, and is sufficiently consistent with the RGGI Model Rule such that CO₂ allowances may be traded with holders of allowances from other states.

Considering that this Commonwealth has the fifth leading CO₂ emitting electricity generation sector in the country, this final-form rulemaking is a significant component in achieving the Commonwealth's goals to reduce GHG emissions. Although this final-form 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 final-form 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. To be proactive, this final-form rulemaking is needed to address this Commonwealth's contributions to climate change, particularly CO₂ emissions. The Board determined to address CO₂ 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. See 42 U.S.C.A. §§ 7651-7651o. 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. See generally, 63 FR 57356 (October 27, 1998). 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. 63 FR at 57458. 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 (SO₂) through a permanent cap on the total amount emitted by EGUs. See 24 Pa.B. 5899 (November 26, 1994) and 25 Pa. Code § 127.531 (relating to special conditions related to acid rain). 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 SO₂ emissions by 14.5 million tons (92%) from 1990 levels and 16.0 million tons (93%) from 1980 levels. Information related to the Acid Rain Program is available at <https://www.epa.gov/airmarkets/progress>. 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_x Budget Program, an allowance trading program designed to reduce summertime NO_x emissions from EGUs to reduce ground-level ozone, which included all the current states participating in RGGI. See 27 Pa.B. 5683 (November 1, 1997) and 25 Pa. Code §§ 123.101—123.121 (relating to NO_x Allowance Requirements). According to the OTC's NO_x Budget Program 1999—2002 Progress Report, NO_x Budget Program units successfully reduced ozone

season NO_x 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. The Progress Report is available on the EPA's webpage for the National Service Center for Environmental Publications, <https://nepis.epa.gov>. Based on the success of the OTC's NO_x Budget Program and the Acid Rain Program, in 2003 the EPA implemented a regional NO_x cap and trade program under the NO_x SIP Call, which closely resembled the OTC NO_x Budget Program. 63 FR 57356. The EPA again noted the cost savings of achieving emissions reductions through trading. The EPA's regional NO_x cap and trade program was adopted by the Board on September 23, 2000 to reduce NO_x emissions Statewide. See 30 Pa.B. 4899 (September 23, 2000) and 25 Pa. Code Chapter 145, Subchapter A (relating to NO_x Budget Trading Program).

Beginning in 2009, the EPA's NO_x Budget Trading Program was replaced by the Clean Air Interstate Rule (CAIR) trading program, covering 28 eastern states, which required further summertime NO_x reductions from the power sector as well as SO₂ reductions. See 70 FR 25162 (May 12, 2005). The Board adopted the CAIR program in 2008. See 38 Pa.B. 1705 (April 12, 2008) and 25 Pa. Code Chapter 145, Subchapter D (relating to CAIR NO_x and SO₂ Trading Programs). Finally, in 2015, CAIR was replaced by the Cross-State Air Pollution Rule trading program.

Regional Greenhouse Gas Initiative (RGGI)

RGGI is a cooperative regional market-based cap-and-trade program designed to reduce CO₂ emissions from fossil fuel-fired EGUs. RGGI is currently composed of eleven northeastern and Mid-Atlantic states, including Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, Vermont and Virginia. Since its inception on January 1, 2009, RGGI has utilized a market-based mechanism to cap and cost-effectively reduce CO₂ emissions that cause climate change. Because CO₂ from large fossil fuel-fired EGUs is a major contributor to regional climate change, the participating states developed a regional approach to address CO₂ 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 CO₂ Budget Trading Program regulations, based on the Model Rule, which link together. It is also important to note that States do not execute a multistate agreement or compact to participate in RGGI, and States may withdraw from participation at any time. There is also no central RGGI authority as States jointly oversee the program. The key piece to becoming a "participating state," as the term is defined under § 145.302 (relating to definitions), is the establishment of a corresponding regulation as part of the CO₂ Budget Trading Program. As defined under § 145.302, the "CO₂ Budget Trading Program" is a multi-state CO₂ air pollution control and emissions reduction program established under this final-form rulemaking and corresponding regulations in other participating states as a means of reducing emissions of CO₂ from CO₂ budget sources. For this Commonwealth to participate in RGGI, the Board is promulgating this final-form rulemaking which is consistent with the Model Rule.

RGGI is a "cap and trade" program that sets a regulatory limit on CO₂ emissions from fossil fuel-fired EGUs and permits trading of CO₂ 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 CO₂ emissions from fossil fuel-fired EGUs. The first prong is a declining CO₂ emissions budget and the second prong involves investment of the proceeds resulting from the auction of CO₂ allowances to further reduce CO₂ emissions.

CO₂ emissions budget and CO₂ allowance budget

Each participating state establishes its own annual CO₂ emissions budget which sets the total amount of CO₂ 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 CO₂ emissions budgets. This final-form rulemaking includes a declining annual CO₂ 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 CO₂ emissions in this Commonwealth by 31% compared to 2019. The declining annual CO₂ emissions budget is equivalent to the CO₂ allowance budget, which is the number of CO₂ allowances available each year. A CO₂ allowance represents a limited authorization by the Department or a participating state under the CO₂ Budget Trading Program to emit up to one ton of CO₂. The number of CO₂ allowances available each year decreases along with the CO₂ emissions budget.

One of the benefits of participating in a regional market-based program is that CO₂ allowances are fungible across the participating states. This means that regulated sources within this Commonwealth may, at their option, purchase or sell CO₂ allowances with other regulated sources inside or outside of this Commonwealth. Although this Commonwealth has an established CO₂ allowance budget for each year, this Commonwealth's CO₂ allowances are available to meet the compliance obligations in any other participating state and vice versa at the option of those regulated sources. Therefore, CO₂ emissions from this Commonwealth's power sector are not "capped" by the CO₂ emissions budget, meaning they are not limited to strictly the amount of this Commonwealth's CO₂ allowances. This provides additional compliance flexibility and the regional market assists in achieving least cost compliance for all participating states.

Authority to limit CO₂ emissions and to participate in RGGI through this final-form rulemaking

The Board has the authority to promulgate this final-form rulemaking under the APCA. Specifically, section 5(a)(1) of the APCA provides the Board with broad authority to adopt rules and regulations for the prevention, control, reduction and abatement of air pollution in this Commonwealth. The purpose of the APCA is expansive because it seeks "to protect the air resources of the Commonwealth to the degree necessary for the ... protection of public health, safety and well-being of its citizens ..." See 35 P.S. § 4002(a). When the APCA was enacted, the General Assembly was concerned with air pollution generally and that it be remedied no matter what the source. *Id.* This is shown by the broad scope of the definitions of "air contamination," "air pollution" and "air contamination source" under section 3 of the APCA (35 P.S. § 4003). The broad language in the APCA shows an over-all legislative policy to provide regulatory flexibility to the Board to address a pollutant like CO₂ proven to be inimical to public health and welfare and to be a key contributor to climate change. Therefore, this final-form rulemaking is consistent with the legislative intent and purpose 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 CO₂ pollution. CO₂ falls under the definition of "air pollution" in section 3 of the APCA. First, CO₂ is a gas, and falls within the definition of "air contaminant," under section 3 of the APCA, which is defined as "[s]moke, dust, fume, gas, odor, mist, radioactive substance, vapor, pollen or any combination thereof." By extension, CO₂ is also "air contamination," under section 3 of the APCA, which is defined as "[t]he presence in the outdoor atmosphere of an air contaminant which contributes to any condition of air pollution." The term "air pollution" is defined as "[t]he presence in the outdoor atmosphere of any form of contaminant ... in such place, manner or concentration inimical or which may be inimical to the public health, safety or welfare or which is or may be injurious to human, plant or animal life or to property or which unreasonably interferes with the comfortable enjoyment of life or property." Therefore, CO₂ is also considered to be "air pollution" under the APCA. Additionally, there is a significant body of scientific literature to show that CO₂ meets the definition of air pollution under the APCA. As mentioned previously, numerous sources, including the EPA, the Penn State University, the USGCRP and the IPCC, have confirmed that CO₂ emissions cause harmful air pollution that is inimical to the public health, safety and welfare, as well as human, plant and animal life. CO₂ is also a GHG and the largest contributor to climate change.

Section 5(a)(1) of the APCA also provides the Board with authority to regulate CO₂ emitted from fossil fuel-fired EGUs in this Commonwealth. Since the EGUs regulated under this final-form rulemaking emit CO₂, they fall within the definition of "air contamination source" under section 3 of the APCA, which is "[a]ny place, facility or equipment, stationary or mobile, at, from or by reason of which there is emitted into the outdoor atmosphere any air contaminant." As noted previously, the EPA has issued an Endangerment Finding for CO₂ emissions resulting from fossil fuel-fired EGUs. See 80 FR 64509 (October 23, 2015); *Am. Lung Ass'n v. Env't Prot. Agency*, 985 F.3d 914 (D.C. Cir. 2021). CO₂ is also a Federally regulated air pollutant under the CAA (42 U.S.C.A. §§ 7401—7671q). See *Massachusetts v. EPA*, 549 U.S. 497 (2007). Accordingly, regulating CO₂ emissions from fossil fuel-fired EGUs is necessary to protect public health and welfare from harmful air pollution and to address climate change.

In *Marcellus Shale Coalition v. Commonwealth*, 216 A.3d 448 (Cmwlth. Ct. 2019), the Commonwealth Court outlined the test for determining whether a legislative rulemaking has statutory authority. To determine whether a regulation is adopted within an agency's granted power, the Commonwealth Court stated that it looks to the statutory authority authorizing the agency to promulgate the legislative rule and examines that language to determine whether the rule falls within that grant of authority. The Court also found that the legislature's delegation must be clear and unmistakable. In particular, the Court considers the letter of the statutory delegation to create the rule and the purpose of the statute and its reasonable effect. *Id.*

As this final-form rulemaking would limit CO₂ pollution by regulating CO₂ emitted from fossil fuel-fired EGUs to ensure protection of public health, welfare and the environment, this final-form rulemaking is clearly within the Board's granted authority under the APCA and advances the purposes of the APCA to abate air pollution.

Furthermore, the auction proceeds amount to fees authorized under section 6.3(a) of the APCA and not an illegal tax. Section 6.3(a) of the APCA provides the Department with the

authority to establish fees to support the air pollution control program. The Department is limited by its existing statutory authority under Section 9.2(a) of the APCA (35 P.S. § 4009.2) to only use fees for “the elimination of air pollution.” Since the auction proceeds generated as a result of this final-form rulemaking would be used to reduce GHG emissions, further eliminating air pollution, the fees would be used to support the “air pollution control program” in accordance with section 6.3(a) of the APCA.

Under RGGI, regulated EGUs are required to purchase one CO₂ allowance per ton of CO₂ they emit through multistate auctions or on the secondary market. The proceeds of the multistate auctions are then provided back to the participating states. The purchase of CO₂ allowances generating auction proceeds is a fee because these purchases are one component of the “regulatory measures intended to cover the cost of administering a regulatory scheme authorized under the police power of the government.” See *City of Philadelphia v. Southeastern Pennsylvania Transp. Auth.*, 303 A.2d 247, 251 (1973). As mentioned previously, RGGI provides a “two-prong” approach to reducing CO₂ emissions from fossil fuel-fired EGUs. The second prong involves the proper investment of the auction proceeds to further reduce CO₂ emissions, as well as other harmful GHG emissions. This investment therefore fulfills the purpose and administration of this final-form rulemaking. This final-form rulemaking does not create a tax which is a “revenue-producing measure authorized under the taxing power of the government.” *Id.* The intent of RGGI is not to generate revenue for general government or public purposes, but to achieve a common goal of reducing CO₂ emissions from EGUs.

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) (relating to general). Under § 143.1(b), 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.

Lastly, Section 5(a)(1) of the APCA provides the Board with authority to establish a CO₂ Budget Trading Program through this final-form rulemaking. As mentioned previously, this Commonwealth has and continues to participate in cap and trade programs. Specifically, the Board promulgated the NO_x Budget Trading Program in Chapter 145, Subchapter A (relating to NO_x Budget Trading Program) and the CAIR NO_x and SO₂ Trading Programs in Chapter 145, Subchapter D (relating to CAIR NO_x and SO₂ Trading Programs). See 30 Pa.B. 4899 (September 23, 2000) and 38 Pa.B. 1705 (April 12, 2008). Although those cap and trade program regulations were promulgated in response to initiatives at the Federal level, both subchapters were promulgated under the broad authority of section 5(a)(1) of the APCA, as is this final-form rulemaking. The statutory authority granted to the Board under section 5(a)(1) of the APCA is broad related to the adoption of any rule or regulation for the “prevention, control, reduction and

abatement of air pollution." The comprehensive scope of this directive provides the Board with the discretion to promulgate a trading program to reduce CO₂ emissions from fossil fuel-fired EGUs in this Commonwealth.

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 CO₂ 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 nonprofits 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_x Budget Trading Program rule in 40 CFR Part 96 (relating to NO_x budget trading program and CAIR NO_x and SO₂ 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 CO₂ allowance budgets and consistency of regulatory language. This consistency is necessary to ensure the fungibility of CO₂ allowances across the participating states, which supports the regional trading of CO₂ allowances and the use of a CO₂ allowance issued in one participating state for compliance by a regulated source in another participating state.

This final-form rulemaking therefore adopts the main program elements of the RGGI Model Rule, including the definitions, applicability, standard regulatory requirements, monitoring and reporting requirements, the CO₂ Allowance Tracking System (COATS), the emissions containment reserve, the cost containment reserve and the CO₂ emissions offset project provisions. The CO₂ allowance budgets in this final-form rulemaking are sufficiently stringent to align with RGGI's goal of reducing CO₂ emissions by 30% from 2020 to 2030. This final-form rulemaking also contains regulatory language consistent with the RGGI, Inc. auction platform, the online platform used to sell CO₂ 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 CO₂ Budget Trading Programs. Each participating state is also allotted two positions on the Board of Directors of RGGI, Inc.

Under this final-form rulemaking, RGGI, Inc. would provide technical and administrative services to support the Department's implementation of this final-form rulemaking. This support would include maintaining COATS and the auction platform and providing assistance with market monitoring. Any assistance provided by RGGI, Inc. would follow the requirements of this final-form rulemaking. RGGI, Inc. has neither any regulatory or enforcement authority within this Commonwealth nor the ability to restrict or interfere with the Department's implementation of this final-form rulemaking.

Each participating state's regulation provides for the distribution of CO₂ allowances from its CO₂ allowance budget. The majority of CO₂ allowances are distributed at auction and each CO₂

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 CO₂ allowances to be "set-aside" in a designated account and distributed to advance individual state policy goals and objectives. Since this final-form rulemaking is consistent with the RGGI Model Rule, the Commonwealth's CO₂ allowances will have equal value to the CO₂ allowances held in the other participating states, meaning they may be freely acquired and traded across the region.

Although CO₂ 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 CO₂ allowance budget to a general account from which CO₂ allowances will be sold or distributed to provide funds for energy efficiency measures, renewable or noncarbon-emitting energy technologies, and CO₂ emissions abatement technologies, as well as programmatic costs. Consistent with the RGGI Model Rule, this final-form rulemaking establishes a general account from which CO₂ allowances will be sold or distributed, which is labeled as the Department's air pollution reduction account. Each year, the Department will allocate CO₂ allowances representing 100% of the tons of CO₂ emitted from the Commonwealth's CO₂ allowance budget to the air pollution reduction account, except for the CO₂ allowances that the Department has set aside for a designated purpose as discussed in the following section. CO₂ allowances in the air pollution reduction account will be sold or distributed to provide funds for use in the elimination of air pollution and programmatic costs.

Modifications from RGGI Model Rule

While this final-form rulemaking is sufficiently consistent with the Model Rule and corresponding regulations in the participating states, the Board, in the exercise of its own independent rulemaking authority, also accounts for the unique environmental, energy and economic intricacies of this Commonwealth. This provides the Board the flexibility to limit CO₂ emissions from fossil fuel-fired EGUs in a way that aligns with the other participating states, while tailoring this final-form rulemaking to this Commonwealth's energy markets. In this final-form 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 six main areas in which this final-form rulemaking differs from the Model Rule.

First, under § 145.306(b)(3) (relating to standard requirements), the Department is making an annual commitment to assess changes in emissions and air quality in this Commonwealth as it relates to implementation of this final-form rulemaking. The Board received several comments that requested monitoring of the air quality impacts of this final-form rulemaking and in particular an assessment of any impacts on environmental justice communities. The Department also heard concerns about potential impacts on environmental justice communities from members of EJAB. To address these concerns, the Department is committing to providing an Annual Air Quality Impact Assessment. The report will include at a minimum the baseline air emissions data from each CO₂ budget unit for the calendar year prior to the year this

Commonwealth becomes a participating state and the annual emissions measurements provided from each unit. The Department will not only be assessing the CO₂ emission data provided under the requirements of this final-form rulemaking but will be assessing the entirety of the data submitted from each CO₂ budget unit as required under the Department's regulations. The Department will assess the emission data to determine whether areas of this Commonwealth have been disproportionately impacted by increased air pollution as a result of implementation of this final-form rulemaking. The Department will also publish notice of the availability of the report and the determination in the *Pennsylvania Bulletin* on an annual basis.

Second, under § 145.342(i) (relating to CO₂ allowance allocations), the Department will set aside 10,400,000 CO₂ allowances at the beginning of each year for waste coal-fired units located in this Commonwealth. The amount of the set aside increased in this final-form rulemaking from 9,300,000 CO₂ allowances at proposed to account for one of the waste coal-fired units remaining in operation. That waste coal-fired unit had originally indicated it was shutting down operations when the Department was developing the proposed rulemaking. Since that waste coal-fired unit will remain in operation, its legacy emissions are now included in this final-form rulemaking. Legacy emissions, as defined under § 145.302, for that waste coal-fired unit amount to 1.1 million tons of CO₂ or 1.1 million CO₂ allowances. The Department added the 1.1 million to the proposed amount of 9.3 million which resulted in the set aside being 10,400,000 CO₂ allowances in this final-form rulemaking. The Department took into consideration all comments submitted pertaining to the waste coal set-aside and made the determination to maintain the set-aside provision, as well as the definition of legacy emissions that was included in the proposed rulemaking. The Department made this determination 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 encourage owners or operators of waste coal-fired units to continue burning waste coal to generate electricity. 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 CO₂ emissions from waste coal-fired units are included in this Commonwealth's CO₂ emissions budget and owners or operators of waste coal-fired units are still required to satisfy compliance of all the regulatory requirements in this final-form rulemaking. After reviewing the last 5 years of CO₂ emission data from waste coal-fired units, the Department determined that the CO₂ allowance set aside should be equal to the total of each waste coal-fired unit's highest year of CO₂ emissions from that 5-year period, referred to as "legacy emissions." That total is 10,400,000 tons of CO₂ emissions. Thus, the Department will set aside 10,400,000 CO₂ allowances annually. Each year, the Department will allocate the CO₂ 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 10,400,000 tons of CO₂ emissions sector-wide in any year, then the units must acquire the remaining CO₂ allowances needed to satisfy their compliance obligation.

Third, under § 145.342(j), the Department will set aside CO₂ allowances for a strategic use allocation. By April 1 of each calendar year, the Department will allocate any undistributed CO₂ allowances from the waste coal set-aside to the strategic use set-aside account. Given the possibility that waste coal-fired units may emit less than 10.4 million tons of CO₂ each year, the Department could be left with undistributed CO₂ allowances. Under the strategic use set-aside, the Department will allocate these undistributed CO₂ allowances directly to eligible projects that result in GHG emission reductions. Eligible projects include those that implement energy efficiency measures, implement renewable or noncarbon-emitting energy technologies, or develop innovative greenhouse gas emissions abatement technologies. In response to comments received, in this final-form rulemaking, the Department adjusted the strategic use set-aside provision to further clarify the process to apply for CO₂ allowances. The owner of an eligible project will need to submit a complete strategic use application to the Department. At a minimum the application must specify how the project will result in GHG emission reductions, the number of CO₂ allowances requested, and the calculations and supporting data used to determine the emission reductions. After verifying that the information in the application is complete and accurate, the Department will determine the number of CO₂ allowances to distribute based on the emission reductions achieved. The Department will then distribute CO₂ allowances upon completion of the eligible project and will not award CO₂ allowances to an eligible project that is required under law, regulation, or court order.

Fourth, under § 145.342(k), the Department will set-aside CO₂ allowances for combined heat and power units. The proposed rulemaking included a set-aside provision for cogeneration units, which also covered combined heat and power (CHP) systems. In this final-form rulemaking, the Department changed the name of the set-aside from “cogeneration” to “combined heat and power.” This change was made to clarify that it is CHP units that will be qualified for CO₂ allowances under the set-aside provision. A CHP unit is defined as an electric-generating unit that simultaneously produces both electricity and useful thermal energy. Due to the efficiency and environmental benefits that CHP units provide; the Department understands that it is beneficial to incentivize new CHP buildout in this Commonwealth. In addition, incentivizing future CHP units provides economic development benefits and can be a significant factor for manufacturers and other industrial facilities looking to expand operations within or to this Commonwealth. In fact, the most recent Pennsylvania Climate Action Plan recognized the benefits and importance of incentivizing CHP. In the proposed rulemaking, the Department included a set provision that involved adjusting the compliance obligation of a CHP unit. As proposed, the Department would have adjusted the compliance obligation by reducing the total CO₂ emissions by an amount equal to the CO₂ 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. In this final-form rulemaking, the Department instead includes two tiers for the retirement of CO₂ allowances from the combined heat and power set-aside account. Under the first tier, which is an addition at final-form, applicable combined heat and power units may request that the Department retire CO₂ allowances equal to the total amount of CO₂ emitted as a result of providing all useful thermal energy and electricity during each allocation year. Under the second tier, which was included in the proposed rulemaking, applicable combined heat and

power units may request that the Department retire CO₂ allowances equal to the partial amount of CO₂ emitted as a result of supplying useful thermal energy or electricity, or both, to an interconnected industrial, institutional or commercial facility during the allocation year. This two-tier approach aligns the overall environmental benefits of CHP units with the CO₂ allowances that may be requested.

As in the proposed rulemaking, the combined heat and power units must submit a complete application to request that CO₂ allowances be retired by the Department on behalf of the unit. The Department added in this final-form rulemaking that if the unit is requesting total retirement of CO₂ allowances, then the unit must satisfy the more stringent requirements. The unit must submit an application including documentation that the useful thermal energy is at least 25% of the total energy output of the combined heat and power unit on an annual basis and that the overall efficiency of the combined heat and power unit is at least 60% on an annual basis. If the unit is requesting partial retirement of CO₂ allowances, the unit must submit an application which includes documentation of the amount of useful thermal energy or electricity, or both, supplied to an interconnected industrial, institutional or commercial facility. Unlike the waste coal set-aside, the Department would not distribute CO₂ allowances directly to the unit, but rather retire CO₂ allowances on behalf of the unit to reduce its compliance obligation. The owner or operator of a unit requiring additional CO₂ allowances to satisfy the CO₂ requirements under § 145.306(c) shall transfer CO₂ allowances for compliance deductions to the compliance account of the unit.

Fifth, under § 145.305 (relating to limited exemption for CO₂ budget units with electrical output to the electric grid restricted by permit conditions), the Board provides additional flexibility in the form of a limited exemption for CHP units that are interconnected and supply power to an industrial, institutional or commercial facility. In the proposed rulemaking, the interconnected facility was required to be a manufacturing facility. In response to comments received, in this final-form rulemaking, the Department broadened the language to allow for the interconnected facility to be an industrial, institutional or commercial facility. A CHP unit that supplies less than 15% of its annual total useful energy to the electric grid, not including energy sent to the interconnected facility, does not have a compliance obligation under this final-form rulemaking. The owner or operator of the CHP 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 CHP units that primarily send energy to an interconnected facility because these CHP units provide a CO₂ emission reduction benefit. These units provide useful thermal energy, a byproduct of electricity generation, to the interconnected facility which helps prevent the need for the facility to run additional boilers onsite to generate electricity which in turn avoids additional CO₂ emissions.

Lastly, this final-form rulemaking includes §§ 145.401—145.409 (relating to CO₂ allowance auctions) outlining the procedure for auctioning CO₂ allowances, which is not contained in the RGGI Model Rule. Several participating states have also added auction procedure language to their CO₂ Budget Trading Program regulations or developed separate auction regulations. By including the auction procedure in this final-form rulemaking, the Board seeks to ensure that auction participants fully understand the auction process and the associated requirements.

In § 145.401 (relating to auction of CO₂ allowances), the Board includes a provision for the Department to participate in multistate CO₂ 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. The criteria that the Department will use to determine if the multistate auction "meets or exceeds the benefits" of a Pennsylvania-run auction are whether the auction results in reduced emissions and environmental, public health and welfare, and economic benefits. As discussed further under section G, participation in RGGI would provide those benefits to this Commonwealth. Additionally, the multistate auction process must be consistent with the process described in this final-form rulemaking and include monitoring of each CO₂ 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 final-form rulemaking, the Board provides for flexibility in case the benefits of the multistate auctions diminish in the future.

Compliance and the RGGI CO₂ Allowance Tracking System (COATS)

Under § 145.304 (relating to applicability), 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 will have a compliance obligation. These regulated EGUs are referred to as "CO₂ budget units" and a facility that includes one or more CO₂ budget units is a "CO₂ budget source," as defined under § 145.302. Under § 145.306, the owner or operator of each CO₂ 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 CO₂ Budget Trading Program. The owner or operator will be required to operate the CO₂ budget source and each CO₂ 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 2020, 63 CO₂ budget sources (facilities) with 150 CO₂ budget units would have a compliance obligation under this final-form rulemaking. However, due to the dynamic nature of the electricity generation sector, the number of covered facilities will likely change by the time this final-form rulemaking is implemented. The Department projects based on announced closures and future firm capacity builds that in 2022, there will be 66 CO₂ budget sources with 158 CO₂ budget units with a compliance obligation under this final-form rulemaking. The Department conducted an analysis of power sector emissions and the facilities that meet the applicability criteria in this final-form rulemaking and determined that around 99% of this Commonwealth's power sector CO₂ emissions would be covered under this final-form rulemaking.

Within the participating states and under this final-form rulemaking, the owner or operator of a CO₂ budget unit must obtain one CO₂ allowance for each ton of CO₂ emitted from the CO₂ budget unit each year. The owner or operator may use a CO₂ allowance issued by any

participating state to demonstrate compliance with any state's regulation, including this final-form rulemaking. RGGI operates on 3-year control periods for compliance, meaning full compliance is evaluated at the end of each 3-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 CO₂ allowances in their compliance account to cover the CO₂ budget source's CO₂ 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 CO₂ allowances equal to 50% of CO₂ emissions in the compliance account for the CO₂ budget source. As outlined under § 145.355 (relating to compliance), at the end of the control period or interim control period, CO₂ allowances will be deducted from each CO₂ budget source's compliance account to cover each of the CO₂ budget unit's CO₂ emissions at the source for the control period or interim control period.

All owners or operators of CO₂ budget sources are required to open a compliance account in COATS to transfer and hold CO₂ allowances for compliance purposes. The Department will use COATS to determine compliance with this final-form rulemaking by comparing the covered emissions of a CO₂ budget source with the CO₂ allowances held in its compliance account. COATS is a publicly accessible platform that records and tracks data for each state's CO₂ Budget Trading Program, including the transfer of CO₂ allowances that are offered for sale by the participating states and purchased in the quarterly auctions. On the COATS web site, the public can view and download reports of RGGI program data and CO₂ allowance market activity. COATS is used to allocate, award and transfer CO₂ allowances, to certify and provide CO₂ allowances for compliance-related tasks, and to register and submit applications and reports for offset projects.

Under § 145.352 (relating to establishment of accounts), any person may apply to open a general account for the purpose of holding and transferring CO₂ 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 CO₂ allowances in COATS, but unlike a compliance account, it does not provide for the CO₂ allowance compliance deduction process outlined in this final-form rulemaking. A compliance account is associated with an electric generation facility regulated under a state CO₂ Budget Trading Program, a CO₂ budget source. These accounts are used for compliance with the requirements of each state's CO₂ Budget Trading Program. Only one compliance account will be assigned to each CO₂ budget source. An applicant must have either a general or compliance account to participate in CO₂ allowance auctions. CO₂ allowances can be "banked" meaning they may be held for future compliance as they have no expiration date.

CO₂ allowances may be acquired through purchases in quarterly multistate auctions, through secondary markets, or by obtaining CO₂ offset allowances. Once a CO₂ allowance is purchased in an auction, it can then be resold in the secondary market. The secondary market assists with compliance by allowing CO₂ 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 to identify anticompetitive conduct. The quarterly multistate auction process continues each consecutive

year of the CO₂ Budget Trading Program with fewer CO₂ allowances distributed into the auctions by the participating states each year.

As provided under section 4 of the Environmental Hearing Board Act (35 P.S. § 7514) persons adversely affected by a final Department action have the opportunity to appeal that action to the Environmental Hearing Board.

Offsets

As an additional compliance option under this final-form rulemaking, owners or operators of CO₂ budget sources may complete an offset project to reduce or avoid atmospheric loading of CO₂ or CO₂ equivalent (CO₂e) emissions. CO₂e refers to the quantity of a given GHG, other than CO₂, multiplied by its global warming potential. By completing an offset project, the owner or operator will generate CO₂ offset allowances which can be used to offset a portion of the CO₂ budget source's emissions. A CO₂ offset allowance is equivalent to a CO₂ allowance, however a CO₂ 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), consistent with the RGGI Model Rule and the regulations in the participating states, the number of CO₂ offset allowances available to be deducted for compliance purposes may not exceed 3.3% of the CO₂ budget source's CO₂ emissions for a control period or interim control period.

As described under § 145.395 (relating to CO₂ 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 CO₂ 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 final-form rulemaking. These requirements ensure that awarded CO₂ offset allowances represent CO₂e emission reductions or carbon sequestration that are real, additional, verifiable, enforceable and permanent.

Under § 145.393 (relating to general requirements), 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 CO₂e emission reductions or carbon sequestration occurs in this Commonwealth. Massachusetts, New Hampshire, Rhode Island and Virginia have determined not to award CO₂ offset allowances, but CO₂ budget sources located within those states may use CO₂ offset allowances awarded by a participating state, including this Commonwealth. By recognizing CO₂e emission reductions and carbon sequestration outside the electric generation sector and this Commonwealth's CO₂ 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 final-form 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 purpose of this final-form rulemaking, which is to reduce anthropogenic emissions of CO₂, a greenhouse gas, from CO₂ budget sources in a manner that is protective of public health, welfare and the environment. By requiring the attainment of CO₂ allowances, this final-form rulemaking establishes a monetary obligation per ton of CO₂ emitted from a CO₂ budget source. The value of CO₂ allowances is used to further support the CO₂ Budget Trading Program and reduce GHG emissions and any associated costs related to achieving the emission reduction goals. The CO₂ 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 CO₂ emissions. The fee amounts generated each year is a function of the CO₂ allowance budget and the CO₂ 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. The investment of auction proceeds is discussed further under section G.

Benefits

In addition to decreasing CO₂ emissions and addressing this Commonwealth's contribution to regional climate change impacts, this final-form rulemaking would provide numerous co-benefits to public health and welfare and the environment. The co-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_x, SO₂ 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 the novel coronavirus (COVID-19). As such, reductions in CO₂ 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 final-form rulemaking are discussed further under section G.

RGGI provides regulatory certainty

This final-form rulemaking provides regulatory certainty for CO₂ 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 CO₂ 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 CO₂ 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 CO₂ 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 the cost of compliance for covered entities. CO₂ 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 (RRA) (71 P.S. §§ 745.1—745.15) 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. The Department, working with the Public Utility Commission (PUC), engaged with PJM Interconnection to promote the integration of the CO₂ Budget Trading program in a manner that preserves orderly and competitive economic dispatch within PJM and minimizes emissions leakage. The Department also met with various stakeholders to receive additional input on this final-form 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 final-form rulemaking.

Additionally, the Department consulted with the Air Quality Technical Advisory Committee (AQTAC), the Citizens Advisory Council (CAC), the Small Business Compliance Advisory Committee (SBCAC), and the Environmental Justice Advisory Board (EJAB) throughout the development of this final-form rulemaking.

Air Quality Technical Advisory Committee (AQTAC)

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 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 proposed Annex A. At the April 16, 2020, AQTAC meeting, the Department provided a brief update on the development of the draft proposed rulemaking. In response to requests from committee members for more opportunities to learn about the CO₂ Budget Trading Program, on April 23, 2020, the Department presented on and provided the modeling results associated with the draft proposed rulemaking in a Special Joint Informational Meeting of AQTAC and CAC. The meeting was held by means of a webinar and over 225 members of the public were able to listen to the modeling results. Individuals interested in hearing the modeling results can also watch the meeting at any time through a link on the Department's web site.

On May 7, 2020, the draft proposed rulemaking was presented to AQTAC for review and technical advice before the Department moved the draft proposed rulemaking forward to the Board for consideration. The meeting was held by means of 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 on the draft proposed rulemaking and ultimately declined to do so without a majority decision.

On April 8, 2021, the Department presented an update on this final-form rulemaking to AQTAC. The update included information on the regulatory process, a summary of the comments received, the Department's key proposed regulatory changes from proposed to final, and the Department's public outreach efforts. On May 17, 2021, at a special AQTAC meeting, the Department presented this final-form rulemaking and updated power sector modeling results. After the Department answered the members' remaining questions on this final-form rulemaking, the members voted in support of recommending that the Department move this final-form rulemaking forward to the Board. The supportive vote is particularly notable considering that the same committee had been divided on whether to concur with the draft proposed rulemaking.

The opportunity to provide public comment on the draft proposed rulemaking to AQTAC members was provided on three occasions, at the February 13, 2020, April 16, 2020, and May 7, 2020, AQTAC meetings. Additionally, the opportunity to provide public comment on this final-form rulemaking to AQTAC members was provided on April 8, 2021, and May 17, 2021.

Citizens Advisory Council (CAC)

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 proposed Annex A. On April 23, 2020, the Department presented on and provided the modeling results associated with the draft proposed rulemaking in a Special Joint Informational Meeting of AQTAC and CAC. The Department also conferred with CAC's Policy and Regulatory Oversight Committee concerning the draft proposed rulemaking on May 8, 2020. At the May 19, 2020, CAC meeting, the draft proposed rulemaking was presented to CAC for review before the Department moved the draft 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 the draft proposed rulemaking forward to the Board for consideration.

On April 20, 2021, the Department presented an update on this final-form rulemaking to CAC. The update included information on the regulatory process, a summary of the comments received, the Department's key proposed regulatory changes from proposed to final, and the Department's public outreach efforts. On May 19, 2021, the Department presented this final-form rulemaking and updated power sector modeling results to CAC. After the Department answered the members remaining questions on this final-form rulemaking, the members voted in support of recommending that the Department move this final-form rulemaking forward to the Board. Again, the supportive vote is particularly notable considering that the same committee had been divided on whether to concur with the draft proposed rulemaking.

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

May 19, 2020, CAC meetings. Additionally, the opportunity to provide public comment on this final-form rulemaking to CAC members was provided on April 20, 2021, and May 19, 2021.

Small Business Compliance Advisory Committee (SBCAC)

Under section 7.8 of the APCA (35 P.S. § 4007.8), the SBCAC is required to review and advise the Department on rulemakings which affect small business stationary sources. The Department provided informational presentations on the draft proposed rulemaking to SBCAC on January 22, 2020, and April 22, 2020. On July 22, 2020, the Department presented the draft proposed rulemaking to SBCAC for review and advice on the potential small business stationary source impact of the draft proposed rulemaking. During the presentation, the Department mentioned that it had estimated that ten small business stationary sources, as defined under section 3 of the APCA (35 P.S. § 4003), may need to comply with the draft proposed rulemaking. Of those ten sources, seven were estimated to be waste coal-fired power plants. The Department also mentioned that it had included in the draft proposed rulemaking a CO₂ 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 the draft proposed rulemaking forward to the Board.

On May 19, 2021, the Department presented this final-form rulemaking and updated power sector modeling results to SBCAC. During the presentation, the Department mentioned that it had estimated that now twelve small business stationary sources, as defined under section 3 of the APCA (35 P.S. § 4003), may need to comply with this final-form rulemaking. Of those twelve sources, eight were estimated to be waste coal-fired power plants. The Department also mentioned that, in the final-form rulemaking, it had retained the CO₂ allowance set-aside provision to assist all waste coal-fired power plants located in this Commonwealth with their compliance obligation. After the Department answered the members' remaining questions on this final-form rulemaking, the members voted in support of recommending that the Department move this final-form rulemaking forward to the Board. In light of the SBCAC vote in opposition to the draft proposed rulemaking, the members' support of this final-form rulemaking is particularly significant.

Environmental Justice Advisory Board (EJAB)

Additionally, the Department provided an informational presentation on the draft proposed rulemaking to EJAB on May 21, 2020, and had further engagement with Environmental Justice stakeholder groups such as the Chester Environmental Partnership and EJ Stakeholders Group throughout 2020. On July 16, 2020, the Department participated in a discussion with EJAB members centered around recommendations to the Department regarding RGGI. This conversation continued at the August 11, 2020, meeting and resulted in recommendations shared with the Department regarding RGGI program implementation in addition to review and discussion of the draft RGGI equity principles, developed in conjunction with the Advisory Committee. Discussion and consultation with EJAB regarding the draft RGGI Equity Principles continued during the November 17, 2020, meeting.

On May 20, 2021, the Department provided a presentation on the final rulemaking and updated power sector modeling, specifically highlighting environmental justice and equity concerns and how these were addressed in the rulemaking and would be addressed in an investment plan. The Delta Institute, with whom the Department collaborated to conduct outreach and research in communities impacted by this final-form rulemaking, also presented their findings and recommendations for the Department's efforts in affected communities. The Department also provided an opportunity to present public comments at this meeting. While EJAB did not vote on the draft proposed rulemaking in 2020, the EJAB members decided to vote unanimously in support of the Department moving this final-form rulemaking forward to the Board.

Other Advisory Committees

The Department also provided informational presentations on the draft proposed rulemaking to the Climate Change Advisory Committee on February 25, 2020, and the Oil and Gas Technical Advisory Board on May 20, 2020. Additionally, the Department provided updates to these committees on this final-form rulemaking.

E. Summary of Final-Form Rulemaking and Changes from Proposed to Final-Form Rulemaking

General provisions

§ 145.301. Purpose

This section establishes the purpose of the CO₂ Budget Trading Program.

No change is made to this section from proposed to final-form rulemaking.

§ 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—CO₂ allowance tracking system," "COATS account," "CO₂ allowance," "CO₂ allowance auction or auction," "CO₂ allowance deduction or deduct CO₂ allowances," "CO₂ allowances held or hold CO₂ allowances," "CO₂ allowance price," "COATS account," "CO₂ allowance transfer deadline," "CO₂ authorized account representative," "CO₂ authorized alternate account representative," "CO₂ budget emissions limitation," "CO₂ budget permit condition," "CO₂ budget source," "CO₂ Budget Trading Program," "CO₂ budget unit," "CO₂ CCR allowance or CO₂ cost containment reserve allowance," "CO₂ CCR trigger price or CO₂ cost containment reserve trigger price," "CO₂ ECR allowance or CO₂ emissions containment reserve allowance," "CO₂ ECR trigger price or CO₂ emissions containment reserve trigger price," "CO₂e—CO₂ equivalent," "CO₂ offset allowance," "combined heat and power set-aside account," "combined heat and power unit," "combined cycle

system," combustion turbine," "commence commercial operation," "commence operation," "compliance account," "control period," "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 CO₂ allowance auction," "operator," "owner," "participating state," "Pennsylvania CO₂ budget trading program adjusted budget," "Pennsylvania CO₂ 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," "total useful energy," "undistributed CO₂ allowance," "uniform-price, sealed-bid auction," "unit," "unit operating day," "unsold CO₂ 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.

This section is amended at final-form rulemaking to modify the definition of “allocate or allocation” by replacing the term “cogeneration” with “combined heat and power.” The Board also modified the definition of “cogeneration set-aside account” at final-form to change it to “combined heat and power set-aside account” and to reflect the changes made to the combined heat and power set-aside provision under § 145.342(k). The Board also modified the definition of “cogeneration unit” to change it to “combined heat and power unit” and to clarify the production requirements for the electric-generating unit. The Board modified the definition of “control period” to remove the part of the definition that indicates when Pennsylvania will participate in the CO₂ Budget Trading Program. The Board modified the definition of “minimum reserve price” by removing the price for calendar year 2020 and adding the price for calendar year 2021. The Board modified the definition of “strategic use set-aside account” to reflect the changes made to the strategic use set-aside provision under § 145.342(j). The Board also added a definition for the term “total useful energy.” The Board slightly modified the definition of “undistributed CO₂ allowance” to reflect the proper verb tense. The Board modified the definition of “useful thermal energy” to add that the energy may come in the form of air. The Board modified the definition of “waste coal” to indicate that the term “waste coal” is defined within the definition of “alternative energy sources” under section 2 of the Alternative Energy Portfolio Standards Act (73 P.S. § 1648.2).

§ 145.303. *Measurements, abbreviations and acronyms*

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

No change is made to this section from proposed to final-form rulemaking.

§ 145.304. *Applicability*

This section establishes that this final-form rulemaking would apply to the owner or operator of a CO₂ 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 CO₂ budget source is any source that includes one or more CO₂ budget unit.

This section is amended at final-form rulemaking to remove the provision under subsection (a) indicating that applicable CO₂ budget units are in operation at any time on or after January 1, 2005 in response to comments that the date is unnecessary and may cause confusion.

§ 145.305. *Limited exemption for CO₂ budget units with electrical output to the electric grid restricted by permit conditions*

This section establishes a limited exemption as well as compliance requirements for a CO₂ budget source that has a permit issued by the Department containing a condition restricting the supply of the CO₂ 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 industrial, institutional or commercial facility to which the CO₂ budget source is interconnected.

This section is amended at final-form rulemaking to remove the language under subsection (a) indicating that the interconnected facility has to be a manufacturing facility and to instead broaden the language to allow for the interconnected facility to be an industrial, institutional or commercial facility. This amendment was made based on comments received that the prior exemption language was too narrow. This section is also amended to replace the January 1, 2022 commencement dates under subsection (c)(5) with an editor's note indicating that the commencement date shall be January 1, 2022, or the date of publication of the final-form rulemaking in the *Pennsylvania Bulletin*, whichever is later.

§ 145.306. *Standard requirements*

This section establishes the standard permit, monitoring, CO₂, excess emissions and recordkeeping and reporting requirements. This section also proposes to establish liability for the CO₂ authorized account representative and the owner or operator of a CO₂ budget source or CO₂ budget unit.

This section is amended at final-form rulemaking to add a provision under subsection (b)(3) for the Department to use the emissions measurements recorded and reported under Article III to determine whether areas of this Commonwealth have been disproportionately impacted by increased air pollution as a result of implementation of this final-form rulemaking. The Department will publish notice of the availability of a report of the emissions measurements and the determination in the *Pennsylvania Bulletin* on an annual basis, including the baseline air emissions data and the annual emissions measurements. This provision was added in response to comments received recommending that the Department ensure that this final-form rulemaking does not disproportionately impact environmental justice and low-income communities in this Commonwealth.

This section is also amended to replace the January 1, 2022 start date under subsection (c) for CO₂ budget units to be subject to the CO₂ requirements with an editor's note indicating that the start date will either be January 1, 2022, or the first day of the next calendar quarter following the date of publication of the final-form rulemaking in the *Pennsylvania Bulletin*, whichever is later.

§ 145.307. *Computation of time*

This section establishes the computation of any time period scheduled under the CO₂ Budget Trading Program.

No change is made to this section from proposed to final-form rulemaking.

CO₂ authorized account representative for a CO₂ budget source

§ 145.311. *Authorization and responsibilities of the CO₂ authorized account representative*

This section establishes the authorization and responsibilities of the CO₂ authorized account representative.

No change is made to this section from proposed to final-form rulemaking.

§ 145.312. *CO₂ authorized alternate account representative*

This section establishes the requirements for the designation of no more than one CO₂ authorized alternate account representative to act on behalf of the CO₂ authorized account representative.

No change is made to this section from proposed to final-form rulemaking.

§ 145.313. *Changing the CO₂ authorized account representative and the CO₂ authorized alternate account representative; changes in the owner or operator*

This section establishes the process and requirements for changing the CO₂ authorized account representative or the CO₂ authorized alternate account representative. This section also proposes to establish the process and requirements for changes in the owner or operator.

No change is made to this section from proposed to final-form rulemaking.

§ 145.314. *Account certificate of representation*

This section establishes the elements of a complete account certificate of representation for a CO₂ authorized account representative or a CO₂ authorized alternate account representative.

No change is made to this section from proposed to final-form rulemaking.

§ 145.315. *Objections concerning the CO₂ authorized account representative*

This section establishes the procedure for objections concerning the CO₂ authorized account representative.

No change is made to this section from proposed to final-form rulemaking.

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

This section establishes a provision for a CO₂ authorized account representative, or a CO₂ authorized alternate account representative to delegate their authority to make an electronic submission in COATS.

No change is made to this section from proposed to final-form rulemaking.

Permits

§ 145.321. General requirements for a permit incorporating CO₂ Budget Trading Program requirements

This section establishes the requirement for each CO₂ budget source to have a permit issued under Chapter 127 that incorporates the CO₂ Budget Trading Program requirements.

No change is made to this section from proposed to final-form rulemaking.

§ 145.322. Submission of an application for a new, renewed or modified permit incorporating CO₂ Budget Trading Program requirements

This section establishes the process and deadlines for the CO₂ authorized account representative to submit a complete permit application to the Department.

No change is made to this section from proposed to final-form rulemaking.

§ 145.323. Contents of an application for a permit incorporating CO₂ Budget Trading Program requirements

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

No change is made to this section from proposed to final-form rulemaking.

Compliance certification

§ 145.331. Compliance certification report

This section establishes the requirement for a CO₂ authorized account representative of a CO₂ budget source to submit to the Department a compliance certification report for each control period. The section proposes to include the required contents of the report and compliance certification.

No change is made to this section from proposed to final-form rulemaking.

§ 145.332. *Department action on compliance certifications*

This section establishes a provision for the Department or its agent's review of compliance certifications, the ability to conduct independent audits of submissions and to deduct or transfer CO₂ allowances based on the information in the compliance certification.

No change is made to this section from proposed to final-form rulemaking.

CO₂ allowance allocations

§ 145.341. *Pennsylvania CO₂ Budget Trading Program base budget*

This section establishes the Pennsylvania CO₂ Budget Trading Program declining base budget for the years 2022 through 2030 and each succeeding calendar year. For example, for 2022, if Pennsylvania is a participating state on January 1, 2022, the Pennsylvania CO₂ Budget Trading Program base budget is 78,000,000 tons. By 2030 and each succeeding calendar year, the Pennsylvania CO₂ Budget Trading Program base budget is 58,085,040 tons.

This section was amended at final-form rulemaking to add quarterly provisions under subsection (a) for the 2022 Pennsylvania CO₂ Budget Trading Program Base Budget if Pennsylvania is a participating state after January 1, 2022. If Pennsylvania is a participating state after January 1, 2022, but before or on April 1, 2022, then the Pennsylvania CO₂ Budget Trading Program Base Budget is 57,954,000 Tons. If Pennsylvania is a participating state after April 1, 2022, but before or on July 1, 2022, then the Pennsylvania CO₂ Budget Trading Program Base Budget is 40,716,000 Tons. If Pennsylvania is a participating state after July 1, 2022, but before or on October 1, 2022, then the Pennsylvania CO₂ Budget Trading Program Base Budget is 18,564,000 Tons.

§ 145.342. *CO₂ allowance allocations*

Subsection (a) establishes that the Department will allocate CO₂ allowances representing 100% of the tons for each allocation year from the Pennsylvania CO₂ 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 combined heat and power. Subsection (b) was amended at final-form rulemaking to replace the term “cogeneration” with “combined heat and power” to account for the name change of the set-aside account under § 145.342(k).

Subsection (c) establishes the Pennsylvania CO₂ Budget Trading Program adjusted budget for each allocation year. Subsection (c) was amended at final-form rulemaking to clarify that the provision is applicable to each allocation year and to remove the language distinguishing allocation year 2022.

Subsection (d) establishes the CCR allocation and the process by which the Department will allocate CO₂ CCR allowances, separate from and additional to the Pennsylvania CO₂ 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 CO₂ allowances that have been withheld from any auction into the Pennsylvania ECR account.

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

Subsection (g) establishes a provision for the Department to establish the Pennsylvania CO₂ Budget Trading Program adjusted budget for an allocation year and the formula to be used.

Subsection (h) establishes a provision to require the Department to publish notice in the *Pennsylvania Bulletin* of the CO₂ 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 10,400,000 tons during a calendar year, and the set-aside termination. This subsection applies to waste coal-fired units located in this Commonwealth that commenced operation on or before the effective date of this final-form rulemaking, that are subject to the CO₂ Budget Trading Program requirements.

Subsection (i) was amended at final-form rulemaking to clarify that the allowance transfer and compliance allocation under subsection (i)(3) and (i)(4) occur each calendar year except for 2022. This subsection was also amended to increase the total amount of legacy emissions under subsection (i)(5) from 9,300,000 tons on proposed to 10,400,000 tons on final-form rulemaking. This amendment was made because the Department needed to include CO₂ emissions from an additional waste coal-fired unit in the calculation for the total amount of legacy emissions.

Subsection (j) establishes the process for the strategic use set-aside allocation, including the establishment of a general account, allowance transfers, allocation to eligible projects, the strategic use application, CO₂ allowance determination, general requirements, use of CO₂ allowances, and the transfer or retirement of CO₂ allowances. The strategic use set-aside allocation will consist of undistributed CO₂ allowances from the waste coal set-aside account.

Subsection (j) was amended at final-form rulemaking to clarify the allocation of CO₂ allowances to eligible projects under subsection (j)(3) by adding a requirement for eligible projects to be located in Pennsylvania and result in a GHG emission reduction benefit. The Board also removed language under subsection (j)(3)(i)-(iii) pertaining to the allocation to eligible projects for clarification purposes because the language was unnecessary and could cause confusion. Subsection (j) was also amended at final-form rulemaking to add the process for a strategic use application under subsection (j)(4). The Board clarified that owners of eligible projects must submit an application that includes at a minimum the information required by the

Department. This includes documentation that the project will result in GHG emission reductions, identification of the general account, specification of the number of CO₂ allowances requested, and the calculations and supporting data used to determine the GHG emission reductions. Subsection (j) was also amended at final-form rulemaking to add the process for the final CO₂ allowance determination by the Department, general requirements for eligibility, the use of CO₂ allowances by the owner of an eligible project, and the transfer or retirement of CO₂ allowances at the end of each control period under subsection (j)(5)—(8).

Subsection (k) establishes the process for the combined heat and power set-aside allocation, including applicability, the establishment of a general account, the CO₂ allowance retirement, the required CO₂ allowance retirement application, the CO₂ allowance retirement determination, and the retirement and transfer of CO₂ allowances.

Subsection (k) was amended at final-form rulemaking to change the name of the set-aside from “cogeneration” to “combined heat and power.” This change was made to clarify that it is combined heat and power units that will be qualified for CO₂ allowances under the set-aside provision. The term “cogeneration” could have included units that are less efficient and environmental beneficial than the narrower category of “combined heat and power” units that the Department intended to cover under the set aside provision. The Board also clarified under subsection (k)(1) that for a unit to be applicable, it must be located in Pennsylvania and subject to the CO₂ Budget Trading Program requirements in this final-form rulemaking.

Subsection (k) was also amended at final-form rulemaking to include two options under subsection (k)(3) for the retirement of CO₂ allowances from the combined heat and power set-aside account. Under the first option, which is an addition at final-form, applicable combined heat and power units may request that the Department retire CO₂ allowances equal to the total amount of CO₂ emitted as a result of providing useful thermal energy and electricity during each allocation year. Under the second option, which was included in the proposed rulemaking, applicable combined heat and power units may request that the Department retire CO₂ allowances equal to the partial amount of CO₂ emitted as a result of supplying useful thermal energy or electricity, or both, to an interconnected industrial, institutional or commercial facility during the allocation year.

As in the proposed rulemaking, the combined heat and power units must submit a complete application to request that CO₂ allowances be retired by the Department on behalf of the unit. The Board added in this final-form rulemaking under subsection (k)(4) that if the unit is requesting total retirement of CO₂ allowances, the unit must submit an application including documentation that the useful thermal energy is at least 25% of the total energy output of the combined heat and power unit on an annual basis and that the overall efficiency of the combined heat and power unit is at least 60% on an annual basis. In this final-form rulemaking, the Board included calculations for a unit to determine the percentage of useful thermal and energy and the percentage of overall efficiency. The Board also added in this final-form rulemaking under subsection (k)(4) that if the unit is requesting partial retirement of CO₂ allowances, the unit must submit an application which includes documentation of the amount of useful thermal energy or electricity, or both, supplied to an interconnected industrial, institutional or commercial facility. In this final-form rulemaking, the Board also included language under subsection (k)(5) indicating that it will retire CO₂ allowances on behalf of the units based on the satisfaction of the

application requirements. The Board also added in this final-form rulemaking under subsection (k)(5) that the owner or operator of a unit requiring additional CO₂ allowances to satisfy the CO₂ requirements shall transfer CO₂ allowances for compliance deductions to the compliance account of the unit. Lastly, the Board added under subsection (k)(6) that it will retire CO₂ allowances from the set-aside account in an amount equal to the determination for each unit at the end of each interim control period, in addition to the end of each control period.

§ 145.343. Distribution of CO₂ allowances in the air pollution reduction account

This section establishes a description for how the Department will distribute CO₂ allowances held in the air pollution reduction account. With the exception of CO₂ allowances held in a set-aside account, the Department will make available all CO₂ 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 CO₂ Budget Trading Program.

This section was amended at final-form rulemaking to replace the term “cogeneration” under subsections (a) and (d) with the term “combined heat and power” to account for the name change of the set-aside account under § 145.342(k).

CO₂ allowance tracking system

§ 145.351. CO₂ Allowance Tracking System (COATS) accounts

This section establishes a description for the nature and function of compliance and general accounts. Compliance accounts are only for CO₂ budget sources, while any person may have a general account.

No change is made to this section from proposed to final-form rulemaking.

§ 145.352. Establishment of accounts

This section establishes a provision for the establishment of a compliance account by the Department or its agent upon receipt of a complete account certificate of representation. This proposed 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 proposed section. This proposed section establishes the requirements for the authorization of a CO₂ authorized account representative, changing a CO₂ authorized account representative or a CO₂ authorized alternate account representative, changes in persons with ownership interest, objections concerning a CO₂ authorized account representative, delegation by a CO₂ authorized account representative and a CO₂ authorized alternate account representative, and account identification.

No change is made to this section from proposed to final-form rulemaking.

§ 145.353. COATS responsibilities of CO₂ authorized account representative and CO₂ authorized alternate account representative

This section establishes a provision that allows submissions to the Department or its agent pertaining to a COATS account to be only submitted by the CO₂ authorized account representative or CO₂ authorized alternate account representative for the account.

No change is made to this section from proposed to final-form rulemaking.

§ 145.354. Recordation of CO₂ allowance allocations

This section establishes the deadlines for the Department or its agent to record and assign a serial number to the CO₂ 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.

This section was amended at final-form rulemaking to add under subsection (a) that the recordation of CO₂ allowances allocated for the air pollution reduction account will occur by January 1 of each calendar year except for 2022. This section was also amended at final-form rulemaking to replace the term “cogeneration” under subsection (b) with the term “combined heat and power” to account for the name change of the set-aside account under § 145.342(k).

§ 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.

No change is made to this section from proposed to final-form rulemaking.

§ 145.356. Banking

This section establishes a provision to allow a CO₂ 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 CO₂ allowance is deducted or transferred.

No change is made to this section from proposed to final-form rulemaking.

§ 145.357. Account error

This section establishes a provision to allow the Department or its agent to correct and notify a CO₂ authorized account representative of an error in a COATS account.

No change is made to this section from proposed to final-form rulemaking.

§ 145.358. *Closing of general accounts*

This section proposes to allow the CO₂ 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 CO₂ allowances to be closed. This proposed section also describes the notification procedure for the closure.

No change is made to this section from proposed to final-form rulemaking.

CO₂ allowance transfers

§ 145.361. *Submission of CO₂ allowance transfers*

This section establishes the requirements for a CO₂ authorized account representative to submit a CO₂ allowance transfer to the Department for recordation.

No change is made to this section from proposed to final-form rulemaking.

§ 145.362. *Recordation*

This section establishes the requirements and process for the Department to record a CO₂ allowance transfer.

No change is made to this section from proposed to final-form rulemaking.

§ 145.363. *Notification*

This section establishes the processes for notification of recordation and non-recordation of a CO₂ allowance transfer and allows for the resubmission of a CO₂ allowance transfer for recordation.

No change is made to this section from proposed to final-form rulemaking.

Monitoring, reporting and recordkeeping requirements

§ 145.371. *General monitoring requirements*

This section establishes the monitoring requirements that an owner or operator or CO₂ authorized account representative of a CO₂ 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.

This section was amended at final-form rulemaking to replace the July 1, 2021 and January 1, 2022 dates under paragraph (2) with blanks along with editor's notes indicating that the dates are

based on the date of publication of the final-form rulemaking. Instead of July 1, 2021, the date will be 180 days prior to the date of publication. Instead of January 1, 2022, the date will be either January 1, 2022, or the date of publication.

§ 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.

No change is made to this section from proposed to final-form rulemaking.

§ 145.373. *Out-of-control periods*

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

No change is made to this section from proposed to final-form rulemaking.

§ 145.374. *Notifications*

This section establishes the requirement for a CO₂ authorized account representative for a CO₂ budget unit to submit written notice to the Department and the Administrator in accordance with 40 CFR 75.61 (relating to notifications).

No change is made to this section from proposed to final-form rulemaking.

§ 145.375. *Recordkeeping and reporting*

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

This section was amended at final-form rulemaking to remove language under subsection (d) pertaining to when a quarterly report must be submitted based on the date of commencement of commercial operation because it was unnecessary, and the rest of the section provides sufficient information.

§ 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.

No change is made to this section from proposed to final-form rulemaking.

§ 145.377. *CO₂ budget units that co-fire eligible biomass*

This section establishes reporting and data calculation requirements for the CO₂ authorized account representative of a CO₂ budget unit that co-fires eligible biomass as a compliance mechanism under the CO₂ Budget Trading Program.

No change is made to this section from proposed to final-form rulemaking.

Auction of CO₂ CCR and ECR allowances

§ 145.381. *Purpose*

This section establishes a provision to allow 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.

No change is made to this section from proposed to final-form rulemaking.

§ 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.

No change is made to this section from proposed to final-form rulemaking.

CO₂ emissions offset projects

§ 145.391. *Purpose*

This section establishes a provision to allow the Department to award CO₂ offset allowances to sponsors of CO₂ emissions offset projects that have reduced or avoided atmospheric loading of CO₂, CO₂e or sequestered carbon. CO₂ offset allowances must be real, additional, verifiable, enforceable and permanent within the framework of a standards-based approach.

No change is made to this section from proposed to final-form rulemaking.

§ 145.392. *Definitions*

This section establishes definitions for the following terms: "AEPS—Alternative energy portfolio standards," "anaerobic 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 proposed defined terms are used in the substantive provisions of §§ 145.391—145.397 (relating to CO₂ emissions offset projects).

No change is made to this section from proposed to final-form rulemaking.

§ 145.393. *General requirements*

This section establishes the requirements for an offset project to qualify for the award of CO₂ 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.

No change is made to this section from proposed to final-form rulemaking.

§ 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.

No change is made to this section from proposed to final-form rulemaking.

§ 145.395. *CO₂ 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.

No change is made to this section from proposed to final-form rulemaking.

§ 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.

No change is made to this section from proposed to final-form rulemaking.

§ 145.397. *Award and Recordation of CO₂ offset allowances*

This section establishes the process for awarding and recording CO₂ offset allowances. This section also proposes to establish 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.

This section was amended at final-form rulemaking to replace the January 1, 2022 and June 30, 2022 dates under subsection (c) with blanks along with editor's notes indicating that the dates are based on the date of publication of the final-form rulemaking. Instead of June 30, 2022, the date will be either June 30, 2022, or 180 days after the date of publication, whichever is later. Instead of January 1, 2022, the date will be either January 1, 2022, or the date of publication, whichever is later.

CO₂ allowance auctions

§ 145.401. *Auction of CO₂ allowances*

This section establishes that the Department will participate in a multistate CO₂ 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 CO₂ allowance auction and retains its authority to enforce compliance with the CO₂ Budget Trading Program and control over the proceeds.

No change is made to this section from proposed to final-form rulemaking.

§ 145.402. *Auction format*

This section establishes the format of a CO₂ allowance auction, the lot of CO₂ allowances and the reserve price.

No change is made to this section from proposed to final-form rulemaking.

§ 145.403. *Auction timing and CO₂ allowance submission schedule*

This section establishes the timing of a CO₂ allowance auction, the availability of CO₂ allowances held in the air pollution reduction account and the requirement for an auction to include a CCR reserve and trigger price.

This section was amended at final-form rulemaking to replace the term “cogeneration” with the term “combined heat and power” under subsection (b) to account for the name change of the set-aside account under § 145.342(k).

§ 145.404. *Auction notice*

This section establishes the requirement for notice to be provided of each CO₂ allowance auction and the required contents of the notice.

No change is made to this section from proposed to final-form rulemaking.

§ 145.405. *Auction participant requirements*

This section establishes the eligibility requirements to participate in a CO₂ allowance auction as a bidder.

No change is made to this section from proposed to final-form rulemaking.

§ 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.

No change is made to this section from proposed to final-form rulemaking.

§ 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 CO₂ allowance auction as a bidder and the process for requesting return of the financial security.

No change is made to this section from proposed to final-form rulemaking.

§ 145.408. *Bid submittal requirements*

This section establishes the requirements and limitations of bid submittals.

No change is made to this section from proposed to final-form rulemaking.

§ 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 CO₂ allowances to successful bidders and make available the auction clearing price and the number of CO₂ allowances sold in the auction.

No change is made to this section from proposed to final-form rulemaking.

F. Summary of Comments and Responses on the Proposed Rulemaking

The Board adopted the proposed rulemaking at its meeting on September 15, 2020. On November 7, 2020, the proposed rulemaking was published for a 69-day comment period at 50 Pa.B. 6212 (November 7, 2020). Ten public hearings were held virtually with two each day on December 8, 9, 10, 11 and 14, 2020. Over 445 persons provided verbal testimony, including several in Spanish translation. The comment period closed on January 14, 2021. The Board received comments from 14,038 commentators including the House and Senate Environmental Resources and Energy Committees (ERE Committees), members of the Pennsylvania Legislature and the Independent Regulatory Review Commission (IRRC). The majority of the commentators expressed their support of the CO₂ Budget Trading Program, noting the success of cap and trade programs in reducing emissions and the health, environmental and economic benefits that can be achieved through this final-form rulemaking. The comments received on the proposed rulemaking are summarized in this section and are addressed in a comment and response document which is available on the Department's website.

During the comment period, the Board sought comment specifically on potential approaches for the implementation of this final-form rulemaking that would address equity and environmental justice concerns in this Commonwealth. The Board received comments requesting that the Department monitor for any local air quality impacts resulting from this final-form rulemaking in environmental justice areas. The Board also received comments requesting that a portion of the auction proceeds be spent on projects located in environmental justice communities. Additionally, the Board received comments requesting that the Department continue to engage in public outreach with environmental justice communities throughout the implementation of this final-form rulemaking. In response to these comments, the Department developed three Equity Principles which have been incorporated under section D of this Preamble. The Equity Principles consist of inclusively gathering and meaningfully considering input from environmental justice community members, mitigating any adverse impacts on human health in environmental justice communities, and distributing environmental and economic benefits of auction proceeds in communities that have been disproportionately impacted by air pollution. The Board also added language to this final-form rulemaking indicating that the Department will assess air emissions data each year to determine whether areas of this Commonwealth have been disproportionately impacted by increased air pollution as a result of implementation of this final-form rulemaking. Additionally, the Department is committed to allocating a portion of the auction proceeds to further eliminate air pollution in environmental justice communities.

During the comment period, the Board also sought 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. The Board received comments expressing concern about the dependence certain communities have on fossil fuel-fired EGUs. Commentators noted that school districts, small businesses, municipalities, parks & recreation areas and other community pillars depend on the economic productivity of these facilities. The concern is particularly acute in areas containing a concentrated number of fossil fuel-fired EGUs.

Many commentators implied that this final-form rulemaking would be the singular cause of economic challenges to fossil fuel-fired EGUs, specifically coal-fired EGUs, while other commentators recognized that these facilities are projected to cease operations in the near future with or without the implementation of this final-form rulemaking. Nonetheless, commentators acknowledged the economic impact of these facilities and recognized a need to both create a transition plan and invest auction proceeds in these communities. Specifically, commentators recommended a transition plan that includes economic diversification and workforce development that will lead to immediate job transition for workers employed at facilities expected to close in the near future. Commentators also recommended using auction proceeds as authorized under the APCA to invest in these communities in ways that would provide for job training and economic growth.

In response to these comments, the Department partnered with the Delta Institute, a nonprofit organization that has worked with communities to solve complex environmental challenges since 1998, to evaluate the potential impacts of a changing energy sector on this Commonwealth's energy workers and the surrounding communities. The Delta Institute is engaging with fossil fuel communities to understand the interdependence with large fossil fuel-fired EGUs, as well as surrounding communities, and to explore potential economic diversification strategies. Included in this engagement is discussions with community members representing nonprofit organizations, labor, workforce development boards, research institutions, regional planning commissions, universities, private citizens, utility providers, community organizations, industry groups, economic development entities, consumer advocates, environmental justice stakeholders, and many others representing all the regions of this Commonwealth, including communities with significant employment in the fossil fuel sector. The Delta Institute's efforts, in coordination with the Department, will culminate in the development of a set of Guiding Principles and a final strategy document that will be used to guide the Department's implementation of this final-form rulemaking, including the investment of auction proceeds in projects that benefit communities dependent on fossil fuel-fired EGUs.

During the comment period, the Board also sought comment on ways to appropriately address the benefits of cogeneration in this Commonwealth, including the allocation of CO₂ allowances similar to the waste coal set-aside provision. The Board received comments requesting that the cogeneration set-aside, now the combined heat and power set-aside, be expanded to include more than useful thermal energy or electricity provided to a co-located facility. In response to comments, the Board included two tiers for the retirement of CO₂ allowances from the combined heat and power set-aside account in this final-form rulemaking. Under the first tier, which is an addition at final-form, applicable combined heat and power units may request that the Department retire CO₂ allowances equal to the total amount of CO₂ emitted as a result of providing all useful thermal energy and electricity during each allocation year. Under the second tier, which was included in the proposed rulemaking, applicable combined heat and power units may request that the Department retire CO₂ allowances equal to the partial amount of CO₂ emitted as a result of supplying useful thermal energy or electricity, or both, to an interconnected industrial, institutional or commercial facility during the allocation year. This two-tier approach aligns the overall environmental benefits of CHP units with the CO₂ allowances that may be requested.

Numerous members of the General Assembly expressed their support of this final-form rulemaking and this Commonwealth's participation in RGGI. Some even highlighted that polling consistently shows that more than 70% of Pennsylvanians strongly support action on climate change and that this final-form rulemaking has diverse support from businesses and institutions to environmental nonprofits and health organizations. Members also stressed that it is crucial to address climate change, lower emissions of harmful air pollutants, particularly given the COVID-19 pandemic, and consider environmental justice concerns. They noted that RGGI has proven successful and that RGGI participation will provide a multitude of benefits to public health, safety, and welfare, as well as benefits to the environment and the economy. In particular, they stated that participating in RGGI will spur additional investments in renewable energy throughout this Commonwealth, ensuring that this Commonwealth's vital position in national energy markets is maintained. They also emphasized that reducing CO₂ emissions from the power generation sector would improve the environment for this Commonwealth's citizens and make this Commonwealth a more sustainable and innovative place in the future. In response, the Board acknowledges these comments and thanks the members for their support.

IRRC asks the Board to explain whether the regulation is in the public interest, particularly given the House and Senate ERE Committee objections noted in their disapproval letters, which are discussed below and addressed in the comment and response document.

In response, the Board explains how this final-form rulemaking is in the public interest. As required under section 745.5b of the RRA (71 P.S. §§ 745.5b), to determine whether a regulation is in the public interest, IRRC must first determine whether the agency has the statutory authority to promulgate the regulation and whether the regulation conforms to the intent of the General Assembly when it enacted the enabling statute. As discussed previously, the Board has the authority to promulgate this final-form rulemaking under section 5(a)(1) of the APCA. Additionally, this final-form rulemaking is consistent with the purpose of the APCA and the intent of the General Assembly. That is, to, among other things, protect the air resources of the Commonwealth to the degree necessary for the protection of public health, safety, and well-being of its citizens. 35 P.S. § 4004(a)(i). Moreover, several members of the General Assembly, including minority members of the ERE committees, provided supportive comments, specifically noting that the Board has the authority under the APCA to promulgate this final-form rulemaking and that it is in the public interest.

In determining whether a regulation is in the public interest, IRRC also must consider the additional criteria for review of regulations outlined under section 745.5b(b) of the RRA. The Board explains below how this final-form rulemaking satisfies the review criteria in detailed responses to comments and specifically notes the following. First, this final-form rulemaking will have a positive economic and fiscal impact on this Commonwealth. For example, the economic modeling conducted for this final-form rulemaking shows that this Commonwealth's participation in RGGI will lead to a net increase of more than 30,000 jobs and spur further economic growth in this Commonwealth as it will result in an additional \$1.9 billion to the Gross State Product. Second, this final-form rulemaking protects the public health, safety and welfare and the environment from harmful CO₂ pollution from fossil fuel-fired EGUs. For instance, the Department calculated that if 188 million tons of CO₂ are avoided through 2030 then this Commonwealth's residents would see cumulative health benefits amounting to \$2.79—\$6.3

billion. Third, the requirements of this final-form rulemaking are both reasonable and feasible. One of the most cost-effective emissions reduction strategies to limit CO₂ emissions is through an electricity sector cap and trade program. Fourth, this final-form rulemaking does not represent a policy decision of such a substantial nature that it requires legislative review. That is, the General Assembly has already provided the Board with broad authority to promulgate this final-form rulemaking. Fifth, the Board has responded to the comments, objections and recommendations of the ERE committees in this final-form rulemaking and associated comment and response document. Where warranted, changes were made to this final-form rulemaking in response to those comments. Sixth, the Board and the Department complied with the RRA and IRRC's regulations throughout the rulemaking process. Seventh, this final-form rulemaking is supported by a plethora of acceptable data and an extensive modeling effort as discussed throughout this preamble. Finally, while there is not a less costly or less intrusive method of achieving the goal of this final-form rulemaking, since a cap and trade program is the most effective means of reducing CO₂ emissions, provisions are included in this final-form rulemaking to address any impact on small business stationary sources.

Further, the Commonwealth Court has found that the regulation of air pollution has long been a valid public interest. See e.g., *Bortz Coal Co., v. Commonwealth*, 279 A.2d 388, 391 (Pa. Cmwlth. 1971); *DER v. Pennsylvania Power Co.*, 384 A.2d 273, 284 (Pa. Cmwlth. 1978); *Commonwealth v. Bethlehem Steel Corporation*, 367 A.2d 222, 225 (Pa. 1976). Moreover, the Commonwealth Court has endorsed the Department's position that the General Assembly, through the APCA, gave the agency the authority to reduce GHG emissions, including CO₂. *Wolf v. Funk*, 144 A.3d 228, 250 (Pa. Cmwlth. 2016).

1. Comments, objections or recommendations of the House and Senate ERE committees.

IRRC noted that under the RRA, the comments, objections or recommendations of a Legislative Committee is one of the criteria that IRRC must consider when determining if a regulation is in the public interest. In response, the specific comments, objections, and recommendations noted by IRRC will be addressed in turn, below.

- a. The Board has the statutory authority under the APCA to promulgate this final-form rulemaking.*

The House and Senate ERE Committees objected to this final-form rulemaking stating that the Board lacks statutory authority under the APCA (35 P.S. § 4001—40015) to promulgate the regulation.

In response, the Board has the authority to promulgate this final-form 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 for the protection of public health, safety and the environment. Section 5(a)(1) of the APCA provides the Board with broad authority to adopt rules and regulations for the prevention, control, reduction and abatement of air pollution in this Commonwealth. In *Marcellus Shale Coalition v. Commonwealth*, 216 A.3d 448 (Cmwlth. Ct. 2019), the Commonwealth Court outlined the test for determining whether a legislative rulemaking has statutory authority. To determine whether a regulation is adopted within an

agency's granted power, the Commonwealth Court stated that it looks to the statutory authority authorizing the agency to promulgate the legislative rule and examines that language to determine whether the rule falls within that grant of authority. The Court also found that the legislature's delegation must be clear and unmistakable. In particular, the Court considers the letter of the statutory delegation to create the rule and the purpose of the statute and its reasonable effect. *Id.* As this final-form rulemaking would limit CO₂ pollution by regulating CO₂ emitted from fossil fuel-fired EGUs to ensure protection of public health, welfare and the environment, this final-form rulemaking is clearly within the Board's granted authority under the APCA and advances the purposes of the APCA to abate air pollution.

b. The auction proceeds are a fee under the APCA.

The House and Senate ERE Committees objected to this final-form rulemaking stating that the proceeds generated through the auction procedures of the rulemaking and RGGI are not a fee under the APCA, but rather an illegal tax.

In response, the auction proceeds amount to fees authorized under section 6.3(a) of the APCA and not an illegal tax. Section 6.3(a) of the APCA provides the Department with the authority to establish fees to support the air pollution control program. The Department is limited by its existing statutory authority under Section 9.2(a) of the APCA (35 P.S. § 4009.2) to only use fees for "the elimination of air pollution." Since the auction proceeds generated as a result of this final-form rulemaking would be used to reduce GHG emissions, further eliminating air pollution, the fees would be used to support the "air pollution control program" in accordance with section 6.3(a) of the APCA. There is also existing case law that supports the conclusion that auction proceeds are a fee, including *National Biscuit Company v. Philadelphia*, 98 A.2d 182 (Pa. 1953) and *White v. Com. Medical Professional Liability*, 571 A.2d 9 (Pa. Cmwlth. 1990).

Under RGGI, regulated EGUs are required to purchase one CO₂ allowance per ton of CO₂ they emit through multistate auctions or on the secondary market. The proceeds of the multistate auctions and the secondary market are then provided back to the participating states. The purchase of CO₂ allowances generating auction proceeds is a fee because these purchases are one component of the "regulatory measures intended to cover the cost of administering a regulatory scheme authorized under the police power of the government." See *City of Philadelphia v. Southeastern Pennsylvania Transp. Auth.*, 303 A.2d 247, 251 (1973). As mentioned previously, RGGI provides a "two-prong" approach to reducing CO₂ emissions from fossil fuel-fired EGUs. The second prong involves the proper investment of the auction proceeds to further reduce CO₂ emissions, as well as other harmful GHG emissions. This investment therefore fulfills the purpose and administration of this final-form rulemaking. This final-form rulemaking does not create a tax which is a "revenue-producing measure authorized under the taxing power of the government." *Id.* The intent of RGGI is not to generate revenue for general government or public purposes, but to achieve a common goal of reducing CO₂ emissions from EGUs.

Moreover, none of the eleven participating states consider their CO₂ budget trading program regulations, or the RGGI program overall, as establishing a tax. Also, no court has determined that RGGI amounts to a tax. Recently in *California Chamber of Commerce v. State Air Res. Bd.*, 10 Cal. App. 5th 604, 650, 216 Cal. Rptr. 3d 694, 728 (2017), the California court determined that the California Air Resource Board's cap and invest program did not create a tax.

c. The virtual public hearings were held in accordance with the APCA.

The House and Senate ERE Committees objected to this final-form rulemaking stating the Department violated the APCA's mandate for public hearings to be held in impacted communities. They also noted that citizens without internet access or broadband capability were excluded from participating in the virtual hearings that were held. A few other commentators also believe that the APCA requires the Board to hold in-person public hearings.

In response, the APCA does not require the Board to hold "in-person" public hearings. Section 7(a) of the APCA states "Public hearings shall be held by the board or by the department, acting on behalf and at the direction or request of the board, in any region of the Commonwealth affected before any rules or regulations with regard to the control, abatement, prevention or reduction of air pollution are adopted for that region or subregion." The commentators and legislators seem to be interpreting the phrase "in any region of the Commonwealth affected" in Section 7(a) as creating a requirement for "in-person" public hearings. The Board disagrees with this interpretation and contends that the intent of the statutory language is to ensure that a public hearing is held in a location that is actually impacted by a regulation. For instance, section 7(a) would prevent the Board from holding one public hearing in Harrisburg for a regulation that only impacts the Northwest region.

For this final-form rulemaking, the Board satisfied the public hearing requirement in section 7(a) of the APCA by holding ten well-attended virtual public hearings. As this final-form rulemaking impacts the entire Commonwealth, the virtual public hearings were accessible Statewide. The virtual public hearings were a necessity due to the COVID-19 pandemic and allowed hundreds of Pennsylvanians to deliver their comments without exposing themselves or their families to a widespread, communicable disease. To ensure that all Pennsylvanians had access to the ten virtual public hearings for this rulemaking, the Department and the Board made the hearings accessible via any phone connection, including landline and cellular service, or internet connection. The public hearings were also held at varying times including evening hours, so that members of the public could provide testimony outside of typical work hours. For the first time, the Department was able to provide real time English to Spanish translation during the virtual public hearings. Altogether, the Board and the Department saw record participation during the virtual public hearings and over 445 members of the public provided testimony on this rulemaking. The Department also received feedback from many participants that the use of a virtual public hearing platform was preferred and resulted in savings, in both time and money, for many residents who did not have to drive or find a way to attend a public hearing. Additionally, as with all the Department's rulemakings, members of the public also had the opportunity to provide written comments by regular mail, the Department's eComment system, or email during the comment period.

d. This final-form rulemaking will have a positive fiscal impact on this Commonwealth's economy.

The House and Senate ERE Committees objected to this final-form rulemaking stating it will have a negative fiscal impact on this Commonwealth's economy. In particular, they argue that the coal industry, fossil-fuel-fired EGUs, large industrial users of electricity, small businesses, labor unions and individuals will be harmed financially.

In response, the Board explains that the implementation of this final-form rulemaking will provide public health, environmental and economic benefits to this Commonwealth. The Department calculated that if 188 million tons of CO₂ are avoided through 2030 then this Commonwealth's residents would see cumulative health benefits amounting to \$2.79—\$6.3 billion. This equates to a range of \$232—\$525 million annually and is an extremely conservative estimate given these health benefits are only those benefits tied to the reduction of co-pollutants (NO_x, SO_x and PM_{2.5}) and exclude the additional benefits provided from the reduction in CO₂ emissions. Further, calculations using the social cost of carbon would result in significantly higher benefit values for this final-form rulemaking.

The economic modeling conducted shows that this Commonwealth's participation in RGGI will lead to a net increase of more than 30,000 jobs and add \$1.9 billion to the Gross State Product. Additionally, an independent study by Penn State's Center for Environmental Law and Policy confirms the economic benefits accruing as a result of this Commonwealth's participation in RGGI and suggests positive economic impacts beyond even those calculated by the Department. See Penn State Center for Energy Law and Policy, Prospects for Pennsylvania in the Regional Greenhouse Gas Initiative Working Paper, December 2020, https://sites.psu.edu/celp/files/2021/01/CELP_RGGI.pdf. In particular, the Penn State study indicates that between 2022 and 2030 this Commonwealth's participation in RGGI will yield \$2.6 billion in net economic benefits to the power sector within this Commonwealth. This study determined that economic benefits to electricity market participants include the higher net profits to the generation sector (additional revenue arising from higher wholesale electricity prices less new costs from the purchase of CO₂ allowances) and CO₂ allowance proceeds accruing to CO₂ allowance holders. Economic costs predominantly reflect the higher costs of purchasing bulk power by load-serving entities and direct access consumers in the PJM regional electricity market. This analysis is narrower in scope than the Department's modeling but remains demonstrative of the positive economic impacts of this final-form rulemaking.

In 2010, coal generation accounted for 47% of the energy generated in this Commonwealth and by 2019, coal generation had decreased to 17%. The Department's modeling indicates that this trend will continue with the majority of coal generation (with the exception of waste coal) ceasing by 2025. This is the current trajectory of coal which has been on the decline for decades, and in 2014 was finally usurped by natural gas as the leading source of energy generation in this Commonwealth. These impacts are not resulting from RGGI participation as they will occur regardless of the implementation of this final-form rulemaking. However, RGGI participation presents an opportunity to assist transitioning communities, which would not exist without this final-form rulemaking.

While fossil fuel-fired EGUs subject to this final-form rulemaking will have costs associated with the purchase of CO₂ allowances, in most cases this minimal cost will be passed onto consumers. Cost impacts as a result of implementation of this final-form rulemaking are minimal and are less than the typical seasonal swing in electricity prices. Wholesale power prices (\$/MWh) are expected to be no more than 2.4% higher in 2022 and no more than 1.7% higher by 2030. These prices reflect the cost of a cap-and-trade program and are not reflective of the investment of the auction proceeds. Significant investments of the auction proceeds in the energy sector in this Commonwealth will have a price suppressing impact further decreasing any potential price impacts.

Additionally, based on information contained within the PUC's 2020 Rate Comparison Report, a small commercial customer's usage is the closest aligned with a small business as defined by the U.S. Small Business Administration, though it is not an exact match. See Pennsylvania PUC, 2020 Rate Comparison Report, https://www.puc.pa.gov/General/publications_reports/pdf/Rate_Comparison_Rpt2020.pdf. The PUC report indicates that average 2019 electricity consumption for this customer class is 1,000 kWh/month with total monthly bills ranging from \$106.29 to \$143.49 depending on the Electric Distribution Company service territory and the corresponding electricity rate. Using the same assumptions regarding the composition of an electric bill as used above, a small commercial customer using 1,000 kWh/month could expect to see a potential increase of \$1.28 to \$1.72 per month in 2022.

According to the PUC, a large commercial customer using 200,000 kWh per month has a monthly bill ranging from \$11,788.08 to \$21,043.18. These customers could expect to see a 2022 potential price increase of \$141 to \$253 per month, again depending on their electric service territory and associated rates.

The Board understands the concerns that have been expressed regarding impacts on employees in this Commonwealth's energy sector. As mentioned previously, while there will be expansion and contraction within the energy sector as a result of implementation of this final-form rulemaking, this Commonwealth's participation in RGGI will lead to a net increase of more than 30,000 jobs. The Department has partnered with the Delta Institute to evaluate the potential impacts of a changing energy sector on this Commonwealth's energy workers, and the surrounding communities. This will assist the Department in identifying community-driven ways to assist this Commonwealth's transition to a cleaner energy economy.

e. CO₂ is an "air pollutant" as defined under the APCA, and despite leakage, this final-form rulemaking will significantly reduce GHG emissions.

The House and Senate ERE Committees objected to this final-form rulemaking stating CO₂ is not an "air pollutant" as defined by the APCA. They stated that the proposal does not prevent or reduce greenhouse gases because generation will shift to fossil-fuel-fired EGUs in other states and emissions from those EGUs will pollute the environment of the Commonwealth. This is referred to as leakage. Any reduction of pollution would be insignificant; thus, this final-form rulemaking fails to meet the APCA's standard that regulations must produce a meaningful reduction of "air pollution."

In response, the Board finds that CO₂ is in fact a regulated "air pollutant." Section 5(a)(1) of the APCA provides the Board with authority to regulate CO₂ emissions. CO₂ falls under the definition of "air pollution" in section 3 of the APCA. First, CO₂ is a gas, and falls within the definition of "air contaminant," under section 3 of the APCA, which is defined as "[s]moke, dust, fume, gas, odor, mist, radioactive substance, vapor, pollen or any combination thereof." By extension, CO₂ is also "air contamination," under section 3 of the APCA, which is defined as "[t]he presence in the outdoor atmosphere of an air contaminant which contributes to any condition of air pollution." The term "air pollution" is defined as "[t]he presence in the outdoor atmosphere of any form of contaminant . . . in such place, manner or concentration inimical or which may be inimical to the public health, safety or welfare or which is or may be injurious to

human, plant or animal life or to property or which unreasonably interferes with the comfortable enjoyment of life or property.” Therefore, CO₂ is also considered to be “air pollution” under the APCA. CO₂ is also a Federally regulated air pollutant under the CAA (42 U.S.C.A. §§ 7401—7671q). See *Massachusetts v. EPA*, 549 U.S. 497 (2007). Moreover, the EPA has issued an Endangerment Finding for CO₂ emissions resulting from fossil fuel-fired EGUs. See 80 FR 64509 (October 23, 2015); *Am. Lung Ass’n v. Env’t Prot. Agency*, 985 F.3d 914 (D.C. Cir. 2021).

While there is a potential for leakage as outlined in the Department’s modeling for this final-form rulemaking, this potential leakage does not undermine the value of the significant benefits that will accrue to this Commonwealth and its residents as a result of this final-form rulemaking. The potential for CO₂ reductions in this Commonwealth by 2030 ranges from 97 million to 227 million tons. These emissions reductions will occur in this Commonwealth despite any generation changes that may occur in other states. The meaningful reductions of air pollution stemming from this final-form rulemaking have also been confirmed by independent power sector modeling conducted by PJM and the Penn State Center for Energy Law and Policy. The Department further discusses the topic of leakage below.

f. The modeling used by EQB to justify this final-form rulemaking is up to date, takes into account “leakage,” and provides an accurate estimate of the economic impact of this final-form rulemaking.

The House and Senate ERE Committees objected to this final-form rulemaking stating that the modeling used by the Board to justify the rulemaking is outdated and does not provide an accurate estimate of the economic impact that the rulemaking will have. They also state that the modeling does not account for leakage.

The Board received thoughtful comments and feedback on the 2020 power sector modeling results through the Department’s extensive advisory committee meetings, webinars, and the public comment period. The Board understood the concerns raised and wanted to make sure the modeling was as current as possible to ensure that all the provisions of this final-form rulemaking, specifically the starting CO₂ allowance budget, were still appropriate when this final-form rulemaking is implemented in 2022. Additionally, the Board wanted to verify previous conclusions based on the modeling. For this final-form rulemaking, the Department conducted additional power sector modeling which verified earlier modeling conclusions, confirming the 78 million CO₂ allowance budget for 2022, and the significant potential for CO₂ emissions reductions in this Commonwealth. The updated modeling also showed that in comparison to the previous 2020 round of modeling, impacts on natural gas generation, this Commonwealth’s energy exports, and electricity prices are even less than the slight impacts anticipated by the previous modeling. Furthermore, the modeling confirmed that the retirement of coal-fired EGUs in this Commonwealth will occur within a shorter time horizon. According to the updated modeling, most of the coal-fired generation in this Commonwealth will cease by 2025 in no part due to this final-form rulemaking, but rather decreased demand for electricity resulting in part from the COVID-19 pandemic and its impacts on the energy markets.

The Department’s modeling used IPM, the Integrated Planning Model, which provides long-term projections of plant dispatch, capacity expansion and retirement, market prices, and emissions projections for the power sector across the country. This specific analysis focused on

this Commonwealth, the PJM states, and the current states participating in RGGI. The results of the modeling include electricity transmission both into and out of this Commonwealth and the larger PJM and Eastern Interconnect regions. These values allow the Department to evaluate the changes in generation, and the flows of electricity between states and across the region. It is through this data that the Department is able to evaluate the potential for and magnitude of emissions shifts within the region.

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. Emissions leakage is the shifting of emissions from states with carbon pricing to states without carbon pricing. This leakage has no bearing on the environmental, health or economic benefits of this final-form rulemaking, and merely means that a portion of the emissions reductions achieved within this Commonwealth may shift to other states or areas without carbon pricing. Additionally, this final-form rulemaking will result in a net emissions reduction of 28 million tons of CO₂ across the broader PJM region through 2030.

It is important to note that the modeling results assume the only policy change impacting the power sector in the region between 2021 and 2030 is this Commonwealth's participation in RGGI. The Department finds that extremely unlikely given the ongoing efforts by PJM, the Federal Energy Regulatory Commission (FERC) and the Federal government. The Department has been an active participant in PJM's Carbon Pricing Senior Task Force which is conducting additional modeling in an effort to better understand and control leakage across the entire PJM region. The FERC hosted a carbon pricing technical conference in the Fall of 2020, resulting in a policy statement requesting public comment on issues such as how to address shifting generation amongst states as a result of carbon pricing. Lastly, the Federal administration is seeking to reduce carbon emissions from the electric power sector, specifically aiming to produce 80% of the nation's electricity from zero-carbon sources. The Department anticipates actions at the regional and Federal level will mitigate potential leakage impacts that may result from this final-form rulemaking.

Although there is the potential for leakage as confirmed in both the original and updated modeling results, this leakage does not undermine the benefits of this final-form rulemaking to this Commonwealth, nor to the broader PJM region and Eastern Interconnection. The Department's modeling has not only accounted for leakage, but Department staff have actively engaged with stakeholders, PJM Interconnection and electricity generators specifically to discuss options for leakage mitigation.

- g. This final-form rulemaking should proceed despite announcements of Federal climate change policies.*

The House and Senate ERE Committees objected to this final-form rulemaking stating that the Federal government is moving forward with climate change policies. In response, while the current Federal Administration is currently in the process of developing climate change policies, there is no guarantee that those policies will come to fruition. For instance, the Obama Administration's regulation to control GHG emissions from existing fossil fuel-fired EGUs, commonly known as the Clean Power Plan, was stayed by the United States Supreme Court and later repealed and replaced by the Trump Administration's ACE rule. The Board contends that

addressing the impacts of climate change is too pressing of an issue to wait any longer. 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.

h. The benefits of this final-form rulemaking outweigh potential costs, including during the time of the COVID-19 pandemic.

The House and Senate ERE Committees objected to this final-form rulemaking stating that the potential costs of the rulemaking outweigh any meaningful benefits that may result from it, especially during the time of the COVID-19 pandemic.

Emerging evidence links chronic exposure to air pollution with higher rates of morbidity and mortality from COVID-19. The current pandemic underscores the need for further emissions reductions. See Harvard University Study “Fine particulate matter and COVID-19 mortality in the United States: A national study on long-term exposure to air pollution and COVID-19 mortality in the United States”, 2020, <https://projects.iq.harvard.edu/covid-pm>.

The implementation of this final-form rulemaking will have climate, environmental and health benefits. While there is a cost associated with implementation, the benefits far outweigh any costs. Although the methodology to determine climate and environmental impacts are complicated, calculating the health benefits is quite simple. The Department calculated the health impacts associated with the emissions reductions stemming from the implementation of this final-form rulemaking using the EPA’s Benefit-per-Ton (BPT) and Incidence-per-Ton (IPT) methodology. The Department calculated that if 188 million tons of CO₂ are avoided through 2030 then this Commonwealth’s residents would see cumulative health benefits amounting to \$2.79—\$6.3 billion. This equates to a range of \$232—\$525 million annually and is an extremely conservative estimate given these health benefits are only those benefits tied to the reduction of co-pollutants (NO_x, SO_x and PM_{2.5}) and exclude the additional benefits provided from the reduction in CO₂ emissions. Further, calculations using the social cost of carbon would result in significantly higher benefit values for this final-form rulemaking.

The analysis conducted by Penn State’s Center for Energy Law and Policy estimated the health benefits of this Commonwealth’s participation in RGGI to be on the order of \$1 billion to \$4 billion per year over the initial decade of this Commonwealth’s RGGI participation, specifically noting the conservative nature of the Department’s calculations. Implementation of this final-form rulemaking does come with increased costs, in terms of impacts on electricity prices. Updated modeling shows that the impact on wholesale power prices is estimated to be 2.42% in 2022 and 1.73% by 2030. These minimal price impacts are exclusive of the price suppressing impacts of any investments to be made in the energy sector using the auction proceeds.

The Department’s economic modeling shows that even with consideration of these electricity price increases, this Commonwealth’s participation in RGGI will lead to a net increase of more than 30,000 jobs and add \$1.9 billion to the Gross State Product. While implementation of this final-form rulemaking is not without cost; the economic and health the economic benefits are considerable and far outweigh any implementation costs.

2. This final-form rulemaking does not represent a policy decision of such a substantial nature that it requires legislative review.

IRRC questions whether the regulation represents a policy decision of such a substantial nature that it requires legislative review. IRRC also notes that a Senate letter signed by 29 members states the following: “The proposed regulation joining Pennsylvania to RGGI represents the single, most significant energy policy reform since the deregulation of electric generation in the 1990’s.” IRRC also mentions the passage of HB 2025 and that ten of the 11 states that currently participate in RGGI have done so with specific authority granted by their respective legislative branches. Additionally, IRRC notes that three advisory committees declined to support the proposed rulemaking. IRRC asks the Board to explain why it is appropriate to implement this carbon trading program through executive order and the rulemaking process instead of the legislative process.

In response, this final-form rulemaking is not a policy decision of such a substantial nature that it requires legislative review. The General Assembly provided the Board with broad authority to regulate sources of air pollution under the APCA. This final-form rulemaking directly falls within that statutory grant of authority as CO₂ emissions cause harmful air pollution. The APCA does not limit the Board in how it may regulate a source of pollution. This is shown by the Board’s history of promulgating different types of regulations, including command and control and cap and trade regulations under the broad authority of section 5(a)(1) of the APCA. If House Bill 2025 had not been vetoed by the Governor, it would have taken away the Board’s existing statutory authority to regulate CO₂ emissions. The bill went beyond preventing this Commonwealth from participating in RGGI to prohibit the Board from promulgating any regulation to address CO₂ emissions unless and until the General Assembly passed future authorizing legislation. This would have been extremely detrimental to the Department’s efforts to address GHG emissions and climate change impacts. However, as explained previously, the General Assembly provided the Board with the authority to promulgate this final-form rulemaking through the expansive language in the APCA.

Through Executive Order 2019-07, Governor Tom Wolf directed the Department to develop and present to the Board a rulemaking to abate, control, or limit CO₂ emissions from fossil-fuel-fired EGUs, as authorized by the APCA. In other words, the Department was directed to use its existing statutory authority, the APCA, to implement this final-form rulemaking. The Executive Order was an indication from the Governor that addressing CO₂ emissions from the electricity sector is necessary. However, this final-form rulemaking is not being implemented under the Executive Order as it is being implemented under the APCA, specifically sections 5(a)(1) and 6.3(a).

Although most of the participating states were directed to participate in RGGI through specific legislation, that does not necessarily mean that their environmental agencies lacked regulatory authority. It is more of an indication of the willingness to address climate change in those states. Furthermore, as discussed previously, four of the Department’s advisory committees voted to support the Department’s recommendation to move this final-form rulemaking forward to the Board. This includes the three advisory committees, AQTAC, SBCAC and CAC, which had voted against supporting the proposed rulemaking.

3. This final-form rulemaking sufficiently protects public health, safety and welfare and this Commonwealth's natural resources.

IRRC notes that some commentators have provided suggestions for amending the regulation to provide further environmental protections. These suggestions include: modifying or eliminating set-aside allowances for certain industries; inclusion of data collection mechanisms to ensure emissions are not shifted to generation facilities that fall below the 25 megawatt threshold of the rulemaking because the facilities could have a negative impact on environmental justice communities; and ensuring that imported power does not contribute to leakage. IRRC also encourages the Board to consider all the recommendations provided by commentators as a means of further protecting the public health, safety and welfare of citizens of the Commonwealth and its natural resources and meeting the goal of this rulemaking.

The Board has considered all the recommendations provided by commentators as a means of further protecting the public health, safety and welfare of citizens of this Commonwealth and its natural resources and meeting the goal of this final-form rulemaking. The Board made the following changes to this final-form rulemaking in response to comments. The Board increased the value of the waste coal set-aside in response to comments received to account for the continued operation of one waste coal-fired EGU. The waste-coal set-aside was increased from 9.3 million CO₂ allowances in the proposed rulemaking to 10.4 million CO₂ allowances in this final-form rulemaking.

The Board received extensive comments on the cogeneration set-aside and made changes in response to those comments. Additionally, commentators expressed the potential for unintended consequences in the form of emissions increases potentially by disincentivizing the operation of current cogeneration facilities and the addition of future facilities. The Board was asked to clarify what was meant by cogeneration and to expand the set-aside to cover the full emissions of facilities that meet certain emissions criteria. In response, the Board clarified that its intent was to be inclusive of CHP units and as a result changed the name of the set-aside to clarify that it was not applicable to all cogeneration, but specifically to CHP units as defined in this final-form rulemaking. Additionally, the Board responded to the request for an expanded set-aside by including two tiers for qualifying CHP units to apply for CO₂ allowances to be retired on their behalf.

Commentators also requested additional clarification on the functioning of the strategic use set-aside. In response, the Department clarified the objectives for the set-aside, provided additional specifics on the types of qualifying projects and outlined the application process by which an entity could submit a project for consideration to the Department. The Board also received comments that the scope of the limited exemption from the applicability requirements was too narrow and that the term manufacturing facility should be replaced with "industrial, institutional or commercial" facility. The Board made this change in this final-form rulemaking in response to comments.

There were concerns expressed during the comment period regarding the impact of cap and trade programs on environmental justice communities. Environmental justice and other stakeholders specifically requested that the Department closely monitor the impacts of this final-

form rulemaking on air quality in this Commonwealth, particularly in environmental justice communities. In response, the Board added a provision for an annual air quality impacts assessment in this final-form rulemaking. In response to comments received both prior to and during the public comment period, the Department, in partnership with external stakeholders developed equity principles for this final-form rulemaking. Through the establishment of these principles and their implementation, the Department pledged to inclusively gather public input on the rule and mitigate any adverse impacts with a focus on Environmental Justice communities.

The Board also received comments urging additional flexibility in terms of the implementation date for this final-form rulemaking. Some commentators requested that the Board consider a mid-year start date if January 1, 2022 is not possible to avoid a delay in implementation until January 1 of the following year. In response, the Board added quarterly CO₂ allowance budgets for 2022 which identify the starting CO₂ allowance budget for the beginning of each quarter. These budgets are based on the starting CO₂ allowance budget of 78 million CO₂ allowances and allocated to each quarter based on the seasonal emissions distributions during the past five years. For example, rather than assigning a value of 25% to each quarter, the value for each quarter is calculated based on historic emissions. The Department relied on actual historic emissions from the past five years to properly assign a quarterly emissions value.

4. The Board has the statutory authority to promulgate this final-form rulemaking.

IRRC asks the Board to consider all of the arguments on both sides of the statutory authority issues and provide a point-by-point analysis of why this proposal is within the statutory authority granted by the APCA and also consistent with the intent of the General Assembly when that statute was enacted.

The Board has provided a point-by-point analysis of its statutory authority and explained how this final-form rulemaking is consistent with the intent of the General Assembly under the subsection titled *Authority to limit CO₂ emissions and to participate in RGGI through this final-form rulemaking*. Specifically, the Board explained how Section 5(a)(1) of the APCA provides the Board with broad authority to promulgate regulations for the “prevention, control, reduction and abatement of air pollution.” The Board also explained in that subsection how CO₂ is included in the definition of “air pollutant” under section 3 of the APCA. Additionally, the Board explained how the auction proceeds are a fee authorized under Section 6.3(a), and not an illegal tax as some commentators have claimed. Further, the Board addresses leakage concerns in detailed responses below.

Members of the General Assembly and others have argued that the Department is violating section 4(24) of the APCA by not submitting the interstate air pollution control compact or agreement to the General Assembly. Section 4(24) of the APCA provides that the Department shall “cooperate with the appropriate agencies of the United States or of other states or any interstate agencies with respect to the control, prevention, abatement and reduction of air pollution, and where appropriate formulate interstate air pollution control compacts or agreements for the submission thereof to the General Assembly.” See 35 P.S. § 4004(24). However, as states do not sign any sort of agreement or compact to participate in RGGI, there is no agreement to submit to the General Assembly under section 4(24) of the APCA. Instead, the

key piece to becoming a “participating state,” as the term is defined in this final-form rulemaking, is the establishment of a corresponding regulation as part of the CO₂ Budget Trading Program. While this final-form rulemaking provides for this Commonwealth’s participation in RGGI by establishing a corresponding regulation, it does not amount to an agreement or compact subject to legislative approval.

RGGI is also not an interstate air pollution control compact. Instead it is a regional initiative, where participating states develop regulations that are capable of linking with similar regulations in other states. States may withdraw from participation at any time. A State may participate in RGGI once it meets the definition of a “participating state,” meaning the State has promulgated a regulation consistent with the RGGI Model Rule and has executed a service contract with RGGI, Inc.

Moreover, the APCA does not require the Board to hold “in-person” public hearings. Section 7(a) of the APCA states “Public hearings shall be held by the board or by the department, acting on behalf and at the direction or request of the board, in any region of the Commonwealth affected before any rules or regulations with regard to the control, abatement, prevention or reduction of air pollution are adopted for that region or subregion.” The commentators and legislators seem to be interpreting the phrase “in any region of the Commonwealth affected” in Section 7(a) as creating a requirement for “in-person” public hearings. The Board disagrees with this interpretation and contends that the intent of the statutory language is to ensure that a public hearing is held in a location that is actually impacted by a regulation. For instance, section 7(a) would prevent the Board from holding one public hearing in Harrisburg for a regulation that only impacts the Northwest region. For this final-form rulemaking, the Board satisfied the public hearing requirement in section 7(a) of the APCA by holding ten well-attended virtual public hearings. As this final-form rulemaking impacts the entire Commonwealth, the virtual public hearings were accessible Statewide.

5. This final-form rulemaking is consistent with the intent of the General Assembly.

IRRC questions whether the regulation is consistent with the intent of the General Assembly. The commentator notes that the current balance of the Clean Air Fund is approximately \$26 million dollars and that the Department anticipates that this rulemaking will raise over \$2 billion dollars between 2022 and 2030. IRRC is concerned that the General Assembly did not contemplate or envision the Clean Air Fund growing to that amount and that it could be spent at the discretion of the Secretary under the guidance provided by a regulation (Chapter 143) promulgated over 40 years ago. IRRC asks the Board to explain how this process of collecting proceeds and distributing funds of this magnitude is consistent with the intent of the General Assembly when the APCA was enacted.

As the Board explained under the subsection titled *Authority to limit CO₂ emissions and to participate in RGGI through this final-form rulemaking*, this final-form rulemaking is consistent with the intent of the General Assembly. The Board is acting within the existing statutory authority granted by the General Assembly. Section 6.3(a) of the APCA provides the Board with broad authority to establish fees to support the air pollution control program authorized by the APCA and not covered by fees required by section 502(b) of the Clean Air Act. As provided under section 9.2(a) of the APCA, all auction proceeds will be used to support the elimination of

air pollution and in furtherance of the purpose of the APCA. While the auction proceeds may appear to be significant, the fee amounts are necessary to further achieve through investments the GHG emission reductions needed to address climate change and protect public health and welfare.

IRRC notes that many of the commentators that support this final-form rulemaking provided suggestions on how the auction proceeds could be allocated. Some of the suggestions would appear to be outside of the parameters established by 25 Pa. Code Chapter 143. IRRC agrees with comments submitted by the Pennsylvania Office of Consumer Advocate that suggest the DEP should “seek further authority” to allow for a broader use of the auction proceeds. Alternatively, IRRC suggests that the Department could initiate a rulemaking to amend existing Chapter 143 to allow for a broader use of the proceeds.

In response, the Board and the Department are not planning on seeking further authority for the use of the auction proceeds as the authority provided under section 9.2(a) of the APCA is quite broad. Section 9.2(a) allows the Department to use fees to further eliminate air pollution in this Commonwealth. As required under section 9.2(a) of the APCA, the Board adopted Chapter 143 to further provide for the management and use of the money in the Clean Air Fund. Section 143.1(a) states that “monies paid into the Clean Air Fund may be disbursed at the discretion of the Secretary for use in the elimination of air pollution.” See 25 Pa. Code § 143.1(a). Under § 143.1(b), the “full and normal range of activities” of the Department are considered to contribute to the elimination of air pollution. See 25 Pa. Code § 143.1(b). Section 143.1(b) also includes a nonexclusive list of purposes that the Clean Air Fund monies can be used for, including the purchase of contractual services and payment of the costs of a public project necessary to abate air pollution. Section 143.1(b) therefore specifically provides for the Department to both use the auction proceeds to invest in projects that further reduce GHG emissions and to contract with RGGI, Inc. for administrative and technical support services. For these reasons, the Board and the Department do not find it necessary to seek further authority or to initiate a rulemaking to amend Chapter 143. However, if the General Assembly enacts legislation that extends the Department’s authority to use the auction proceeds, the Department would be able to further assist transitioning workers and environmental justice communities.

6. Need for this final-form rulemaking; Economic or fiscal impact.

IRRC questions whether the regulation is needed and asks the Board to address the economic and fiscal impact. IRRC notes that questions raised about the need for this final-form rulemaking are numerous but revolve around two main issues. The first, as noted by the Senate ERE Committee, is the fact that CO₂ emissions from fossil-fuel power generation in this Commonwealth have been reduced by 38% since 2008. This reduction trend is likely to continue because of the price of natural gas and the development of renewable energy. Second, the rulemaking will push the generation of electricity to states like West Virginia and Ohio that do not participate in RGGI. If these states increase their production of fossil-fuel-generated electricity, as predicted by some commentators, the overall health benefits to this region of the country, and Pennsylvania specifically, will be minimal and come at a steep economic cost.

This final-form rulemaking is needed to reduce CO₂ emissions in this Commonwealth. This Commonwealth has established Statewide goals to reduce GHG emissions economy-wide by

26% by 2025 and 80% by 2050 in comparison to 2005 levels. While this Commonwealth has achieved reductions from all sectors, including the power sector, more is needed to meet these goals, set to avoid the worst impacts of climate change. This Commonwealth's participation in RGGI would provide significant assurance that prudent investments of the auction proceeds coupled with other GHG abatement activities will allow this Commonwealth to remain on track to reach the 2025 reduction goal. Without the reductions associated with the implementation of this final-form rulemaking, this Commonwealth will fail to reach even the interim GHG reduction goal established for this Commonwealth.

While emissions from the generation sector have decreased since 2008, the current trajectory of emissions reductions in the power sector is not sustainable. There are few remaining coal-fired EGUs, which based on updated modeling are anticipated to cease most if not all generation by 2025. The air emissions gains that were realized through fuel switching (coal to natural gas) and replacing aging coal-fired facilities with new natural gas plants have mostly occurred. Moving forward a new approach is needed to achieve further reductions. Historic trends provide no guarantee of what the emissions profile for this Commonwealth's electricity sector will look like in the future. For example, electricity generation is very sensitive to the costs of inputs, the major input of which is fuel. As this Commonwealth has seen over the last year, the COVID-19 pandemic led to an increase in natural gas prices, in turn generating electricity with natural gas became more expensive and in response production of electricity using coal as an input increased. In turn this led to an increase in emissions in this Commonwealth. Even though demand for electricity decreased, the method and fuel from which that electricity has been created was more energy and emissions intensive leading to increased emissions even when the overall demand for electricity had decreased. The energy market is very dynamic, and historic emissions trends and profiles are not indicative of future trends, not without concrete targets and goals regarding emissions reductions. RGGI is a proven market-based program, and one that recognizes that CO₂ emissions from fossil fuel-fired EGUs exist, and the cost of this pollution should be factored into the price of that electricity. This allows us to value the real cost of electricity generation when the cost of these emissions is factored in and helps position this Commonwealth to remain competitive in an ever-evolving energy market where clean energy is highly valued both in this Commonwealth and in the other states to which we export electricity.

The Department's power sector modeling indicates a potential for emissions and generation leakage, meaning that some of the emissions decrease in this Commonwealth tied to decreased generation in this Commonwealth may be made up for by increased generation in other states across the region. This shift most often occurs between states that have implemented carbon pricing programs (like RGGI) and those states that do not have carbon pricing. The modeling indicates that this Commonwealth's participation in RGGI could lead to between 97 million and 227 million tons of CO₂ reductions between 2022 and 2030. These emissions reductions are going to occur in this Commonwealth and are not tied to or dependent on actions by other surrounding states. When this Commonwealth implements this final-form rulemaking, significant CO₂ emissions reductions occur within this Commonwealth. Tied to these significant emissions reductions are the resulting health impacts. The Department calculated that if 188 million tons of CO₂ are avoided through 2030 then this Commonwealth's residents would see cumulative health benefits amounting to \$2.79—\$6.3 billion. Penn State's study projected even higher health benefits, on the order of \$1 billion to \$4 billion per year over the initial decade of this Commonwealth's RGGI participation, specifically noting the conservative nature of the

Department's calculations. These health benefits accrue within this Commonwealth as a result of this regulation, and again are not tied to decisions by outside actors.

Where leakage becomes a consideration is when the focus on emissions reductions is outside of this Commonwealth and across a broader region, for example, the PJM Interconnection, the regional transmission organization consisting of parts of 13 states and the District of Columbia. The potential for an evaluation of leakage has been a focus of PJM since the creation of the RGGI as PJM has some member states that participate in RGGI (have a carbon price) and some that do not (have no carbon price). In order to more thoroughly study the potential for leakage and the magnitude of that leakage, PJM created the Carbon Pricing Senior Task Force (CPSTF). This group, in which the Department has been an active participant, has examined the impacts of both the recent entry of Virginia into RGGI and also the potential impacts of this Commonwealth's participation in RGGI. PJM's independent power sector modeling came to the same conclusions as the Department's modeling, that though there was some potential for leakage, this did not undermine the significant emissions reduction potential within this Commonwealth, nor did it undermine emissions benefits across the PJM region. See PJM Interconnection, Issue Charge of the Carbon Pricing Senior Task Force, 2019, www.pjm.com/-/media/committees-groups/task-forces/cpstf/postings/issue-charge.ashx?la=en. Even with the potential for leakage, PJM determined that in addition to significant benefits within this Commonwealth there was a net benefit across the PJM region as well. When this is extrapolated further to the Eastern Interconnection, there continues to be a net benefit, the value of which decreases as the lens through which the reductions are viewed becomes wider.

In addition to the modeling conducted by the Department and PJM, the report by the Penn State Center for Energy Law and Policy also addresses leakage. Their associated modeling confirms the potential for leakage, and bolsters results from PJM and the Department in confirming that despite leakage, CO₂ emissions in the multi-state PJM region decline following this Commonwealth participating in RGGI. Though some emissions may shift to other states, the potential increases in other states' emissions do not absorb the emissions reductions occurring in this Commonwealth. This Commonwealth's EGUs with close proximity to abundant and inexpensive natural gas have a competitive advantage over similar operations in other states. While some other states may experience some increased emissions, again any increase in emissions in the region is out measured by the decrease in this Commonwealth, thereby resulting in net benefits across the region. Additionally, these leakage estimates and models are based on current and predicted market conditions based on existing laws and policies, exclusive of any further regional or National action on carbon pricing which would minimize or entirely eliminate the potential for leakage.

The Department compiled a Pennsylvania RGGI Modeling Report which provides a detailed explanation of modeling processes, assumptions, inputs, and outputs to provide a broad understanding of the results. This summary report and all the modeling results and recordings of the public webinars providing further explanation of key results are available on the Department's RGGI webpage located at https://files.dep.state.pa.us/Air/AirQuality/AQPortalFiles/RGGI/PA_RGGI_Modeling_Report.pdf.

IRRC agrees that the goal of reducing GHGs through RGGI and this final-form rulemaking is laudable. However, IRRC mentions that the declining emissions from fossil-fuel-fired EGUs that has occurred over recent years without participation in RGGI and the leakage that will occur if this Commonwealth does join RGGI raises the question of whether this final-form rulemaking, and its potential benefits, are needed compared to the potential negative fiscal impact that is predicted by the Committees, certain legislators and some members of the regulated community. To assist IRRC in determining if the rulemaking is in the public interest, IRRC asks the Board to explain why the benefits of the rulemaking outweigh the costs associated with its implementation.

The benefits of this final-form rulemaking far exceed any associated costs. According to the Department's 2021 Pennsylvania Climate Impacts Assessment, climate change is already having a negative impact on this Commonwealth with wide-ranging economic impacts, from disruptions to recreation and tourism to agriculture and infrastructure service disruptions. Furthermore, climate change will not affect all Pennsylvanians equally. Some may be more at risk because of their location, income, housing, health, or other factors. As this Commonwealth works to reduce its climate risks, steps should be taken to ensure that these inequitable impacts are addressed, and that efforts to address climate change do not inadvertently exacerbate inequities. The harm is already being felt by this Commonwealth's most vulnerable residents, and we must not delay implementation as this final-form rulemaking is clearly in the public interest. As mentioned above, failure to implement this final-form rulemaking, or even a delay in implementation will cause this Commonwealth to miss its 2025 interim GHG reduction goal with concerns regarding the trajectory toward meeting the 2050 goal.

As CO₂ budget sources would need one allowance for each ton of CO₂ emitted, the owners or operators would need to acquire 61 million CO₂ allowances at the estimated 2022 allowance price of \$3.24 (2017 \$/Ton). If these CO₂ allowances were all purchased at quarterly multistate auctions in 2022, the total purchase cost would be \$198 million. The CO₂ 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 \$198 million will be passed onto this Commonwealth's electric consumers as 25% of this Commonwealth's electricity is sold out of state.

Even if assuming the \$198 million is the annual price tag of the program, which as explained above is an over estimation, the resulting public health benefits alone are estimated to be higher at \$232—\$525 million annually. The value of partial benefits already exceeds the cost of the program, and this does not account for the total environmental, health and economic benefits of CO₂ reductions, nor does it include the benefits of the reinvestment of the quarterly auction proceeds, a major economic driver.

The independent Penn State study also confirms that the climate benefits for this Commonwealth exceed the monetary costs of participation in RGGI. Penn State's analysis projected even higher health benefits, on the order of \$1 billion to \$4 billion per year over the initial decade of this Commonwealth's RGGI participation, specifically noting the conservative nature of the Department's calculations. Looking at the benefits even through the narrow lens of health benefits, the benefits exceed the costs with additional benefits accruing from the

reinvestment of the auction proceeds. This is consistent with the actual results of participation for the existing participating states over the last decade.

7. This final-form rulemaking is supported by acceptable data.

IRRC questions whether the regulation is supported by acceptable data. IRRC also notes that commentators have raised concerns about the modeling employed by the Board to quantify the economic and health benefits of the rulemaking. They question if the data considered is acceptable and appropriate. First and foremost, commentators are concerned that the underlying assumptions and data used for the modeling have not been made available to the public. IRRC urges the Board to share the underlying assumptions and data used for its modeling and address the following issues to demonstrate the validity of the data upon which the regulation is based:

- a) Emissions reductions in the Commonwealth have been overstated because of leakage; therefore, the monetized health benefits are also overstated.
- b) The modeling compares cumulative data for the time from 2019-2030, but the Commonwealth will not join RGGI until 2022.
- c) The model uses an estimate of future natural gas prices which could be much lower than predicted.
- d) The model does not account for new natural gas generation, but it does account for new renewable generation.
- e) The modeling was conducted before New Jersey and Virginia joined RGGI.
- f) The actual cost of buying an allowance will be higher than projected.
- g) The modeling fails to account for the economic downturn related to the COVID-19 pandemic.
- h) The model fails to account for the expansion of other federal and state regulations and initiatives that impact the production and distribution of electricity.

In response, the Department has been transparent in terms of the modeling and the inputs and assumptions that went into the modeling, both for the original 2020 modeling and the updated 2021 modeling runs as well. The underlying data and assumptions are sound, and the Department's modeling aligns with the real-world benefits that have accrued to the RGGI participating states. All modeling results, assumptions and raw data have been made available to the public through the Department's website in several areas and has been presented and discussed with thousands of stakeholders through the course of this rulemaking. The Department has also held individual meetings with stakeholders and the modeling contractor when requested to make sure that all questions and inquiries regarding the modeling were thoroughly answered. The modeling information posted to the Department's website consists of comprehensive spreadsheets containing all the assumptions and raw data upon which the Department's analyses and conclusions were based.

The Department also compiled a Pennsylvania RGGI Modeling Report which provides a detailed explanation of modeling processes, assumptions, inputs, and outputs to provide a broad understanding of the results. This summary report, all the modeling results and recordings of the public webinars providing further explanation of key results are available on the Department's RGGI webpage located at www.dep.pa.gov/RGGI.

The Board addresses the issues noted by IRRC and other commentators individually below in a)—h) to demonstrate the validity of the data upon which this final-form rulemaking is based.

a) In response, the modeling indicates that this Commonwealth's participation in RGGI could lead to between 97 million and 227 million tons of CO₂ reductions between 2022 and 2030. The Department's modeling indicates what emissions reductions will occur in this Commonwealth. These are not based on regional benefits, but State benefits alone. When this Commonwealth implements this final-form rulemaking, significant CO₂ emissions reductions occur within this Commonwealth. Tied to these significant emissions reductions are the resulting health impacts. The Department calculated that if 188 million tons of CO₂ are avoided through 2030 then this Commonwealth's residents would see cumulative health benefits amounting to \$2.79—\$6.3 billion. Penn State's study projected even higher health benefits, on the order of \$1 billion to \$4 billion per year over the initial decade of this Commonwealth's RGGI participation, specifically noting the conservative nature of the Department's calculations. These health benefits accrue within this Commonwealth as a result of implementation of this final-form rulemaking, and if anything, the Department's health benefits are understated.

b) In response, when evaluating the impacts of RGGI participation on the power sector, there are two separate modeling runs or scenarios. The first scenario, the Reference Case or Business-as-Usual Case projects what this Commonwealth's power sector will look like in the future without this Commonwealth's participation in RGGI, and the Policy Case or the RGGI case projects what this Commonwealth's power sector will look like with RGGI participation. These two modeling cases are then compared to help project the impacts of RGGI participation on electric transmission and generation and electric sector emissions, among others in this Commonwealth. When this modeling was first completed in 2020 for the proposed rulemaking, the most recent year of available data was 2019. Therefore, the 2019 data was included in the 2020 round of modeling. While the time period for the IPM analysis was 2019 through 2030, the modeling specifically provided projections for 2020, 2022, 2025, 2028, and 2030. When the modeling was updated in early 2021 for this final-form rulemaking, the most recent year of available data was 2020. Therefore, the 2020 data was included in the 2021 round of modeling and as such the time period for the updated IPM analysis was 2020 through 2030.

The time period for the IPM analysis includes years prior to the implementation of this final-form rulemaking for two reasons. First, as stated, the only available data for each round of modeling was either 2019 or 2020. Second, the Policy Case assumes this final-form rulemaking will be in effect in 2022, so the modeling needs to account for certain assumptions, for example legal or policy requirements that are projected to change, in years before 2022. This accounts for any differences between the Reference Case and the Policy Case in years prior to 2022. Lastly, these assumptions are not only a factor in the Department's modeling, but can also be seen by the functioning of the actual energy market. For example, on March 13, 2020, Energy Harbor, the owner of the Beaver Valley nuclear power plant, responsible for 1,845 MW of carbon free generation, withdrew its closure announcement, specifically citing this Commonwealth's intended participation in RGGI as a key determinant in continuing operations.

c) In response, the modeling includes natural gas prices that are the average of the Annual Energy Outlook (AEO) Reference Case and the High Gas Resources Case which are published annually by the EIA. The AEO Reference Case is used as a starting point, and then averaged

with the High Gas Resources Case because of this Commonwealth's location within the shale region. This hybrid method is used because neither the AEO Reference Case nor the AEO High Gas Resources Case are singularly representative of gas prices in this Commonwealth. Averaged together, the two cases provide as accurate a forecast as possible for modeling purposes. However, the Board notes that these are forecasted prices and there is a possibility that future prices could vary.

d) In response, the modeling accounts for all available data for new generation within this Commonwealth and the surrounding states despite the fuel source. The specific list of projects that were included as firm capacity additions for this Commonwealth is included in the publicly available modeling results on the "Assumptions Overview- Firm Capacity Changes in PA" tab on the Department's RGGI webpage located at www.dep.pa.gov/RGGI. In the 2020 power sector modeling, the Department included 3,131 MW of new natural gas combined cycle capacity and 251 MW of new solar generation capacity.

e) In response, in the Reference Case for the modeling, RGGI was modeled as an 11-state program including the 9 states participating in RGGI at the end of 2019 — Massachusetts, Connecticut, Maine, New Hampshire, Rhode Island, Vermont, New York, Delaware, and Maryland. Additionally, New Jersey and Virginia were included in the modeling as projected to begin participation on January 1, 2020, and January 1, 2021, respectively. In particular, the starting CO₂ allowance budget for New Jersey was input at 18 million short tons, and the starting CO₂ allowance budget for Virginia was input at 27.16 million short tons. The IPM Policy Case uses similar assumptions as the Reference Case with the key difference that it assumes that this Commonwealth will begin participation in RGGI on January 1, 2022.

f) In response, the RGGI auction clearing prices in late 2020 and early 2021 had a higher price compared to the projected CO₂ allowance prices in the Department's 2020 modeling. The difference between projected CO₂ allowance prices and actual CO₂ allowance prices can be due to a number of factors, including the end of the RGGI three-year control period, the change of the Federal administration, the fact that Virginia began participating in RGGI at the start of 2021, among others. The IPM model generates a CO₂ allowance price based on actual market fundamentals, including the projected supply and demand of CO₂ allowances during the modeling period. However, the model does not take into account behavioral considerations that impact auction bidder behavior and expectations. Bidder expectations can influence the CO₂ allowance price, and therefore lead to a difference from the projected CO₂ allowance price.

g) In response, the Board and the Department received comments and feedback on the power sector modeling through our extensive advisory committee meetings, webinars, public hearings, and the formal public comment period. Understanding the concerns that were raised, the Department conducted a second round of modeling to ensure that the modeling was as up to date as possible, specifically to confirm that the starting CO₂ allowance budget for 2022 and other components of this final-form rulemaking were still appropriate. In February of 2021, the Department updated the power sector modeling assumptions and inputs previously included in the 2020 round of modeling. These assumptions and inputs include the following: updated PJM electricity demand forecast, 2021 AEO Natural Gas Prices, updated capacity additions and retirements, updated technology costs and revisions to State law and policies which encompasses

the new in-state generation requirement for Tier II resources under the Alternative Energy Portfolio Standards Act (73 P.S. §§ 1648.1—1648.8).

Most notably, the main difference in the modeling assumptions between 2020 and 2021 was the demand forecast for electricity. As a direct impact of the COVID-19 pandemic, the projections for the future demand of electricity are below the 2020 projections made prior to the onset of the pandemic. In sum, while the original 2020 modeling did not account for the impacts of the COVID-19 pandemic, the updated 2021 modeling conducted for this final-form rulemaking includes those impacts.

h) In response, the IPM model properly takes into account the expansion of other Federal and State regulations and initiatives that impact the production and distribution of electricity. IPM is a dynamic linear programming model that generates optimal decisions under the assumption of perfect foresight. It determines the least-cost method of meeting energy and peak demand requirements over a specified period. In its solution, the model considers several key operating or regulatory constraints that are placed on the power, emissions and fuel markets. The constraints include, but are not limited to, emission limits, transmission capabilities, renewable generation requirements and fuel market constraints. The model is designed to accommodate complex treatment of emission regulations involving trading, banking and special provisions affecting emission allowances, as well as traditional command-and-control emission policies. The specific Federal and State laws and policies that are included in the modeling runs are outlined on the “Assumptions Overview” tab on the Department’s RGGI webpage located at www.dep.pa.gov/RGGI, the very first tab located in each of the modeling results files.

8. This final-form rulemaking will not have a negative economic or fiscal impact to this Commonwealth.

IRRC notes that there is no consensus on how this final-form rulemaking will affect the economy of this Commonwealth. IRRC asks the Board to review the concerns of those commentators that have raised issues related to the effect on the economy and provide updated and revised information in the RAF related to the potential economic and fiscal impact of this final-form rulemaking. In particular, commentators believe that the requirement to purchase allowances by coal and older natural gas-fired EGUs will result in those units becoming uneconomical to operate. As a result, these EGUs will close, impacting the coal mining industry of this Commonwealth and hundreds of small businesses and labor unions that support those industries. Another concern is that the price of electricity will increase. The price that electric utilities pay for electricity from fossil fuel-fired generators will increase and the additional cost will be passed on to residential, commercial and industrial rate payers. Low-income residents and those economically affected by the COVID-19 pandemic, small businesses and large industrial users will be impacted. Large industrial users of electricity may base a decision to locate or relocate a business based on the price of electricity in this Commonwealth. Additionally, IRRC mentions that commentators also note that local governments where the coal-related industries and small businesses operate will be negatively impacted because of the tax loss that will result from the rulemaking. One commentator has stated that the fiscal impact of the rulemaking will be the loss of over 8,000 jobs, the loss of \$2.82 billion in total economic impact, the loss of \$539 million in employee compensation, and the loss of \$34.2 million in state and local tax revenue. However, other commentators believe any potential economic disruption

caused by this final-form rulemaking will be negligible because of growth of other segments of the economy.

In response, the Department's updated 2021 modeling shows that most if not all the coal-fired generation in this Commonwealth, except for waste coal-fired facilities, will cease generation by 2025. These are the results of the Business-as-Usual or Reference case which does not take into consideration the impacts of this Commonwealth's participation in RGGI on the power sector. Notably, this is a divergence from the results of the Business-as-Usual or Reference case from the 2020 modeling which had projected that coal generation was expected to cease by 2030, though this Commonwealth's participation in RGGI and the associated CO₂ allowance price were previously shown to accelerate these retirements to some extent.

As explained in detail in prior responses, the Department's economic modeling shows that this Commonwealth's participation in RGGI will lead to a net increase of more than 30,000 jobs and an addition of \$1.9 billion to the Gross State Product, a measurement of the value of the State's economy, indicating economic growth. The Department's modeling incorporates any impacts to economic activity, divestment and loss of tax base that would occur as a result of this final-form rulemaking. Further, the Department's modeling projects this Commonwealth will continue to have lower electricity prices than nearly all of the participating states from 2022-2030, demonstrating the continued advantage of operating a business in this Commonwealth relative to nearby states.

Additionally, Penn State's study confirms the economic benefits accruing as a result of this Commonwealth's participation in RGGI and suggests positive economic impacts beyond even those calculated by the Department. Penn State indicates that between 2022 and 2030, this Commonwealth's participation in RGGI will yield \$2.6 billion in net economic benefit to this Commonwealth. These have also been the results reported by the participating states and summarized in the RGGI review conducted by the Analysis Group.

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 CO₂ 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. In sum, 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.

The Board agrees with other commentators that any potential economic disruption caused by this final-form rulemaking will be negligible because of growth of other segments of the economy.

9. This final-form rulemaking complies with the provisions of the RRA.

IRRC requests additional information and more complete answers to the following sections of the RAF, in addition to the more thorough analysis regarding potential fiscal or economic impact

requested. First, Section 17 of the RAF asks an agency to identify the financial, economic and social impact of the regulation on individuals, small businesses, businesses and labor organizations and other public and private organizations. It also asks an agency to evaluate the benefits expected as a result of the regulation. The Board provides a detailed explanation of the expected environmental, health and economic benefits of the regulation for society as a whole. It also provides a dollar estimate of the potential cost to residential customers in terms of monthly electricity bills. However, the explanation does not provide a similar estimate for small businesses and other businesses. IRRC asks the Board to provide that information in the RAF submitted with the final regulation. Second, Section 19 of the RAF asks an agency to estimate any costs or savings to the regulated community associated with legal, accounting or consulting procedures. IRRC asks the Board to estimate the cost associated with an owner or operator having an account representative required to participate in allowance auctions under RGGI.

In response, the Board added supplementary information to the responses to sections 17 and 19 of the RAF. The Board particularly added more detail regarding the estimates for small businesses and other businesses. Additionally, potential costs and savings to the regulated community are discussed in more detail in the RAF, including the estimated cost associated with an owner or operator having an account representative required to participate in the multistate auctions under RGGI.

10. This final-form rulemaking will not negatively impact small businesses and provisions have been made to assist small business stationary sources with compliance.

IRRC questions whether a less costly or less intrusive alternative method of achieving the goal of the regulation has been considered for the regulation impacting small businesses. IRRC asks the Board to consider the following options, and if it decides to proceed with the current rulemaking, provide an explanation of why these alternatives are not appropriate. First suggestion is do nothing: A comment letter signed by 40 Representatives of the General Assembly states that the current regulatory environment and existing market forces have already significantly reduced CO₂ emissions in the Commonwealth. The “status quo is a far less costly and intrusive method than RGGI at achieving tremendous reductions in carbon emissions.” Second, the letter states the Department could achieve its objective with a “gradually declining CO₂ emissions budget without the exorbitant costs proposed by this submission.” This could be accomplished by calculating a price to auction emissions that would cover the cost needed to administer RGGI.

As mentioned in the Board’s prior responses, status quo will not achieve the emissions reductions needed to protect public health and the environment, nor are current measures adequate to address climate change. The Department’s modeling effort as mentioned above included two separate modeling runs, the first of which is (a) the reference case which reflects business-as-usual with no regulatory or policy changes, and (b) the policy case which is reflective of the impacts of this final-form rulemaking. In comparing these modeling scenarios, without this final-form rulemaking in place, this Commonwealth will emit 97—227 million tons of CO₂ more than with the implementation of this final-form rulemaking. Additionally, residents of this Commonwealth will not benefit from improved air quality or realize the economic, job impacts or health benefits that result from this final-form rulemaking.

Furthermore, rather than benefitting from implementation of this final-form rulemaking, there will be a deleterious impact on the environment, health and the economy without this meaningful and decisive action. Business-as-usual or status quo does not address climate change in a meaningful way. While there may be emissions reductions in the future, they do not occur at the rate or level at which is required to avoid the worst impacts of climate change. Additionally, as a Commonwealth we will not be capable of honoring our commitment to address climate change and will fall short of meeting the interim 2025 GHG reduction goal.

Part of what makes RGGI economically efficient is that it is a regional program, allowing for EGUs to achieve least cost compliance by buying and selling CO₂ allowances whether in multistate auctions or in the secondary market. CO₂ allowances are fungible, meaning that though this Commonwealth has an established CO₂ allowance budget for each year, this Commonwealth's CO₂ allowances are available to meet the compliance obligations in any other participating state and vice versa. Therefore, emissions from this Commonwealth's power sector are not limited to strictly the amount of this Commonwealth's CO₂ allowances. This cooperation allows EGUs more flexibility in terms of compliance and allows the market to signal entrance and exit of generation. In this respect, the market assists in achieving least cost compliance for all participating states. Furthermore, strategic investments of the auction proceeds within this Commonwealth reduce GHG emissions even further than this Commonwealth's annual CO₂ allowance budget alone.

11. Implementation procedures for the set-aside provisions and limited exemption.

IRRC asks the Board to respond to technical comments for and against the set-aside provisions and comments requesting full exemptions instead of set-asides. Additionally, IRRC asks the Board to respond to technical comments suggesting ways to improve the implementation of the set-asides and exemptions.

Each state has the authority and discretion as to how CO₂ allowances are treated which is memorialized in each state's CO₂ Budget Trading Program regulation. Allocation of the CO₂ allowances is just one mechanism through which states further public policy goals. For example, each state must decide how to make the CO₂ allowances available. In addition to states offering CO₂ allowances for sale through the multistate auctions, most participating states also opt to have set-aside accounts. These states specifically carve out or "set aside" a portion of the state's CO₂ allowance budget to assist certain sectors with part or all of their compliance obligations or allow other sectors to monetize the CO₂ allowances for further investment.

In this final-form rulemaking, the Board has provided three set-aside options, which are discussed in detail in this preamble. First, the Board is setting aside CO₂ allowances to assist this Commonwealth's waste coal generation sector with compliance with this final-form rulemaking. While waste coal facilities are not exempt from this final-form rulemaking, the Department will oversee the sector's compliance using CO₂ allowances that have specifically been carved out or "set aside" for this purpose. In other words, the compliance costs for waste coal-fired EGUs will be minimal.

At the beginning of each compliance year, the Department will set-aside CO₂ allowances for the waste coal facilities, thereby eliminating the need for the facilities to purchase these

allowances in either the multistate auctions or on the secondary market. The waste coal set-aside is equal to 10.4 million tons of CO₂ emissions, an increase from the 9.3 million as outlined in the proposed rulemaking, in response to comments received during the public comment period. Some commentators requested an increase in the set-aside allocation to allow for future expansion of the waste coal industry, while others requested that the set aside allocation be reduced or completely eliminated. In response, the Department slightly increased the value of the set-aside to account for a facility previously marked for closure that will now remain in operation.

Much like the comments received on the waste coal-set aside, the Board received comments asking for both the expansion and elimination of the cogeneration (now CHP) set-aside. Furthermore, commentators asked for clarification as to what facilities would qualify for the set-aside and how those calculations would be performed. In response to comments, the Board changed the name and description of the set-aside to clarify that the specific type of cogeneration facilities the set-aside covers are CHP facilities.

Some commentators requested the elimination of the CHP set-aside, indicating the anti-competitive nature of this set-aside. In response, the Board notes that facilities that would qualify for this set-aside are not strictly electricity producers in the plainest sense but have on-site generation that is feeding an interconnected facility. In other words, while these facilities do have some electricity that is sold to the grid, that is not the key focus of their business model nor is the amount of electricity sold to the grid in a volume that allocation of CO₂ allowances would create an anti-competitive environment.

Comments were also made requesting that the Board expand the value of the CHP set-aside to account not only for a portion of the qualifying facility's compliance obligation, but to account for all of a qualifying facility's compliance obligation. Commentators indicated that without a full set-aside the Department may be creating a disincentive for existing CHP facilities to operate efficiently and a potential disincentive for the future buildout of additional CHP facilities. The commentators emphasized that this runs counter to the recommendations outlined in the Department's Climate Action Plan and the PUC's Policy Statement on Combined Heat and Power. Commentators indicated that any disincentive for these facilities to operate at anything, but peak efficiency was undermining the environmental benefits of CHP and may lead to other facilities with higher emissions intensity generating the lost electricity.

In response, the Board developed a two-tier approach to the CHP set-aside whereby facilities meeting strict efficiency criteria may be eligible for a full set-aside while other qualifying CHP facilities that do not meet those criteria may qualify for the partial set-aside. This allows for efficient operation of existing CHP facilities and does not interfere with the potential for future buildout of CHP in this Commonwealth.

The Board received comments asking that rather than depositing undistributed CO₂ allowances from the waste coal set-aside account into the strategic use set-aside account, that the strategic use set-aside account have its own independent CO₂ allowance allocation. In response, the Board notes that the Department has the flexibility in future years to deposit CO₂ allowances into the strategic use set-aside if the undistributed CO₂ allowances are not sufficient to support activity in

this set-aside account. Because the Department has this flexibility already, the Board decided to maintain the allowance allocation structure as proposed.

Furthermore, comments were received asking that the Board add a new set-aside or modify the strategic use set-aside to develop a Voluntary Renewable Energy Set-aside akin to those established by a few of the participating states. In response, the Board elected to keep the strategic use set-aside as proposed, with some clarifications to explain that renewable and other non-emitting energy technologies would qualify for allocation of allowances under the strategic use set-aside. Rather than restrict the types of projects that would qualify for allowances, the Board has elected to keep the broader, more inclusive nature of the strategic use set-aside.

The Board also received comments requesting that the process by which applicants could apply for allowance allocations be more clearly outlined in the regulation. The Board responded with modifications to the regulation clearly outlining the set-aside application process and requirements. An additional requirement was added clarifying that CO₂ allowances are distributed upon the completion of a project which is not legally required. Projects that are completed for compliance purposes or as the result of settlements do not qualify for an allocation of allowances under the strategic use set-aside account.

IRRC asks the Board to consider delaying the implementation of the rulemaking for one year. IRRC suggests that this additional time would allow the regulated community an opportunity to adjust their business plans to account for the potential increased costs associated with this Commonwealth joining RGGI.

The Board understands the concerns expressed by IRRC and other commentators; however, this Commonwealth cannot wait any longer to address CO₂ emissions from fossil-fuel fired EGUs. On October 3, 2019, it was announced that the Department was going to begin this rulemaking process, which provided more than two years' notice to the regulated community of the forthcoming regulation. As has been stated above, further delay would compromise this Commonwealth's ability to meet the GHG emissions reductions goals, and cause harm to public health and the environment which the Department is responsible for protecting under the APCA. Furthermore, due to the nature of compliance in the RGGI program, the first real compliance deadline occurs more than a year after the anticipated January 1, 2022 start date, further extending the compliance horizon for covered facilities.

RGGI operates on a three-year compliance schedule whereby only partial compliance is required within the first two years, and then full compliance is required after the end of the third year. The current RGGI three-year compliance period began in 2021, so 2021 and 2022 are interim compliance years while 2023 is a full compliance year. What this means is that facilities only need to acquire 50% of the necessary CO₂ allowances during the interim compliance years, but need to hold 100% of CO₂ allowances for the entire three-year control period by March 1 of the following year.

For example, while January 1, 2022 or the first day of the next calendar quarter following publication is the date upon which the CO₂ requirements begin for this Commonwealth, the first compliance deadline is not until more than a year later on March 1, 2023 with full compliance not required until March 1, 2024 providing ample time to comply.

12. Provisions of this final-form rulemaking were amended for clarity.

IRRC says the applicability provision under § 145.304 is unclear because it does not specify that only units that are operating would have to comply with the regulation. IRRC suggests that the final regulation be amended to improve the clarity of this requirement. In response, the Board amended § 145.304 to remove the language related to a unit operating at any time on or after January 1, 2005 to clarify that only fossil fuel-fired EGUs currently operating in this Commonwealth need to comply with this final-form rulemaking.

IRRC is concerned that § 145.314 does not require the owner or operator of a unit to verify anything. Section 145.314 specifies what must be included in a complete account certificate of representation for a CO₂ authorized account representative or a CO₂ authorized alternate account representative. IRRC recommends that the final-form regulation be amended to require the owner or operator of a unit to sign or verify in some manner that the representative is authorized to represent their interests under the CO₂ budget trading program.

In response, the Board notes that in addition to the language pertaining to the account representatives in § 145.314, there is language in § 145.311 providing that “the representative of the CO₂ budget source shall be selected by an agreement binding on the owner or operator of the source and all CO₂ budget units at the source and must act in accordance with the certificate of representation under § 145.314.” Additionally, the owner or operator should already have a designated representative who submits data to the EPA on behalf of the owner or operator. To participate in COATS, a representative of the CO₂ budget source must complete a Certificate of Representation form and submit the form to the EPA. The account representative listed on the form for a CO₂ budget source must match the representative for that facility in the EPA’s Clean Air Market Division system. The regulatory language in sections 145.311 and 145.314 is also consistent with the existing language in the Board’s NO_x Budget Trading Program regulation in 25 Pa. Code Chapter 145, Subchapter A and the RGGI Model Rule.

G. Benefits, Costs and Compliance

The CO₂ emission reductions accomplished through implementation of this final-form 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 CO₂ emissions

This final-form rulemaking includes a CO₂ emission budget which declines by approximately 20 million short tons from 2022 to 2030 within this Commonwealth. However, this Commonwealth projects to reduce its CO₂ emissions from EGUs within this Commonwealth by between 97 million short tons and 227 million short tons as a direct result of participation in RGGI. This results in CO₂ 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 CO₂ emission reductions resulting from this final-form 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 from the 2021 modeling of approximately 11 million metric tons of CO₂ per year 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.

While efforts to model impacts of this final-form rulemaking focused on this Commonwealth, the impacts on the participating states in the PJM region, which consists of all or parts of 13 states and the District of Columbia, were also considered. 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 28 million tons of CO₂ across PJM for the period between 2021 and 2030.

It is important to note that the modeling results assume the only policy change impacting the power sector in the region between 2021 and 2030 is this Commonwealth's participation in RGGI. The Department finds that extremely unlikely given the ongoing efforts by PJM, the FERC, and the Federal government. The Department has been an active participant in PJM's Carbon Pricing Senior Task Force which is conducting additional modeling in an effort to better understand and control leakage across the entire PJM region. The FERC hosted a carbon pricing technical conference in the Fall of 2020, resulting in a policy statement requesting public comment on issues such as how to address shifting generation amongst states as a result of carbon pricing. Lastly, the Federal administration is seeking to reduce carbon emissions from the electric power sector, specifically aiming to produce 80% of the nation's electricity from zero-carbon sources. The Department anticipates actions at the regional and Federal level will mitigate potential leakage impacts that may result from this final-form rulemaking.

The participating states together, including this Commonwealth, will achieve regional CO₂ 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. See The World Bank, Calculation based on GDP (current US\$), 2019, <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD>. These CO₂ emission reductions are even more significant when viewed from this collective impact. Reductions in CO₂ emissions will help decrease the adverse impacts of climate change on human health, the environment and the economy. Specifically, CO₂ 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 final-form 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_x and 96% of SO₂. Specifically, mitigating GHGs can lower emissions of SO₂, NO_x, PM, ozone and PM precursors, and other hazardous pollutants, reducing the risks to human health from air pollution.

While this final-form rulemaking requires CO₂ emission reductions, co-pollutants will also be reduced, because multiple pollutants are emitted from fossil fuel-fired EGUs. While the benefits of the cumulative CO₂ emission reductions will be tremendous, the Department also estimates that this final-form rulemaking will lead to a reduction of co-pollutants as well. Based on the 2020 modeling, this final-form rulemaking would provide public health benefits due to the expected reductions in emissions of CO₂ and the ancillary emission reductions or co-benefits of SO₂ and NO_x reductions. The Department's 2020 modeling projects cumulative emission reductions of 112,000 tons of NO_x and around 67,000 tons of SO₂ 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. Based on an assumption that 188 million tons of CO₂ emissions are avoided through 2030, the Department estimated that between 283 and 641 premature deaths will be avoided in this Commonwealth due to emission reductions resulting directly from this final-form 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 SO₂ and NO_x 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 6 years of RGGI implementation alone. From 2009—2014, the participating states avoided around 24% of CO₂ 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 final-form rulemaking would lead to a 31% reduction of projected CO₂ 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_{2.5} 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. One of the important environmental benefits that waste coal ash provides is the neutralization of acid mine drainage, due to the use of limestone as an emission reduction additive during the combustion process. 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 as well as the Commonwealth's efforts to meet and maintain compliance with the NAAQS.

Benefits of CHP

As discussed previously, this final-form rulemaking provides a set-aside and limited exemption for CHP which will benefit existing systems while encouraging new installations in this Commonwealth. CHP units 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 units 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 CO₂ 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. Because CHP units are interconnected with a facility, the electricity consumed on-site is not reduced due to line losses, and climate change resiliency is increased.

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 CO₂ 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 CO₂ 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 CO₂ 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 at the option of the regulated sources. Therefore, CO₂ emissions from this Commonwealth's power sector are not limited to strictly the amount of this Commonwealth's CO₂ 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, CO₂ allowance holdings, and CO₂ 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 or the secondary market, or both, making recommendations regarding proposed market rule changes to improve the efficiency of the market for RGGI CO₂ 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 CO₂ 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 CO₂ 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 CO₂ 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, titled "The Regional Greenhouse Gas Initiative: Ten Years in Review," shows that CO₂ 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.

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 CO₂ 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 final-form rulemaking may create economic opportunities for clean energy businesses. By establishing a cost for emitting CO₂, and pricing this externality into the energy market, the CO₂ 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 CO₂ 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 final-form 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 final-form rulemaking. However, the Department conducted modeling to estimate the economic impacts of this final-form rulemaking. The Department analyzed the net economic benefits of the program investments using the Regional Economic Model, Inc. 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, hundreds of millions of dollars 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 10 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 CO₂ 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 2018 Investment Report, over the lifetime of the installed measures, the investments made in energy efficiency in 2018 alone are projected to save participants over \$1.2 billion on energy bills, providing benefits to more than 115,000 participating households and 1,200 participating businesses. The investments are also projected to further avoid the release of 1.4 million short tons of CO₂ pollution. See RGGI, Inc., *The Investment of RGGI Proceeds in 2018*, July 2020, https://www.rggi.org/sites/default/files/Uploads/Proceeds/RGGI_Proceeds_Report_2018.pdf.

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 onsite 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 CO₂ allowance budget by generating more electricity without additional emissions.

The participating states invested 19% of their 2018 auction proceeds in clean and renewable energy projects. Over the lifetime of the projects installed in 2018, these investments are projected to offset about \$600 million in energy expenses for households and businesses. The investments are also projected to avoid the release of 1.9 million short tons of CO₂ 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 2018, an estimated 20% 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 1.2 million short tons of CO₂ emissions across the region.

In the 2020 modeling, 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 CO₂ 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 2020 modeling show that this final-form 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 final-form rulemaking would lead to an increase in Gross State Product of \$1.9 billion and a net increase of over 30,000 jobs in this Commonwealth. The Department's modeling also indicates that investments from this final-form rulemaking would spur an addition of 9.4 gigawatts 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 final-form 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 final-form 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 final-form rulemaking applies to owners or operators of fossil fuel-fired EGUs, within this Commonwealth, with a nameplate capacity equal to or greater than 25 MWe. This final-form rulemaking is designed to effectuate least cost CO₂ emission reductions for the years 2022 through 2030 within this Commonwealth. In addition to purchasing CO₂ allowances and completing offset projects to generate CO₂ offset allowances, CO₂ budget units may reduce their

compliance obligations by reducing CO₂ emissions through other alternatives such as heat rate improvements, fuel switching and co-firing of biofuels.

To comply with this final-form rulemaking, each CO₂ budget unit within this Commonwealth will need to acquire CO₂ allowances equal to its CO₂ emissions. If CO₂ allowances are purchased through the multistate auctions, the owner or operator of a CO₂ budget unit will pay the auction allowance price, currently around \$5 per ton, for each ton of CO₂ the unit emits. As mentioned previously, reserved CO₂ 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 CO₂ the unit emits and the allowance price. The owner or operator may also purchase CO₂ allowances on the secondary market where they could potentially purchase CO₂ allowances at a price lower than the RGGI allowance price. CO₂ allowances also have no expiration date and can be acquired and banked to defray future compliance costs.

Since the Department will allocate CO₂ allowances to waste coal-fired units each year up to 10,400,000 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 CO₂ 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 CO₂ budget trading programs into their permits.

This final-form rulemaking 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 the final-form rulemaking or 12 months before the date on which the CO₂ 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 final-form rulemaking utilizes current methods and, in most instances, will require no additional emissions reporting. For instance, the continuous emission monitoring required under this final-form 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 CO₂ budget unit as the amount of CO₂ emitted is the primary driver of compliance costs. Overall CO₂ 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 CO₂ emissions from CO₂ budget sources are estimated to be 61 million short tons. Given the 3-year compliance schedule, all 61 million CO₂ allowances will not need to be purchased in the first year. The total amount of CO₂ allowances available will decline as the amount of CO₂ emissions in this Commonwealth decline.

As CO₂ budget sources would need one allowance for each ton of CO₂ emitted, the owners or operators would need to acquire 61 million CO₂ allowances at the estimated 2022 allowance price of \$3.24 (2017\$/Ton). If these CO₂ allowances were all purchased at quarterly multistate auctions in 2022, the total purchase cost would be approximately \$198 million. The CO₂ 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 \$198 million will be passed onto this Commonwealth's electric consumers.

Electric consumer impact

Based on the Department's 2021 modeling, it can be expected that at least 25% 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 51,000 gigawatt hours (GWh), representing 25% of this Commonwealth's 2022 electricity generation of 201,221 GWh. As a result, without factoring in the strategic investment of auction proceeds, the remaining 75% of the cost of compliance or \$149 million would be borne by this Commonwealth. This percentage is also dependent on the CO₂ emissions intensity of the exported generation.

According to the EIA, the major components of the United States' average price of electricity in 2020 were 56% generation, 31% distribution and 13% transmission costs. See EIA, Electricity explained: Factors affecting electricity prices, Major components of the U.S. average price of electricity, 2020, <https://www.eia.gov/energyexplained/electricity/prices-and-factors-affecting-prices.php>. This final-form 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 2021 modeling estimates that in 2022, wholesale energy prices will be 2.4% higher with RGGI participation. That amounts to a roughly 1.2% increase 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 final-form rulemaking is implemented and this Commonwealth begins participating in RGGI in 2022, residential electric consumer bills will increase by an estimated 1.2% in the short-term. This amounts to an additional \$1.17 to \$1.65 per month depending on the home heating source. However, the Department's 2020 modeling shows that this minor increase is temporary. As shown in the 2020 modeling, as a result of the fee investments 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 final-form rulemaking were not implemented.

Additionally, based on information contained within the PUC's 2020 Rate Comparison Report, a small commercial customer's usage is the closest aligned with a small business as defined by the U.S. Small Business Administration, though it is not an exact match. See

Pennsylvania PUC, 2020 Rate Comparison Report.

https://www.puc.pa.gov/General/publications_reports/pdf/Rate_Comparison_Rpt2020.pdf. The PUC report indicates that average 2019 electricity consumption for this customer class is 1,000 kWh/month with total monthly bills ranging from \$106.29 to \$143.49 depending on the Electric Distribution Company service territory and the corresponding electricity rate. Using the same assumptions regarding the composition of an electric bill as used above, a small commercial customer using 1,000 kWh/month could expect to see a potential increase of \$1.28 to \$1.72 per month in 2022.

According to the PUC, a large commercial customer using 200,000 kWh per month has a monthly bill ranging from \$11,788.08 to \$21,043.18. These customers could expect to see a 2022 potential price increase of \$141 to \$253 per month, again depending on their electric service territory and associated rates.

Compliance assistance plan

The Department will continue to educate and assist the public and the regulated community in understanding the 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 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 onsite assessments, EMAP also operates a toll-free phone line to field questions from small businesses in this Commonwealth, as well as businesses wishing to start up in, or relocate to, this Commonwealth. EMAP operates and maintains a resource-rich environmental assistance web site 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 final-form 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.

H. 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 final-form rulemaking would help ensure that the citizens of this Commonwealth would benefit from reduced emissions of CO₂ from regulated sources. Reduced levels of CO₂ would promote healthful air quality and ensure the continued protection of the environment and public health and welfare.

I. *Sunset Review*

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

J. *Regulatory Review*

Under section 5(a) of the Regulatory Review Act (71 P.S. § 745.5(a)), on October 21, 2020, the Department submitted a copy of the notice of proposed rulemaking, published at 50 Pa.B. 6212, to the Independent Regulatory Review Commission (IRRC) and the Chairpersons of the House and Senate Environmental Resources and Energy Committees for review and comment.

Under section 5(c) of the Regulatory Review Act, IRRC and the House and Senate Committees were provided with copies of the comments received during the public comment period, as well as other documents when requested. In preparing this final-form rulemaking, the Department has considered all comments from IRRC, the House and Senate Committees and the public.

Under section 5.1(j.2) of the Regulatory Review Act (71 P.S. § 745.5a(j.2)), on **DATE**, 2021, this final-form rulemaking was deemed approved by the House and Senate Committees. Under section 5.1(e) of the Regulatory Review Act, IRRC met on **DATE**, 2021, and approved this final-form rulemaking.

K. *Findings of the Board*

The Board finds that:

(1) Public notice of proposed rulemaking was given under sections 201 and 202 of the act of July 31, 1968 (P.L. 769, No. 240) (45 P.S. §§ 1201 and 1202) and regulations promulgated thereunder at 1 Pa. Code §§ 7.1 and 7.2 (relating to notice of proposed rulemaking required; and adoption of regulations).

(2) At least a 60-day public comment period was provided as required by law and all comments were considered.

(3) This final-form rulemaking does not enlarge the purpose of the proposed rulemaking published at 50 Pa.B. 6212.

(4) These regulations are reasonably necessary and appropriate for administration and enforcement of the authorizing acts identified in Section C of this order.

L. Order of the Board

The Board, acting under the authorizing statutes, orders that:

(a) The regulations of the Department, 25 Pa. Code Chapter 145, are amended to read as set forth in Annex A.

(b) The Chairperson of the Board shall submit this final-form regulation to the Office of General Counsel and the Office of Attorney General for review and approval as to legality and form, as required by law.

(c) The Chairperson of the Board shall submit this final-form regulation to IRRC and the House and Senate Committees as required by the Regulatory Review Act (71 P.S. §§ 745.1—745.14).

(d) The Chairperson of the Board shall certify this final-form regulation and deposit it with the Legislative Reference Bureau as required by law.

(e) This final-form regulation shall take effect immediately upon publication in the *Pennsylvania Bulletin*.

PATRICK McDONNELL,
Chairperson