Borough of Selinsgrove

Climate Action Plan

Adopted by the Borough Council of the Borough of Selinsgrove on Feb. 2, 2026

Created by the Climate Action Task Force with support from Penn State, Susquehanna University, the PA DEP, & ICLEI: Local Governments for Sustainability

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- Scott M. Frost, Borough Council President
- Bobbie J. Owens, Borough Council Vice President
- Richard P. Mease, Borough Council President Pro Tempore
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- Lauren A. Martz, Borough Manager
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Climate Action Task Force

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Executive Summary

In 2024, the Borough of Selinsgrove partnered with the Local Climate Action Program, a climate action initiative led by the Pennsylvania State University (Penn State) and the Pennsylvania Department of Environmental Protection, to get a better understanding of its contribution to climate change. Greenhouse gas (GHG) emissions from major sectors—energy, transportation, water, wastewater, solid waste, and more—were compiled for the entire community for the year 2023. The results showed that the Borough was responsible for around 49,600 metric tons of carbon dioxide equivalent (MTCO2e), with energy and transportation accounting for the majority (approximately 94%) of emissions.

These GHG emissions are impactful as they contribute to the increasingly daunting reality of climate change. In Pennsylvania, climate change acts a threat-multipler, leading to both increased rainfall and drought, flooding, high-heat days, and vector-borne illnesses such as Lyme disease. In 2025, the Borough continued their collaboration with Penn State and expanded research into future emissions and reduction options. Projections to the year 2050 showed that, without action, the Borough will likely not meaningfully reduce its emissions.

In the coming months, a task force reviewed other climate actions plans and the 2023 emissions inventory for the Borough, and launched surveys and workshops to get input from the Selinsgrove community. In doing so, the force created a list of community-supported objectives, each with specific action-items, to further reduce the Borough of Selinsgrove's emissions as well as build resilience. If enacted, future emissions projections suggest that the Borough of Selinsgrove could reduce its emissions from its 2023 baseline by 43% by 2050. The graphic below summarizes a list of the most impactful emissions-reduction objectives proposed by the task force, referred to as "short-term/high-priority," and their expected outcomes by 2050.

<table>
<tr><th colspan="3">Borough of Selinsgrove Climate Action Plan</th></tr>
<tr><th>Objectives</th><th>Impact of Actions</th><th>Emissions Impact</th></tr>
<tr><td>1) Encourage efficient vehicles.</td><td>Convert 30% of all vehicle miles driven in the Borough of Selinsgrove to electric by 2050.</td><td rowspan="7">These actions result in a reduction of the Borough of Selinsgrove's 2023 greenhouse gas emissions baseline (~49,600 MTCO2e) by 43% by 2050.</td></tr>
<tr><td>2) Encourage active transportation, e.g. walking or biking.</td><td rowspan="2">Reduce overall vehicle miles traveled in the Borough of Selinsgrove by 40% by 2050.</td></tr>
<tr><td>3) Align land use, housing, and transportation.</td></tr>
<tr><td>4) Improve the resiliency of energy production and distribution.</td><td rowspan="2">Reduce grid-delivered electricity to the Borough of Selinsgrove by 30% by 2050.</td></tr>
<tr><td>5) Increase energy efficiency in buildings.</td></tr>
<tr><td>6) Reduce solid waste.</td><td>Reduce solid waste tonnage generated in the Borough of Selinsgrove by 20% by 2050.</td></tr>
<tr><td>7) Grow and maintain healthy tree canopies and support diverse ecosystems.</td><td>Sequester additional carbon dioxide through tree planting.</td></tr>
</table>

Message from the Mayor

Since the discovery of coal and oil, and the increasing innovation in its use in the past two hundred years, human civilization has experienced an unprecedented level of economic and population growth that has built our nation, improved our health and lifted many people out of poverty.

Increasingly, though, we have come to understand that burning all that coal and oil (and later, fossil gas) came with a terrible price: air and water pollution; serious health problems like asthma, lung and heart conditions and cancer; loss of habitat and ongoing extinction of wildlife and native plants; and devastation of the lands, forests and waters that made the United States so inspirational and prosperous. It has brought severe floods and hurricanes, longer heat waves, increased disease-bearing insects like mosquitoes and ticks, and drought, affecting the stability of our food supply.

Luckily, in the last 50 years or so, science and technology have brought us new ways of producing energy that are easier on our world. These so-called renewable energy technologies include solar, wind, nuclear, geothermal and hydropower. Paired with battery storage, they have overcome the problem of reliability (when the sun doesn't shine and the wind doesn't blow). These technologies have virtually unlimited potential to produce energy with little to no emissions of the greenhouse gases that are injuring our communities. Because fuels such as sunlight are free and renewable, they keep energy prices stable.

The increasing recognition by our community of the effects of unfettered fossil fuel use on our health, weather, and agriculture makes this a time of opportunity. We can build a resilient community and create a more healthy, equitable, and sustainable Borough.

This climate action plan highlights key recommendations from a local task force, with input from two community surveys. It is clear from those surveys that Selinsgrove residents want a Borough that:

- Retains its small-town charm and the beauty of the Susquehanna River,
- Keeps the water and air clean for the improved health of the community,
- Is more friendly to walkers and bicyclers,
- Encourages green space and natural areas for recreation,
- Models and informs how the community can take advantage of renewable technologies.

What follows is a plan for addressing those goals to create a more sustainable home and adapt to our changing climate. I look forward to watching it work for our community in future years.
—The Honorable Mayor Jeff Reed (term expired 12/31/2025)

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Introduction

As highlighted by the *Center for Climate and Energy Solutions* (C2ES)[1], climate action plans or CAPs are an increasingly utilized tool for governments to acknowledge the impacts of a changing climate on their community and communicate steps for the future. This CAP represents the first ever for the Borough of Selinsgrove, a small municipality located in Central Pennsylvania. In drawing from academic literature defining the components of a CAP,[2] the Borough hopes to accomplish three goals with the publication of this document:

- Report the results of a 2023 greenhouse gas emissions (GHG) inventory,
- Detail the impacts of climate change on the community, and
- Establish objectives and action-items to reduce GHG emissions.

By adopting this plan, the Borough of Selinsgrove is joining nearby municipalities such as the Borough of Lewisburg[3] and the City of Shamokin,[4] both of whom have created their own climate plans. It's also preparing for the future. In addressing the goals above, this CAP includes support for mitigation, e.g. the reduction of GHG emissions resulting from the Borough of Selinsgrove, as well as adaptation, e.g. plans to address future challenges as a result of climate change.[5]

This CAP is the culmination of years of effort and includes community feedback from surveys and public workshops. It is a milestone for the Borough of Selinsgrove and its completion marks a crucial step in ensuring that Borough Council, Borough Staff, residents, workers, and visitors-alike are prepared with the information and tools required to establish resilience in the face of an often uncertain future.

This climate action plan (CAP) was officially adopted at the Borough of Selinsgrove Borough Council meeting on Feb. 2, 2026. Please see Appendix A for more information.

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[1] "U.S. State Climate Action Plans," Center for Climate and Energy Solutions, August 2024, https://www.c2es.org/document/climate-action-plans/.
[2] Mathew Cohen et al., "A Review of U.S. City Climate Action Plans," *Climatic Change* 178, no. 4 (March 18, 2025), https://doi.org/10.1007/s10584-025-03887-7.
[3] Kendy Alvarez et al., Lewisburg Borough Climate Action Strategy: For a Healthy and Sustainable Future § (2023).
[4] Doreen Annis et al., Environmental Resiliency Plan: Local Actions and Policies to Reduce the City of Shamokin's Greenhouse Gas Emissions and Improve Environmental Resilience § (2021).
[5] "Responding to Climate Change," NASA, December 4, 2024, https://science.nasa.gov/climate-change/adaptation-mitigation/.

Background

The Impact of Climate Change

As weather patterns intensify, the frequency and severity of natural disasters are escalating, posing significant threats to the health, safety, and overall well-being of communities across the globe. The Borough of Selinsgrove is no exception. Like many communities, it faces the realities of continued increased precipitation and rising temperatures through mid-century and beyond. These changes will mean more challenges with flooding and heat waves in Selinsgrove, creating significant hurdles for all residents and triggering a cascade of unexpected impacts.

In Pennsylvania, temperatures have already increased by more than 1.8°F since the early 20th century and are expected to increase over 6°F by mid-century.[6] Annual precipitation in Pennsylvania will increase by 9% in the same timeframe.[7] Pennsylvania will experience heat waves and more heat days above 90°F. Our changing climate will make our Commonwealth more prone to more frequent and severe hyper tropical events. These changing conditions will have unexpected secondary and tertiary effects that will further disrupt society.

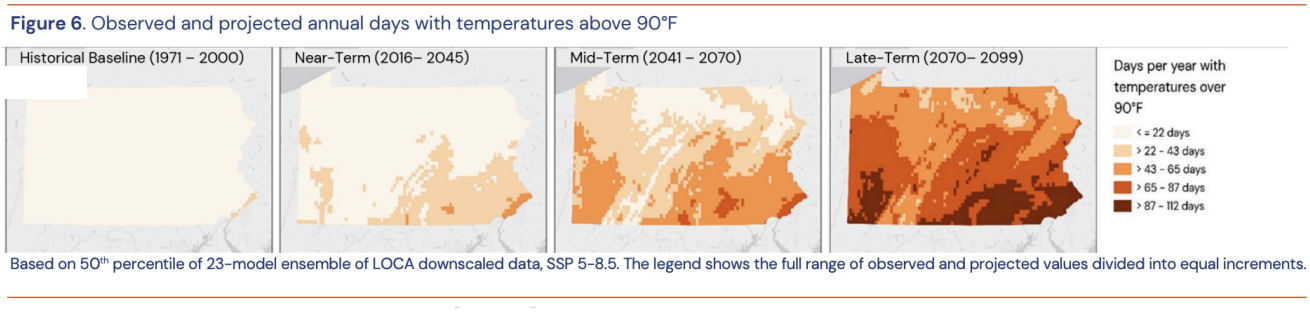

Figure 1: Observed and Projected Annual Number of Days with Temperatures Greater than 90 degrees Fahrenheit[8]

In 2008, the Pennsylvania Climate Change Act was passed, and requires the Department of Environmental Protection (DEP) to (1) develop an inventory of GHG emissions and update it annually; (2) administer a Climate Change Advisory Committee; (3) set up a voluntary registry

[6] Department of Environmental Protection, Pennsylvania Climate Impacts Assessment 2024 § (2025). Page 12.
[7] Ibid.
[8] Department of Environmental Protection, Pennsylvania Climate Impacts Assessment 2024 § (2025). Page 14.

of GHG emissions; and (4) prepare a Climate Change Action Plan and Climate Impacts Assessment, both to be updated once every three years.[9] The most recent greenhouse gas (GHG) inventory was released in 2025 using 2022 data, following a new Climate Impacts Assessment and Climate Action Plan released in April of the same year. These documents offer information and guidance for local climate action planning in the Commonwealth.

The Climate Impacts Assessment provides a scientific basis for potential statewide impacts of global climate change, which can be used alongside available local data to inform community adaptation efforts. The Pennsylvania Climate Action Plan summarizes statewide GHG emissions, sets emissions reduction targets, and describes potential mitigation and adaptation actions for residents and businesses, as well as local and state governments. The state's current targets include "collectively reducing net GHG emissions at least 26-28% by 2025 compared to 2005 levels; collectively reducing net GHG emissions at least 50-52% by 2030 compared to 2005 levels; and collectively achieving overall net zero GHG emissions as soon as practicable, and no later than 2050 [previous goal was an 80% reduction from 2005 levels by 2050]."[10]

The Borough of Selinsgrove recognizes the risks and opportunities that the climate crisis poses to its residents and businesses and is acting now to mitigate its own emissions. However, its later baseline of 2023 (compared to 2005 for the state) makes it difficult to match the state's GHG reduction targets. In the 18 years between 2005 and 2023, there have been advancements in renewable energy technologies and battery storage, retirements of coal-fired power plants, and adoption of electric vehicles, all of which have played a role in reducing GHG emissions. While there is still much work to do and many opportunities to reduce emissions, the Borough of Selinsgrove is setting a more realistic target of reducing its 2023 baseline emissions by 43% by 2050.

To achieve this and prepare for the future, this CAP presents a locally-created framework of recommendations for emissions reductions and resilience planning spanning six sectors:

1) Transportation,
2) Buildings and Energy,

[9] Commonwealth of Pennsylvania, "Climate Change," Department of Environmental Protection, April 25, 2025, https://www.pa.gov/agencies/dep/residents/climate-change.
[10] Pennsylvania Department of Environmental Protection, Pennsylvania Climate Action Plan Update 2024 § (2025). Page 2.

3) Waste,
4) Sequestration,
5) Disaster Risk Reduction, and
6) Flooding.

This framework, created by a 14-member task force, aims to document, coordinate, and measure efforts within these categories.

Planning Process

The planning process utilized for the Borough of Selinsgrove Climate Action Plan (CAP) was based on the Five Milestones for Climate Mitigation framework developed by *ICLEI: Local Governments for Sustainability*. While this framework offers a recommended process for pursuing climate action at the local level, there is no requirement to follow it precisely. For example, some communities set reduction targets before they ever conduct an inventory. Others elect not to adopt formal reduction targets at all. Communities should tailor the framework to their needs and ambitions.

Figure 2: Five Milestone for Climate Mitigation

The Borough of Selinsgrove prioritized following these milestones. It began by conducting a GHG emissions inventory between August and December of 2024.[11] It then produced a series of forecasts into the future, estimating its GHG impact without taking any actions to reduce emissions (a business-as-usual scenario) and with actions taken (an action scenario). Once completed, the community set emissions reduction targets/goals (milestone 2), aiming to achieve a 43% reduction in GHG emissions from 2023 levels by 2050. This goal led to the development of this CAP (milestone 3) which was adopted by Borough Council on Feb. 2, 2026. Implementation of the CAP is now underway (milestone 4). Following this, the Borough aims to eventually complete milestone 5, conducting another emissions inventory to evaluate progress towards plan goals within 5 years of the adoption date.

This Climate Action Plan (CAP) represents the Borough of Selinsgrove's first planning cycle. To date, the Borough is on milestone 4. Reaching this point required the following steps:

- Assembling a technical team that guided the process,
- Convening a diverse Climate Action Task Force (CATF),
- Conducting a Borough-wide emissions inventory,
- Conducting community surveys on the plan and climate change more broadly,
- Drafting objectives and action items to reduce emissions and set emissions reduction goals, and
- Adopting the climate action plan (CAP).

The CATF (noted above) ensured this CAP included in-depth knowledge of Selinsgrove from the beginning. The CATF members were instrumental in providing recommendations to the technical team in drafting this document.

Technical Team

The technical team included members from the Pennsylvania State University (Penn State), Susquehanna University, the Pennsylvania Department of Environmental Protection, and *ICLEI: Local Governments for Sustainability*. Members met on an 'as needed' basis and brainstormed ideas for moving forward on the plan.

[11] Eric Belfanti and Grant Rowe, "Selinsgrove Local Climate Action Plan," ArcGIS StoryMaps, September 18, 2025, https://storymaps.arcgis.com/stories/0d46ed746ad5499f986d1405ca138bec.

Emissions Inventory

From August to December 2024, the technical team conducted a 2023 communitywide greenhouse gas emissions inventory. This inventory provides a benchmark of current emissions within the Borough. While offering total (cumulative) emissions for the Borough of Selinsgrove, the greenhouse gas inventory is also largely disaggregated by sectors (energy, transportation, waste, etc.) and by energy source (electricity, natural gas, gasoline, diesel, etc.). More information on the inventory can be found in the chapters below and in Appendix B at the end.

This inventory process was guided by the United States Community Protocol (USCP) for Accounting and Reporting Greenhouse Gas Emissions. The technical team utilized data from UGI Utilities for natural gas usage, PPL for electricity usage, and ArcGIS for transportation calculations. ArcGIS is a highly detailed mapping tool that allows for the collection of vehicle miles traveled on streets within the Borough of Selinsgrove. Assumptions underlying the emissions inventory, can be found in Appendix B. Once collected, data was input into the ClearPath emissions calculator, designed by *ICLEI: Local Governments for Sustainability*, which allowed the technical team to calculate the emissions for the baseline year of 2023. Due to budget constraints, emissions forecasting into the future was based on *ICLEI* standards but completed using Google Sheets.

Selinsgrove Local Climate Action Task Force (CATF)

The Climate Action Task Force (CATF) includes local elected officials, local residents, local environmental and community non-profit representatives, and a master gardener. This group developed objectives, action items, and measurable outcomes responsive to the emissions inventory, local needs, and opportunities.

Creating Objectives and Action-Items

The CATF met virtually using the Zoom platform as needed. Meetings were to refine the ideas generated into distinct objectives and action items. This platform allowed the technical team to propose potential emission-reducing objectives and the CATF to respond by revising objectives and offering suggested action items in real-time.

Project Scopes and Objectives

Mission Statement

Prior to the creation of this plan, Selinsgrove Borough Council authorized formation of a Climate Action Task Force (CATF) under the auspices of the Pennsylvania Department of Environmental Protection's Local Climate Action Program (LCAP). The CATF's goal was to brainstorm ways to make the Borough more resilient to climate-related events and emergencies, such as increased and more severe flooding, wildfires, drought, and insect-borne diseases such as Lyme disease and West Nile Virus. It was also to evaluate the results of the 2023 emissions inventory to incorporate ways of lowering emissions in the Borough of Selinsgrove. The culmination of the CATF's efforts is this climate action plan (CAP).

To tailor this CAP, the CATF included a variety of residents and stakeholders, such as businesses, faith leaders, long-and-short-time residents, students, health care professionals, educators, technicians, and others. The CATF aimed to represent views from across the political and economic spectrum in hopes that the final CAP would represent all the Borough's citizens and result in a locally-focused, goals-oriented plan with buy-in from the community. No expertise in environmental subjects was required to be a CATF member; local knowledge is all that was needed.

Climate Action Task Force Responsibilities

The CATF's goal was (and remains) to improve the health and quality of life for everyone in the Borough by forging an environmentally and economically resilient community. In drafting this CAP, the CATF maintained the following responsibilities:

- The project to develop a Climate Action Plan (CAP) was a years-long commitment, with the goal of presenting it to the Borough Council for adoption by the Borough Council.
- The time commitment was defined by the CATF during the first two organizational meetings.
- CATF Members attended most meetings and came prepared to contribute ideas on resilience or other related areas of expertise for purposes of brainstorming.

- Members broke into smaller work groups as necessary to focus on particular areas of interest within the plan.

Borough of Selinsgrove 2023 Greenhouse Gas (GHG) Emissions

Selinsgrove Community-Wide GHG Emissions

The 2023 community-wide greenhouse gas (GHG) emissions inventory measured the GHGs attributed to the Borough of Selinsgrove. This includes emissions resulting from actions or activities not necessarily generated within the boundaries of the Borough of Selinsgrove. For example, emissions resulting from the use of electricity in residential and commercial properties within the Borough are included in the CAP despite portions of the energy itself being generated outside of the Borough. Further, most sectors measured produce a variety of GHGs with varying levels of warming (global warming potentials), e.g. an internal combustion engine vehicle releases carbon dioxide, methane, and nitrous oxide. To account for this, all GHGs measured in this inventory have been standardized based on their warming potential relative to carbon dioxide. This allows for emissions from various sectors and GHGs to be quantified together as metric tons of carbon dioxide equivalent or MTCO2e. Figures 3 and 4 below offer more insight into the results of the 2023 GHG inventory.

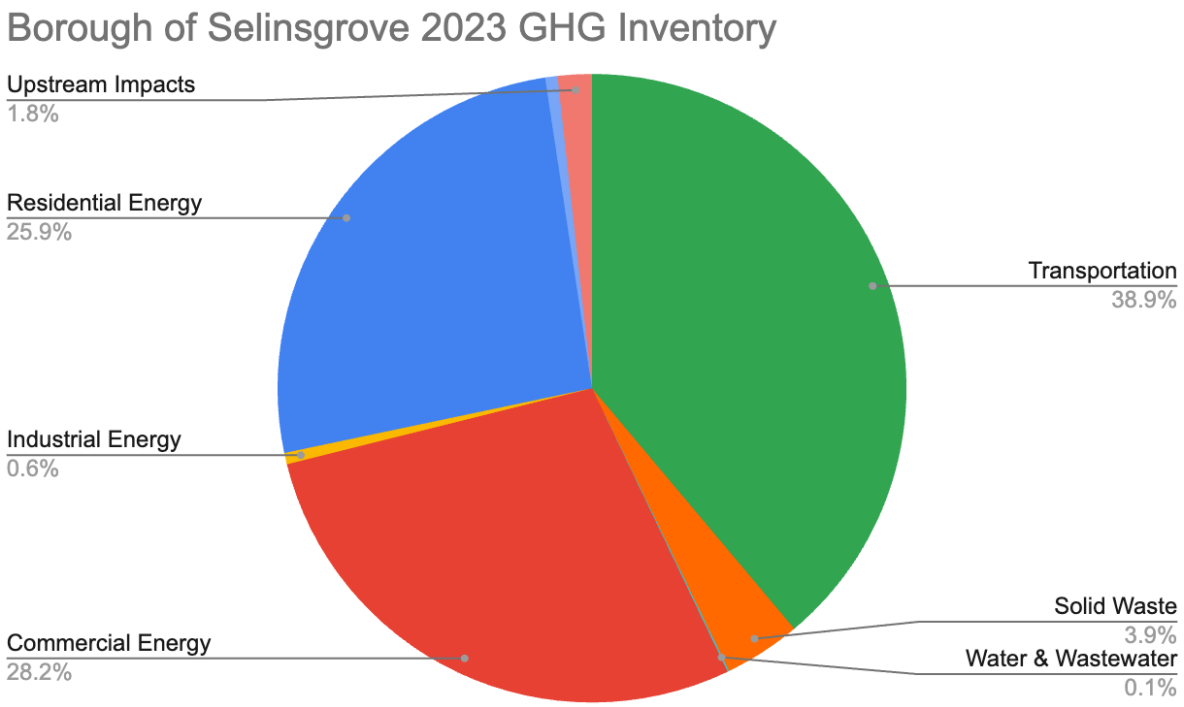

Figure 3: Borough of Selinsgrove 2023 Emissions Pie Chart by Sector

Borough of Selinsgrove 2023 GHG Emissions Table

Sector	MTCO2e ▲
Water & Wastewater	45
Industrial Energy	292
Process & Fugitive	314
Upstream Impacts	870
Solid Waste	1,956
Residential Energy	12,867
Commercial Energy	13,999
Transportation	19,299
Total	49,642

Figure 4: Borough of Selinsgrove 2023 GHG Emissions Table by Sector in MTCO2e

Transportation is the largest emitting sector for the Borough of Selinsgrove, followed by commercial and residential energy. Combined, these sectors account for 93% of the Borough of Selinsgrove's GHG emissions, serving as 46,165 MTCO2e out of a total of 49,642 MTCO2e.

Reducing GHG emissions in the Borough at any scale will require targeting these sectors of emissions. More information on the specifics of this GHG inventory can be found in Appendix B.

Forecasting Selinsgrove's BAU GHG Emissions

The emissions in the previous section represent GHG emissions for the Borough of Selinsgrove for the year 2023. However, climate change, nor the anthropogenic emissions that exacerbate it,[12] can be captured in a single year. Climate is a long-term concept, GHGs emitted have varying warming potentials (and time scales), and efforts to meaningfully reduce emissions will likely take decades. As such, the Borough of Selinsgrove is not only interested in its current emissions but in future emissions as well.

An emissions forecast is one way to accomplish this task. By using a series of growth rates and assumptions, GHG forecasts allow one to estimate emissions well into the future. Doing so offers insight into how a community can reduce emissions and into how sectors will change in the future. The *ICLEI: Local Governments for Sustainability* ClearPath software, the program used to conduct the 2023 GHG inventory for the Borough of Selinsgrove, allows for forecasting. However, the program comes with a financial cost. The Borough of Selinsgrove received financial support for ClearPath during the Fall 2024 semester but lost access to the program in 2025. Thus, to streamline this CAP and ensure that forecasted work is financially accessible going forward, the technical team for the Borough of Selinsgrove opted to create their own forecasting guide based on *ICLEI's* methodology but using Google Sheets, a free online program.

Forecasting for the Borough of Selinsgrove followed a straightforward approach. First, the technical team set 2050 as the end date of the forecast, using 2025, 2030, 2035, 2040, 2045, and 2050 as reference points for the future. Next, the team applied growth rates to each of the sectors of emissions. Growth rates are estimations of how a sector of emissions will change in the future based on trends in data. Population is a common growth rate as estimations for the future population of an area are often easily accessible and—in most cases—emissions increase as

[12] IPCC, 2023: Summary for Policymakers. In: Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, pp. 1-34, doi: 10.59327/IPCC/AR6-9789291691647.00. Page 4.

population increases, e.g. waste tonnage will increase if population increases as there will be more people generating waste which will break down in landfills.

However, certain sectors (or parts of sectors) require different or additional considerations. For instance, while population is an important indicator for both electricity and transportation (an increase or decrease in population can be assumed to correspond to either more or less kilowatt hours of energy consumed or vehicle miles traveled), there are other factors of importance. For energy, the make-up of the energy grid will impact emissions, a concept known as grid or carbon intensity. If a grid retires heavy emitting sources of energy such as coal and replaces them with renewable energy such as solar, intensity will decrease. Further, if vehicles become more fuel efficient (better miles per gallon) then less fuel will be consumed while driving. This is crucial as it alters the emissions of a sector in addition to changes related to activities themselves such as the amount of energy consumed or miles traveled.

Thus, different growth rates and/or intensities were applied to each of the emissions sectors. For the Borough of Selinsgrove, the following rates were applied:

- Solid waste: a population growth rate was used to estimate changes to waste tonnage;
- Water and Wastewater: a population growth was used to estimate electricity usage in water processes and a grid/carbon intensity rate was used to account for changes to the energy grid itself;
- Commercial energy: a population growth rate was used to estimate the amount of energy sources (natural gas, propane, etc.) consumed and a grid/carbon intensity rate was used solely for electricity to account for changes to the energy grid;
- Industrial energy: a population growth rate was used to estimate electricity usage and a grid/carbon intensity rate was applied to account for changes to the energy grid itself;
- Residential energy: a population growth rate was used to estimate the amount of energy sources (natural gas, propane, etc.) consumed and a grid/carbon intensity rate was used solely for electricity to account for changes to the energy grid;
- Process and fugitive emissions: a population growth was applied to estimate fuel leakages;
- Upstream impacts: a population growth rate was applied to estimate electricity line losses and a grid/carbon intensity rate was applied to account for changes to the energy grid; and

- Transportation: a population growth rate was applied to estimate changes to annual vehicle miles traveled and an efficiency standard was applied to anticipate changes to vehicle miles-per-gallon in future years.

Population growth rates were derived from the United States Census Bureau, Google's Data Common database, and the Center for Rural Pennsylvania.[13] Future projections related to average fuel economy standards for vehicles required more estimation. The Trump Administration recently announced[14] a proposed rule[15] to significantly alter previous fuel efficiency standards in place by the Biden Administration. However, vehicle manufacturers have already spent billions of dollars in research and upgrades to manufacturing facilities in an effort to increase vehicle efficiency. Further, there is demand for more fuel efficient vehicles such as electric vehicles (EVs) around the world and especially in China.[16] Thus, it can be difficult to anticipate future miles-per-gallon estimates. In an effort to strike a balance between current and potential future alternatives for vehicle efficiency, this CAP assumes that passenger and light duty trucks increase in fuel efficiency by 3.65% up until 2050, while motorcycles and larger vehicles remain at current fuel efficiencies.

Grid/carbon intensity is based on reporting from PPL, the electric utility company for the Borough of Selinsgrove. PPL's most recent climate report highlights the company's goals to achieve large-scale emissions reductions, including an 70% reduction in emissions from a 2010 baseline by 2035, an 80% reduction from a 2010 baseline by 2040, and a net-zero goal by 2050.[17] Working to achieve this goal, PPL details an estimated 59% decrease in emissions from 2010 levels in its most recent sustainability report, reducing from an approximate 63,000,000 MTCO2e in 2010 to an approximate 26,000,000 MTCO2e in 2023.[18] Accepting these numbers, the Borough of Selinsgrove's emissions from the energy grid, e.g. its electricity usage,

[13] Philip Sirinides et al., Pennsylvania Population Projections for the Next 30 Years: 2020 to 2050 § (2023).
[14] "Fact Sheet: President Donald J. Trump Announces the Reset of Corporate Average Fuel Economy (CAFE) Standards," The White House, December 3, 2025, https://www.whitehouse.gov/fact-sheets/2025/12/fact-sheet-president-donald-j-trump-announces-the-reset-of-corporate-average-fuel-economy-cafe-standards/.
[15] The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule III, 90 FR 56438, (Dec. 5, 2025)
[16] IEA (2025), Global EV Outlook 2025, IEA, Paris https://www.iea.org/reports/global-ev-outlook-2025
[17] "Energy Forward: PPL's 2021 Climate Assessment Report ," PPL , 2022, https://www.pplweb.com/wp-content/uploads/2022/01/PPL_Corp-2021-Climate-Assessment_2022-01-04.pdf.Page 3.
[18]PPL Corporation 2024 Sustainability Report, 2025, https://www.pplweb.com/wp-content/uploads/2025/04/PPL_CSR-2024-Report_FINAL.pdf. Page 95.

essentially reaches 0 MTCO2e by 2050. The results of this forecast are shown in the figure below.

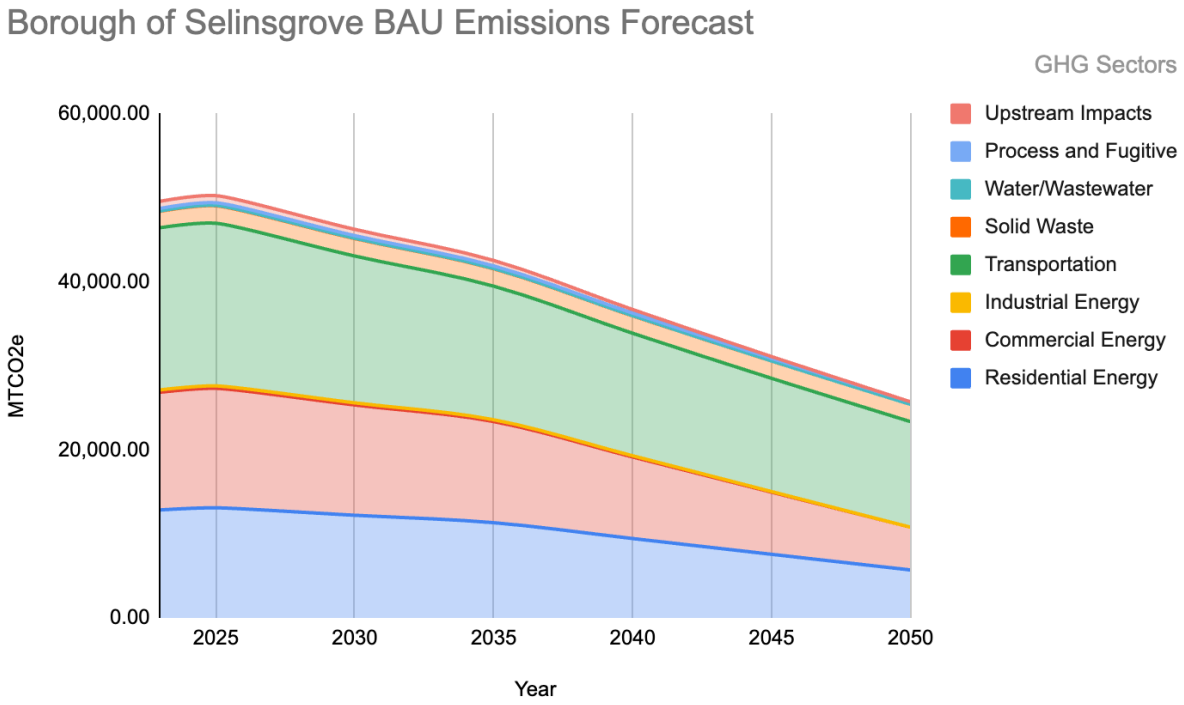

Figure 5: Borough of Selinsgrove BAU Emissions Forecast (PPL Net-Zero Assumption)

In this business-as-usual (BAU) forecast, the Borough of Selinsgrove reduces emissions from its 2023 baseline by around 48% by 2050. This represents a massive decline in emissions largely driven by the steep decline in the energy sector due to PPL's net-zero emissions goal. However, this is an incredibly ambitious goal that PPL admits "would require an unprecedented level of technology advancement and investment in clean energy, not just at PPL, but across the economy."[19] Such a goal assumes large-scale investment in renewables, a reduction of fossil-based power plants, and the purchase of carbon offsets which can sometimes be contentious in promotion and practice.[20] Further, there is still much to be seen regarding the

[19] "Energy Forward: PPL's 2021 Climate Assessment Report ," PPL , 2022, https://www.pplweb.com/wp-content/uploads/2022/01/PPL_Corp-2021-Climate-Assessment_2022-01-04.pdf. Page 5.
[20] Danick Trouwloon et al., "Understanding the Use of Carbon Credits by Companies: A Review of the Defining Elements of Corporate Climate Claims," *Global Challenges* 7, no. 4 (February 25, 2023), https://doi.org/10.1002/gch2.202200158.

impact of artificial intelligence (and the data centers necessary to maintain it) on future energy predictions.[21]

To account for these uncertainties, the Borough of Selinsgrove technical team created another BAU forecasting scenario with all of the same assumptions except for a reduction in PPL's climate goals. In this forecast, PPL achieves a 70% reduction in emissions by 2050 from its 2010 baseline. The results of this forecast can be seen in the figure below.

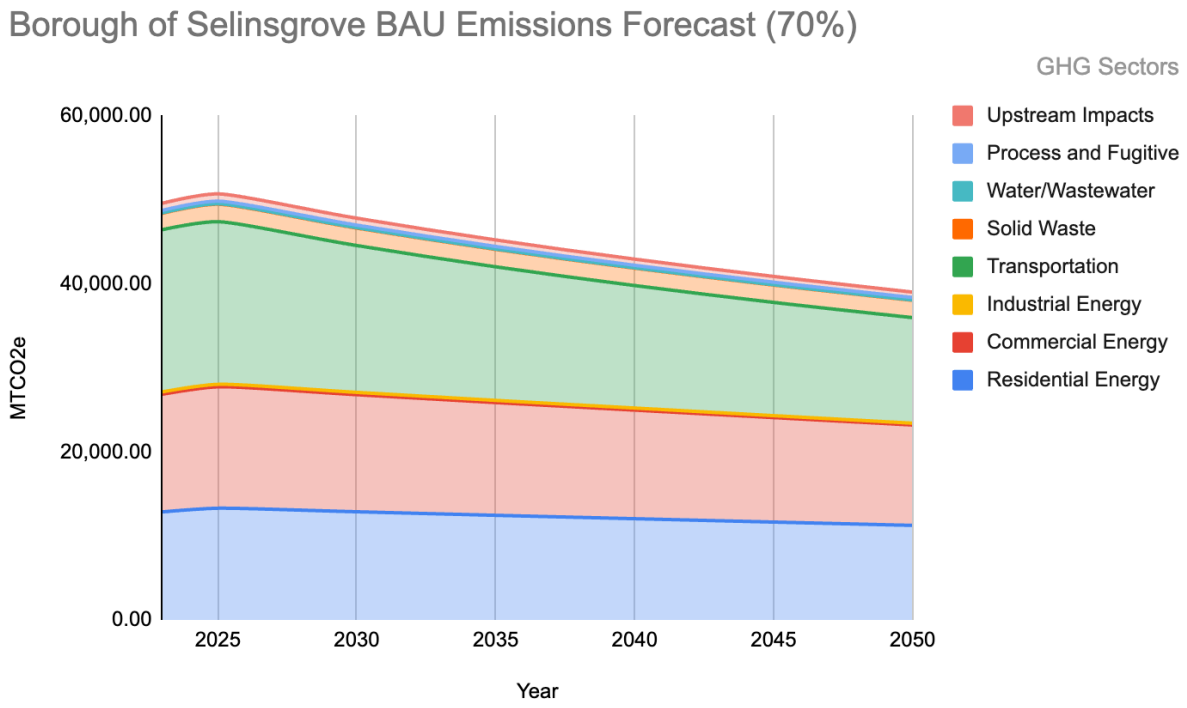

Figure 6: Borough of Selinsgrove BAU Emissions Forecast (PPL 70% Assumption)

In this business-as-usual (BAU) forecast, the Borough of Selinsgrove reduces emissions from its 2023 baseline by around 21% by 2050. This represents a more realistic forecast, assuming that the electricity sector still meaningfully contributes to emissions in 2050. This is the BAU forecast used going forward in the CAP. The following chapter details objectives and action-steps created by the Climate Action Task Force (CATF) to reduce emissions even more in the future.

For more information related to the BAU forecast, please see Appendix C.

[21] IEA (2025), Energy and AI, IEA, Paris https://www.iea.org/reports/energy-and-ai

Taking Action

Community Survey 1

The Borough Council of the Borough of Selinsgrove authorized the formation of a Climate Action Task Force (CATF) with the goal of creating a CAP that was built by and for the local community. Following the GHG inventory for the year 2023, research into the impacts of climate change on Selinsgrove and initial GHG business-as-usual (BAU) forecasting, the CATF began work to develop a series of objective and action steps that could reduce GHG emissions going forward. Partnering with the technical team, the CATF launched two community surveys and a community workshop to invite public comment into the CAP planning process.

The CATF launched its first community survey in September of 2025. The goal of this survey was to gather feedback on the community's joys, fears, and feelings related to climate change and the future. The CATF created both an online version of the survey, utilizing the Qualtrics software, as well as a paper version. Those interested in the online version of the survey could find it on the "Public Notices" page of the Borough of Selinsgrove's website, in virtual newsletters shared by local organizations, and linked via QR codes on physical flyers hanging at local businesses. To accommodate those who prefer physical surveys and/or have limited access to the internet, the CATF received permission to table at multiple farmers' markets (9/13/2025 and 9/20/2025) and at the Market Street Festival (9/27/2025) hosted by *Selinsgrove Projects, Inc.*, offering paper copies to anyone interested. The task force also left paper copies of the survey and a drop-box at the local Rudy Gelnett Memorial Library for anyone to utilize. Importantly, surveying efforts, especially in-person efforts, were made possible thanks to collaboration from Susquehanna University. Four students, Eric Belfanti, Georgia Loladze, Madison Hoy, and Joli Anderson, with support from Dr. Drew Hubbell, allowed in-person survey work to be possible.

The figures below offer additional insight into the first CAP survey conducted by the CATF.

Figure 7: Example of Climate Survey 1 Flyer

Figure 8: Image of Susquehanna University Students Tabling at Farmers' Market

Figure 9: Image of CATF Members and Susquehanna University Students Tabling at Farmers' Market

Selinsgrove Community Survey on Climate Risk

Thank you for taking the time to complete this climate risk survey for the Borough of Selinsgrove. Responses will help inform local leaders on community interest in long-term investment, adaptation, and mitigation efforts. Responses are anonymized and no personal information will be made public (including email and phone number, should you choose to provide it).

These questions are **optional** and answers will be used to further inform survey responses.

a. How old are you?:

- ☐ Under 18
- ☐ 18-24 years old
- ☐ 25-34 years old
- ☐ 35-44 years old
- ☐ 45-54 years old
- ☐ 55-64 years old
- ☐ 65+ years old

b. How do you describe yourself? (check one):

- ☐ Male
- ☐ Female
- ☐ Non-Binary/third gender
- ☐ Prefer to self-describe:_____
- ☐ Prefer not to say

c. What is the highest level of education you have completed? (check one):

- ☐ Some high school or less
- ☐ High school diploma or GED
- ☐ Some college, but no degree
- ☐ Associates or technical degree
- ☐ Bachelor's degree
- ☐ Graduate or professional degree (MA, MS, MBA, PhD, JD, MD, DDS etc.)
- ☐ Prefer not to say

d. How many children under 18 live with you?_____

e. What was your total household income before taxes during the past 12 months? (check one):

- ☐ Less than $25,000
- ☐ $25,000-$49,999
- ☐ $50,000-$74,999
- ☐ $75,000-$99,999
- ☐ $100,000-$149,999
- ☐ $150,000 or more
- ☐ Prefer not to say

1. What is your relationship with Selinsgrove? (Check all that apply).
   - ☐ I live in Selinsgrove.
   - ☐ I work in Selinsgrove.
   - ☐ I own or operate a business in Selinsgrove.
   - ☐ I spend time in Selinsgrove but do not live or work there.

2. Do you own or rent a home or business property in Selinsgrove? (Check one).
   - ☐ I own property.
   - ☐ I own and rent property.
   - ☐ I rent property.
   - ☐ Not applicable.

3. What do you enjoy most about Selinsgrove? Number in order of most enjoyed (1) to least enjoyed (9).
   - ☐ Cost of living.
   - ☐ The Susquehanna River.
   - ☐ Green space.
   - ☐ Safety.
   - ☐ Small town charm.
   - ☐ The school district and/or Susquehanna University.
   - ☐ Friendliness.
   - ☐ Central location.
   - ☐ Access to cultural activities.

4. How important is the issue of climate change to you personally? (Check 1).

1	2	3	4	5	6	7	8	9	10

   1 (not at all important)—10 (extremely important)

5. How worried are you about the effects of climate change on you or Selinsgrove? (Check 1).

1	2	3	4	5	6	7	8	9	10

   1 (not at all worried)—10 (extremely worried)

6. How worried are you about the effects of climate change on future generations? (Check 1).

1	2	3	4	5	6	7	8	9	10

1 (not at all worried)—10 (extremely worried)

7. Which of the following risks from a changing climate in Selinsgrove are most concerning to you? Number in order of most important (1) to least important (8).

- ☐ An increase in the number of annual days with temperatures higher than 90 degrees.
- ☐ Increased health impacts from heat, poor air quality, and tick and mosquito-borne diseases.
- ☐ Increased precipitation and flooding.
- ☐ More severe storms, such as thunderstorms, tornadoes and hurricanes.
- ☐ Wildfires and smoke.
- ☐ Effects on agriculture, i.e. heat, drought, increased rainfall, pests, and diseases.
- ☐ Impact on nature and wildlife.
- ☐ Other (please list):_____

8. If climate change is addressed, which potential benefits are the most important to you? Number in order of most important (1) to least important (10).

- ☐ Improved health.
- ☐ Saving money from lower utility bills.
- ☐ Increased resilience from natural disasters (such as flooding, high heat days, tornadoes, hurricanes).
- ☐ Creation of green jobs.
- ☐ Stable food supply.
- ☐ Improved air and water quality.
- ☐ Producing less waste.
- ☐ Reduced dependence on fossil fuels.
- ☐ More green spaces and wildlife habitat.
- ☐ Other (please list): _____

9. Community engagement is the basis for effective planning and implementation. What activities would you be most likely to participate in? (Check all that apply).

- ☐ Community meetings.
- ☐ Email or text communication: _____
- ☐ Sharing your expertise.
- ☐ Education events.
- ☐ Events focused on taking action.
- ☐ Other: _____

10. Is there anything else you would like to add when it comes to improving sustainability and resilience in Selinsgrove?

You may leave your email if you would like to participate in a follow-up survey, join in our work, or receive updates on survey results:_____

Figure 10: Climate Survey 1

The first climate survey was open from September 12, 2025 to October 12, 2025, receiving a combined (online and paper) 126 responses. Online responses were compiled using the Qualtrics software while paper (physical) responses were compiled by Susquehanna University student, Georgia Loladze, and technical team member, Grant Rowe. To quantify the paper surveys, deliberate choices were made to ensure respondents' voices were accurately represented. When the questions were completely filled out, the results were tallied and recorded in a spreadsheet. However, on several surveys, the ranking/numbering questions (questions 7 and 8 in figure 10 above) were incomplete as respondents did not complete the rankings.When respondents ranked more than 1 option but not all listed, the rankings they provided were recorded in the spreadsheet in the order they ranked them. When respondents ranked only 1 option, their choice was reflected as a number one ranking. These decisions were made to account for human error, while still reflecting respondents' priorities in the final survey results.

Complete results from the initial survey can be found in Appendix D. However, key findings from the survey are listed below:

- Question 3: The Susquehanna River was the option most enjoyed by the Borough of Selinsgrove community.
- Question 7: Increased health impacts and effects on agriculture were the two most chosen climate concerns.
- Question 4: When asked to rank the importance of climate change on a personal level on a scale from 1 (not important) to 10 (extremely important), 89% of respondents selected a 6 or higher.
- Question 5: When asked to rank worry related to climate change on a scale from 1 (not worried) to 10 (extremely worried), 84% of respondents selected a 6 or higher.
- Question 6: When asked to rank worry related to the impact of climate change on future generations on a scale from 1 (not worried) to 10 (extremely worried), 89% of respondents selected a 6 or higher.

These responses suggest that the local community enjoys the natural environment, especially the Susquehanna River, which is at risk from a changing climate. The community is also invested in climate change and worried about its impacts both today and in the future. Based on these findings, the CATF launched a second survey to develop actions to reduce GHG emissions going forward.

Community Survey 2

While the first climate survey offered insight into general feelings towards the Borough of Selinsgrove and climate change, the goal of the second survey was to expand on this baseline and create informed actions to reduce GHG emissions and mitigate climate change going forward. To achieve this, the CATF and technical team created a series of questions to understand current and previous actions taken by the Selinsgrove community to reduce emissions, as well as interest and challenges to future actions. Included in this were also questions aimed at the role of local government, e.g. the Borough of Selinsgrove, in curbing emissions.

This second climate survey was launched in October of 2025. Similar to the first climate survey, the CATF created an online version using the Qualtrics software as well as a paper version for those with limited access to the internet. However, due to time constraints and in an effort to share updates on the CAP process with the community, this second survey was largely promoted as a single in-person workshop. The Borough of Selinsgrove, Susquehanna University, and local businesses promoted an in-person event at a community center in downtown Selinsgrove on November 8th. The goal was to have attendees take this second survey in-person while also learning more about the 2023 GHG emissions inventory and draft CAP.

No paper versions of this survey were distributed at farmers' markets or the local library, but a QR code for an online version was shared at the Selinsgrove Area Community Pool's Pumpkin Dash 5-K run[22] on October 25, 2025. Further, a link to the online version of this survey was posted on the "Public Notices" section of the Borough of Selinsgrove's website and flyers were posted at local businesses. The figures below offer more insight into the promotion of the second survey and the questions included.

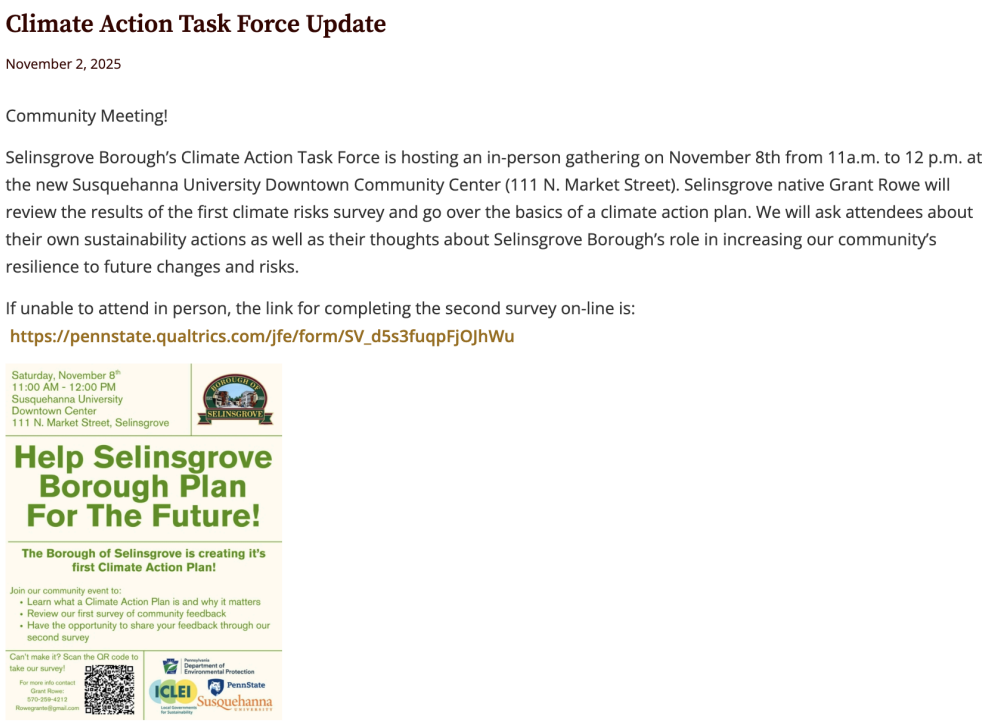

Figure 11: Promotion of Climate Survey 2 on Borough Website

[22] "Pumpkin Dash 5K," Selinsgrove Area Community Pool, 2025, https://selinsgrovepool.org/events/spash-dash-5k/.

Figure 12: Example of Climate Survey 2 Flyer

Selinsgrove Climate Action Survey (2)

Thank you for taking the time to complete this climate action survey for the Borough of Selinsgrove. Responses will help inform local leaders on community interest in long-term investment, adaptation, and mitigation efforts. Responses are anonymized and no personal information will be made public.

Q1 How do you primarily heat and cool your home or business in Selinsgrove? (select all that apply)

- ☐ Electricity
- ☐ Natural gas
- ☐ Oil or propane
- ☐ Wood or biomass
- ☐ Other_____

Q2 In the past five years, have you made any upgrades to improve your home or business's energy efficiency? (select all that apply)

- ☐ Installed LED lighting
- ☐ Upgraded insulation
- ☐ Installed smart thermostat
- ☐ Installed solar panels or other renewable energy systems
- ☐ Conducted energy audit
- ☐ Purchased EnergyStar appliances
- ☐ Installed energy efficient windows
- ☐ Installed high efficiency HVAC/Heat pumps
- ☐ Replaced gas lawn or snow equipment with an electric alternative
- ☐ No improvements yet, but plan to make improvements
- ☐ No improvements, not sure where to start
- ☐ Other_____

Q3 Please select your level of interest in each action. (one answer per item)

	Very interested	Interested	Not interested	Already completed
Installing LED lighting	☐	☐	☐	☐
Upgrading insulation	☐	☐	☐	☐
Installing smart thermostat	☐	☐	☐	☐
Installing solar panels or other renewable energy systems	☐	☐	☐	☐
Conducting energy audit	☐	☐	☐	☐
Purchasing EnergyStar appliances	☐	☐	☐	☐
Installing energy efficient windows	☐	☐	☐	☐
Installing high efficiency HVAC/Heat pumps	☐	☐	☐	☐
Replacing gas lawn or snow equipment with an electric alternative	☐	☐	☐	☐

Q4 Please select the biggest hurdles to the following changes. (one answer per item)

	Cost	Lack of information	Lack of interest	Already completed	Other
Installing LED lighting	☐	☐	☐	☐	☐
Upgrading insulation	☐	☐	☐	☐	☐
Installing smart thermostat	☐	☐	☐	☐	☐
Installing solar panels or other renewable energy systems	☐	☐	☐	☐	☐
Conducting energy audit	☐	☐	☐	☐	☐
Purchasing EnergyStar appliances	☐	☐	☐	☐	☐
Installing energy efficient windows	☐	☐	☐	☐	☐
Installing high efficiency HVAC/Heat pumps	☐	☐	☐	☐	☐
Replacing gas lawn or snow equipment with an electric alternative	☐	☐	☐	☐	☐

Q5 On a hyper-personal level, please select your interest in each action. (one answer per item)

	Very interested	Interested	Not interested	Already taking action
Recycling	☐	☐	☐	☐
Composting	☐	☐	☐	☐
Using less materials	☐	☐	☐	☐
Eating less meat	☐	☐	☐	☐

Q6 How do you typically travel for daily activities within or around Selinsgrove?

- ☐ Gasoline vehicle
- ☐ Hybrid or electric vehicle
- ☐ Carpool or ride share
- ☐ Public transportation
- ☐ Walking
- ☐ Biking
- ☐ Other_____

Q7 Which of the following changes or incentives would most motivate you to drive less or switch to a different method of transportation?

- ☐ More EV charging stations
- ☐ Improved sidewalks, bike lanes, or trails
- ☐ Improved public transit or shuttle services
- ☐ Incentives for carpooling or ride sharing
- ☐ None, I am satisfied with current options

Q8 What are the most important actions for the Borough of Selinsgrove to take to address climate change? Rank in order of most important (1) to least important (9)

_____ Acquire open space

_____ Mitigate extreme precipitation

_____ Improve bike/pedestrian paths

_____ Serve as a role model/provide education/provide incentives for action

_____ Enact additional code regulations

_____ Advocate for public transit

_____ Increase access to EV charging stations

_____ Borough does not have a role

_____ Other

We thank you for your time spent taking this survey.

Figure 13: Climate Survey 2

The second climate survey was open from October 24, 2025 to November 11, 2025, receiving a combined (online and paper) 24 responses. Online responses were compiled using the Qualtrics software while paper responses were compiled by technical team member, Grant Rowe. Total results from the initial survey can be found in Appendix E. However, key findings from the second survey are listed below:

- Question 2: In the past five years, the most common energy efficiency upgrades to homes and/or businesses include EnergyStar appliances (54% of respondents selected this), LED lights (54% of respondents selected this), and efficient windows (38% of respondents selected this).
- Question 3: The Borough of Selinsgrove community is most interested in EnergyStar appliances (63% of respondents selected this), energy audits (63% of respondents selected this), smart thermostats (50% of respondents selected this), and LED lights (50% of respondents selected this).

- Question 4: Out of all the options listed, cost as a hurdle for solar was selected the most times (58% of respondents selected this), a lack of information as a hurdle for energy audits was selected the most times (46% of respondents selected this), and a lack of interest as a hurdle to replacing gas equipment with electric equipment was selected the most times (17% of respondents selected this).
- Question 8: When asked to rank the most important actions for the Borough of Selinsgrove to take to address climate change, the community selected the following ranking order:
    1) Serve as a role model/provide education/provide incentives for action;
    2) Improve bike/pedestrian paths;
    3) Increase access to EV charging stations;
    4) Acquire open space;
    5) Enact additional code regulations;
    6) Advocate for public transit;
    7) Mitigate extreme precipitation;
    8) Borough does not have a role; and
    9) Other.

The results of this second climate survey highlight a few important realities. The Borough of Selinsgrove community has already taken a variety of emissions reducing actions and is interested in additional actions; however, many of these are the cheapest options available, e.g. smart thermostats and EnergyStar appliances tend to require less upfront investment than solar panels. Cost and a lack of information remain as hurdles for some of the most impactful emissions-reducing actions such as solar and energy audits and efforts to address these should be considered. Moving forward, the community would like to see the Borough of Selinsgrove serve as a role model and educational hub for climate action.

Finally, while maximum efforts were undertaken to promote these two surveys and to offer multiple versions, including online and paper options at multiple in-person events and locations, these surveys do not capture all of Selinsgrove. The Borough of Selinsgrove recognizes that it may have missed input from certain community members. However, these surveys, combined with input from a local Climate Action Task Force (CATF), serve as some of the best options for

incorporating community insight into climate action planning. In taking these steps, the Borough of Selinsgrove is making a sustained and committed effort to create a CAP informed from the bottom up, not the top down.

Objectives and Action-Items

Analyzing the 2023 GHG emissions inventory, BAU forecasts, and community climate survey and workshop data, the Climate Action Task Force (CATF) developed a list of items to reduce emissions resulting from the Borough of Selinsgrove. The CATF decided to follow an objective and action model. They created a set of overarching objectives each containing more-specific actions. For example, Objective 1 (in the transportation sector) argues for the "encourag[ment of] more efficient vehicles and resilient transportation systems." Within this objective is a targeted action, Action T1, "prioritize residential electric vehicle use through providing increased access to parking and electric vehicle charging stations." In essence, objectives are umbrellas with actions underneath. These objectives and actions address a variety of sectors with an emphasis on transportation and energy as they are the largest sectors of emissions for the Borough of Selinsgrove.

Importantly, the CATF has designated certain objectives and actions as "short-term/high -priority," meaning they have the opportunity to play an outsized role in emissions reductions. As such, the Borough of Selinsgrove should aim to implement or begin implementing these "short-term/high-priority" objectives and actions within 1-to-3 years of the adoption date of this climate action plan (CAP).

Objectives and actions without this status should not be ignored. Certain objectives may not, themselves, reduce emissions but may still play a valuable role in expanding climate resilience. An example of this is the creation of temperature extreme or flood plans. While these plans do not reduce or mitigate emissions, they do bolster adaptation and can meaningfully impact lives. However, for emissions reduction purposes, only "short-term/high-priority" objectives and actions are included in future forecasting.

Summary Tables

The summary tables below detail the sectors within the 2023 Borough of Selinsgrove GHG emissions inventory and recommended objectives and actions to reduce emissions in each sector. This Climate Action Plan (CAP) draws from the Commonwealth of Pennsylvania's 2024 Climate Action Plan, incorporating actions from the state plan as possible and appropriate, in addition to new locally-specific actions.

The tables below include a total of 11 objectives and 41 action-items. Of these, 7 objectives and 28 action-items are designated as "short-term/high-priority." Most actions in this plan require partnerships or initiation from government and/or private businesses. However, as they are implemented, actions taken will expand to positively impact the Selinsgrove community and will undoubtedly require community support. Such actions include expanded bike lines, bike parking, access to electric vehicle chargers, composting, tree planting, and more. In implementing this CAP, the Borough of Selinsgrove can assist residents and businesses in their endeavors to reduce emissions through education, self-implementation (setting an example), or governmental actions (changes to municipal code or ordinances). By working together, Selinsgrove can help its residents save money on energy expenses while also reaping the benefits of healthier air, lower costs for utilities and services, improved transportation and accessibility, a more vibrant local economy, and many other co-benefits of climate action.

Co-Benefits of Climate Action

Taking climate action does more than curb GHG emissions and create climate resilience. It also produces a variety of social, environmental, and economic co-benefits. For example, micro-forests preserve natural spaces and support wildlife and ecosystem conservation. Local sequestration efforts improve local environmental quality, such as through the tending of shade trees which also provide wildlife habitat. The result is a more prosperous and resilient community. Such co-benefits include supporting jobs and economic prosperity, advancing social equity, improving public health, fostering resource security, and improving local environmental quality, each of which are denoted through corresponding symbols in the figure below.

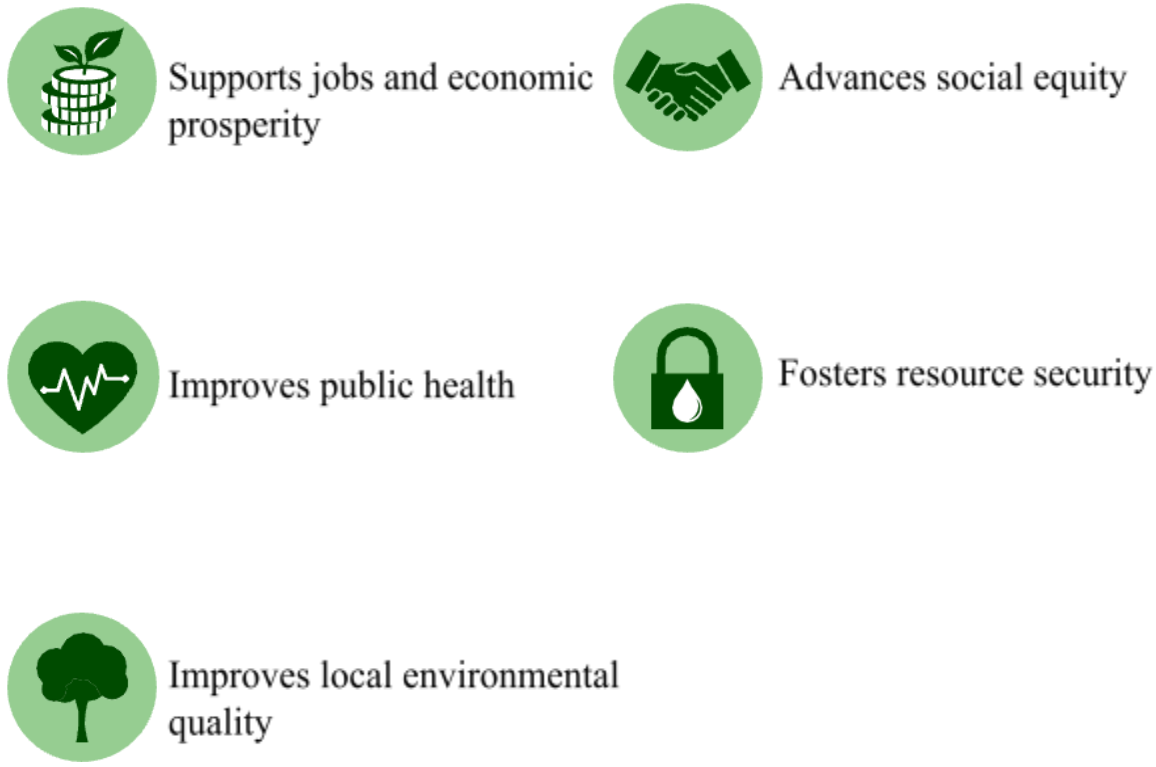

Figure 14: Climate Action Co-Benefits

Transportation

Transportation is the leading source of emissions in the Borough of Selinsgrove, accounting for 39% of the Borough's emissions. The CATF took this into consideration when creating the objectives and actions listed below. Further, the Borough of Selinsgrove recently completed and Borough Council adopted a walkability study. The objectives and actions listed below are meant to intersect with the walkability study, aiming to move Selinsgrove forward with implementing infrastructure improvements that enhance pedestrian safety, accessibility, and connectivity throughout the town.

The table below details the objectives and action-items for the Borough of Selinsgrove in the transportation sector.

Transportation (Short-Term/High-Priority)				
Objective(s)	Action-Item(s)			
Objective 1: Encourage more efficient vehicles and resilient transportation systems.	T1 - Prioritize residential electric vehicle use through providing increased access to parking and electric vehicle charging stations.	T2 - Research opportunities to electrify the Borough of Selinsgrove's vehicle fleet.	T3 - Provide educational material on the financial and environmental benefits of electric vehicles and other alternative forms of transportation.	
	Co-Benefits: 	Co-Benefits: 	Co-Benefits: 	
Objective 2: Encourage active and alternative transportation.	T4 - Provide covered bike racks and promote bike sharing networks.	T5 - Expand walking and biking paths.	T6 - Investigate grant opportunities such as the 'Safe Streets and Roads for All' program.	T7 - Create and implement an educational system regarding sustainable transportation.
	Co-Benefits: 	Co-Benefits: 	Co-Benefits: 	Co-Benefits: 
Objective 3: Align land use and housing policy with transportation infrastructure to increase	T8 - Establish a sidewalk construction and maintenance fund.	T9 - Enhance recreation uses of the Susquehanna River by linking to bike and pedestrian walkways.	T10 - Modify Land Development Ordinance to further protect pedestrian and bike infrastructure.	T11 - Expand access to public transit, increasing routes and public transit options.

access to walking, biking, and public transit.	Co-Benefits: 	Co-Benefits: 	Co-Benefits: 	Co-Benefits: 

Table 1: Transportation Short-Term/High-Priority Actions

There are no additional objectives or action items listed in the transportation sector outside of what is above.

Buildings and Energy

Residential, commercial, and industrial energy use represents an approximate 55% of the Borough of Selinsgrove's 2023 emissions. Opportunities to decrease this energy consumption can come through increasing the energy efficiency of buildings through weatherization and increasing renewable energy production. These opportunities also represent cost savings in reduced utility spending and therefore enjoy an added incentive to inspire action.

Many organizations like SEDA-COG and Snyder County are already working in these areas to support weatherization and other energy efficiency programming. As such, many of these action items listed are already underway or are not new ideas. Including them in a climate action plan allows the CATF to support and track their impacts as part of emissions reduction tactics.

The table below details the objectives and action-items for the Borough of Selinsgrove in the residential, commercial, and industrial energy sectors.

Residential, Commercial, & Industrial Energy (Short-Term/High-Priority)				
Objective(s)	Action-Item(s)			
Objective 4: Improve resiliency of energy production and distribution system.	E1 - Explore local energy production possibilities, including power purchase agreement, borough geothermal potential, mechanical battery storage, and alternative Borough provided solar energy sites.	E2 - Educate and encourage resilient energy production and distribution. Host a meet and greet between contractors and residents.		
	Co-Benefits: 	Co-Benefits: 		
Objective 5: Improve energy resiliency and efficiency for existing and new buildings.	E3 - Advance policies to provide incentives for energy efficiency initiatives such as energy audits.	E4 - Design and implement educational programs to increase public knowledge on energy efficiency.	E5 - Advocate for existing energy providers to expand options for renewable energy.	E6 - Increase public awareness on existing weatherization assistance programs and home weatherization strategies.
	Co-Benefits:	Co-Benefits:	Co-Benefits:	Co-Benefits:

				
Objective 5 (continued): Improve energy resiliency and efficiency for existing and new buildings.	E7 - Create and implement Borough's own weatherization assistance program.	E8 - Increase public awareness and information on on-site renewable energy options for homeowners.	E9 - Install renewable energy systems on municipal buildings such that 20% of the Borough's energy demand is met by 2035.	
	Co-Benefits: 	Co-Benefits: 	Co-Benefits: 	

Table 2: Residential, Commercial, & Industrial Energy Short-Term/High-Priority Actions

The following additional objectives or action items are not "Short-Term/High-Priority" but are also included in the residential, commercial, and industrial sectors:

- Within Objective 4 (listed above):
    - E10 - Strive to increase the number of Borough buildings that are LEED certified and retain any present certifications.

Waste

When solid waste is deposited in a landfill, it gradually generates methane gas, a greenhouse gas that has a higher global warming potential (GWP) than carbon dioxide. The warming impact depends on the timespan being analyzed, with 28-36 times more warming being expected on a

100-year timeline, and 84-87 times more warming on a 20-year schedule.[23] The objective and action items below are meant to reduce solid waste to improve the overall health and wellbeing of the Borough of Selinsgrove and reduce its methane emissions. The strategies suggested aim to minimize the tonnage of waste that will end its life in a landfill by focusing on the five Rs of the Zero Waste Movement: Refuse, Reduce, Reuse, Recycle, Rot (composting). Promoting low waste lifestyles creates alternatives to single-use items, establishes unique strategies to repurpose, and increases recycling and composting.

Waste (trash) in the Borough of Selinsgrove is currently done via private contractors. The actions below do not necessarily require that the Borough create a single-hauler or non-private system. Rather, it argues for increased support for alternative waste practices and composting options.

Waste (Short-Term/High-Priority)				
Objective(s)	Action-Item(s)			
Objective 6: Reduce solid waste.	W1 - Implement a municipal compost program that partners with farming communities.	W2 - Create and implement a comprehensive recycling and food waste educational campaign.	W3 - Enforce all existing recycling ordinances.	W4 - Implement a program to incentivize circular disposal: Reduce, Reuse, Recycle, Renew, Repair.
	Co-Benefits: 	Co-Benefits: 	Co-Benefits: 	Co-Benefits: 

Table 3:Waste Short-Term/High-Priority Actions

The following additional objectives or action items are not "Short-Term/High-Priority" but are also included in the waste sector:

- Within Objective 6 (listed above):
    - W5 - Expand recycling and e-waste intake.

[23] "About Methane Management | Unece," UNECE, 2021, https://unece.org/sustainable-energy/about-methane-management-0.

Carbon Sequestration and Ecosystem Support

Many strategies laid out in this plan focus on reducing greenhouse gas emissions directly. This is extremely important but needs to be coupled with increased pathways of carbon sequestration. When energy is created through the burning of fossil fuels, so are greenhouse gas emissions. These emissions, particularly carbon dioxide, can be recaptured into the earth through sequestration; this happens largely through plants. Carbon is sequestered or captured by the plants through photosynthesis and then stored in vegetation and soil.

While plants provide this sequestration benefit, they provide other benefits as well, such as beautification, shade, and ecosystem health. Collaborating with groups like the Shade Tree Commission, master gardeners, scout troops, and outside experts can significantly enhance Selinsgrove's natural sequestration capacity. These partnerships will help expand green spaces, promote biodiversity, and create a more sustainable environment, benefiting both the community and its natural habitats.

This section of the plan is focused on sequestration strategies through increasing natural green spaces which will increase the connection between the community and nature.

Carbon Sequestration (Short-Term/High-Priority)				
Objective(s)	Action-Item(s)			
Objective 7: Grow and maintain a healthy tree canopy and diverse ecosystems.	S1 - Increase Borough tree canopy.	S2 - Support educational efforts already happening in the community on tree education, native species, and free trees.	S3 - Upgrade code to allow for maintained meadow, edible yards, green roofs, and pollinator gardens.	S4 - Encourage more healthy green spaces through wildlife corridors, invasive species removal, and community gardens.
	Co-Benefits: 	Co-Benefits: 	Co-Benefits: 	Co-Benefits: 

Table 4: Carbon Sequestration Short-Term/High-Priority Actions

The following additional objectives or action items are not “Short-Term/High-Priority” but are also included in the carbon sequestration and ecosystem support sector:

- Within Objective 7 (listed above):
    - S5 - Support wild bird populations through, for example, obtaining PA Bird Town certification and incentivizing indoor cat maintenance.

Disaster Risk

Some objectives and action-items created by the Climate Action Task Force (CATF) do not directly reduce greenhouse emissions. As such, they are not classified as “Short-Term/High-Priority.” However, the CATF believes these objectives and subsequent actions remain incredibly important as many non-emissions-reducing actions help bolster community resilience.

As temperatures rise and climate change impacts continue to increase in severity, there is the increased risk of disaster. This section highlights objectives and actions to help the Borough of Selinsgrove proactively prepare for challenges. This section represents a two-fold strategy for disaster preparedness, one from the responsibility of the Borough to increase infrastructure resilience and one from the community to promote positive relationships:

- Objective 8: Enhance the Borough’s operational capacity to withstand and recover from disaster-related disruptions.
    - D1 - Designate an emergency operation center.
    - D2 - Support a system of public notifications and feedback for use during emergencies.
    - D3 - Establish emergency heating, cooling, and power center(s).
- Objective 9: Enhance the community’s capacity to withstand and recover from disruptions.
    - D4 - Create and implement a comprehensive educational program on climate disaster response.
    - D5 - Stimulate community building and connection through expanding on current events and establish local block parties.

- D6 - Explore Feasibility of developing a Community Emergency Response Team (CERT).

Flooding

One particular disaster of concern for the Borough of Selinsgrove and its residents, businesses, and visitors is flooding. Located largely along the Main Branch of the Susquehanna River, Selinsgrove has historically been subject to flooding from the river as well as the Penns Creek Tributary. According to the organization *First Street*, there are 1,316 properties in Selinsgrove at risk for flooding over the next 30-years, representing almost 80% of all properties in the area.[24]

With this flooding comes property damage alongside reduced access to utilities, emergency services, and transportation. Flooding can also impact the overall economic well-being of an area.

While the disaster section above details various objectives and action-items related to disasters (a category of which flooding belongs), flooding serves as a large-scale concern for the Borough. As such, the CATF created its own section with more targeted information. The following objective and action-items are not "Short-Term/High-Priority," but will play a crucial role in addressing the above flooding concerns and boost community safety and resilience going forward:

- Objective 10: Enhance the Borough's capacity to withstand and recover from flooding-specific disruptions.
    - F1 - Implement recommendations of the Borough's Flood Resilience
    - Plan.
    - F2 - Support system of public notifications and feedback for use during flooding emergencies.
    - F3 - Establish a high water meeting spot.
- Objective 11: Enhance the community's operational capacity to withstand and recover from flooding-specific disruptions.

[24] "Selinsgrove Flooding Risk," firststreet.org, 2025, https://firststreet.org/city/selinsgrove-pa/4269216_fsid/flood.

- F4 - Create and implement comprehensive educational programs on climate flooding response.

Equity and Justice

The historic expansion of energy generation and consumption in the United States has undoubtedly led to many benefits. This includes access to heating, cooling, internet, communication, and more. However, the benefits of energy cannot be recognized without the negatives. Generating the energy sources that power our homes, businesses, and industry may lead to large profits for corporations, but does so at both a planetary and human cost. Land is disturbed to mine fuels and fossil-based power plants create damaging pollution when operating. The result is air, land, and water contamination, frequently causing health impacts and even death.[25]

This trend of exploiting communities for profit is both unjust and inequitable. For instance, areas of heavy fossil fuel use are often disproportionately located in minority communities, sometimes referred to as "sacrifice zones" as those who live in said areas experience increased levels of harm.[26] Without meaningful change, the push for climate action and renewable energy could be similarly exploitative. While renewable forms of energy and electric vehicles produce zero greenhouse gas (GHG) emissions when operating, they are not without cost. The transition to renewables will require an array of resource-intensive materials[27] and, lacking community support, renewable projects can frustrate and distress residents. Such has been the case in certain rural communities in the United States.[28]

To avoid the damages of fossil fuels, renewable energy projects and climate action more broadly must work with communities. Residents should be informed of initiatives and offered a seat at the table in planning. If done correctly, renewables have the potential to be wholly beneficial to

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[25] "Deaths Associated with Pollution from Coal Power Plants," National Institutes of Health, December 12, 2023, https://www.nih.gov/news-events/nih-research-matters/deaths-associated-pollution-coal-power-plants.
[26] Timothy Q. Donaghy et al., "Fossil Fuel Racism in the United States: How Phasing out Coal, Oil, and Gas Can Protect Communities," *Energy Research & Social Science* 100 (June 2023): 103104, https://doi.org/10.1016/j.erss.2023.103104.
[27] IEA (2021), The Role of Critical Minerals in Clean Energy Transitions, IEA, Paris https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions.
[28] Nichola Groom, U.S. solar expansion stalled by rural land-use protests | reuters, April 2, 2022, https://www.reuters.com/world/us/us-solar-expansion-stalled-by-rural-land-use-protests-2022-04-07/.

the communities they surround, unlike fossil fuels. Farmers can have dual-use of their land via agrivoltaic projects,[29] residents can repurpose open space, and communities can come together to share in the benefits of having renewables near them, creating clean energy with support, not exploitation. In short, "the success of renewable energy initiatives...is fundamentally connected to the integration, acceptance, and active involvement of the communities where these projects are planned and implemented…[as] continued engagement beyond completion can help build trust and enhance equitable benefit-sharing schemes."[30]

The Borough of Selinsgrove is committed to an equitable, just, and sustainable path forward, and community support has been a top priority in developing this climate action plan (CAP). This plan includes feedback from community surveys and a community workshop, as well as detailed guidance from a locally created Climate Action Task Force (CATF). Upon adoption, the Borough of Selinsgrove aims to work with residents, businesses, and visitors to reduce emissions and increase resiliency from the bottom up, ensuring equity in all facets of implementation.

Forecasting Selinsgrove's Objectives/Actions

Recall that the Borough of Selinsgrove's 2023 greenhouse gas (GHG) baseline emissions are anticipated to decrease by 21% by 2050 in its business-as-usual BAU) scenario. However, supporting state climate goals requires additional work to further reduce emissions. To achieve this, the Borough of Selinsgrove's Climate Action Task Force (CATF) created a series of objectives and action-items (detailed in previous sections). These objectives and actions were intentionally created with feedback from two community surveys and a community workshop as any meaningful actions the Borough takes will require community support. In total, the CATF created 11 objectives and 41 action-items. Of these, 7 objectives and 28 action-items are designated as "short-term/high-priority," meaning they have an increased ability to reduce emissions. As such, this forecast focuses solely on these "short-term/high-priorty" items.

[29] "Agrivoltaics: Solar and Agriculture Co-Location," U.S. Department of Energy, https://www.energy.gov/eere/solar/agrivoltaics-solar-and-agriculture-co-location.
[30] Elif Gündüzyeli and Sanna Markkanen, "Europe Needs to Triple Renewable Capacity by 2030, and Community Buy-in Is Critical," The Nature Conservancy, May 15, 2024, https://www.nature.org/en-us/what-we-do/our-insights/perspectives/community-engagement-renewable-energy-europe/.

To forecast the emissions reduction potentials from the 7 objectives and 28 action-items created by the CATF, a series of assumptions are required. For instance, Objective 1 states a goal of encouraging more efficient vehicles and resilient transportation systems. This goal in and of itself has no quantifiable outcome. As such, a series of estimated outcomes must be applied, e.g. 30% of all vehicle miles traveled by 2050 will be from electric vehicles. This assumption is measurable and can be entered into an emissions calculation. Figure 15 below details the assumptions for each of the 7 "short-term/high-priority" objectives and their subsequent action items.

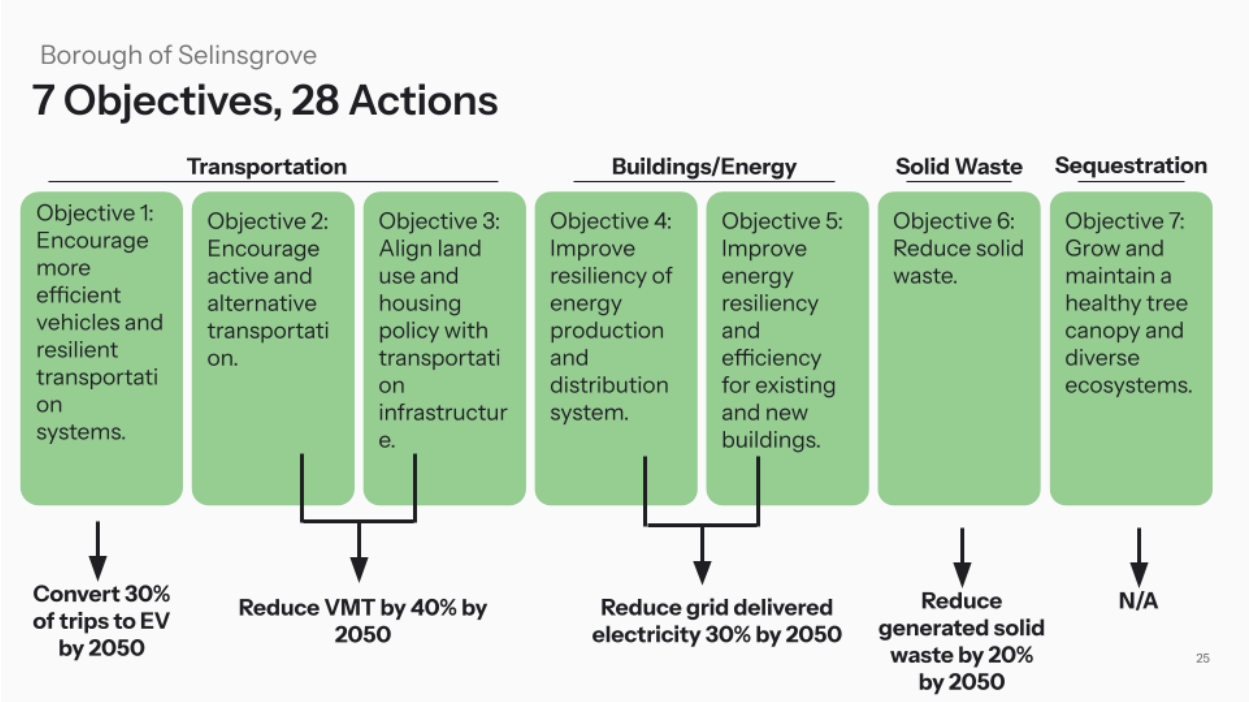

Figure 15: Quantifiable Outcomes of Selinsgrove's "Short-Term/High-Priority" Items

Between the 7 objectives and 28 action-items there are 4 quantifiable outcomes. Objective 1 and its action-items revolve around electric vehicles, suggesting steps to increase vehicle chargers and promote electric vehicle education. The idea is that more community members will purchase electric vehicles as additional electric vehicle chargers are installed and as the technology and range for electric vehicles increases in the future,[31] reducing concerns such as "range anxiety." Reviewing advancements in electric vehicles as well as feedback from community surveys, the

[31] Connor R. Forsythe et al., "Technology Advancement Is Driving Electric Vehicle Adoption," *Proceedings of the National Academy of Sciences* 120, no. 23 (May 30, 2023), https://doi.org/10.1073/pnas.2219396120.

CATF and technical team estimated that 30% of miles traveled in the Borough of Selinsgrove could be achieved by electric vehicles by 2050.

Objectives 2 and 3, and their corresponding action-items, seek to improve biking, walking, and public transportation. They promote additional bike storage, bike share programs, transit systems, and more. In implementing these objectives, the Borough of Selinsgrove anticipates reducing vehicle miles traveled by 40% by 2050. This estimate is based on data from the U.S. Department of Transportation's Daily Mobility Statistics.[32] The agency reports daily vehicle trips in Snyder County (where the Borough of Selinsgrove is located) from 2019 to 2024. Analyzing this dataset, over 40% of reported trips in the County were less than 3 miles in length, suggesting that these trips could be completed using alternative methods of transportation such as walking or biking. As such, the CATF and technical team have estimated a 40% reduction in VMT by 2050.

Objectives 3 and 4 address both energy usage and source, advocating for better efficiency practices as well as an increase in renewable energy. One method for achieving energy efficiency is an energy audit, a process in which testing is done to identify weak points in a home related to energy, e.g. air leaks or spots of weak insulation. Such tests could save homeowners as much as 30% on their energy bills[33] and, if paired with a home or business solar system, could further reduce energy billing. Building from this, the CATF and technical team have estimated that grid delivered energy to the Borough of Selinsgrove could be reasonably reduced by upwards of 30% by 2050.

Objective 6 and its action-items emphasize reducing waste, especially via the promotion of composting. Food waste is a large-scale issue in the United States. Not only is it the most common material sent to landfills, but it accounts for approximately 24% of municipal solid waste.[34] Therefore, the CATF predicts that 20% of solid waste tonnage could be reduced by 2050 if adequate composting programs are established.

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[32] Kyle Titlow, "Daily Mobility Statistics: BTS Data Inventory," Bureau of Transportation Statistics, April 30, 2024, https://data.bts.gov/Research-and-Statistics/Daily-Mobility-Statistics/w96p-f2qv/about_data.
[33] "Energy Saver 101 Infographic: Home Energy Audits," U.S Department of Energy, March 3, 2022, https://www.energy.gov/energysaver/articles/energy-saver-101-infographic-home-energy-audits.
[34] Composting, December 12, 2025, https://www.epa.gov/sustainable-management-food/composting#stats.

Objective 7 refers to the sequestration of carbon through the planting of trees. While this is an important step for the Borough of Selinsgrove to implement, measured carbon reductions from this objective are not included in the forecast. The planting of trees can be difficult to estimate as some trees planted do not grow or survive into adulthood, and ensuring that all trees planted are tracked and monitored is not guaranteed. Thus, while this plan advocates for tree planting as a "short-term/high-priority" item, the additional emissions reductions such an action would generate are not included in this forecast.

The objectives (1 through 6) and their subsequent action-items result in 4 measurable outcomes by 2050:

- A transition to 30% of vehicle miles traveled by 2050 done so by electric vehicles;
- A reduction in overall vehicle miles traveled by 40% by 2050 due to increased walking, biking, and alternative transit options;
- A reduction of grid delivered electricity by 30% by 2050 due to more efficient homes and businesses and the installation of on-site solar; and
- A reduction in solid waste tonnage by 20% by 2050 due to composting and other reduction measures.

These outcomes are applied under all of the same assumptions as the business-as-usual (PPL 70% Assumption) forecast, meaning any growth rates applied in the previous forecast are applied here as well. The only alternative is the application of the outcomes themselves. Forecasting these outcomes to 2050 results in a reduction of the Borough of Selinsgrove's 2023 GHG emissions by 43% by 2050. In other words, emissions from the Borough would decrease from around 49,600 MTCO2e in 2023 to around 28,200 MTCO2e by 2050. While not net-zero, this represents both a realistic and impactful reduction in emissions. Recall that the business-as-usual (BAU) scenario referenced earlier (the PPL 70% Assumption) only reduced 2023 emissions 21% by 2050. Thus, the Borough of Selinsgrove, with community support, has a real potential to make a meaningful reduction in emissions, creating a healthier and more resilient future.

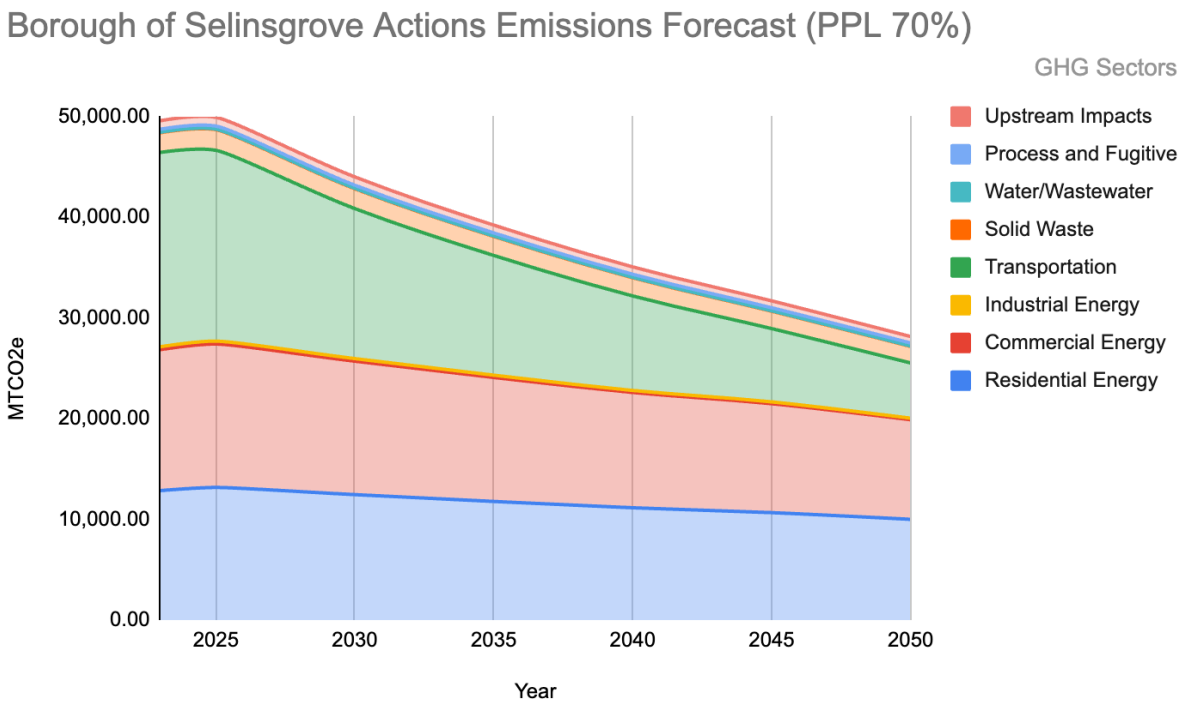

Figure 16: Forecast of Borough of Selinsgrove's "Short-Term/High-Priority" Items

For more information on the forecast above, please see Appendix F.

Specific Studies

The forecasting above offers an overarching estimation of the impacts of implementing the objectives and action-items created by the Climate Action Task Force (CATF). It highlights the potential emissions reductions for the entirety of the Borough of Selinsgrove until the year 2050. The sections below take a different approach, offering a more granular focus. The following sections are two focused studies, one on the benefits of a proposed solar site in the Borough of Selinsgrove and another on the benefits of electric vehicle adoption. These sections do not require that the following actions necessarily be taken but offer background information and examples of localized projects that the Borough, businesses, and residents can reference going forward.

Solar Specific Study

Introduction

This case study examines the feasibility of installing a rooftop solar array on the Borough of Selinsgrove's municipal buildings to save electricity costs and reduce greenhouse gas emissions. This case study provides solar array setup costs and payback time. It also includes an estimate of expected annual solar production in order for the Selinsgrove Borough Council to make an informed decision.

Key Benefits

Many major cities, towns, and municipalities are turning toward cleaner energy to offset high energy prices and carbon emissions associated with traditional fossil fuel–based sources. According to Exact Solar, commercial systems tend to run between $1.50/W and $2.50/W, and the return on investment for a typical system is estimated between 6 and 10 years.[35] This depends on the size of the system, how much sunlight it will receive, net metering, interest rates on loans, and local electricity costs. Solar photovoltaic (PV) systems generally last at least 25 years.[36]

[35]" How Much Do Solar Panels Cost?," Exact Solar, May 12, 2025, https://exactsolar.com/how-much-do-solar-panels-cost/.
[36] "Solar Explained: Solar Energy and the Environment," U.S. Energy Information Administration (EIA), January 19, 2024, https://www.eia.gov/energyexplained/solar/solar-energy-and-the-environment.php.

The environmental benefits of PV systems are substantial. These systems reduce greenhouse gas footprints by producing clean, renewable energy and help decrease fossil fuel dependency. Additionally, PV systems become carbon neutral quickly, offsetting the emissions associated with their mining, manufacturing, and installation. With solar panels only producing around 50 g of CO_2 per panel during the manufacturing process,[37] their carbon footprint can be neutralized in 10 months to 4 years, depending on productivity.[38]

Roof Warranty and Protections

Some are concerned about the impacts to roofs or properties during solar installation, pointing to concerns related to roof racks needed for solar panels. However, most solar installations have a roof warranty to protect from any damage one could experience. Sunrun reports that "all our roof penetrations are made watertight and are guaranteed by a workmanship warranty. One little known benefit, once the solar panels are on your roof, they can protect the underlying sections from normal weathering and increase its longevity."[39]

Furthermore, solar panels are incredibly durable. According to Lumina Solar, the panels are "built to withstand constant exposure and tough weather conditions." They preface that the biggest damage risk to solar panels is from fallen debris.[40]

State Resources

The Pennsylvania Department of Environmental Protection's Solar Energy Resource Hub provides local governments with guidance on how to plan for, regulate, and benefit from solar energy development. As solar costs continue to fall and demand rises, municipalities are increasingly positioned to use solar to reduce operating expenses, lower greenhouse-gas emissions, and support local economic development. The Hub outlines the two primary roles local governments play: first, as regulators overseeing zoning, permitting, and land-use decisions for both small accessory systems on homes and businesses and larger grid-scale solar installations; and second, as potential customers who can install solar on municipal buildings or

[37] "What Is the Carbon Footprint of Solar Panel Manufacturing?," Solaris Renewables, April 12, 2023, https://solarisrenewables.com/blog/what-is-the-carbon-footprint-of-solar-panel-manufacturing/.
[38] Martin Pehnt, "Dynamic Life Cycle Assessment (LCA) of Renewable Energy Technologies," *Renewable Energy* 31, no. 1 (January 2006): 55–71, https://doi.org/10.1016/j.renene.2005.03.002.
[39] "What Happens to My Roof When Solar Panels Are Installed?," Sunrun, 2025, https://www.sunrun.com/go-solar-center/solar-faq.
[40] "Solar FAQ," Lumina Solar, 2025, https://luminasolar.com/faq/.

procure solar power through third-party power purchase agreements. DEP highlights important tools for responsible solar planning, including the Municipal Officials' Guide to Grid-Scale Solar Development, which helps communities create or update zoning ordinances, address siting considerations, protect farmland and natural resources, and ensure developers provide proper decommissioning plans.

The Hub also provides municipalities with several pathways for adopting solar, including onsite rooftop or ground-mounted installations, third-party financing arrangements that shift upfront costs to solar developers, and off-site procurement options for communities with limited local space. Additionally, Pennsylvania's solar siting policy encourages prioritizing previously disturbed lands to preserve agricultural soils and forests while still enabling clean energy growth. Through model ordinances, permitting templates, and national programs like SolSmart and Solar@Scale, the Solar Energy Resource Hub equips municipalities to streamline solar development, strengthen local decision-making, and ensure solar projects deliver long-term environmental, economic, and community benefits.[41] More information can be found at: https://www.pa.gov/agencies/dep/residents/solar-energyresource-hub/local-government

Solar for Schools Grant Program

The Solar for Schools Grant Program was created under the Solar for Schools Act (P.L. 813, No. 68), signed July 17, 2024. Its purpose is to reduce the financial burden of installing solar energy systems at eligible educational institutions across Pennsylvania by underwriting a portion of upfront costs.[42]

Eligible applicants include public school districts, intermediate units, charter schools (including cyber and specialized schools), career and technical schools, community colleges, and certain trade colleges. Projects must be located at a school facility and use photovoltaic or solar-thermal technologies.

Grant funding helps cover equipment, installation, permitting, energy storage, and utility interconnection. The size of the grant depends on a district's MV/PI Aid Ratio. Depending on

[41] "Local Government," Department of Environmental Protection, accessed 2025, https://www.pa.gov/agencies/dep/residents/solar-energy-resource-hub/local-government.
[42] "Solar for Schools Grant Program (S4S)," PA Department of Community & Economic Development, 2025, https://dced.pa.gov/programs/solar-for-schools-grant-program-s4s/.

that ratio, grants can cover up to 50% of project cost (capped at $500,000), 40% ($400,000 cap), or 30% ($300,000 cap).[43] Selinsgrove Area School District's MV/PI ratio for 2025–2026 is 0.5074, making it eligible for up to 40% of project costs.

The first round of applications opened November 1, 2024, and closed January 31, 2025.[44] The initial appropriation was $25 million statewide, and by mid-2025 DCED awarded more than $22.6 million to 74 schools.[45]

Solar Example

The site below was chosen based on several criteria, including potential incoming solar radiation, land ownership, site size, and potential environmental/aesthetic impact. ArcGIS was used to first find potential annual solar radiation in kWh. Next, parcel data was used to determine land/building ownership. In searching for the selected location, only parcels owned and operated by the Borough of Selinsgrove were taken into consideration (i.e. Borough buildings, Borough land, etc.). Potential arrays were outlined based on their potential environmental and aesthetic impacts. Sites with usable rooftop space or existing impervious surfaces were prioritized over sites that are primarily lawn or forested.

The chosen site found through ArcGIS was then compared to the National Laboratory of the Rockies' (NLR) (Formerly National Renewable Energy Laboratory (NREL)) PVWatts online calculator. The site was assumed to have monthly irradiance losses through winter due to snow cover and general system losses were calculated by site characteristics.

The following assumptions were made to calculate individual solar array payback periods. As mentioned previously, mid-range, commercial arrays' installation costs run between $1.50-$2.50/W, so installation cost was assumed to be $2.00/W ($2,000/kW). Annual operations and maintenance were assumed to be $20/kW/yr. Electricity price is assumed value at $0.14/kWh.

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[43] Ibid.
[44] "PA Solar 4 Schools Grant – Jan 31," PHENND, January 7, 2025, https://phennd.org/update/pa-solar-4-schools-grant-jan-31/.
[45] "Shapiro Administration Invests More than $22.6 Million to Help Schools across Pennsylvania Lower Electricity Costs and Create Jobs by Installing Solar Panels," PA Department of Community & Economic Development, May 20, 2025, https://dced.pa.gov/newsroom/shapiro-administration-invests-more-than-22-6-million-to-help-schools-across-pennsylvania-lower-electricity-costs-and-create-jobs-by-installing-solar-panels/.

Isle of Que Boat Launch Parking Lot Array

The Isle of Que Boat launch was selected as a potential site for solar installation. With minimal obstructions and high solar radiation, it could be an ideal site to prototype a parking lot solar array (solar carport). Such a location could allow the Borough to see the benefits of a solar array, without needing to sacrifice limited green and permeable surfaces elsewhere. This site is estimated to generate 209,896 kWh annually (Figure 17). The payback period on this array is estimated to be around 12.9 years (Figure 18). A local example of a successful parking lot array can be seen at Burkholder's Country Market in Spring Mills, PA. More information can be found at https://burkholdersmarket.com/solar-carport/.

Site map of Isle of Que Boat Launch solar array.

Location and Station Identification	
Requested Location	700 S Front St, Selinsgrove, PA 17870
Weather Data Source	Lat, Lng: 40.77, -76.86 1.3 mi
Latitude	40.77° N
Longitude	76.86° W
PV System Specifications	
DC System Size	167.4 kW
Module Type	Standard
Array Type	Fixed (open rack)
System Losses	13.19%
Array Tilt	20°
Array Azimuth	180°
DC to AC Size Ratio	1.2
Inverter Efficiency	96%
Ground Coverage Ratio	0.4
Albedo	*From weather file*
Bifacial	No (0)
Monthly Irradiance Loss	Jan 2% Feb 2% Mar 1% Apr 0% May 0% June 0% July 0% Aug 0% Sept 0% Oct 0% Nov 0% Dec 2%
Performance Metrics	
DC Capacity Factor	14.3%

Site statistics and assumptions for calculations.

RESULTS

Print Results

209,896 kWh/Year*

System output may range from 204,880 to 217,831 kWh per year near this location.
Click HERE for more information.

Month	Solar Radiation (kWh / m² / day)	AC Energy (kWh)
January	2.74	12,026
February	3.56	13,950
March	4.26	17,857
April	5.03	19,220
May	5.94	22,798
June	6.38	23,222
July	6.21	23,235
August	5.88	21,886
September	4.94	18,432
October	3.79	15,289
November	3.09	12,456
December	2.18	9,525
Annual	4.50	209,896

Estimated annual solar radiation and AC energy generation.

Figure 17: Solar Case Study for Isle of Que Boat Launch (Location, Inputs, and Results)

$$\textit{Annual Generation}: 209{,}896\ kWh$$
$$\textit{DC System Size}: 167.4\ kW$$
$$\textit{Installed Costs}: \$2/W \rightarrow \textit{Total Installed Cost} = \$334{,}800$$
$$\textit{Operations \& Maintenance}: \$20/kW/year \rightarrow \textit{Annual O\&M} = \$3{,}348$$
$$\textit{Electricity Value}: \$0.14/kWh \rightarrow \textit{Annual Evergy Value}: 209{,}896\ kWh * \$0.14 = \$29{,}385.44$$
$$\textit{Annual Net Savings}: \$29{,}385.44 - \$3{,}348 = \$26{,}037.44$$
$$\textit{Payback Period (No Assisstance)}: \frac{\$334{,}800}{\$26{,}037.44/yr} = 12.9\ years$$

$$** \textit{Investment Tax Credit} (30\%): 30\% * \$334{,}800 = \$100{,}440$$
$$** \textit{Net Installed Cost}: \$334{,}800 - \$100{,}440 = \$234{,}360$$
$$** \textit{Payback Period (With S4S \& ITC)}: \frac{\$234{,}360}{\$26{,}037.44/yr} = 9.0\ years$$

Payback period calculations for the Isle of Que Boat Launch array. An additional calculation to show how ITC could affect payback period is also included.

Figure 18: Solar Case Study for Isle of Que Boat Launch (Payback Period)

Investing in solar energy offers Selinsgrove Borough a safe and practical opportunity to reduce municipal electricity costs, stabilize long-term energy expenses, and contribute to greenhouse gas reduction goals. Analysis of the Isle of Que location serves as an example of the potential for solar exploration in the area. Even without incentives (note that the Federal Investment Tax Credit scenario included in figure 16 is no longer available), many solar payback periods are within 15 years and emissions payback is even sooner.

Solar adoption supports broader community and environmental objectives. It reduces municipal greenhouse gas emissions, encourages local economic development and clean-energy jobs, and enables educational opportunities through programs like Solar for Schools. With available state grants, technical guidance, and historically proven federal incentives, solar represents a strategic investment that balances economic feasibility with sustainability and demonstrates municipal leadership in clean energy.

Electric Vehicle Specific Study

Introduction

Transportation is the largest sector of greenhouse gas (GHG) emissions for the Borough of Selinsgrove as well as the United States.[46] As such, reducing emissions from this sector is an increasing priority for both federal, state, and local governmental bodies. Electric vehicles (EVs) serve as one method of reducing transportation-related emissions, producing little to no emissions while operating (none if a full electric vehicle) and less emissions over its lifetime in comparison to traditional internal combustion engine (ICE) based vehicles. In drafting this climate action plan (CAP), the Climate Action Task Force (CATF) has emphasized the adoption and promotion of electric vehicles, particularly in Objective 1 and its subsequent action items. The study below offers an overview into the benefits of EVs, highlighting an example of a potential vehicle for the Borough of Selinsgrove and its subsequent benefits not only in reducing emissions but in cost competitiveness as well.

Overview

Electric vehicles come in a variety of forms, including fully electric (herein referred to as a battery electric vehicle or BEV) and partially electric (a hybrid or plug-in hybrid). BEVs do not have a combustion engine, instead utilizing an electric motor to move the vehicle. Because of this, BEVs produce no emissions or exhaust while operating and do not have a tailpipe. Instead, emissions are generated separate from the vehicle at power plants very similar to how energy is generated for one's home or business. When a vehicle is running low on battery, it simply needs to be plugged in via a charging port on the vehicle. Charging the BEV can be done at three levels or speeds. A level 1 charger refers to charging the BEV using a traditional 120-volt outlet much like one would charge their phone or computer. Level-2 is slightly faster and utilizes a 240-volt outlet similar to a drying machine. DC-fast charging, sometimes referred to as level-3 charging, requires high voltages (via direct-current) and is done at specialized fast charging stations.[47]

[46] Sources of Greenhouse Gas Emissions, March 31, 2025, https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions.
[47] "Electric Vehicle Charging Stations," Alternative Fuels Data Center, 2025, https://afdc.energy.gov/fuels/electricity-stations.

In contrast, Hybrid vehicles contain a mix of both a battery and an internal combustion engine (ICE), using both to operate. Typically, plug-in hybrid electric vehicles have larger batteries, contain an exterior charging port, and can drive for short distances using only the battery.[48] In contrast, hybrid vehicles have a smaller battery that cannot be charged externally.[49] The smaller battery works to increase efficiency and extend range, but is not typically used to drive without the ICE. ICE vehicles solely use the engine and fuel to drive the vehicle.

Key Benefits

When comparing vehicles it is important to consider their impact not only while in use, but throughout its entire lifetime. For instance, BEVs have no tailpipe and, thus, produce no emissions while operating. However, emissions are produced at a power plant somewhere else when the vehicle is charging. Further, the creation of the vehicle, from the mining of materials to construction at a factory, also produces emissions. As such, vehicle emissions should be evaluated from its creation to its eventual disposal, e.g. a cradle-to-grave analysis.

In conducting such an analysis, BEVs consistently result in less total (lifetime) emissions than its plug-in hybrid, hybrid, and ICE counterparts. This is largely due to the higher efficiency of BEVs. Unlike hybrid and ICE vehicles which almost always use some gasoline or diesel fuel, BEVs operate solely on electricity. In doing so, they are able to convert much higher levels of energy into motion. The result is a vehicle that is sizably more efficient. In fact, over its lifetime, BEVs result in reduced emissions compared to its hybrid and gasoline counterparts across the contiguous United States.[50] Importantly, BEVs may result in more emissions during construction due to the resource intensive materials required for its large batteries.[51] However, the longer they are driven, the quicker BEVs catch up and eventually surpass its counterparts, especially ICE vehicles.[52]

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[48] "How Do Plug-In Hybrid Electric Cars Work?," Alternative Fuels Data Center, 2025, https://afdc.energy.gov/vehicles/how-do-plug-in-hybrid-electric-cars-work.
[49] "How Do Hybrid Electric Cars Work?," Alternative Fuels Data Center, 2025, https://afdc.energy.gov/vehicles/how-do-hybrid-electric-cars-work.
[50] Elizabeth Smith et al., "Greenhouse Gas Reductions Driven by Vehicle Electrification across Powertrains, Classes, Locations, and Use Patterns," *Environmental Science & Technology* 59, no. 37 (August 25, 2025): 19768–80, https://doi.org/10.1021/acs.est.5c05406.
[51] Electric Vehicle Myths, August 7, 2025, https://www.epa.gov/greenvehicles/electric-vehicle-myths.
[52] Pankaj Sadavarte, Drew Shindell, and Daniel Loughlin, "Comparing the Climate and Air Pollution Footprints of Lithium-Ion Bevs and Ices in the US Incorporating Systemic Energy System Responses," *PLOS Climate* 4, no. 10 (October 29, 2025), https://doi.org/10.1371/journal.pclm.0000714.

Similar to initial emissions, BEVs are also sometimes more expensive than other hybrid or ICE vehicles. However, BEVs are able to make up for the increased sticker costs in a few different ways. Not only is it cheaper to charge a BEV at home than it is to purchase fuel, BEVs also have less parts than ICE vehicles as they have no engine. This results in the lowest overall maintenance costs out of all vehicles.[53]

Warranty

Due to its higher sticker price, there is perhaps increased pressure regarding the lifetime of BEVs, e.g. people want to make sure the vehicles last. Luckily, most BEVs come with a warranty on the battery. For example, the Chevrolet Blazer EV comes with an 8-year or 100,000 mile battery warranty to help ensure one of the most important (and expensive) parts of the vehicle is protected.[54]

Resources

Federal incentives regarding BEVs have been reduced; however, there are still certain state incentives available. One example is the Pennsylvania Alternative Fuels Incentive Grant (AFIG) program which provides funding incentives for both the purchase of BEVs as well as BEV chargers. This includes funding of $3,000 for BEVs that meet certain standards. [55]

Vehicle Comparison

The following comparison analyzes the environmental and financial impact of 3 vehicle options for the Borough of Selinsgrove: a BEV, plug-in hybrid, and ICE vehicle (hybrid vehicles, as opposed to plug-in hybrids, are not included in the tool used). First, the International Energy Agency's EV Life Cycle Assessment Calculator is applied to the three vehicle types. While not perfect, the calculator offers a relatively complete analysis into emissions from vehicles by type, considering "the direct and indirect impacts of vehicle manufacturing, fuel production and

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[53] FOTW #1190, June 14, 2021: Battery-electric vehicles have lower scheduled maintenance costs than other light-duty vehicles, June 14, 2021, https://www.energy.gov/eere/vehicles/articles/fotw-1190-june-14-2021-battery-electric-vehicles-have-lower-scheduled.

[54] "EV Ownership," Chevrolet, 2025, https://www.chevrolet.com/electric/ownership.

[55] 1. "Alternative Fuels Incentive Grant (AFIG)," Department of Environmental Protection, 2025, https://www.pa.gov/agencies/dep/programs-and-services/grants-loans-rebates/alternative-fuels-incentive-grant.

distribution, and the use of the vehicle."[56] Using the calculator, emissions from the three vehicle types are estimated assuming:

- The vehicles (BEV, plug-in hybrid, and ICE) are medium in size,
- Driven infrequently, e.g. an average of 15km driven a day (around 3,400 miles annually), due to the Borough's small size, and
- The vehicle has a 15 year lifetime.

The results are shown in figure below.

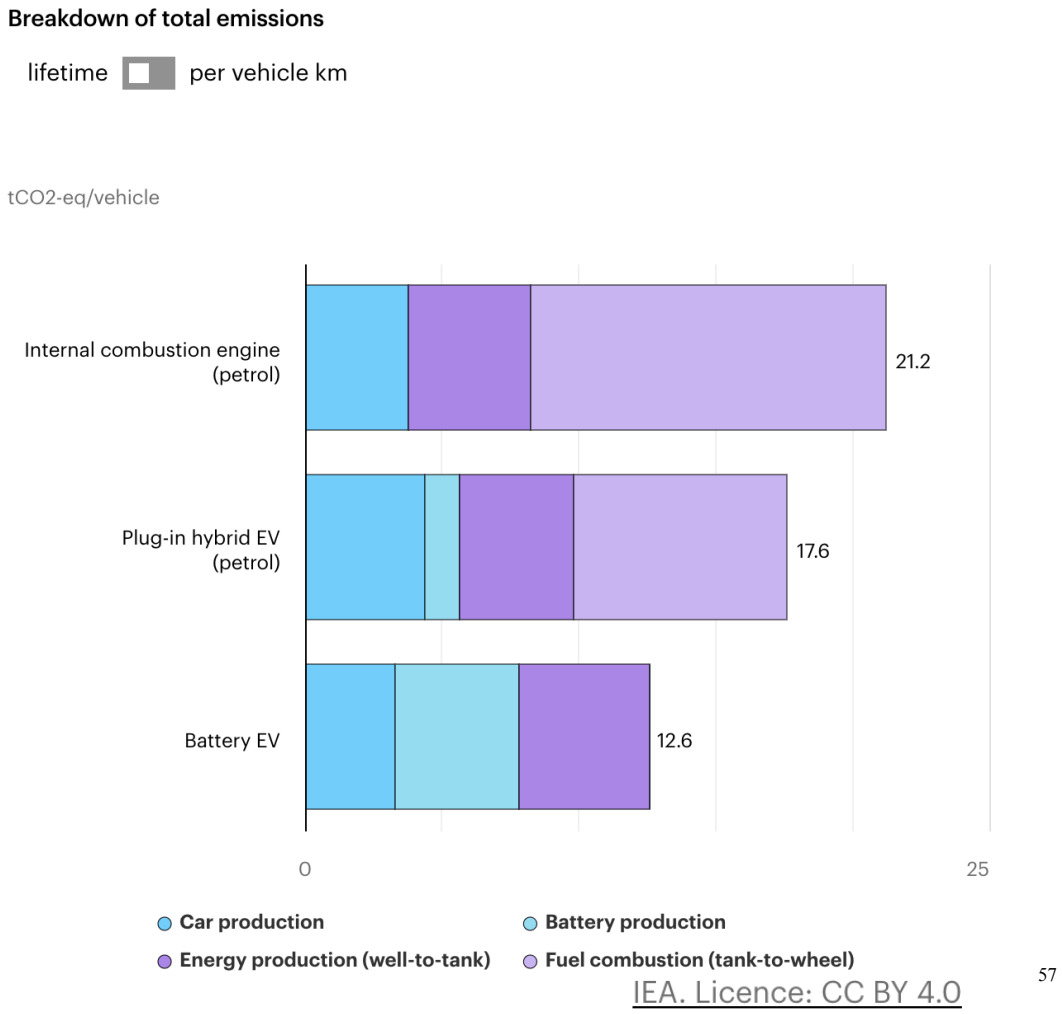

Figure 19: Lifetime Emissions by Vehicle Type

[56]Method statement - Life Cycle Assessment (LCA), 2024, https://iea.blob.core.windows.net/assets/4559e539-d8c4-41c1-b5e6-2a65d1e0cc50/EVLifeCycleAssessmentCalculatorMethodology.pdf. Page 1

[57] EV Life Cycle Assessment Calculator, 2025, https://www.iea.org/data-and-statistics/data-tools/ev-life-cycle-assessment-calculator.

Even with incredibly short annual mileage, the BEV still results in the lowest total lifetime amount of emissions out of the three vehicle types. Importantly, the farther the vehicles drive, the more emissions the BEV saves, e.g. the better the vehicle looks in comparison to the plug-in hybrid and ICE vehicles.

Next, three specific vehicles are compared using the U.S. Department of Energy's Alternative Fuels Data Center Vehicle Cost Calculator. This calculator allows one to evaluate ownership costs associated with a vehicle, including the cost of annual fuel or electricity use and operating cost. For this analysis, the vehicles of focus include:

- 2025 Chevrolet Blazer EV AWD (Automatic [A] EV),
- 2025 Ford Explorer AWD (6cyl 3.0L Automatic [S10] Gasoline), and
- 2025 Mazda CX-70 4WD (6cyl 3.3L Automatic [S8] Hybrid)

These vehicles are chosen due to available information and range of uses. For instance, the vehicles below could be used for inspections, parking enforcement, or even to transport small materials. Further, the BEV (Chevrolet Blazer) also lends itself to potential police use as Chevrolet has a retrofitted police version of the vehicle as well.[58] Using the calculator, cost projections for the three vehicle types are estimated assuming:

- 2025 Chevrolet Blazer EV AWD costs $47,600,
- 2025 Ford Explorer AWD costs $41,755,
- 2025 Mazda CX-70 4WD cost $40,455, and
- All three vehicles are driven infrequently, e.g. an average of 15km driven a day (around 3,400 miles annually), due to the Borough's small size.

The results are shown in the figure below.

[58] "The Only EV Fit to Pursue," 2026 Chevrolet Blazer EV Police Pursuit Vehicle | GM Envolve, 2025, https://www.gmenvolve.com/fleet/police/chevrolet-blazer-ppv-ev.

Vehicle	Annual Fuel Use	Annual Electricity Use	Annual Fuel/Elec Cost	Annual Operating Cost	Cost Per Mile
2025 Chevrolet Blazer EV AWD EV	0 gal	1,212 kWh	$167	$1,923	$0.57
2025 Ford Explorer AWD Gasoline	165 gal	0 kWh	$505	$2,304	$0.68
2025 Mazda CX-70 4WD Hybrid	136 gal	0 kWh	$416	$2,215	$0.65

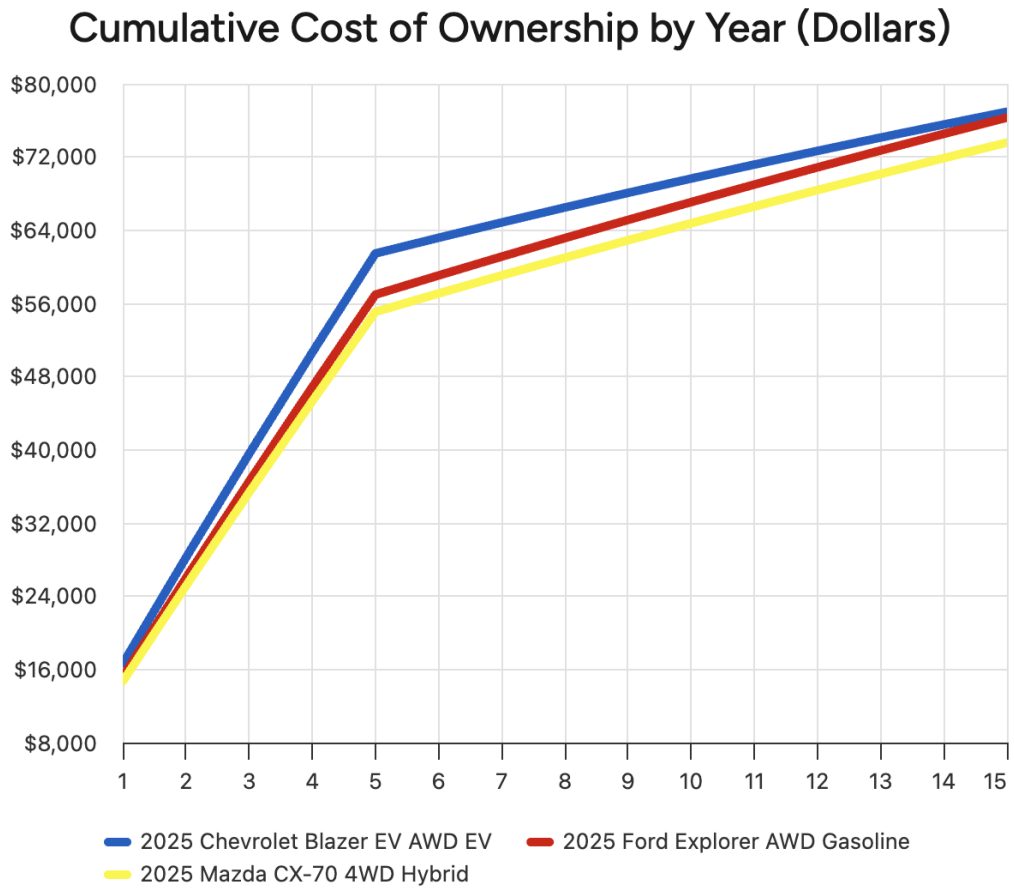

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Figure 20: Ownership Costs by Vehicle Type

In this analysis, the BEV has a higher purchase price but a lower fuel and operating cost. Because of this, after 15-years of use, the vehicle reaches cost parity with the ICE vehicle. However, the hybrid vehicle remains slightly cheaper. This analysis assumes no grants, outside funding (such as AFIG), or incentives impact the price of the BEV. Further, vehicle prices can heavily vary. Some hybrids are much cheaper than the Mazda in this example, making the

[59] "Vehicle Cost Calculator," Alternative Fuels Data Center, 2025, https://afdc.energy.gov/calc/.

difference between it and the BEV much greater. Similarly, this study assumes very low annual mileage from the BEV. The longer it is driven, the quicker cost parity would be reached.

In essence, this specific study is not a recommendation for any one vehicle. Rather it highlights that any BEV the Borough of Selinsgrove or Selinsgrove resident purchases is likely to have reduced lifetime emissions and operating costs. Due to this, BEVs also have the potential to be cost competitive with ICE vehicles and some hybrids, depending on the model and current incentives.

Conclusion

This climate action plan is the culmination of years of research, partnership, and dedication. It marks the fourth milestone in the *ICLEI: Local Government for Sustainability's* Five Milestones for Climate Mitigation framework and sets meaningful objectives and actions-items for the Borough of Selinsgrove to implement to reduce community-wide greenhouse gas emissions. In adopting this plan, the Borough of Selinsgrove joins surrounding municipalities in tackling climate change and makes a commitment to creating a more equitable, resilient, and community-driven future.

Appendices

SELINSGROVE BOROUGH COUNCIL MEETING
Monday, February 2, 2026

COUNCIL MEMBERS PRESENT: C/P Scott M. Frost, C/P Richard Mease, C/P Sara Maul, C/P Todd Cox, C/P Christian Schlieder, C/P Alex Donchak
COUNCIL MEMBERS VIA ZOOM/TELEPHONE: N/A
COUNCIL MEMBERS ABSENT: C/P Bobbie J. Owens

OTHERS PRESENT: Mayor Michael Bolig, Solicitor Robert Cravitz, Assistant Borough Manager/Treasurer Sharon Badman, Administrative Assistant Carrie Briggs, Chief Petrovich, DH&L Ambulance Brian Hipple, Rev. Paul C. Donecker, Helen Walter, Jon & George Niles, Justin Giorgio, Nathan Morgan, Jeff Reed, Climate Action Plan - Leslie Jenkins, Michele Mitchell, & Grant Rowe, Daily Item Marcia Moore, SU Students Jurdyn Steinbecker & James Stephens

OTHERS ON ZOOM: Climate Action Plan - Kay Cramer

CALL MEETING TO ORDER: President Frost called the meeting to order at 7:00PM. Assistant Borough Manager/Treasurer Sharon Badman called the roll and acknowledged a quorum. President Frost called for a moment of silence and the Pledge of Allegiance.

COMMITTEE/COMMISSION/BOARD REPORTS:

A. ADMINISTRATION/FINANCE COMMITTEE – BOBBIE OWENS, CHAIR

1. C/P Mease made a motion to pay the bills. C/P Maul seconded the motion.
AYES: SIX (6) **NAYS: NONE** **MOTION CARRIED**

2. C/P Mease made a motion to adopt Resolution 2026-2 exonerating Michael B. Bolig, Former Tax Collector of the $31,608.33 in Selinsgrove Borough Delinquent Real Estate, Fire Protection Taxes, and Ambulance Rescue Taxes that he shall not be liable under his bond. C/P Schlieder seconded the motion.
AYES: SIX (6) **NAYS: NONE** **MOTION CARRIED**

3. C/P Mease made a motion to accept the bid from Fisher's Disposal of Lewisburg, PA for the Borough Cleanup in the amount of $360.00/ton for two packer trucks with a driver and operator as well as $190.00/per load plus $70.00/ton for the twenty-yard container (price per pull/ton). C/P Schlieder seconded the motion.
AYES: SIX (6) **NAYS: NONE** **MOTION CARRIED**

4. C/P Mease made a motion to approve change order #2087 dated 1/4/2026 in the amount of $950.00 for Paige Electrical Services to replace existing devices from ivory to white and to relocate an existing card reader and electrical lock. C/P Cox seconded the motion.
AYES: SIX (6) **NAYS: NONE** **MOTION CARRIED**

5. C/P Mease made a motion to approve the Shade Mtn Granite sales agreement quote #2512181 in the amount of $2,602.29 for the pre-approved quartz countertop and sink at the Police Department. C/P Schlieder seconded the motion.
AYES: SIX (6) **NAYS: NONE** **MOTION CARRIED**

6. C/P Mease acknowledged receipt of the Borough Council Committee listing.

B. PUBLIC FACILITIES & SERVICES COMMITTEE – SARA MAUL, CHAIR

1. Meeting minutes from January 15, 2026 were provided.
4. The next Public Facilities meeting will be on February 19, 2026 at 2:00 PM.
2. C/P Maul made a motion to approve moving forward with bidding for Walnut Street as soon as the County clears approval of the funds. C/P Mease seconded the motion.
AYES: SIX (6) **NAYS: NONE** **MOTION CARRIED**

3. C/P Maul made a motion to approve the LCAP (Local Climate Action Plan). C/P Mease seconded the motion.
AYES: FIVE (5) **NAYS: ONE (1)** **MOTION CARRIED**
C/P Schlieder

Energy

The following tables show each activity, related data sources, and notes on data gaps.

Energy Data Sources

Activity	Data Source	Data Gaps/Assumptions
Communitywide		
Residential, commercial, and industrial electricity consumption	PPL electric	Data provided by zip code which incorporates more than Selinsgrove.
Residential, commercial, and industrial natural gas consumption	ICLEI USCP, EIA, and EPA	State-wide data downscaled by population
Residential Propane Consumption	ICLEI USCP, EIA, and EPA	State-wide data downscaled by population
Residential Fuel Oil Consumption	ICLEI USCP, EIA, and EPA	State-wide data downscaled based on SEDS
Residential Kerosene Consumption	ICLEI USCP, EIA, and EPA	State-wide data downscaled based on SEDS

Emissions Factors for Electricity Consumption

Year	CO_2 (lbs./MWh)	CH_4 (lbs./GWh)	N_2O (lbs./GWh)
2023	643.5	34	4

Transportation

Transportation Data Sources

Activity	Data Source	Data Gaps/Assumptions
Communitywide		
Vehicle miles traveled	ArcGIS	Very high

For vehicle transportation, it is necessary to apply average miles per gallon and emissions factors for CH4 and N2O to each vehicle type. The factors used are shown in Table 6.

MPG and Emissions Factors by Vehicle Type

Fuel	Vehicle type	MPG	CH_4 g/mile	N_2O g/mile
Gasoline	Passenger car	24.1	0.0183	0.0083
Gasoline	Light truck	17.6	0.0193	0.0148
Gasoline	Heavy truck	5.37	0.0785	0.0633
Gasoline	Motorcycle	24.1	0.0183	0.0083
Diesel	Passenger car	24.1	0.0005	0.0010
Diesel	Light truck	17.6	0.0010	0.0015
Diesel	Heavy truck	6.39	0.0051	0.0048

Wastewater

Wastewater Data Sources

Activity	Data Source	Data Gaps/Assumptions
Communitywide Operations		
Energy used in wastewater facilities	From borough	Average

Potable Water

Potable Water Data Sources

Activity	Data Source	Data Gaps/Assumptions
Communitywide		
In-boundary	From borough	High
Out-boundary	From borough	High

Solid Waste

Solid Waste Data Sources

Activity	Data Source	Data Gaps/Assumptions
Communitywide		
Outside Jurisdiction	Clearpath defaults	Data matches National Averages

Fugitive Emissions

Fugitive Emissions Data Sources

Activity	Data Source	Data Gaps/Assumptions
Communitywide		
Natural gas Distribution	Data from Residential, Commercial, and Industrial section	High

Appendix C: BAU Forecasts

BAU Forecasting Assumptions		
Area of Assumption	*Information*	*Notes*
Population Growth Rate	The population of the Borough of Selinsgrove in 2020 (5,920) was compared to the population of Snyder County in that same year to create a downscaling ratio. This ratio was then applied to population forecasts for Snyder County from the Center for Rural Pennsylvania until the year 2050.	The population for the inventory year (2023) was 5,655.
Carbon Intensity Factor	This is based on reporting from PPL in their 2024 Sustainability Report and their 2021 Climate Assessment Report, setting a net-zero emissions goal by 2050. Assuming this goal can be met, the following intensities are utilized: 0.410 (in 2023), 0.392 (in 2025), 0.346 (in 2030), 0.300 (in 2035), 0.200 (in 2040), 0.100 (in 2045), and 0 (in 2050). Assuming this goal falls short and only a 70% reduction in emissions from PPL's baseline occurs by 2050, the following intensities are applied: 0.410 (in 2023), 0.402 (in 2025), 0.381 (in 2030), 0.360 (in 2035), 0.340 (in 2040), 0.320 (in 2045), and 0.300 (in 2050).	Figures for both of these BAU scenarios (a net-zero and 70% reduction) are included in this CAP.
Transportation (Passenger vehicles)	Vehicle efficiency starts at 24.8 MPG and increases by an estimated 3.65% year over year until 2050.	This initial MPG datum is derived from the 2023 GHG Inventory in ClearPath.
Transportation (Light-Duty Trucks)	Vehicle efficiency starts at 18.1 MPG and increases by an estimated 3.65% year over year until 2050.	This initial MPG datum is derived from the 2023 GHG Inventory in ClearPath.
Transportation (Heavy-Duty Trucks)	Vehicle efficiency stays at 7.3 MPG until 2050.	This initial MPG datum is derived from the 2023 GHG Inventory in ClearPath.
Transportation (Motorcycles)	Vehicle efficiency stays at 44 MPG until 2050.	This initial MPG datum is derived from the 2023 GHG Inventory in ClearPath.
Public Transportation	Vehicle efficiency stays at 7.3 MPG until 2050.	This initial MPG datum is derived from the 2023 GHG Inventory in ClearPath.
Solid Waste	Estimated emissions (MTCO2e) per tonnage of solid waste is 0.6345236928.	This estimation draws from data in ClearPath from the 2023 GHG inventory.

Appendix D: Community Survey 1

Climate Survey 1 (Totaled Answers)									
Demographic Questions									
How old are you?									
Answers	*Number of responses*								
Under 18	6								
18-24 years old	33								
25-34 years old	9								
35-44 years old	16								
45-54 years old	12								
55-64 years old	18								
65+ years old	32								
How do you describe yourself?									
Answers	*Number of responses*								
Male	37								
Female	86								
Non-binary / third gender	3								
Prefer to self describe	0								
Prefer not to say	0								
What is the highest level of education you have completed?									
Answers	*Number of responses*								
Some high school or less	7								
High school diploma or GED	17								
Some college but no degree	25								
Associates or technical degree	6								
Bachelor's degree	26								
Graduate or professional degree (MA, MS, MBA, PhD, JD, MD,DDS etc.)	30								
Prefer not to say	15								
How many children under 18 live with you?									
Answers	*Number of responses*								
0 children	51								
1 child	10								
2 children	12								
3 children	2								
4 children	1								
5 children	0								
6+ children	0								
Note: Some people left blank									
What was your total household income before taxes during the past 12 months?									
Answers	*Number of responses*								
Less than $25,000	13								
$25,000-$49,999	16								
$50,000-$74,999	22								
$75,000-$99,999	24								
$100,000-$149,999	22								
$150,000 or more	11								
Prefer not to say	18								
Survey Questions									
1) What is your relationship with Selinsgrove?									
Answers	*Number of responses*								
I live in Selinsgrove.	83								
I work in Selinsgrove.	30								
I own or operate a business in Selinsgrove.	8								
I spend time in Selinsgrove but do not live or work there.	35								
2) Do you own or rent a home or business property in Selinsgrove?									
Answers	*Number of responses*								
I own property.	46								
I own and rent property.	1								
I rent property.	15								
Not applicable.	63								
3) What do you enjoy most about Selinsgrove? Number in order of most enjoyed (1) to least enjoyed (9)									
*Quantify by the amount of times each was listed in a certain position, e.g. how many times was *insert answer* listed in spot 1?*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
Cost of living.	7	8	7	13	16	15	11	6	24
The Susquehanna River.	28	24	13	8	4	10	9	6	5
Green space.	6	8	16	15	14	15	17	6	6
Safety.	8	20	18	14	16	15	12	2	1
Small town charm.	27	23	12	17	15	8	3	2	0
The school district and/or Susquehanna University.	27	7	16	12	7	8	8	11	10
Friendliness.	7	14	18	14	20	12	9	10	3
Central location.	6	2	10	8	7	11	16	30	15
Access to cultural activities.	0	3	3	3	10	12	16	24	34

4) How important is the issue of climate change to you personally? (Check 1).	
*Quantify by the amount of times a ranking was given, e.g. people ranked climate change at a 4 *insert number* many times.*	*Number of responses*
1 (not at all important)	3
2	1
3	2
4	2
5	6
6	4
7	9
8	16
9	24
10 (extremely important)	62

5) How worried are you about the effects of climate change on you or Selinsgrove? (Check 1).	
*Quantify by the amount of times a ranking was given, e.g. people ranked climate change at a 4 *insert number* many times.*	*Number of responses*
1 (not at all worried)	3
2	3
3	3
4	3
5	8
6	8
7	15
8	23
9	19
10 (extremely worried)	42

6) How worried are you about the effects of climate change on future generations? (Check 1).	
*Quantify by the amount of times a ranking was given, e.g. people ranked climate change at a 4 *insert number* many times.*	*Number of responses*
1 (not at all worried)	2
2	2
3	4
4	0
5	6
6	2
7	4
8	10
9	10
10 (extremely worried)	85

7) Which of the following risks from a changing climate in Selinsgrove are most concerning to you? Number in order of most important (1) to least important (8).								
*Quantify by the amount of times each was listed in a certain position, e.g. how many times was *insert answer* listed in spot 1?*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
An increase in the number of annual days with temperatures higher than 90 degrees.	36	21	12	9	8	16	15	0
Increased health impacts from heat, poor air quality, and tick and mosquito-borne diseases.	37	25	22	21	6	4	2	1
Increased precipitation and flooding.	8	10	14	23	24	14	22	2
More severe storms, such as thunderstorms, tornadoes and hurricanes.	9	8	19	18	23	29	10	1
Wildfires and smoke.	2	10	12	12	19	22	38	2
Effects on agriculture, i.e. heat, drought, increased rainfall, pests, and diseases.	10	26	19	18	21	13	9	1
Impact on nature and wildlife.	18	17	17	19	13	14	17	2
Other (please list):_____	2	1	0	0	0	1	1	69

8) If climate change is addressed, which potential benefits are the most important to you? Number in order of most important (1) to least important (10).										
*Quantify by the amount of times each was listed in a certain position, e.g. how many times was *insert answer* listed in spot 1?*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
Improved health.	44	22	10	11	6	8	7	3	4	1
Saving money from lower utility bills.	4	10	6	11	11	12	8	18	34	1
Increased resilience from natural disasters (such as flooding, high heat days, tornadoes, hurricanes).	20	12	17	11	13	18	13	10	2	0
Creation of green jobs.	1	11	6	12	7	15	23	26	14	0
Stable food supply.	11	8	24	16	24	12	13	6	3	0
Improved air and water quality.	14	28	24	13	10	17	4	6	0	0
Producing less waste.	7	7	15	12	16	15	16	15	10	1
Reduced dependence on fossil fuels.	12	16	9	11	14	6	10	19	17	1
More green spaces and wildlife habitat.	8	5	11	13	13	9	19	9	28	1
Other (please list): _____	2	0	0	0	0	0	0	0	0	71

9) Community engagement is the basis for effective planning and implementation. What activities would you be most likely to participate in? (Check all that apply).	
Question/Answers	*Number of responses*
Community meetings.	52
Email or text communication.	55
Sharing your expertise.	17
Education events.	70
Events focused on taking action.	70
Other.	4

Appendix E: Community Survey 2 (Community Workshop)

Climate Survey 2 (Totaled Answers)

Questions

Q1 How do you primarily heat and cool your home or business in Selinsgrove? (select all that apply)

Electricity	19
Natural gas	4
Oil or propane	4
Wood or biomass	2
Other	1

Q2 In the past five years, have you made any upgrades to improve your home or business's energy efficiency? (select all that apply)

Installed LED lighting	13
Upgraded insulation	6
Installed smart thermostat	6
Installed solar panels or other renewable energy systems	4
Conducted energy audit	4
Purchased EnergyStar appliances	14
Installed energy efficient windows	9
Installed high efficiency HVAC/Heat pumps	5
Replaced gas lawn or snow equipment with an electric alternative	6
No improvements yet, but plan to make improvements	3
No improvements, not sure where to start	4
Other_____	4

Q3 Please select your level of interest in each action. (one answer per item)

	Very interested	Interested	Not interested	Already completed
Installing LED lighting	1	11	2	10
Upgrading insulation	2	7	6	9
Installing smart thermostat	2	10	6	6
Installing solar panels or other renewable energy systems	4	5	10	5
Conducting energy audit	4	11	5	4
Purchasing EnergyStar appliances	6	9	1	8
Installing energy efficient windows	2	8	5	9
Installing high efficiency HVAC/Heat pumps	0	4	7	13
Replacing gas lawn or snow equipment with an electric alternative	4	5	6	9

Q4 Please select the biggest hurdles to the following changes. (one answer per item)

	Cost	Lack of information	Lack of interest	Already completed	Other
Installing LED lighting	7	2	1	13	1
Upgrading insulation	7	2	3	9	3
Installing smart thermostat	4	6	2	7	5
Installing solar panels or other renewable energy systems	14	0	2	4	4
Conducting energy audit	5	11	2	4	2
Purchasing EnergyStar appliances	8	1	0	11	4
Installing energy efficient windows	11	0	1	11	1
Installing high efficiency HVAC/Heat pumps	8	0	2	13	1
Replacing gas lawn or snow equipment with an electric alternative	7	0	4	10	3

Q5 On a hyper-personal level, please select your interest in each action. (one answer per item)

	Very interested	Interested	Not interested	Already taking action
Recycling	11	3	1	9
Composting	8	4	5	7
Using less materials	12	6	0	6
Eating less meat	4	5	6	9

Q6 How do you typically travel for daily activities within or around Selinsgrove? (one answer per item)

Gasoline vehicle	16
Hybrid or electric vehicle	5
Carpool or ride share	0
Public transportation	0
Walking	2
Biking	1
Other_____	0

Q7 Which of the following changes or incentives would most motivate you to drive less or switch to a different method of transportation? (one answer per item)									
More EV charging stations	3								
Improved sidewalks, bike lanes, or trails	11								
Improved public transit or shuttle services	4								
Incentives for carpooling or ride sharing	0								
None, I am satisfied with current options	6								
Q8 What are the most important actions for the Borough of Selinsgrove to take to address climate change? Rank in order of most important (1) to least important (9)									
*Quantify by the amount of times each was listed in a certain position, e.g. how many times was *insert answer* listed in spot 1?*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
Acquire open space	5	3	3	5	5	3	0	0	0
Mitigate extreme precipitation	3	4	4	0	4	1	6	2	0
Improve bike/pedestrian paths	3	8	5	4	2	1	0	1	0
Serve as a role model/provide education/provide incentives for action	10	4	3	5	2	0	0	0	0
Enact additional code regulations	2	2	1	2	6	7	4	0	0
Advocate for public transit	0	3	3	5	2	8	3	0	0
Increase access to EV charging stations	0	0	5	3	3	3	8	2	0
Borough does not have a role	1	0	0	0	0	1	3	14	5
Other	0	0	0	0	0	0	0	5	19

Appendix F: Objectives and Action-Items Forecast

Note: The assumptions listed in Appendix C for the business-as-usual (BAU) forecasts apply to this forecast as well. However, additional assumptions are made to estimate emissions reductions from a series of objectives and action-items.

Forecasting Objective/Action Assumptions		
Reduction Target and Sector	*Information*	*Notes*
Convert 30% of vehicle miles traveled (VMT) to electric by 2050 | Transportation Sector	VMTs are evenly reduced year over year, achieving a 58% reduction in VMT for gasoline and diesel vehicles (miles from public transit is excluded from this) by 2050. To account for the increase in EV adoption (electricity usage increases as people charge their cars), it is assumed that an average person drives 13,476 miles per year and that the average EV owner uses 2,363 kWh of electricity to charge their EV at home.	There is overlap between these two actions, e.g. some people may both reduce the miles they drive and also choose to use an EV when driving. As such, VMT cannot be reduced a combined 70% by 2050. Instead, the following calculation is applied to account for overlap: 30% + 40% - (30% X 40%). This results in a .58 or 58% decline in VMT.
Reduce vehicle miles traveled 40% by 2050 | Transportation Sector		
Reduce grid delivered energy by 30% by 2050 | Energy Sector	Grid delivered electricity is reduced in the residential, commercial, and industrial sectors by an average of 1.11% each year until 2050.	N/A
Reduce the amount of solid waste generated by 20% by 2050 | Solid Waste Sector	Waste tonnage is reduced by an average of .74% year over year until 2050.	N/A

Appendix G: Solar & EV Studies

Solar Study Assumptions	
Installation Cost	$2.00/W ($2,000/kW)
Annual Operation and Maintenance Cost	$20/kW/yr.
Electricity Price	$0.14/kWh

IEA: Life Cycle Assessment Calculator Assumptions			
Overall Assumptions:	Medium-Sized Vehicle	15km/Day Driven	Based in the United States
Energy Supply Assumptions:	Decarbonisation Scenario: STEPS	Biofuel Blending (ethanol/gasoline) share: 10.5% (Default)	Electricity Emissions: Use Decarbonisation Scenario
BEV Assumptions:	300km Range	Avg. Power Consumption 22.3 kWh/100km	
Plug-In Hybrid Assumptions:	Utility Factor: 30% of km traveled on battery power	Avg. Fuel Consumption: 6.3 l/100km	
ICE Assumptions:	Gasoline Fuel Type	Avg. Fuel Consumption: 7.4 l/100km	

DOE: Ownership Costs Assumptions			
Overall Assumptions:	Vehicles Driven: 15km/Day (3,402 miles annually)	City Distance: 1,871 miles Highway Distance: 1,531 miles	State of Electricity Use: PA
	Price	*Fuel Economy (City/Hwy)*	*Fuel Type*
2025 Chevrolet Blazer EV AWD Assumptions:	$47,600.00	33/39 kWh/100mi	Electric
2025 Ford Explorer AWD (ICE) Assumptions:	$41,755.00	18/25 mpg	Gasoline
2025 Mazda CX-70 4WD (Hybrid) Assumptions:	$40,445.00	23/28 mpg	Hybrid

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