



# ENERGY TRANSITION PLAN ROADMAP

Solebury Township

October 27, 2022

## Abstract

A roadmap setting out objectives, goals, and strategies to enable Solebury Township to achieve our Ready for 100 commitments.

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# SOLEBURY TOWNSHIP ENERGY TRANSITION PLAN



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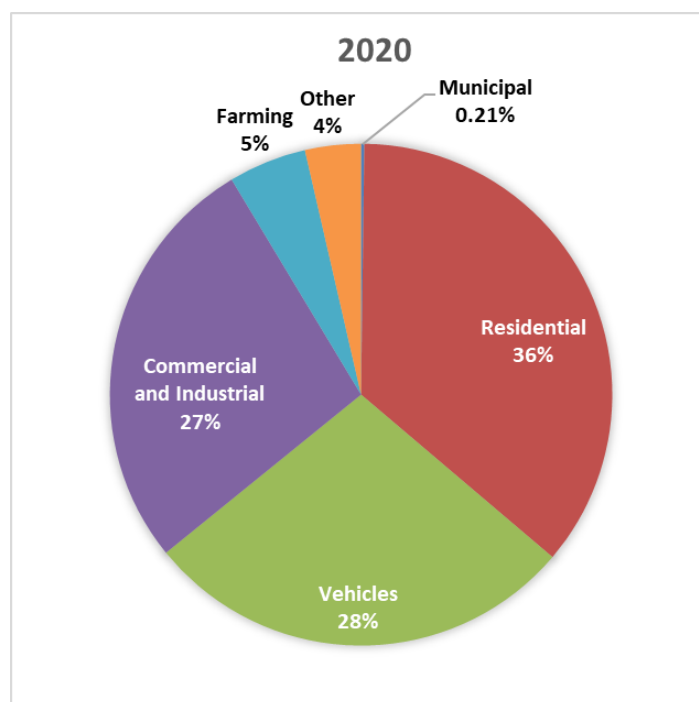
**SOLEBURY TOWNSHIP  
ENERGY TRANSITION PLAN**



# SOLEBURY TOWNSHIP ENERGY TRANSITION PLAN

## 1.0 Executive Summary

Findings – Assessment of Greenhouse Gas (GHG) emissions released by Solebury Township in 2020 are depicted in the following pie chart:



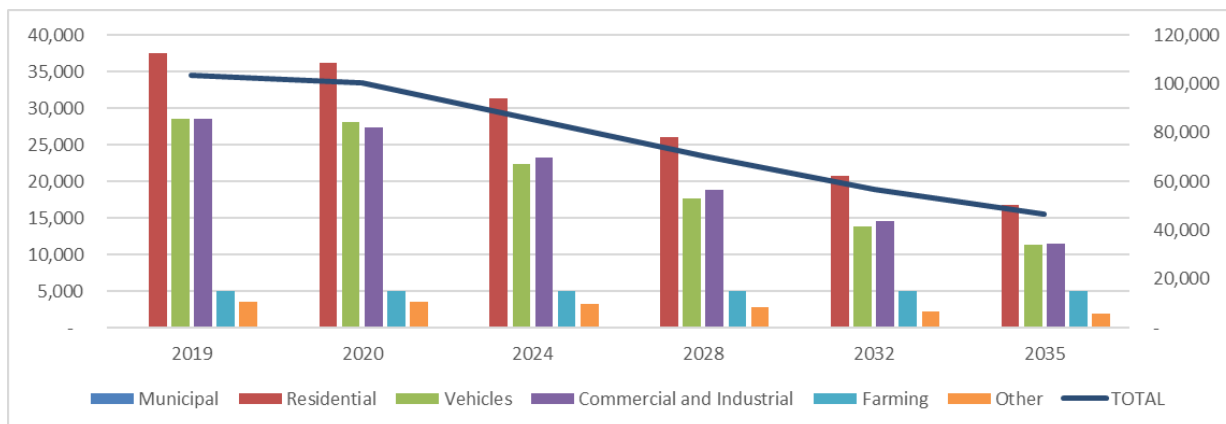
The following table provides a compilation of the carbon dioxide emissions of Solebury Township that were calculated from available data from DVRPC, shown in millions of metric tons of CO<sub>2</sub> equivalent.

MTCO <sub>2</sub> e	2019	2020
Municipal	213	213
Residential	37,491	36,248
Vehicles	28,590	28,135
Commercial and Industrial	28,527	27,425
Farming	5,058	5,058
Other	3,617	3,617
<b>TOTAL</b>	<b>103,496</b>	<b>100,697</b>

(MTCO<sub>2</sub>e) = Metric Tons of Carbon Dioxide Equivalent- shown in millions

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Projections indicate that GHGs in Solebury can be significantly reduced over the next 20+ years. The following table is calculated based on strategy modeling created by Henry Alexander and based on 2015 DVRPC emission inventory data.



The municipality has an obligation and an opportunity to demonstrate leadership through the assembling and dissemination of facts concerning the benefits of adopting sustainable energy practices by the community.

The impact of addressing the energy strategy of the township facilities and infrastructure is small – less than 0.5% of the Green House Gasses (GHG) produced by the township as a whole.

90% of the GHGs produced by the township are from three sectors in roughly equal parts: Commercial and Businesses (includes non-profits, schools, and institutions), Residential, and Vehicles.

The most impact can be obtained by focusing on residential and commercial adoption of sustainable energy practices, and additionally incentivizing the adoption of an increasing number of electric vehicles by businesses and residents.

The process and effort to reach the goals we set for our township, will be heavy and take time. This is a lengthy process whereby the community will need to be continually reminded of the need to participate.

A broad net should be cast over the township community and it will need to rely heavily on outreach and education if the goals are to be met.

This Energy Transition Plan is a template and roadmap for action within the Solebury community. The heavy lift is to implement the recommended actions provided in this report.

## 2.0 Introduction

This Energy Transition Plan (ETP) addresses the challenges and opportunities of the coming decades related to public and private investment, jobs creation, public health concerns, energy reliability and independence, and climate disruption as it applies to our current energy consumption patterns. The ETP recommends changes that will support Solebury Township and its residents, businesses, and other community stakeholders in recognizing the breadth of these challenges and then pursuing the steps outlined to enhance the economic, social, and environmental foundations of the community, and by extension the region, state, nation, and the world.

This ETP proposes a blueprint to direct our efforts to bring about a more robust, stable, resilient, and equitable society while planning for the transition to an energy economy that is no longer driven by and tied to carbon-based, extracted fuels. There are many reasons to do this; it will foster public-private investment partnerships; it will create investments in local infrastructure that will improve sustainability and create jobs; it will reduce pollution and the associated health issues and costs; and it will facilitate the decentralization of energy production, helping to stabilize supply and decoupling from fossil fuel energy dependence.

The conversion to clean, renewable energy will provide direct and indirect benefits to Solebury Township. Early steps include energy efficiency measures to be assessed and implemented. Typically, these measures meet the established criteria and will supply net savings within a few years, savings that can then be rolled back into further efficiency investments as well as renewable energy installations. Based on U.S. Department of Energy findings, energy usage can be reduced by 30% through conservation and energy efficiency measures alone. According to the American Council for an Energy-Efficient Economy (ACEEE), since 1980 energy efficiency alone has halved energy use relative to the size of the US economy. Additionally, the transition to clean, renewable energy will save U.S. citizens hundreds of billions of dollars annually in reduced cost of air pollution, which will translate to billions of dollars annually and improve the health of residents in southeastern Pennsylvania.

Solebury Township has adopted the ***Ready for 100 (Rf100)*** resolution which commits us to reach 100% clean, renewable energy by 2035 for electricity, and 2050 for heat and transportation. For those municipalities which have adopted a renewable energy commitment, such as Solebury, this plan meets the resolution objective of developing an energy transition plan for municipal operations and the community.

There are three strategies for achieving the ***Rf100*** Goals:

1. Reduce unnecessary energy consumption through energy efficiency and conservation.
2. In buildings, transition natural gas-powered, oil-powered, and propane-powered energy systems to all-electric systems (i.e., electrification) and/or other alternative non-fossil fuel systems. Additionally, transition gasoline-fueled vehicles to electric vehicles (EVs).
3. Accelerate the replacement of fossil fuels with carbon-free energy sources, both on-site and at the utility level (i.e., utility-scale power generation).

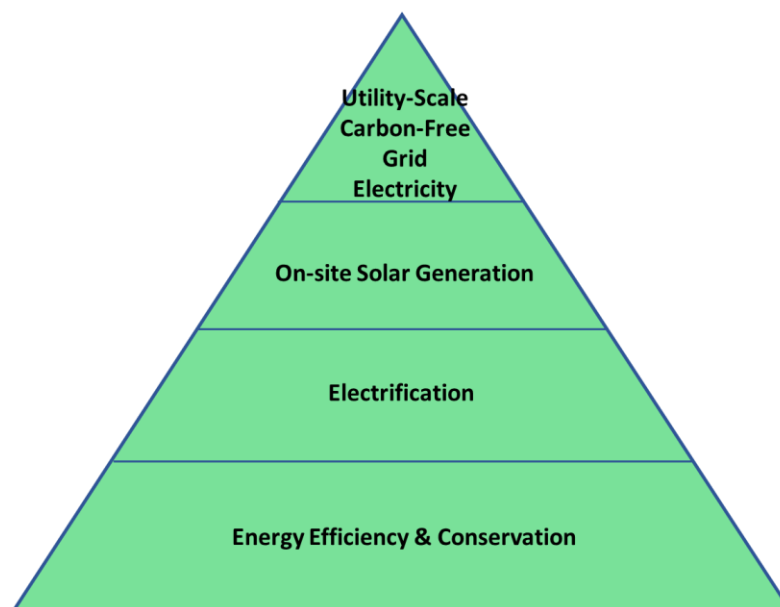


Figure 3.1. Strategies to Obtain Carbon-Free Energy Goals

**Energy Efficiency and Conservation:** Reducing energy consumption through energy efficiency and conservation is the most powerful resources we have for meeting energy and environmental goals. Why? Nearly two thirds of the energy we use is wasted and simply does not need to be consumed. (Lawrence Livermore National Laboratory; <https://www.llnl.gov/news/americans-used-more-clean-energy-2016>). Recent research shows that well-constructed energy efficiency policies alone could enable more than 40% of the emissions cuts needed to reach the Paris Accord climate goals – using existing technology. Additionally, energy waste costs American businesses and households billions of dollars every year.

**Electrification:** We must move toward converting to 100% electricity for all energy needs, including electrification of heating systems (i.e., conversion of oil-, propane-, and gas-based heating systems to electric systems) and transportation (electric vehicle, or EV, charging stations). By converting technologies that directly combust fossil fuels (natural gas, oil, coal) with technologies that use electricity or other non-fossil fuel systems, we can move away from unsustainable and polluting fuel sources that prevent attainment of the Ready for 100 clean energy goals. While electrification is seen as the primary way to move away from fossil fuels, other renewable energy systems including geothermal and wind power, have an important role to play. As technology moves on it is possible that these, and other, forms of alternative energy may become more prominent, cheaper and more actionable.

**Local Solar Generation:** We must maximize our ability to generate renewable electricity on-site using solar (or other sustainable) technology. The time has come to begin aggressive on-site solar generation programs, as the cost of solar photovoltaics (PV) has declined more than 70% since 2010, making it competitive with conventional electricity. Further, financing models are available to make solar systems in residences and commercial buildings financially viable.

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- In addition to the lower installation costs of solar, costs throughout the lifetime of the system, make the investment more financially viable. Financial incentives are available to lower the upfront costs of the array. Additionally, the typical costs for operation and maintenance for solar arrays are minimal since the system is stationary. The typical maintenance includes replacement of panels/inverters (which can be covered by warranties), cleaning panels (which is not anticipated based on the location of the Township, this is typically needed in sandy regions), and maintenance plans (which are typically needed on large, commercial arrays).
- With a solar array, electricity customers will still have to pay an electric bill, but the total costs will be significantly lower throughout the lifetime of the array. Electricity customers with onsite solar do not have to pay for supply charges for the portion of electricity generated by the renewable energy system, which can account for a large portion of the electricity charges depending on the tariff.
- Additionally, net-metering legislation allows solar owners to receive financial credit for excess solar electricity production. Net metering allows the electricity customer to only be charged based on the net amount of energy used during each billing period, also known as the amount of energy delivered to the home minus the excess amount generated by the array. This legislation allows electricity customers to receive financial incentives through the life of the array. If investing in a renewable energy array is not cost-effective, electricity consumers have the option of shopping around for renewable electricity directly from their power supplier, as discussed in the Buy Green Energy through the Grid action.

**Utility-Scale Clean Energy:** As we move toward total electrification, we must ensure that electricity delivered by the utility (i.e. PECO) is generated from carbon-free and clean energy sources such as solar, small-scale hydroelectric power, onshore and offshore wind. The good news is, the EIA has dubbed solar the “new king of electricity,” because utility-scale solar is now cheaper to build than new coal- or gas-fired power plants, offering some of the lowest-cost electricity ever seen.

(<https://www.iea.org/reports/world-energy-outlook-2020>). Solebury Township municipal facilities already purchase their electricity from renewable sustainable sources, but this is only part of the need to ensure that renewable electricity is generated locally. Paying PECO to source their electricity from California or Arizona does not create additional or new renewable electricity sources, one of the goals of Rf100.

This plan will be created and overseen by a steering committee ([Steering Committee](#)), which represents the municipal government and the stakeholders within Solebury Township. We welcome the participation of all in this transition.

The following sections of this report present:

- A statement of [Goals](#),
- [Data Collection](#) - information gathered about Solebury and its contribution to GHG emissions
- [Gap Analysis](#) showing where actions and intervention can be most effective



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- [Implementation Plan](#) - the establishment of the structure and process to implement agreed upon actions including personnel, organization, and outreach necessary to implement the plan (Section 7.0), including a summary of the 4 main categories of focus: Municipal, Ordinances, Community Outreach, and Political Lobbying.
- [Steering Committee](#) – formation – A steering Committee is being assembled to oversee the development and subsequent implementation of this plan, see below under [Implementation](#).
  - The list of actions the community can implement to transition to renewable energy in:
    - Public school district
    - Large properties and institutions
    - Residential,
    - Commercial and businesses
    - Non-profits, churches, and private schools
    - Transportation
    - PECO and other utilities
    - Government – local, county and state
    - Public engagement
  - A description of the actions that the municipality will undertake to start the process.

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### 3.0 Goals

Solebury Township embraces its role and responsibility to care for the health and welfare of the township.

We seek to contribute to the stabilization of the climate system, and provide for a sustainable, secure, and practical transit to a prosperous low-carbon economy.

In preparing a Clean Energy Transition Plan, the municipality seeks to safeguard the future of Solebury Township through the widespread adoption and use of energy efficiency and renewable energy.

The following are the guiding principles and goals of this Energy Transition Plan, which provide an integrated approach for planning and actions:

**Appropriate stewardship of energy resources:** incorporating best practices in energy conservation and energy efficiency efforts, which are the most cost-effective ways of reducing energy consumption. They can significantly reduce energy use in commercial and municipal buildings, homes, and transportation systems. These strategies comprise the early steps of this ETP and are central to its structure.

**Redirection in capital investment:** The stakeholders of Solebury Township spend \$24.6 million, annually, on electricity, natural gas, propane, heating oil, gasoline and diesel fuel. This Energy Transition Plan (ETP) recommends changes in our energy consumption patterns that will spur a smooth transition to clean renewable energy and reduce this cost.

**Community participation:** This ETP emphasizes close co-operation between township government and the community at large.

- Education and dissemination of information on energy conservation and renewable energy.
- Provide help and encouragement to the community.
- Remove barriers to implementation by improving our practices and changing and updating our ordinances to be in line with our energy goals.
- Provide incentives to residents and commercial enterprises.
- Identify available grants and potential fund sources.
- Prioritize locally produced and distributed energy, whenever feasible, for the many advantages it provides to the community.

**Emphasis on job generation:** Renewable energy projects create well paying, stable, local jobs. The economic downturn of the early 2020s due to COVID and the recession, requires that the creation of new, well paid jobs be foremost in our planning. This ETP factors job creation into the actions recommended.

**Public health:** This ETP strives to maximize the health benefits provided by the transition from our fossil fuel-based economy to a renewable energy economy. Elimination of air contaminants is one of the goals of this ETP.

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**Social fairness:** This ETP considers the impacts of the energy transition on local economic and environmental conditions community wide. Many people do not have the financial stability or resources to qualify for loans needed to invest in home weatherization improvements and renewable energy installations. They will need support, which must be seen as maintaining the overall public good. Another group of citizens that will need fair and equitable treatment are those whose livelihoods are eliminated by the transition, such as workers in energy extraction and refining and related support industries. Job training and adequate community support programs must be developed to smooth the transition for these workers, some of whom are employed in the southeastern Pennsylvania region. We seek actions that equitably address the risks of climate change and share the cost and benefits of action across the community.

**Climate stabilization:** This ETP addresses the need to immediately reduce and ultimately eliminate human-generated greenhouse gases enabling Solebury Township to do its part in the world-wide effort to reign in the continuing increases in average global temperature which have destabilized our climate.

**Energy independence:** This ETP endeavors to make the municipality and the larger community more self-reliant through energy efficiency and conservation and on-site renewable energy development, allowing for reductions of imported fuels.

**Inclusion:** This ETP welcomes the participation of all stakeholders within the municipality and is designed to integrate their input as part of the development process.

**Coordination with other governments:** This ETP has been outlined in a manner that will enable multiple communities in conjunction with Solebury Township either individually or in groups at the county or regional levels, to develop aggregate planning strategies and participate in aggregated procurement contracts for regional wind and solar energy.

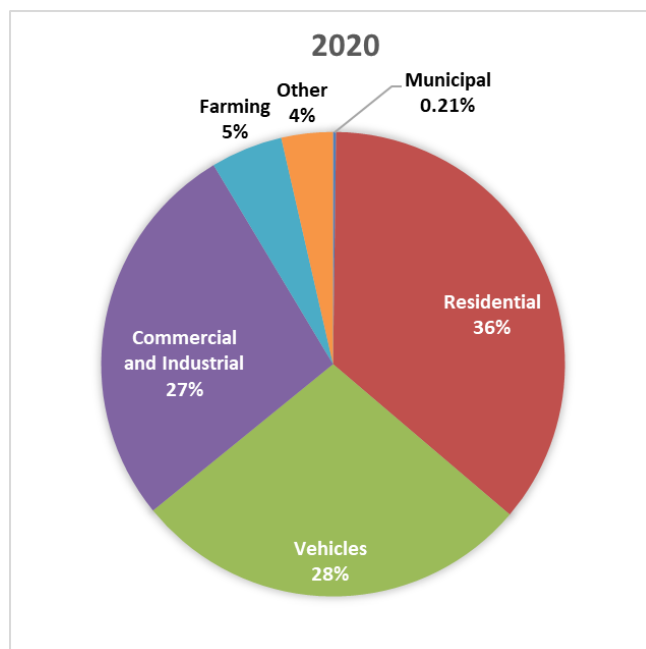
**Evidence based decision-making:** This ETP reflects scientific knowledge, assessments of vulnerability and emissions and other empirical inputs to inform decision-making.

## 4.0 Data Collection and Findings

Data regarding energy usage, costs of energy, and emissions of greenhouse gases within Solebury Township are available through reference to the DVRPC data which is used to generate the following tables and charts. Appendix C summarizes the modeling and technical analysis of the strategies for making the transition to a renewable energy economy.

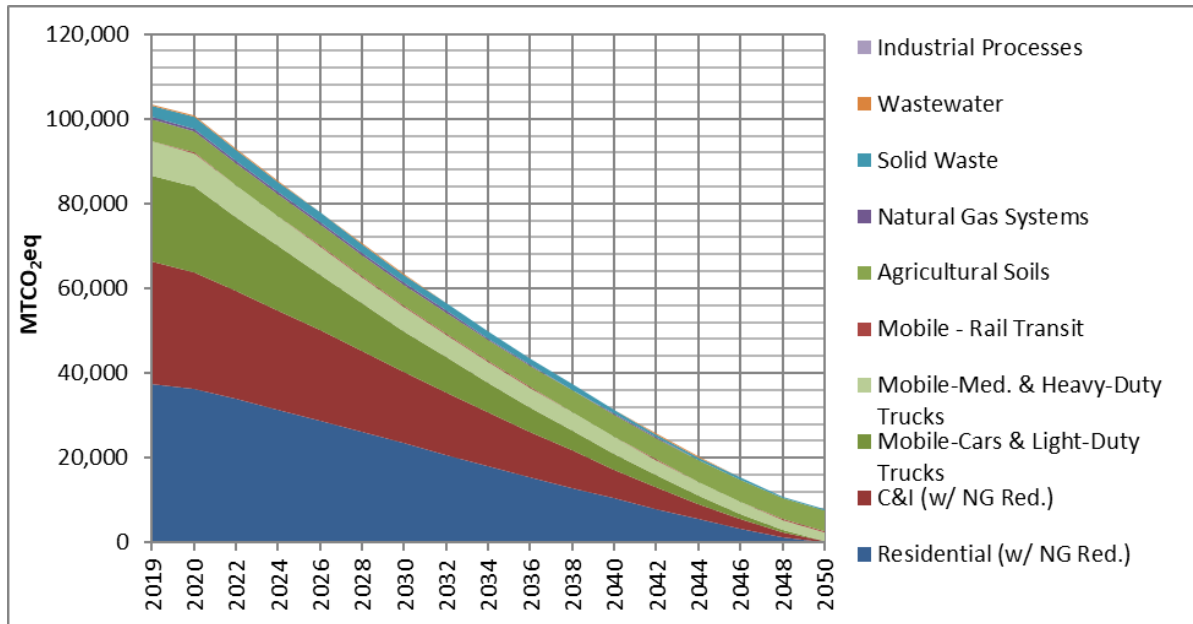
In assembling data for this baseline, we considered data from our municipal accounts with PECO and third-party vendors, the responses to a municipal energy use survey, consultations with municipal staff, and the wealth of information available from the Delaware Valley Regional Planning Commission (DVRPC).

The findings from the analysis of the DVRPC data shows: Residential, Transport and Commercial GHGs contribute 90% of the GHGs in Solebury, split approximately into thirds. 36% of GHGs in Solebury is generated by the residential component of the township, whereas less than 0.25% is produced by the municipal buildings and infrastructure.



While the municipal component is very small in empirical numbers, it represents a significant symbolic component where the township management can demonstrate an example for the rest of the township to follow.

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Using accepted modeling techniques (Appendix C)<sup>1</sup>, it is projected that Solebury can significantly reduce its GHG impact, see above. Using base data from the DVRPC, and applying assumption models over time, it is confidently predicted that it is practical to achieve the GHG reductions set out in the Rf100 goals.

<sup>1</sup> Model created by Henry Alexander based on 2015 DVRPC emission inventory data.

## 5.0 Gap Analysis

Comparing the goals of the plan with the findings from the available data shows that the largest gaps where there is an opportunity to make an impact are in the commercial, transportation, and residential sectors. However, the municipality itself has a significant role to play by leading by example.

In order to bridge the gap between the goals and the existing situation, much effort will be needed to incentivize and encourage homeowners, HOAs and commercial business to adopt sustainable practices.

The implementation plan describes ways in which this gap can be closed over time.

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## 6.0 Accomplishments to Date

Solebury Township has not stood by and done nothing while the process of creating the ETP continued. We have started or completed the following activities:

Activity	Who	Current Stage
Rf100 resolution	BOS	Passed
Moved Township to purchase of 100% renewable energy	Township Manager	Complete
Energy Audit of Township facilities	Township Manager	Planned
Proposal for Solar panels on Twp Building	Township Manager	Proposal and cost bid completed. Awaiting budget funds
Replaced all Township building lights with LEDs	Township Manager	Complete
Change traffic lights to LED	Township Manager	Completed
Tree planting	Township Operations	Tree City designation achieved, ongoing
EV charging stations installation	Township Manager	2 installed
Route 202 proposals for easing traffic flow	BOS	Under consideration
Transitioned to electric power tools for township staff	Township Maintenance	Chainsaw, hedge trimmer, pole saw, one lien trimer and blowers replaced with electric
Entered energy data for Township facilities into EnergyStar Portfolio Manager in late 2020. The Manager is now being used to monitor Township energy consumption.	Township Manager	On going
Solebury awarded Pennsylvania Sustainable Communities Certification at the Platinum level	EAC, Twp, BOS	Complete
Replacing Police Fleet with Hybrid cruisers	Police Dept	4 hybrids in the current fleet, 2 more on order. Total fleet is 8 vehicles.
Passing a new Alternative Energy Ordinance	Planning Commission	Approved by the PC, under edit and awaiting BOS consideration
Plastic Ban Ban	EAC	

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## 7.0 Implementation

### 7.1 Steering Committee

It is recommended to establish a Steering Committee to oversee the development and subsequent implementation of this plan. The committee will consist of municipal officials and/or staff, interested volunteers and, where possible, interested members of stakeholder groups in the municipality such as schools and businesses. Some time in each meeting will be used to educate the group about the various aspects of a renewable energy transition including technology and economics of energy efficiency, renewable energy, and transition options for buildings and transportation.

The Steering Committee may decide to complete the ETP itself, contract with a consulting firm for assistance, or may contract with a consulting firm to fully prepare the plan. Consultants can add value, provide additional perspective, and keep a steering committee on track as it develops a plan and reviews actions and initiatives, but need to be used judiciously. In addition, consideration should be given to the possibilities of collaborating and/or teaming up with other local townships to share resources.

The Steering Committee is anticipated to include the following members although this will need to be ratified:

Person	Represents	Expertise/Perspective
John Francis	Board of Supervisors	Township policy
Chris Garges	Township Manager	Township operations
TBD	Township Operations	Township Operations
Eric Allen	EAC	Environmental objectives
Shannon Pendleton	EAC	Passive House Consultant
Jim Mansfield	EAC	Plan specialist
Other committee members from EAC and PC	EAC and PC	

The Steering Committee should meet monthly. During implementation of the plan, the committee will meet more frequently. Membership in the committee can change depending on the need for expertise and members' ability to serve. The Steering Committee serves at the pleasure of the Board of Supervisors and reports to them on a periodic basis.

The Steering Committee's charge is to:

- Educate itself on the actions necessary to efficiently transition the municipality to renewable energy.
- Engage the stakeholders identified in this report.
- Propose actions needed for the transition to the Board of Supervisors and the Township Manager.
- Monitor the implementation of adopted actions; and,
- Adopt new initiatives as the energy transition proceeds.



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### 7.2 The Strategies of the ETP

This plan is a product of Solebury Township and is this municipality's blueprint to implement energy conservation and efficiency measures and transition its community to renewable energy in a manner that will enhance community resilience, create jobs, reduce air pollution, protect public health, and do our part to control climate change. It is intended to fully engage the Township infrastructure in the process.

The actions recommended fall into 4 parts:

- Municipal Facilities and Infrastructure
- Township Ordinances
- Community Outreach
- Political Pressure

We recognize that each of these parts has its role in implementing our ETP and that each carries a different weight of impact. While the Municipal Facilities and Infrastructure impacts empirical effects to reduce GHG only relatively to a small degree (<.05%) it's use as an example and leading torchbearer to encourage the community is very large.

Furthermore, we categorize actions which the township can adopt and the impact on reducing GHGs falls into 4 categories:

- **Energy Procurement** – While the township already buys electricity from renewable sources via PECO, we will continue to promote the ability of residents and the community to do the same and increasingly from more local sources.
- **Energy Efficiency** – this involves reducing the need to consume energy in the first place by, for example: improving insulation, installing programmable thermostats, setting temperatures lower in winter and higher in summer and upgrading to higher thermal insulated windows.
- **Transportation** – by transitioning the municipal fleet to electric vehicles over time, implementing a program to install, or have installed, electric vehicle charging stations.
- **Renewable Energy Production** – changing municipal energy systems to renewables and incentivizing the community to do the same through programs to encourage solar and geothermal systems.

Each has its part to play in achieving our goals.

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	Municipal	Ordinances	Outreach	Political
<b>Procurement</b>	Buying from renewable sources	Setting Standards	Information	Lobbying
<b>Efficiency</b>	Energy Audit	Rebates and grants	Education	Lobbying
<b>Transport</b>	Fleet program and EV Charging Stations	Rebates	Incentives for EV Charging Stations	Lobbying
<b>Renewable Energy Production</b>	Community Solar	Incentives	Community Choice Aggregation (CCA)	Lobbying

The recommended actions fall into 4 parts:

### 7.2.1 Municipal Facilities

While it is recognized that the impact that changing municipal infrastructure and buildings will be small overall, it will be the example by which the rest of the community can be encouraged to follow.

Solebury Township is committed to energy efficiency and the transition to renewable energy in diverse ways:

- Leading by example: The municipality will implement energy efficiency measures and shift its energy sources to renewable energy as expeditiously as possible.
- Support and guidance: The municipality will undertake changes to its planning, zoning code, road system, and other aspects of municipal governance that impact energy usage throughout the community.
- Public education: The municipality will provide information and encouragement to all stakeholders in the community to use energy efficiently and transition to the use of renewable energy.
- Reducing roadblocks: The municipality will consider implementing changes to reduce roadblocks for climate-positive investments and encourage adoption of energy transition programs and investments by residents, institutions, and businesses.
- Apply for grants: Municipal governments can seek grants from nonprofits or state/federal programs that subsidize some aspect of projects for energy transition.

Municipalities are limited in the extent that they can address energy transition issues because many of the legislative and regulatory powers needed to address these issues reside in the county, state, and federal governments. Powers such as energy policy, vehicle efficiency standards, and building energy

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efficiency standards are beyond the jurisdiction of local government. However, county, state, and federal officials pay careful attention to the policy positions taken by local officials because they represent, on the local level, a substantial number of the same voters that vote for county, state, and federal officials. Expressions of policy demands and preferences by municipalities to other levels of government are an important part of the implementation of the transition to renewable energy.

### **7.2.2 Municipal Policies and Ordinances**

By creating ordinances that remove barriers to transitioning to renewable energy, the township can engage the community. In addition, incentives can be created to move the community toward achieving the goals of the Energy Transition Plan.

Ordinances can often be seen as prohibitions, but they can also enable and promote projects which benefit the township. Here are some examples:

- EV-Ready Ordinance
- Solar-Ready Ordinance
- Access and use [DVRPC Resources](#)
- Streamlined Solar Permit Process (see [SolSmart](#) and the [SolarApp](#))
- Sustainable Building Checklist
- Insulation and low E window specification requirements
- Energy Disclosure Requirement at Time of Sale
- Establish an Energy or Climate Committee to do Community Engagement
- Hire a Sustainability/Climate Officer to direct internal and community projects

### **7.2.3 Community Outreach**

It is recognized that the heavy lift in achieving the ETP goals is to motivate and enlist the support and action of the community itself. This includes all institutions and businesses as well as all residents. The largest gain is this sector by far as can be seen in the chart on page 3. Outreach will include:

- Education – ensuring all residents are informed about the issues, goals, and science behind the plan.
- Providing opportunities for residents to contribute.
- Surveys and community input.
- Web site updates and information sharing.

### **7.2.4 Lobbying to Enable State Policies**

The township can use its influence at County and State level to change behaviors and institute legislative change. In order to reach our goals in Solebury, we want to promote legislative changes which include: Community Solar, Community Choice Aggregation, State Incentives for EV and Solar adoption, amongst others.

### **7.2.5 Specific Strategies**

Here are four proposed major strategies which the ETP will examine and develop in more detail:

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7.2.5.1 Strategy #1: Reduce energy consumption through energy efficiency and conservation.

### Municipal Actions

Proposed Action	Follow-on issues	How it fits and influences the big picture
Designate one or more Twp staff members to oversee energy and sustainability activities of the Township.	Update EnergyStar and other monitoring of the Township's energy usage and report on conservation progress on a regular basis.	Highlights any issues with the goal of reducing energy usage at the Township Gov't level.
Actively look for Clean Energy grants under the IRA and other federal and state programs, and apply for them.		
Commission an Energy Efficiency Audit of Solebury Township Buildings and implement the recommendations of that audit. <sup>2</sup>		Reduces energy consumption through optimal tuning of heating and A/C systems.
Consider development of a plan to increase to overall efficiency trash and recyclables collection within the Township.	Work with trash collectors & HOAs to reduce the number of collection trips and hasten the transition to electric or hydrogen trash trucks. Explore the possibility of negotiating a township-wide trash collector to reduce trip redundancy.	Fewer trash trucks, collecting once/week and servicing all residences, would mean far less fossil fuel used – and less exhaust pollution.
Investigate further weatherization of existing township-owned facilities.		Further reduce energy used by Township buildings.
Increase advertisement for free PECO energy assessments to help residents increase their efficiency and reduce energy costs.		Encourages more residents to do audits and to implement energy saving recommendations.
Increase the number of walkways and bike trails connecting residences with commercial establishments.		Encourages walking and biking as alternatives to driving for simple errands.

<sup>2</sup> Steve Clark ([scstevemclark@gmail.com](mailto:scstevemclark@gmail.com)) has offered to look at Annual Demand Intensity graphs for each Township building and interpret them for us. If warranted, there are companies that can then do a more in-depth efficiency study. Note: We have been encouraged by several “experts” to do an efficiency study before finalizing a Solar program.

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### Community Actions

Proposed Action	Follow-on issues	How it fits and influences the big picture
Audit the use of LEDs in all HOA streetlamps and assist the HOAs in replacing any non-LEDs.		
Audit the use of LEDs in all parking lot streetlamps and assist businesses in replacing any non-LEDs.		
Encourage the conversion of large lawn areas to low-mow/no-mow meadowland.		Reduces the amount of energy used to mow and maintain lawns.
Encourage the expeditious replacement of removed trees and the planting of additional tree cover to shade buildings.		Increases the sequestration of CO <sub>2</sub> . Reduces the need for air conditioning.

7.2.5.2 **Strategy #2:** Accelerate the replacement of fossil fuels with carbon-free energy sources, both on-site and at the utility level (i.e., utility-scale power generation).

### Municipal Actions

Proposed Action	Follow-on issues	How it fits and influences the big picture
Revisit proposals for installation of roof-top solar on the Solebury public works building, with the aid of an independent energy consultant.		Significantly reduces the amount of fossil fuel used by the Township. Sets an example for Township residents and businesses.
Reduce or eliminate permitting fees to install roof-top solar. Simplify the application process for roof-top solar and reduce approval time for applications.	The Township should consider participation in the federal SolSmart program.	
Lobby for the adoption of Community Choice Aggregation in PA.	Once CCA is available in PA, select a default Clean Energy Supplier for Solebury.	This program would dramatically increase the percentage of Solebury households using a renewable energy supplier.
Lobby for adoption of Community Solar in Pennsylvania.	Currently not permitted in PA, but the law could change with pressure on lawmakers.	Allows residents not able to install roof-top solar to participate in the use of solar generation.

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Proposed Action	Follow-on issues	How it fits and influences the big picture
Follow up on Solebury's registration with SolarAPP+	Research costs and implications before signing up.	
Offer incentives for builders of electric-only construction.		

### Community Actions

Proposed Action	Follow-on issues	How it fits and influences the big picture
Encourage residents to select a renewable energy provider.	Educate our community on the possibilities.	Increases the demand for renewable energy capacity.
Join an existing "Solarize" organization or work to establish one for Bucks County; then, promote its use by Solebury residents.		Educates and encourages Township residents to move forward with installation of roof-top solar.

7.2.5.3 Strategy #3: In buildings, transition propane-powered, oil-powered, and natural gas-powered, energy systems to all-electric systems (i.e., electrification).

### Municipal Actions

Proposed Action	Follow-on issues	How it fits and influences the big picture
Develop a plan to transition the Township facilities to electric heat and A/C, including sufficient capacity and facilities for current and future vehicle and equipment charging.	Additionally, come up to speed on electric equipment already purchased and in use.	Contributes to reducing Twp climate footprint.
Develop a Township plan to purchase additional electric landscaping equipment.	On-going	Sets example for the community while reducing air and noise pollution.
Develop programs to encourage contractors to <b>build green</b> . For example: incorporate only electric heating, water heating, and appliances. Use green building standards for building orientation, insulation, etc.	Educate our community on the possibilities.	

### Community Actions

## SOLEBURY TOWNSHIP ENERGY TRANSITION PLAN



Proposed Action	Follow-on issues	How it fits and influences the big picture
Engage with HOAs to educate and support goals	Educate our community on the possibilities.	
Distribute a survey to the Community asking for their input on what Solebury should be doing about Climate-Change.		Provides key information on how the Twp should proceed with Climate-change initiatives.
Hold interviews with key Community organizations, businesses, and individuals for their input on what Solebury should be doing about Climate-Change.		Provides key information on how the Twp should proceed with Climate-change initiatives.
Encourage residents to move to a renewable choice for electricity.		Creates additional demand for renewable-specific power generation.
Survey local landscapers to determine their plans to move to electric landscaping equipment.		Promotes the elimination of highly polluting 2-stroke gas engines.
Work with New Hope Solebury school district regarding participation in RF100 and climate-friendly actions.		Encourages young people in the Township to get involved in conservation and renewable energy efforts.

### 7.2.5.4 Strategy #4: Transition gasoline-fueled cars to electric vehicles (EVs)<sup>3</sup>.

#### Municipal Actions

Proposed Action	Follow-on issues	How it fits and influences the big picture
Review the Solebury Police Chief's plan to transition police cars to hybrid and all electric.	Work with the Twp Manager and Police Chief for flesh out the plan.	Contributes to reducing Twp climate footprint. Affects overall planning for how the Twp creates clean energy.
Work with the Township's Public Works Dept to formulate a plan to purchase medium/heavy duty hybrid, hydrogen, and/or electric vehicles.	Inform Public Works of the existence of the Mack Truck LRE trash hauler as an early entrant into the heavy-duty electric truck market.	Contributes to reducing Twp climate footprint. Affects overall planning for how the Twp creates clean energy.

<sup>3</sup> The Union of Concerned Scientists published a report in July 2022 which finds that "....the average new battery electric vehicle produces more than 50% less global warming pollution than a comparable gasoline or diesel vehicle." This takes into account the complete manufacture of the vehicle and battery and operation over its lifetime.

## SOLEBURY TOWNSHIP ENERGY TRANSITION PLAN



### Community Actions

Proposed Action	Follow-on issues	How it fits and influences the big picture
Work with DVRPC to propose optimal sites for additional EV charging station in the Township. Promote the installation of charging stations in these locations.	Investigate, especially, the possibility of charger installations along Rt. 202.	Encourages the rapid adoption of electric vehicles.



## 8.0 Stakeholders

Stakeholders within the community are critical to the success of the Energy Transition Plan. There are countless ways in which they will be important participants in this plan, and they will bring countless talents to the transition to renewable energy.

Appendix A lists those in the community who have already been identified, some of which have their own clean energy targets, efficiency programs, renewable energy systems, renewable electricity power purchase agreements, and replacement policies which take a transition to clean energy into account. Others we hope will participate and engage with the township's efforts as we move on. We recognize that this list is incomplete and will be expanded over time.

In addition to the stakeholders listed in the Appendix, which have a presence in the township already, we will want to look at two other significant climate change factors:

1. waste & refuse management
2. water supply & treatment

We will need to engage with the suppliers of these services to assess how we can encourage best practices.

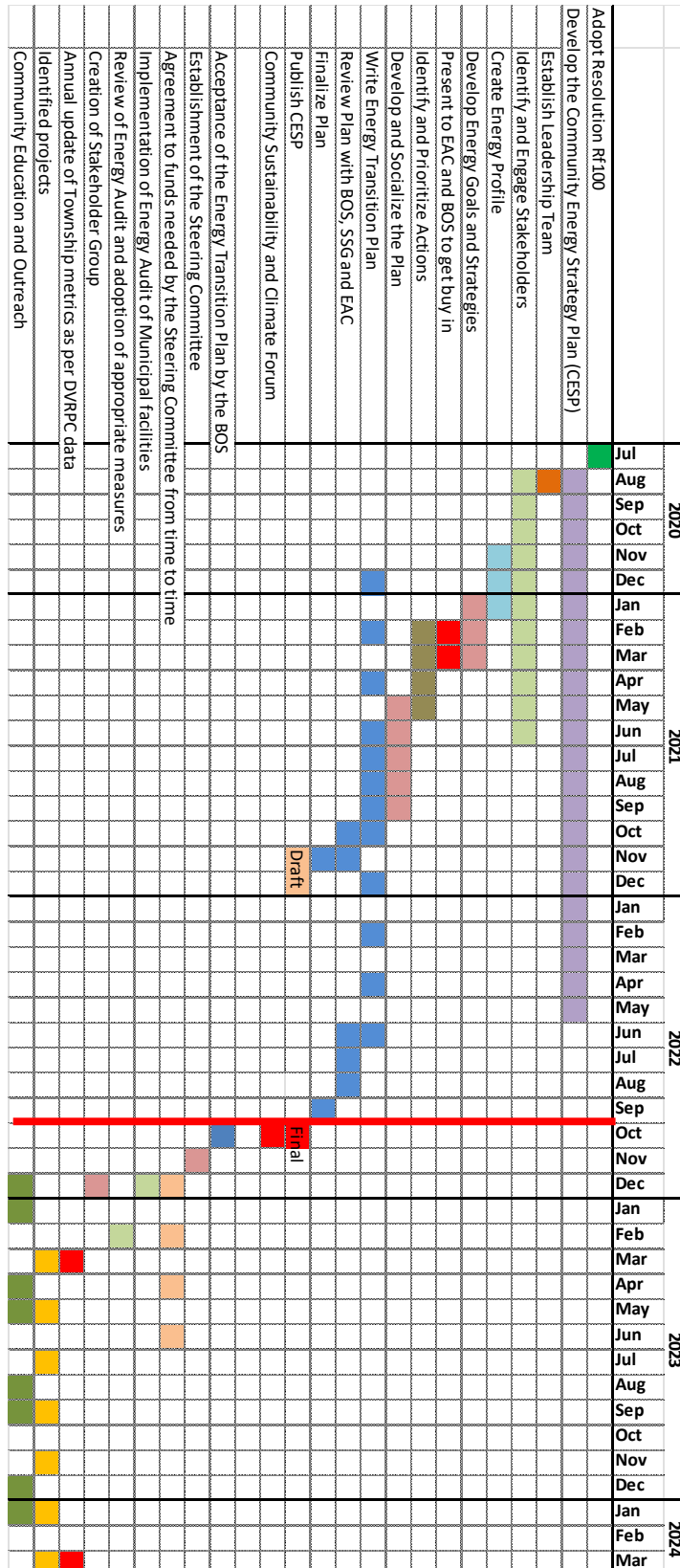
## 9.0 Process, Timeline and Metrics

The process to implement this plan going forward will be predicated on the following basis:

- Acceptance of the Energy Transition Plan by the BOS
- Establishment of the Steering Committee
- Agreement to funds needed by the Steering Committee from time to time
- Implementation of Energy Audit of Municipal facilities
- Review of Energy Audit and adoption of appropriate measures
- Creation of Stakeholder Group
- Annual update of Township metrics as per DVRPC data
- Identified projects

On the next page is the past and future timeline of this plan and its implementation. It will of course, run on beyond the time frame set out here.

# SOLEBURY TOWNSHIP ENERGY TRANSITION PLAN



# SOLEBURY TOWNSHIP

## ENERGY TRANSITION PLAN



### 10.0 Funding

Funding for the various actions is often needed to enable their implementation. It is important to be bold in requesting funds either from the municipality or other funding sources for meaningful projects to achieve the transition to renewable energy. The DSIRE website (<https://programs.dsireusa.org/system/program?fromSir=0&state=PA>) provides a fairly complete listing of existing funding sources for energy efficiency and renewable energy projects in Pennsylvania. Alternatively, we can set up local financing mechanisms such as the following:

- The township can allocate funds for staff time to work on actions or for individual actions themselves
- Establish revolving loan fund for residential energy upgrades
- Establish revolving loan fund for distributed generation – resilience battery storage or renewable energy emergency services
- Establish weatherization loan fund
- Develop local bank partnerships
- Create a solar hot water retrofit program for affordable housing
- Partner with other municipal departments
- Establish Commercial Property Assessed Clean Energy (CPACE<sup>4</sup>) program, if not already approved by municipality or county and use other financing mechanisms to fund renewable installations
- Plan for Residential PACE program
- Establish a benefit assessment measure
- Develop an energy savings reinvestment plan: Establishing an Energy Savings Reinvestment Plan allows future projects to be internally self-funded. These plans can be set up so that up to 80% of a project's savings goes to the energy fund to pay for future energy efficiency projects, while the remaining amount is returned to the city's general fund.

No funding was needed for the preparation of this Plan. The initial team relied on the information and expertise of the elected official and their staff, knowledgeable members of the community, and assistance from organization in southeastern Pennsylvania.

Required funding and sources will be one of the early reviews and requests (if needed) of the Steering Committee.

Currently there is a proposal from the Planning Commission (and proposed as a line item in the 2023 budget) to engage a Sustainability Consultant to help guide the township through the processes of assessing sustainability opportunities. It is further anticipated that the township will need a staff member focused on sustainability to manage the ETP efforts and also to support the upcoming rewriting of the Comprehensive Plan. This is something that should be reconciled soon, such that their expertise can inform the ETP actions going forward.

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<sup>4</sup> CPACE is not currently available for municipal use.

## **SOLEBURY TOWNSHIP ENERGY TRANSITION PLAN**



The ETP must present possible projects as they become firm, including projected cost and timing. It is anticipated several large projects will be called for to achieve ETP Goals. The ETP must keep the BOS well informed so there are no surprises or potential misunderstandings during the budget process. The Steering Committee will be expected to present their projects and budget requests to the Board, in priority order, in September of each year.

### **11.0 Monitoring**

The Steering Committee will establish monitoring procedures and milestones to enable progress to be determined.

While some action will likely reap benefits quite quickly, others will take time measured over years not months. Reviews will be set up via regular meetings of the Committee, and the milestones and subjects for data monitoring will vary according to progress and stage.

DVRPC data is revised every five years and will be used as the basis for determining progress toward the goals set at the outset.

It is recommended that an Energy Transition Scorecard be established to consistently report and track progress. Results will be regularly reported to the Board of Supervisors.

### **12.0 Next Steps**

The Board of Supervisors are asked to adopt this initial report as a template and guideline for the establishment of an ETP Steering Committee to work in setting up the processes herein described.

It will be the first task of the Steering Committee to establish strategic priorities and low hanging fruit which can be actioned in the short term.

**SOLEBURY TOWNSHIP  
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**13.0 Appendices**

# SOLEBURY TOWNSHIP ENERGY TRANSITION PLAN



## 13.1 Appendix A -Stakeholders

The list of stakeholders is an ongoing opportunity to expand and engage. The following provides a template for the collection of stakeholders in the Solebury community who may participate and collaborate over time.

### 13.1.1 Public School District

The public schools in Pennsylvania are independent entities recognized by the Commonwealth. Each is administered under the authority of an elected school board which appoints the administrative official, sets policy, and approves the budget. All initiatives and actions to transition to renewable energy must be approved by the Board.

Energy transition opportunities directly applicable to the public schools are:

- Energy efficiency improvements in heating, cooling, and hot water supply.
- Energy conservation measures to minimize the electrical and fuel usage, especially when the school is closed or out of session.
- Purchase of renewable electricity through power purchase agreements in coordination with other school districts and other large institutions.
- Geothermal systems and rooftop solar arrays.
- Gradual electrification of the school bus fleet as old buses are retired.
- Inclusion of sustainable energy practices in school curricula and vocational education.
- Inclusion of energy efficiency and renewable energy in new building construction.
- Inclusion of carbon drawdown initiatives wherever possible, primarily in appropriate landscaping techniques.

In addition, our schools provide a valuable function in educating and engaging their staff, students and their families to take a leadership role in promoting energy conservation and efficiency and the implementation of renewable energy systems.

Solebury Township is served by the New Hope-Solebury public school district. This school district encompasses the Township of Solebury and the Borough of New Hope. Only one school is within the Township boundaries: New Hope-Solebury Lower Elementary. The other three schools within the district are located in New Hope. All the public schools in the district are listed as follows:

Name	Address	Phone Number	Contact Person
Lower Elementary School			
Upper Elementary School			
Middle School			
High School			
District offices	180 West Bridge Street, New Hope	215 862 5372	

## SOLEBURY TOWNSHIP ENERGY TRANSITION PLAN



### 13.1.2 Religious and other Institutions

The following are the large properties and institutions located in **Solebury Township**:

Name	Address	Phone Number	Contact Person
Trinity Episcopal Church	6587 Upper York Rd	(215) 297-5135	
Solebury United Methodist Church	2536 Aquetong Rd # A, New Hope, PA 18938	(215) 862-2657	
St Philip's Episcopal Church	10 Chapel Rd, New Hope, PA 18938	(267) 897-3050	
Lahaska United Methodist Church	Route 263 and Street Road	(215) 794 0688	
Solebury Friends Meeting	2680 Sugas Rd, New Hope, PA 18938	(609) 403-0412	
Carversville Christian Church	3736 Aquetong Road, Carversville, PA 18913	(215) 297-5166	

Owners and operators of institutions (such as hospitals, universities, religious organizations, and retirement homes and continuing care facilities) are large energy users and have a stake in reducing their energy costs. They often have productive relationships with their municipal officials that may be leveraged to obtain their interest and cooperation.

### 13.1.3 Residents

The residents of the community are critical to the success of the plan and, as constituents of their municipal officials, can exert influence over this process. The operation of their homes and their activities within the community represent a significant portion of the energy consumed by the community as a whole, giving them not only the opportunity to reduce that consumption, but also emphasizing the major role they all play in providing a safe, healthy, progressive, and forward-looking community.

Home Owners Associations (HOAs) have a great opportunity to contribute to this effort through their collective actions.

Many of the developments in Solebury have Homeowners Associations. Responsibilities of these Homeowners Associations include: contracting for waste hauling and landscaping services, maintaining streetlights and streets, holding conservation easements, and owning or operating water and wastewater treatment systems. In the future they may be instrumental in Community Solar systems.

In each instance, the Homeowner Association is governed by a set of by-laws and a council or board. The by-laws and policies of the associations vary. In essence, the Homeowners Associations act as governing bodies that address issues regarding the rules and regulations of each Homeowners Association.

Many of the Homeowners Associations contract with a management company to take care of the administrative requirements. See Appendix D for Solebury HOA details.



## SOLEBURY TOWNSHIP ENERGY TRANSITION PLAN



### 13.1.4 Commercial and Businesses

The following are some of the major businesses located in **Solebury Township**:

Name	Address	Phone Number	Contact Person
Giant Food Store	6542 Logan Square, New Hope, PA 18938	(215) 862-9061	
Soulberry Natural Market	415 York Rd, New Hope, PA 18938	(267) 741-5406	
Manoff Market Gardens	3157 Comfort Rd, New Hope, PA 18938	(215) 297-8220	
Black Bass Hotel	3774 River Rd, Lumberville, PA 18933	(215) 297-9260	
Lumberville General Store	3741 River Road, Lumberville, PA 18933	(215) 297-9262	
Holly Hedge Estate	6987 Upper York Road, New Hope, PA 18938	(215) 862 3136	
Hotel du Village	2535 River Road, New Hope, PA 18938	(215) 330-2700	
Clarion Inn & Suites	6426 Lower York Road, New Hope, PA 18938	(215)862-5221	
Magill's Self Storage	6814 Lower York Road, New Hope, PA 18938	(215) 862-6933	
1740 House	3690 River Rd, Lumberville, PA 18933	(215) 297-5661	

Businesses are often in the forefront of energy efficiency efforts because these actions have demonstrated favorable returns on their investments for decades, saving them money while burnishing their image as companies that run sustainable operations. They depend to some degree on maintaining solid relationships with their municipal officials, which might be the leading edge in gaining even further commitment to the larger energy transition goals of this plan.

### 13.1.5 Nonprofits and Private Schools

The following are the nonprofits and private schools located in **Solebury Township**:

Stakeholder Type	Stakeholder Name	Contact Name	Position/ Title	Web site/ email address	phone	Comments
Non-profit	Aquetong Watershed Assoc.	Jade Greene	President	<a href="mailto:jadebgreene@gmail.com">jadebgreene@gmail.com</a>		
Non-profit	Bowmans Wildflower Preserve			Bhwp.org	215 862 2934	
Non-profit	Bucks County Audubon	Stacy Carr-Poole	Executive Director			Already has energy efficiency targets; recently installed 35 kW solar system.
Non-profit	Carversville Farm Foundation			<a href="http://www.carversvillefarm.org">www.carversvillefarm.org</a>	(855) 228-8085	

## SOLEBURY TOWNSHIP ENERGY TRANSITION PLAN



Stakeholder Type	Stakeholder Name	Contact Name	Position/ Title	Web site/ email address	phone	Comments
Non-profit	Free Library of New Hope and Solebury			<a href="mailto:nhspubliclibrary@gmail.com">nhspubliclibrary@gmail.com</a>	215 862 2330	
Non-profit	Friends of New Hope & Solebury Library			Friendsflnhs.org		
Non-profit	Historic Carversville Society			Carversville.org		
Non-profit	Nakashima Foundation for Peace			Nakashimafoundations.org	215 862 2272	
Non-profit	New Hope Eagle Fire Company			<a href="mailto:info@nhefco.org">info@nhefco.org</a>	215 862 2692	
Non-profit	New Hope Helping			Newhopehelping.org	215 862 5663	
Non-profit	Phillips Mill Community Association			Phillipsmill.org	215 862 0582	
Non-profit	Primrose Creek Watershed Assoc.	Francis Collins	President	<a href="mailto:crashcollins@yahoo.com">crashcollins@yahoo.com</a>		
Non-profit	Raymond Farm Center for Living Arts and Design			Raymondfarmcenter.org	215 862 2691	
Non-profit	Solebury Township Historical Society			Soleburyhistory.org	215 297 5091	
Non-profit	The New Hope Colony Foundation for the Arts			Newhopecolony.org	215 568 9751	
Private education	Solebury School	Jenn Burns	Asst Head	<a href="mailto:jburns@solebury.org">jburns@solebury.org</a>	215.862.5261 x183	

Non-profit organizations and small private schools are medium-to-large energy users and have a stake in reducing their energy costs, since they often operate on limited funding. As with large institutions and businesses, it is in their interest to work with their municipality to reduce their energy use and costs, while contributing to the long-term sustainability of the community.

### 13.1.6 Transportation

The data from the DVRPC which tracks Solebury GHGs includes through traffic especially that on 202. Our influence over that sector is limited. However, we will be able to educate and encourage residents and commercial fleets to transition to electric vehicles (EVs).

One action we can take will be to incentivize the installation of more EV charging stations by commercial and institutional members of the community.

### 13.1.7 PECO and Other Utilities

The utility that provides electric and gas service to Solebury Township is PECO.

PECO distributes electricity in the urban portion of the five-county southeastern Pennsylvania area and distributes natural gas to the same area with the exception of the City of Philadelphia.

## SOLEBURY TOWNSHIP ENERGY TRANSITION PLAN



PECO is part of the PJM regional grid, which operates under a deregulated system. In a deregulated system, the electrical generating companies, transmission companies, and distribution utilities must be independent entities. Any customer within the distribution utility's service area may purchase electricity directly from any electrical generation company or from the distribution utility. This allows for direct purchase of renewable electricity by the customer. The electricity is delivered through the distribution utility's electric grid and that particular utility is compensated for the distribution service.

Examples of the ways in which the distribution utility can assist in energy conservation and the conversion to renewable energy are:

- They can participate in rebate programs for energy efficiency measures and energy efficient equipment. Energy Star is one of those rebate programs.
- They can facilitate easy and fast approval of connection of solar arrays to their system. PECO has in the past not been particularly good in this area. Approval of solar arrays often take months.
- They can use their influence with the PA Public Utilities Commission (PUC) to implement changes to purchasing of renewable electricity; and,
- They can upgrade their system to accommodate and take advantage of distributed energy resources (DERs), and
- In conjunction with regional planning initiatives, they can facilitate the development of regional microgrids and storage applications.

### **13.1.8 County, Regional, and State Government**

County, regional, and state government have buildings, motor vehicle fleets, outdoor lighting, etc. which can be made greener. And county or regional planning groups can be powerful in terms of data gathering (like the DVRPC, which has gathered greenhouse gas emissions data), pulling together information on best practices in terms of technology adoption, zoning and building code model statutes (as Bucks and Montgomery County has done), provide wider forums for discussion of solarization and other sustainability goals. Counties can also put resolutions on the ballot, including visionary resolutions to promote change, resolutions for climate-positive administrative actions or tax or bond measures to finance renewables or weatherization programs. Another goal of coordination is to encourage higher levels of government, especially at the county level, to help coordinate the efforts of the municipalities that have taken the lead in this effort. This will both strengthen the planning process and assist in achieving increased uniformity and coordination between municipalities. The municipal official will communicate their concerns to their legislative representatives on an annual, or semi-annual basis.

### **13.1.9 Public Input and Engagement with Stakeholders**

Public input is a valuable dimension to the overall planning and implementation. One or more 'visioning' sessions will be held to ensure the stakeholders in the community have an opportunity to provide input and to voice concerns. Stakeholders include businesses, schools, healthcare centers, commuters, residents - anyone who will be a consumer of energy and anyone who may be impacted by the decisions made to transition to renewable energy. If possible, more than one session will be held to allow for the greatest amount of input. The goal of the 'visioning' sessions is to explain the objectives of the project, and to solicit input in the form of opportunities, obstacles, concerns, and all other ideas. Often the session is largely informal.

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To further develop stakeholder input, selected interviews are being held. Interview team are built from the steering committee and may include government staff and elected officials. “key stakeholders” identified to date are listed below. Interviews will be conducted individually with representatives or by stakeholder category to leverage the group dynamic albeit in smaller settings. The important point is to leverage the opportunity to further develop the input from the public through directed question and answer sessions.

As the visioning sessions and the interviews are complete, the full set of input will be consolidated to look for trends in each area of input: opportunities, obstacles, concerns, and other ideas. This input will be carefully weighted. The consolidated set of input will be available to the planning team on an ongoing basis and will be used as a guide throughout the planning and implementation steps.

The consolidated input will also be shared with stakeholders for transparency and as a reminder of their input, through periodic status memos or newsletters to the stakeholder group will keep these key contacts engaged.

It may be appropriate to create sub-committees to “solve certain problems”. For instance, if a Home Owners Association (HOA) is against having any rooftop solar in their neighborhood, a committee might be formed to do some research, find some examples in other towns that have tackled this problem and found compromises or pathways to keep all parties happy.

As the plan evolves, we will circle back with the stakeholders to go over the aspects of the plan that will impact them and get further feedback. This is an iterative process. As much as possible, we will engage with community groups and make them a part of the process. We will need their help through all phases of the plan implementation.

Stakeholders identified to date include the following:

Name	Address	Phone Number	Contact Person
Township Manager	3092 Sugan Road, PO Box 139, Solebury, PA 18963	(215) 297-5656	Chris Garges
Township Ass’t Mgr		(215) 297-5656	Michele Blood
Board of Supervisors			Mark Baum Baicker, John Francis, Robert McEwan, Hanna Howe, Kevin Morrissey
Planning Commission			TJ Francisco
Env Advisory Council			Eric Allen
State Representative, 178 <sup>th</sup> District	123 W. Bridge St., New Hope	(215) 862 1940	Wendi Thomas
State Senator, 1 <sup>st</sup> District		(215) 489-5000	Steve Santarsiero
New Hope-Solebury School District			
Carversville Farm Foundation			
Solebury School		(215) 862-5261 x183	Jenn Burns
Bucks County Audubon			Mary Jo May, Executive Director
Logan Square - Giant			Chris Chandor

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Logan Square medical complex			
HOAs (13)			See separate matrix, below.
PECO			
Waste Management			Waste Management, Republic Services, EnviroGreen, Leck Waste Services, Whitetail
Solar Provider			Brent Alderfer Mark Bortman, Exact Solar

# SOLEBURY TOWNSHIP ENERGY TRANSITION PLAN



## 13.2 Appendix B -Stakeholder Strategy

### 13.2.1 Local Government

Stakeholder Type	Stakeholder Name	Contact Name	Position/Title	email address	phone	Comments
Solebury gov't	Solebury Twp	Chris Garges	Twp Manager			
		Michele Blood	Ass't Mgr/ Finance			
	Township BoS	Mark Baum Baicker	Chair			
	Township BoS	John Francis	Vice Chair			
	Township BoS	Robert McEwan	Supervisor			
	Township BoS	Hanna Howe	Supervisor			
	Township BoS	Kevin Morrissey	Supervisor			
	Planning Commission	TJ Francisco	Chair			
	EAC	Eric Allen	Chair			
Bucks County Gov't						
State Gov't	State Representative 178 <sup>th</sup> District	Wendi Thomas		<a href="mailto:wthomas@p&lt;br/&gt;ahousegop.c&lt;br/&gt;om">wthomas@p ahousegop.c om</a>		
State Gov't	State Senator, 1 <sup>st</sup> District	Steve Santarsiero			(215) 489- 5000	
New Hope – Solebury School District	Board of School Directors	Mrs. Liz Sheehan	President	<a href="mailto:lsheehan@n&lt;br/&gt;hsd.org">lsheehan@n hsd.org</a>	215-862- 5372 ext. 3293	Scott Radaszkiewicz, perhaps
New Hope – Solebury HS	Student Environmental Organizations	Leo MacDonald & Jeremy Phancock	High School science teachers			
Regional planning	dvrpc					

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## 13.2.2 Community-wide

Stakeholder Type	Stakeholder Name	Contact Name	Position/ Title	Website/email address	phone	Comments
Chamber of Commerce						
Community activist						
Farm representative	Carversville Farm Foundation					
Gas & Electric	PECO					
HOAs (13)						See separate matrix, below.
Local business	Logan Square - Giant	Chris Chandor				Giant Mall/Complex
Local business	Village at Logan Square					Logan Square medical complex
Local Developer						Future 202 developer. Can we encourage them to meet EnergyStar goals?
Media	Bucks County Herald	Bridget Wingert	Editor	<a href="mailto:bridget@buckscountyherald.com">bridget@buckscountyherald.com</a>		Use to inform the Community
Senior Citizen Representative						
Solar Provider		Brent Alderfer				Advised Twp Mgr on Solar
Solar Provider	Exact Solar, Yardley	Mark Bortman		<a href="mailto:mark@exactsolar.com">mark@exactsolar.com</a>		Has already contacted EAC by email
Utility, refuse	EnviroGreen					
Utility, refuse	Leck Waste Services			<a href="https://georgelECKANDSON.com/">https://georgelECKANDSON.com/</a>	(215) 675-8000	Ivyland, PA
Utility, refuse	North Wales Water Association	Bob Bender	<a href="mailto:rbender@nwwater.com">rbender@nwwater.com</a>		215 482 6940	
Utility, refuse	Republic Services					
Utility, refuse	Whitetail Disposal					
Waste collection & recycling	Waste Management					List all providers
Waste Mgmt	Solebury School					Wastewater treatment plant
Water provider	BCWSA	Cindy Nadeau, Mgr.	<a href="mailto:N.Cindy@bcwsa.net">N.Cindy@bcwsa.net</a>		215 343 2538	

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### 13.2.3 Homeowner Associations

Many of the developments in Solebury have Homeowners Associations. Responsibilities of these Homeowners Associations range from holding conservation easements to owning and operating water and wastewater treatment systems.

In each instance, the Homeowner Association is governed by a set of by-laws and a council or board. The by-laws and policies of the associations vary. In essence, the Homeowners Associations act as governing bodies that address issues regarding the rules and regulations of each Homeowners Association. Many of the Homeowners Associations contract with a management company to take care of the administrative requirements. Below is a list of Homeowners Associations and their property management company, if known.

Below is a list of Homeowners Associations and a partial list of their property management companies. The majority of streetlights in Solebury are private – either business or HOA owned. It is estimated that the total count of HOA streetlights is over 200, many of which are not yet LED.

HOA	Type of residences	Location (within Solebury Township)	Mgmt Company	Contact	Common area maint.	Trash collection	Street-lights	Road maint.	Snow remove
Avignon									
Devonshire									
Fieldstone	Condos	Just west of New Hope Boro	Continental Property Management	Pam Resnick (215) 343-1550			50		
Fox Run Preserve									
Hermitage									
Ingham Mews									
North Pointe	Single-family homes	Just west of New Hope Borough			✓	✓	15	?	✓
Peddler's View									
Seasons									
Watson									
Wilshire Hunt	Condos	Just west of New Hope Borough	Continental Property Management	Deb Gol (215) 343-1550	✓	✓	25	✓	✓
Wilshire Hunt II (Breckenridge Court)									
Yorkshire Meadows									



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### 13.3 Appendix C -Energy Reduction Strategy Model

#### Strategy Evaluation for GHG Reduction **Solebury Township**

Impact of Building Energy Efficiency Standards and Conversion to Electric Vehicles									
Residential Strategies	Participation Rate/Year		Change/Yr.		Commercial & Industrial Strategies	Participation Rate/Year		Change/Yr.	
Highly efficient new housing	0.5%	▲	45%	▲	Highly efficient new commercial and industrial buildings	1.0%	▲	45%	▲
Increased thermal efficiency for existing houses	4.0%	▲	24%	▲	Increased thermal efficiency for existing buildings	4.0%	▲	24%	▲
Electrical Efficiency Increase	4.0%	▲	24%	▲	Electrical Efficiency Increase	4.0%	▲	24%	▲
Strategies for Non-Energy GHG Emissions					Mobile Source Strategies				
					Rail Transit - Electrification of Locomotives	0.0%	▲	1.5%	▲
Agricultural Soil - No Change (Reserved)	0.0%	▲	0.0%	▲	Conversion to electric cars	3.5%	▲	3.5%	▲
Natural Gas Systems - 6.0% reduction per year after 2034	4.5%	▲	4.5%	▲	Increase in the miles per gallon for vehicles with Internal combustion engines (ICEs)	1.0	▲	1.0	▲
Waste Management - Reduction of solid waste	3.2%	▲	3.2%	▲	Reduction in VMT due to reduction in number of trips	0.3%	▲	0.3%	▲
Wastewater Management - (general assumption)	0.0%	▲	3.2%	▲	% decrease in emissions from 2019 for medium and heavy-duty trucks	3.2%	▲	2.4%	▲
Industrial Processes - No Sources	0%	▲	3.0%	▲	Improvement of public transit to limit vehicle miles of travel (VMT) increase of cars	0.3%	▲	0.3%	▲
Add Impact of Strategies to Convert to Renewable Electricity									
Strategies for Fuel Switching in Buildings					Strategies for Renewable Energy				
Natural Gas Elimination Starting in 2026	4.5%	▲	4.5%	▲	Growth in Renewable Electricity	3.20%	▲	3.2%	▲
Residential Oil and LPG Phaseout	3.5%	▲	3.5%	▲	Solar Electric Supply within Area		▲	0.0%	▲
C&I Oil and LPG Phaseout	3.5%	▲	4.0%	▲	(Reserved)		▲	0.0%	▲

**SOLEBURY TOWNSHIP  
ENERGY TRANSITION PLAN**



**13.4 Appendix D -Rf100 Resolution**

**SOLEBURY TOWNSHIP BOARD OF SUPERVISORS**

**RESOLUTION IN SUPPORT OF 'READY FOR 100' RENEWABLE ENERGY MOVEMENT**

**RESOLUTION 2020-98**

**WHEREAS**, Climate change is a global long-term threat to civilization and Earth's living ecosystems, and is occurring at a rate unprecedented in human history, threatening to overwhelm the abilities of society and nature to adapt;

**WHEREAS**, Extreme weather associated with climate change poses immediate risks as it becomes more commonplace; testing our infrastructure, emergency and social services; impacting our access to food, water and energy supplies; heightening disruption of services, commerce and quality of life; impacting negatively on the quality of life and human health, increasing cost for disaster relief, restoration, and prevention; and resulting in a commensurate increase in taxes and cost of services to pay for these effects;

**WHEREAS**, Carbon dioxide (CO<sub>2</sub>) is the primary greenhouse gas emitted by human activities, the rate at which climate change is occurring is largely the result of the increase in the concentration of carbon dioxide in the atmosphere, and combustion of fossil fuels for energy is the primary source of carbon dioxide emissions;

**WHEREAS**, The 2015 United Nations Climate Change Conference in Paris resulted in a consensus among all 195 countries to limit the increase in global average temperatures to well below 2°C (3.6°F), ensure that greenhouse gas emissions will not exceed sinks (total carbon capture) by the second half of this century, and become carbon neutral between 2050 and 2100;

**WHEREAS**, The US government's November 2017 Climate Science Special Report states that "It is extremely likely that human activities, especially emissions of greenhouse gases (GHGs), are the dominant cause of the observed warming since the mid-20th century";

**WHEREAS**, In January 2019, Governor Tom Wolf issued an executive order stating, "the Commonwealth will work to achieve a 26 percent reduction of greenhouse gas emissions by 2025 and an 80 percent reduction by 2050";

**WHEREAS**, currently 31 municipalities in Southeastern Pennsylvania including 12 in Montgomery County, 12 in Chester County, 5 in Delaware County, one other in Bucks County and also the city of Philadelphia, have stepped up as regional leaders and passed resolutions for 'Ready for 100', setting goals for the transition to renewable energy in their communities;

**WHEREAS**, Solebury Township has demonstrated a commitment to reducing its energy usage by implementing energy efficiency improvements in multiple areas, including:

- Municipal building energy efficiency improvements, resulting in reduced energy usage and costs;
- Lighting and energy system improvements at the Township Building, resulting in reduced energy usage and costs;
- Achieving nearly 40% of land in preservation;
- Initiating the replacement of the police vehicle fleet with hybrid vehicles;
- Vigorously supporting sustainable agriculture;
- Being committed to maintaining and improving our natural watersheds;
- Continuing to explore the use of solar power for the municipal facilities.

**WHEREAS**, Solebury Township is committed to be a community characterized by equality, health, safety, livability, prosperity and equity;

**WHEREAS**, Solebury Township recognizes that it has a responsibility to future generations to take an

# SOLEBURY TOWNSHIP ENERGY TRANSITION PLAN



active stance to reduce the emission of greenhouse gases within the Township;

**WHEREAS**, The best strategy for achieving a cost effective, even cost saving, energy source transition is through collaboration with other regional energy leaders and participation in acquiring aggregated procurement contracts – Power Purchase Agreements (PPAs) for regional wind and solar energy; to this end, Solebury Township also recognizes the importance of developing a close working relationship with its electric energy supplier(s) to create the most advantageous and mutually beneficial plan for integrating locally generated and renewable power;

**AND WHEREAS**, A renewable energy initiative can produce energy cost savings for residents and local businesses while stimulating new economic activity and local jobs, all while simultaneously mitigating the risks from climate change for everyone;

**NOW, THEREFORE, BE IT RESOLVED**, by the Board of Supervisors of Solebury Township, Bucks County, Commonwealth of Pennsylvania:

- Solebury Township will endeavor to preserve the past and embrace the future by joining leading towns and cities in the national Ready for 100 movement, with the goal of transitioning to 100% clean, renewable energy for all, and completing this transition, community-wide, to:
  - 100% clean renewable electricity by 2035;
  - 100% clean renewable energy when replacing heating system and transportation equipment by 2050;
  - As vehicles are replaced, priority will also be given to transitioning the Solebury Township vehicle fleet to 100% renewable energy sources by 2030 where feasible;
- The Solebury Township Environmental Advisory Council will provide guidance for commissioning a committee, task force, and/or consultant to draft an energy transition plan for achieving these goals by December, 2020 or sooner, to include interim milestones, financial impacts, equity metrics, potential financing mechanisms and the percentage of renewable energy that is locally produced;
- Renewable energy will be defined as carbon-free and pollution-free energy generated sustainably from renewable sources such as wind, solar, small hydro, tidal, fuel cells and geothermal;
- Locally produced and distributed energy is prioritized whenever feasible for the many advantages it provides to the community;
- Solebury Township will continue to strategically decrease energy usage by implementing energy efficiency improvements;
- Solebury Township will seek to work in collaboration with other regional townships wherever possible and feasible, in the creation of mechanisms and processes to achieve the goals of this resolution;
- Solebury Township stakeholders will have the opportunity and will be encouraged to participate in the planning and implementation process;
- Solebury Township will call on the Commonwealth of Pennsylvania to set a goal to use 100% renewable energy for all purposes no later than 2050;
- Solebury Township will call on the Commonwealth of Pennsylvania to adopt codes and standards to increase the efficiency of buildings and appliances;
- Solebury Township will call on the Commonwealth of Pennsylvania to increase the Alternative Energy Portfolio Standards to levels that put us on track to meet 100% renewable energy goals;

**SOLEBURY TOWNSHIP  
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**BE IT FURTHER RESOLVED**, that a certified copy of this Resolution be forwarded to State Senator Steve Santarsiero, State Representative Wendi Thomas, Pennsylvania Governor Tom Wolf, U.S. Representative Brian Fitzpatrick, and U.S. Senators Bob Casey and Patrick Toomey.


**RESOLVED, ADOPTED and APPROVED**, on the 21<sup>st</sup> day of July, 2020, at a regular public meeting of the Board of Supervisors of Solebury Township.

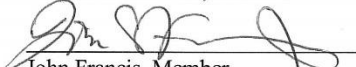
**SOLEBURY TOWNSHIP  
BOARD OF SUPERVISORS**

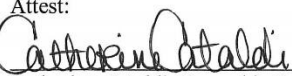
  
\_\_\_\_\_  
Mark Baum Balcker, Chair

  
\_\_\_\_\_  
Kevin Morrissey, Vice-Chair

\_\_\_\_\_  
Noel Barrett, Member

  
\_\_\_\_\_  
Robert A. McEwan, Member

  
\_\_\_\_\_  
John Francis, Member

Attest:  
  
\_\_\_\_\_  
Catherine Cataldi, Township Secretary

July 21, 2020  
\_\_\_\_\_  
Date

# SOLEBURY TOWNSHIP ENERGY TRANSITION PLAN



## 13.5 Appendix E -Home Owners Associations in Solebury

Below is a list of Homeowners Associations and a partial list of their property management companies. The majority of streetlights in Solebury are private – either business or HOA owned. It is estimated that the total count of HOA streetlights is over 200, many of which are not yet LED.

Community Management Services Group, 721 Dresher Road, Horsham, PA 19044, Phone: [\(215\) 830-1100 Ext. 204](tel:2158301100)

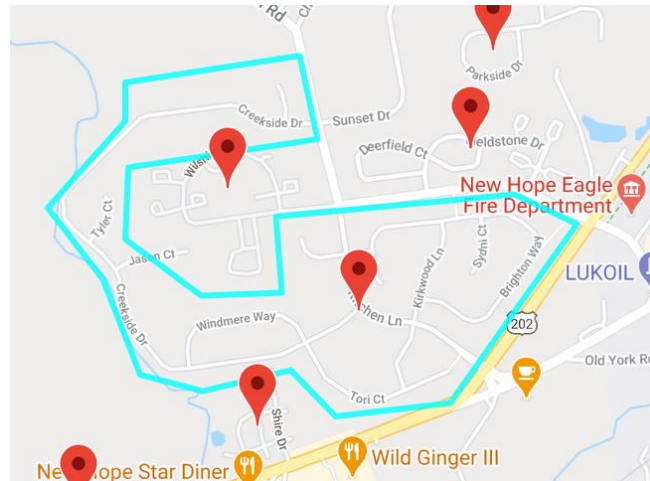
Continental Property Management, 975 Easton Road, Warrington, PA 18976, Phone: [\(215\) 343-1550](tel:2153431550)

HOA	Management Company			Street-lights	Roads
Avignon					
Devonshire					
Fieldstone				50	
Fox Run Preserve					
Hermitage					
Ingham Mews					
North Pointe				15	
Peddler's View					
Seasons					
Watson					
Wilshire Hunt				25	
Wilshire Hunt II (Breckenridge Court)					
Yorkshire Meadows					
Total private streetlights				90	



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**North Pointe** - North Pointe is a subdivision of single-family homes constructed by Katz Builders circa 2000. Models include 3-4 bedrooms, 2 1/2 baths, 2-car garage. Some have first floor master bedroom suites. Most have full basements. Many options were available to original purchasers during construction. Lots range from 1/4 acre to more than 1/2 acre. 15 streetlights, one at each intersection.

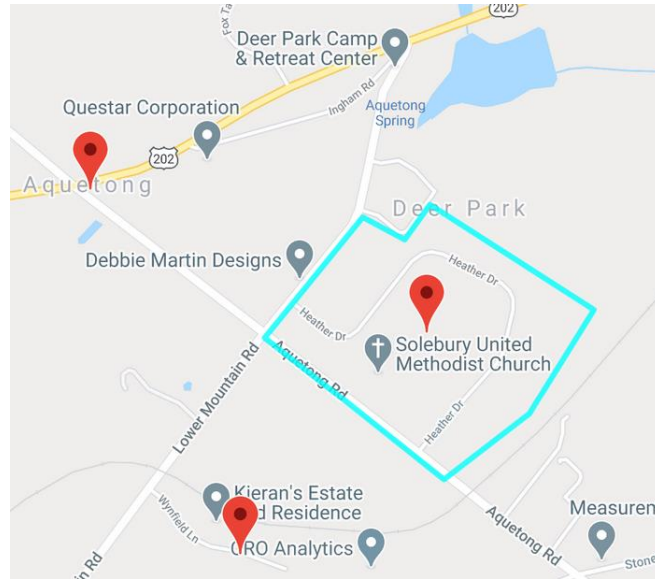


**Yorkshire Meadows** - Yorkshire Meadows is a subdivision of 72 townhomes and condominiums built by Granor-Price circa 1981. Median interior living space is approximately 900 sq. ft.

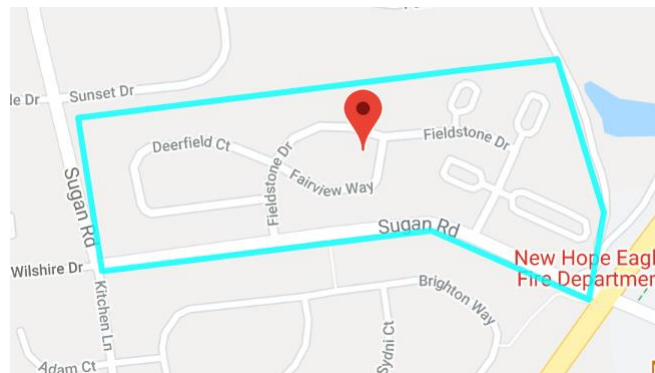


## SOLEBURY TOWNSHIP ENERGY TRANSITION PLAN

**Seasons** - Seasons is a subdivision of 39 single family homes built by C W Schrenk circa 1998. Lot sizes range from 1.5 to 5 acres with a median slightly larger than 1.5. Interior living space ranges from approximately 3,000 to 4,000 sq.ft. with a median of approximately 3,500 sq.ft. Access to the Seasons neighborhood is from Lower Mountain Road or Aquetong Road onto Heather Drive.

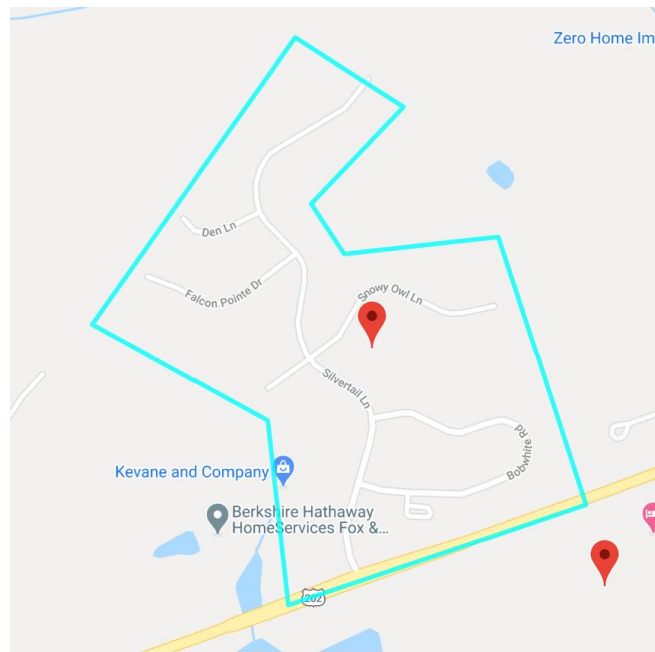


**Fieldstone** - Fieldstone is a townhome development of approximately 125 residences built circa 1993. Models include 2 and 3 bedrooms, 2 1/2 baths, and single car garage. Interior living space ranges from approximately 1,700 to 2,300 sq.ft. with a median of approximately 2,175 sq.ft.

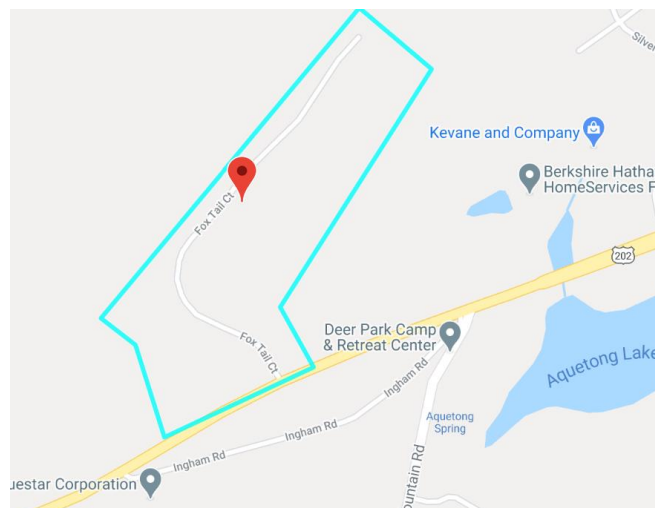


## SOLEBURY TOWNSHIP ENERGY TRANSITION PLAN

**Fox Run Preserve** - Fox Run Preserve is an active adult (55-plus) community of approximately 95 residences built by DeLuca Enterprises circa 2002. Residences range from approximately 1,700 to 3,399 sq.ft., (2,600 sq.ft. median) 2-3 bedrooms, 2-car garage; some with lofts. Median lot size is approximately one-quarter acre. Access to the Fox Run Preserve neighborhood is from Lower York Road onto Silver Tail Lane.



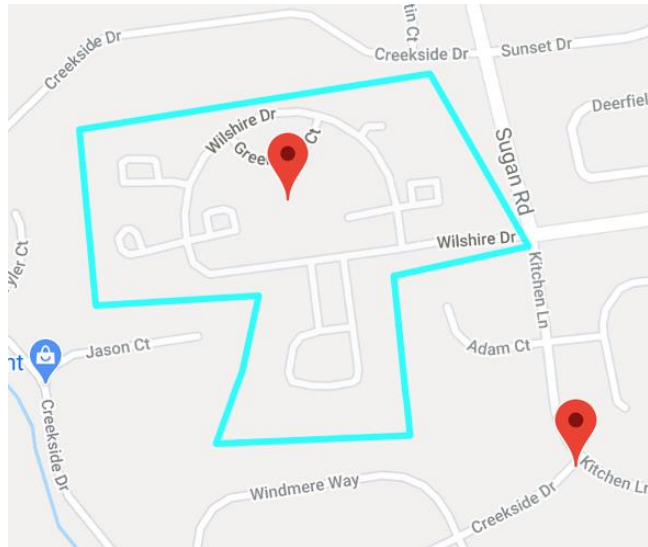
**Fox Run Estates** is a residential subdivision of detached, single family homes built circa 2002. Typical homes have 4 to 5 bedrooms with 3-1/2 baths and range from approximately 4,700 to 6,000 sq.ft. of interior living space. Access to the Fox Run Estates neighborhood is from York Road (Route 202) onto Fox Tail Court.



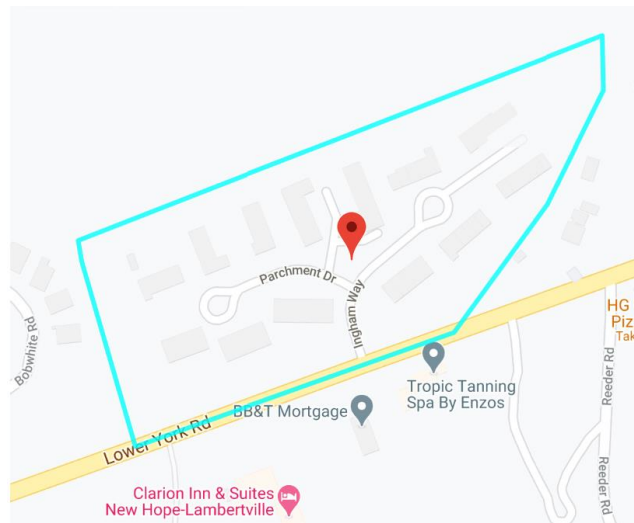


## SOLEBURY TOWNSHIP ENERGY TRANSITION PLAN

**Wilshire Hunt** is a residential subdivision of townhomes built circa 1998. Interior living space varies from approximately 1,750 to 3,000 sq.ft. with a median of 2,100 sq.ft. Access to the Wilshire Hunt neighborhood is from Sugan Rd onto Wilshire Dr.



**Ingham Mews** is a townhome subdivision built circa 1985. Median interior living space ranges from 1,200 to 2,400 sq. ft with a median of approximately 2,000 sq.ft. Access to the Ingham Mews neighborhood is from Route 202 southbound onto Parchment Drive.

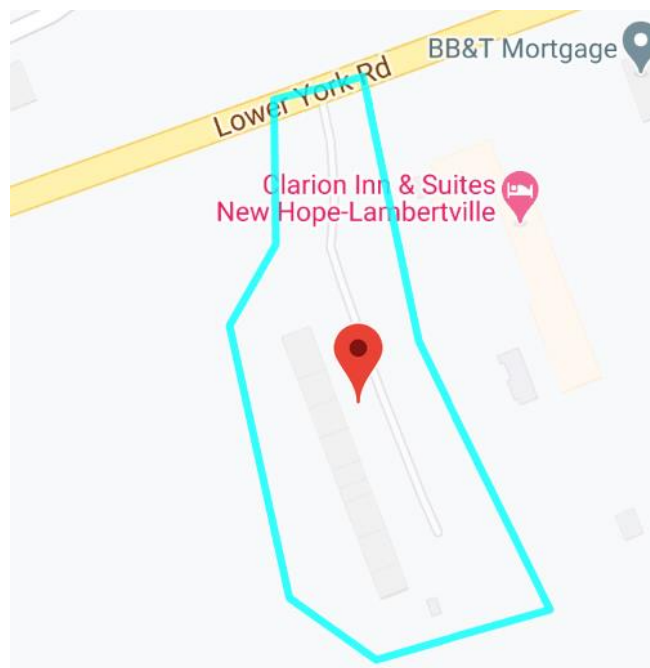


## SOLEBURY TOWNSHIP ENERGY TRANSITION PLAN

**Solebury Mountain Estates** is a limited-access, residential community of detached, single family homes built from the 1950s through the 1980s with a median age circa 1970. Property sizes range from approximately 1 to 40 acres with a median of slightly over 1 acre. Interior living spaces ranges from less than 2,000 sq.ft. to more than 10,000 sq.ft. with a median of approximately 2,500 sq. ft. Access to the Solebury Mountain Estates neighborhood is from Aquetong Road eastbound onto Low Road or Solebury Mountain Drive.

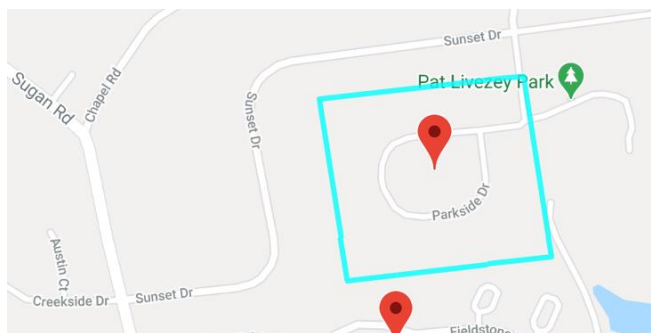


**Hermitage** is a Condominium/Townhome development built circa 1983. Interior living space ranges from less than 1,000 to more than 1,400 sq.ft. with a median of approximately 1,100 sq.ft. Hermitage Drive is located off York Road (Route 202) between Lower Mountain and Reeder Roads.

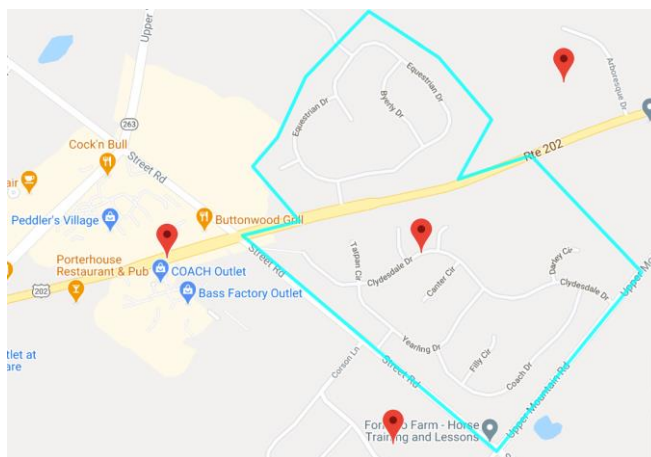


## SOLEBURY TOWNSHIP ENERGY TRANSITION PLAN

**Parkside Ridge** is a limited-access, residential subdivision built by Elliott Builders circa 1996. Median lot size is approximately 2/3rds of an acre. Median interior living space is approximately 3,100 sq.ft. Typical homes have 4 bedrooms, 2-1/2 to 3 baths, full basement, and 2-car attached garage. Access to the Parkside Ridge neighborhood is from Sunset Drive onto Parkside Drive:



**Peddlers View** is a residential subdivision of approximately 200 detached, Single Family Homes built in two phases at the intersection of Route 202 and Street Road in Lahaska, Solebury Township, Bucks County. Phase One was built on the northbound side of Route 202, and Phase Two on the southbound side. The original builder models retained their designated names, but many underwent design changes for construction of Phase 2. Residences include 3 to 4 bedroom models, 2 car garages, basements; some models have first floor master suites. Homes were built from 1994 to 1997 (median: 1996). They range in size from approximately 2,200 to 4,400 sq.ft. (median: approximately 2,950 sq.ft.). Lot sizes range from approximately 0.18 to 1 acre (median: 1/4 acre).



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**Avignon** is a residential subdivision of 26 residences built circa 2001 by Gigliotti Builders. Homes are on lots of approximately one-third acre; the development comprises 32 acres of open space. Interior living space varies from approximately 3,200 to almost 6,000 sq.ft. with a median of 3,600 sq.ft. Access to the Avignon neighborhood is from Street Rd onto Avignon Way.



### 13.6 Appendix F -Glossary of Environmental Terms and Agencies

- **ACS:** American Community Survey. The ACS is an ongoing survey updated annually by the U.S. Census Bureau. It regularly gathers information previously contained only in the long form of the decennial census, such as ancestry, citizenship, educational attainment, income, language proficiency, migration, disability, employment, and housing characteristics.
- **AEPS:** Alternative Energy Portfolio Resources. 18% must come from alternative energy resources by 2021.
- **AEC:** Pennsylvania created an Alternative Energy Portfolio Standard (AEPS) that states that an annually increasing percentage of electricity sold to customers be from solar energy sources. An **AEC** is created each time a solar system generates 1000 kWh of electricity. AECs are Pennsylvania's version of SRECs.
- **AEV:** All-Electric Vehicle. An alternate term for BEV.
- **Aggregated Purchasing:** Group buying of electricity by multiple customers to achieve competitive rate from renewable energy.
- **Air source heat pump:** A heat pump that employs the outside air as a sink for energy transfer.
- **BEV:** Battery-only Electric Vehicle. A term that applies to PEVs that use only a battery and an electric motor to power the EV. Current examples include the Nissan LEAF, the Chevrolet Bolt, BMW i3, Ford Mach, or any of the Tesla models. This term is used to distinguish BEVs from Fuel-Cell Electric Vehicle (FCEVs), a potential source of confusion, as all Plug-in Electric vehicles contain batteries. See, also, PEV, PHEV, FCEV, and EREV.
- **British thermal units (Btu):** The amount of heat energy needed to raise the temperature of one pound of water by one degree (roughly the energy in a lit match). This is the standard measurement used to state the amount of energy that a fuel has as well as the amount of output of any heat-generating device. MMBtu is the common symbol for one million Btus.
- **Brown energy:** The current mix of energy supplied to the electric grid, which is generated by a combination of electric generation facilities powered by coal, natural gas, nuclear fusion, hydropower, solar, and wind.
- **Carbon dioxide equivalent (CO<sub>2</sub>e):** A unit of measure that allows emissions of greenhouse gases of different strengths to be added together based on their global warming potential.
- **Carbon footprint:** A measurement used to calculate the impact human activities have on the climate change. It is measured in terms of the amount of greenhouse gases emitted from each activity and reported in units of carbon dioxide equivalents (CO<sub>2</sub>e).
- **CCA:** Community Choice Aggregation. CCA is the process of getting lower electric rates for the members of the community. It occurs when a city or town buys electricity from a participating supplier, in bulk, for its residents.
- **Census Block:** The smallest geographic area for which the Census Bureau collects and tabulates decennial census data.
- **Census Block Group:** A combination of census blocks that is a subdivision of a census tract. The Block Group is the smallest geographic entity for which the decennial census tabulates and publishes the sample data (socioeconomic information).
- **Charging Event:** The act of plugging-in a PEV to charge the battery.
- **C-PACE:** Commercial only tax credit for Solar installation. (??check)

## SOLEBURY TOWNSHIP ENERGY TRANSITION PLAN



- **Community choice aggregation (CCA):** An arrangement in which local entities aggregate the buying power of individual customers within a defined jurisdiction in order to secure alternative energy supply contracts.
- **Community Solar:** A community solar project is a solar power plant whose electricity is shared by more than one property. The primary purpose of community solar is to allow members of a community the opportunity to share the benefits of solar power even if they cannot or prefer not to install solar panels on their property. As of Fall 2020, Community Solar is not yet available in PA. It is waiting on passage of HB531.
- **DVRPC:** Delaware Valley Regional Planning Commission: the regional planning organization for the five southeastern PA counties and four adjacent counties in New Jersey.
- **EDC:** Electric Distribution Company. The public utility that provides facilities for the transmission and distribution of electricity to retail customers. Electric distribution companies are regulated by state utility commissions. Exceptions include building or facility owners or operators that manage their internal distribution system and supply electric power and electric services to occupants of the building or facility.
- **Electric vehicle (EV):** A vehicle that uses one or more electric motors for propulsion.
- **Energy equivalency:** The process of comparing two or more kinds of energy (e.g. electricity, gasoline, and diesel) by converting them to a common and equivalent measure, often expressed in BTUs.
- **Energy Star:** A joint program between the DOE and EPA that provides energy efficiency standards for products and buildings.
- **EREV:** Extended Range Electric Vehicle. Example is the Chevy Volt.
- **EV:** A generic term for a vehicle that gets some, or all, of its power from an electric motor. Sometimes used to mean PEV, BEV, or AEV (and occasionally HEV).
- **EVSE:** Electric Vehicle Supply Equipment. The function of EVSEs is to supply electric energy to recharge electric vehicles. EVSEs are also known as EV charging stations, electric recharging points or just charging points. EVSEs can provide a charge for the operation of electric vehicles or plug-in hybrid electric-gasoline vehicles.
- **FCEV:** Fuel cell electric vehicles (FCEVs) use an electric motor instead of an ICE to power the wheels; however, instead of plugging into the grid to recharge, FCEV storage tanks are filled with hydrogen gas, which generates electricity when combined with oxygen in the air. An example is the Honda Clarity.
- **Geothermal heat pump:** A heat pump that employs the ground as a sink for energy transfer rather than the outside air. It is a highly efficient heating and cooling system.
- **GIS:** Geographic Information System. A Geographic Information System is a system designed to capture, store, manipulate, analyze, manage, and present spatial or geographic data. GIS applications are tools that allow users to create interactive queries, analyze spatial information, edit data in maps, and present the results of all these operations. Esri's ArcGIS is a popular GIS software application.
- **Greenhouse gas (GHG):** A gas that absorbs and emits radiant energy within the thermal infrared range. Greenhouse gases cause the greenhouse effect on planets. The primary greenhouse gases in Earth's atmosphere are water vapor, carbon dioxide, methane, nitrous oxide, and ozone.
- **Heat pump:** A device that transfers heat from a colder area to a hotter area by using mechanical energy, as in an air conditioner. It can be used to heat buildings. A new generation of heat

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pumps has been developed in the last two decades that have much higher efficiencies than traditional heat pumps installed before that time. These heat pumps can efficiently provide heating down to as low as -7 degrees Fahrenheit.

- **HEV (Hybrid Electric Vehicle):** HEVs are vehicles that do not plug in, but instead have a large battery on board that is charged by the vehicle's braking [and by the fossil fuel engine]. The energy stored by this battery assists the ICE in moving the car, significantly improving the gas mileage. Current examples include the Toyota Prius and Honda Accord Hybrid.
- **IBA:** An Important *Bird* and Biodiversity Area (*IBA*) is an area identified using an internationally agreed set of criteria as being globally important for the conservation of *bird* populations. *IBA* was developed and sites are identified by BirdLife International. Currently there are over 12,000 *IBAs* worldwide. *IBAs* are important in the identification of future energy generation sites such as wind and solar.
- **ICE:** Internal Combustion Engine. Gasoline and diesel cars and trucks use an internal combustion engine to convert fuel to the motion that moves the vehicle. Propane or compressed natural gas are used in some ICE vehicles as well.
- **ICLEI (pronounced "ick-lee"):** The International Council of Local Environmental Initiatives (see [iclei.usa.org](http://iclei.usa.org) for complete information.).
- **Intergovernmental Panel on Climate Change (IPCC):** The IPCC was established jointly by the United Nations Environment Programme and the World Meteorological Organization in 1988. The purpose of the IPCC is to assess information in the scientific and technical literature related to all significant components of the issue of climate change.
- **ITC (Investment Tax Credit):** A national tax credit that allows solar panel owners to deduct 26% of the cost of solar from their federal tax burden for the solar arrays is installed in 2021. The tax credit is set to gradually decrease each year from 2020 and onward.
- **Kilowatt-hours-per-100-miles:** One of the ways that EVs are evaluated. This measurement allows EV efficiency to be compared, based on the amount of power it takes to go 100 miles.
- **kWh:** Kilowatt-hour. A measure of electrical energy equivalent to a power consumption of 1,000 watts (about what a hand-held hair dryer uses) for 1 hour. It is the standard unit of measurement to describe PEV battery capacities and the amount of electricity transferred to the battery during charging.
- **LCOE:** Levelized cost of energy. The Lifetime Cost of an energy facility divided by the energy production of the facility. The Lifetime Cost is calculated as the Present Value of the total cost of the facility and its lifetime operating expenses. In 2017 the LCOE for Residential Solar PV was 15.1¢/kWh or \$151/mWh. This is in contrast to \$60/mWh for gas and \$100/mWh for coal.
- **LEED Certification:** Leadership in Energy and Environmental Design: It is an internationally recognized green building certification system, providing third-party verification that a building or community was designed and built using strategies aimed at achieving energy savings, water efficiency, CO2 emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts. It was developed by the [U.S. Green Building Council \(USGBC\)](http://www.usgbc.org).
- **LEHD:** Longitudinal Employer-Household Dynamics.
- **Light Emitting Diode (LED):** A lighting technology that is much more efficient and lasts much longer than incandescent, mercury, or sodium lights and contains no hazardous chemicals. They have a higher initial cost, which is more than offset by the energy savings.



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- **LODES:** Longitudinal Employer-Household Dynamics (LEHD) Origin-Destination Employment Statistics. LODES Data provides detailed spatial distributions of workers' employment and residential locations and the relation between the two at the Census Block level. LODES also provides characteristic detail on age, earnings, industry distributions, and local workforce indicators.
- **LPG:** Liquefied petroleum gas (LPG or LP gas) is a flammable mixture of hydrocarbon gases used as fuel in heating appliances, cooking equipment, and vehicles. In the United States, mainly two grades of LPG are sold: commercial propane and HD-5.
- **Megawatt (MW):** A megawatt hour is a unit for measuring power that is equivalent to one million watts. One megawatt is equivalent to the power of 10 automobile engines.
- **Megawatt-hour (MWh):** A MWh is equal to 1,000 kilowatt hour (KWh). It is about equivalent to the amount of electricity used by about 330 homes during one hour.
- **MPGe:** Miles per gallon of gasoline-equivalent. MPGe measures the fuel efficiency of vehicles that run on non-liquid fuels, such as electric models. It provides a way to compare ICE and electric **vehicles**. The conversion rate used is one gallon of gasoline equals 33.7 kWh of electricity. See, also, an EV's "kilowatt-hours-per-100-miles" rating.
- **MPO:** Metropolitan Planning Organization.
- **Municipality:** A city, township, or borough.
- **NREL (National Renewable Energy Lab):** A government-owned, contractor-operated facility funded through the United States Department of Energy. It specializes in renewable energy and energy efficiency research and development.
- **Peak Load:** The maximum instantaneous load or the maximum average load over a designated interval of time. Also known as peak demand.
- **PECO:** The major electric distribution company (EDC) in southeastern Pennsylvania.
- **PEV:** Plug-in Electric Vehicle. An EV that plugs into an external source to charge an on-board battery that provides the electricity for the electric motor. Some EVs, such as trolleys, subways, trains, and trolley buses, are powered by external electricity, from overhead wires or a track. Others are powered by fuel cells (FCEVs).
- **PHEV:** Plug-in Hybrid Electric Vehicle. PHEVs use both an ICE and an electric motor with a battery that recharges by plugging into an external source. Depending on its exact configuration, the PHEV's battery can either assist the ICE, or fully power the vehicle until the battery has been discharged, at which time the vehicle continues to operate as an HEV. A current example is the Toyota Prius Prime.
- **PPA (Power Purchase Agreement):** An arrangement in which a third-party developer installs, owns, and operates an energy system either on a customer's property or on other land. The customer then purchases the system's electric output for a predetermined period.
- **PJM:** The Pennsylvania New Jersey Maryland regional electrical transmission organization. The local electrical grid for these three states.
- **REC (Renewable Energy Credit):** Tradable, non-tangible energy commodities that represent proof that one megawatt-hour (MWh) of electricity was generated from an eligible renewable energy resource (renewable electricity) and was fed into the shared system of power lines which transport energy. Bundled RECs are RECs that are sold together with electricity. Unbundled RECs are RECs that are sold separately from electricity. RECs are also called AECs in Pennsylvania.



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- **Renewable energy:** Energy sources that, within a short time frame relative to the Earth's natural cycles, are sustainable. They include non-carbon technologies such as solar energy, hydropower, and carbon neutral technologies such as biomass.
- **RGGI:** Regional Greenhouse Gas Initiative
- **Solar array:** A collection of solar panels electrically combined and coupled with other equipment to deliver solar-generated electricity.
- **Solarize:** A group purchase program for residential solar installation. An organized effort by a citizens group to vet qualified solar contractors, find interested customers for the solar contractor, provide assistance to customers concerning working with the contractors, and negotiate lower prices for the customers. This program is assisted by the U. S. DOE.
- **SolSmart:** DOE program for communities to increase support of Solar. A no-cost technical assistance program for local governments designed to increase the installation of solar arrays and help make it possible for more American homes and businesses to access affordable and renewable solar energy to meet their electricity needs. It is part of the U.S. DOE SunShot Initiative.
- **SREC (Solar Renewable Energy Credits):** Renewable Energy Credits for the generation of one megawatt-hour of electricity from solar arrays. See, also, REC and AEC.
- **Stakeholder:** A person or group that would be affected by a particular action or policy.
- **TCO:** Total cost of ownership.
- **Virtual Power Purchase Agreement (VPPA):** A long-term financial arrangement between a renewable energy supplier (the seller) and a customer that enables the customer to purchase electricity either at a fixed price or at a floating price depending on the value of the electricity at the time of supply to the customer.
- **VW Lawsuit Settlement:** Volkswagen agreed to spend \$14.7 billion to settle allegations of cheating on emissions testing of its vehicles. The settlement is divided into three distinct parts. Money from part of this settlement is being used by Pennsylvania to fund EV charging stations.
- **ZEV:** Zero Emission Vehicle. Under the ZEV regulations, three distinct vehicle designs are considered "zero emission," though to varying degrees: (1) Plug-in hybrid vehicles combine a conventional gasoline-powered engine with a battery that can be recharged from the electrical grid. (2) Battery electric vehicles run entirely on electricity and can be recharged from the electricity grid. (3) Hydrogen fuel cell vehicles run on electricity produced from a fuel cell using hydrogen gas.