

# **Springfield Township Energy Transition Plan: Clean Transportation By 2050**

## ***Executive Summary***

In January 2019, Springfield Township adopted a Renewable Energy Resolution committing to a clean energy transition goal for electricity by 2035 and for all municipal transportation and building heat to operate on clean energy by 2050. The effort to achieve the goal of clean transportation by 2050 involves a continuing conscious emphasis on energy usage and efficiency, not only with municipal sources of carbon emissions, but also among the larger community. This section of the Township's Energy Transition Plan discusses and provides recommendations for a transitioning of the municipal fleet, currently energized by fossil fuels, to vehicles and equipment that obtains renewable energy from the electric grid.

The greatest effect in reducing carbon emissions from municipal sources lies in electrifying all currently fossil fuel-fired vehicles and equipment owned and operated by the township. The benefits of electric vehicles are wide-ranging and well-documented. An electric car is a car which is propelled by one or more electric motors, using energy stored in rechargeable batteries. These vehicles can have significantly lower fuel costs and total costs of ownership compared with gasoline-powered vehicles. Importantly, they are one of the most promising ways of reducing carbon emissions from the transportation sector, which is the largest contributor to U.S. greenhouse gas emissions.

The municipal fleet of Springfield Township in Montgomery County includes a variety of fossil fuel-powered vehicles and equipment, from police patrol cars to garbage trucks to lawn mowers. Based on fuel usage in 2019, the township fleet emitted nearly 600 metric tons CO<sub>2</sub> equivalent (MTeCO<sub>2</sub>). Mobile sources comprised the largest combined municipal source, approximating over 60% of total emissions. The path toward ZERO municipal mobile emissions in Springfield Township has been initiated with the replacement of police patrol cars with hybrid (gas/electric) vehicles, followed by retirement of these hybrid cars as administrative vehicles. These hybrid vehicles, in addition to all vehicles and equipment utilized by Public Works with the exception of refuse, will be replaced by all-electric vehicles upon achieving the municipal goal of clean electricity in 2035. Refuse vehicles will be replaced by all-electric vehicles starting in 2040. This is a non-binding, staggered approach that can be altered as needed by the township.

Research on electric vehicles and equipment, including available technology and financial assistance, during the municipal procurement process is central to the inclusion of hybrid and electric-only vehicles and equipment in the township fleet. In addition, we recommend that Springfield Township take steps to encourage an increase of private EV purchase, such as promoting outreach and creating policies, to enable community-wide adoption of EVs. In developing policy, there should be an overarching goal of making Springfield communities more walkable and bikeable, therefore, more sustainable and healthy. A walkable neighborhood is one in which residents are able to accomplish many of their daily activities without a car.

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In November 2020, the Township Board of Commissioners made the decision to buy two hybrid police patrol vehicles for 2021, thus initiating the path to a clean municipal fleet. The first of these hybrid vehicles was patrolling the streets of Springfield in June 2021. The transition has begun!



## I. Introduction

The benefits of electric vehicles (EVs) are wide-ranging and well-documented. An **electric car** is a car which is propelled by one or more electric motors, using energy stored in rechargeable batteries. Compared to internal combustion engine (ICE) cars, electric cars are quieter, have no exhaust emissions and lower emissions overall. In the United States, as of 2020, the total cost of ownership of newer EVs is cheaper than that of comparable ICE cars, due to lower fueling and maintenance costs (*Consumer Reports, November 2020*). Charging an electric car can easily be done at a variety of charging stations; these charging stations can be installed at both houses and in public areas.

While an electric car's power source is not explicitly an on-board battery, electric cars with motors powered by other energy sources are typically referred to by a different name. For example, an electric car using solar panels as a power source is a solar car, and an electric car powered by a gasoline generator is a form of hybrid car. Thus, an electric car that derives its power from an on-board battery pack is a form of electric-only or battery electric vehicle (BEV). For the sake of clarity, the basic types of electric vehicles are defined in the table below.

<p><i>Electric Vehicle (EV)</i></p> <p>Overall term for vehicles that derive all or part of their power from electricity supplied by the electric grid. They include AEVs, HEVs and PHEVs.</p>
<p><i>All-Electric Vehicle (AEV)</i></p> <p>Vehicles powered by one or more electric motors. They receive electricity by plugging into the grid and store it in batteries. They consume no petroleum-based fuel and produce no tailpipe emissions. AEVs include <i>Battery Electric Vehicles (BEVs)</i> and <i>Fuel Cell Electric Vehicles (FCEVs)</i>.</p>
<p><i>Plug-in Hybrid Electric Vehicle (PHEV)</i></p> <p>Vehicles that use batteries to power an electric motor, plug into the electric grid to charge, and use a petroleum-based or alternative fuel to power the internal combustion engine. Some types of PHEVs are also called <i>extended-range electric vehicles (EREVs)</i>.</p>
<p><i>Hybrid Electric Vehicle (HEV)</i></p> <p>Low-emission vehicles that use an electric motor to assist gas-powered engines. All energy comes from gasoline.</p>

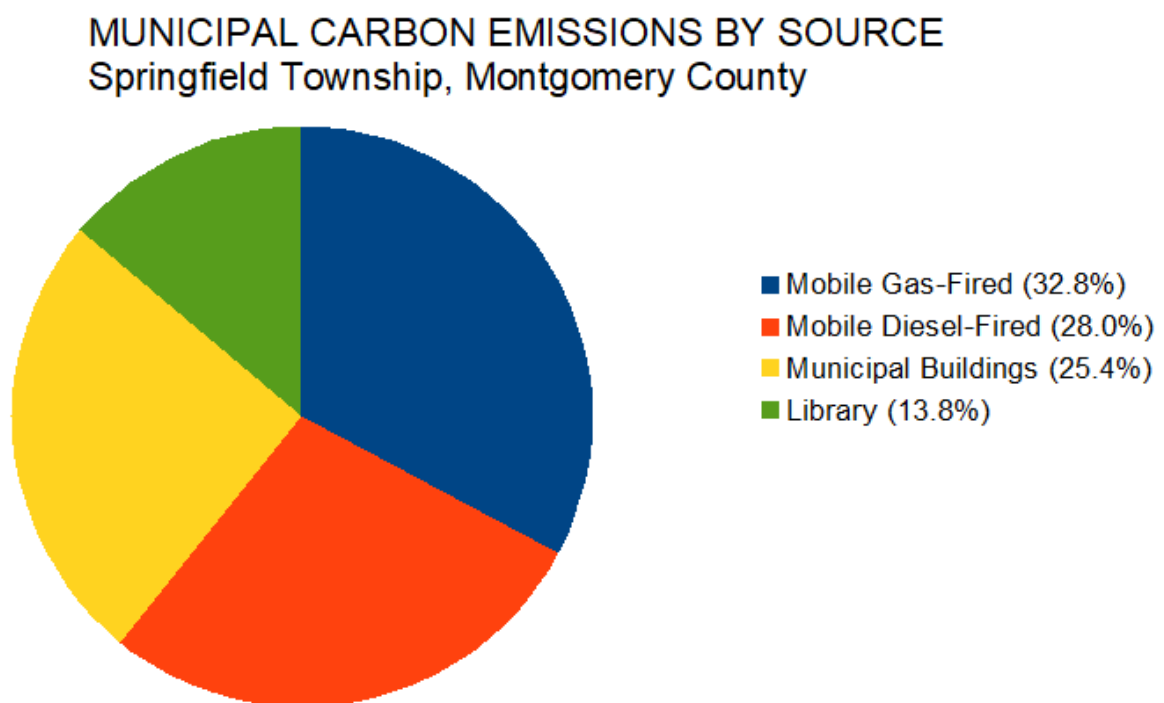
The reduction in tailpipe emissions from EVs ties in to public health benefits associated with better air quality. Furthermore, they reduce US dependence on foreign oil, which is beneficial for national security. As noted above, EVs can have significantly lower fuel costs and total cost of ownership (TCO) compared with gasoline-powered vehicles. Importantly, they are one of the most promising ways of reducing carbon emissions from the transportation sector, which is the largest contributor to US greenhouse gas (GHG) emissions.

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In the following sections, we will provide background on Springfield Township’s vehicle fleet inventory and fuel usage, using 2019 as a baseline, and discuss strategies to encourage the use of clean transportation by residents and business owners within township boundaries. These community strategies emphasize improved walkability and bikeability in the township to promote cleaner and healthier living. At the heart of our discussion, however, is a proposed pathway to ownership of a 100% clean municipal fleet by 2050.

## **II. Township Fleet**

The municipal fleet of Springfield Township in Montgomery County includes a variety of fossil fuel-powered vehicles and equipment, from police patrol cars to garbage trucks to lawn mowers. In 2019, Springfield Township used approximately 39,652 gallons of gasoline and 26,788 gallons of diesel fuel, spending approximately \$125,000 on fuel to power its fleet of vehicles. Based on fuel usage, the township fleet emitted nearly 600 metric tons CO<sub>2</sub> equivalent (MTeCO<sub>2</sub>). As can be seen from the chart of municipal carbon emissions shown below, mobile sources comprised the largest combined municipal source, approximating over 60% of total emissions.



It should be noted that the fuel usage and carbon emissions provided above include emergency vehicles, such as fire trucks and ambulances, that serve the community. These emergency vehicles may refill from fuel storage provided by the Township; however, the fire and EMS departments are self-standing entities not operated or managed by the Township. Although the emergency departments repay the Township for fuel used, emergency vehicle emissions are not included in the emissions reduction strategy included later in this section.

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Replacement vehicles and equipment for Springfield Township are purchased on a staggered schedule. The procurement process for the Township involves use of **COSTARS**, the Commonwealth of Pennsylvania's cooperative purchasing program. This program serves as a conduit through which registered and eligible local public procurement units (LPPUs) and state-affiliated entities (together "Members") are able to leverage contracts established by the Pennsylvania Department of General Services (DGS) to effectively and efficiently identify suppliers with whom to do business. In the case of police and administrative vehicles, two patrol vehicles are replaced on an annual basis, and retired patrol vehicles are then used as administrative vehicles. The Township utilizes a variety of models for the police fleet, including the Ford Interceptor. In November 2020, the Township Board of Commissioners made the decision to buy two hybrid police patrol vehicles for 2021, thus initiating the path to a clean municipal fleet.

A municipal inventory of gas- and diesel-powered mobile sources is provided below:

Department	Vehicle	Number of Gas-Powered	Number of Diesel-Powered
Police	Police Cruisers	14	
Administrative	Administrative Vehicles	5	
Public Works	Pickup	9	
	Small Highway Dump	4	
	Bucket Truck	1	
	Riding Mowers	5	
	Small Snow Equipment	5	
	Portable Generators	10	
	Chain Saws	8	
	Backpack Blowers	4	
	Refuse & Recycle Trucks		7
	Large Highway Dump		4
	Winter Maintenance Truck		4
	Sweeper		1
	Sewer / Flush Truck		1
	Compressors		2
	Tub Grinders		1
	Leaf Machine		1
	Tractor		1
	Loader		3
	Building Generator		4
<b>TOTAL</b>		<b>65</b>	<b>29</b>

### III. Electric Vehicle Charging Opportunities

Currently, most EVs charge at home or work. Two types of EV charging meet national Society of Automotive Engineers (SAE) standards:

**Level 1** charging uses a standard, grounded, three-prong, 120-volt outlet with a ground fault circuit interrupter and also requires a 15- to 20 amp fuse or circuit breaker. The typical charge time for 40 miles of electric driving is 8 to 10 hours at Level 1. BEVs with larger batteries and extended electric driving range may take as much as 12 to 21 hours to fully charge at Level 1.

**Level 2** charging requires the installation of a 240-volt charging station (also known as electric vehicle supply equipment or EVSE) on a dedicated 40-amp circuit. Level 2 charging will typically charge an EV in about half the time of Level 1 and uses about the same amount of electricity as a central air conditioning unit when charging. This type of station may require upgrades to the home or building's electrical service.

Manufacturers also are working on fast-charging technologies that can recharge certain types of EVs in 30 minutes or less. **DC Fast Charging** (100 miles / hour of charging) is suited for drivers with no at home charging option (ex: those with no off-street parking availability) and for those on long trips who need to fill up without waiting a long time.

The various types of standard charging technology are shown in the graphic below.

	Level 1 (120V)	Level 2 (208/240V)	DC Fast Charging
Typical Duration of Charge Event	6-10 hours	1-3 hours	30 minutes
Range per hour of charging	5 miles	10-20 miles	75+ miles
Typical Users/Uses	<ul style="list-style-type: none"><li>▪ Home use</li><li>▪ Employee parking during the work day</li><li>▪ Long term (8+ hours) parking at a commuter lot, charging while on a carpool, walking or transit trip</li></ul>	<ul style="list-style-type: none"><li>▪ Home use for EV owners wanting a faster charge</li><li>▪ Charging in a commercial area while shopping or doing business</li><li>▪ Parking at a commuter lot and charging while on a carpool, walking or transit trip</li></ul>	<ul style="list-style-type: none"><li>▪ Fast charging while on a long trip in order to reach a destination or extend the length of a trip</li></ul>
Desirable Characteristics	<ul style="list-style-type: none"><li>▪ Workplaces</li><li>▪ Lit, safe area</li><li>▪ Pedestrian and transit connections</li></ul>	<ul style="list-style-type: none"><li>▪ Shopping, dining, restrooms etc. within walking distance</li><li>▪ Transit service</li><li>▪ Pedestrian facilities</li><li>▪ Lit, safe area</li></ul>	<ul style="list-style-type: none"><li>▪ Amenities at the charging site (food, coffee, Wi-Fi)</li><li>▪ Lit, safe area</li></ul>

Details regarding electric vehicle charging equipment may be found in the [Electric Vehicle Charging Station Guidebook](#), produced by the Vermont Energy Investment Corporation.

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For commercial EVSE installations, the township ordinance should clarify zoning requirements, allowing for such installations except in extreme circumstances where such installations would create hardships on property owners. Community or Design Guidelines should also be reviewed where they would arbitrarily create unnecessary barriers to EVSE installations, and where appropriate, they should be curtailed. The same should apply to Existing Use Permits. More detailed recommendations to promote EV use are provided in later sections.

## **IV. EV Chargers Installed in Public Lots**

There are many benefits that come with installation of public EV charging stations. Owners of EVs will preferentially shop in locations with charging stations and the presence of these stations can attract outside customers into a new place in order to charge. It should be noted that no charger is instantaneous; drivers need something to do while charging.

Currently, the Township has two public Chargepoint CT4000 charging stations. The charging stations are located in the municipal library parking lot at 8900 Hawthorne Lane in Wyndmoor, Pennsylvania, in the vicinity of the township administrative building. Although there are only two active chargers available at the station, infrastructure was put in place to provide for easy expansion of the station at the municipal campus. From the time of installation through October 2020, the chargers have expended 1.108 MWh of energy in a total of 127 charging sessions, thus avoiding 465 kilograms of GHG emissions.



Funding for this program was provided through the Pennsylvania Department of Environmental Protection (PADEP) Level 2 EV Charging Rebate Program. Approximately \$7.7 million is being allocated over a 5-year period to fund this rebate program for the installation of Level 2 EV charging equipment. Rebates will be provided for Level 2 EV charging equipment for:

- Public use at government owned property
- Public use at non-government owned property



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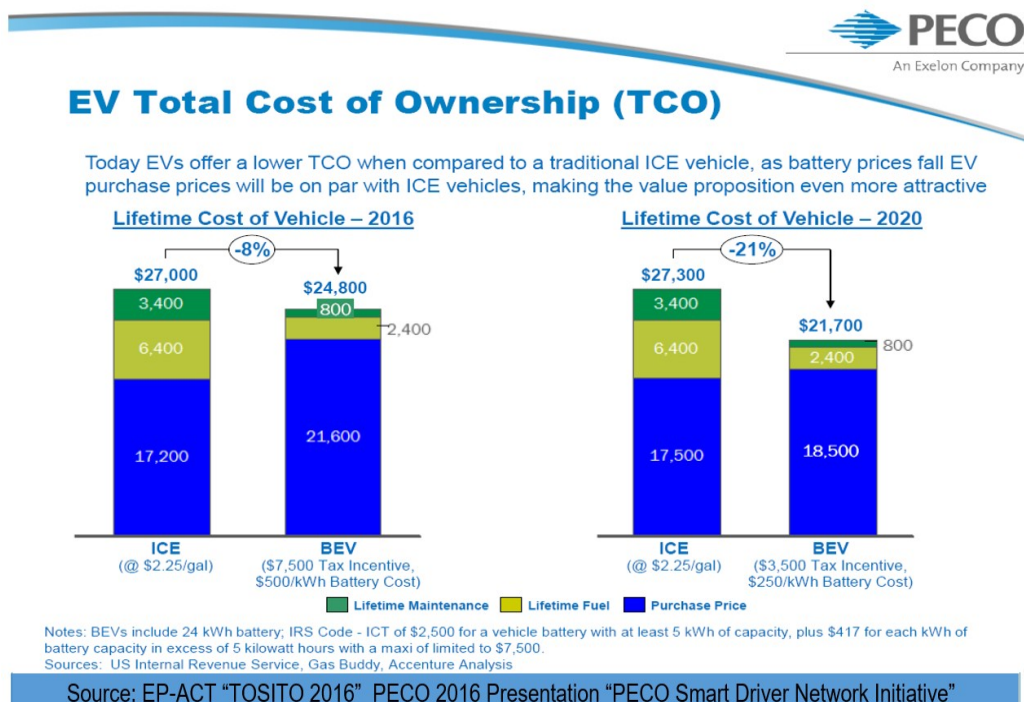
- Non-public use at work places
- Non-public use at multi-unit dwellings

Pennsylvania organizations that submit complete and eligible applications will be provided rebate vouchers on a first come, first served basis. All projects for which a rebate is requested must be approved in advance by the PADEP. Complete applications that meet eligibility criteria will receive a voucher to hold their rebate funding for their project.

## V. Getting to 100% Clean Transportation

The most recent and comprehensive assessment of the energy usage and emissions of GHGs in southeastern Pennsylvania was conducted for the year 2015 by the Delaware Valley Regional Planning Commission (DVRPC). Based on the 2015 inventory, the emissions from energy use in buildings and in transportation together account for 95% of the GHG emissions in Springfield Township. Aside from reducing our generation of solid waste, virtually all of the GHG emissions in the township come from building energy usage and highway vehicles.

In order to eliminate mobile sources of GHGs, the miles driven per person must be reduced and both public and private vehicles must transition to non-fossil fuel sources. A variety of alternative fuel sources have emerged in recent years, including plant-based fuels, hydrogen fuel cells, and electric batteries. As outlined in the PADEP's [Drive Electric Roadmap](#), EVs are the alternative fuel vehicle of choice. After accounting for fuel cost savings, an electric vehicle over its lifetime is comparable to or costs less to own than a fossil fuel vehicle (see graphic below). In order to achieve the required degree of ownership of EVs in Springfield Township to reduce GHGs, infrastructure must be installed to facilitate charging.





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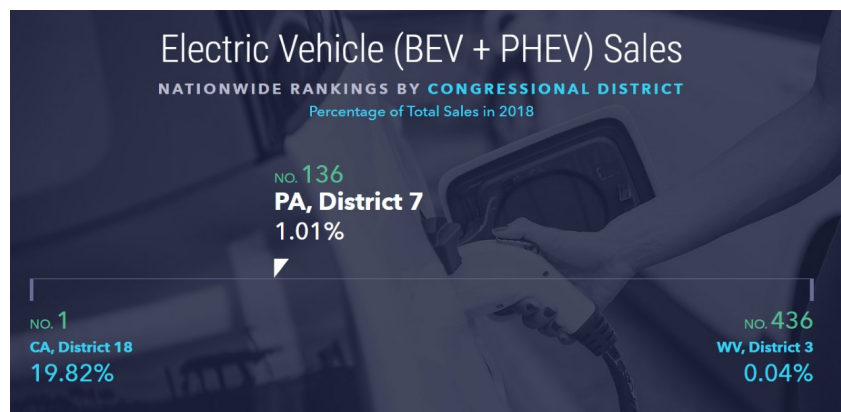
While vehicles comprise the majority of liquid fuel use in Springfield, other small combustion engines should be phased out across the township as well. These include lawn mowers, leaf blowers, and gasoline-powered portable outdoor lighting. These small engines contribute noise and disproportionately high levels of particularly dangerous air pollution ([EPA](#)) -- with estimates of an hour of lawn mowing releasing the same amount of pollution as 100 to 350 miles of car travel. Strategies to phase out these small combustion engines should also be developed.

In general, to eliminate GHG emissions from highway transportation, the following strategies must be applied within our township and beyond:

- Reduction in miles traveled through increased use of mass transit and non-vehicular travel (e.g., bicycles and walking), as well as compact land use patterns and tele-commuting.
- Increased fuel efficiency in ICEs.
- Replacement of ICE vehicles with EVs and hydrogen vehicles (primarily expected for use in heavy duty vehicles). An EV is 68% more efficient than an ICE vehicle because it converts the power to locomotion with considerably more efficiency than an ICE vehicle.
- Transition of the grid that supplies electricity to vehicles and equipment to 100% renewable, fossil fuel-free sources.

### **V.a. Strategies to Encourage Clean Transportation for Residents and Business Owners**

While existing EV owners generally report high levels of satisfaction with their vehicles, the vast majority of consumers still have little understanding and many misconceptions about the capabilities and advantages of EVs, how they operate, and the nature of the charging/fueling experience. It's not surprising then that most consumers are not considering an EV for their next car purchase or lease. Pennsylvania has committed to transitioning vehicles to electric through the Drive Electric program. A number of resources are available discussing technology and strategies to build-out infrastructure and to encourage uptake of EVs ([PAEV Roadmap](#) and [DEP EV information](#)), and where a summary of current EV technology can be found. According to the Alliance of Automobile Manufacturers survey of EV sales in 2018, our Pennsylvania district (PA District 7) ranks 136 out of 436 in the country for EV sales (see [In Your State | Alliance of Automobile Manufacturers](#)).



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We recommend that Springfield Township take the following steps to encourage an increase of private EV purchase:

- *Create policies to enable community-wide adoption of electric vehicles:*
  - Review existing state and municipal ordinances related to EV readiness and EV charging.
  - Stay informed on grants available to fund EV transition (e.g., PADEP's Alternative Fuels Incentive Grant and the Volkswagen Zero Emission Vehicle Fund).
  - Adopt EV-ready building codes for new one- and two-family homes.
  - Adopt ordinances requiring a minimum percentage of EVSE-ready parking spaces in new or re-constructed residential and commercial parking structures.
  - Revise residential and commercial building codes to require supporting electric infrastructure for EVSE in new construction.
  - Mandate EV readiness for ≥50% of non-residential parking spaces. For example, this would include mandating that 20% of new parking spaces be charger ready (run conduit) and right-size electrical service for additional 40 Amp circuits for commercial and industrial accounts.
  - Identify ways to incentivize businesses and multi-unit dwellings to install chargers (e.g., tax abatement rules, zoning relief requests).
  - Review and update permits for EV chargers for residents.
    - Determine the current permitting process to install a charger and work to streamline this.
    - Put information on the process on the Township website/Facebook page and in a brochure.
  - Simplify EV charger permitting for commercial and industrial sectors.
  - Adopt no idling ordinances.
  - Coordinate EV charging infrastructure development with state plans, especially fast charge plans.
- *Support community-wide adoption of electric vehicles:*
  - Support the brand-neutral [Drive Change. Drive Electric.](#) campaign in partnership with automakers and work to bring in additional partners, highlight the expanding network of zero-emission vehicle charging and fueling infrastructure, and amplify the campaign messages and materials.
  - Make strategic investments in highly visible Level 1 and Level 2 chargers in state- and municipally-owned parking lots in central areas and at popular destinations (e.g. parks year-round).
  - Promote private investment in EVSE in central areas or parks with low-cost, long-term leases or no-cost use permits.
  - Deploy Level 1 and Level 2 charging stations in parking lots and garages located at high-traffic areas, and encourage private sector investments at these locations with long-term low-cost leases or no-cost use permits.
  - Deploy visible and easy to follow signage along access routes to charging stations and on site, respectively, to guide EV drivers to charging locations.

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- Expand EV charging at schools, municipal lots, workplaces, multi-unit housing (Level 1 and Level 2 and DC fast charge at transportation corridors).
- *Promote community outreach to support adoption of electric vehicles:*
  - Organize events in collaboration with EVSE providers, automakers, business-focused NGOs, business associations, and other partners to provide high-level recognition for business leaders that commit to investments in workplace charging and fleet electrification, such as the “Drive the Dream” events held in California and Vermont.
  - Offer workshops, webinars and educational materials for employers to support decision-making on workplace charging and promote efficient and high utilization of charging stations.
  - Convene stakeholders to encourage and expand EV charging at schools, municipal lots, houses of worship, workplaces, multi-unit housing (Level 1 and Level 2 and DC fast charge at transportation corridors).
  - Promote participation in [National Drive Electric Week](#) (NDEW) to learn from EV drivers and owners. Promote NDEW to town commercial, industrial sectors, schools and residents.
  - Implement an EV financial benefits awareness campaign (e.g., [Plug In America](#), NDEW, and Drive change Drive Electric campaigns).
  - Offer and promote existing state rebates, income tax credits, and sales and excise tax exemptions, and consider new programs and outreach efforts that could improve access to incentives among moderate and lower income consumers. For example: expanding eligibility to used vehicle purchases.

A key to reducing the need for vehicle use is to create **walkable and bikeable neighborhoods**. A walkable neighborhood is one in which residents are able to accomplish many of their daily activities without a car. Walking and biking are pleasurable, safe, and the transportation of choice. Such neighborhoods typically have a mixed use center with all of the following in a relatively small area:

- Shops and restaurants (including stores for everyday necessities like hardware and groceries)
- Localized community resources (neighborhood library, community center, public pool, school, parks and recreation)
- Offices/jobs
- A variety of housing types
- Good public transportation to connect neighborhoods and jobs

Transitioning Springfield Township to a more walkable series of neighborhoods centered around business districts in Erdenheim, Flourtown, Oreland and Wyndmoor would likely improve public health, reduce vehicle use, boost the local economy and real-estate value, while bringing neighbors out of their cars and face-to-face. *Section VI* below outlines other strategies and considerations for improved walkability and bikeability, including a list of existing and planned trails and trail circuits.

## **V.b. Strategies to Transition to a Clean Municipal Fleet**

Municipalities seeking to electrify their fleets must consider several factors, such as the best applications for EVs, ensuring adequate charging infrastructure, and training fleet drivers. This plan focuses on the adoption of light-duty zero emission vehicles; however, promising new developments in the application of zero emission technologies to medium- and heavy-duty transportation will complement the development of the light-duty (e.g., passenger vehicles) EV market by increasing demand for advanced batteries and chargers, and by raising public awareness. As with light-duty vehicles, continuing progress in reducing production costs (for both batteries and fuel cell systems) will continue to translate to real-world improvements in affordability and total operating cost. Additionally, savings related to EVs could provide a favorable acceptance of the technology by township residents, and *should be shared with the public*.

Springfield has limited resources; there are no surplus vehicles in the police fleet, therefore long charging times are a constraint. The recent commitment taken by the township to purchase hybrid police patrol cars is echoed by similar purchases in neighboring townships, and will create confidence in making future purchases of HEVs and AEVs based on comfort with the technology and savings in fuel usage, primarily during idling. The demands of police / highway vehicles and their cargo may limit the types of immediate improvements possible in the fleet.

In addition to purchasing more efficient or electric vehicles, there may be operational changes that can be made. It may be advisable for the township to investigate the number of hours each vehicle spends idling to see whether there are opportunities to reduce this. For most automobiles, idling for more than ten seconds wastes more fuel than simply turning off and restarting. Also, many studies have shown that frequent restarting has little effect on the mechanics of an automobile: excessive idling can result in incomplete combustion and can damage engine components, including cylinders, spark plugs, and exhaust systems.

Research on EVs, including available technology and financial assistance, during the municipal procurement process is central to the inclusion of hybrid and electric-only vehicles and equipment in the township fleet. There are sources of information on grants, EV technology, and municipal procurement that would help with the procurement process, such as the [Climate Mayors Electric Vehicle Purchasing Collaborative](#), the PADEP [Energy Programs Office](#), and the Pennsylvania Drive Electric program ([PAEV Roadmap](#)). A particularly useful resource is the [Electric Vehicle Resource Kit for Municipalities](#) prepared by the DVRPC: this toolkit is targeted to municipal managers and addresses concerns related to the purchase and incorporation of EVs into municipal fleets in Pennsylvania and New Jersey. Other recommendations for transition to a clean municipal fleet are listed below.

- Conduct Fleet Vehicle Audits to assess the availability, costs, benefits, and barriers to utilizing alternative fuels and vehicles, and help to identify other fuel-saving opportunities.
- Retain an EV integration company to accelerate town fleet economic, energy and emissions savings through planned fleet decarbonization.

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- Conduct and keep an updated, detailed GHG inventory of transit-related emissions in the township.
- Advance electrification of the fleet by setting municipal near- and long-term electrification goals:
  - Develop a 10 year fleet decarbonization plan and process
  - Raise awareness and acceptance of EVs by offering information, maintenance training and opportunities for test drives to fleet administrators
  - Conduct fleet-wide inventories of vehicles that could be replaced with EVs; quantifying potential fuel and maintenance cost savings and encouraging vehicle selection based on total cost of ownership; and, assessing opportunities to secure the benefit of the federal electric vehicle tax credit through leasing or other means
  - Lead by example by installing workplace chargers for full-time employees
  - Explore innovative ways to reduce the total capital and operational costs of in-fleet charging stations, for example, through EVSE sharing agreements with other public institutions and private businesses
- Consider cooperation with other municipalities, such as collaboration on EV-related events and in development of an EV and EV charger adoption roadmap to save \$100 towns in TCO compared to driving as usual.
- Establish Municipal Procurement policies to purchase low GHG-emitting vehicles to replace existing or “retiring” conventional, fossil-fuel vehicles.
- Set energy efficiency and fuel economy goals for the municipal fleet (e.g., 50 mpg by 2025, 100 mpg by 2028).
- Advance electrification of the municipal fleet through employee education.
  - Municipal fleet representative participates in National Drive Electric events
  - Promote driver behavior and/or incorporate technologies to reduce vehicle engine idling and other best practices
  - Reward workplace charging (Workplace chargers significantly increase EV miles traveled (eVMT); employees are 20 times more likely to drive EV if they can charge EVs at work.)

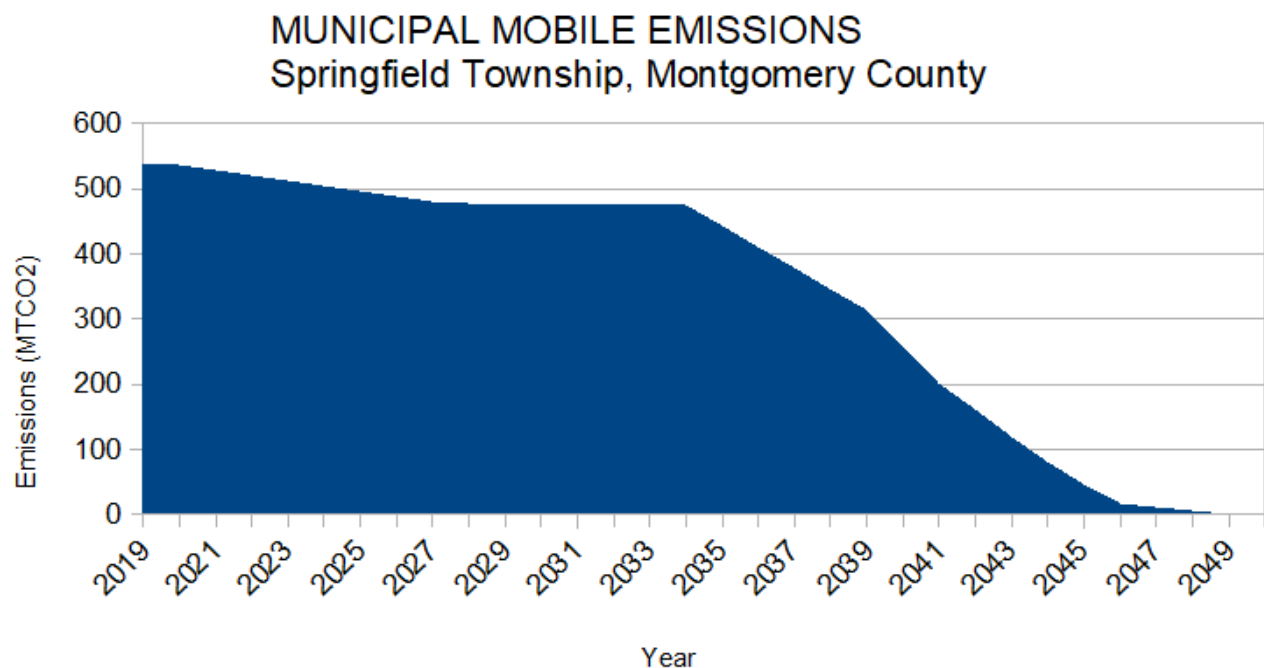
The following steps provide a **path toward ZERO municipal mobile emissions** in Springfield Township. As noted previously, emergency vehicles are not included in the emission reduction strategy as the township does not have ownership of these vehicles; in addition, vehicles and equipment owned by the School District of Springfield Township are also not addressed here.

1. Police patrol vehicles will be replaced by hybrid vehicles (HEVs), two vehicles per year, starting in 2021. Administrative vehicles will be replaced with retired police vehicles.
2. Police patrol vehicles will be replaced by electric-only vehicles (BEVs), two vehicles per year, starting in 2035 (or earlier). The year 2035 was chosen conservatively, as this year is the township deadline for transitioning municipal sources of electricity to 100% renewable. Administrative vehicles will be replaced with retired police vehicles.
3. Gas-fired Public Works vehicles and equipment (i.e., pick-up style trucks, dump trucks, loaders and tractors) will be replaced by electric-only vehicles and/or equipment, at the equivalent of one vehicle per year, starting in 2035 (or earlier).

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4. Diesel-fired Public Works vehicles and equipment, with the exception of refuse vehicles, will be replaced by electric-only vehicles and/or equipment, at the equivalent of two vehicles per year, starting in 2035 (or earlier).
5. Refuse vehicles will be replaced by electric-only vehicles, one vehicle per year, starting in 2040 (or earlier).

This conservative, staggered approach allows for a trickle-down of available, affordable technology to a smaller municipality such as Springfield Township. These strategies are non-binding and representative, but serve as a guide for achieving a 100% clean fleet by 2050. *The most important aspect of this approach is to include research and review of alternative fuel vehicles and equipment in the township's procurement process.* The chart *Municipal Mobile Emissions* provided below is a representation of the emissions reductions achieved by this strategy.



Small equipment, which is gasoline- or diesel-powered, generates enormous amounts of toxic air pollution. Steps should be taken to transition this equipment to electric and to reduce the need for it, including:

- Reduce mowing: Areas of parks which are not used for recreation and which could be converted to meadow should be actively identified and steps taken to make the transition.
- Replace lawn care equipment with electric models as available; otherwise, purchase the lowest emissions models.



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In order to achieve ZERO carbon emissions, full electrification of the municipal fleet is a necessity **in combination with** achievement of 100% renewable energy. Emissions of EVs are only as good as the source of its electricity. The U.S. Department of Energy Alternative Fuels Data Center has a useful tool to determine how the source of your electricity has an effect on the carbon footprint of your electric vehicle (see [https://afdc.energy.gov/vehicles/electric\\_emissions.html](https://afdc.energy.gov/vehicles/electric_emissions.html)).

## **VI. Moving Forward**

Based on experience in other neighboring communities, reducing the necessity of private car use in Springfield will improve property values, grow the local economy, reduce air pollution, promote health through physical activity, strengthen a sense of community through increased human interactions, and create a more equitable society. The basic structure of neighborhoods organized around mixed use and commercial districts, and connected by public transit, exists in our township. The Township should take clear steps to develop these neighborhood commercial and mixed-use districts and to enhance non-car modes of transportation within and between these neighborhoods.

### **VI.a. Existing and Planned Trail Systems**

Although Springfield Township is a small municipality compared to surrounding townships, it offers access to many different area trails and trail systems:

**Piszek Preserve**, Wissahickon Trails (formerly Wissahickon Valley Watershed Association). This is a relatively short paved trail that is located within the township on the western side of Pennsylvania Avenue in the Oreland section of the township. The paved trail extends from the newer housing developments of Springfield Manor to Penn Manor. This area is frequently flooded during intensive storm events as Sandy Run Creek overruns its banks; Sandy Run Creek empties into Wissahickon Creek. This trail has limited access by foot or bike. There is a visitors parking lot located at Springfield Manor; however, even local residents along Pennsylvania Avenue cannot safely walk to this trail due to lack of sidewalks along Pennsylvania Avenue and the high traffic risk from crossing Pennsylvania Avenue to get from the eastern side of the Preserve (largely located within Upper Dublin Township) to the western side.

<https://wissahickontrails.org/explore-the-watershed/find-your-trail/piszek-preserve>

**Sandy Run Park**, Springfield Township. Separated from Piszek Preserve by the train tracks serving the SEPTA Lansdale-Doylestown Regional Rail Line, this 14-acre park can be found on Walnut Avenue in the Oreland section of the township. It contains an abandoned quarry that was filled with water many years ago. The township is planning to place a walking trail by Sandy Run Creek and Sandy Run Country Club to better connect walkers from Oreland to the Sandy Run Park. Other notable municipal parks with existing or future walking trails located within Springfield Township include **James A. Cisco Park** on Montgomery Avenue and **Mermaid Park** on Mermaid Lane.

<https://www.springfieldmontco.org/departments/parks-recreation/parks-facilities/>

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In addition, a planned use of the site of the former Enfield Elementary School located at Church and Paper Mill Roads in Oreland may include walking trails along the perimeter of the property. This property is owned by the School District of Springfield Township.

**Green Ribbon Trail**, Wissahickon Trails. As noted on the trail's website, this trail begins at Parkside Place in Upper Gwynedd Township and ends at Stenton Avenue in Whitemark Township. It is over 12 miles in lengths and shadows the Wissahickon Creek for this entire stretch. Although this trail does not fall within the township borders, there are several local access points, including along West Valley Green Road and at the **Fort Washington Park Flourtown Day Use Area** on West Mill Road. This trail system also provides access to and/or through several of the preserves owned and managed by Wissahickon Trails. Piszek Preserve, described above, is also owned by Wissahickon Trails, but is not currently connected to the Green Ribbon Trail. Wissahickon Trails is a non-profit organization that preserves land for public access; there is a long-term commitment to connecting all of its trails and preserves, as well as connecting to other area trail systems (such as that in Wissahickon Valley Park in Philadelphia).

<https://wissahickontrails.org/explore-the-watershed/find-your-trail/green-ribbon-trail-2>

There is a planned **Wissahickon Trail Connector**, which will provide a missing segment to connect the trail located at Forbidden Drive in the Wissahickon Valley Park (see below) to the Green Ribbon Trail end segment found at Stenton Avenue (in Whitemarsh Township). Plans to connect and expand existing trails with Montgomery County can be found in the [MontCo 2040: A Shared Vision](#) plan.

**Wissahickon Valley Park**, Friends of Wissahickon and Philadelphia Parks & Recreation. This park, located within the City of Philadelphia, comprises 1,800 acres of land that follows Wissahickon Creek from the intersection of Germantown and Northwestern Avenues down to Lincoln Drive and the outlet of the creek into the Schuylkill River. There is walkable/bikeable access for township residents that live along the Lafayette Hill panhandle of the municipality, while other residents may drive and park at access points on Northwestern Avenue and at Bells Mill Road.

<https://fow.org/visit-the-park/>

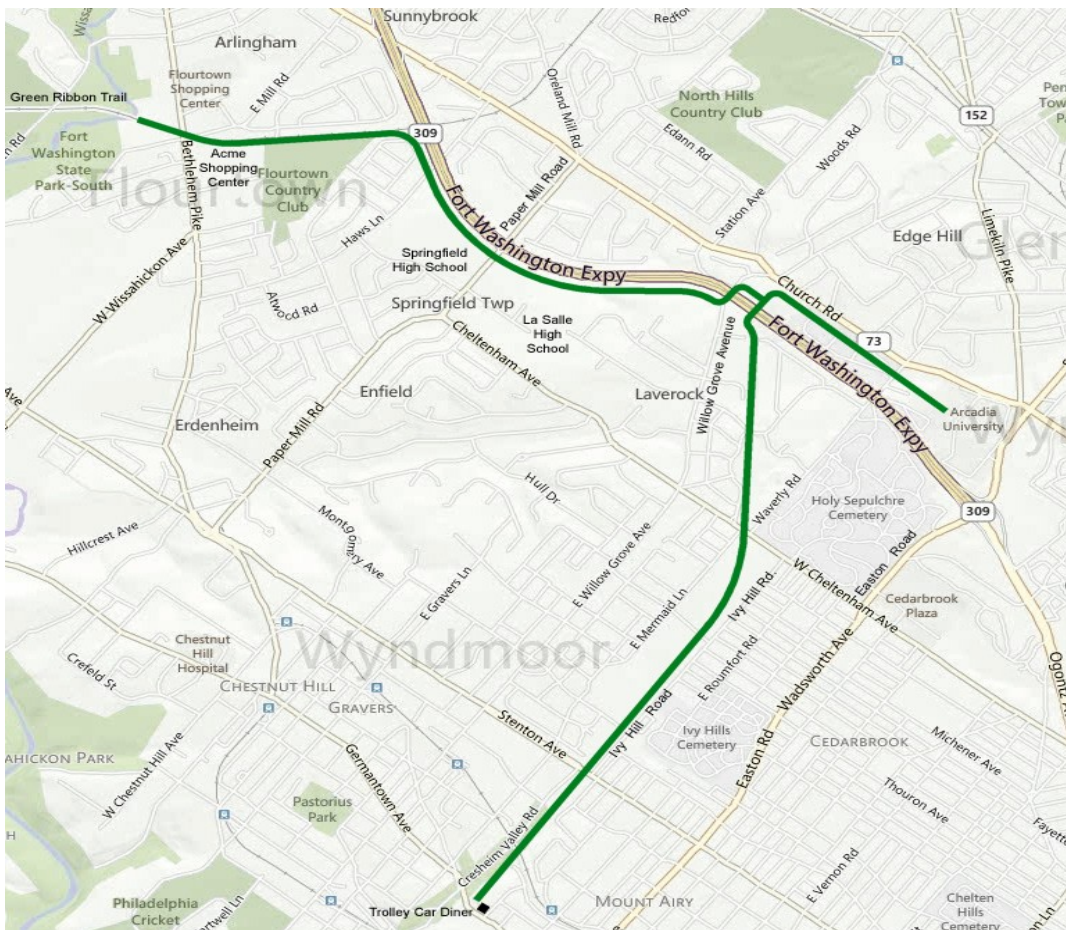
**Fort Washington State Park**, Pennsylvania Department of Conservation & Natural Resources. Although most of this Pennsylvania state park is located outside of township borders, there are several local access points to this park (and a portion of the Green Ribbon Trail within the park). Walkable/bikeable access to this park and all of its resources, camping sites, and trails can primarily be found to the southernmost portion via the Flourtown Day Use Area off West Mill Road. As noted above, the Green Ribbon Trail extends far to the north of the township.

<https://www.dcnr.pa.gov/StateParks/FindAPark/FortWashingtonStatePark/Pages/default.aspx>

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**Cresheim Trail,** The Cresheim Trail is part of a 750-mile multi-use trail circuit within the Greater Philadelphia region, which includes Montgomery County. There is planned expansion (see map below) of this trail system that would potentially connect the Green Ribbon Trail at the southern portion of Fort Washington Park, along Route 309 within the township, and then through the corridor between Mermaid Lane and Ivy Hill Road in the Wyndmoor section of Springfield Township. This stretch in Wyndmoor would potentially be linked to Mermaid Park, a municipal park that will be upgraded with its own small trail circuit around an existing pond. This proposed expansion of the Cresheim Trail section would connect to the existing trail along Cresheim Valley Road in Philadelphia (and the Fairmount Park system located within the city). A figure showing the proposed expansion is provided below.

<https://cresheimtrail.org/>



**Morris Arboretum,** University of Pennsylvania. This 92-acre garden is partially located within the western “panhandle” section of the township along Northwestern Avenue. Although the Arboretum may be within walking/biking distance for some residents, it does require a fee to gain access.

<https://www.morrisarboretum.org/>

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Many of the trails described above are part of the **Circuit**, which is a 750-mile network of multi-use trails planned for the Greater Philadelphia region.

### **VI.b. Recommendations for Township Planning**

The following recommendations address urban planning and walkability.

- **Put cars in their place.** Adopt a resolution supporting non-car-based transportation and recognizing that building bigger streets does not improve congestion but increases traffic. This resolution can guide new road and development projects.
- **Increase mixed use districts.** In a primarily residential community like Springfield, it is almost mandatory to own a private vehicle to complete the ordinary tasks of daily living. With only a few exceptions, residents are not able to walk to restaurants, the grocery store, or the doctor. Areas of the Township appropriate for adding additional mixed-use zoning should be identified. Where mixed use zoning currently exists, but the commercial uses are under-represented, efforts should be made to develop these often vacant buildings into businesses serving day-to-day resident needs. Also, allowances should be made for increased housing density.
- **Get the parking right:**
  - Price parking to allow for ~85% occupancy, coordinate prices of off-street parking, curbside parking, and residential permits to ensure space is appropriately used. The goal should be to limit long-term employee and transit parking to off-street while increasing turnover of curbside parking near merchants. For future street-scape improvement, consider using parking lot and meter revenues in their respective neighborhoods so that there is a positive benefit to the community to offset the increased cost of parking and/or increase in traffic in newly developed commercial areas.
  - Remove minimum parking requirements for development. Consider use of “in lieu” fees in which building owners pay a fee towards a central, shared parking lot in a business district. Where parking is dedicated to a given building, parking is ideally situated behind the building.
  - Consider an (electric) car share and carpool service in Springfield to reduce the number of cars that are rarely used or which spend the entire day parked at the train station. A single carpool driven by a professional driver making 3 trips/hour with 3 passengers/trip could reduce the number of cars parked at the station by nearly 30.
- **Let transit work:** Springfield Township, in collaboration with other Montgomery County communities, must work with SEPTA to improve public transit services.
  - More **frequent rail service** should be restored to Oreland, North Hills, Wyndmoor and Chestnut Hill train stations. Commuters who may have gotten on at these small neighborhood stations are now forced to drive longer distances and park at other stations.

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- A limited number of bus routes currently run approximately 1/hour. This effectively limits ridership to those who cannot afford cars, forcing economically disadvantaged citizens to have hours-long commutes to travel short distances. More and better connected routes with access to places that residents want to go should be added. Service should run no less frequently than every 10 minutes. Transit pass pricing should be more equitable, with discounts for children and/or families and the economically disadvantaged. Use small (electric) buses which can be more easily filled with people and fit better on our narrow streets. If SEPTA refuses to consider these changes, find a private vendor to pilot service in Springfield either alone or with neighboring communities.
- Create **transit-oriented development** overlay districts surrounding the Oreland regional rail train station to encourage people to “live, work, and play” near transit, further reducing the need for private cars.
- **Protect Pedestrians:**
  - Work with PennDOT and other **road planners** to ensure that intersections and street widths are appropriate for the surrounding neighborhoods. Excessively wide, straight streets have been shown to increase speeds and create a sense of being unsafe for pedestrians and cyclists. Converting the curb lane to parking, tree plantings or a bicycle lane where appropriate will protect pedestrians, reduce car speeds, and promote cycling. Narrowing lanes in residential neighborhoods could allow for addition of bicycle lanes and will slow cars.
  - The most walkable cities have small blocks or large blocks with many **pedestrian cut-throughs**. While Springfield’s blocks are mostly established, this should be considered in any new developments. For existing long blocks, work with neighbors to identify key places where a bridge or a path could greatly shorten a long walk-around and allow pedestrians to walk on a quieter path. *It should be noted that the Springfield residents that live along the Pennsylvania Avenue corridor are disconnected from the township at-large by the train tracks that serve the Lansdale-Doylestown SEPTA line.*
  - Ensure pedestrian crossings are safe. At busy intersections, reduce right on red (especially continuous right turns with yield sign), and implement Leading Pedestrian Interval (LPI) which gives pedestrians approximately 3 seconds to start walking before cars get the green light to turn. This improves visibility of the pedestrian to the turning motorist. Add crossings where they currently do not exist.
  - Develop a **public information campaign** coupled with signage and ticketing to modify motorist behavior regarding crosswalks.
  - Develop a plan to provide **sidewalks** and safe routes for pedestrians where needed in the township. An excellent resource for analyzing the availability of pedestrian-safe zones is the DVRPC [Pedestrian Portal](#). Also, the PennDOT page contains information related to training and funding to create [Safe Routes to School](#).
- **Welcome Bikes:** Adding cycling infrastructure to increase cycling activity has been shown to benefit the economy, attract new residents, increase housing prices, and improve health. In



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addition, as the number of cyclists in a community increases, motorists become more cautious, speeds are reduced and pedestrian and cyclist safety improves.

- Communicate all road improvement plans to Montgomery County regional planning prior to finalization; their bike infrastructure specialist can provide input regarding bike facilities.
  - Through community meetings in each Ward, identify areas for improved bike (and pedestrian) infrastructure.
  - Invest in a professional planner to develop an integrated biking plan (both on road and multi-use trail) for the Township. Ensure connectivity with surrounding communities, the county, and the local and adjacent trails.
  - Ensure that new developments incorporate appropriate biking infrastructure.
- **Plant Trees.** In Philadelphia, there is a 20-degree difference in temperature between affluent and poor neighborhoods in summer. This temperature difference is linked to the presence of more trees in affluent neighborhoods. In addition to shade, trees absorb substantial storm run-off, clean the air, absorb GHG emissions, and provide Springfield with one of its unique characteristics.
    - With the help of the Shade Tree Commission and community groups, identify streets and parks that need to have trees added or replaced.
    - Create a team consisting of neighbors and organizations focused on tree planting (e.g., Audubon, Tree Tenders). Develop a plan and identify funding to purchase, plant, water, and tend these trees.
    - Native trees should be used, with species selection favoring those more resilient.
- **Make Friendly and Unique Faces:** Commercial development should be done to support street life and make people want to get out of their cars. Interesting and inviting design can make a long walk feel shorter. In addition, creating a sense of an enclosed space rather than a wide open one is psychologically more attractive to humans.
    - Parking should be as invisible as possible. Walking past a large strip of asphalt is both boring and, in summer, scorching. Surface parking should be behind buildings, greenery or other structural façade. Parking structures should be masked so that they resemble occupied buildings.
    - Shop fronts should be close to the street. Large canopies or trees should be used to provide shade. Seating areas and benches should be used throughout.
    - An example code from Melbourne, Australia, states that 60% of street facades should be open and inviting (e.g., windows instead of blank walls).
    - Consider transitioning to a form-based code rather than traditional zoning. (See [www.transect.org/codes.html](http://www.transect.org/codes.html).)
    - Keep green in its place. Springfield's preponderance of trees and pocket parks are one of its best features. However, to encourage walking as a form of transportation, it is important to create lively business districts that may be lacking in extensive green spaces. A building set close to the street without a front yard is more appropriate for a lively commercial area.



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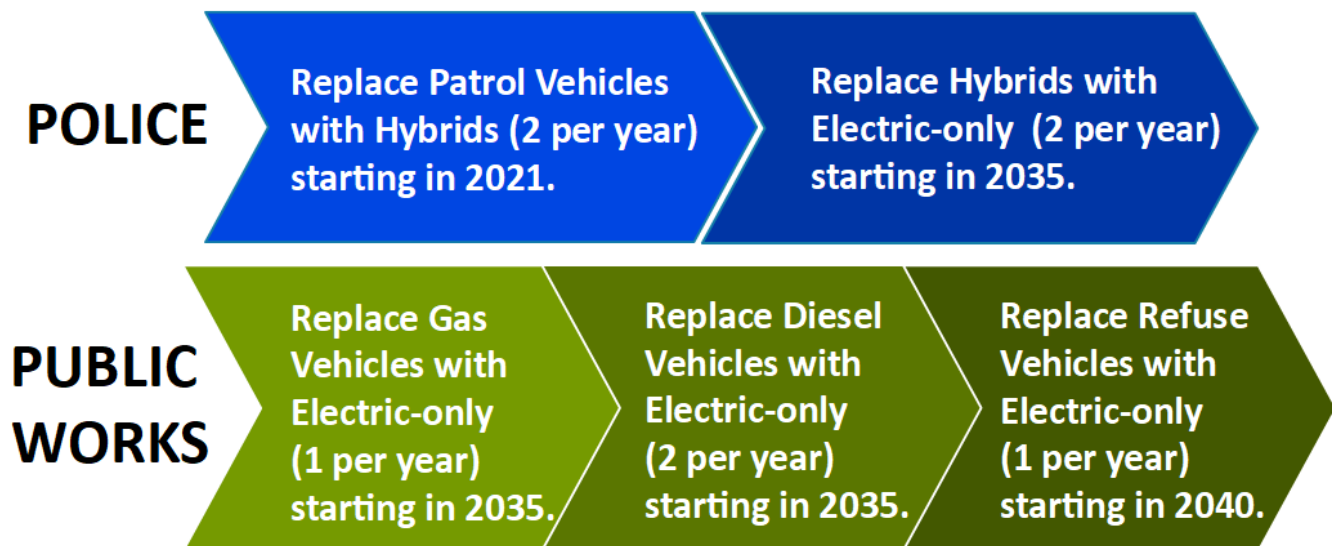
- **Prioritize and plan.** Not every neighborhood can be adapted for walkability in its current form. Instead, Springfield should focus on redeveloping and improving the existing commercial districts surrounded by relatively dense housing, particularly those located near transit. Within these districts, anchor stores and structures should be identified, with creation of walkable paths connecting these being the first priority. As new development comes to Springfield in the future, principles of walkability outlined previously can be applied.
- **Encourage Up-take of Private EV Ownership.** The Township should take the following steps to encourage up-take of private EV purchase.
  - Stay informed on grants available to fund EV transition, such as the PADEP [Alternative Fuels Incentive Grant](#) and the [Volkswagen Zero Emission Vehicle Fund](#).
  - Remove Permitting/Zoning Barriers for publicly available charger installation (i.e., pay-to-charge):
    - Identify where in the Township such facilities would be permitted under current zoning.
    - Determine and streamline the current permitting process to install a charger.
    - Put information on the process on the Township website and in a brochure.
    - Identify ways to incentivize businesses and multi-unit dwellings to install chargers (eg, tax abatement rules, zoning relief requests).
  - Remove Permitting/Zoning Barriers for private charger installation:
    - Determine the current permitting process to install a charger and work to streamline this.
    - Put information on the process on the township website and in a brochure.
    - Lead by example: As described in prior sections, purchase EVs for municipal vehicle replacements wherever possible. Install additional Level 2 chargers at visible locations in the township funded in part by the PADEP rebate.
    - Encourage installation of public chargers in privately owned lots:
      - Identify key parking lots to target (ensure currently zoned commercial)
      - Send invitation letter and brochure on the PADEP rebate process from the Township
      - Consider offering tax incentives
      - Consider offering township help with rebate applications
      - Look into permitting process for electrical work
    - Develop a plan for homeowners with no off-street parking. Examples of approaches include:
      - Allowing private chargers in the right-of-way, similar to requesting a handicap spot.
      - Modify ordinances and/or work with the Zoning Committee to allow installation of chargers in under-used neighborhood parking lots (e.g., church parking lots) which could provide ready access to charging for those without off-street parking.
      - Consider allowing public networked chargers on residential streets.
    - Adopt pro-EV Building Codes:

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- Adopt codes that require new residential and commercial construction to be pre-wired for chargers (this is less expensive than retrofits later).
- Increase the proportion of chargers required per number of spaces.

A staggered, conservative approach for transitioning the municipal fleet to 100% clean energy is discussed in Section V.b and depicted in the graphic below. There is no commitment to the approach laid out in this Energy Transition Plan: the overarching goal is to reach a 100% clean fleet by 2050. The difficulty in planning the details of the fleet transition at this time is the knowledge that the technology and availability of electrified vehicles and equipment will likely change quickly over the next few decades. Regardless, the township procurement process should include research into EVs and electric equipment as the opportunity arises.

### *Electrification of the Springfield Township Municipal Fleet*



Electrified transportation, including electric vehicles, is expected to play an increasingly important part in regional transportation planning, as well as abatement of the effects of climate change. Electrified transportation and equipment offer the following benefits:

- Greenhouse gas reduction, which is furthered as the energy grid transitions away from fossil fuels
- Improved air quality and, thus, improve public health and lower health-related costs
- Cost savings over liquid fuel, making money available which may be invested back into the community
- Expected to help stabilize the renewable-supplied electrical grid
- Incorporate measures in plans of economic and community development to attract EV drivers

The path forward to a clean, electric-only municipal fleet and walkable, bikeable communities starts with dedication among the leaders of our township and community.

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### **Glossary of Terms**

AEV	All-Electric Vehicle
BEV	Battery Electric Vehicle
CO <sub>2</sub>	Carbon Dioxide
DC	Direct Current
DOT	Pennsylvania Department of Transportation
DVRPC	Delaware Valley Regional Planning Commission
EPA	United States Environmental Protection Agency
EREV	Extended Range Electric Vehicle
ETP	Energy Transition Plan
EV	Electric Vehicle
EVSE	Electric Vehicle Supply Equipment
FCEV	Fuel Cell Electric Vehicle
GHG	Greenhouse Gas (e.g., CO <sub>2</sub> and methane)
HEV	Hybrid Electric Vehicle
ICE	Internal Combustion Engine (e.g., gas-fired)
LPI	Leading Pedestrian Interval
LPPU	Local Public Procurement Unit
mpg	Miles per gallon
MTeCO <sub>2</sub>	Metric Tons (of GHG emissions) equivalent to CO <sub>2</sub>
MWh	Megawatt hours
NDEW	National Drive Electric Week
NGO	Non-governmental organization
PADEP	Pennsylvania Department of Environmental Protection
PGS	Pennsylvania Department of General Services
PHEV	Plug-in Hybrid Electric Vehicle
SAE	Society of Automotive Engineers
TCO	Total Cost of Ownership
VMT	Vehicle Miles Traveled