



## AGENDA

### **PHOENIXVILLE REGIONAL COMPREHENSIVE PLAN UPDATE – COMMITTEE WORKSHOP PRPC-9**

January 31, 2018

1. Environmental Resource Plan – Posted on PRPC website. Revisions per Workshop PRPC-8A indicated on draft text in **RED**
  - a. Added supporting maps, graphics
  - b. Defined technical terms with footnotes
  - c. Clarifications to Riparian Buffer graphic
  - d. Added invasive species narrative
  - e. Added reference to unmapped critical habitats
  - f. Modified implementation strategies accordingly
2. Energy Conservation Plan – Posted on PRPC website. Revisions per Workshop PRPC-8A indicated on draft text in **RED**
  - a. Rename element as Energy Conservation and Sustainability Plan
  - b. Added information on recycling programs
  - c. Various minor clarifications
3. Housing Plan – Initial draft review
  - a. Goals and Objectives
  - b. Existing Characteristics and Trends
  - c. Sustainability
  - d. Affordability
  - e. Implementation Strategies
4. Announce Next Workshop – February 28, 2018 – Draft Economic Development Plan
5. Adjournment

## **CHAPTER FOUR – ENVIRONMENTAL RESOURCES PLAN**

Located in the Piedmont physiographic region in northeastern Chester County, Pennsylvania, the Phoenixville Regional Planning Committee (PRPC) region covers 51.82 square miles (33,167 acres). More than 100 miles of rivers and streams flow through the region's high quality and exceptional value watersheds. 11,280 acres of mature woodlands cover the land, providing habitat for a wide variety of wildlife, while more than 11,730 acres of prime agricultural farmland are present within the region, serving as the basis for land use in the region since European settlement. The rolling topography is generally moderately sloping, with pronounced ridges and stream valleys that include steep slopes.

By preserving these resources through a sustainable approach to conservation and future development, the municipalities of the PRPC region will safeguard important quality of life factors for their residents and for future generations. Because these systems do not coincide with political boundaries, they are best managed on a larger scale. By working together through the PRPC, the constituent municipalities can realize a greater benefit from these resources than they would by managing them in isolation.

### **4.1 ENVIRONMENTAL RESOURCES PLAN GOAL AND OBJECTIVES**

Protect natural resources as essential to public health, safety, and welfare and to maintaining the character of the Region. This goal is to be advanced through the pursuit of the following specific objectives:

1. Promote surface and groundwater quality through protection of floodplains, wetlands, stormwater infiltration areas, steep slope areas, and the creation of buffers.
2. Protect essential and vulnerable soil resources such as prime agricultural soils and erodible soils.
3. Protect habitats and species diversity through identification of critical areas including high quality forests and woodlands, riparian areas, specific microclimates, essential geological or physiological characteristics, and state and federally listed rare, threatened, and endangered species.
4. Promote remediation of degraded environments.
5. Organize resource protection into effective and integrated regional systems, such as greenways.
6. Develop uniform Regional resource protection regulations that incorporate strategies appropriate to differing existing land uses and conditions.

### **4.2 INVENTORY OF NATURAL RESOURCES**

#### **Geology and Physiography**

The underlying geology of the region informs the character of the landscape in a variety of ways. Geology and weathering dictate topography and hydrology. Through weathering of the underlying bedrock, climate (e.g. precipitation, wind, and solar radiation) and biological processes, the conditions that support varying plant and animal communities have developed over eons. These conditions in turn

dictate human history by presenting differing sets of opportunities and constraints to human activities, including settlement, agriculture, and resources.

The PRPC municipalities are located within the Piedmont physiographic province. Characterized by rolling hills, the Piedmont (French for “foothills”) is so named for its location relative to the Appalachian Mountains. This region stretches from New York City to Birmingham, Alabama and sustains a relatively concentrated human population amid diverse wildlife communities and extensive natural areas.

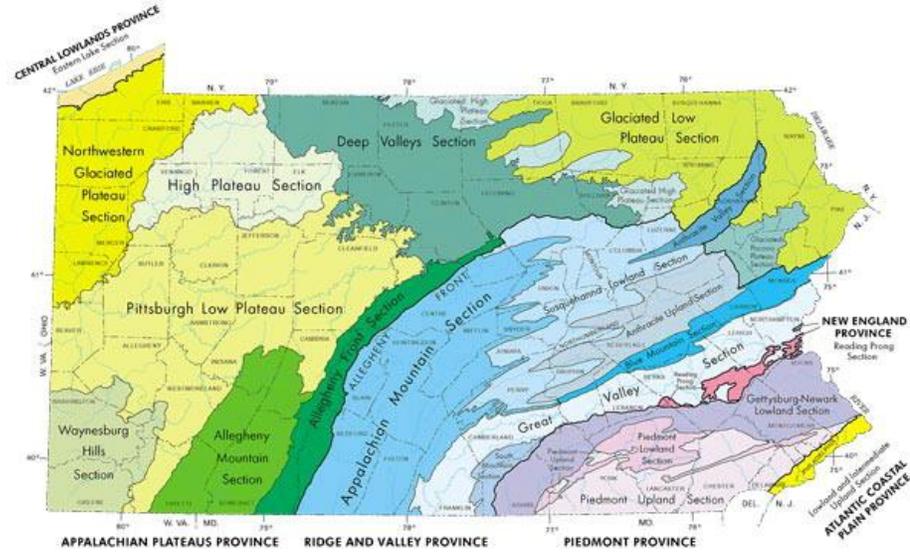


Figure 4.2-1: Physiographic Provinces Map of Pennsylvania (PA DCNR)

Within the PRPC region, there are three separate geological sub-provinces: the Piedmont Uplands (approximately 22,400 acres in the southern portion of the region), the Gettysburg- Newark Lowland (nearly 10,624 acres along the Schuylkill River), and the Piedmont Lowland (a small 211 acre sliver to the south of Route 76). Corresponding to the division between the Piedmont Upland and the Gettysburg- Newark lowland, the geology of the region (see Fig. 4.2-3, next page) is divided between the harder gneiss rock to the west and south, and several softer formations of sandstone, mudstone, and quartz. These softer rocks, formed from river mud, and are easily erodible, resulting in a more gradual, gently sloping terrain. The bedrocks associated with the Piedmont lowland are also more porous than gneiss, allowing for greater recharge of the aquifer as water percolates through the sandstone.

The Piedmont Upland’s underlying bedrock consists of gneiss (felsic gneiss & graphitic felsic gneiss), a relatively hard rock somewhat resistant to erosion. This leads to the rolling hill character of the area. In contrast to the Piedmont Upland, the Gettysburg- Newark Lowland is underlain by a variety of bedrock types. Generally softer than the Piedmont Upland, the bedrock of the Gettysburg- Newark Lowland is more susceptible to erosion, meaning this portion of the study area is flatter, though

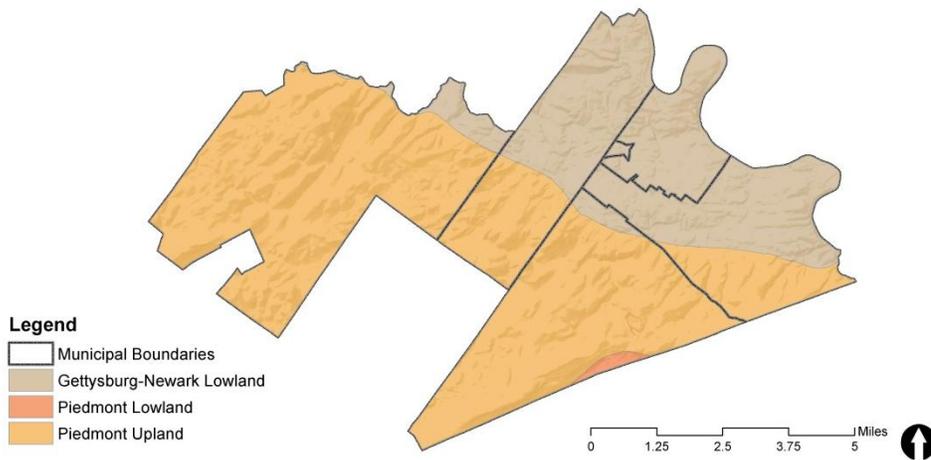


Figure 4.2-2: Physiographic Sub-provinces of the PRPC Study Area

areas of erosion-resistant diabase rock has left hills and small elevated regions. The Piedmont Lowlands are comprised of even softer rock, such as limestone, dolostone, and phyllite, and is geologically younger than the surrounding uplands.

In the lowland, Stockton, Lockatong, Brunswick, and Chickies Formations are prevalent. Each formation is a mixture of rock types: argillite, sandstone, mudstone & quartzite. Argillite and mudstone are formed from lithified mud, while quartzite is formed from sand. These bedrocks are relatively porous and allow for greater percolation of water into the aquifer. As a group, they are softer than gneiss, meaning that erosion is more uniform and the character of the slope is less undulating. In fact, much of the lowland is relatively flat, especially as it nears the floodplain of the Schuylkill.

### Topography

The overall topography of the region is characterized by a relatively gentle slope, moving from a highpoint of more than 810' in the gneiss hills of southern West Vincent Township, to the low point of less than 60' in the floodplain of the Schuylkill River in the west of Schuylkill Township.

There are areas of relatively steep slope, classified as moderate (15-25% grade) or steep (over 25% grade), particularly along Pickering Creek in Charlestown Township and to the western side of West Vincent Township where steep valley walls and stream banks are found (see Regulated Natural Resources Map). Consistent with patterns of land use, areas of steep slopes most often coincide with mature forest cover. Since the land is unsuitable for development, woodlands have been allowed to remain on these sloped areas. The woodlands are valuable for habitat, and the root systems of the native plant communities found on steep slopes hold soil in place, thereby limiting erosion and subsequent sediments into the region's water bodies. The shade provided by canopy cover also contributes to cooling streams, thus helping promote a balanced ecosystem that allows for a variety of aquatic wildlife to flourish.

Disturbance of steep slopes and vegetation alters topography and drainage, contributes to slope instability and erosion, and diminishes the quality of groundwater supplies and surface water. It is important that natural vegetative cover be retained on steep slopes, especially adjacent to streams and wetlands.

### Soils

There are two main soil associations within the region: Penn silt loam and Gladstone gravelly loam. Penn silt loam is the major soil type found in the Gettysburg-Newark Lowland. It is formed from the weathering of shale, siltstone, and sandstone, which are the major bedrock types found within the Gettysburg-Newark Lowland. Penn silt loam is a moderately deep, well-drained soil. Gladstone gravelly loam, the major soil group within the Piedmont Upland, is formed from the weathering of gneiss bedrock, the predominant bedrock type in the upland. It is a very deep, well-drained soil particularly suited to cultivation.

Beyond soil associations, soils in the region may be classified according to the regulatory framework governing their capabilities for use. These regulated soils, which are of particular concern in creating land use and development plans, are prime agricultural soils and hydric soils.

Prime agricultural soils, identified as Classes I and II by the United States Department of Agriculture (USDA), are soils whose chemistry, access to water, and exposure to sunlight make them particularly suited to cultivation. These soils, found in regions of relatively flat topography, are often desirable to developers for because of the same characteristics. However, they should be protected in order to maintain the viability of farming in the region, which in turn is responsible for much of the appealing visual character of the region.

**Hydric soils<sup>1</sup>**, found in proximity to waterways and often indicative of wetlands, are not suited to development. Particularly in proximity to the region's special protection waterways, hydric soils should be accurately mapped and protected through the regulation of riparian buffer zones. In addition to wetlands subject to regulatory protection, hydric soils are also indicative of areas of groundwater recharge. There is therefore an interest in water quality protection associated with hydric soils. Where wetlands are not mapped, the presence of hydric soils can indicate a high probability for the presence of wetlands.

Soils located on steep slopes should be considered in planning for future development. Soils on steep slopes are not only unstable and prone to erosion; they are also home to native plant communities in the form of mature woodlands and should therefore be of particular consideration for protection through regulatory action. Two problems associated with soil are erosion and resultant sedimentation, which impairs water quality. By protecting forest cover on steep slopes, water quality and wildlife habitat are both safeguarded.

There is a general overlap between soils unsuited to development and other natural resources to be protected. For example, soils on steep slopes often overlap with areas of preserved mature woodlands. By protecting those woodlands from clearing through development, the soils are also protected from erosion due to stormwater runoff. As noted above, the protection of hydric soils from development as protects the quality of water present in those areas. And the preservation of farmland promotes economic activity and local food source sustainability while retaining the bucolic character of the PRPC region.

### Forests & Vegetative Cover

Forest cover represents an important natural resource in several regards. Healthy and mature woodlands provide a range of ecological services that benefit the region as a whole. Large stands of woodland provide habitat for a wide variety of wildlife. They clean the air through the process of photosynthesis and regulate climate by removing carbon dioxide from the atmosphere. They protect water quality through removal of pollutants, infiltration, and providing the structural integrity of streambanks by stabilizing soil and slowing stormwater runoff.

While any size woodland can have a positive effect on the environment, these functions are best realized when woodland is allowed to remain unfragmented. This means that large stretches of woodland are kept intact, with as large an area of undisturbed woodland as possible remaining on the

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<sup>1</sup> U.S. Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS) defines hydric soils as "soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic [oxygen-deprived] conditions in the upper part". USDA-NRCS includes under this definition soils that became saturated with water as a result of land alteration as well as naturally saturated soils. (Source: [https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/use/hydric/?cid=nrcs142p2\\_053961](https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/use/hydric/?cid=nrcs142p2_053961))

interior of any given stand. The stable conditions that characterize interior forests are found a minimum of 300 feet from the nearest forest edge, and many plant and animal species require these conditions for survival. Such interior habitats are a rare and vulnerable resource in the Piedmont Region.

While much of the mature woodland once present was cleared for agriculture or other development, large contiguous stands of woods remain in the region. In West Vincent Township, around French Creek, and in Charlestown Township, along Pickering Creek, there are particularly large areas of relatively undisturbed woodland. Since woodlands coincide with other important ecological systems, they should be managed within the larger natural resource context of the region. By promoting land use patterns that allow for the preservation and enhancement of mature woodlands, fully functional ecosystems can remain intact. The region's forests should be managed in light of adverse impacts from pollution, clearing, invasive species, and stormwater runoff.

### Hydrology

The hydrological system is comprised of waterways, wetlands, floodplains, and groundwater. Each of these elements contributes to the overall health of the hydrological system and impacts on any part of the system will have an effect on the overall function. As a natural system that corresponds to geology, topography, soils, and vegetation, the hydrological function of the region should be a major consideration in all future land use and development planning.

Negative impacts to the function of the hydrological system are posed by intensive development (particularly impervious surfaces such as roofs and parking lots) and associated concerns, such as stormwater runoff and wastewater systems. These impacts will be felt in the form of pollution, sedimentation, and erosion in the waterways.

Stormwater best management practices that strive to replicate predevelopment conditions in terms of infiltration and runoff are critical. The preservation of naturally vegetated areas and development which is responsive to the hydrological attributes will not only safeguard water quality but help mitigate flood damage and enhance the natural beauty of the region.

#### Waterways and Watersheds

Waterways are categorized by stream order, as they run from the smallest 1<sup>st</sup> order headwaters eventually out to the ocean. The Schuylkill River, which is a 6th order watercourse, borders the region to the east and flows north to south on its way to join the Delaware River in Philadelphia. French and Pickering Creeks, 5th order streams, bisect the region, flowing from west to east towards their confluences with the Schuylkill River, in Phoenixville Borough and Schuylkill Township, respectively. Higher order waterways of the region include Birch Run, Valley Creek, Pigeon Run, Bull Run, and Black Horse Creek, which are all 4th order streams. Jug Hollow and Stony Run, 3rd order streams, flow directly into the Schuylkill.

Stream orders begin with the ~~smallest~~ headwaters ~~in the region, the~~ and 1<sup>st</sup> order streams. ~~Though they may seem less significant than larger water bodies, it is imperative to afford protections to these smaller waterways.~~ As recognized by the Stroud Water Research Center, "Scientific evidence clearly shows that healthy headwaters — tributary streams, intermittent streams, and spring seeps — are essential to the health of stream and river ecosystems. The evidence demonstrates that protecting these headwater streams with forested riparian buffer

zones and protecting and restoring the watersheds in which they arise will provide benefits vital to the health and well-being of Pennsylvania’s water resources and its citizens. Healthy, undisturbed headwaters supply organic matter that contributes to the growth and productivity of higher organisms, including insects and fish. Headwaters also help to keep sediment and pollutants out of the stream system’s lower reaches. In addition, they enhance biodiversity by supporting flora and fauna that are uniquely acclimated to this habitat.” Any deleterious impacts within headwaters are compounded as water flows successively to higher order streams on its way to the Schuylkill.

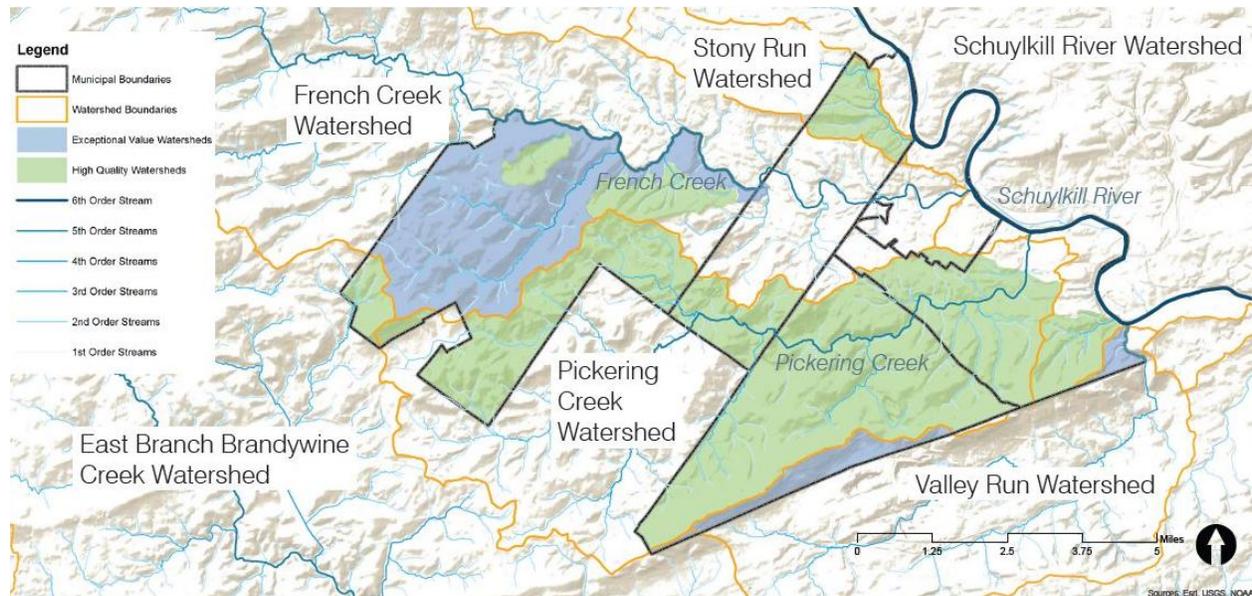


Figure 4.2-4: Stream Orders and Watersheds within the PRPC Study Area

Water quality is another parameter by which streams are designated. The majority of the region falls within Special Protection watersheds designated by the state as either High Quality or Exceptional Value. The High Quality (HQ) designation protects surface waters “having quality which exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water by satisfying Water Quality Standards of the PA Code.” The Exceptional Value (EV) designation goes a step further, protecting waters which not only satisfy the quality standards of the PA Code 93.4b, but are “of exceptional recreational significance, of exceptional ecological significance, or [are] located within a protected zone e.g. State Park.” These designations are established to maintain present water quality by protecting from harmful effects associated with development and related stormwater runoff. The EV and HQ designations should be considered in planning for a regional approach to water management.

The waterways of the region are all associated with a particular watershed, or drainage basin. Watersheds are defined by ridgelines and the watercourses that drain the areas between them by way of surface flow and groundwater. Watersheds are classified by order and by water quality, so for example the upper end of the French Creek basin would be referred to as an Exceptional Value 5<sup>th</sup> order watershed, and each of its lower order tributaries would also be classified as Exceptional Value.

#### Wetlands

**Wetlands**<sup>2</sup> (see Map 5 - Regulated Natural Resources) are areas of water at or near the surface. They are most often found in proximity to waterways and are delineated by the type of vegetation and soils found there. They play an important role in groundwater recharge, while simultaneously providing habitat for particular plant and animal species. Wetlands are protected by local, state, and federal regulations enabled by the Clean Water Act of 1972.

#### Floodplains

Floodplains are areas in proximity to waterways that are formed by the movement of water channels, and are subject to flooding in significant rain events. Though rivers may appear to be static shapes, they in fact meander and drift over time, thereby creating flat areas of alluvial soil known as floodplains. These areas, when uncompromised by development, allow for the containment of flood events and thus help to limit damage to life and property posed by periodic flooding during storm events.

The Federal Emergency Management Agency (FEMA), requires municipalities to regulate development impacts in floodways to preserve their function and to prevent hazards to human life and property. In order for municipalities to participate in FEMA's National Flood Insurance Program, they must delineate **100-year floodplains**<sup>3</sup> and strictly limit development within those areas. This includes promoting stormwater best management practices to promote groundwater infiltration and otherwise manage the amount of stormwater runoff reaching the floodplain.

#### Pennsylvania Scenic Rivers

**Pennsylvania Scenic Rivers** are rivers that are designated "scenic" according to the criteria of the Pennsylvania Scenic Rivers Act (P.L. 1277, Act No. 283 as amended by Act 110, May 7, 1982). The scenic rivers are managed by a variety of State agencies and local conservancies. For the purposes of the act, "river" is defined as "...a flowing body of water or estuary or a section, portion, or tributary thereof, including rivers, streams, creeks, runs, kills, rills, and small lakes."

According to the Act, Pennsylvania Scenic Rivers fall into one of five classifications, depending on the amount of development along the shore, access to the river, and diversion of flow:

- **Wild** rivers are rivers or sections of rivers that are not impounded and are usually not accessible except by trail. Their **watersheds** and shorelines are essentially primitive and the waters unpolluted.
- **Scenic** rivers are rivers or sections of rivers that are not impounded. Their shorelines or watersheds are largely primitive and undeveloped but they are accessible in places by roads.
- **Pastoral** rivers are those that are not impounded except for historic or restored mill dams. There may be diversions or withdrawals to support agricultural activities, for example agricultural ponds. Their shorelines or watersheds may support a variety of

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<sup>2</sup> See 14 for the Commonwealth of Pennsylvania's definition of wetlands.

<sup>3</sup> 100-year floodplains are areas with a 1% (or 1 in 100) annual chance of flooding.

farm or farm-related activities, but these activities may not interfere with the pastoral nature of the landscape.

- **Recreational** rivers or sections of rivers are easily accessible, may have some development along their shorelines, and may have been impounded or diverted in the past.
- **Modified recreational** rivers (or sections of rivers) are those in which the flow may be regulated by upstream control devices. Low dams are permitted as long as they do not increase the river beyond bankfull width. These rivers are designated for human activities which do not interfere with public use of the streams or enjoyment of their surroundings.

The Pennsylvania Scenic Rivers in the PRPC Region are the Schuylkill River and French Creek. These waterways are so designated for recreational as well as scenic significance: French Creek for its Exceptional Value status and fishing, and the Schuylkill River for boating, fishing, and as a PA State Water Trail. The Schuylkill River provides the setting for the regionally important Schuylkill River Trail, a multi-use trail that upon completion will extend from Philadelphia to Pottsville. West Vincent Township has zoning regulations to protect the scenic and environmental quality of French Creek.

#### 4.3 EXISTING MUNICIPAL ENVIRONMENTAL RESOURCE PROTECTION REGULATIONS

Each municipality within the Region prioritizes natural resource protection differently depending on natural resource characteristics of the community, historic development patterns, and community priorities. Regulations developed to protect natural resources can also vary greatly from one community to another. The following table summarizes existing natural resource regulations for each of the regional municipalities.

<b>Natural Resource Protection Standards Summary</b>					
	<b>Charlestown Township</b>	<b>East Pikeland Township</b>	<b>Phoenixville Borough</b>	<b>Schuylkill Township</b>	<b>West Vincent Township</b>
<b>Floodplain</b>	Y Structures Prohibited	Y Structures Prohibited	Y Limits development	Y Structures Prohibited except SWM	Y Structures Prohibited
<b>Riparian Buffer</b>	Y 100-feet	Y 100-feet (30'- Zone 1 70'- Zone 2)	Y 35'	Y 100' min	Y 150' + (increases with steep slopes)
<b>Steep Slopes</b>	Y >25%: no new struct.	Y >25%: no new struct.	Y >25%: no new struct. w/o CU	Y 15-25% (20% max regraded) (>25%- no more than 10% regraded)	Y 15-25% (max impervious varies) (>25%- no buildings; max impervious varies)

<b>Natural Resource Protection Standards Summary</b>					
	<b>Charlestown Township</b>	<b>East Pikeland Township</b>	<b>Phoenixville Borough</b>	<b>Schuylkill Township</b>	<b>West Vincent Township</b>
<b>Forests &amp; Woodlands</b>	Y Priority resource for open space	Y No more than 25% disturbed. Tree replacement	Y Limit removal to area needed for construction	Y Prioritized in Cluster Option	Y Clear-cutting prohibited on slopes >15% and w/in 100' of stream Tree replacement
<b>Wetlands</b>	Y 50' buffer	Y 50-200' buffer	Y 25-foot setback	Y 50' buffer (10% disturbance)	Y 100' buffer w/ 20% disturbance
<b>Environmental Constraint Lot Area Net-Outs</b>	Y Floodplain Steep Slopes Wetlands	Y Floodplain Steep Slopes Wetlands	Y Floodplain Wetlands	Y Floodplain Steep Slopes Wetlands	Y Floodplain Steep Slopes Wetlands
<b>Open Space</b>	Y Prioritizes Natural Resources	Y Natural Features Protection Chapter		Y Cluster Option requires 60% open space Natural Resources Overlay-protects range of resources	Y Greenway Lands required depending on Tier
<b>Water</b>	Y Flushing Mechanisms			Y 150' buffer for Outstanding Water Resources	Y Water Resource Overlay in recharge/discharge areas
<b>Solar Energy/ Alternative Energy</b>	Y				Y

In general, existing resource protection standards are more lenient in Phoenixville than in the surrounding Townships. This is consistent with the higher development intensities in the Borough and historical land use and development practices that predated modern understanding of resources and their protection.

#### 4.4 ENVIRONMENTAL RESOURCE PROTECTION POLICY

The Region should adopt uniform policies for environmental protection that are responsive to the goals and objectives of the Comprehensive Plan, with measures appropriate to the importance of specific resources, to existing and future land use conditions, and to practical considerations that advance sustainability. Thus, policies would be most rigorous in cases where maximum resource protection is achievable, but where there are compromised existing conditions, the focus is to be on the degree of protection that can reasonably be implemented and that creates measurable improvement over the existing condition. In practical terms, this means that resource protection regulation and strategy within a pristine forest setting would take a different form than in a denuded brownfield undergoing remediation and redevelopment.

##### Steep Slopes

Steeply sloping land produces increased stormwater runoff and soil erosion potential, and also presents challenges to agriculture and development. Increased soil erosion and runoff can greatly impair surface water quality through diminished groundwater recharge, which is necessary to maintaining uniform stream base flows, and through direct deposition of soil and contaminants into streams. Agricultural practices must be modified on steep slopes to prevent severe erosion, and for the safety of farmers operating equipment. Development on steep slopes requires expensive interventions involving grading, retaining walls, and stormwater management, and can limit suitability for certain building types. The steeper the slopes, the more severe the negative impacts of inappropriate use or management. Thus, it is important that steep slopes be maintained in effective natural vegetative cover where possible. Where this is not possible, disturbance should be minimized and appropriate mitigation practices utilized.

In keeping with these considerations, the PRPC municipalities should maintain zoning provisions that minimize disturbance of steep slope areas. As such, open space and conservation uses are most suitable, followed by limited types of agricultural or silvicultural practices. Development should be prohibited or very severely limited on steeply sloping lands. Restrictions should be most stringent on “prohibitive” or “very steep” slopes of over 25%. In addition, “precautionary” or “moderately steep” slopes of 15-25% should have restrictions on use and disturbance.

Over the land use history of certain tracts, development and earth moving practices have led to the creation of steep slopes where none had naturally existed previously. In such cases, municipalities could consider exemption or relief from steep slope regulations, provided sufficient stormwater management and erosion control practices are in place concurrent with any use or development.

Recommended guidelines for steep slope protection in the Region are as follows:

Prohibitive Slopes 25%+

Uses – Conservation, Sustainable Forestry and Agriculture, Recreation  
No buildings or cut/fill  
Maximum impervious cover 5%, subject to Conditional Use  
Maximum disturbance 5-15%, subject to Conditional Use  
Exemption for artificial slopes

Precautionary Slopes 15-25%

Uses - Conservation, Sustainable Forestry and Agriculture, Recreation, Residential by Conditional Use  
Buildings and structures associated with permitted uses by Conditional Use  
Maximum impervious cover 10%  
Maximum disturbance 15-30%, subject to Conditional Use  
Exemption for artificial slopes

Floodplain and Riparian Areas

Floodplain areas and riparian corridors play a critical role in the water quality of streams and rivers, and improper development of these areas can threaten the environment, private property, and human life. Thus, protection of these areas is of prime importance.

Floodplains are those areas occupied by streams and rivers during storm events. For planning and land use purposes, floods are categorized in terms of their average frequency or more accurately, their likelihood of occurrence in a given year. The Federal Emergency Management Agency (FEMA) establishes national flood and flood insurance policy based on the flood event with a 1% chance of annual occurrence, commonly known as a 100-year flood. FEMA and the Pennsylvania Department of Community and Economic Development (DCED) have recently revised their standards and mandated that all Pennsylvania municipalities adopt compliant regulations for existing structures and proposed development within the 100-year floodplain.

In addition to floodplains, it is important to protect riparian corridors with buffers. Riparian buffers are recognized by Pennsylvania Department of Conservation and Natural Resources (DCNR) and Pennsylvania Department of Environmental Protection (DEP), who define them essentially as naturally vegetated areas along waterways that act as filters and provide numerous other environmental benefits. These benefits include water quality protection, flood impact protection, erosion control, groundwater recharge, wildlife habitat, and water temperature moderation that is important to aquatic life. The most effective buffers are natural forest areas with structural and species abundance and diversity. However, managed woodlands and meadows can also provide significant buffer protection.

The following graphic represents specific empirically determined benefits provided by forested riparian buffers of various widths, measured from each stream bank. Buffer protection benefits are completely absent or negligible at widths below 100 feet in specific parameters, including removal of nutrients and

certain pesticides, native **macroinvertebrate**<sup>4</sup> and fish communities, and terrestrial habitat and migration corridors. The full array of benefits is not manifest until buffer width reaches 150 feet or more. It is for this reason that environmental researchers and many regulators advocate minimum

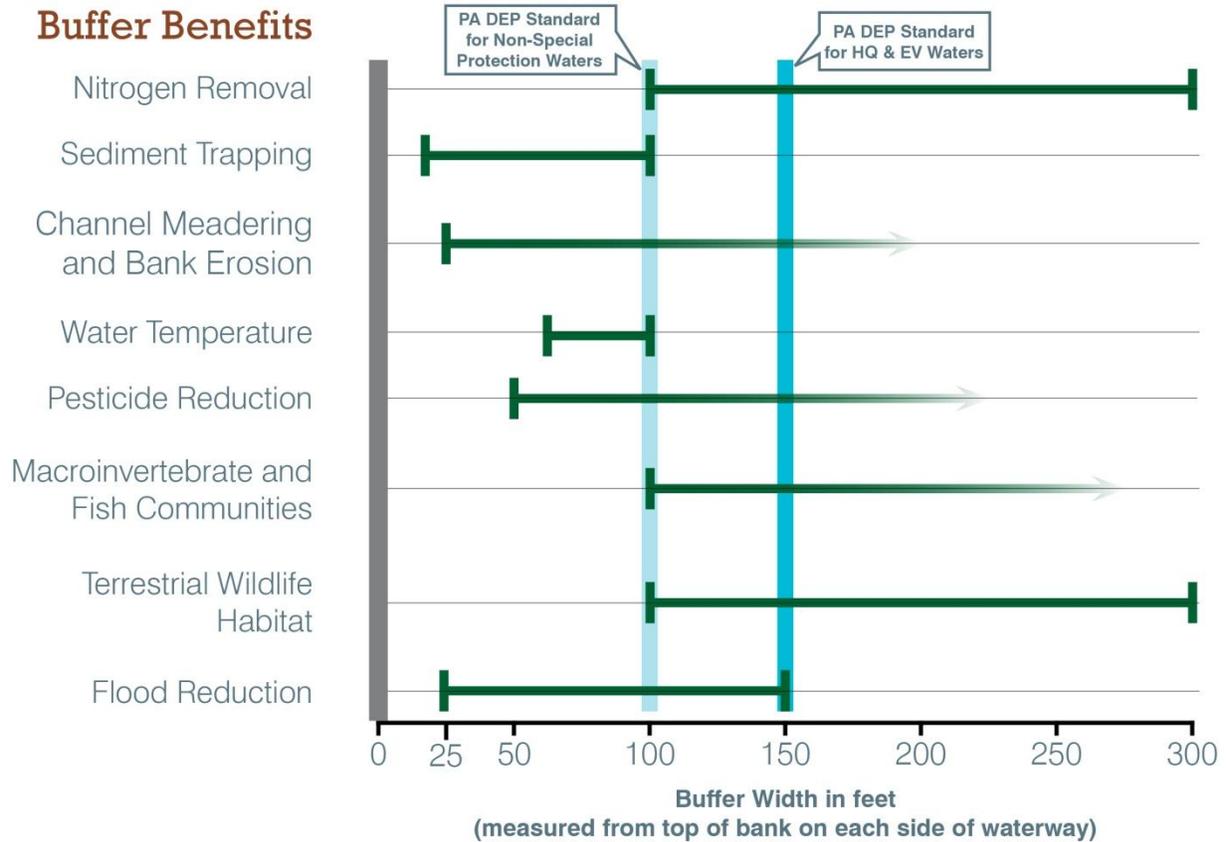


Figure 4.4-1: Diagram of the benefits of riparian buffers of varying widths.

riparian buffers of 150 feet, especially in Special Protection watersheds.

Section 102.14 of the Pennsylvania Code establishes 150 foot wide buffers along Exceptional Value (EV) and High Quality (HQ) streams, and 100 foot wide buffers along other streams. However, these guidelines apply only to land disturbances of one acre or greater, and there are other exceptions and relief available to land developers. In addition, changes to the PA Clean Streams Law (PA Act 162) enacted in October 2014 effectively nullify much of the buffer protection requirement by allowing the following in lieu of riparian buffers:

- Alternative best management practices (BMPs) for disturbance within required buffers that are “substantially equivalent” to a riparian buffer in terms of water quality

<sup>4</sup> Macroinvertebrates are animals without backbones that can be seen without the help of a microscope. They include crayfish, freshwater mussels, and aquatic insects, and are indicators of water quality. Source: <https://stroudcenter.org/macros/key/>

- Required offsetting replacement buffer areas in Special Protection watersheds for land disturbance within 100 feet of EV and HQ designated streams

It is evident that current statewide regulations do not provide buffer protection consistent with standards that empirical evidence would justify. In light of the Special Protection streams that are prevalent in Northern Chester County and within the Region, municipalities should at minimum enact regulations consistent with maintaining their quality. In addition, the non-Special Protection streams in the Region also sustain relatively good health and biodiversity and should be protected with generous buffers. Exceptions could be considered within municipal regulations for specified agricultural uses that maintain effective year round vegetative cover, historic buildings, trails, and permitted road or driveway crossings. Within currently urbanized areas and brownfield redevelopment sites on non-Special Protection streams, reduced buffer widths may be considered in conjunction with BMPs that improve water quality, reduce runoff, increase groundwater recharge, and promote habitat.

PRPC Member Municipalities should maintain minimum riparian buffers as follows:

- Special Protection Streams – 150 foot buffer. May consist of a 100 foot undisturbed forested inner buffer and a 50 foot outer buffer that allows certain management practices and very limited disturbance but no buildings or impervious cover.
- Non-Special Protection Streams - 100 foot buffer. May consist of a 50-75 foot undisturbed forested inner buffer and a 25-50 foot outer buffer that allows certain management practices and very limited disturbance but no buildings or impervious cover.
- Non-Special Protection Streams in Brownfield/Urbanized Conditions – 35-50 foot forested or managed buffer. Any proposed buffer of less than 100 feet width should be supported with site-wide BMPs.

### Wetlands

Wetlands are defined by the Pennsylvania DEP (25 PA Code, Chapter 105) as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” Wetlands contain three main components: (1) water at or near the surface for significant parts of the year, (2) hydric soils, and (3) wetland indicator vegetation such as cattails and skunk cabbage. Wetlands fulfill a number of critical ecological roles in providing habitat for species with specialized requirements, maintaining surface water quality, sustaining groundwater supplies and stream base flows, flood accommodation and absorption, and as the headwater source of first order tributary streams.

Wetlands inventory mapping is limited to that provided by the National Wetlands Inventory and the USGS. These sources identify only the largest and most prominent wetland areas. Smaller unmapped wetlands areas are no less environmentally significant than their mapped counterparts and are far more numerous. These unmapped wetland areas must be field identified and surveyed in order to assure protection.

Wetlands receive protection under the federal Clean Water Act, which regulates the discharge of dredged and fill material into waters, including wetlands. Activities that are regulated include fill for development, water resource projects (such as dams and levees), infrastructure development (such as

highways and airports), and conversion of wetlands to uplands for farming and forestry. Any proposed activity within a wetland must receive a permit from the U.S. Army Corp of Engineers.

The basic premise of the federal wetlands protection program is that no discharge or dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the waters would be significantly degraded. Permit applicants must demonstrate that they have taken steps to avoid wetland impacts where practicable, minimized potential impacts to wetlands, and provided compensation for any remaining unavoidable impacts through activities to restore or create wetlands (Source: US Environmental Protection Agency, Wetland Regulatory Requirements).

Municipalities should take steps to assure wetland protection, especially in light of the Special Protection and other biologically significant watersheds throughout the Region. Since wetlands are most frequently associated with specific plant species (known as wetland indicators) and hydric soil types, municipal ordinances should require a wetland determination and survey for any development or land disturbance application when either of those conditions is present.

In addition, buffers of natural vegetation surrounding wetland areas can protect them from the harmful impacts of sediments, nutrients, and other contaminants. Although the protection of wetlands from human activities such as agriculture, silviculture, and urban development is obvious, research has shown that terrestrial areas surrounding wetlands are core habitats for many semi-aquatic species that depend on mesic **ecotones**<sup>5</sup> to complete their life cycle (Source: Conservation Biology, October 2003). Thus, forested or managed natural wetland buffers are recommended as follows:

- In Special Protection Watersheds – 100 foot buffer. May consist of a 50 foot undisturbed forested inner buffer and a 50 foot outer buffer that allows certain management practices and very limited disturbance but no buildings or impervious cover.
- In Non-Special Protection Watersheds - 50 foot buffer. May consist of a 25 foot undisturbed forested inner buffer and a 25 foot outer buffer that allows certain management practices and very limited disturbance but no buildings or impervious cover.
- In Non-Special Protection Watersheds in Brownfield/Urbanized Conditions – 15-25 foot forested or managed buffer. Any proposed buffer of less than 50 feet width should be supported with site-wide BMPs.

### Forests and Woodlands

Forest cover provides numerous and irreplaceable benefits in terms of water quality, wildlife habitat and migration corridors, erosion control, recreation, and economic value. In addition, they are recognized for their role in carbon sequestration, an important factor in mitigation of climate change. This is especially true of large areas of contiguous forest that support interior habitats that are essential to a number of specialized plant and animal species, including some categorized as endangered or

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<sup>5</sup> Ecotones are areas influenced by the transition between one or more different ecosystems. Source: Thomas, Jack Ward; Maser, Chris; Rodiek, Jon E. 1979a. Edges. In: Thomas, Jack Ward, tech. ed. Wildlife habitats in managed forests: the Blue Mountains of Oregon and Washington. Agric. Handb. 553. Washington, DC: U.S. Department of Agriculture, Forest Service: 48-59. (found in [https://www.fs.fed.us/rm/pubs/rmrs\\_p011/rmrs\\_p011\\_049\\_055.pdf](https://www.fs.fed.us/rm/pubs/rmrs_p011/rmrs_p011_049_055.pdf))

threatened. Fragmentation of forest vegetation leaves small, isolated island communities that degrade wildlife habitat and ecosystem health.

Among the Region's critical woodland areas is the Hopewell Big Woods, a globally significant resource area that covers large parts of northern Chester and Berks Counties and much of West Vincent Township. In addition, there are significant bands of contiguous woodland and forest throughout the Region that are associated with stream corridors, ridgelines, and steeply sloping areas. Even in urbanized settings, smaller forest and woodland areas play an important role in habitat, water quality, and microclimatic moderation, while contributing greatly to community aesthetics and human quality of life.

Forest fragmentation occurs when large, contiguous forest blocks are divided into smaller patches due to land clearing for non-forest use. Forest interiors create relatively stable conditions in terms of temperature, moisture, sunlight, and wind as compared with open and edge areas. These conditions favor highly specialized and interdependent species that cannot live in harsher and less consistent environments. Forest fragmentation for development and/or agricultural use severely threatens interior forest habitats by exposing more areas to variable edge conditions. For example, according to a 2013 report summarizing the resources of the Hopewell Big Woods, each mile of a 100-foot right-of-way disturbs approximately 12 acres and creates an additional 72 acres of new forest edge. Converting the interior forest environment into forest edge exposes that previously stable environment to increased light levels and soil disturbance; invasive plant species; and the effects of extreme weather. Invasive exotic species such as vines and climbing shrubs evolved to thrive in edge habitats. These plants strangle trees along forest edges, eventually killing them by cutting off the flow of nutrients and pulling them to the ground, particularly in winter when snow and ice accumulate on branches. Invasive plant species also outcompete native understory and herbaceous plants, reducing species diversity and limiting food resources available to native wildlife - many of which, particularly native pollinating insects, have adapted to depend solely on specific species of native vegetation. These detrimental edge effects are present within forests up to 300 feet from the actual edge.

The creation of new forest edge also threatens plant and animal species that depend on large tracts of intact, secluded forest interior to feed and raise their young. They are at increased risk from parasitism and predation, because many parasitic and nest predator species thrive in edge habitats. These predators, which include raccoons, feral cats, jays, and crows, are typically associated with human developments, and can gain access to interior forest habitats via linear right-of-ways such as roads and utility cuts.

Forest edges mimic the conditions found in early successional forest areas, which are typically considered to be areas of high diversity. However, this diversity is limited to the immediate local area. Due to the increased pressure on interior species that results from edge creation, diversity at a larger regional scale might actually decline because area-sensitive species would disappear from the larger landscape.

Plant and animal species that require large forest interior habitat are specialists. Many are already rare, threatened, or vulnerable, due to habitat degradation from previous encroaching human development. According to the Cornell Lab of Ornithology, "Evidence from numerous studies indicates that the detrimental effects of an edge can extend from 150–300 feet (45–90 m) into the forest interior". Therefore, contiguous forests that include stands of forest at least 300 feet from the edge provide greater shelter opportunities for interior species. Certain species, such as bald eagles, great blue

herons, and scarlet tanagers, require over 600 feet of forest buffer in order to successfully feed and raise young. Because the interior patches are larger in forests that are broad in both depth and width than in linear stands, the shape of forest habitat can be a crucial factor in protecting certain vulnerable species. In other words, in order for a forest to support interior habitat, it must be at least 6.5 acres in area, and with a minimum width of 600 feet in any direction.

In addition, smaller islands of forest and even individual trees impart ecological and cultural benefits. In an urban setting, individuals and groups of mature trees provide food and nesting habitat while providing microclimatic amelioration and air and water quality benefits. In less densely settled landscapes, hedgerows and small woodlots provide wind breaks, promote groundwater infiltration, decrease soil erosion, promote habitat, and can reduce energy demands and pollution. Individual specimen trees can provide important historical context and can serve as significant cultural icons in and of themselves. As long lived carbon sinks that can mitigate climate change impacts, trees should be cultivated and preserved wherever possible, whether in the form of urban forestry programs or in more traditional land stewardship and conservation efforts.

For these reasons, the Region should implement regulations that protect and enhance forest and woodland resources. These should focus on maximizing contiguous forested areas and in particular those with forest interior habitat in Special Protection watersheds, but also wooded areas of varying size in non-designated watersheds that provide other environmental, economic, and aesthetic benefits. Zoning and land development regulations should be considered that protect woodland and forest areas as follows:

- Establish provisions to qualify various wooded areas in terms of quality and ecological significance
- Limit allowable clearing of wooded areas, especially in areas of high significance
- Mitigate unavoidable woodland and forest disturbance with restoration planting areas
- Utilize open space and cluster zoning to maximize protection of wooded areas, and in particular contiguous forest
- Identify and protect specimen or heritage trees of exceptional ecological, cultural, or aesthetic value
- Prohibit to the extent possible introduction of invasive species
- Adopt timber harvesting regulations that include a re-establishment and management plan for species diversity, age stratification, and prevention of the establishment of invasive species

### Invasive Species

Invasive species are generally non-native and have competitive advantages to the point where they destabilize and alter the ecosystem by pushing out native species on which the ecological web depends. Invasive species typically seed and reproduce rapidly and are often introduced into areas that have been disturbed by agriculture, development, or other human interventions. Invasive plant species are widespread throughout the region and thus are very difficult to control. They can and do cause significant environmental and economic damage.

Unfortunately, many invasive plant species are commercially available in the nursery trade and are installed by developers, public utilities, road departments, contractors, farmers, and property owners

who unwittingly assist in their propagation. PRPC members can help to control the arrest the proliferation of invasive species through the following actions:

- Provide information at municipal offices and on websites informing people of the dangers posed by invasive plant species, methods of control, and beneficial native alternatives.
- Work with environmental groups and citizens to have invasive species eradication work days on public and private lands.
- Adopt ordinance provisions to prohibit introduction of known invasive species on land developments and other activities requiring municipal permits.

### Critical Habitat Areas

The Nature Conservancy designated several areas of critical habitat in their 1994 inventory of natural areas in Chester County, which was prepared for the Chester County Planning Commission. The Conservancy chose these sites based on the quality of each site's habitat, the rarity of species or communities in each, and the threats to and management needs of each site's biodiversity. These areas were updated in 2015 by the Pennsylvania Natural Heritage Program (PNHP), a partnership of PA DCNR, State & Federal wildlife commissions, and the Western Pennsylvania Conservancy, to guide conservation work and land-use planning. The critical habitat areas were described for Chester County in the Chester County Natural Areas Inventory (CCNAI) and described as Core Habitats and Supporting Landscapes for plant and animal species and natural communities of concern.

**Core Habitat** – areas representing critical habitat that cannot absorb significant levels of activity without substantial negative impacts to elements of concern.

**Supporting Landscape** – areas directly connected to Core Habitat that maintain vital ecological processes and/or secondary habitat that may be able to withstand some lower level of activity without substantial negative impacts to elements of concern.

Full information for each area can be found in the PNHP's Natural Heritage Area (NHA) Factsheets. The PRPC Region in its entirety is classified in the PHNP as a Supporting Landscape to eight designated Core Habitats that support rare or threatened species. (See CCNAI MAP and Factsheets, Appendix \_\_) The mapped CCNAI Core Habitats in the PRPC Region are:

<u>Core Habitat</u>	<u>Municipality</u>
Bacton Mine Ridge	Charlestown
Beaver Hill Road Woods	West Vincent
Birch Run Woods	West Vincent
Constant Spring Lane Meadow	Charlestown
Horse-Shoe Trail Wetlands	West Vincent
Kimberton Meadows	East Pikeland
Pickering Creek Tributaries	Charlestown
Schuylkill River – Port Providence	East Pikeland, Phoenixville, Schuylkill

There are additional critical habitats in the Region that are not as yet listed in the CCNAI. A notable example is the Pickering Reservoir in Schuylkill Township, which provides nesting habitat for Bald Eagles,

among other species. Regional environmental groups and those with local knowledge should be consulted on the identification and protection of these undocumented habitat areas.

Protection of habitat should be accomplished by maintaining and promoting the health and diversity of natural areas as follows:

- Require appropriate buffers and other protections. Protect as open space those properties that contain sites identified in the CCNAI
- Utilize the PNHP Conservation Explorer tool to determine whether there are critical species impacts related to any municipal application
- Protect critical habitats through protection of topography and geology, soils, forest and vegetative cover, wetlands, floodplains, watersheds and streams on which they depend
- Establish a networked system of large contiguous areas of open space
- Establish a network of riparian corridors and greenways

#### Prime Agricultural Soils

Prime agricultural soil is a finite and invaluable resource that has helped to determine the character of much of the Regional landscape. Because these are also the most easily developed soils, exurban sprawl has led to a rapid and irreversible depletion of this resource.

Among the methods for farmland protection is the deduction of USDA Class 1 and 2 soils from tract area calculations for allowable development intensity, so that farmlands can be preserved as agricultural open space. However, this provision cannot be applied in municipalities that net out environmentally constrained lands such as steep slopes, wetlands, floodplain, and riparian buffers from lot area and density calculations.

Alternatively, prime agricultural land can be preserved through land use and zoning policy that restricts areas with an abundance of Class 1 and 2 soils to agricultural and very low density residential use. In addition, by requiring cluster or open space zoning in these areas, prime agricultural lands can be permanently preserved as open space.

Prime agricultural soils should be protected in the Region as follows:

- Support of agricultural and conservation easement programs
- Low intensity zoning in areas with prime agricultural soils
- Class 1 and class 2 soils as prime candidates for inclusion in open space associated with development

#### 4.5 IMPLEMENTATION STRATEGIES

The following policy recommendations will implement the goals and objectives of the Environmental Resources Plan:

**ER-1 Evaluate municipal steep slope protections and revise for consistency with Regional policy.**

Develop uniform Regional policy for protection of steep slopes with appropriate use and disturbance restrictions. Allow reasonable exemptions for artificially constructed pre-existing slopes and previously developed areas.

**ER-2 Evaluate municipal floodplain protection ordinances to assure consistency with FEMA and DCED requirements.**

**ER-3 Evaluate municipal riparian buffer ordinances and revise for consistency with Regional policy.**

Develop uniform Regional policy for riparian buffers along Special Protection streams and those without Special Protection status. Allow reasonable exemptions for certain uses and for urban and brownfield redevelopment, with appropriate mitigation for diminished width buffers.

**ER-4 Evaluate municipal wetland buffer regulations and revise to meet minimums consistent with Regional policy.**

Create buffer widths appropriate to watershed Special Protection status. Allow reasonable exemptions for certain uses and for urban and brownfield redevelopment, with appropriate mitigation for diminished width buffers.

**ER-5 Establish Regionally compatible ordinances for forest and woodland resource protection.**

Set disturbance limits on existing wooded lands and specimen or heritage trees consistent with environmental quality and resource value, with appropriate mitigation for clearing. Establish land development practices in zoning to maximize protection of valuable woodland resources as open space. Evaluate and revise municipal forestry ordinances to promote ecologically responsible harvesting and restoration practices.

Prioritize the protection of woodlands that extend beyond the property line and/or municipal boundary in an effort to preserve contiguous woodlands.

Prioritize preservation of woodlands dominated by native tree species and require replacement trees to be native species.

**ER-6 Establish Regional zoning standards for protection of critical habitats.**

Utilize Chester County Natural Areas Inventory as basis to identify and protect Core Habitat Areas. Require municipal applicants to verify potential impacts on Core Habitats and modify plans or mitigate impacts accordingly.

**ER-7 Implement programs to prevent, eradicate, and control invasive species.**

Utilize public information/awareness, direct community action, and regulatory strategies.

**ER-8 Evaluate municipal lot and tract area net-out provisions to assure that lands with environmentally sensitive resources are not over-developed.**

Adopt appropriate net-out provisions to promote protection of steep slopes, floodplain and riparian corridors, and wetlands.

**ER-9 Coordinate municipal zoning along resource corridors to create open space greenways for environmental protection and recreation.**

Create greenways that respond to environmental conditions and that do not terminate based on municipal boundaries where sensitive resource lands extend across them.

**ER-10 Adopt zoning to promote preservation of lands with Prime Agricultural soils.**

Utilize low intensity and agricultural use districts, open space zoning, and transfer/purchase of development rights to protect agricultural lands.

**ER-11 Utilize Regional and municipal resources to promote conservation and agricultural land easements.**

Create online and printed municipal and Regional information banks for landowners to learn about easement programs and their benefits. Host educational events and showcase model examples and programs.

## **CHAPTER FIVE – ENERGY CONSERVATION AND SUSTAINABILITY PLAN**

Energy conservation is a necessary component of environmental sustainability. This Chapter focuses on methods of achieving greater efficiency and cleaner sources of energy generation for electricity, heating and transportation in order to reduce pollution, limit the depletion of and dependency on finite resources, and lessen the impacts of carbon-induced climate change.

### 5.1 ENERGY CONSERVATION PLAN GOAL AND OBJECTIVES

Advance strategies and practices that reduce energy consumption and promote renewable and non-polluting energy sources. This goal is to be advanced through the pursuit of the following specific objectives:

1. Increase utilization of renewable energy systems.
2. Develop regulatory and/or incentive-based standards for energy efficient buildings and construction.
3. Coordinate development with transportation systems, and in particular mass transportation.
4. Maximize energy efficiency of transportation systems.
5. Promote an efficient and flexible electric grid that includes local and regional clean power generation.

### 5.2 RENEWABLE ENERGY SYSTEMS

There are a number of renewable energy systems that have practical application in the PRPC Region. These systems provide substantial benefits in terms of reduced demand on polluting and nonrenewable resources, while providing mid-term to long-term economic advantages to residences and businesses. If State and Federal incentive programs are re-funded and augmented, the use of renewable energy and all of its attendant benefits will be dramatically increased.

#### Solar Energy

Solar energy is derived from the sun's radiation and is classified as active or passive. Passive solar relies on building technologies that utilize thermal mass, orientation, light dispersal/absorption, and convection, and is discussed further in section 5.3. Active solar creates electricity or heats water. Because solar water heating applications are typically most practical at latitudes lower than 40 degrees, this section deals with solar electricity generation.

In the last two decades, photovoltaics (PV), also known as solar PV, has evolved from a pure niche market of small scale applications towards becoming a mainstream electricity source. It works through solar cells that convert light directly into electricity using the photoelectric effect. With rapid advances in solar panel and battery storage technology, solar electricity generation is becoming increasingly affordable and practical at small to large scale, and is expected to be the world's leading source of electricity production by 2050.

Figure 5-1 demonstrates that available solar resource in the PRPC Region is significant, with solar potential of up to 4.4 kWh/square meter/day. In practice, current solar panels currently produce about 15 watts per square foot, or about 265 watts per typical 65 inch by 39 inch panel. According to Philadelphia Electric Company (PECO), average electrical demand is approximately 17 kWh per day. Thus, even small solar panel arrays can produce a significant amount of needed electricity.

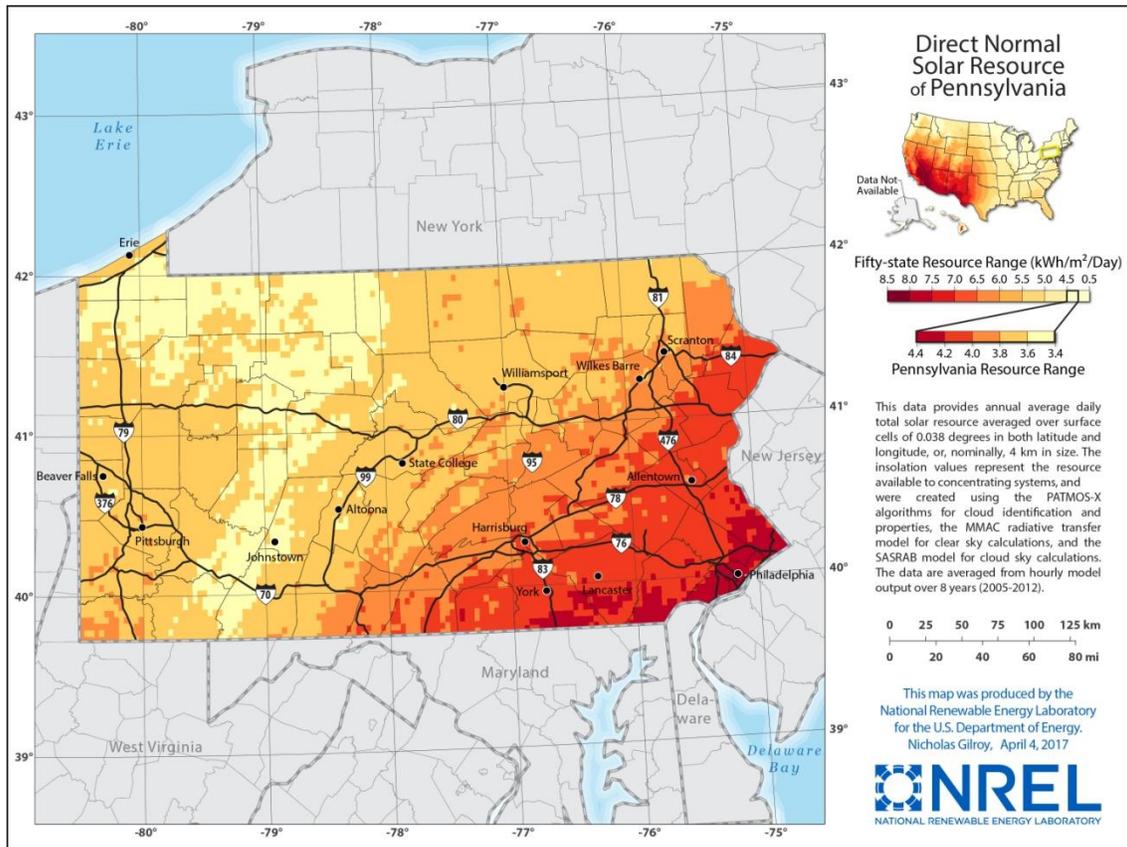


Figure 5-1. Solar Energy Potential in Pennsylvania

Also contributing to increasing practicality of solar electrical systems is dramatically improving battery storage technology. Current battery systems capable of sustaining typical residential demand over a period of days cost only slightly more than fossil fuel powered generator systems, and their cost is expected to decrease rapidly as their function improves.

Government incentives make solar PV systems more affordable to residences and businesses. There is currently a significant federal tax credit that would cover 15-20% of the system installation cost. In addition, Pennsylvania has a solar rebate program, ~~although it is presently unfunded by the legislature that requires legislative funding for implementation.~~

Another alternative available to homes and businesses is leasing a PV system, whereby an individual pays a fixed or variable monthly rate to a solar company who owns and installs the system. This

eliminates the upfront cost for the user and typically results in modest cost savings on electricity to the home or business, while greatly reducing demand on the non-renewable fueled electrical grid.

### Ground Source Heat Pumps

Ground source heat pumps (GSHPs) are wells in the soil that greatly increase the efficiency of heating and cooling (HVAC) systems by providing an ambient heat source or sink with higher moisture content and more constant and moderate temperature than air sourced heat pumps. Since heating and cooling typically consumes up to 50% of residential energy demand, these systems can greatly save on cost and reduce environmental impacts over conventional fossil fuel or electrical systems. In fact, GSHPs are recognized as among the most efficient technologies for HVAC and water heating.

Installation costs for GSHP's are two or three times higher than for conventional systems, but this difference is returned in energy savings over a period of three to ten years, depending on comparisons with radiant electrical, oil, or natural gas. The working life of GSHP systems is estimated at 25 years for inside components and over 50 years for the ground source loops, so they are considerably more durable than conventional HVAC systems, which represents another source of savings in terms of cost and environmental impact. The return on investment period can be considerably shortened through Federal and State incentive programs.

### Wind Energy

Wind energy consists of turbines of various sizes and designs that power electrical generators. It is a significant source of electricity in many parts of the world and the United States. Southeastern Pennsylvania, including the PRPC Region is marginal for wind power production in comparison with other parts of the State, as illustrated in figure 5-2. Thus, this discussion focuses on site specific application of wind power, as opposed to large commercial wind farms.

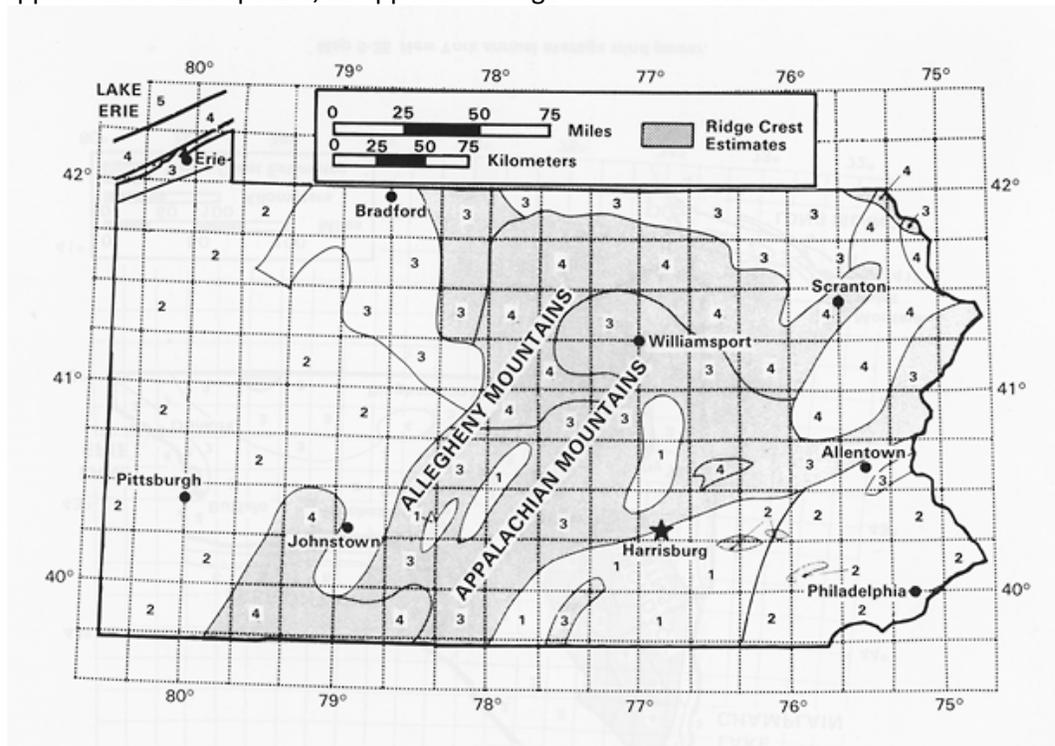


Figure 5-2. Wind Energy Potential in Pennsylvania. Wind power classes 3 and 4 are suitable, class 2 is marginal, and class 1 is generally unsuitable.

Wind power has historically been used in agricultural settings in southeastern Pennsylvania, and advances in turbine and generator efficiency have enabled this source to continue in farm and residential applications. As with solar, improved battery storage technology and cost have increased the capacity to utilize wind power.

~~Unfortunately, previous~~ State and Federal wind energy tax credit programs for onsite wind power for residential and business application ~~have been expired~~could be reinstated to incentivize it. ~~Nonetheless~~Regardless, wind energy remains a technologically feasible supplemental power source for this region, if one is able to absorb a lengthy period of return on investment.

### 5.3 ENERGY EFFICIENT CONSTRUCTION

Energy efficient building layout and construction has been part of traditional building practices worldwide since the beginnings of civilization. However, with the advent of industrial age technology that produced cheap and abundant energy and economic systems that conceal costs through externalization, practices changed to favor a consumer-based method of development. The 20<sup>th</sup> century way of development has needlessly consumed resources, and has resulted in throwaway buildings and landscapes that become blight when their design lives of a scant few decades is exhausted.

This section explores technologies that reduce the environmental impacts of building and development, while improving livability, durability, and sustainability.

Recent advances in architecture, site planning, and consumer product certification have been created to encourage building and development that is more energy efficient and environmentally friendly.

#### LEED Certification

Leadership in Energy and Environmental Design (LEED) Green Building Rating System, developed in 1998 by the U.S. Green Building Council, provides a suite of standards for environmentally sustainable construction. It has since become a standard throughout the U.S. Practices that attain points on the LEED certification scale include such measures as:

- Siting to achieve passive or active solar benefit
- Thermal massing
- High performance insulation for walls, roofs, doors, and windows
- High efficiency HVAC and mechanical systems
- Renewable source energy
- Use of recycled and renewable building materials
- Recycling of construction waste and demolition materials

#### SITES Certification

SITES is a sustainability-focused framework developed in 2009 that encourages landscape architects, engineers, planners, architects and other designers toward practices that protect ecosystems and enhance the mosaic of benefits they provide, such as climate regulation, carbon storage and flood mitigation. SITES is the culmination of work by leading professionals in the fields of soil, water, vegetation, materials and human health. Administered by Green Business Certification Inc. (GBCI), SITES

offers a comprehensive rating system designed to distinguish sustainable landscapes, measure their performance and elevate their value. SITES certification is for development projects with or without buildings—ranging from national parks to corporate campuses, streetscapes to homes, and more. (Source – Sustainable Sites Initiative, 2017) SITES is a points-based system that emphasizes performance objectives over specific practices. Typical measures consistent with SITES certification would include:

- Stormwater water quality and infiltration practices, such as rain gardens, meadows, level spreaders, riparian buffers, green roofs
- Habitat protection and enhancement
- Pervious paving surfaces
- Recycled, locally sourced, and sustainable building materials
- Coordination with mass and multi-modal transit
- Renewable energy
- Water conservation
- Soil management
- Pedestrian accessibility and interconnections
- Operations, maintenance, monitoring, and stewardship

#### Energy Star

Energy Star, created in 1992, is an international standard for energy efficient consumer products including computer products, kitchen appliances, buildings, and others. Energy Star certified products typically reduce energy by between 20 and 30 percent as compared to those that are non-certified.

### 5.4 RECYCLING, REDEVELOPMENT, AND REDUCED RESOURCE USE

#### Recycling

Recycling requirements were established by PA Act 101, The Municipal Waste Planning Recycling and Waste Reduction Act adopted in 1988. Each municipality within the Region works to comply with these requirements in varying ways. [Waste haulers are required to have recycling programs and collect recycling separate from waste in all municipalities. In the Borough of Phoenixville, the Borough collects comingled products weekly, which includes paper, glass, plastics, metal and aluminum cans.](#)

[Additionally, both Phoenixville Borough and East Pikeland Township have composting facilities. The Phoenixville composting facility is located on South 2<sup>nd</sup> Avenue. The Phoenixville composting facility accepts/collects yard debris from residents of Phoenixville Borough and also accepts yard debris from Schuylkill Township residents and approved contractors in the region. Residents of Phoenixville and Schuylkill can get mulch from the facility during established hours.](#)

[The East Pikeland composting facility was established in 1993 and it is located next to the Township building on Rapps Dam Road. Residents can drop off their yard waste and pick up mulch when needed.](#)

[While West Vincent and Charlestown Township do not currently have composting programs, opportunities to create such programs should be considered. Programs could start simply at a designated site maintained by the Township or at community garden areas. Another alternative could be to develop multi-municipal agreements similar to the arrangement between Phoenixville and Schuylkill Township with the other municipalities of the Region to allow residents of West Vincent and Charlestown Townships to use the existing facilities.](#)

Opportunities to expand local recycling programs should be encouraged. ~~Opportunities, such as composting food waste and offering yard waste composting in municipalities that do not have this option should be pursued.~~

#### Redevelopment

In an effort to reduce energy use associated with the development of an undeveloped site, incentives should be provided to encourage redevelopment of vacant and underutilized parcels located near population centers.

#### Reduced Use of Resources

The United States population continues to use natural resources at a higher rate per capita than most other countries. Many opportunities exist to reduce the amount of resources used, but often a concerted effort to educate the population is required to help people change habits. Some examples of opportunities to reduce energy use include turning off lights in rooms when not being used, unplugging appliances and electronics when not in use, setting heating system slightly lower in the winter and wearing warmer clothes, washing clothes using cold water, insulating roofs and windows, and installing low-flow plumbing fixtures. Opportunities should be pursued to educate residents and businesses of the Region regarding ways to reduce energy and resource use.

### 5.5 TRANSPORTATION SYSTEMS

Transportation accounts for nearly 30% of total energy use in the US, and can therefore contribute significantly toward energy conservation efforts. Transportation planning will receive further attention in **Chapter 10**.

Transportation systems significantly impact energy use in our region. Single-occupancy vehicles account for the vast majority of commuting vehicles and miles driven. As summarized in the Chester County Landscapes2 Comprehensive Plan, the percent of employed residents who drove alone, based on the American Community Survey from 2008-2012, was 84-90 percent in East Pikeland and Schuylkill Township, 79-83 percent in Phoenixville and Charlestown Township, and 71-78 percent in West Vincent Township. As technology and innovation continue to develop, creative alternatives for reducing the miles driven by the single-occupant driver become available. Because much of the Region is developed at low densities, and is encouraged to remain that way through land use policies, a wide range of alternatives needs to be available to residents. Mass transit that is feasible in the urbanized areas, may not be feasible in the rural areas where the population density does not support such services.

Within the Phoenixville Region there are organizations focused on transportation coordination between public sector transportation agencies and the Chester County business community. TMACC is a non-profit that was established in 1992 by the Pennsylvania Department of Transportation to serve as a liaison between public sector transportation agencies and the private sector on transportation issues affecting the Chester County business community. TMACC's focus is on Mobility Management and Sustainability through education, advocacy and special programs.

Another nonprofit doing work in the region advocating and promoting a viable transportation network for the region's economic vitality is the Greater Valley Forge Transportation Management Association (GVF). GVF is based in King of Prussia, but its mission is to achieve a desirable quality of life and a

healthy, competitive economic environment by developing multi-faceted transportation strategies throughout the region.

#### Land Use Planning and Zoning Coordination

Local zoning and land development regulations provide opportunities to establish energy conservation standards and improved transportation systems for new development. Consideration of interconnections for both vehicles and pedestrians between existing and proposed development across municipal boundaries can be required in local ordinances to provide improved opportunities for people to make choices to reduce vehicle miles traveled and to choose to walk between businesses that are relatively nearby.

Mixed use development supports energy efficiency and a reduced impact on transportation systems by encouraging a mix of residential, commercial and office development in proximity to one another providing improved opportunities to walk or bike between uses. Coordinating zoning and requiring interconnections between mixed-use developments in adjacent municipalities supports such mixed-use areas.

Local ordinances can also be amended to require new development to provide bicycle storage and bicycle parking facilities near entrances to buildings, rather than remotely located on the property. Bicycle parking facilities should be covered, at a minimum, to protect bicycles from harsh weather. Walking-Pedestrian facilities interconnecting ~~to~~ adjacent properties ~~and trails~~ should link new development to existing development.

To help encourage carpool/ridesharing, local zoning codes can be amended to require new development to provide ~~Consideration should also be given to requiring the dedication of a limited number of parking spaces to carpool/ridesharing for this purpose.~~

#### Mass Transportation Planning and Improvements

Mass transportation includes existing fixed route transportation systems typically consisting of buses, trolleys, and trains/rail service. In the Phoenixville Region mass transportation is currently limited to bus service, and this service is limited to Phoenixville, Schuylkill Township, Charlestown Township and East Pikeland Township. Phoenixville is served by two SEPTA bus routes, Route 99, which provides regular transit service between Royersford and King of Prussia including stops in Audubon and Norristown. Route 39 also serves Phoenixville, Schuylkill Township, and East Pikeland Township with stops along Route 724 in East Pikeland and stops along Route 23 in all three municipalities. The portion of Charlestown Township associated with the Great Valley Corporate Center is served by bus 206, which connects the Great Valley Corporate Center with the Paoli Train Station and points in-between. West Vincent Township does not have SEPTA service available.

SEPTA previously provided bus service between Phoenixville, the Great Valley Corporate Center and the Paoli Rail Station, but ridership was low and the service was cancelled in 2014. Currently SEPTA Route 206 provides connection between the Great Valley Corporate Center and the Paoli Rail Station.

Providing transit opportunities throughout the region remains challenging because much of the Region is rural in nature and does not lend itself to opportunities for high volumes of riders outside the more urbanized areas. While increased frequency and coverage could help increase ridership, the SEPTA

routes tend to be circuitous between major destinations such as Norristown and King of Prussia resulting in long commutes that are often not practical for employees who have other alternatives. Opportunities for express buses during peak hours should be considered, [particularly along major roads in the Region including Route 23, Route 29, and Route 724. Reestablishment of the SEPTA service previously provided between Phoenixville, the Great Valley Corporate Center and the Paoli Rail Station should be considered and establishment of a bus route along Route 100 in West Vincent connecting Ludwigs Corner to the Exton train station should also be considered.](#)

Due to limited funding for mass transit, the amenities associated with bus stops tend to be minimal, further reducing the appeal of choosing transit. Improved amenities such as protected shelters at bus stops, bicycle parking, wifi on the buses, and more comfortable seating should be considered to increase ridership. Some amenities could be sponsored by the local municipality and/or businesses to make transit more appealing.

### Rail Service

Phoenixville was served by commuter rail service until the 1980's when it was ended. Studies have been completed over the years to reestablish rail service between Phoenixville and Norristown, but adequate funding has not been allocated beyond conducting studies. The possibility of connecting Phoenixville with the Great Valley Corporate Center in Charlestown Township via rail was subsequently investigated, but again funding was not allocated and the project did not move forward. [Reestablishment of rail service to the Phoenixville Region should be advocated to help improve energy conservation opportunities.](#)

### Other Publicly Funded Transportation

While not having a fixed daily route, Rover Community Transportation is a transportation service available for residents throughout Chester County needing to travel within Chester County. While the service is available to anyone in Chester County, the emphasis is on providing a transportation alternative for Chester County seniors and disabled residents. The Rover transportation service is subsidized for residents who are disabled, senior or who qualify for certain other government assistance programs. Residents who do not qualify for subsidies can use the service, but must pay the full rate which is dependent on the distance of the trip. Full price rates currently range from \$11.75 (0- 4.99 miles) to \$129.05 (41+ miles). To use Rover, a reservation must be made the prior day by 1 PM and routes may include picking up other passengers along the way to a destination. Given the high price for full-rate customers, Rover tends to be a better alternative for riders eligible for subsidies.

Because there is a fleet of vehicles associated with the Rover Community Transportation system already active in the Region, consideration should be given to potential partnerships between the Rover program and local employers to offer shuttle services between population and employment centers within the greater region.

### Ride Sharing/Carpooling

[Another opportunity for reducing energy use in the region is ridesharing or carpooling.](#) Ridesharing or carpooling consists of two or more people with similar work schedules riding together to a similar area. Carpooling/ridesharing is typically done in a private vehicle and arrangements can vary from taking turns

driving a private car, to compensating a driver for providing a ride. Challenges associated with carpooling/ridesharing including finding another person from your area with a similar commuting pattern and finding safe and secure meeting places from which to travel. Within the Region there are currently no park-and-ride parking lots to encourage ridesharing. Consideration should be given to identifying locations for park-and-ride lots in the Region to better improve opportunities for shared rides. Ridesharing websites exist, but without a better understanding by the general public how such an arrangement could work for them, it is often difficult for people to be willing to try such an alternative.

#### Alternative/Multimodal Transportation

Multi-modal transportation refers to a transportation system that involves various modes (walking, cycling, automobile, public transit, etc.) and connections among modes. To encourage use of multimodal transportation alternatives, the points of transition from one mode to another should support an easy, safe transition. This could range from waiting areas protected from harsh weather to adequate lighting and protected seating for people having to wait to adequate parking for cars or bicycles. As technology advances and innovative, energy efficient ways to get from one point to another are developed, municipalities within the Region should continue to find ways to encourage and support alternative modes of transportation.

#### Telecommuting

Telecommuting is a work arrangement that allows an employee to conduct work during any part of regular paid hours at an approved alternative worksite, such as at home. As technology improves and telecommuting becomes much more feasible for a wider range of businesses, telecommuting from home is a simple alternative that maximizes energy efficiency by eliminating the need to travel for work on the telecommuting days.

#### Complete Streets

Complete streets is a concept focused on requiring improvements within the public right-of-way to be designed and operated to enable safe access and passage for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities. Municipalities are often challenged by developers requesting relief from certain aspects of complete street requirements due to an anticipated lack of pedestrian, transit or bicycle use. Granting such requests essentially eliminates the possibility of these alternative modes becoming established in the future. Granting such relief should be avoided. Throughout the Region gaps can be seen in the infrastructure for pedestrians and bicycles resulting in unsafe conditions for those who have no alternative to walking and bicycling. These gaps also discourage others from walking or bicycling due to the lack of safe facilities. Retrofitting rights-of-ways later to accommodate such infrastructure tends to be challenging and a significant financial burden to the tax payers within a community. Complete streets provide residents and employees with choices of alternative forms of transportation and enhance the livability of the Region.

#### Plug-in and Alternative Fuels

Significant progress has been made with plug-in car technology in the past several years, but challenges continue regarding public charging stations. According to resources available on the internet there are two charging stations within the Phoenixville Region, one at the Borough of Phoenixville municipal building and one at Main Line Animal Rescue on Route 113. However, according to Phoenixville

Borough [staff representatives](#), the charging station at the Phoenixville municipal building was recently removed because the company servicing the unit went out of business. [The Borough continues to search for sponsorship to replace the charging station and the possibility of expanding the charging stations to other spaces in the Borough parking lot along Bridge Street, which are also wired for charging stations. No plans are currently underway to replace that unit.](#) Without charging stations in the Region, people with electric cars may be less likely to travel to the Region. Municipalities within the Region should consider opportunities to provide such stations at municipal buildings or encourage local businesses to provide charging stations.

## 5.6 ELECTRICITY GRID

The electricity grid system has traditionally been centralized. Centralized systems are typically dependent on a limited number of energy production facilities, utilizing energy sources such as natural gas, nuclear, or coal, which generates large quantities of electricity that is located a long distance from end-users resulting in transmission and distribution inefficiencies due to long distances required for distribution. Such systems are inefficient and vulnerable should the system be interrupted close to the source, resulting in the loss of power to a large area.

In an effort to reduce dependency on a centralized source of energy generation, distributed energy generation is playing a larger role in electricity distribution. A distributed energy system is one where there are multiple sources of energy production, both large and small. Sources of energy vary from wind turbines, solar panels, conventional fossil fuels and nuclear power plants. Transitioning to the distributed energy system provides opportunities for alternative sources of energy when one source becomes unavailable.

### Support Modernized Grid

Within the Region the distributed energy system can be supported by encouraging new development to incorporate energy efficient technologies such as roof-mounted solar into development. Retrofitting existing buildings with solar also adds to the diversifications of the grid system.

## 5.7 LOCAL INITIATIVES

There are a number of actions that can be taken on the local level to advance energy conservation. These include regulatory strategies, municipal programs, and model projects.

### Local and Community Regulations

PRPC municipalities should review local development and building codes to create incentives and eliminate barriers to energy conservation. Incentives could consist of various types of density bonuses for low impact design. Ordinances could be crafted in ways that walk applicants through various components and processes



of green building, with established details and methodologies to expedite design and approval

Further, in order to promote sustainability through resource protection and energy conservation, it is critical that ordinances and rules made by local authorities and community associations do not counter these objectives. Municipalities should ensure that ordinance standards based on purely aesthetic or parochial concerns do not create unintended barriers to environmentally conscientious development, construction, or rehabilitation. In addition, where regulations are crafted with the intention of promoting the use of sustainable practices, permitting and cost hardships that would discourage those practices should not be invoked. Finally, community association covenants should be scrutinized to prevent the establishment of arbitrary and counterproductive prohibitions of sustainable practices.

### Municipal Programs

Municipalities should advocate energy conservation throughout the community. These efforts can take a number of forms:

- Local recycling and composting programs or participation in and expansion of existing regional programs
- Information gathering and dissemination through printed materials, public exhibits, and web content
- Implementation of sustainable practices at municipal facilities, such as LEED/SITES certification, stormwater/habitat projects, electric vehicle charging stations, and model projects using sustainable materials
- Use of alternative fuel and EV/hybrid vehicles
- Advocacy of multi-modal transportation
- Community fairs and events focused on energy and environmental sustainability
- Coordination with community and regional organizations dedicated to energy conservation

## 5.8 IMPLEMENTATION STRATEGIES

The following policy recommendations will implement the goals and objectives of the Energy Conservation Plan:

### **EC-1 Assure that local ordinances promote use of renewable energy.**

Develop provisions to advance renewable technologies with straightforward processes and permitting, and eliminate provisions in the codes that act as deterrents. Emphasis should be placed on promoting solar PV and GSHP development.

### **EC-2 Advocate use of energy efficient technologies in local building and development codes.**

Preferred practices should be advanced through simplified permitting and/or fee structures that favor those practices. Eliminate code provisions that prohibit or discourage sustainable building practices.

### **EC-3 Establish guidelines for community associations to prevent arbitrary prohibitions of sustainable practices.**

Examples are aesthetically motivated outright prohibitions on solar panels, outdoor clothes lines, landscaping restrictions, etc. that are commonly found in community association covenants.

**EC-4 Create municipal resource centers for activities and information on energy conservation.**

Include energy conservation strategies for residents in utility bills or other forms of communication from municipalities to residents.

**EC-5 Create or expand municipal and/or regional recycling programs.**

Consider the development of food composting recycling programs within the region.

**EC-6 Develop municipal projects to serve as models of energy efficient practices for the community.**

Examples are sustainable building practices in municipal facilities, EV and high efficiency vehicles, multi-modal transportation and accessibility.

**EC-7 Continue to work with regional transit advocates and SEPTA to promote rail service to Phoenixville with stops in the Phoenixville Region as appropriate.**

**EC-8 Improve opportunities within the Region for residents to utilize alternative modes of transportation.**

Identify locations that can serve as park-and-ride facilities to better encourage carpooling and ride-sharing in the Region.

On municipal websites develop a list of resources for residents interested in ridesharing/carpooling.

Encourage SEPTA to provide incentives for those carpooling/ridesharing to rail stations by offering dedicated free or reduced parking for those carpooling.

Provide secure bicycle parking/storage at key multimodal locations to allow storage of bicycles while using another mode of transportation.

Have representatives of the Phoenixville Regional Planning Committee attend local meetings of community organizations such as Chambers of Commerce to promote opportunities for carpooling/ridesharing and other alternative transportation opportunities.

**EC-9 Encourage improved mass transportation service to the Region where feasible.**

Encourage SEPTA to develop express bus service to major destinations such as King of Prussia and Norristown during peak hours.

Work with SEPTA, other transportation organizations, municipal governments and local business organizations to promote available bus services, and newly proposed bus service, to residents and employees in the Region to improve ridership.

Encourage partnerships between SEPTA and large employers in the greater region to develop shuttles between population centers and major employers. Consider incorporation of the Rover vehicles as regular shuttle vehicles between key locations connecting population and employment centers.

**EC-10 Provide electric vehicle charging stations at municipal buildings and encourage local businesses to provide charging stations.**

## **CHAPTER SIX – HOUSING PLAN**

The plan for housing helps to maintain and shape the type of community the Region will have. Housing policy influences who lives in the community in terms of ethnicity and economic characteristics. It also affects economic viability by prioritizing a workforce appropriate to local and regional centers of employment. It works in concert with the Land Use Plan to create vibrant settlements while protecting rural and natural areas. The Housing Plan is thus an essential part of establishing and sustaining a healthy and dynamic, Regional community of neighborhoods.

### **6.1 HOUSING PLAN GOAL AND OBJECTIVES**

Provide a range of housing opportunities in appropriate areas to meet the needs of all Phoenixville Area residents, regardless of household size, age and/or income. This goal is to be advanced through the pursuit of the following specific objectives:

1. Manage new housing through a balanced pattern of development that preserves and enhances existing communities and the natural and scenic landscapes of the Region.
2. Encourage clustering of housing and village-style mixed-use development, and discourage sprawling development patterns that consume existing open space.
3. Provide a diversity of housing options for residents throughout the Region.
4. Maintain, preserve, and revitalize the Phoenixville Region’s existing neighborhoods, particularly its older housing stock, and create new residential opportunities that make it a community of choice for homeowners and renters.
5. Support the revitalization of existing residential areas in older communities and neighborhoods through effective code enforcement and the preservation of the housing stock.
6. Ensure opportunities for affordable housing throughout the Phoenixville Region.
7. Prioritize housing opportunities for seniors and families.
8. Encourage home ownership opportunities in areas of the Region where owner-occupancy rates are much lower than the majority of the Region.

### **6.2 EXISTING HOUSING CHARACTERISTICS AND CURRENT TRENDS**

The PRPC Region includes housing patterns in rural, suburban, and urban settings. Although the majority of housing units are single family detached, over 40% of the Region’s dwellings are in attached or multifamily buildings – a percentage that will likely increase in accordance with post-recession trends. There is a good availability of rental housing for a diverse and transitional workforce, although the emphasis of new development on an upscale, rental market is having an impact on affordability and the proportion of single-family detached housing stock.

#### **Current Housing Data**

##### **Housing Unit Types**

Most of the housing across the Region is made up of single family detached units, although attached and multi-family units constitute a combined total of 43% of housing stock. Mobile homes comprise just 1% of the Region’s units, and most of these are contained within three developments in Schuylkill Township.

Phoenixville offers the greatest diversity in housing options, with a fairly even split between single family detached, single family attached, and multi-family units. As figure 6.2-2 shows, this coincides with the greatest rental availability in the Region. The Borough’s dense residential concentration presents a greater opportunity for mixed use development and transit options than elsewhere in the Region.

Outside of Phoenixville, East Pikeland and Charlestown Townships have the largest percentage of single family attached housing. In both municipalities, these residences are largely clustered in traditional neighborhood and carriage home developments along major transportation route corridors. The overwhelming majority of units in both Schuylkill and West Vincent Townships are single family detached. However, West Vincent and East Pikeland Townships each contain a significant portion of multi-family housing, which suggests increased renter opportunities in both municipalities.

The location of single family attached and multi-family units throughout the Region may help identify areas needing expanded transportation options, amenities and services, or mixed-use development opportunities.

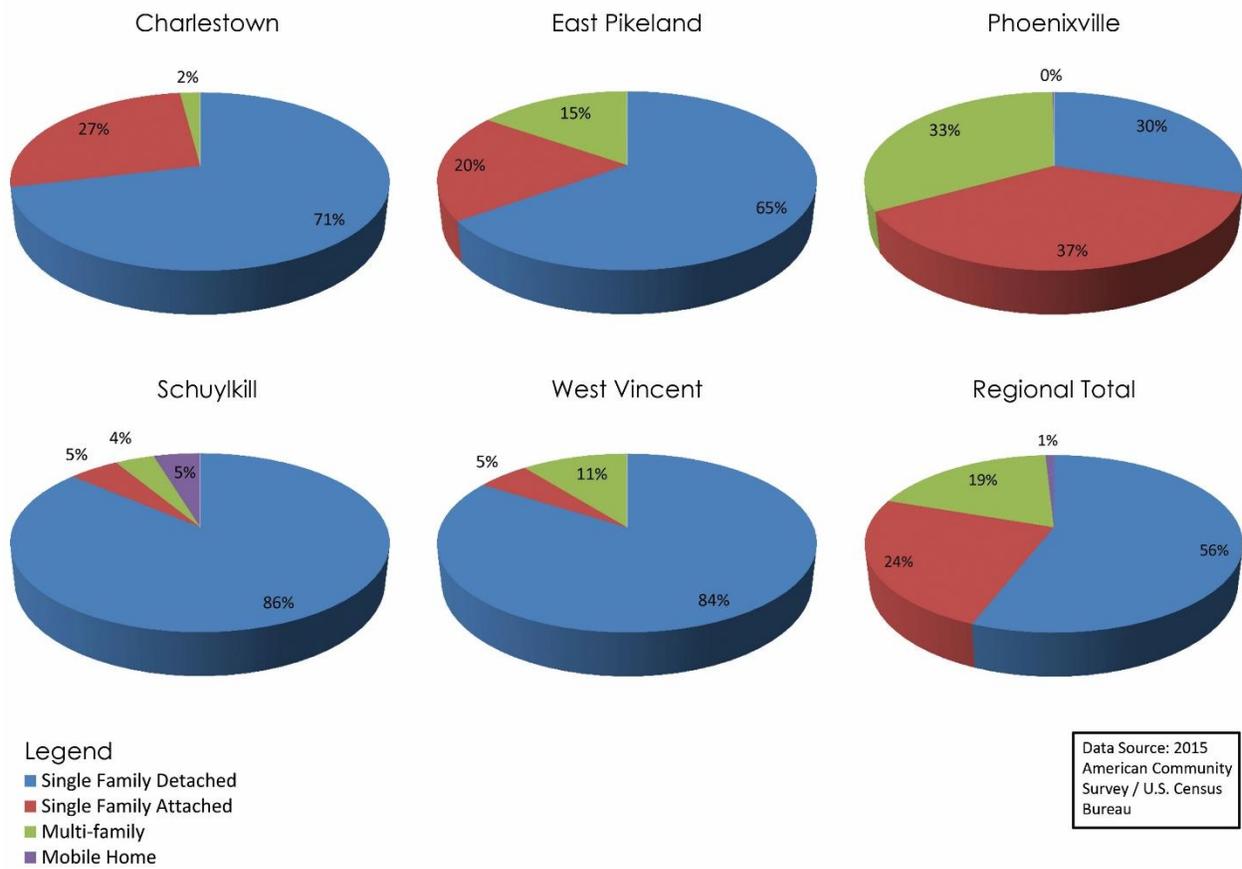
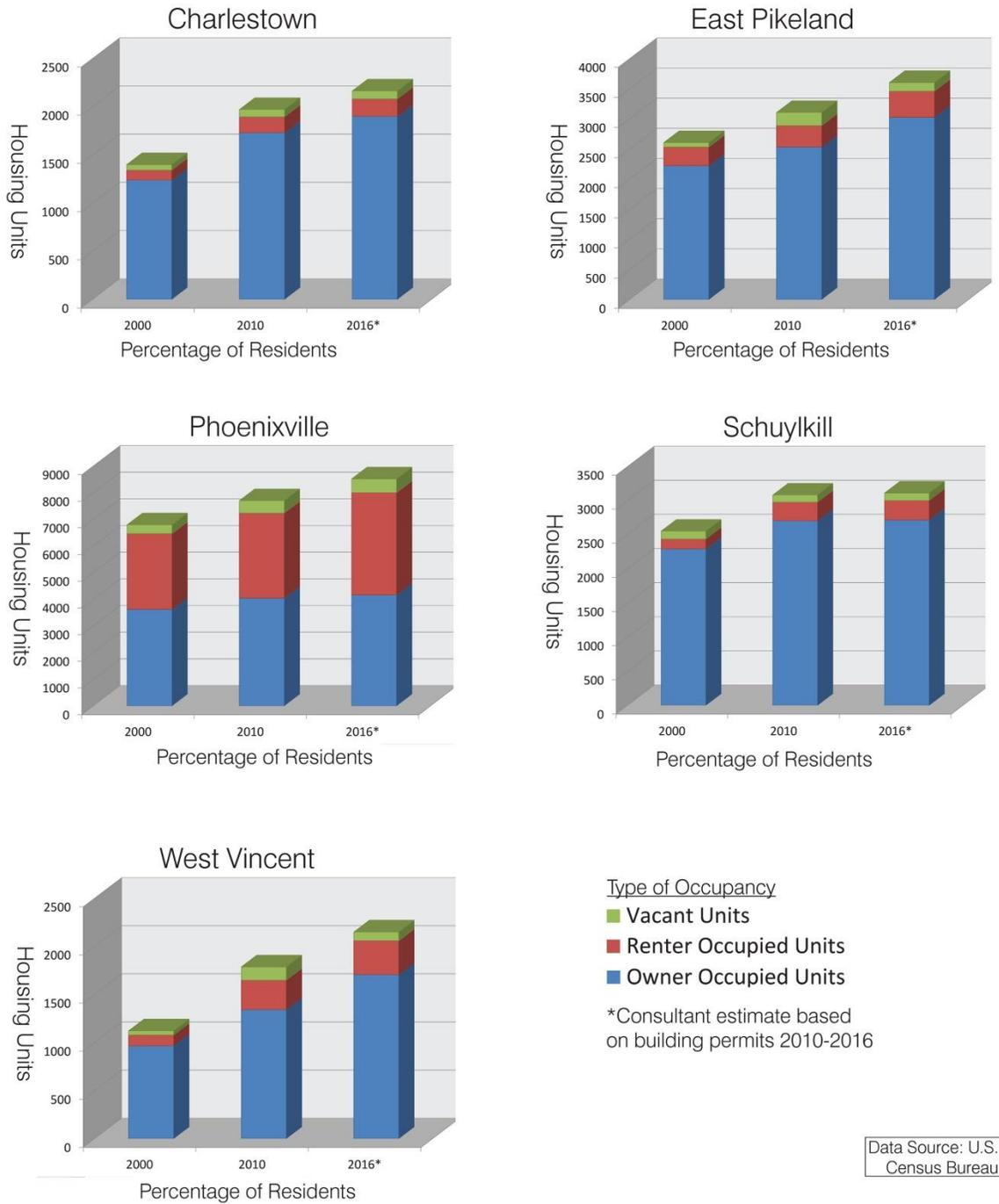


Figure 6.2-1: Housing Unit Types by PRPC Member Municipality and by PRPC Study Area Total

### Housing Unit Occupancy and Tenure

Owner-occupied housing makes up the vast majority of units in each of the Region's municipalities with the conspicuous exception of Phoenixville Borough (figure 6.2-2). Here, renter-occupied housing is approaching an equal proportion with owner-occupied housing, particularly after the surge in construction of multi-family and single family attached units in 2016 (see table 6.2-2 on page 11). Both West Vincent Township and East Pikeland Township also experienced a significant increase in renter-occupied housing between 2010 and 2016, which is consistent with the new apartment and townhouse construction that took place during this time. Although Charlestown and Schuylkill Townships did not see dramatic gains in the percentage of renters, they too have had a slight increase in this segment of the housing market.

Throughout the Region, unit vacancy rates have remained for the most part stable and below the statewide rate of 6.5% (2010). While Phoenixville had a relatively high rate of vacancy in 2010 (6.1%), it remained below the statewide figure. Some of the Borough's vacant units could represent older housing stock in need of rehabilitation (see figure 6.2-3). East Pikeland and West Vincent's vacancy rates rose in 2010 to exceed that of the state (7.1% and 7.7%, respectively), although this is due to recent construction yet to be occupied; by 2016's estimates, vacancy fell to rates consistent with those of Charlestown and Schuylkill Townships.



**Figure 6.2-2: Unit Occupancy and Tenure by PRPC Member Municipality**

**Housing Growth and Age of Units**

Dates of housing construction in the Region may correspond with periods of greater economic development. The majority of housing units built before 1970 are found in Phoenixville, which accords with the Borough’s long history of economic growth associated with the steel industry. A significant

proportion of units were also constructed in East Pikeland and Schuylkill Townships before 1970 (36% and 40%, respectively).

The thirty years between 1970 and 2000 brought robust exurban growth to the Region: Charlestown, East Pikeland, and Schuylkill Townships each added over 40% of their current housing stock during this time, and over a quarter of the current units in West Vincent and Phoenixville were constructed in this time period as well. This period saw the trend of less densely placed, single family units contributing to sprawl throughout the Region.

The growth of housing construction continued in nearly all of the PRPC member municipalities between 2000 and 2015. This period of growth is particularly significant in West Vincent Township, which saw more units built during these 15 years than in the previous 60 years. A large number of units were also built in Charlestown Township following the year 2000 (643 units, or 34% of its housing stock). The growth in these townships to a large extent reflects the boom in the construction of multi-family and attached single family units that occurred following the Region's recovery from the Great Recession of 2007-2008. If we project the 2000-2015 building trends for each municipality out to 2030, Charlestown and West Vincent would each be on track to add over half of all of their housing units during this time (51% and 56%, respectively), followed by East Pikeland (35%), Schuylkill (31%), and Phoenixville (16%). This incredible, Region-wide growth could create strains on existing services, and lead to a demand for expanded amenities – the Region should plan so that this growth is directed in a sustainable manner.

The Region will also need to consider its aging housing stock. Phoenixville, East Pikeland, and Schuylkill have the greatest number of units approaching fifty years of age or older. Phoenixville in particular has the greatest concentration of older units, but these buildings present unique opportunities and challenges in each of the PRPC member municipalities. Farm houses, townhouses, and other old buildings contribute to the area's unique sense of place and historic character, and should be reused wherever possible as opportunities allow. However, plans for repurposing these buildings should balance historic significance with safety concerns and the maintenance needs pertinent to older structures.

Changes in Occupancy

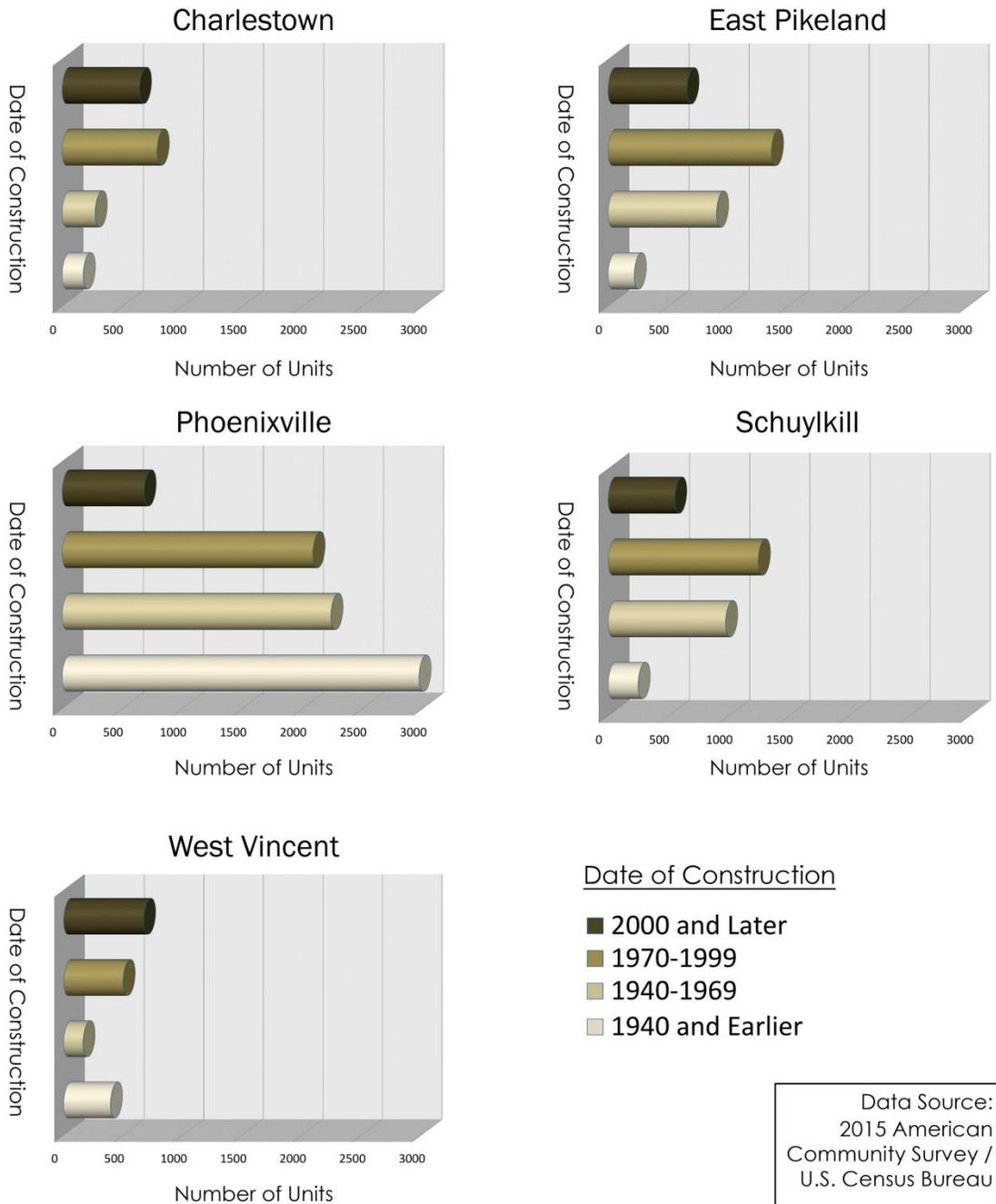


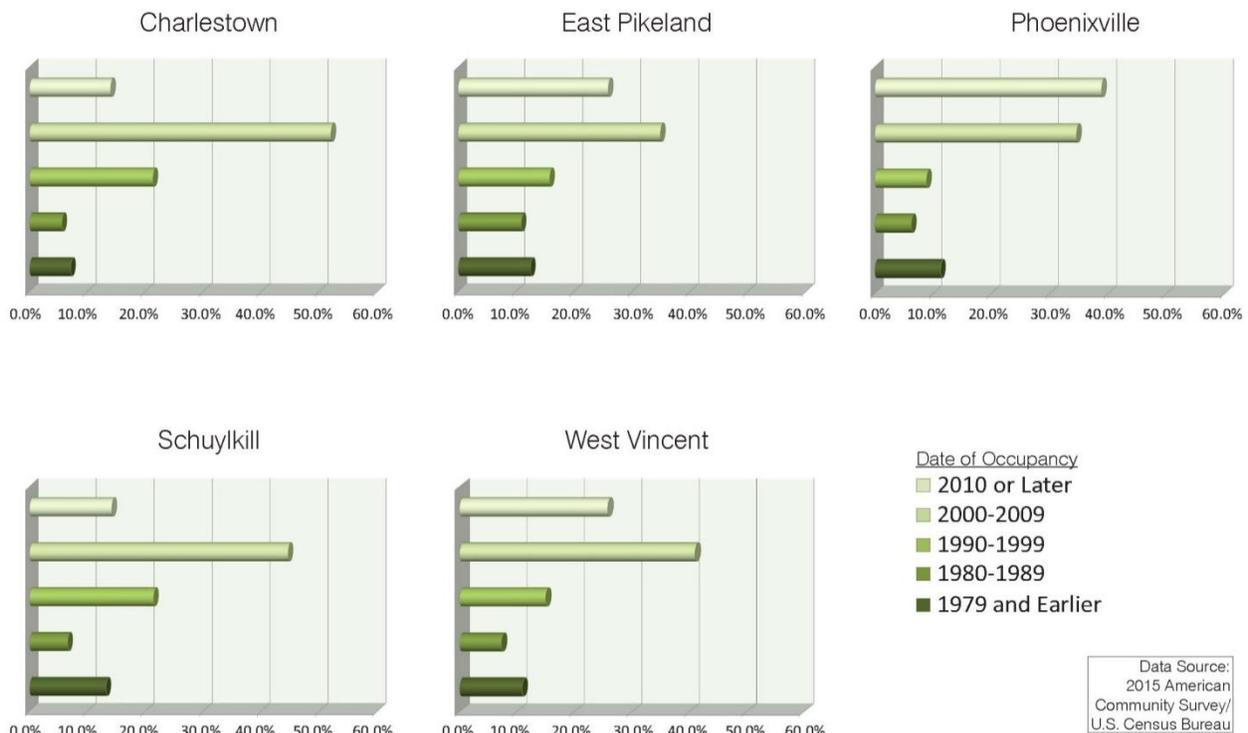
Figure 6.2-3: Dates of Housing Construction by PRPC Member Municipality

The Region’s population is a fairly dynamic one, which may be explained at least in part by the recent housing boom: as figure 6.2-4 shows, over half of all households occupied their current residence during or after 2000. The 2000-2010 decade saw the most significant fluctuation for Charlestown (52% of

households occupied current residence), Schuylkill (44.6%), and West Vincent (41%) Townships in particular, followed by East Pikeland (34.9%) and Phoenixville (34.6%).

The years following 2010 brought significant change for East Pikeland, Phoenixville, and West Vincent’s occupants as well; in each of these municipalities, over a quarter of all housing units changed occupants at this time. This is likely due to the occupation of newly constructed residences, although change of occupants in rental properties may also help to explain these fluctuations.

Phoenixville appears to have the most dynamic population: it has seen the greatest number of residences changing occupants since 2000 in the Region (73.5% of units), and is the only municipality in the PRPC with more units changing hands in 2010 or later than in any other decade. This is consistent with a significant renter population, as is shown both in figure 6.2-2 and in charts in Chapter 2, Demographics; it may also be partly explained by the Borough’s recent economic revitalization. Larger proportions of the population in Charlestown, Schuylkill, and (to a lesser extent) East Pikeland and West



**Figure 6.2-4: Dates of Housing Occupancy across PRPC Member Municipalities**

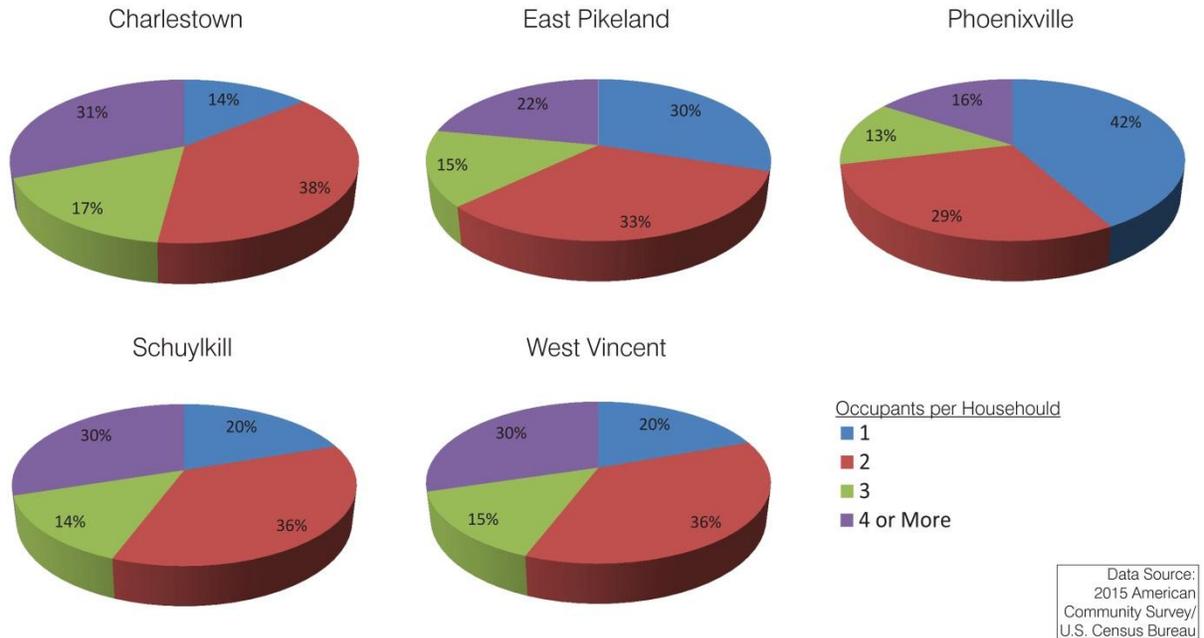
Vincent townships have settled in their current households since at least 1999, indicating a greater percentage of stable, family-based households – this is also supported by figures in Chapter 2.

**Occupants per Household**

As with family composition numbers discussed in Chapter 2, the number of occupants per household gives some indication of patterns of residential density and may be used to help direct planning for transportation and general economic growth.

In Phoenixville and East Pikeland there are many 1- and 2-person households, which is indicative of a greater percentage of non-family households; this is consistent with the family household data presented in in Chapter 2. In the other municipalities, however, demographics data shows that the 2-occupant households indicate a higher percentage of family members, couples without children or with grown children than non-family households.

Households with three or more occupants make up at least one third of all households throughout the Region, except in Phoenixville. When paired with family household data, this shows that traditional, nuclear families are a significant proportion of the population here. It is interesting to note, however,



**Figure 6.2-5: Number of Occupants per Household across PRPC Member Municipalities**

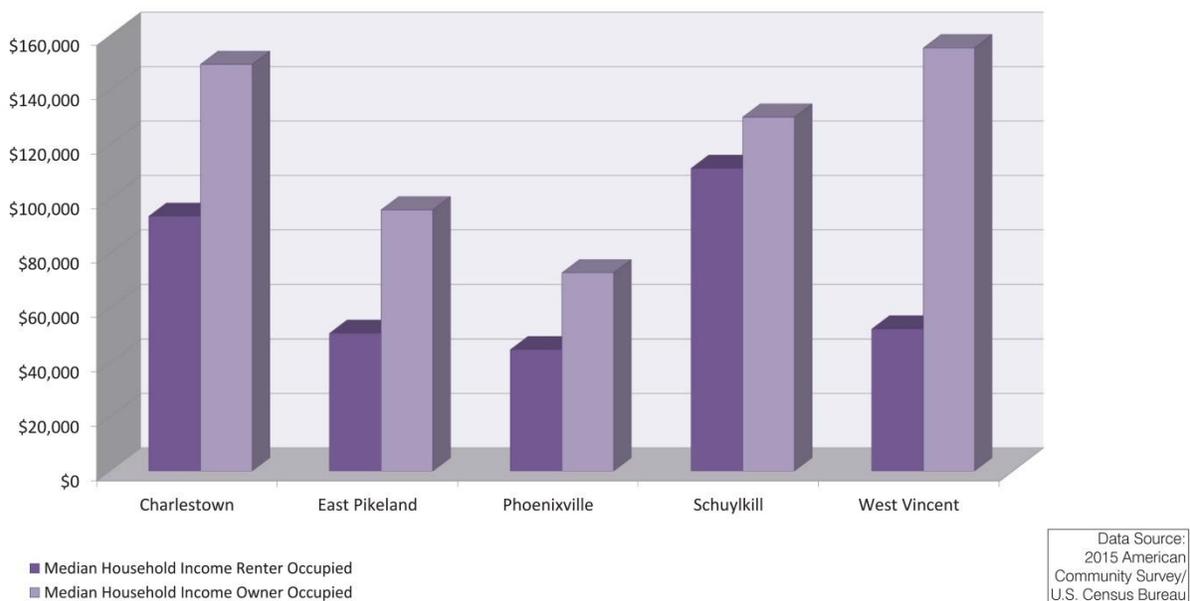
that these households make up less than 50% of households in every one of the PRPC member municipalities.

### Household Income

Household incomes relative to renting vs. owning types occupancy help provide a picture of residents' ability to purchase homes and where rental markets should be concentrated.

In Schuylkill Township there is the smallest gap between the incomes of renters and owners (\$111,165 vs. \$129,975). Given that Schuylkill has a similar relative number of rental units (9.2% of units - see figure 6.2-2) as the other municipalities, this may correlate with a higher quality of rental accommodations (e.g. luxury apartments).

West Vincent has the largest gap in median household income between renters and owners (\$52,232 vs. \$155,417), and a relatively large rental market (16.5% of all units), which points to a large discrepancy in the quality of rental versus owned units. Phoenixville has a fairly narrow gap between renter and owner



**Figure 6.2-6: Median Income of Renter Occupied vs Owner Occupied Households across PRPC Member Municipalities**

incomes (\$28,195), but a high number of rental units (45.1% of available housing), likely indicating less of a discrepancy in quality of accommodation between owned and rented units.

Impact of the Great Recession

The Great Recession of 2007-2008 dramatically altered the nature of housing growth in the Region. Prior to that time, small to large developments of single family detached houses on suburban lots was the dominant paradigm, and tracts of agricultural and natural lands were transformed at an alarming rate. Very little development occurred during the Great Recession of 2007-2008. Then, as the economy recovered, development patterns shifted toward revitalizing areas of Phoenixville and toward higher density and mixed use communities in the surrounding Townships. Large lot subdivisions have for now at least given way to small lot, attached, and multifamily developments, and there has been a recent dramatic increase in the construction of rental apartments.

According to Chester County Planning Commission data, overall County-wide housing sales numbers and median prices by 2014 had recovered to approximately pre-recession levels, although numbers of new, non-apartment units are still significantly lower. In addition, construction of new owner occupied housing was slowed dramatically by the recession, but rental units are still being built in all of the Region’s municipalities at a significant rate.

**Table 6.2-1 Regional Changes in Housing Occupancy 2000-2016**

<b>Municipality/Year</b>	<b>Occupied Housing Units</b>	<b>Owner Occupied Units</b>	<b>% Owner Occupied</b>	<b>Renter Occupied Units</b>	<b>% Renter Occupied</b>
Charlestown 2000	1340	1236	92.2%	104	7.8%
Charlestown 2010	1893	1728	91.3%	165	8.7%
Charlestown 2016*	2079	1898	91.3%	181	8.7%
East Pikeland 2000	2530	2221	87.8%	309	12.2%
East Pikeland 2010	2885	2530	87.7%	355	12.3%
East Pikeland 2016*	3457	3025	87.5%	432	12.5%
Phoenixville 2000	6460	3619	56.0%	2841	44.0%
Phoenixville 2010	7232	4041	55.9%	3191	44.1%
Phoenixville 2016*	8000	4156	52.0%	3844	48.1%
Schuylkill 2000	2436	2291	94.0%	145	6.0%
Schuylkill 2010	2977	2704	90.8%	273	9.2%
Schuylkill 2016*	3001	2715	90.5%	286	9.5%
West Vincent 2000	1077	965	89.6%	112	10.4%
West Vincent 2010	1646	1341	81.5%	305	18.5%
West Vincent 2016*	2057	1703	82.8%	354	17.2%

\* Consultant's estimate based on municipal building permit data 2010-2016

Significant New Developments and Trends

Ongoing Regional projects provide evidence that the post-recession change in development patterns persists. Developments include multifamily and mixed residential buildings, and some incorporate or are near supporting commercial uses. Phoenixville's new housing consists almost entirely of apartments, and East Pikeland, Schuylkill, and West Vincent Townships also have significant new apartment projects pending or proposed. Attached housing consisting of twins, townhouses, or carriage homes is still a significant factor in Phoenixville and in Charlestown, Schuylkill, and West Vincent Townships. There are notable single family detached housing developments in Charlestown, East Pikeland, Schuylkill, and West Vincent Townships, but these are generally open space/cluster or Traditional Neighborhood Development configurations with compact development patterns as opposed to the large lot paradigm that was predominant before.

**Table 6.2-2 Significant Approved and Pending Residential Projects**

Source: Municipal records as of December 2017

<b>Project by Municipality</b>	<b>Apartments</b>	<b>Single Family Attached</b>	<b>Single Family Detached</b>	<b>Total Housing Units</b>
<b>Charlestown Township</b>				
Devault Village	0	51	27	78
Pickering Crossing	0	76	0	76
Spring Oak	0	102	82	184
<b>East Pikeland Township</b>				
Kimberton Glen	0	0	332	332
Pikeland Glen	0	0	285	285
Westside	171	0	0	171
<b>Phoenixville Borough</b>				
Barto**	300	0	0	300
Church Street Commons	70	0	0	70
Eland Pointe Crossing	193	0	0	193
Filmore Village	0	29	0	29
French Creek Residences	850	0	0	850
Odessa*	240	0	0	240
Phoenix Village	168	0	0	168
SteelTown Village***	0	48	0	48
Steel Works/500 block Bridge Street	336	0	0	336
Steel Site**	0	551	0	551
Various Infill Projects	12	14	6	32
<b>Schuylkill Township</b>				
Reeves	0	32	64	96
Valley Forge Meadows	72	0	0	72
<b>West Vincent Township</b>				
Bryn Coed Farms	0	0	27	27
Eagle Farms II	0	105	93	198
The Promenade	30	110	0	140
The Ridings	0	0	65	65
Weatherstone Courtyards	0	113	72	185
Weatherstone Apartments	240	0	0	240
<b>Totals</b>	<b>2682</b>	<b>1231</b>	<b>1053</b>	<b>4966</b>

\* Exclusive of senior living component – see Table 6.2-3 for senior living units.

\*\* Sketch plans

\*\*\* SteelTown Village’s units are rentals.

It is noteworthy that the majority of new housing in Phoenixville is rental apartments, with attached units as the only other significant residential housing type constructed within the borough. The result over time could be a shortage of housing stock for residents looking to move up as their disposable income increases and families grow. The potential result for Phoenixville could be the loss of residents with increased disposable income to other municipalities. Based on the pending residential developments in the other municipalities of the Phoenixville Region, opportunities for new single-family detached residential units are available.

Housing for senior citizens has also become a significant component of the Regional residential mix. In addition to older facilities such as Phoenixville Care and Rehabilitation Center, there are a number of new and proposed senior living facilities, including assisted living and continuing care retirement communities. This trend is expected to continue as older residents of the Region wish to remain within the community and close to family members. Existing and planned senior living facilities include the following:

**Table 6.2-3 Regional Senior Living Facilities**

<b><u>Facility Name</u></b>	<b><u>Municipality</u></b>	<b><u>Type</u></b>	<b><u>#Units/Beds</u></b>
Atria/Woodbridge	East Pikeland	Assisted Living	105
Coldstream Crossing	East Pikeland	Independent Living	146
Spring Mill	East Pikeland	Independent/Assisted Living	86
Phoenixville Care	Phoenixville	Skilled Nursing	138
Odessa (planned)	Phoenixville	Independent/Assisted Living	260

**Regional Housing Demand Projections**

Based on DVRPC projections as summarized in Chapter 2, the Phoenixville Region’s population is expected to grow by another 10,689 between 2015 and 2030. Region-wide, there were 2.4 residents per unit on average as of the 2010 US Census. This would translate into a 2030 demand for 4,455 new dwelling units, assuming that average persons per unit remains essentially as it is today. Of this projected demand, 4,016 dwellings are currently approved or pending as of 2016. Thus, to meet the DVRPC projected population growth, the Region would need to plan for an additional 439 dwellings by 2030.

There are a number of factors that could alter this projected scenario. As we have seen, the majority of housing units currently proposed are apartments, which typically have fewer occupants than single family dwellings. In addition, family and household sizes may continue to decrease as they have over recent decades. These factors could raise the number of new units required to accommodate the growing population. These considerations notwithstanding, there is more than sufficient developable land designated in the Future Land Use Plan (Chapter 3) to accommodate population growth within the next 10 to 15 years.

**6.3 SUSTAINABILITY**

The Housing Plan aims to enhance Regional sustainability. This includes considerations of location and accessibility, density, construction methods, energy use and efficiency, and the strengthening rather than abandonment of existing communities.

#### Development and Redevelopment Focused on Existing Communities and Growth Areas

New housing should occur primarily as infill within existing urban areas and villages or in areas designated as growth centers. This allows for a focus on improvement of existing housing stock and adaptive re-use of historic buildings, which can be far less resource intensive than greenfield development and sprawl. Phoenixville has enjoyed a remarkable revitalization, and obviously remains an attractive location for new development and redevelopment. In addition, the villages of Birchrunville, Kimberton, Valley Forge, and Wilmer could be sites for limited development in context with the historic character unique to each. Finally, new mixed use growth areas at Devault, Ludwigs Corner, and the Route 23/724 corridor could accommodate significant amounts of well-planned housing coordinated with roads and other infrastructure. Each of these types of developments focused on existing settlements and growth areas takes development pressure off of rural and natural lands, which conserves valuable resources and prevents wasteful and energy intensive sprawl.

#### Mixed Use Development and Multi-Modal Accessibility

Sustainability is advanced by providing people with transportation alternatives to personal cars. There are a number of ways that the Housing Plan can assist in this regard:

- Concentrate housing in walkable mixed use areas. This generally involves “smart growth” strategies that have residential, work, shopping, and leisure accommodations in close proximity to one another and linked by a comprehensive sidewalk system.
- Coordinate development and redevelopment housing with accessibility to public transportation. Provide bus stops with shelters in walkable proximity to residential communities.
- Coordinate housing development with multi-use paths for walking and bicycling. Where necessary, provide connections to the existing multi-use trail system, and participate in extending the system where possible.

#### Sustainable Building Practices

Construction materials and methodologies described in Chapter 5 – The Energy Conservation and Sustainability Plan should be incorporated to retrofit existing housing and to construct new housing. This will result in housing that is more affordable from an operational standpoint while having dramatically reduced environmental impact.

#### 6.4 HOUSING AFFORDABILITY

As the economy continues to recover from the recession, many residents of the Phoenixville Region struggle with housing affordability. Home values and rents continue to increase, and for many, income is not keeping pace in some of the communities of the Region. The result is that more people must dedicate a higher percentage of income to housing, or leave the Region to find affordable housing elsewhere.

Affordable housing is typically defined in terms of median household income. A primary indicator used to determine affordability of housing is the measurement of the percentage of the population that is paying 30 percent or greater of their household income toward housing costs. As the percentage of the population spending 30 percent or more of their income on housing expenses increases over time, housing is considered to be less affordable.

According to the Pennsylvania Housing Availability and Affordability Report produced by the Pennsylvania Housing Finance Agency in 2012, housing trends in the marketplace include:

- A trend toward lower homeownership rates
- Data showing that more people are renting
- Indications that rents are increasing due to greater market demand, and
- Evidence of an increasing need to provide affordable housing options for the state’s residents – of particular importance for an aging population and for households in the Marcellus Shale Region.

In the Phoenixville Region housing trends generally appear to be following state and national trends. As noted previously, housing construction has shifted significantly to rental apartments and away from single-family detached units. While apartments are traditionally considered to be a more affordable housing alternative, many of the apartments recently constructed in the Region have been luxury apartments with rents well above average. This trend appears to be further driving up rents and reducing the overall affordability of housing.

Table 6.4-1 shows short-term trends relating to median rent and the percentage of households spending 30 percent or greater of income on rent in the Phoenixville Region. Over the course of the five years shown in Table 6.4-1, the number of rental households spending 30 percent or greater of income on rent increased in all regional municipalities except Schuylkill Township, with Phoenixville and East Pikeland showing significant increases. The rental data in Table 6.4-1 also shows median rents increasing slightly in Schuylkill and West Vincent Townships and substantial median rent increases in Phoenixville and East Pikeland. Median rent information was not available for Charlestown Township for 2010.

**Table 6.4-1 Household Rental Summary 2010-2015**

Municipality	Median Rent (monthly)		Percentage of Households with Gross Rent 30% or Greater of Income	
	2010	2015	2010 Rental Households	2015 Rental Households
Charlestown	n/a	\$1,618	14.8%	23.7%
East Pikeland	\$944	\$1,659	36.5%	53.1%
Phoenixville	\$940	\$1,053	31.2%	45.8%
Schuylkill	\$1,088	\$1,102	30.9%	22.8%
West Vincent	\$1,449	\$1,420	31.6%	42.4%

In addition to the proportions of households paying 30 percent or greater of income for housing expenses, another indicator of housing affordability is the proportion of owner-occupied units compared to renter-occupied units. Traditionally, a higher, steady rate of owner-occupied units reflects a relatively affordable housing market. However, studies are finding that younger adults are placing a lower priority on home ownership and prefer to rent, partially due to the flexibility it affords them.

Table 6.2-1 indicates that owner occupancy continues to remain strong throughout the townships of the Region. Charlestown’s owner occupancy rate remained virtually unchanged, while the other municipalities experienced a slight drop in favor of renter-occupied housing; West Vincent Township’s percentage of owner-occupied units decreased the most, with a drop of 6.8% in owner occupancy from 2000 to 2016. Based on the approved and pending developments summarized in Table 6.2-2, more than 50 percent of the new residential units in the Region will be rental apartments. This will significantly influence the proportion of owner-occupied units in the Region, particularly in Phoenixville and East Pikeland where the majority of new apartments are proposed.

Table 6.4-2 does not indicate a consistent trend relating to owner-occupancy throughout the Region. Median household income for owner-occupied units increased in three of the regional municipalities, Charlestown, Schuylkill, and West Vincent Township, while Phoenixville and East Pikeland experienced reductions in household income for owner-occupied units. Regarding percentages of owner-occupied households paying 30 percent or greater of income for housing cost, results are also mixed. Phoenixville and Schuylkill Township saw increases in the percentage, and in both municipalities approximately one-third of households in owner-occupied units spend 30 percent or more of their income on housing. Meanwhile, East Pikeland and West Vincent both saw a reduction in the percentage of households spending 30 percent or more of their income on housing costs.

**Table 6.4-2 Household Owner-Occupancy Income & Housing Cost Summary 2010-2015**

Municipality	Median Household Income for Owner-Occupied Units		Percentage of Households with Housing Cost 30% or Greater of Income	
	2010	2015	2010	2015
Charlestown	\$ 136,920	\$ 149,350	24.5%	25.5%
East Pikeland	\$ 99,606	\$ 95,934	34.0%	24.7%
Phoenixville	\$ 76,866	\$ 72,851	31.8%	34.8%
Schuylkill	\$ 126,522	\$ 129,975	22.2%	32.3%
West Vincent	\$ 129,453	\$ 155,417	36.6%	29.6%

Overall, more of the Region’s population is spending 30 percent or more of household income on housing, particularly residents in rental housing. As the Borough of Phoenixville continues to enjoy a resurgence of the downtown area, the neighborhoods within walking distance of the downtown become more desirable for housing revitalization, which drives up residential property values and rents, further reducing housing affordability in the borough. Housing in the townships of the Phoenixville Region remain dominated by owner-occupied residential units as illustrated in Table 6.2-1, although the owner-occupancy rate has decreased slightly since 2000. In the Borough of Phoenixville, the percentage of

owner-occupancy has dropped to 52 percent, and this is anticipated to decrease further given the high number of apartments approved for development.

### Existing Affordable Housing Developments & Funding

Within the Phoenixville Region there are three existing developments that provide public housing to tenants. Two of these developments are located within the Borough of Phoenixville and a third is located in Schuylkill Township, just outside Phoenixville. The first development in Phoenixville is King Terrace, which is a 50-unit public housing development for elderly and disabled tenants only. The second development, also within Phoenixville, is Fairview Village which has public housing and tax credit units. Fairview Village has 25 public housing and 11 income-restricted units available. The third development located in Schuylkill Township is the Liberty House, which is a 48-unit residential facility in that is a former military hospital that was renovated in 1996 to provide housing for the homeless. The property has one floor with transitional housing for the homeless and another floor with permanent housing.

Another publicly funded housing alternative is the Section 8 Housing Choice Voucher Program, which is a federally funded government program administered locally by public housing agencies to assist very low-income families, the elderly, and the disabled. The housing choice voucher program allows participants to choose any housing that meets the requirements of the program. In Chester County the Housing Authority of the County of Chester (HACC) administers the housing choice voucher program. According to the HACC website the Section 8 Housing Choice Voucher waiting list has been closed since October 2011 and there is no notice of when the waiting list will reopen.

In addition to government housing programs, there are local nonprofit organizations and churches that provide housing assistance to people in need. A variety of organizations provide housing assistance in the Phoenixville Region including the Phoenixville Area Community Services, the Community Coalition, Orion and several churches. In addition to Liberty House, there are also shelters in Phoenixville that provide temporary housing for those with immediate housing needs.

### Proposed Affordable Housing Developments

Table 6.2-2 provides a breakdown of significant approved and pending residential projects as of 2016. More than 50 percent of the proposed units in the Region are apartments, which traditionally tend to be more affordable than single-family attached or detached units. However, it is noted that recent developments have been luxury apartments with much higher rents, further contributing to the challenges of affordable housing. Two of the approved/pending developments have an affordable housing component summarized as follows:

- SteelTown Village is a 48-unit affordable housing development consisting of 1, 2 and 3 bedroom units for individuals and veterans with disabilities, elderly and workforce families. Qualification for acceptance into the community is dependent on maximum income relative to family size. The development was initiated by a private organization that focuses on affordable housing and the development was awarded \$10,009,620 in tax credits from the State of Pennsylvania in 2017.

- Eland Pointe Crossing is an apartment development approved by Phoenixville Borough in January 2018 for 193 apartments, of which eight (8) units will be dedicated as affordable units. According to Borough representatives, the provision of the affordable housing units was negotiated through the review process, separate from requirements associated with Borough ordinances.

### Affordable Housing Initiatives

Within the Phoenixville Region affordable housing initiatives have been limited but, as housing affordability becomes a bigger issue throughout the Region, more initiatives to address the challenges are being seen. In 2017 the Borough of Phoenixville created an Affordable Housing Task Force (Task Force) to address rising rents and housing prices. The Task Force prepared a report with four key focus areas summarized as follows:

- Finance-
  - Mitigate financial risk for landlords to encourage them to provide affordable housing units
  - Develop a program to offer reduced interest rate loans to landlords to assist them with providing upgrades to rental units
  - Provide incentives for affordable housing developments
- Properties/Landlords-
  - Consider allowing mini/tiny houses or accessory dwellings as housing alternatives
  - Use borough owned properties for affordable housing
- Policy-
  - Adopt flexible area and bulk standards for development of affordable housing
  - Work with adjacent municipalities to develop an affordable housing plan.
- Community Education-
  - Establish coordinated mechanisms between local agencies, landlords, and residents regarding available resources
  - Establish an ownership education program to help renters become homeowners

The Task Force hopes to use this report as the basis for developing an implementation plan to address the key challenges associated with affordable housing.

As the Phoenixville Region continues to see housing become less affordable, residents who can no longer afford to live in the Region may move elsewhere. Regional affordable housing agencies will likely see more demand for limited financial assistance resources, and households may seek more shared housing scenarios, or downsizing to be able to stay in the Region. In an effort to address housing affordability on a regional basis, municipalities within the Region should consider the following:

- Participate in the development of a Regional Affordable Housing Plan.
- Consider amending ordinances to include the following, if not already allowed:
  - allow accessory dwellings in association with existing single-family dwellings,
  - consider provisions for tiny houses,
  - density bonuses for affordable housing units
  - flexible area and bulk standards for development that includes affordable housing units.
- Include links on municipal websites for organizations that provide housing assistance.

## 6.5 IMPLEMENTATION STRATEGIES

The following policy recommendations will implement the goals and objectives of the Housing Plan:

**H-1 Utilize zoning to concentrate residential development within and adjacent to existing developed areas or to designated growth areas.**

Coordinate housing policy and regulation with the Future Land Use Plan.

**H-2 Create zoning provisions that discourage exurban sprawl development and create vibrant areas with mixed unit types and sizes and supporting non-residential land uses.**

Promote infill housing in developed areas, and walkable cluster/mixed use new developments with functional open spaces and conservation areas. Coordinate development with trails and public transportation.

**H-3 Coordinate municipal zoning so that the Region offers a full diversity of housing choices with an adequate supply of each unit type.**

Assure that the Region offers housing choices accessible to a socioeconomically diverse and dynamic work force.

**H-4 Create zoning and permitting incentives to facilitate infill development, rehabilitation, and adaptive reuse of industrial and commercial buildings as alternatives to Greenfield development.**

Incentives could include density bonuses, relief from certain requirements, and procedural shortcuts to the normal permitting process.

**H-5 Ensure that municipal zoning includes adequate provision for housing for the elderly and infirm.**

Locate such housing in areas where neighborhood amenities are accessible by walking and to the disabled. This could include access to public transportation or private shuttle services.

**H-6 Develop a Regional Affordable Housing Plan.**

Utilize the report created by the Borough of Phoenixville's Affordable Housing Task Force as a basis for an implementation plan to address the Region's affordable housing challenges. Include zoning provisions and incentives for affordable housing units, as well as finance and community engagement strategies. Coordinate with the Future Land Use Plan.

**H-7 Amend zoning provisions to incentivize creative solutions to regional housing affordability challenges.**

Implement the recommendations in the Regional Housing Plan (strategy H-6) to promote development that creates diverse and accessible affordable housing options.