

IMPLEMENTING CONNECTIONS



A GUIDE FOR MUNICIPALITIES

PLAN REGIONALLY; IMPLEMENT LOCALLY

As the Metropolitan Planning Organization (MPO) for Greater Philadelphia, the Delaware Valley Regional Planning Commission (DVRPC) is responsible for prioritizing federal transportation funding for the region, as well as planning for future growth and development at a regional scale. The DVRPC Board, comprised of member governments, representatives from state departments of transportation, and governor appointees from both states, has adopted a long-range plan to carry out this mission.

This plan, *Connections – the Regional Plan for a Sustainable Future*, presents a bold but attainable blueprint for creating a more sustainable future by 2035. It is a plan that can guide us in creating a vibrant and thriving region with improved opportunities for residents and businesses. The plan was developed with significant public input and guidance, and fulfills a federal requirement to establish a collective vision for our region across municipal, county, and state boundaries. Regions are the basic unit of economic competitiveness in the global economy. Increasing Greater Philadelphia’s competitiveness requires regional cooperation. *Connections* recognizes that future competitiveness also depends on greening businesses, enhancing the transportation system, and reducing greenhouse gas emissions in a cost effective manner.

Connections is developed around four key principles: managing growth and protecting resources; creating livable communities; building an energy-efficient economy; and modernizing the transportation system. Taken together, these principles will forge a more sustainable future, one that will ensure that we address the needs of the present without compromising the ability of future generations to meet their needs. *Connections* identifies targets against which our success in achieving each of the plan principles can be measured. Achieving these targets represents a significant change from a business-as-usual approach and will require a dramatic transformation of actions. However, it will remain only a plan unless it is implemented.

As a regional entity, DVRPC is uniquely positioned to bring together area government, business, and nonprofit leaders to begin discussing and taking action on many of the critical issues that will arise in coming

years. However, it is ultimately up to each of us—county and municipal governments, the business community, and private citizens—to implement the vision. Municipal governments, in particular, have the primary authority and capability to implement policies to achieve the plan.

This brochure gives local officials and citizens a concise description of the major planning tools and policies available to implement *Connections*. Each section, organized by the four key plan principles, defines a variety of tools and techniques that can be used by communities to achieve the goals of the plan. Additional resources for implementing the tools and policies contained in this document are available at www.dvrpc.org/connections/implementation.htm.

FOUR KEY PRINCIPLES



**MANAGING GROWTH
AND PROTECTING
RESOURCES**



**CREATING LIVABLE
COMMUNITIES**



**BUILDING AN ENERGY-
EFFICIENT ECONOMY**



**MODERNIZING THE
TRANSPORTATION
SYSTEM**



MANAGING GROWTH AND PROTECTING RESOURCES

On average, 25 acres have been lost to development each and every day for the past 35 years in the Greater Philadelphia region. Moreover, during this period, land development occurred at five times the rate of population growth. While development generally indicates a vibrant economy and a region where people want to live, low-density development and needless land consumption are inefficient forms of growth. Sprawling development degrades environmental quality, destroys valuable farmland, and makes it increasingly difficult to construct and maintain a transportation system that meets the region's mobility needs. In short, the region's current growth patterns are not sustainable. Building a sustainable future will require acceleration and coordination of growth management and land protection at the local level.

IN THIS SECTION

- Growth Management and Land Preservation
- Environmental Resource Protection

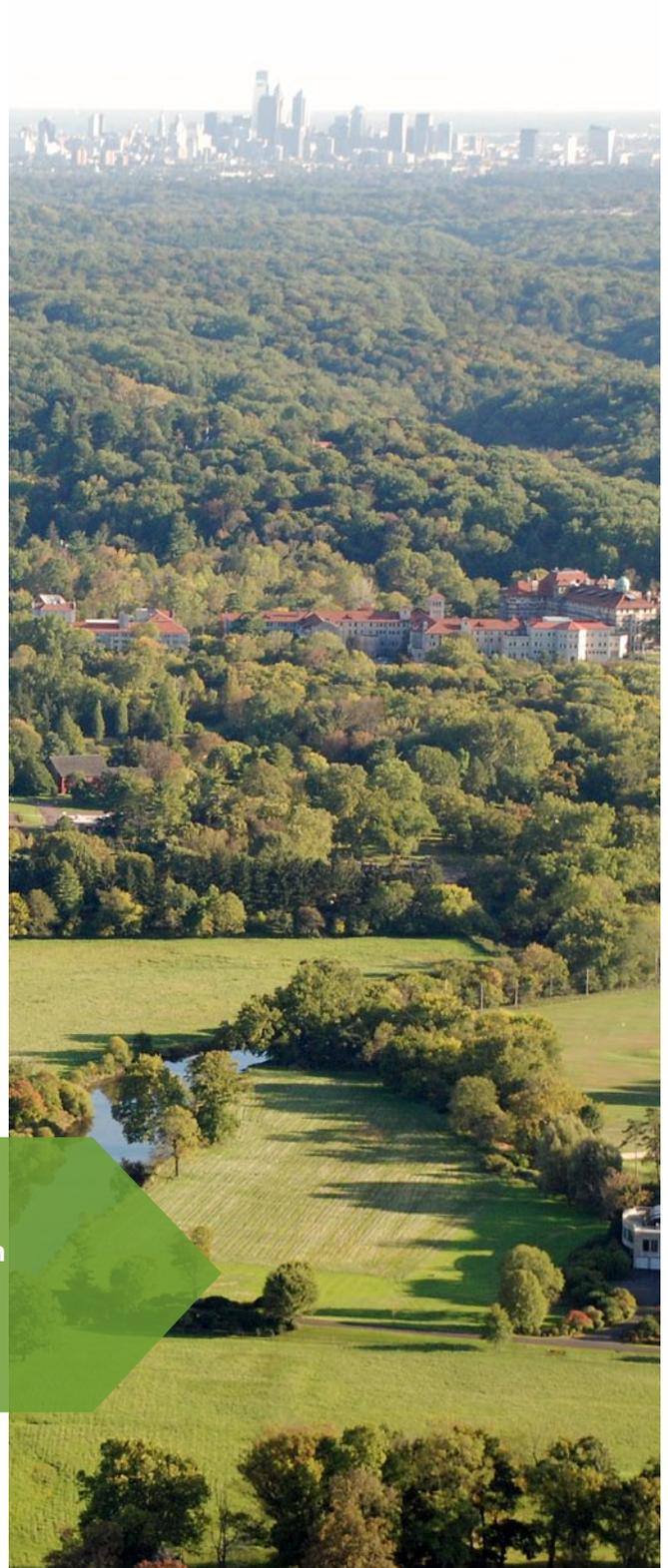


Photo: Land Concepts, Inc.



Growth Management and Land Preservation

Connections promotes a more sustainable development pattern by encouraging infill development and redevelopment in areas with existing infrastructure and by endorsing compact, center-based development to strengthen local communities and reduce suburban sprawl.

To complement growth management efforts, *Connections* calls for preserving 500,000 acres by 2035, which is one-half of the region’s remaining unprotected open space. These lands should be strategically located in the Greenspace Network and Rural Conservation Lands, depicted in the 2035 Land Use Plan. This will protect sensitive natural areas, create interconnected networks of greenspace, preserve valuable farmland, and limit the need for the costly expansion of infrastructure into rural areas.

Growth Areas can be designated by municipalities through the provision of necessary infrastructure and by zoning for higher densities. Promoting and incentivizing compact development within growth areas reduces development pressure on surrounding rural lands.

Transfer of Development Rights (TDRs), direct growth into designated areas called “receiving areas,” and direct growth away from rural areas targeted for preservation, called “sending areas.” TDRs accomplish this by setting up a market for development rights, which can be bought and sold. Rural landowners can profit by selling their right to develop their land in the future, while still maintaining ownership of their land. Landowners who purchase development rights can develop their properties in the receiving area at higher densities than would otherwise be allowed. TDRs enable municipalities to create center-based, compact development that is more efficient to service and maintain.

Fee-Simple Acquisition is the purchase of land in order to take ownership of it. In the case of land conservation, a government or land preservation nonprofit purchases undeveloped land for conservation and/or recreation purposes.

Conservation Design ordinances preserve open space on a parcel by concentrating housing units on those portions of the parcel most appropriate for development. The practice arranges homes on a site in a manner such that 50 percent or more of a parcel’s total land area can be set aside as common open space. This technique, also commonly known as “clustering,” should be employed so that lands of the highest environmental value are preserved and connected with adjacent open spaces to reduce fragmentation. Conservation design ordinances permanently preserve natural areas, farmland, and scenic views, and result in lower environmental impacts and infrastructure requirements.



Center-based growth represents an alternative to conventional development patterns. Sprawl development (top) is inefficient and costly when compared to compact development around places (bottom).

Illustrations by Wallace Roberts & Todd

Conservation Easements are legal documents by which landowners maintain ownership but sell or donate the right to develop their property in order to conserve natural resources, viewsheds, habitat, or farmland. The organization to which the land is eased, whether a private land trust or government agency, is responsible for monitoring deed restriction compliance with current and future property owners.

Parkland Dedications require developers to provide public open space within their developments, or to contribute a fee-in-lieu of dedicated land, to be used toward land preservation projects elsewhere.

Official Maps are ordinances, in map form, that designate existing and proposed areas for public use, such as streets, schools, parks, trails, and greenways. By identifying these areas on an official map, the municipality is announcing its intentions for these

areas. When a subdivision or land development is proposed, the municipality has the option, for up to one year after final plan approval, to negotiate various ways to acquire the designated land for the intended use. Unless otherwise agreed upon, the law specifically states that the property owner is entitled to full market compensation.

Dedicated Open Space Funding programs can be set up by local governments through voter-approved ballot referendums. These programs are validated by direct voter support and raise funds through local real estate taxes, income taxes, and bonding for the express purpose of land preservation. These funds can be used to leverage other funds from county, state, or federal sources. Dedicated local funding programs are a proven method for driving successful land preservation efforts at the municipal level.

2035 Land Use Plan

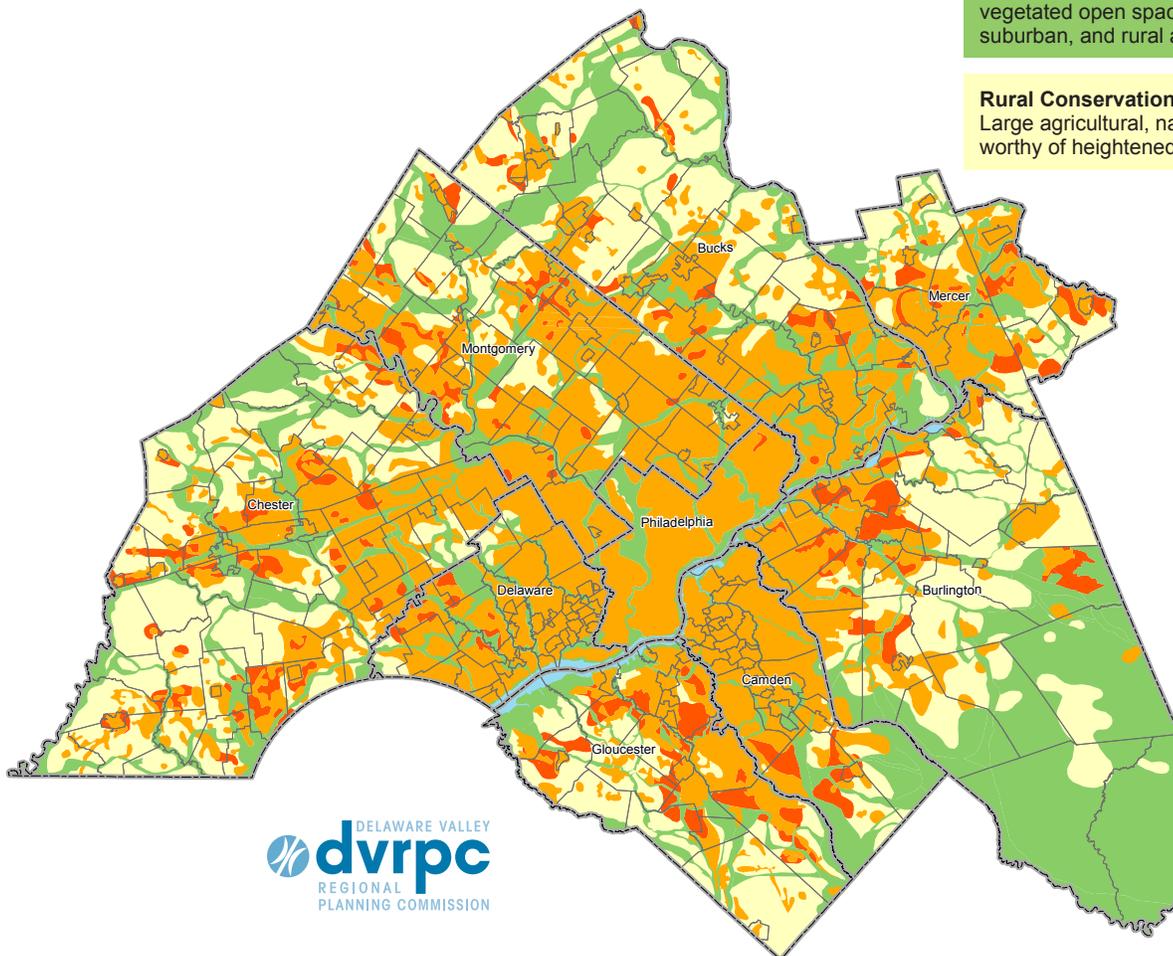
The land use plan provides a regional scale vision for future land development and conservation.

Existing Growth
Developed land as of 2005

Future Growth
Areas with sufficient planned or in-place infrastructure that are appropriate for new development

Greenspace Network
Inter-connected system of naturally vegetated open space spanning urban, suburban, and rural areas

Rural Conservation Lands
Large agricultural, natural, and rural areas worthy of heightened preservation





Environmental Resource Protection

While outright land preservation and growth management are often the most robust tools for protecting natural resources, farmland, and historic and cultural features; municipalities can employ a variety of other tools to protect and enhance key resources.

Natural Resources and Farmland

The protection of natural resources is fundamental to protecting water quality, air quality, soil health, biodiversity, and wildlife habitat, and for providing opportunities for outdoor recreation and environmental education. Protecting farmland is necessary to maintain the viability of agricultural economies, to protect the cultural and physical fabric of rural communities, and to encourage sustainable growing practices while conserving our natural resources.

Stream Corridor Protection Ordinances require development to be set back from stream banks, floodplains, and wetlands, and require the maintenance of natural vegetation within the corridor. Buffer widths typically range from 25 to 300 feet, depending on the type and size of the stream and the community's goals.

Wetlands Management Ordinances protect environmentally sensitive wetland areas by prohibiting any disturbance of delineated wetlands from residential, commercial, or industrial development. Like stream corridor protection ordinances, wetlands management ordinances can require maintenance of vegetated riparian buffers around wetlands.

Stormwater Ordinances set standards for the amount of impermeable pavement, peak flow runoff, and required landscaping for developments.

Steep Slope Ordinances limit development on steep and moderate slopes to reduce erosion and prevent slope collapse.

Floodplain Management Ordinances control the amount and type of development in the 100-year floodplain or designated flood hazard area to prevent property damage and loss of life from flooding.

Environmental Resource Inventories (ERI) are compilations of factual narrative and mapped information about the natural characteristics of a

municipality. They identify critical natural resources and provide a policy basis for the establishment of resource protection ordinances.

Master Plan Conservation Elements take the natural resources documented in an ERI and identify plans and policies for protection and enhancement.

Agricultural Zoning allows municipalities to protect rural and agricultural areas by encouraging agriculture as a primary use and by establishing large minimum lot sizes, usually of 20 acres or more.



Historic and Cultural Resources

Historic preservation is the protection and maintenance of important places from the past, including buildings, neighborhoods, sites, and landscapes. By protecting, preserving, and encouraging the use and reuse of their historic resources, municipalities can maximize efficient use of their existing infrastructure, curb sprawling development patterns, and enhance local identity and community character.

Certified Local Governments are recognized by federal or state preservation agencies and are eligible for various forms of technical assistance, training, and participation in statewide preservation programs.

Demolition Ordinances require that structures be examined for historical significance before their demolition is permitted.

Historic Overlay Zones provide additional regulations for the development of land and modification of buildings in the area that they cover. Historic overlay zones are often applied to historic town centers to protect their unique architecture and character.

Historic Preservation Planning allows municipalities to identify goals, inventory historic resources, and formulate and implement strategies for historic preservation.

Historic Resources Design Standards help to ensure that the visual characteristics that make a historic district unique are preserved. They can be useful tools if adopted as part of a historic overlay zone or in a local historic district.

Historical Commissions, or historic architectural review boards, are local government bodies that oversee historic preservation planning and decision making in their community. Establishing historical commissions is often necessary to implement other local historic preservation efforts.

Local Historic Districts can be created by municipalities to preserve significant historic areas. Local historic district ordinances can preserve community character by regulating the erection, alteration, restoration, and demolition of buildings within the district.

The National Register of Historic Places is the official list of the nation's cultural resources worthy of preservation. The list recognizes properties of national, state, or local significance, gives added consideration

in the planning for federally assisted projects, and makes properties eligible for certain tax benefits and grant programs. Listing in the National Register does not prevent properties from being altered or demolished.

Village Preservation Ordinances can serve to protect historic villages by ensuring that future development, as well as modifications to existing structures, is consistent with the historic context and form of the village.



The region is home to a rich diversity of historic and cultural resources. Pictured here: Elfreth's Alley, Philadelphia (top); Media Theatre, Media (middle); a historic district in Burlington City (bottom).



CREATING LIVABLE COMMUNITIES

Enhancing existing centers and promoting new center-based development is a core strategy for creating livable communities. *Connections* identifies over 100 key centers in the region as focal points for future development. These centers range from the large metropolitan center to suburban centers, traditional town centers, and rural hamlets. While they vary in size, each of these centers has existing infrastructure in place and provides many of the amenities that people want: walkability, unique architectural character, access to transit, social connections, and a mix of housing stock, including affordable housing, that is well connected to employment opportunities. Local analysis has shown that center-based development saves \$25,000 in development and infrastructure costs per new housing unit compared to sprawl-based development. Households in centers also spend \$1,300 less per year in energy and transportation costs and have shorter commutes and more transportation options compared to households located outside established centers.



IN THIS SECTION

- Smart Growth
- Infill and Redevelopment
- Community Green Infrastructure
- Affordable Housing and Housing for Seniors

Washington Town Center, Robbinsville

Smart Growth

Local governments can lead the way to a more sustainable future by ensuring their ordinances promote compact, center-based, mixed-use development. Although each community is unique, smart growth zoning tools can help municipalities address many land use and development issues.

Traditional Neighborhood Development applies historic development patterns to new development, encouraging compact, center-based development with a mix of uses in a pedestrian-friendly, village-type setting. Important features of traditional neighborhood development include a connected street grid, the use of back alleys to access garages, shallow setbacks, and front porches.

Transit-Oriented Development (TOD) encourages compact, mixed-use development near transit stations. TOD is pedestrian friendly and encourages the use of public transit. These areas may become or reinforce existing town centers. TOD zoning districts are often adopted as overlay zones; they do not replace the original zoning. In Pennsylvania, a municipality may also adopt a **Transit Revitalization Investment District (TRID)**, which enables communities to designate a TRID district and set up “value capture” provisions, whereby increases in land values generated by new public investment in the district are then “captured” to pay for that investment or other public improvements in the district.

Unified Development Codes combine the zoning ordinance (land use, density, and bulk standards) with the subdivision and land development ordinance (site plan review, including road and utility standards, design review, and often stormwater management) into one code and integrated review process. Proposed developments are easier to visualize and review by staff, boards, and citizens.

Incentive Zoning encourages developers to provide amenities, such as open space, recreational areas, or affordable housing, in exchange for allowing a higher density of development.

Overlay Zones provide additional regulations or guidelines on land use within their coverage areas. Overlay zones do not replace existing zones and are often used to protect natural resources, historic areas, and control access along major highways.



Transit-oriented development in Collingswood

Form-Based Zoning is a way to regulate development to achieve specific physical design standards instead of relying solely on use and bulk standards. They allow a community to establish upfront what type and form of development they want rather than waiting to react to development proposals.

Performance Zoning regulates development based on the specific impacts of the development on the site instead of on the specific types of uses. For example, performance zoning for an industrial development might consider vehicle traffic, air pollution, noise, and lot coverage, but not regulate what types of industry could locate in the development. Performance zoning provides municipalities with more control over the impacts of development, while giving developers more flexibility in types of permitted uses.

Live/Work Zoning allows for structures that combine a significant amount of floor space for both residential and business use.

Retail Caps protect the economic vitality of the downtown in many communities by limiting the size of superstores. These limits may apply to the overall square footage of the store, or just to the “footprint,” which would require the store to build up rather than out.

Smart Location of Public Facilities situates schools, post offices, municipal offices, and similar facilities in areas that are accessible by a variety of modes, and it integrates them into the fabric of the existing community. This increases the vibrancy of existing centers and developed areas and better serves the public.

Sidewalk Standards in a municipal subdivision and land development ordinance require sidewalks be included on all subdivision and site development plans.

Infill and Redevelopment

Virtually every community has vacant or underutilized properties, ranging from single, isolated parcels to surface parking lots to abandoned shopping malls to brownfields. Infill and redevelopment bridge “gaps” in neighborhoods and play an important role in community revitalization and land conservation by better utilizing existing infrastructure.

A Revitalization Element or Plan contains specific recommendations for brownfield, infill, and redevelopment sites.

Brownfields Redevelopment involves the remediation and redevelopment of former industrial or contaminated sites. Such projects can revitalize urban areas and improve the quality of the environment.

Greyfields Redevelopment involves the redevelopment of abandoned or underutilized shopping centers or strip malls. This redevelopment can often take the form of mixed-use centers and can provide the opportunity to create town centers in communities formerly lacking them.

Compatible Residential Infill Ordinances or Infill Design Guidelines can guide the process of integrating new development carefully into the existing neighborhood fabric with respect to block patterns, scale, building features, landscaping, and other characteristics of the neighborhood.



Successful infill and redevelopment projects have been realized throughout the Delaware Valley. Examples include the Piazza at Schmidts in Philadelphia (top); Roebling Market in Trenton (middle); and new mixed-use development in Wayne (bottom).





Community Green Infrastructure

Community green infrastructure is a network of different types of greenspace and green features that provide natural ecosystem functions and enhance the livability of developed communities. For example, community green infrastructure in the form of trees and green streets boosts property values, supports retail activity, improves health, protects water quality, reduces stormwater runoff, cleans air, stores and sequesters carbon, provides wildlife habitat, and increases roadway safety.

Green Roofs utilize plant vegetation in the place of typical rooftop covers (shingles, tiles, membrane, tar, etc.). A green roof consists of several layers below the plants, including soil, drainage layer, a root inhibitor, and up to several layers of thick, waterproof materials making up the base of the surface. Green roofs provide cooling benefits to the building and help to counteract the urban heat island effect. Installation costs are competitive with traditional roofs and often require less maintenance.

Green Streets involve a range of techniques within and adjacent to the street right-of-way that serve to integrate stormwater runoff. Examples include tree trenches, naturalized retention basins, and rain gardens.

Neighborhood Parks provide much-needed natural vegetation and trees in urban settings and provide all the environmental and aesthetic benefits inherent in community green infrastructure.

Rain Gardens are small bioretention areas—shallow depressions made up of a mixture of sand and soils planted with native vegetation—that serve to filter stormwater runoff from their immediate surroundings.

Bioswales are long, naturally vegetated, shallow depressions designed to intercept sheet flow (runoff that flows over the ground as a thin, even layer rather than concentrating in a channel) from surrounding land.

Naturalized Retention Basins create a natural flow channel for rainwater and use dense tree, shrub, wildflower, and tall meadow grass vegetation to slow down and filter runoff. Naturalized retention basins add aesthetic beauty, which increases property values, while recharging water tables, reducing erosion, and improving water quality.



Naturalized stormwater management techniques are an important part of community green infrastructure.



Photo: Pennsylvania Horticultural Society



Photo: Philadelphia Water Department



Green infrastructure can take many forms: green roof atop the PECO Building in Center City Philadelphia (top); green street features built into sidewalk (middle); tree planting ceremony in Lansdowne (bottom).

Trails are a type of linear park that can be integrated into developed communities, thereby creating a linear green feature and providing alternative transportation.

Greening Vacant Lots transforms otherwise derelict parcels from sources of blight into valuable pieces of community green infrastructure.

A **Tree Inventory** provides specific data on street and park tree location, species, condition, and maintenance needs to manage budgeting, staffing, and maintenance of trees.

A **Tree Management Plan** for street and park trees addresses species diversity, planting needs, hazardous trees, insect and disease problems, and delivery of regular care, such as pruning and watering.

Street Tree Ordinances identify municipal responsibilities for planting, maintaining, and removing trees, and establishes a tree commission with authority to guide the management of public street and park trees.

Woodland Protection/Percent Tree Cover requires a certain percentage of tree cover to be preserved, sometimes on a sliding scale, depending on the type of development and steepness of slope.

Buffer Zones require trees and vegetation between different uses, such as residential and commercial, or between roads and buildings.

Tree Planting and Care Standards requiring trees to be shown on subdivision and site development plans should be included in subdivision and land development ordinances. Requirements should contain strict design standards that require the protection of trees during the development process, replacement or mitigation, and maintenance after development.

Landscape Ordinances promote site-appropriate native plants and set minimum thresholds for the use of naturalized landscaping in parking lots and other forms of new commercial and residential development.

Specimen and Special Tree Protections require developers to protect trees of a certain size, species, or other community value.

Planning Areas and Centers

Promoting centers-based development is a guiding principle of *Connections*. Through infill development and redevelopment of existing centers, and through development of new compact, center-based forms, we can provide transportation, water, and sewer infrastructure more efficiently while preserving open space. The dense, mixed use development patterns found in centers enhance alternative forms of transportation such as transit, walking, and biking and make commercial amenities and services more easily accessible to residential areas.

Connections identifies seven center-types, ranging from the Metropolitan Center to Metropolitan Sub-Centers, Suburban, Town, Rural, Planned Town, and Neighborhood (not shown here) Centers.

CENTERS



The **Metropolitan Center** of Center City/University City Philadelphia is a highly dense, compact, mixed-use area that is the primary hub of the region's economic, educational, and cultural activities and institutions.



Metropolitan Sub-Centers offer a mix of commercial, retail, institutional, and residential activities that reflect a region-wide significance.



Suburban Centers are generally suburban auto-dependent areas but have a more compact mix of primarily commercial, professional, and light industrial development.



Town Centers are pedestrian and transit-friendly areas that offer a mixture of high-density residential and commercial land uses and a distinct downtown/main street.



Rural Centers are similar to Town Centers, but are smaller in scale and are generally surrounded by rural and agricultural land uses.



Planned Town Centers are generally separate from existing Town Centers, are located in growing suburbs or rural areas, and are intended to incorporate a mix of land uses, relatively high densities, and a distinct downtown or main street when complete.

PLANNING AREAS



Core Cities



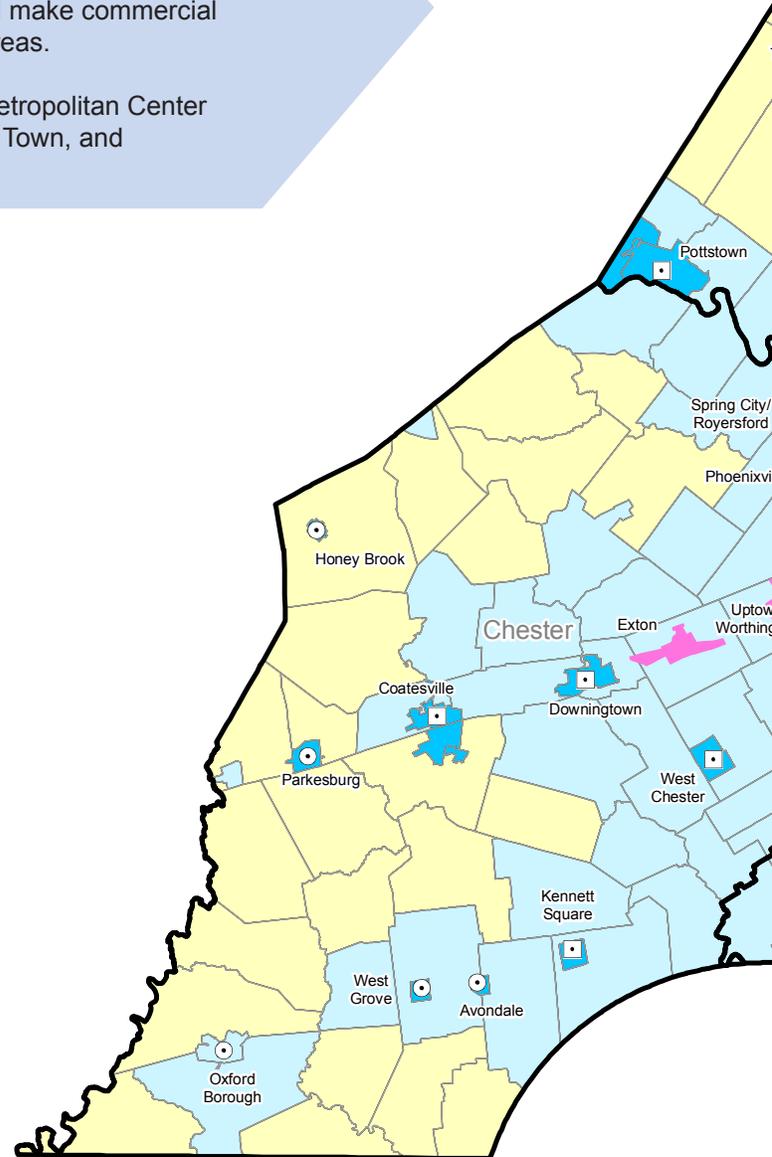
Developed Communities/ Mature Suburbs

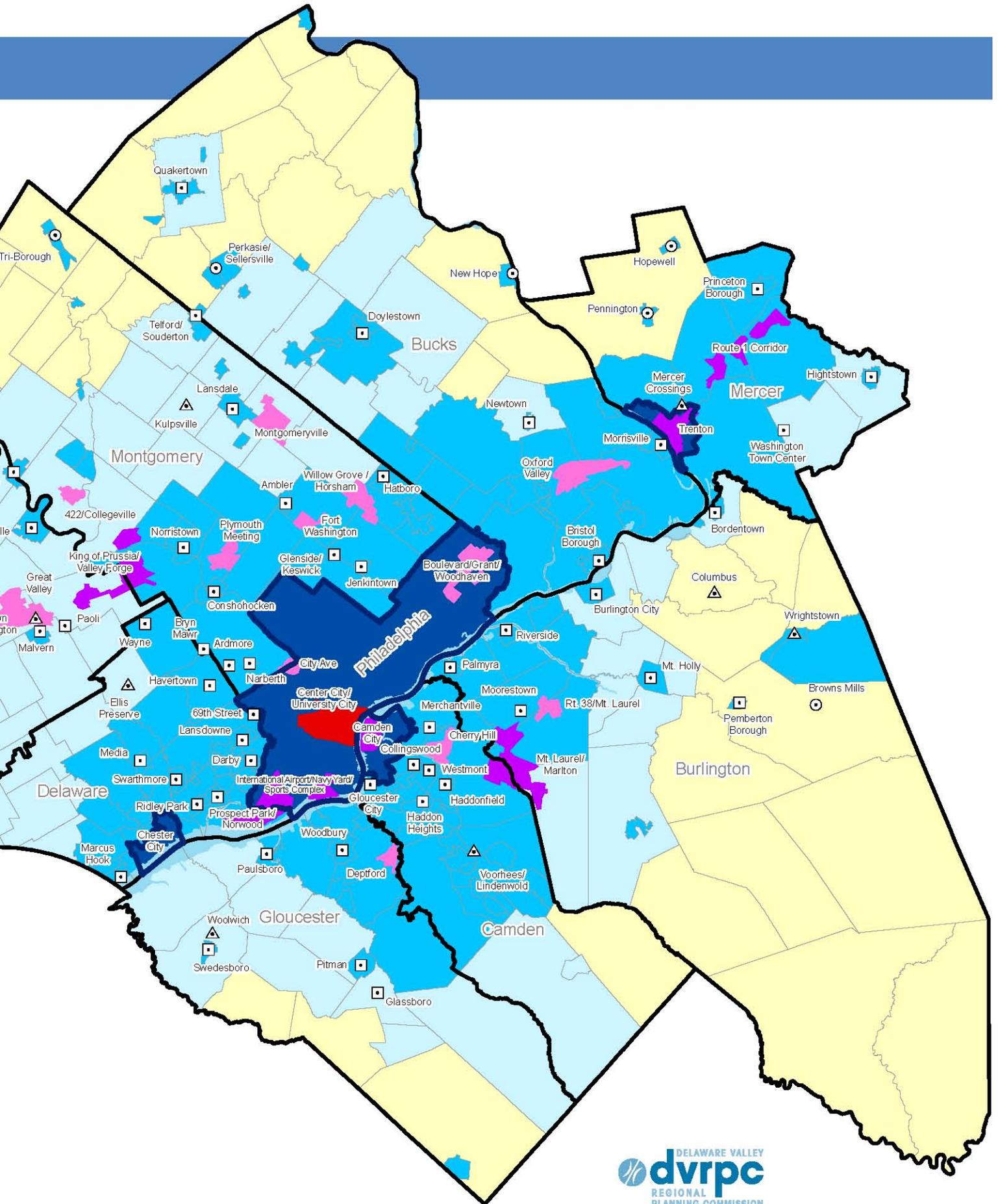


Growing Suburbs



Rural Areas







Affordable Housing and Housing for Seniors

Housing is a key issue that impacts both regional competitiveness and the vitality of individual communities. Introducing new housing types, sizes, and designs into our region's centers and communities can provide housing opportunities for families with a range of incomes, help the region be less energy constrained, and provide housing choices to help meet the demands of the coming senior boom. To help seniors, municipalities can adopt policies to support aging in place. Local codes that allow increased densities and integrated land uses, for example, can help improve access to necessary services. Widening crosswalks, retiming traffic lights, and providing wider sidewalks, benches, and lighting will benefit residents of all ages, including seniors.

Universal Design Standards are guidelines for the built environment and products that emphasize ease of use, accessibility, and attractiveness for people of all abilities.

Housing Maintenance and Rehabilitation Programs targeted to elderly or low-income homeowners can help preserve the existing housing stock, and **modification programs** that make units more accessible can help seniors stay in their homes longer.

Accessory Dwelling Units are small secondary units built on single-family lots, either as accessory apartments or as separate unattached dwelling units. When allowed on the property of family or friends, accessory units reduce housing costs for seniors and provide an informal support network.

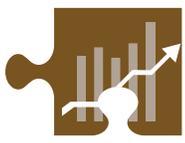
Allowing unrelated elderly adults to **share a single-family residence** can reduce housing costs and provide companionship and support.

Housing Units Above Commercial and Retail Spaces can provide affordable housing opportunities and enhance the vitality of centers.

Inclusionary Zoning ordinances require either a mandatory or a voluntary (opt-in) percent of affordable units to be built in a development in exchange for nonmonetary entitlements from the municipality, such as density bonuses, fee waivers, or relaxed parking restrictions.



Accessory dwelling unit over a garage (top); Housing units located above storefronts (middle); Attractive senior housing in Woodbury (bottom).



BUILDING AN ENERGY-EFFICIENT ECONOMY

The economic future of the region, nation, and world is faced with a host of issues revolving around rising energy prices and dealing with the realities and regulations of climate change. The regions that best equip their businesses and residents to deal with these issues will be the ones that thrive. *Connections* recognizes that the region will need to be innovative in implementing solutions to reduce energy consumption in our buildings and transportation sectors and promote the use of alternative energy technologies in order to be prosperous in the future. Promoting eco-enterprises and green collar jobs that support energy efficiency and alternative energy industries will make our region more competitive economically, generate new jobs and revenue, and create jobs for the underemployed. In addition, the region can build on its already strong economic foundation and improve business sustainability practices in fields such as education, life sciences, tourism, health care, finance, professional and business services, information technology, creative industries, internet, cable and telecommunications, transportation and logistics, specialty manufacturing, and food production.



IN THIS SECTION

- Enhancing the Climate for Business Growth
- Increasing Energy Efficiency and Conservation

Photo: Urban Outfitters

The Urban Outfitters Corporate Campus is composed of five renovated buildings in the Philadelphia Navy Yard. The project, which incorporates many sustainable design features, won the Urban Land Institute's 2007 Global Award for Excellence.



Enhancing the Climate for Business Growth

To enhance the climate for business growth, municipalities must maintain a dialogue with the business community and engage business leaders in growing the economy. A more attractive business tax environment, as well as fast, predictable, and transparent government decision-making, will encourage economic development. Municipalities can also work together to foster regional collaboration, participate in a regional economic development marketing program, and improve the region's image.

Tax Increment Financing (TIF) allows public improvement projects to be financed by future tax revenues within a designated area. These future tax revenues are derived from the anticipated increase in land value that these improvements will create.

Enterprise Zones are areas in economically disadvantaged communities that receive state grants to undertake business development activities. Businesses located in a designated Enterprise Zone may receive tax credits, loans, or other incentives. In Pennsylvania, Keystone Opportunity Zones serve a similar function.

Land Value Taxation (also called two-tier or two-rate taxation) increases taxes on the value of land, while reducing taxes on the value of buildings and improvements. This can encourage reinvestment in urban areas by lowering the relative cost of improving a property and raising the relative cost of allowing it to remain vacant.

Business Improvement Districts (and similar tools such as Special Improvement Districts and Neighborhood Improvement Districts) allow the coordination of business improvement activities, usually by levying a special tax on businesses in the area that will be applied directly back into the district. These activities often include maintenance agreements, façade and streetscape improvements, and security provision.

Main Street Programs help communities revitalize their downtowns by organizing redevelopment activities, improving design standards, and through promoting or marketing efforts.



Photo: Center City District



Business Improvement Districts provide coordinated services for commercial core areas (top); Established communities, such as West Chester, provide a high quality of life and attract workers to the region (bottom).

Increasing Energy Efficiency and Conservation

There is no single solution that can overcome the challenges related to rising energy costs and the threat of climate change. Just a 10 percent improvement in energy efficiency will save the region \$2.5 billion per year in direct costs, while reducing greenhouse gas emissions. With rate caps expiring in Pennsylvania and energy costs rising throughout the region, the ability to use energy efficiently is more important than ever. To reduce the energy used by residents' driving, municipalities can also work to locate employment, services, and housing in close proximity to each other.

DVRPC is developing a toolkit for identifying, prioritizing, and implementing cost-effective strategies to reduce energy demand and curb greenhouse gas emissions in municipal operations. Implementing measures to reduce energy costs will lower local governments' operating costs, while creating a demand for workers and providers of energy efficiency and renewable energy products and services. Energy-efficiency improvements also present opportunities to improve air quality and modernize aging infrastructure. Cost-saving measures to reduce energy and greenhouse gas emissions have proven successful for local government operational sectors, and include buildings, fleets, outdoor lighting, and wastewater treatment facilities.

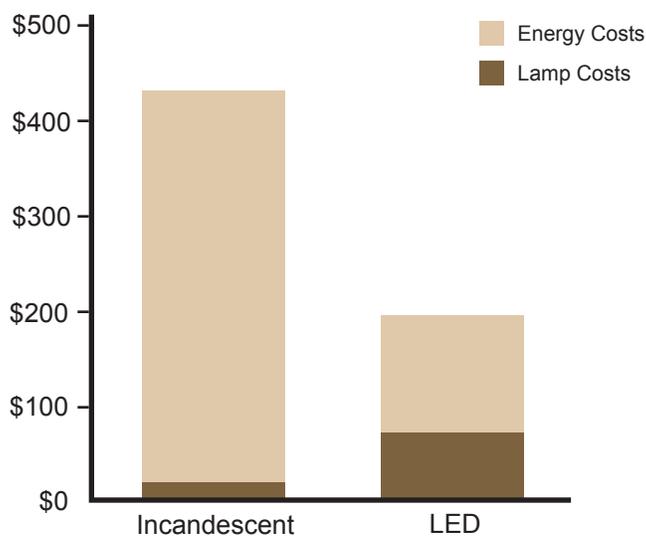
An **Inventory of Greenhouse Gas (GHG) Emissions and Energy Use** in the region was released in 2009 by DVRPC. The inventory was allocated to each of the region's communities and is available on the DVRPC website. Local governments can use the allocated inventory to understand and help reduce sources of GHG emissions and energy use in their community.

Baseline Energy Analysis of Municipal Operations enables local governments to determine the areas in which they are consuming the greatest amounts of energy at the greatest cost. By conducting a simple evaluation of operational sectors and individual buildings with easy-to-use tools, local governments can focus energy reduction efforts where it counts.

Alternative Energy Ordinances ensure that alternative energy—wind, solar, geothermal, and biofuel—production is cost effective and compatible with existing land uses in a community.



Seven-Year Lifecycle Cost:
Incandescent vs. LED Traffic Signals*



Source: Consortium for Energy Efficiency (2002)

* Chart does not include savings for operations and maintenance.

Green Building and Energy-Efficient Design

Standards for public and private buildings can be integrated into energy codes as a way to demonstrate environmental leadership and reduce energy use in buildings. These practices can be encouraged in your community through public sector leadership or through incentives. Incentives can take a variety of forms, either financial (such as tax rebates, fee waivers, or cash payments) or nonfinancial (such as development bonuses in terms of increased floor area ratio, building height, density, expedited permit processing, or fast track review).

Energy-Efficient Traffic Signals and Streetlights

are an opportunity for municipalities to reduce energy use and greenhouse gas emissions with new lighting technologies, such as high pressure sodium, LED, or induction fluorescent.

Energy Audits assess how much energy a building consumes, identify measures that can make a building more energy efficient, and provide information about potential energy cost savings. Even a simple no-cost

audit of a building's plug load, which can account for over 20% of a building's electric energy usage, can identify low- or no-cost energy saving measures.

Energy-Efficient Purchasing, standards, and specifications will ensure that appliances, information technology equipment, lighting, and control equipment have the greatest efficiency for their use; while reducing utility bills and lowering operation and maintenance costs.

Energy Performance Contracting (EPC) allows local governments to audit and retrofit several buildings and facilities for energy efficiency. The benefits of an energy performance contract include little to no upfront capital expenditure, and long-term energy cost savings. The EPC can be financed through a tax-exempt "municipal lease," which is considered a non-balance sheet debt and can be paid back through savings in the operating budget.

Green Fleet and Commute programs call for the purchase of fuel-efficient and alternative fuel vehicles and encourage employees to use public transportation or carpool to work.

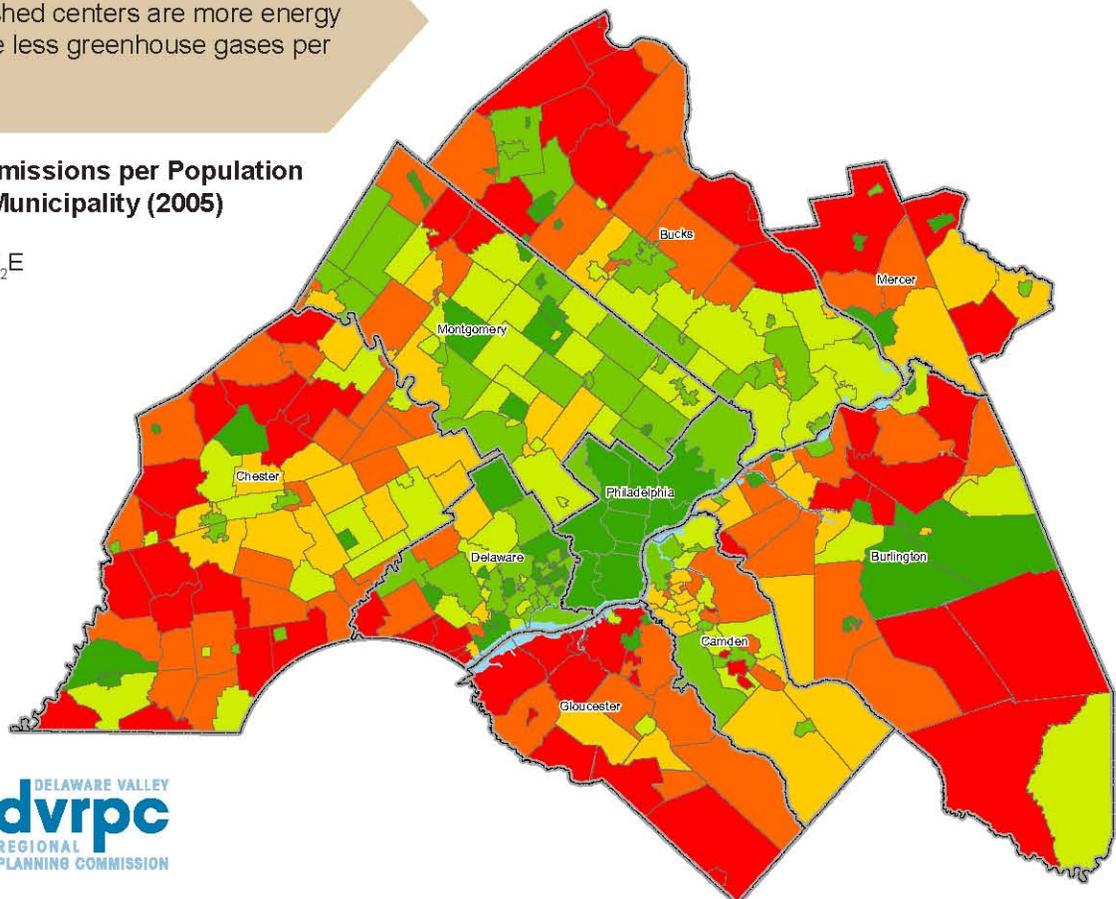
Greenhouse Gas Emissions

The region's established centers are more energy efficient and produce less greenhouse gases per capita.

Greenhouse Gas Emissions per Population + Employment by Municipality (2005)

All emissions in MTCO₂E

- < 6.5
- 6.5 - 7.5
- 7.5 - 8.25
- 8.25 - 9
- 9 - 11
- > 11



The allocation excludes the following sources: industrial energy consumption, highway through traffic, aviation, marine vessels, off-road vehicles, livestock, cement, and iron/steel production.

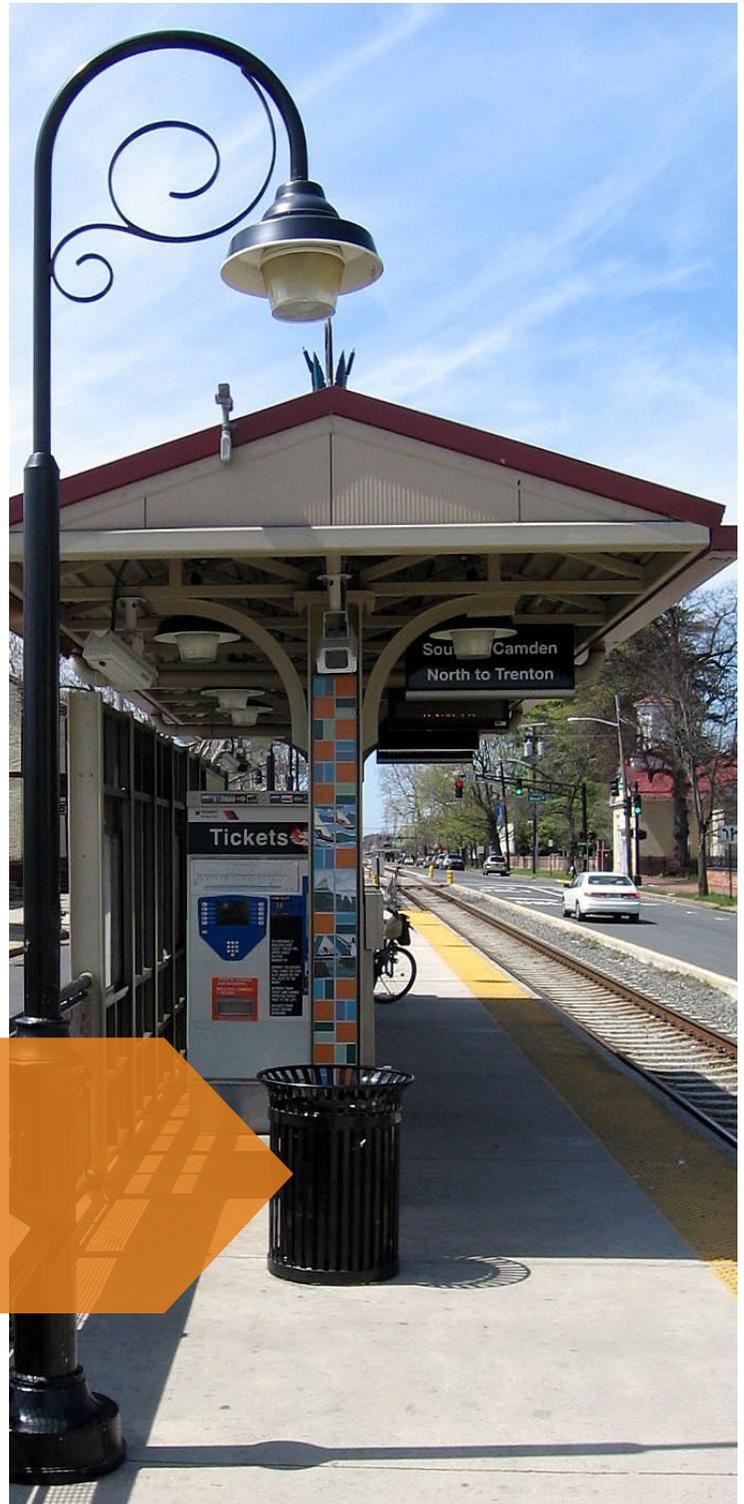


MODERNIZING THE TRANSPORTATION SYSTEM

The ability to efficiently move people and goods is a key component to regional prosperity. DVRPC is committed to building a safe and convenient multimodal transportation system. Greater Philadelphia has the benefit of already having such a system largely in place. However, we need to focus on maintaining, preserving, and making it more efficient. With limited funding available for new capacity improvements, the *Connections* plan recommends improving the transportation system's functionality through technological and operational improvements and land use decisions that support alternative modes of transportation.

IN THIS SECTION

- Building a Multimodal Network
- Regional Transportation Funding



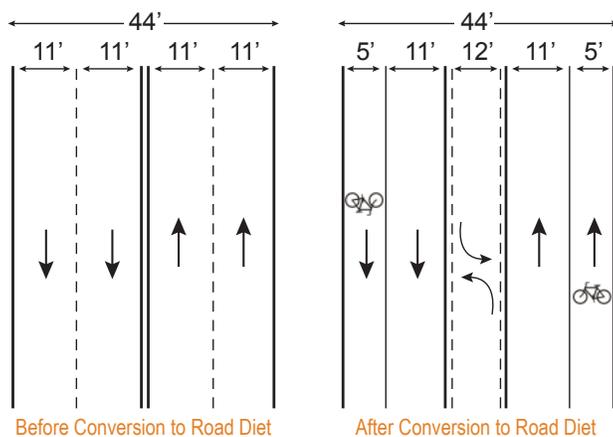
Burlington Towne Centre station of the River LINE, Burlington City

Building a Multimodal Network

Connections plans to strengthen and enhance the multimodal aspects of the region's transportation infrastructure. Increasing transportation sustainability can be done by encouraging alternative forms of transportation. Compact development patterns, particularly transit-oriented and mixed-use development, increase accessibility between origins and destinations. Providing facilities such as sidewalks, bike lanes, and multiuse trails, as well as improving transit service, can help to encourage the use of these more sustainable modes.

Complete Streets design standards make roads safer and more user friendly for bicyclists, pedestrians, the disabled, the elderly, and drivers by including wide sidewalks, bicycle lanes, raised crosswalks and medians, audible traffic signals, bus pullouts, and other design elements that support safe, alternative transportation.

Road Diets are usually conversions of four-lane undivided roads into three lanes (two travel lanes and a continuous two-way left-turn lane). The remaining pavement width from the eliminated lane can be converted into bicycle lanes, sidewalks, on-street parking, or some combination of these elements.



Community Shuttle Programs can complement existing public transit service by providing services to special populations, such as senior citizens, or by circulating within neighborhoods that are not served by transit. Community shuttles can be operated by transportation management associations or other nonprofit organizations and are often funded through welfare-to-work or elderly programs.

Context-Sensitive Design/Context-Sensitive Solutions recognize that roadway improvements should not incorporate a one-size-fits-all approach, but should instead reflect their surrounding land use. Depending on whether the roadway is in an urban, suburban, or rural area affects the roadway width, presence of parking, and appropriate speed limit.

Park-and-Ride Programs encourage the use of transit and carpooling, thus lowering congestion on roadways by providing parking areas near transit stops. Park-and-ride facilities are sometimes located in the parking lots of businesses or institutions and are based on negotiations between the municipality, the transit provider, and the landowner.

Enhancing Safety

Safety is of the utmost concern both in terms of new facilities and addressing previous facilities designed to standards that are now outdated and may compromise safety. Careful consideration should be given to the location, frequency, type, and cause of crashes in the recent past.

Traffic Calming techniques can reduce traffic speeds by incorporating physical elements, such as speed humps, narrow lanes, wide sidewalks, diagonal or parallel street parking, and central medians with landscaping, into roadway design to modify driver behavior. These are most desirable on residential streets, commercial streets, or areas with high pedestrian traffic.

Access Management provisions improve safety and efficiency on roadways by limiting and controlling access points. By linking land use and transportation planning strategies, access management can reduce congestion and accidents without major capital improvements. Access management tools may involve shared driveways for local businesses, improved signage, parallel access roads, or similar techniques. Access management can often be accomplished in conjunction with the state department of transportation's Highway Occupancy Permit process.

Traffic Signal Systems use timing and signal coordination to manage the flow of traffic volumes along a corridor. In municipalities where congestion is a serious concern, the possibility of implementing closed-loop traffic signal systems should be explored in coordination with the state department of transportation.



Traffic Calming techniques, as shown here in Bryn Mawr, can help make roads safer for pedestrians and bicyclists.

A **Road Safety Audit** is a formal safety performance evaluation of an existing or future road or intersection by an independent, qualified safety team. It qualitatively estimates and reports on potential road safety issues and identifies opportunities for safety improvements, while determining if the needs of all road users are being safely met.

Roundabouts are circular intersections with specific design and traffic control features. Key features include yield control of entering traffic, channelized approaches, and appropriate geometric curvature to slow speeds. Roundabouts provide substantially better operational and safety characteristics than older traffic circles and rotaries and are safer than comparable signalized intersections.

Better Parking Management

Municipal parking standards often assume that all trips will be made by car and that destinations will be isolated and single use in character. Such standards fail to recognize the different types of parking provisions that may be desirable or cost-appropriate for different contexts, such as downtowns, suburban shopping districts, or rural areas. Municipal parking ordinances therefore often result in too much parking or requirements that are not flexible for mixed-use settings. These requirements have a strong influence on the built and natural environment and how the community grows or redevelops.

Revisit **Minimum Parking Standards** to ensure that required parking supply does not exceed demand and is sensitive to the local context. In some cases, such as in TODs or historic villages, **Parking Maximums** may be appropriate.

Provide alternatives to conventional parking standards by allowing flexible parking provisions, such as **Shared Parking, Reserve Parking, and Fee-in-Lieu of Parking**.

Implement **Pricing or Metering Strategies** in locations where the amount of available parking is scarce and/or parking turnover is encouraged.

Provide **Dedicated and/or Preferred Parking** for bicycles, vanpools, carpools, car-sharing, and low-emitting and fuel-efficient vehicles.

Encourage **Sustainable Practices in Parking Design**, including the use of recycled concrete and asphalt, pervious paving, stormwater best practices, and heat-island preventing treatments.

Sustainable Transportation

Local governments can encourage new environmentally friendly technologies. These can be in the form of supporting the adoption of alternative fuel vehicles, telecommuting, car sharing, and bike sharing. The last two, in particular, lend themselves to potential public-private partnerships and create services that reduce the need for auto ownership.

Local governments can also utilize travel demand management techniques for their employees. These benefits can help local governments compete for talent, reduce roadway demand during peak hours, and help make local government cleaner and greener.

Travel Demand Management programs are typically designed to reduce traffic at peak hours by changing the driving habits of commuters. Strategies include employee subsidies for the use of transit, such as TransitChek, preferred parking for carpoolers, parking fees for employees who drive alone, flex-time, telecommuting, and similar measures.

Trip Reduction Ordinances use municipal regulatory authority to limit trip generation from development sites. They usually cover an entire local political subdivision rather than just an individual project, spreading the burden more equitably between existing and future development and they may be less vulnerable to legal challenges than conditions imposed on development approvals. Also known as Employee Trip Reduction, such approaches may be voluntary or mandatory.



Landscaping and pedestrian amenities can enhance the appearance and safety of shopping centers.

Green Taxi Ordinances require taxi companies to purchase hybrid, compressed natural gas, or fuel-efficient vehicles. To date there have been legal challenges to implementing this requirement, although the Green Taxis Act proposed in Congress may help to clear these hurdles.

Fleet Vehicle Audits assess the availability, costs, benefits, and barriers to utilizing alternative fuels and vehicles, and help to identify other fuel-saving opportunities. There are various incentives for switching to alternative fuels, which, combined with increased fuel efficiency, can further save the municipality money. Light- and heavy-duty trucks are particularly well suited to conversion to natural gas, which has the added benefit of being relatively local in nature.



Car sharing programs can help reduce the demand for parking.

Regional Transportation Funding

Lack of funding is a major challenge as we work to modernize the transportation system. The region's transportation infrastructure faces a \$45 billion funding deficit over the next 26 years just to maintain the system in a state of good repair, with limited new-capacity expansion.

Greater Philadelphia Transportation Funding Need Compared to Available Revenue



The Greater Philadelphia region lags behind the other largest metro areas in the U.S. in terms of local contribution to transportation projects. Realizing the importance of a modern multimodal transportation system and the need to invest in maintaining and improving our existing system, several counties in the region are starting to look at ways to raise transportation funding from local sources, including bonds and tolling.

One type of funding source that municipalities have the power to enforce is traffic impact fees. Both Pennsylvania and New Jersey have “partnership acts,” which encourage private developer contributions to advance transportation projects. These funds often come as a result of a major development impacting the local transportation network. The rationale for such funding is that the developer’s contribution (or implementation in absence of public funds) serves to speed up project delivery, resulting in enhanced overall accessibility to the development.

Municipalities can work with DVRPC and state departments of transportation to reduce the costs of transportation projects by ensuring that projects are “right-sized” in order to scale the solution to the size of the problem and tailor the approach to the specific project, and selecting transportation projects for capital programming based on sound long-range strategic planning considerations, life-cycle investment analyses, and system performance and condition data.



MUNICIPAL FUNDING OPPORTUNITIES

DVRPC selects projects for federal and state transportation funding and provides project management assistance to PennDOT and NJDOT for specific federally funded transportation projects. By working with local project sponsors, DVRPC helps to implement construction projects by moving the projects through design approvals and ultimately into construction. DVRPC also administers several grant programs that help municipalities conduct planning work to improve the transportation system and create livable communities.

Transportation Enhancements (TE) are federal highway and transit funds set aside under the Surface Transportation Program for community-based “nontraditional” projects designed to strengthen the cultural, aesthetic, and environmental aspects of the nation’s intermodal transportation system.

Hometown Streets projects are undertaken in Pennsylvania communities within a defined “downtown” area that collectively enhances its environment and promotes positive interactions with people in the area. Projects may include sidewalk improvements, planters, benches, street lighting, pedestrian crossings, transit bus shelters, traffic calming, bicycle amenities, kiosks, signage, and other visual elements.

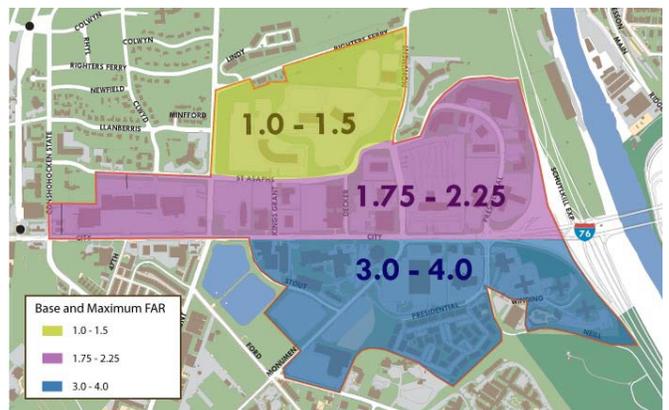
Safe Routes to School programs provide safe routes for children to walk to school, and may focus on engineering improvements, education, or enforcement of existing laws.

The **Transportation and Community Development Initiative (TCDI)** provides planning grants to support local development and redevelopment efforts in the region’s core cities, developed communities, and mature suburbs.

The **Efficient Growth for Growing Suburbs (EGGS)** program provides planning grants to growing suburban municipalities in Pennsylvania to improve growth management and community design and optimize the efficiency of their existing and planned transportation network through better linkage of land use and transportation planning.



These before and after images illustrate improvements made to downtown Glenside using funding from DVRPC’s Hometown Streets program.



The TCDI-funded City Avenue Corridor Zoning Overlay study provides a framework for the transformation of the corridor.

Source: Kise Straw & Kolodner



CALL TO IMPLEMENT THE PLAN

Implementation of *Connections* will rely on a large cast of governmental entities—federal, state, and local—as well as nonprofit groups, businesses, and citizens. Attaining the vision and goals outlined in the plan will require a collective effort that begins with an assessment of the impact our individual actions have on the region. By “thinking regionally but acting locally,” the region can achieve coordinated and cooperative action across municipal, county, state, and federal levels, and between the public and private sectors.

MULTIMUNICIPAL PLANNING

Multimunicipal planning is a key foundation to implementing the plan. Multimunicipal planning allows neighboring municipalities to develop a shared vision and to coordinate on various planning issues, including growth management, provision of infrastructure, preservation of natural and historic resources, and economic development. It can also help municipalities receive funding from state agencies, address issues that cross municipal boundaries, and reinforce the importance of local planning. Government agencies often give priority in grant programs and funding decisions to areas with multimunicipal plans.

Corridor Planning allows municipalities along a transportation corridor to develop a coordinated plan for the entire corridor. This allows municipalities to develop a coherent vision for the corridor, establishing priorities for transportation improvements and land use change. Corridor planning works best with multimunicipal cooperation.

Greenway Planning promotes greenways, or linear corridors of open space, following streams, ridge lines, or abandoned rail corridors, which typically cross municipal boundaries. Greenways provide environmental, recreational, cultural, and economic benefits.

Multimunicipal Comprehensive Plans are agreements between neighboring municipalities to allow formalized cooperation to coordinate on various planning issues. Participating in multimunicipal comprehensive plans can help to protect municipalities from curative amendments or similar zoning challenges, provide funding incentives, require state agencies to consider local plans in decision-making, and can include coordination of tree management, parks, and open space beyond municipal boundaries that provide potential cost savings through economies of scale.

Multimunicipal Zoning ordinances coordinate zoning between participating municipalities. This approach can serve to reduce discrepancies between neighboring zoning ordinances, provide protection from curative amendments, and address planning issues that cross municipal boundaries. These zoning ordinances must be based on a multimunicipal comprehensive plan.

Shared Municipal Services, such as fire and police protection, can allow small municipalities to reduce the cost of providing these services. Often, a multimunicipal service sharing arrangement, or a joint purchasing arrangement, is more cost-effective and efficient.

Voluntary Agreements, such as memoranda of understanding, can help municipalities to implement multimunicipal projects.

Watershed Planning allows municipalities to coordinate planning efforts within watersheds to promote water quality and general environmental health. Often, natural features such as watersheds are more appropriate areas for environmental planning activities than political boundaries.

Public Participation is a key component to the successful implementation of planning projects and consists of three related, and often overlapping, processes: education, consultation, and participation. Stakeholders for a project vary, but may include interested and/or affected individuals, organizations, agencies, and government entities. Municipalities should encourage participation opportunities to a wide and varied audience, including traditionally underserved groups, throughout a project’s timeline.

DVRPC PROGRAMS AND SERVICES

DVRPC acts as a facilitator to bring together stakeholders throughout the area to discuss regional issues. A number of committees bring together elected officials, planners, professional practitioners, and the private sector. DVRPC also strives to implement the vision and policies of *Connections* through its work program and projects, and to provide an array of services to municipalities throughout the region.

Classic Towns of Greater Philadelphia is designed to foster the growth of the region's older communities by promoting what makes each community a wonderful place to live, work, and play. The program functions as a regional marketing strategy by identifying individual community needs, developing effective messages, and creating strategies for targeted distribution that helps communities brand themselves.

A **Regional Information Resource Center**, maintained by DVRPC, provides the most up-to-date census and other data; state-of-the-art Geographic Information Systems (GIS); aerial photography; and various other economic, employment, housing, environmental, and transportation information and reports.

Corridor Studies and **Local Area Plans** involve working together with groups of communities along a corridor or area to consider what transportation improvements are needed, what impacts new transportation infrastructure will have on the local environment, what the area would like to look like and how it would like to function, and what steps are needed to get there. DVRPC also conducts detailed **Technical Reports** on specific subjects, such as climate change, transit-oriented development, regional economic development strategies, civic design excellence, and local food production and distribution.

The **Municipal Open Space and Natural Resource Planning Services** program provides in-depth environmental planning services to New Jersey municipalities. This program assists communities in assessing the current state of their resources, works with the public and community leaders to articulate a future vision, and develops specific municipal tools that a community can use to achieve its vision. Municipalities can choose from the following "market basket" of planning services to meet their diverse needs: community visioning, environmental resource

inventories, open space and recreation plans, farmland preservation plans (including planning incentive grant applications), conservation elements of the master plan, greenway plans, build-out analysis, and environmental protection ordinances, such as conservation design. Natural resource protection tool usage in the region is monitored to gauge which municipalities are using which tools, so that underutilized tools can be targeted to communities that would benefit from them. Sample ordinances are also collected and posted on the DVRPC web site for municipalities to utilize.

Municipal Implementation Tool (MIT) brochures help municipalities throughout the region implement regional goals. The MIT series are "how to" guides on a variety of planning topics related to the regional long-range plan. To date, almost 20 MITs have been produced and widely distributed to all the municipalities in the region. A sampling of the subjects covered in the MITs include parking management strategies, historic preservation, inclusionary housing, aging in place, form-based codes for big box retail, municipal tree management, safe routes to school, and road diets.



A street festival in the Manayunk neighborhood of Philadelphia, one of the Classic Towns of Greater Philadelphia.

REALIZING OUR POTENTIAL

We can transform our region and position ourselves for a promising future. But to achieve this goal, we must acknowledge the value of what we have and how we can capitalize on our strengths to become a model of sustainability, prosperity and productivity.

DVRPC is working with elected officials, regional stakeholders, and the public to implement the *Connections* plan. The plan defines regional policy and establishes a collective vision to enhance our environment, promote energy conservation, optimize transportation, guide investments, ensure consistency, and improve the quality of life for all residents throughout our region. Municipalities play a key role in implementing the plan. Local governments have the opportunity to shape land use and development to create a greener, more sustainable, and economically competitive future. This in turn can help to achieve the vision of a more modern, multimodal transportation system, preservation of an additional 500,000 acres of open space, more livable communities, and a 50 percent reduction in greenhouse gas emissions.

This municipal guidebook gives local officials and citizens a concise description of the major planning tools and policies available to implement *Connections*.

Download the *Connections* plan at www.dvrpc.org/connections.

View additional implementation resources and learn more about the municipal role at www.dvrpc.org/connections/implementation.htm.



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The Delaware Valley Regional Planning Commission is dedicated to uniting the region's elected officials, planning professionals, and the public with a common vision of making a great region even greater. Shaping the way we live, work, and play, DVRPC builds consensus on improving transportation, promoting smart growth, protecting the environment, and enhancing the economy. We serve a diverse region of nine counties: Bucks, Chester, Delaware, Montgomery, and Philadelphia in Pennsylvania; and Burlington, Camden, Gloucester, and Mercer in New Jersey. DVRPC is the federally designated Metropolitan Planning Organization for the Greater Philadelphia Region — leading the way to a better future.

DVRPC fully complies with Title VI of the Civil Rights Act of 1964 and related statutes and regulations in all programs and activities. DVRPC's website may be translated into multiple languages online by visiting www.dvrpc.org. Publications and other public documents can be made available in alternative languages and formats, if requested. For more information, please call (215) 238-2871.