


MARCH 2018



CONNECTIONS

2045

Plan for Greater Philadelphia
SUMMARY DOCUMENT





The **Delaware Valley Regional Planning Commission** is the federally designated Metropolitan Planning Organization (MPO) for a diverse nine-county region in two states: Bucks, Chester, Delaware, Montgomery, and Philadelphia in Pennsylvania; and Burlington, Camden, Gloucester, and Mercer in New Jersey.

DVRPC's vision for the Greater Philadelphia Region is a prosperous, innovative, equitable, resilient, and sustainable region that increases mobility choices by investing in a safe and modern transportation system; that protects and preserves our natural resources while creating healthy communities; and that fosters greater opportunities for all.

DVRPC's mission is to achieve this vision by convening the widest array of partners to inform and facilitate data-driven decision-making. We are engaged across the region, and strive to be leaders and innovators, exploring new ideas and creating best practices.

DVRPC fully complies with Title VI of the Civil Rights Act of 1964 and related nondiscrimination statutes in all activities. For more information, visit www.dvrpc.org/GetInvolved/TitleVI.

The authors are solely responsible for the findings and conclusions herein, which may not represent the official views or policies of the funding agencies.

Cover photo source: ASA/GSFC/LaRC/JPL, MISR Team.



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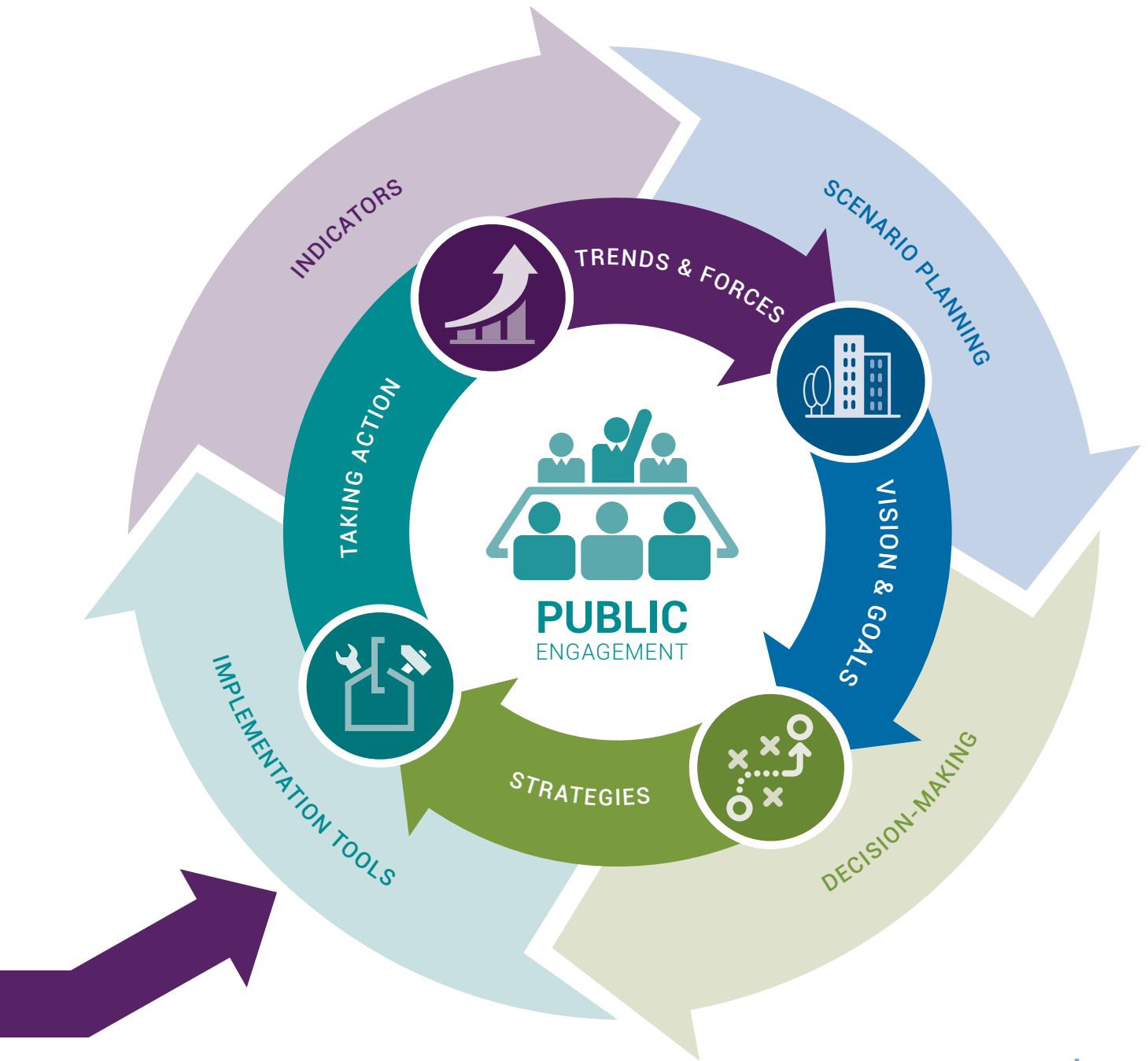


DVRPC & LONG-RANGE PLANNING

DVRPC, the federally designated MPO for the Greater Philadelphia region, is charged with developing a long-range transportation plan. The plan is updated every four years, through a process of **identifying trends and forces** shaping the future, **working with the public** and stakeholders to outline a vision, **developing strategies** to obtain it, and **taking action**.

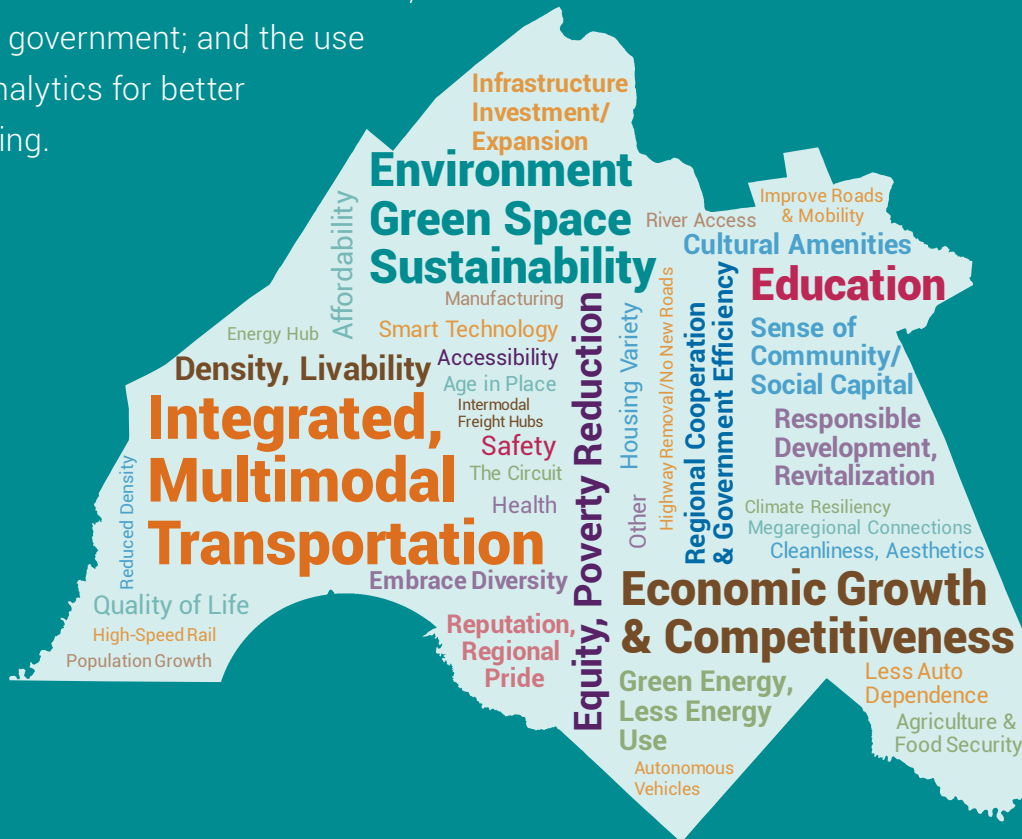
The Plan prioritizes regional transportation funding and considers land use, the natural environment, economic development, equity, and quality of life issues.

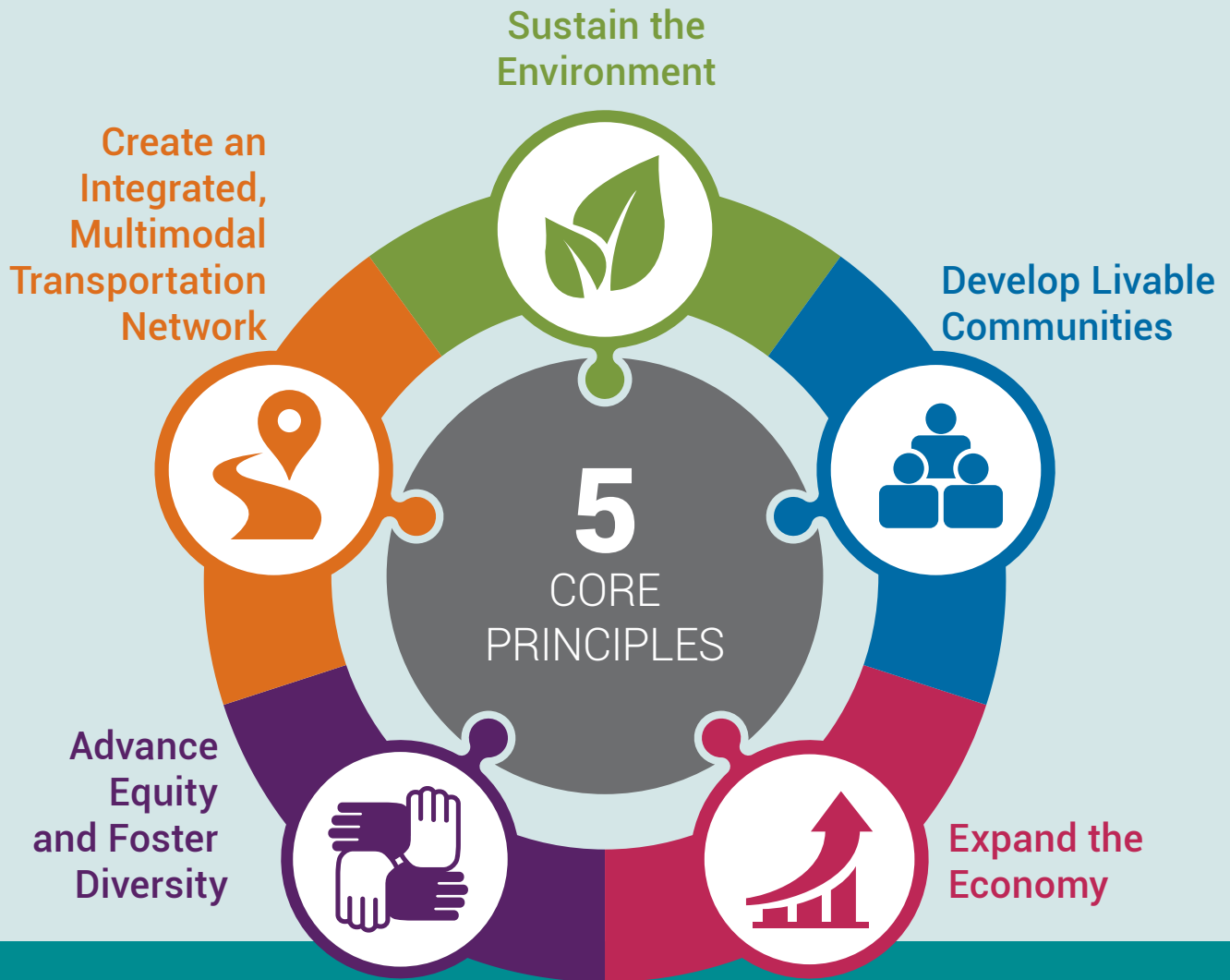
THE PLANNING PROCESS



VISION FOR 2045

The *Connections 2045* Plan outlines a **future vision of the region** based on analysis of trends and forces, along with **feedback from public outreach**. The most prominent themes identified during public engagement form the **five core principles of the Plan**. Government efficiency, regional cooperation, and education were also identified as key strategies for achieving the vision. These strategies promote increased transparency; innovative and sustainable practices; collaboration between residents, business, and government; and the use of data and analytics for better decision-making.



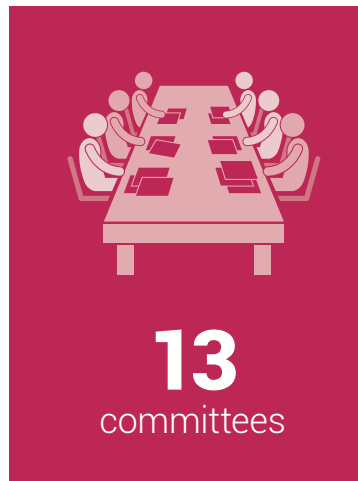


The five core principles of the Plan cover the environment, livable communities, economic competitiveness, equity, and transportation. While the core principles are interrelated, each addresses its own issues and challenges, and comes with a set of goals and strategies for implementation.

2045 FOCUS & OUTREACH

Connections 2045 focuses on our **evolving transportation network** and the continuing challenge of **rebuilding our transportation infrastructure**.

The Plan was developed with the **input and support of regional planning partners, stakeholder groups, and residents**. Workshops and meetings were held throughout the region, stakeholders were engaged at events and presentations, and thousands of comments were received and incorporated.



Top **3** future aspirations we heard





1,815
comments
received

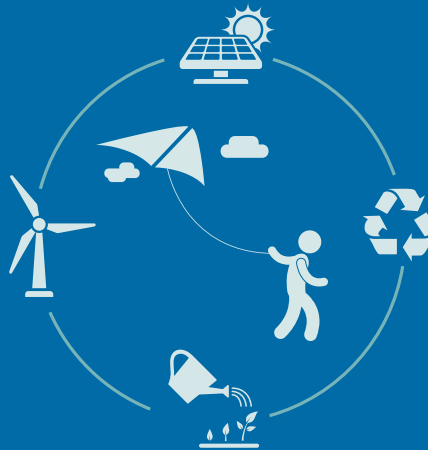


#1



**Integrated/Multimodal
Transportation**

#2



**Environment | Green
Space | Sustainability**

#3



**Economic Growth
and Competitiveness**



How we got
the word out:



email



social media



web



mail



print

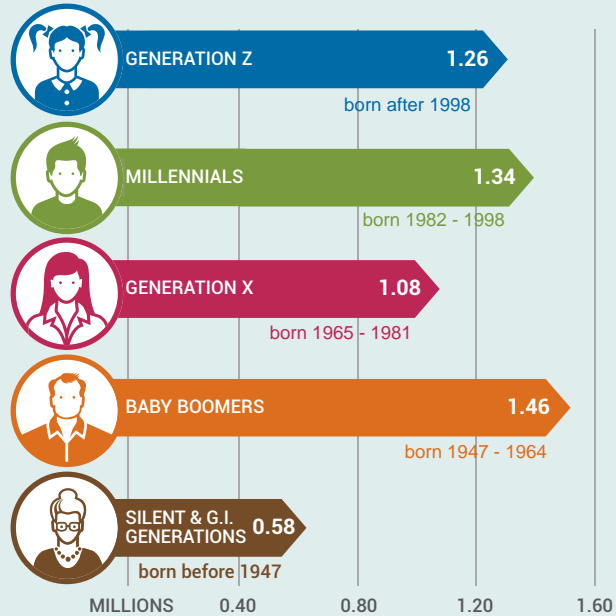
dvrpc

TRENDS & FORECASTS: POPULATION & EMPLOYMENT

There are many factors that will **influence the future**, including current conditions and trends, decisions we make today, technological advances, social and political movements, and forces of change that may be barely perceptible at the present time.

Understanding these trends helps to guide the population and employment forecasts, which are critical to land use and transportation planning. **Overall, the region is forecast to experience moderate population and employment growth over the next several decades.**

2015 POPULATION BY GENERATIONAL AGE GROUP



BETWEEN 2015 AND 2045



658,000
More Residents



11.5%
Increase

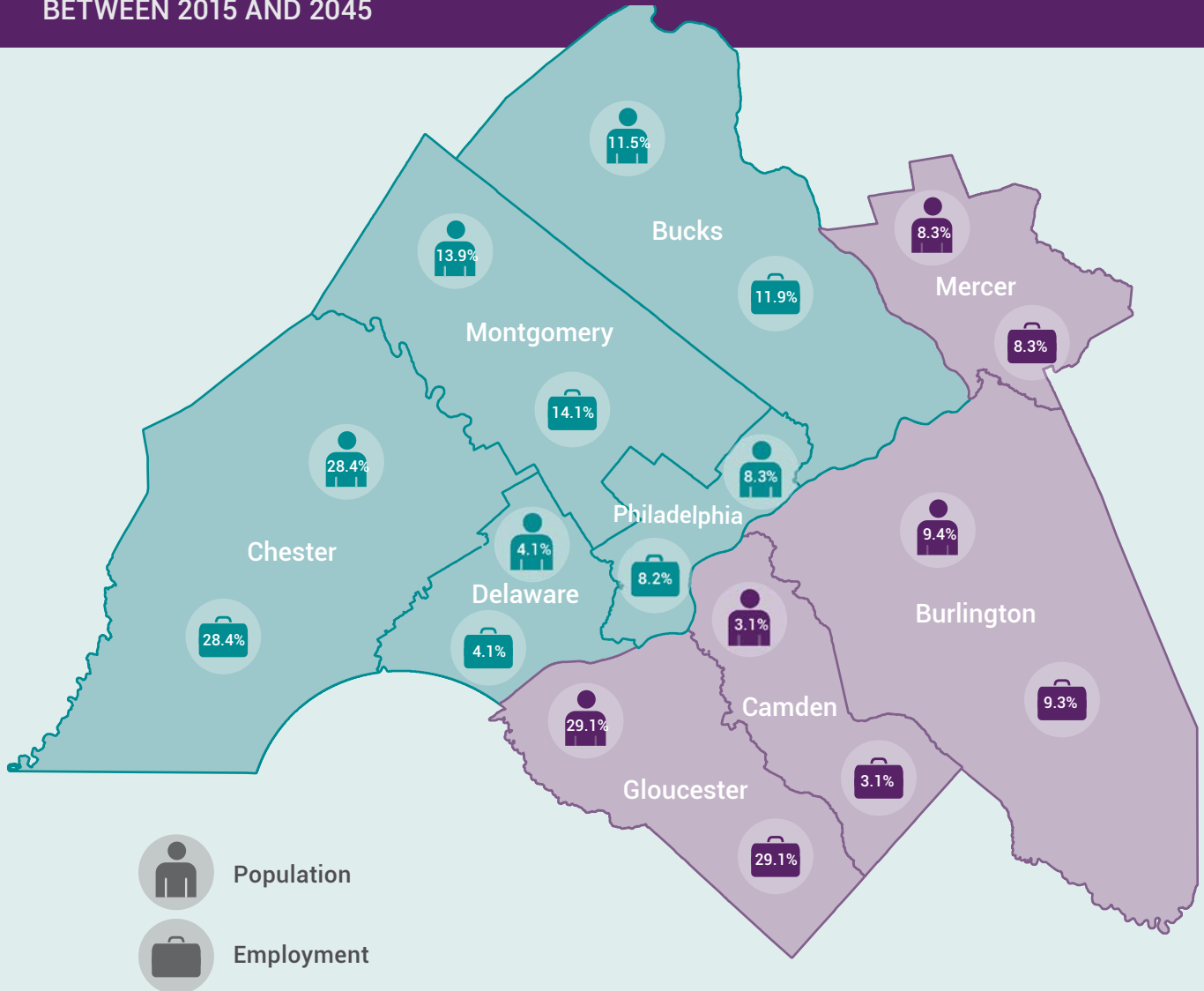


372,000
More Jobs



11.8%
Increase

PROJECTED CHANGES IN POPULATION AND EMPLOYMENT BY COUNTY BETWEEN 2015 AND 2025



Population



Employment

TRENDS & FORECASTS: LAND USE

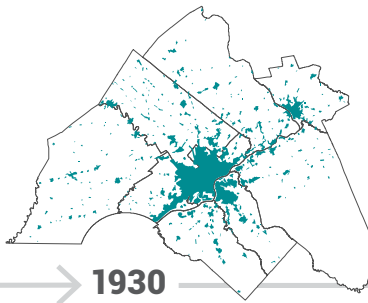
Land use analysis is another fundamental factor in the planning process. Over the last 85 years, **the region has experienced rapid suburbanization**, characterized by "leap frog" development and sprawl. This has led to:

- Increased reliance on **driving, and more congestion**
- Drastic reduction in **open space and farmland**
- Detrimental impacts to **air and water quality**
- Increased need for **infrastructure and services**

From 1930-2015

450%
increase in
acres developed

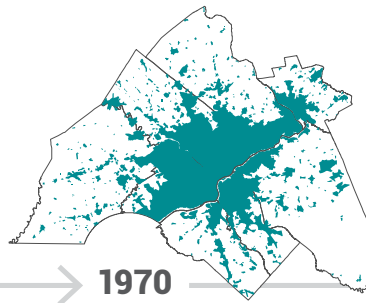
73%
increase in
population



3.3 MILLION PEOPLE



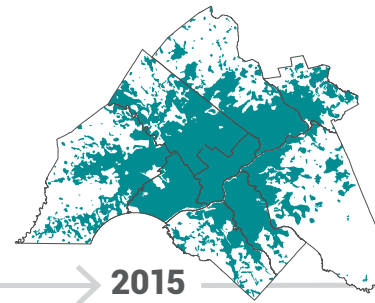
222,000 ACRES DEVELOPED



5.1 MILLION PEOPLE



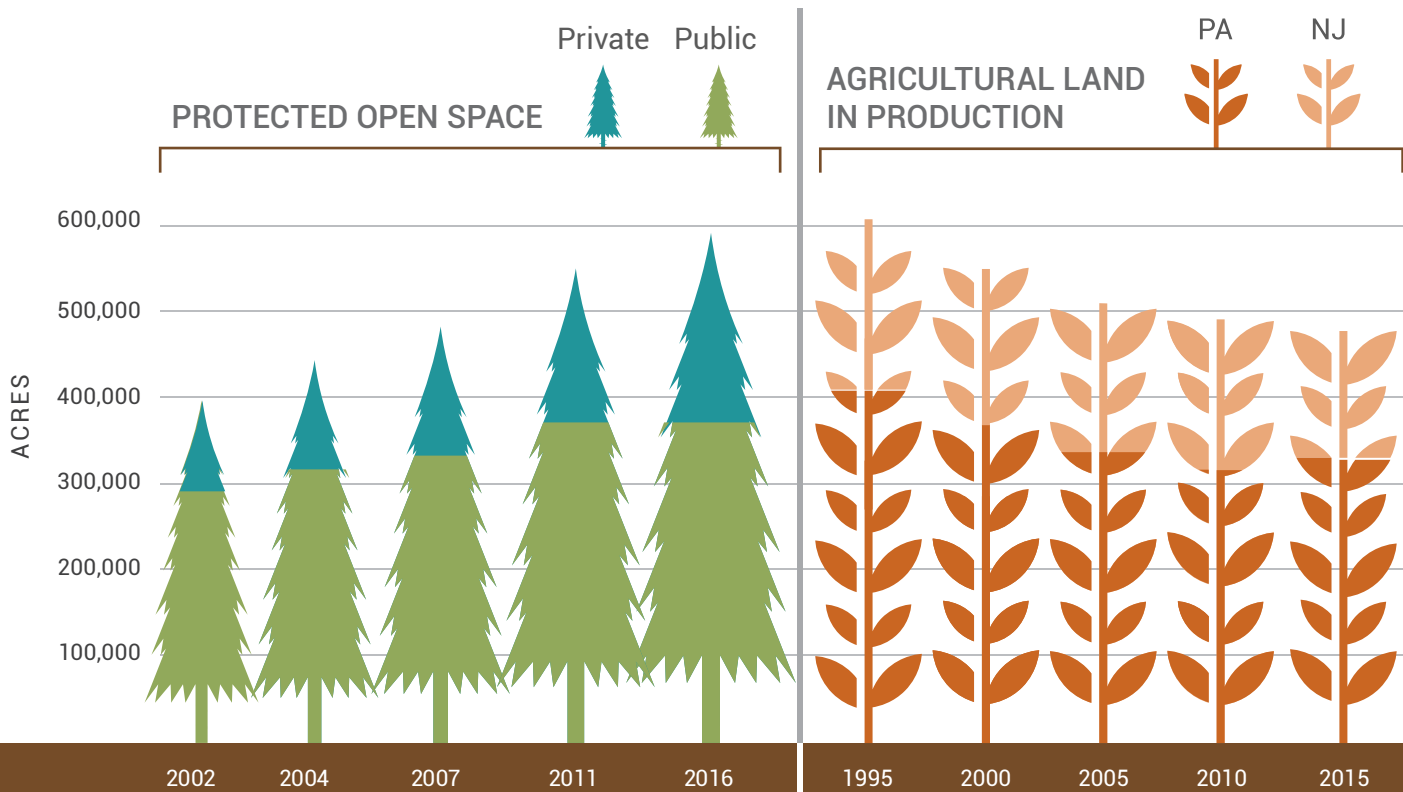
641,000 ACRES DEVELOPED



5.7 MILLION PEOPLE



998,000 ACRES DEVELOPED



Between 2002 and 2016, the region has **steadily increased** its inventory of **protected public and private open space**: a necessary step in managing growth and protecting the environment throughout the region. **Despite this**, there has been **a steady loss in agricultural lands** across the region.

TRENDS & FORECASTS: TRANSPORTATION

The Greater Philadelphia region has **one of the most comprehensive transportation systems in the nation**. However, the system is mature and many of the aging facilities **require significant investment**.

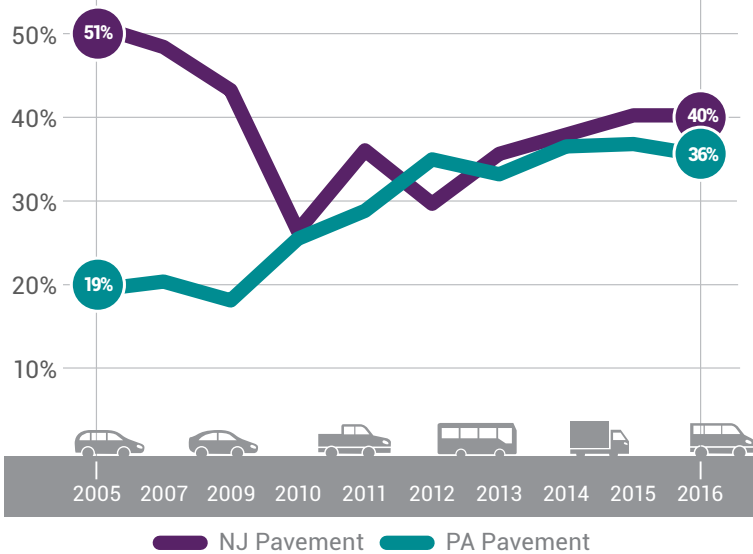


SEPTA has

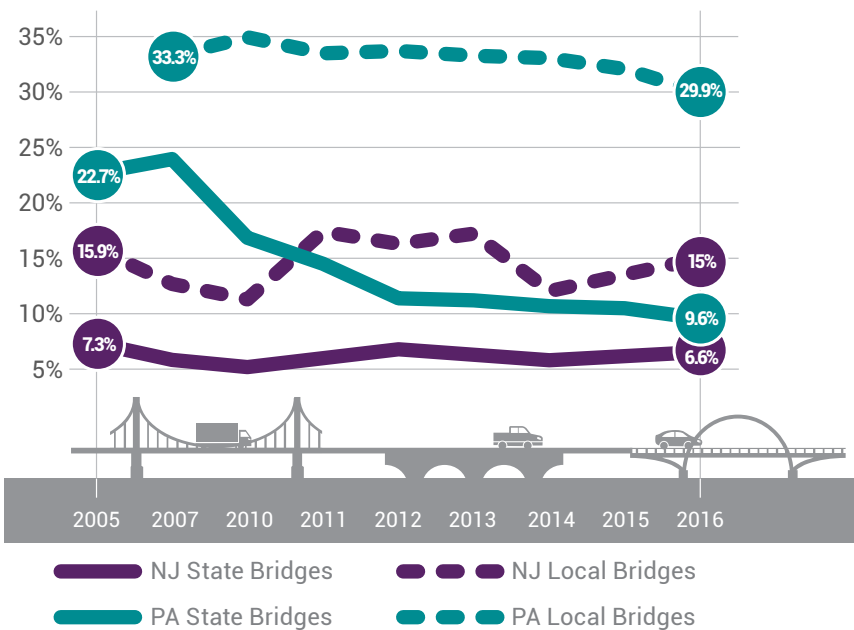
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regional rail vehicles operating past their 35-year expected useful life; **all trolleys** are approaching the end of their useful life.

PERCENT OF LANE MILES IN POOR CONDITION



PERCENT OF STRUCTURALLY DEFICIENT BRIDGE DECK AREA



TRENDS & FORECASTS: REGIONAL INDICATORS

DVRPC periodically analyzes the relative **strengths and weaknesses of the Greater Philadelphia region** as compared with the 25 largest metropolitan areas in the United States and reports its findings in *Rating the Region*. Based on the latest report, the following weaknesses and opportunities were identified:



#1

An aging population with increasing service and mobility needs.

#2

Disparities between urban and suburban educational attainment and unemployment.

#3

Relatively low expenditures in academic research and development, and venture capital investment.



#1

Diverse economy and extensive highway, transit, aviation, and port facilities.

#2

Rich in healthcare resources.

#3

Large number of higher education institutions.

TRENDS & FORECASTS: FUTURE FORCES

DVRPC convened **the Futures Group**, a multidisciplinary expert group to **identify nonlinear, driving forces of change, called Future Forces.**

The group was tasked with assessing the Future Forces' implications for the region and identifying strategies to respond to them.

These are **trends largely beyond the region's control, but they will impact our ability to achieve the vision and goals** set forth in the Plan. Future Forces is what we think might happen, not necessarily what we want to happen. We use them to understand how change is likely to occur, and to guide regional decision-making.

SCENARIO

BENEFITS



ENDURING URBANISM

People and jobs moving to walkable communities is the start of a long-term trend.

More residents and jobs located in walkable communities, increased transit use, and improved urban schools.



THE FREE AGENT ECONOMY

Increased outsourcing and automation means individuals must create their own economic opportunities.

Region would become more entrepreneurial. Innovative technology would enable working from anywhere. On-demand services would be widespread and available for anything.



SEVERE CLIMATE

Continued rise in atmospheric carbon levels lead to significant disruptions from climate change.

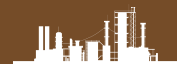
Longer growing season for agriculture, lower heating costs, and the region may become an attractive destination for climate refugees.



TRANSPORTATION ON DEMAND

Smartphones, apps, and real-time information help people get around using new and existing transportation modes.

More real-time information and new transportation options that reduce need for car ownership and parking space, lower travel costs, and enhance user experience.



THE U.S. ENERGY BOOM

An abundance of domestically produced oil and natural gas keeps the cost of energy low.

Increased job opportunities for lower skill workers, reduced energy prices, and less reliance on foreign energy sources.

CONSEQUENCES

More gentrification and rising housing costs, particularly in urban areas; an increase in suburban municipalities with fiscal distress; and a loss of industrial land.

Low skilled workers may fall further behind, incomes may be less stable, and an increase in virtual education and telemedicine may weaken the region's two strongest economic sectors.

More extreme weather and emergency events; shortened infrastructure lifespans, with greater risk of sudden failures; and negative health and wildlife habitat impacts.

Increased suburban sprawl and congestion, with associated negative impacts to transit service and quality.

Greenhouse gas emissions could increase, more air pollution would harm health, and cheap energy may delay the move to cleaner energy and more efficient vehicles, facilities, and equipment.

SCENARIO-SPECIFIC ACTIONS



Expand and increase service frequency throughout the transit system to meet increased demand.



Expand and support business incubators, small businesses, and workforce training programs.



Reduce emissions and pursue climate adaptation strategies such as protecting vulnerable assets, updating building codes, and preserving agricultural lands.



Ensure that new transportation technologies and services are safe and accessible to all people.



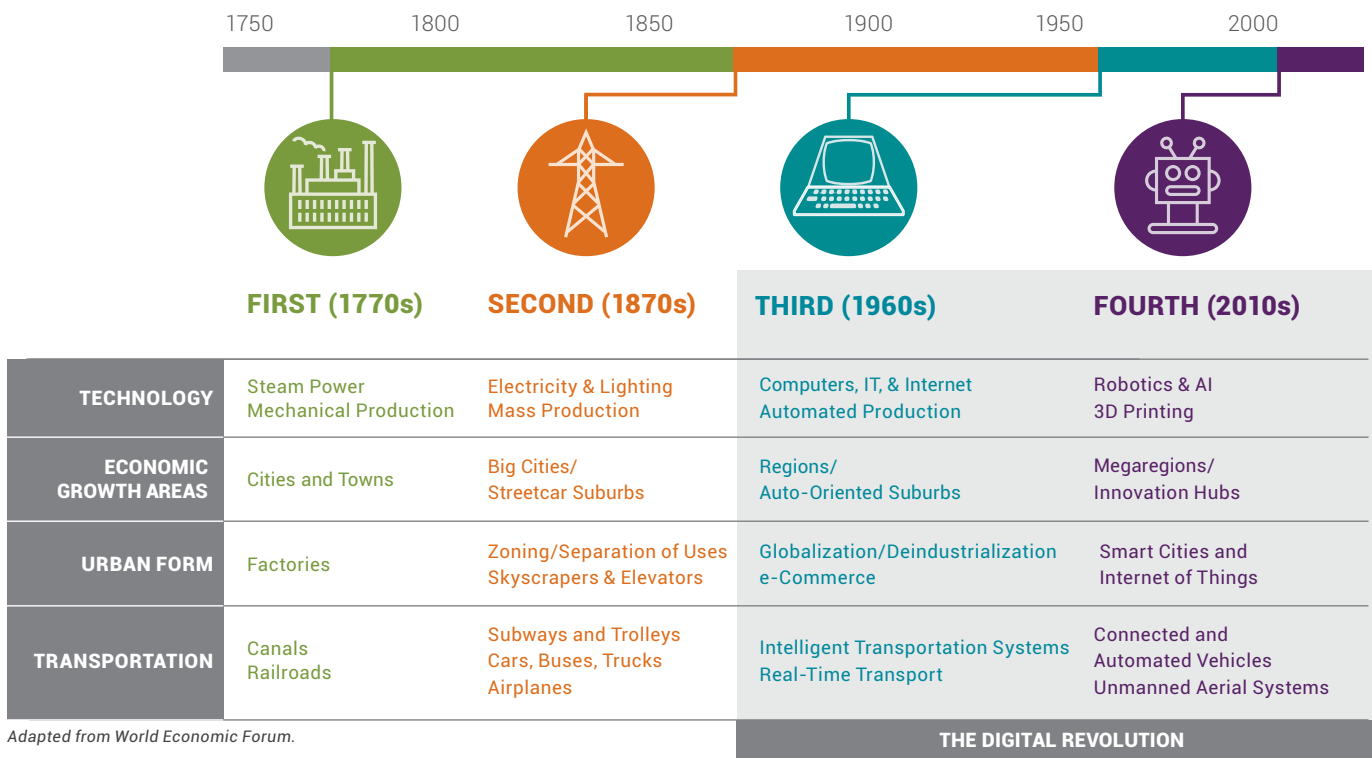
Work with the goods movement industry to promote safety, clean air and water, and *Freight as a Good Neighbor* initiatives.

UNIVERSAL ACTIONS FOR ALL SCENARIOS

- Update zoning codes to allow for mixed-use infill development.
- Build lifelong communities that facilitate aging in place.
- Encourage immigrant-friendly policies.
- Implement universal pre-kindergarten and other programs to improve K-12 educational outcomes.
- Use green infrastructure and stream buffer ordinances to improve water quality.
- Promote collaboration and cooperation with neighboring regions.
- Create regional or local big data team(s) to centralize and analyze datasets, guide decision-making, and enhance government actions.
- Expand regional broadband infrastructure; and internet access and training for low-income individuals.
- Develop the impact economy, which uses a profit motive, public-private partnerships, and nonprofits to address economic, environmental, and social issues.
- Create an integrated, multimodal transportation network and a regional funding source to help pay for it.
- Enhance freight and goods movement.
- Carry out Vision Zero plans, which set a goal of no roadway fatalities.
- Improve infrastructure resiliency.

TRENDS & FORECASTS: NETWORKING TRANSPORTATION

Throughout history, technology has shaped urban form and how we get around within and between developed areas. The initial phase of the **Digital Revolution** was slow to reach transportation, but has recently had major impacts through **real-time travel information and apps, transportation networking companies, and car- and bike-sharing.**



Adapted from World Economic Forum.



The Digital Revolution is now evolving around Artificial Intelligence and robotics. This suggests a future where sensors connected to the Internet will act as a central nervous system in our communities; and **transportation may be refashioned around highly automated and connected vehicles**, and drones.

Thanks to these technological innovations, there is a **unique opportunity to reimagine transportation and urban areas** through increased information, connection of vehicles and infrastructure to each other and the Internet, and linking various modes together into an integrated network.

FIVE CORE PRINCIPLES SUSTAIN THE ENVIRONMENT



Open space, natural areas, farmland, and historic resources are indispensable to our region and its residents.

However, many of these resources are threatened by development.

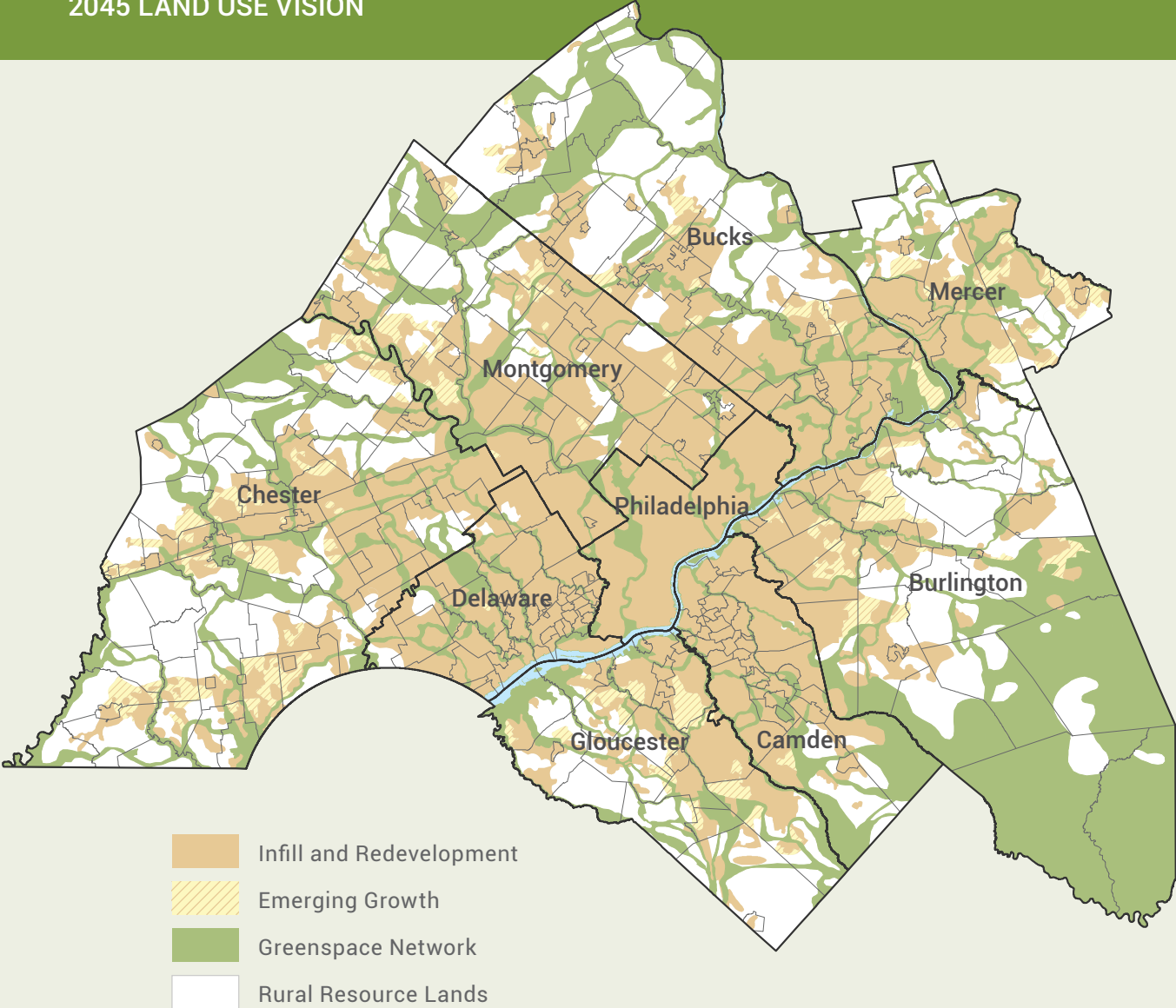
***Connections 2045* aims to SUSTAIN THE ENVIRONMENT by permanently protecting one million acres of open space.** This will improve the region's air and water quality, preserve historic and cultural resources, and increase access to healthy, locally-produced food.

Connections 2045 also establishes a goal of reducing 2005 greenhouse gas emissions by 80 percent by the year 2050 through cleaner energy production and energy efficiency to match international targets. The Plan aims to prepare communities for the impacts of climate change.

DVRPC's Growth Management and Resource Protection Planning Philosophy

- Integrate land use, development, and resource protection into a comprehensive, cooperative, continuing, and coordinated planning process.
- Encourage growth in areas of existing development as Infill and Redevelopment, and discourage development in the Greenspace Network and Rural Resource Lands.

2045 LAND USE VISION



FIVE CORE PRINCIPLES

DEVELOP LIVABLE COMMUNITIES



Centers are the cornerstone of the long-range plan and are critical to achieving many other goals. ***Connections 2045*** seeks

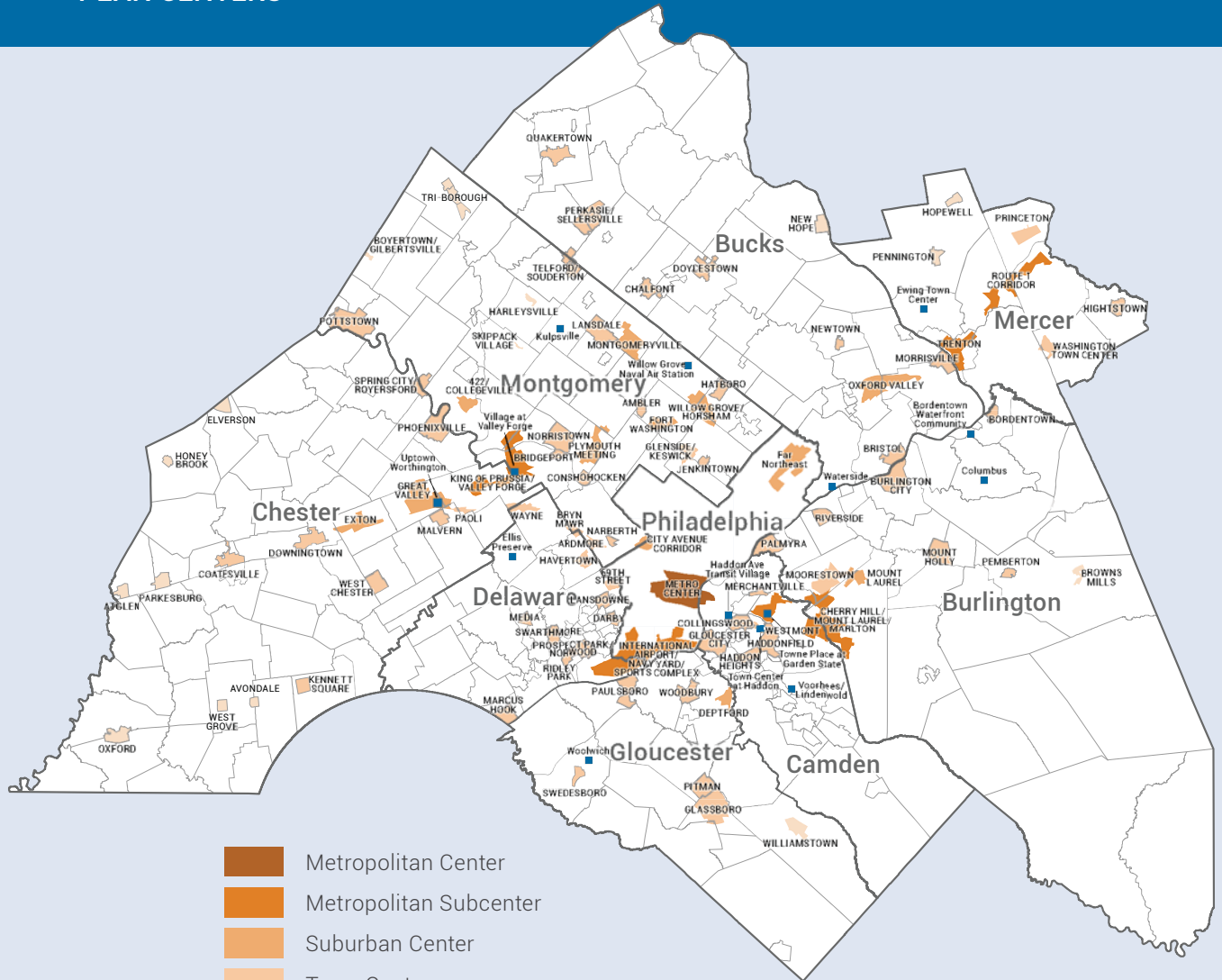
to DEVELOP LIVABLE COMMUNITIES by focusing growth in 125 Centers across the region. More compact, mixed-use, and mixed-income development will shorten distances between destinations, and encourage alternative and active forms of transportation.

The Plan aims to save public money by reinvesting in existing infrastructure—parks, community-centered schools, transportation infrastructure, and water and sewer lines—rather than sacrificing open space to build new facilities, and by encouraging regional cooperation and multimunicipal planning. Through these investments and enhanced community design, the Plan will reinvigorate existing communities, attracting and retaining residents.

DVRPC's Community Development Planning Philosophy

- Develop around Centers as a focal point in the regional landscape to reinforce or establish a sense of community.
- Promote growth and development in Centers to preserve open space, reduce strains on our natural resources, and create thriving, pedestrian-friendly communities that offer an improved quality of life for everyone.
- Prioritize infrastructure investment in Centers of all sizes and forms throughout the region—from core cities and their neighborhoods, to established suburbs and towns, to rural villages and new planned town centers.

PLAN CENTERS



- Metropolitan Center
- Metropolitan Subcenter
- Suburban Center
- Town Center
- Rural Center
- Planned Center

FIVE CORE PRINCIPLES

EXPAND THE ECONOMY



The region's economy ranks among the most diverse of the nation's major metro areas. Although not booming, our economy is resilient;

its diversity guards against the extremes in growth or decline that other regions dependent on one or two major industries often experience.

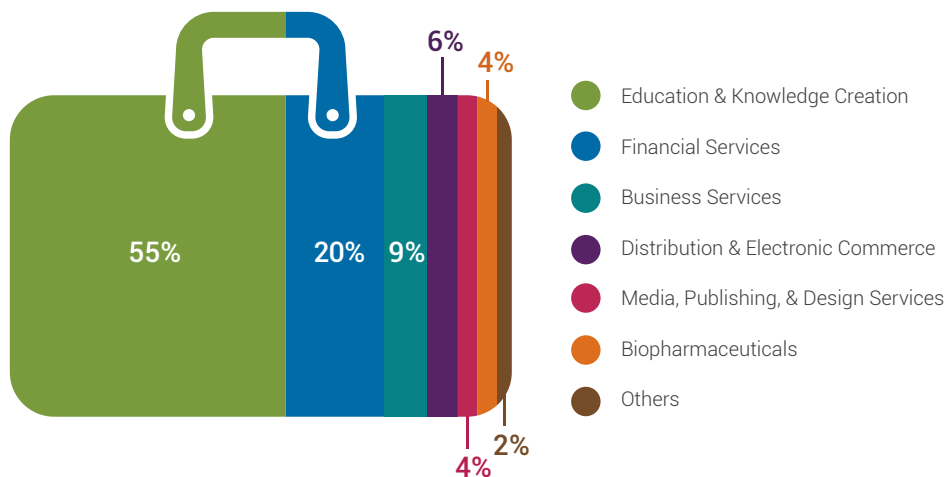
***Connections 2045* will work to further diversify and EXPAND THE ECONOMY, with more innovation, business formation, workforce skills, and global connections.**

The Plan focuses on business retention, increased entrepreneurship, and promoting the growth of key economic sectors, such as manufacturing, tourism, and the expansion of technology and other knowledge-based industries. Governments will need to become more efficient to enhance the climate for business growth. The region must also ensure a well-trained and productive workforce, and become more energy-efficient to gain competitiveness and desirability in the global economy.

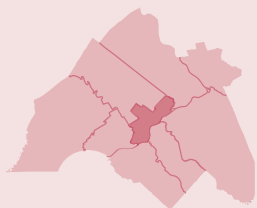
DVRPC's Economic Development Planning Philosophy

- Invest in people to ensure that the region's workforce meets the needs of current and future employers
- Invest in Centers to facilitate the most efficient use of infrastructure, and provide employers with easy access to supplies, markets, and a qualified workforce..
- Support the growth of key economic sectors within the region, and invest in innovation, creative thinking, and start-ups.

BASIC JOBS IN GREATER PHILADELPHIA BY CLUSTER, 2010



The Greater Philadelphia Region...



7th

largest metro
area population
in the nation



**100
million**

people living within
a 500-mile radius



>70

colleges
& universities

Of the Nation's 25 Largest Metro Areas...



12th

in Gross Domestic
Product (GDP)



3rd

in residents per
health care worker



13th

in median sales price
of single-family homes



10th

in value
of exports

Source: DVRPC, Rating the Region, June 2016.

FIVE CORE PRINCIPLES ADVANCE EQUITY AND FOSTER DIVERSITY



Equity is a principle that goes beyond the treatment of individuals, and addresses how policies, institutions, and infrastructure of a region promote fair treatment, and encourage success and prosperity of all persons. **Connections 2045 aims to ADVANCE EQUITY AND FOSTER DIVERSITY by removing barriers, and protecting Civil Rights and the most vulnerable people.** The Plan aims to reduce poverty, increase economic mobility, and support racially and socioeconomically integrated communities.

Equitable access to transportation is critical to economic and social opportunity. The Plan recommends finding ways to develop without displacing low-income populations in areas that are experiencing rapid redevelopment. It also encourages forming inclusive, age-friendly communities throughout the region, and increasing the availability of affordable housing. The Plan further sets a goal of giving all children in the region, no matter where they live, access to good schools and an education that prepares them for jobs of the future.

DVRPC's Equity Planning Philosophy

- Allocate funds following the principles of Title VI and Environmental Justice.
- Support and enhance the principles of equity, which include accessibility, mode choice, affordability, safety, health, diversity, inclusion, living wages, and quality education.
- Seek public input in inclusive and engaging ways, and meaningfully respond to comments and suggestions from the public throughout the planning process.

Eight Indicators of Potential Disadvantage (IPD) are mapped to identify potential adverse impacts and direct public outreach efforts.



Poverty



Limited English Proficiency



Carless Households



Elderly



Non-Hispanic Minority



Female Head of Household with Child



Physically Disabled



Hispanic



FIVE CORE PRINCIPLES CREATE AN INTEGRATED, MULTIMODAL TRANSPORTATION NETWORK



Transportation is entering an era of rapid change and uncertainty, fueled by the Digital Revolution. To adapt to this new environment, **Connections**

2045 aims to improve mobility choices by CREATING AN INTEGRATED, MULTIMODAL TRANSPORTATION NETWORK that is well-maintained, improves accessibility and security, reduces congestion and auto-dependence, incorporates new services and technologies, and moves the region toward zero roadway deaths.

As the transportation marketplace evolves, it will become more important to build partnerships between the public and private sector. At the same time, the rise of the global economy and e-commerce highlight the importance of goods movement and aviation.

DVRPC's Transportation Planning Philosophy

- Prioritize investment in:
 - (1) preserving and maintaining existing transportation infrastructure;
 - (2) improving the operation and efficiency of existing transportation facilities using technology, design, and markets;
 - (3) expanding the capacity of the existing multimodal transportation network, limiting the addition of through travel lanes.
- Ensure projects are affordable, have benefits and costs that are distributed across the region, and carefully consider land use, environmental, economic, and social impacts.
- Be bold in supporting projects that transform the region into a better place to live, work, play, and visit.

AN INTEGRATED, MULTIMODAL TRANSPORTATION NETWORK:

Partners with the private market & others to unleash creative & **entrepreneurial solutions.**

Applies **cybersecurity** to protect people, infrastructure, vehicles, proprietary information, and personal privacy.

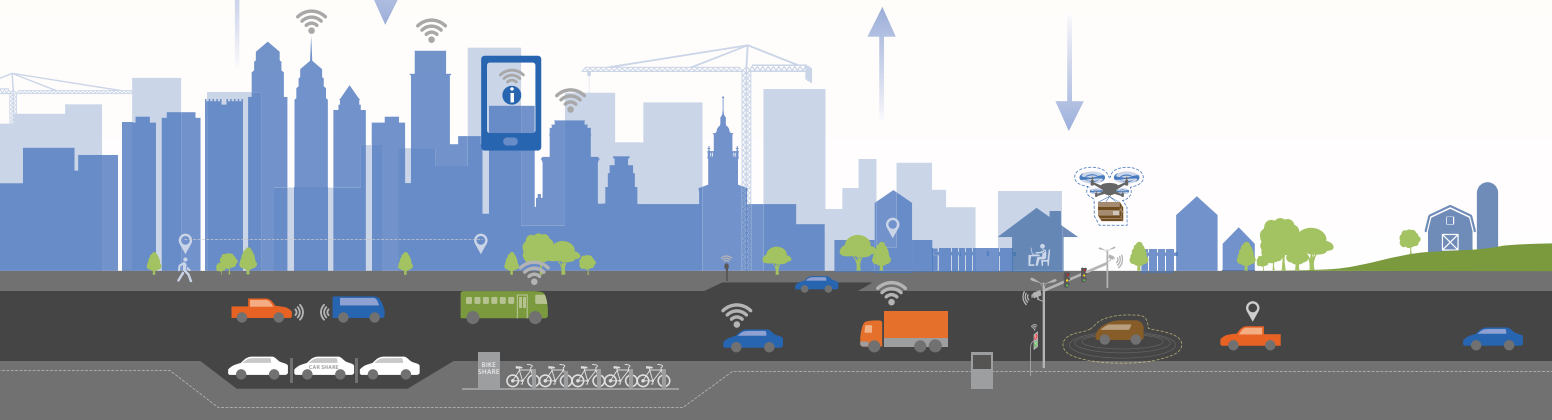
Relies on fixed-route **transit** (bus and rail) as the backbone of the **network.**

Is space efficient to build **agglomeration economies & walkable communities.**

Uses digital transportation technologies to enhance **safety, efficiency, and user experience.**

Is **multimodal, flexible, and adaptable** to prepare for future uncertainty.

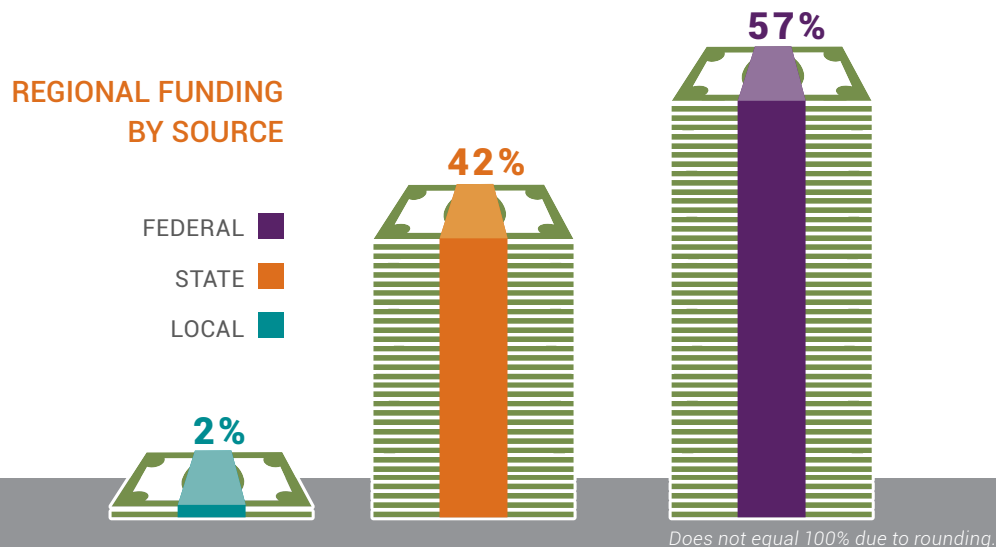
Uses **real-time info** to let people figure out the best way to get around.



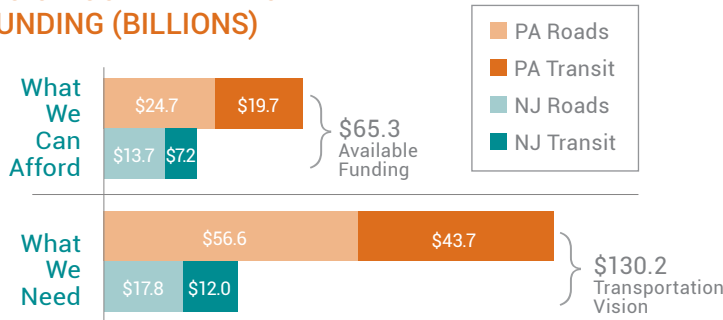
TRANSPORTATION INVESTMENTS

The 2045 vision is to achieve and maintain a state-of-good repair for all existing transportation infrastructure, integrating modes and improving the safety and efficiency of the network, while making it more connected and multimodal. New technologies present the opportunity to physically and digitally network modes and services to each other in a way that increases the availability of real-time information and improves user experience. Achieving the vision means making investments not only in existing infrastructure, but also in technology and operations to maximize the value of the investment.

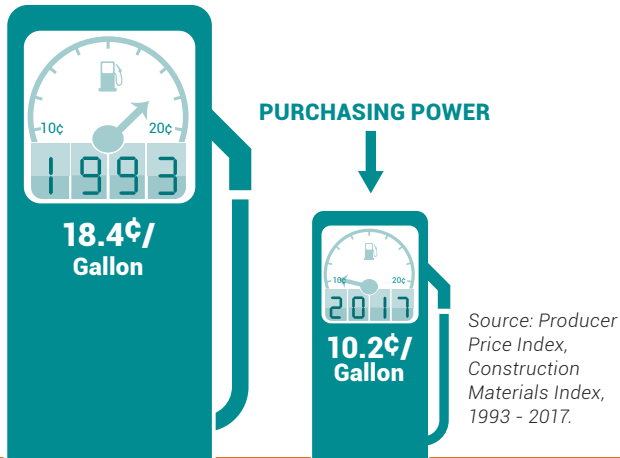
The Plan estimates \$65.3 billion (adjusted for inflation) in total federal, state, and local funding from 2018 to 2045. Local sources contribute just 2 percent of total anticipated funds. The Greater Philadelphia region provides very little transportation funding from local sources— particularly for transit capital projects—as compared with peer regions.



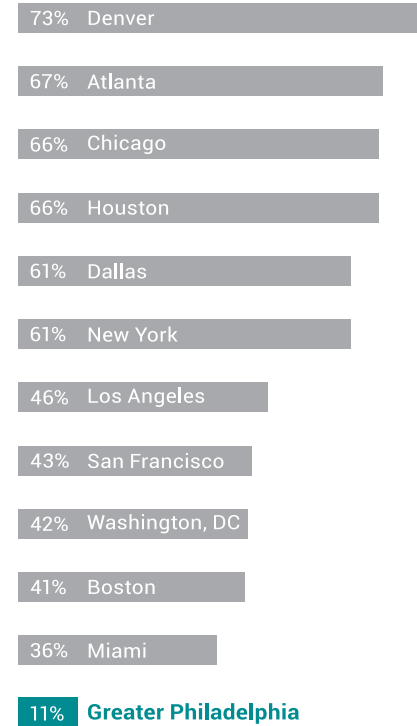
REGIONAL TRANSPORTATION VISION COMPARED TO AVAILABLE FUNDING (BILLIONS)



THE EFFECT OF INFLATION ON THE FEDERAL GAS TAX



PERCENT OF TRANSIT CAPITAL FUNDING FROM LOCAL SOURCES (2006-2015)



Source: National Transit Database, 2006 - 2015.

Most of our transportation funding comes from gas taxes, and this model cannot be sustained. More fuel-efficient and alternative-fuel vehicles, and flat driving rates since the economic recession, have meant decreasing gas tax revenue. Inflation since the last federal gas tax increase in 1993 has eaten away 45 percent of its purchasing power. This, paired with aging infrastructure, has created a large gap between transportation needs and available revenue.

TRANSPORTATION INVESTMENTS TARGET FUNDING ALLOCATION

SYSTEM PRESERVATION

Connections 2045 places an increased emphasis and analysis related to transportation system preservation needs and funding.

OPERATIONAL IMPROVEMENTS

The Plan provides additional funding for physical improvements and technology that enhance the safety and efficiency of the existing transportation network.

SYSTEM EXPANSION

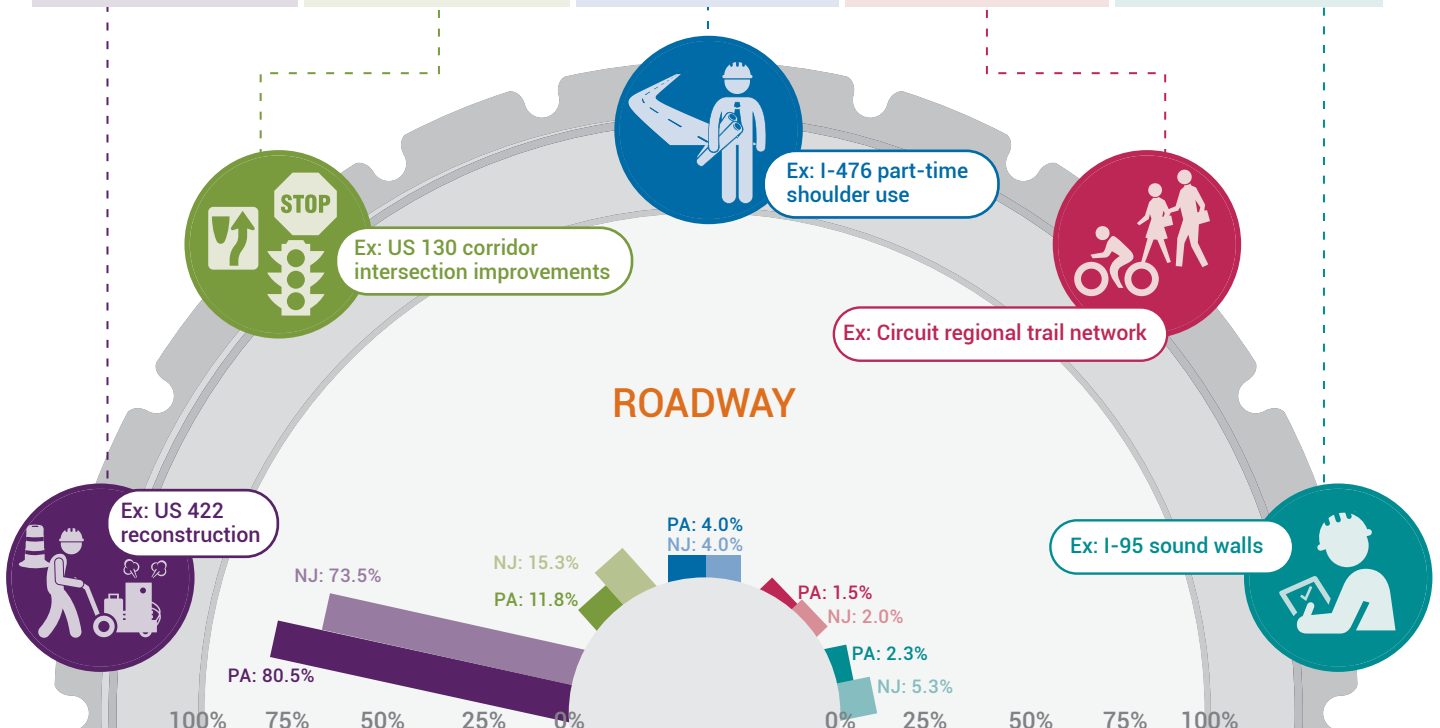
The Plan caps investment in roadway system expansion at 4 percent of total roadway funding. Projects in this category focus on eliminating congestion bottlenecks and supporting land-use goals.

BIKE AND PEDESTRIAN

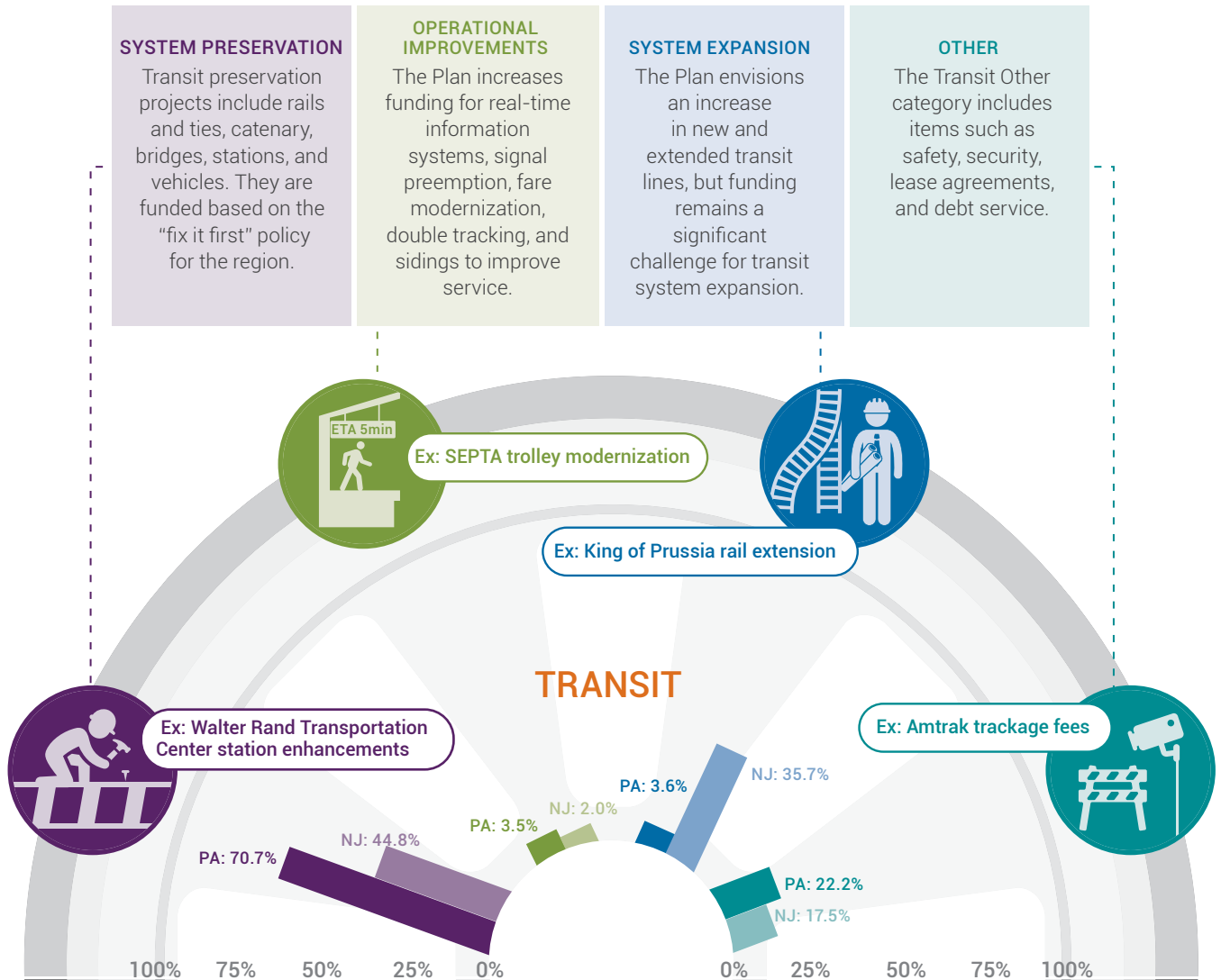
Bike and Pedestrian funding reflects the region's desire to build more bikeable and walkable communities, and to develop more space-efficient transportation.

OTHER

This category includes funding for planning and design, environmental mitigation, debt service, and other miscellaneous items, such as equipment maintenance and storage facilities goals.



Funding is allocated to each of the roadway and transit funding categories based on comparative need, as well as meeting regional goals. These allocations informed the fiscally-constrained list of projects included in the Plan. A detailed, interactive webmap of Major Regional Projects can be found at www.dvrpc.org/webmaps/MRP2045.



TRANSPORTATION INVESTMENTS OTHER FUNDING OPTIONS

Additional funding is needed if the region wants to realize the transportation vision set forth in this Plan. Regions with more local funding have a competitive advantage, as they are better able to build and maintain infrastructure, and have the flexibility to build partnerships and experiment with new technologies. These are just some options for the region to consider—although all would require state-enabling legislation.



MILEAGE-BASED USER FEES

Drivers are charged by the mile for travel on a defined roadway network.



CARBON TAX

Assessed based on the carbon content emitted by the burning of fossil fuels.



TOLL EXISTING HIGHWAYS

A user fee on designated limited access roads and bridges.



SALES TAX

Levied as a percentage of the purchase price for goods, products, and services.



ACCESS FEES

A charge on nonresidential taxable property located near transit stations; similar to a business improvement district.



CONGESTION PRICING

Sets variable tolls to manage demand for using a facility or entering a specific zone, using revenue generated to provide more transportation options.

TAKING ACTION: WHAT YOU CAN DO

Implementing the Plan is an ongoing process. Attaining the vision and goals outlined in the Plan will require shared efforts, including individuals' actions. These actions are simple steps that everyone in the region can take to help make the Plan a reality.





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Publication # 17069
For the full administrative report
and more information on Connections 2045, visit:
www.dvrpc.org/Connections2045

