



Overview of the

2015 CONGESTION MANAGEMENT PROCESS

December 2015



What is a Congestion Management Process (CMP)?

A CMP is a systematic process to manage congestion. It identifies specific multimodal strategies for all locations in the region to minimize congestion and enhance the ability of people and goods to reach their destinations. The CMP advances the goals of the Delaware Valley Regional Planning Commission (DVRPC) Long-Range Plan. It provides medium-term planning to strengthen the connection between the Plan and the regional Transportation Improvement Program (TIP).

The CMP is a requirement of the federal surface transportation legislation. Regulations require that alternatives to building new Single Occupancy Vehicle (SOV) road capacity should be explored first, but where additional capacity is found to be appropriate and necessary, multimodal supplemental strategies to get the most long-term value from the investment must be included.

Incorporating supplemental strategies can save money in the short term by reducing how many miles need to be widened for projects that add new road capacity and in the long term by supporting use of multiple transportation modes. Regulations require projects that add SOV capacity to be consistent with the CMP in order to be eligible for federal funding. Where additional capacity is found to be appropriate, multimodal supplemental strategies to get the most long-term value from the investment must be included.

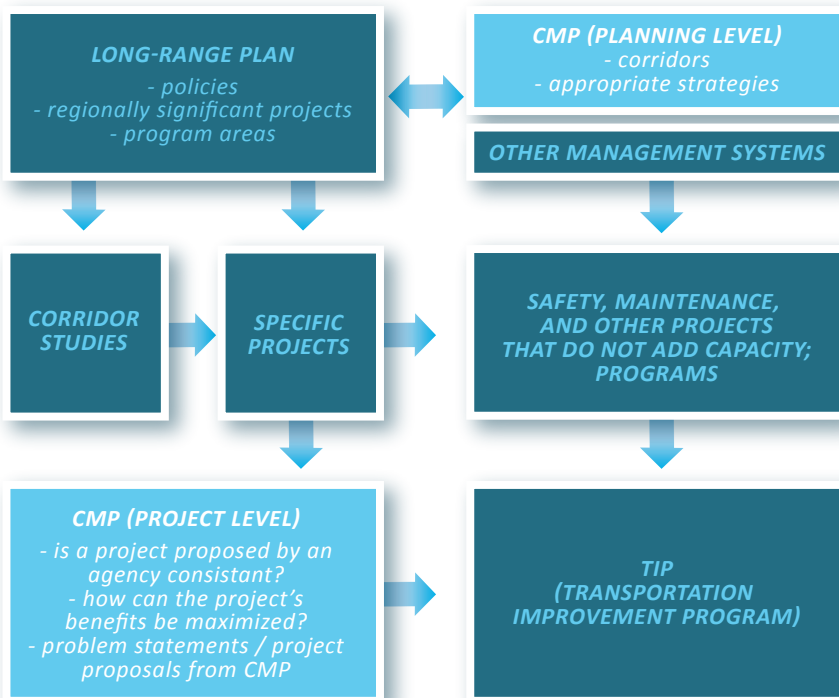
How Does the CMP Work?

The CMP identifies congested corridors and multimodal strategies to mitigate congestion. It also identifies emerging/regionally significant corridors where proactive steps are important to prevent congestion, as well as inexpensive strategies that are appropriate everywhere. The process continues through implementation activities and evaluating strategies for both their anticipated and experienced effectiveness. See the enhanced CMP web resources, available at www.dvrpc.org/CongestionManagement, for more information.

How Does the CMP Help the Delaware Valley?

- ▶ It helps identify where investments are needed for the whole region to prosper and move toward its long-term vision.
- ▶ It improves connections between planning for transportation, land development, economic development, and environmental protection.
- ▶ It informs the selection of projects to include in the TIP and in the Major Regional Roadway System Expansion list in the Long-Range Plan.
- ▶ It is a screening criterion for selecting projects for competitive grant programs such as the Congestion Mitigation and Air Quality Improvement Program (CMAQ).
- ▶ It helps make investments as effective and long-lasting as possible.
- ▶ It provides useful analysis and assistance coordinating with transportation planning partners.

CMP in the Broad Picture



In the DVRPC region, the CMP is a requirement of the federal Surface Transportation Act. For federal CMP regulations, see 23 CFR Parts 450.320 and 500.109.



*If your agency is developing a transportation study or project, the CMP contains valuable information. Contacting DVRPC staff at an early point can save you time. For example, the **CMP Web Map** (www.dvrpc.org/webmaps/CMP2015) allows you to view each congested corridor and the list of appropriate strategies to use as a starting point. The CMP incorporates corridor studies and can help your adopted recommendations get implemented.*

SYSTEM PERFORMANCE ANALYSIS

Performance Measures Used for CMP Analysis

A critical step in the CMP is analysis of the performance of the regional transportation system. The multimodal system performance measures used in the 2015 CMP were a refinement of those used in 2012. Measures are developed with significant input by the CMP Advisory Committee, described on page 17.

The following CMP objectives flow from the transportation goals of the Long-Range Plan:

- ▶ ensure that transportation investments support the Plan’s principles of managing growth and protecting the environment; creating livable communities; building the economy; and establishing a modern, multimodal transportation system;
- ▶ rebuild and maintain the region’s transportation infrastructure;
- ▶ create a safer, more secure transportation system;
- ▶ increase mobility and accessibility; and
- ▶ reduce congestion.



The region’s Long-Range Plan envisions a modern, multimodal transportation system with increased mobility and accessibility, resulting in reduced congestion for all modes.

There is much more detail in the CMP Report, but, briefly, the current CMP measures used in refining corridors and considered in selecting strategies are:

2015 CMP SYSTEM PERFORMANCE MEASURES

Roads with high Travel Time Index (TTI) based on archived operations data, to understand usual recurring congestion.

Roads with current peak-hour congestion measured by high volume-to-capacity (V/C) ratios.

Locations where comparison of the current and future travel model simulations suggest high growth in peak-period V/C ratios in places where congestion could become a problem.

Areas where transit might succeed in 2035 based on demographic forecasts, regardless of whether there is transit service now.

Areas with high Planning Time Index (PTI) based on archived operations data, to understand reliability, also known as non-recurring congestion.

Major roads, existing transit service (bus, trolley, or train) and important freight facilities.

Roads where high crash rates make travel times unreliable.

Critical population and employment centers, key bridges, and other facilities of special concern to be prepared for major events of any type.

Infill and redevelopment areas, emerging growth areas, and Land Use Centers identified in the Plan.

Areas of high and low environmental impact, with low impacts being preferred for transportation investments; for areas with high anticipated environmental impacts, the CMP can help provide information to better connect and streamline planning and National Environmental Policy Act processes.



Addressing high-crash locations can help make roads more reliable and less congested. Pictured above, a crash at the foot of the Ben Franklin Bridge on a rainy morning causes extra congestion heading into Philadelphia.

DVRPC on the Cutting Edge

Changing technology has made it possible to measure congestion in improved ways. The I-95 Corridor Coalition has contracted with private companies to provide speed and travel time data collected from GPS units and cell phones in vehicles. This real-time data is archived and processed to enable many applications for planning purposes. For this update of the CMP, two new measures were added that relied on this data: Travel Time Index (TTI) and Planning Time Index (PTI). TTI helps understand the level of recurring congestion during peak hours, while PTI helps understand the impacts of non-recurring congestion from crashes, weather, and special events. Access to archived operations data will be essential for analyzing and reporting the MAP-21 congestion measures, once they are finalized.



Analysis of the performance of the regional transportation system helps answer the question, “Where should we invest in appropriate multimodal strategies to achieve regional goals?”

STRATEGIES AND CORRIDORS

The DVRPC Board, through the CMP, has adopted the following order of priorities for transportation projects and programs:

1. Maintain and modernize;
2. Manage demand;
3. Increase capacity of the existing multimodal system, limiting the addition of through-travel lanes;
4. Add new capacity where necessary, limiting the addition of new roads.

Full Range of Strategies

The CMP Report offers over 100 congestion-fighting strategies appropriate to the region. Strategies range from policy approaches to programs and capital improvements. A brief explanation of each is also provided.

The full range of strategies helps planners and engineers meet federal regulations. In accordance with federal regulations, other means of solving congestion problems must be considered before using federal funds to build major new road capacity. When major new road capacity is appropriate, a set of supplemental multimodal strategies scaled to the size of the project must be incorporated.

The strategies are grouped into the following categories. The order in which they are listed reflects DVRPC Board-adopted priorities:

CMP STRATEGY CATEGORIES

Operational Improvements, Transportation System Management, and Intelligent Transportation Systems;

Transportation Demand Management, Policy Approaches (such as Complete Streets and Transit-Oriented Development), and Smart Transportation (to provide better conditions for using modes other than driving alone);

Public Transit Improvements first and then New Investments, if necessary;

Road Improvements first and then New Roads, if necessary; and Goods Movement.

Moving from Analysis to Strategies to Projects

Congested corridors were divided into subcorridors where, at a regional planning scale, similar sets of strategies are appropriate. Strategies for each subcorridor were developed using a multistep process based on analysis, reviews by the CMP Advisory Committee, and adopted studies. The strategies provide a starting point for project managers. Strategies Appropriate Everywhere should also be considered. A sample set of strategies is provided in the table below.

Strategies for a Sample Subcorridor

PA 611 NORTH OF CHELTENHAM AVENUE

Signal Improvements
(Range of strategies from basic to sophisticated that improve the efficiency of signals individually and in systems.)

Expanded Parking/Improved Access to Stations (all modes)

Park-and-Ride Lots

Transit-Oriented Development (TOD)

Walking and Bicycling Improvements

At least two of the strategies listed in the table above are advancing as independent projects. The CMP helped recommend selecting PA 611 north of Cheltenham Avenue as a candidate for PennDOT's Regional Signal Retiming Initiative Program. As a result, over 30 signals along the corridor were retimed in 2015. SEPTA's Fiscal Year 2016 Capital Program includes plans to expand parking at the Noble Station along the West Trenton Regional Rail Line, just off PA 611.



CMP staff can help with additional analysis to inform investments in transportation. For example, since 2011, CMP staff has worked closely with NJDOT staff to conduct field views of at least one congested intersection per year, resulting in several new problem statements that advanced into the capital programming process.



CMP MAPS

Three overview maps are included on the pages that follow.

The maps included are:

Page 8: Relationship Between CMP Corridors and Development Centers (With Centers from the DVRPC Year 2040 Long-Range Plan and Metropolitan Planning Organizations (MPOs) in the Surrounding Region)

The fold-out map provides context for the DVRPC region as well as areas beyond the borders of the nine-county, two-state area that comprises Greater Philadelphia. DVRPC is the MPO for these nine counties, but the impacts of traffic and land development extend beyond any jurisdictional boundaries. DVRPC includes representatives from neighboring MPOs on the CMP Advisory Committee to help facilitate interregional coordination.

Page 10: 2015 Congested Interstate Corridors

This map shows just the congested corridors focused on interstates. In general, CMP corridors represent flows of people and goods on parallel and intersecting roads and rail lines. These flows are broader than just single facilities.

Page 11: 2015 Congested Non-Interstate Corridors

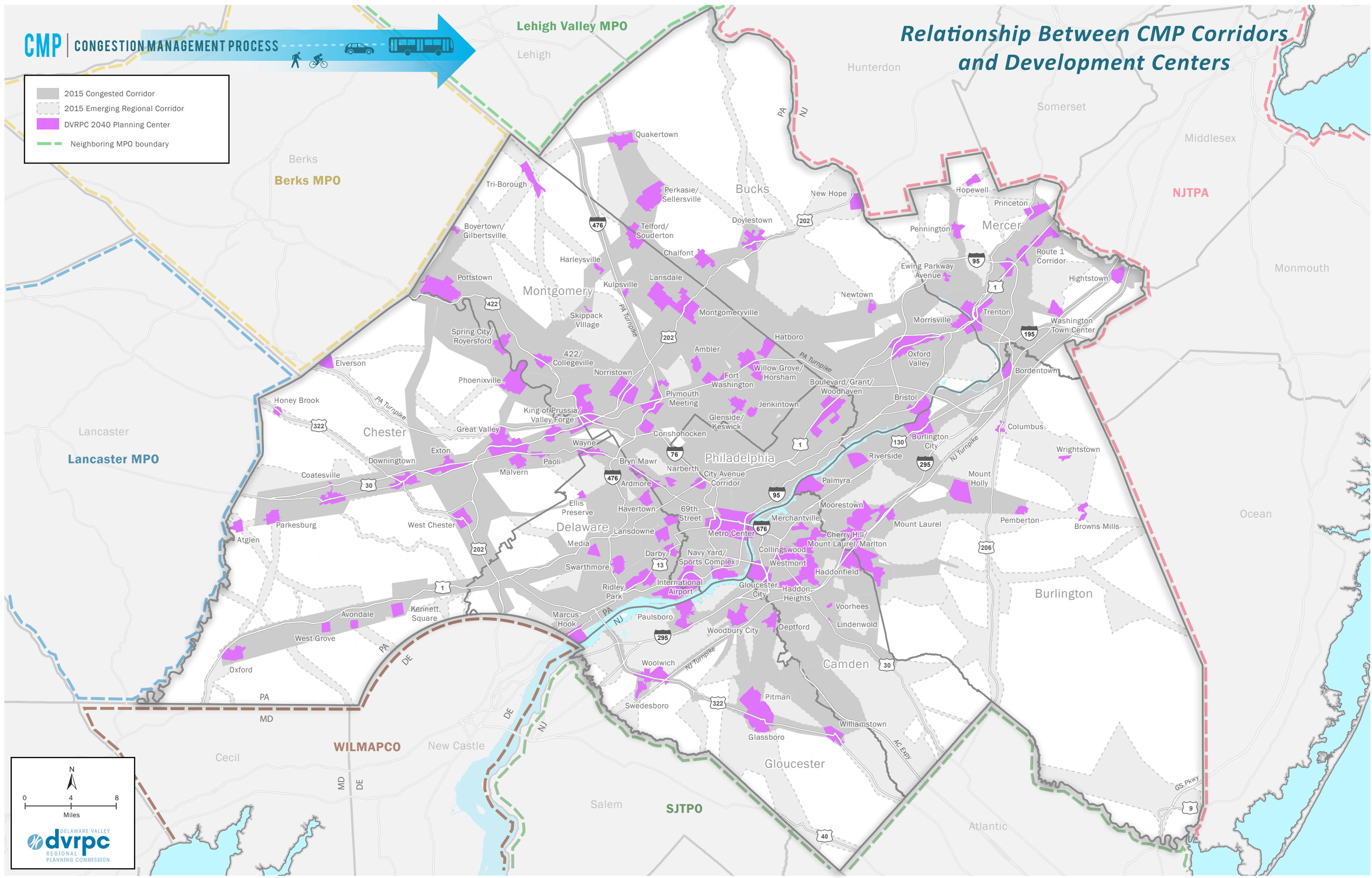
This map shows the rest of the congested corridors in the region. They are treated the same as corridors focused on interstates and are only separated here for enhanced visual presentation.

The CMP Web Application, available at www.dvrpc.org/webmaps/CMP2015/ allows users to explore the congested subcorridors and view recommended strategies, analysis, notes, and relevant corridor studies.



Relationship Between CMP Corridors and Development Centers

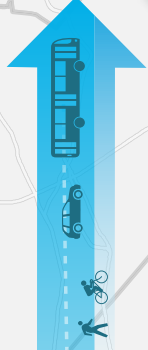
- 2015 Congested Corridor
- 2015 Emerging Regional Corridor
- DVRPC 2040 Planning Center
- Neighboring MPO boundary



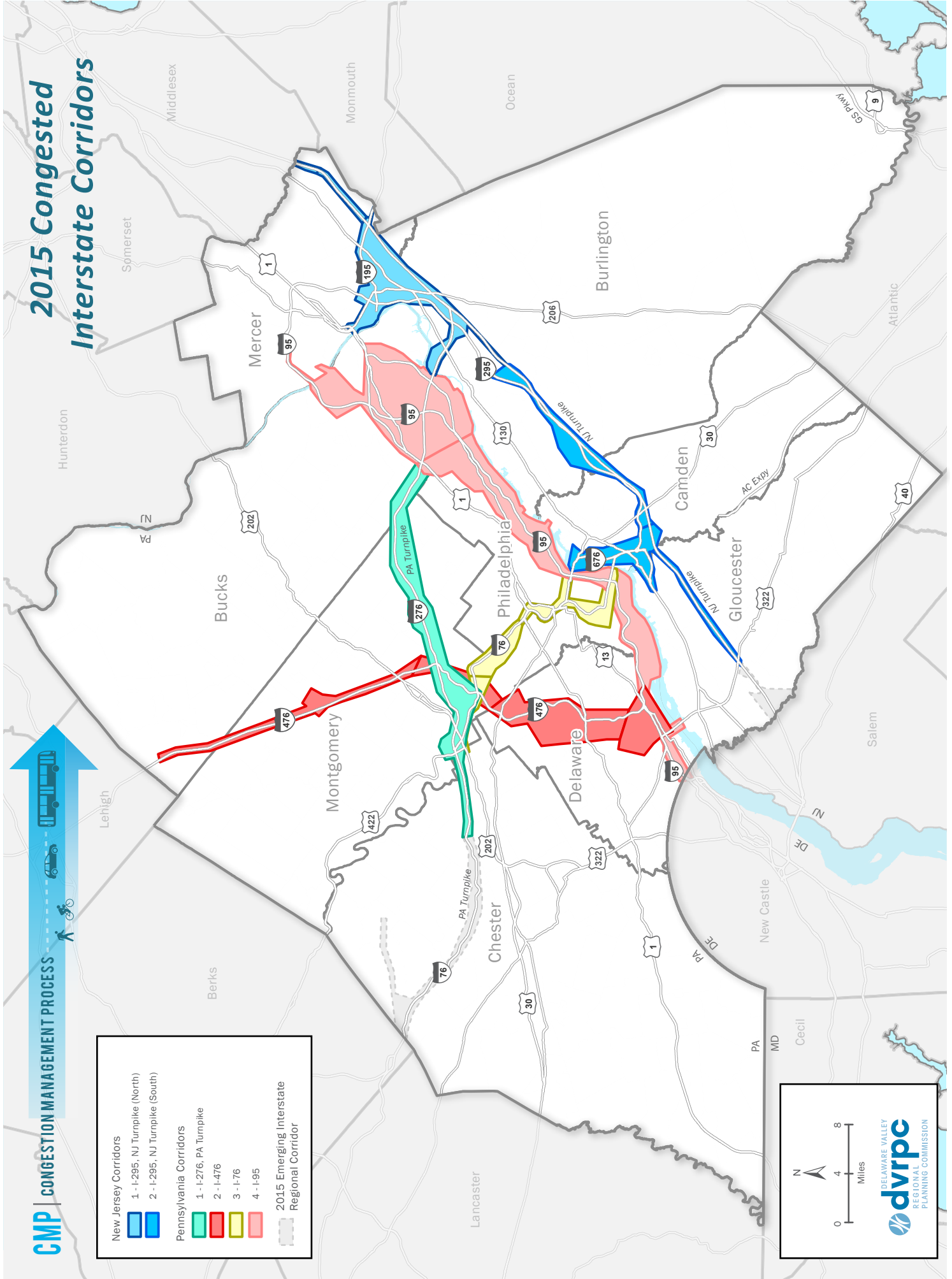
0 4 8 Miles

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2015 Congested Interstate Corridors



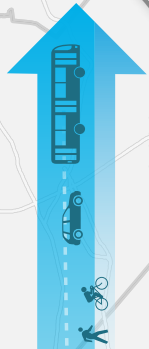
New Jersey Corridors
1 - I-295, NJ Turnpike (North)
2 - I-295, NJ Turnpike (South)
Pennsylvania Corridors
1 - I-276, PA Turnpike
2 - I-476
3 - I-76
4 - I-95
2015 Emerging Interstate Regional Corridor



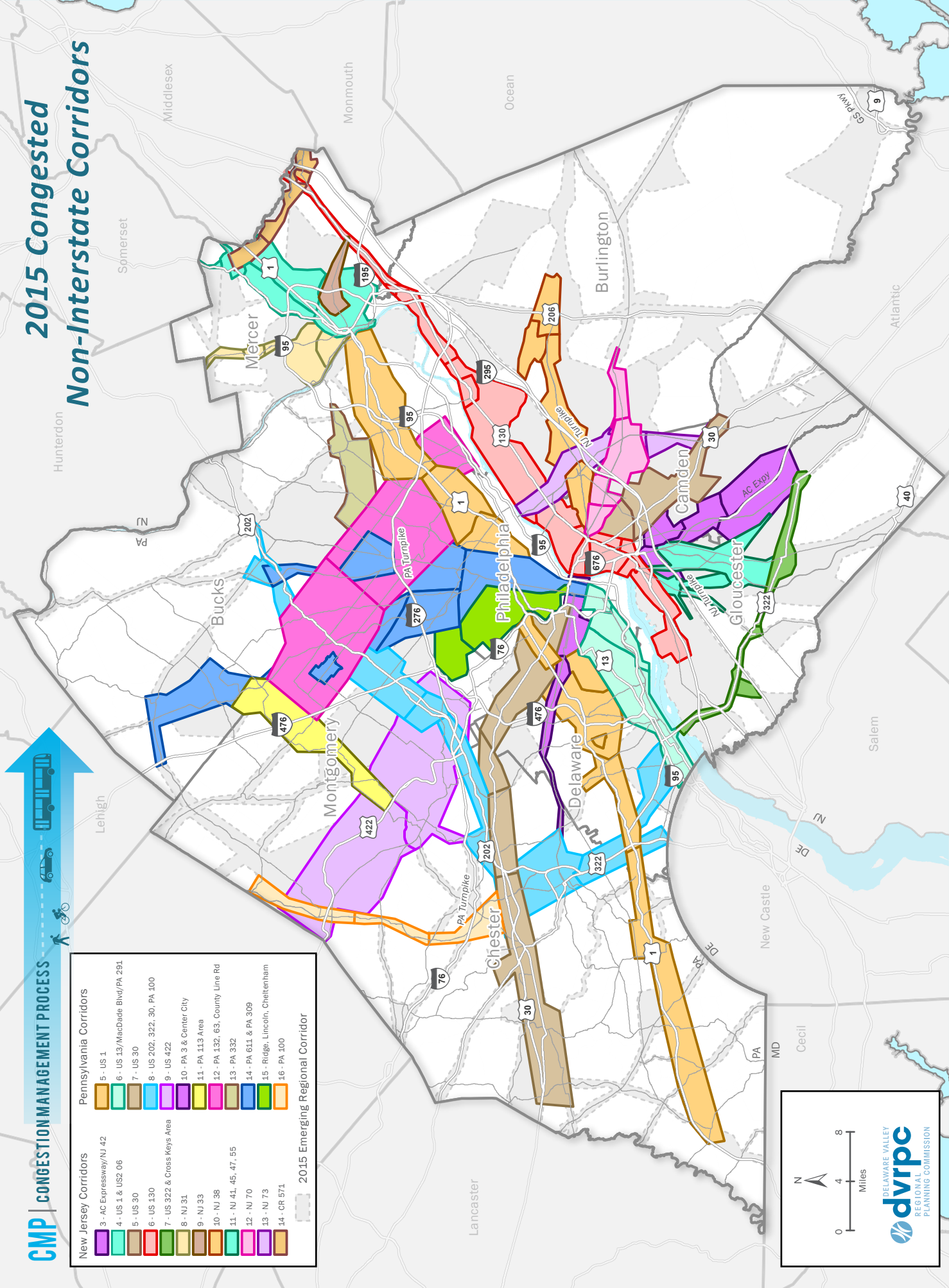
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Miles

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2015 Congested Non-Interstate Corridors



New Jersey Corridors		Pennsylvania Corridors	
3 - AC Expressway/NJ 42	5 - US 1	5 - US 1	15 - Ridge, Lincoln, Cheltenham
4 - US 1 & US2 06	6 - US 13/MacDade Blvd/PA 291	6 - US 13/MacDade Blvd/PA 291	16 - PA 100
5 - US 30	7 - US 30	7 - US 30	
6 - US 130	8 - US 202, 322, 30, PA 100	8 - US 202, 322, 30, PA 100	
7 - US 322 & Cross Keys Area	9 - US 422	9 - US 422	
8 - NJ 31	10 - PA 3 & Center City	10 - PA 3 & Center City	
9 - NJ 33	11 - PA 113 Area	11 - PA 113 Area	
10 - NJ 38	12 - PA 132, 63, County Line Rd	12 - PA 132, 63, County Line Rd	
11 - NJ 41, 45, 47, 55	13 - PA 332	13 - PA 332	
12 - NJ 70	14 - PA 611 & PA 309	14 - PA 611 & PA 309	
13 - NJ 73			
14 - CR 571			
			2015 Emerging Regional Corridor



N

0 4 8
Miles

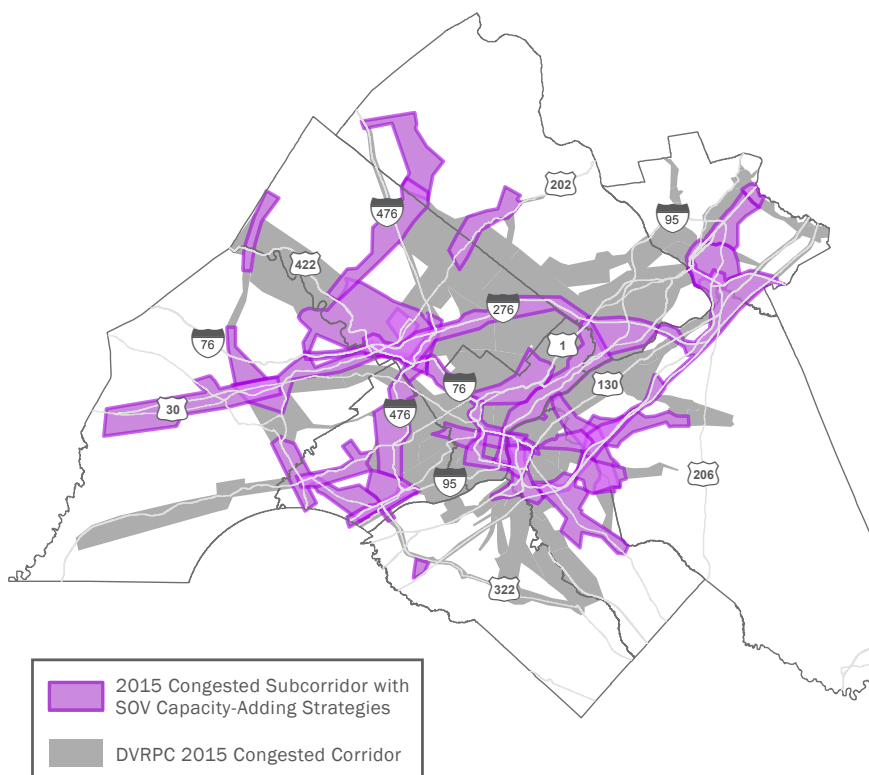
DELAWARE VALLEY
REGIONAL
PLANNING COMMISSION

Implications

The CMP helps decision-makers assess where and how to make transportation investments, and that, in turn, affects the region's future land development patterns. One of the most substantial ways the CMP affects the future is by making decisions about where to recommend strategies to add limited additional road capacity. Procedures for how additional locations may be added are described on the next page.

The CMP helps to achieve the goals of the Plan, but it is also pragmatic. It operationalizes federal regulations by only including road capacity-adding strategies in approximately one-third of congested subcorridors. The CMP does not encourage development in areas designated for preservation by the Long-Range Plan. However, it does incorporate the need for transportation capacity in some areas that have developed more recently than the center of the region.

Subcorridors with Adding Road Capacity as a Strategy



The map on this page illustrates 2015 CMP subcorridors where road capacity-adding strategies are listed for consideration.

Adding SOV capacity may be appropriate when major problems cannot be adequately addressed by sets of other strategies, but should be coordinated with supplemental strategies to get the most long-term value from the investment.

Strategies to add capacity to existing roads include: Interchange with Related Road Segments and General Purpose Lanes.

Strategies to build new roads include: Arterial or Collector Road, and Limited Access Highway.

*See the **CMP Report** for prioritization and definitions of strategies. Adding road capacity is a last resort per federal regulations and DVRPC policy.*

OVERVIEW OF THE CMP



Final engineering for major SOV capacity-adding projects will not be listed in the TIP without a table of supplemental strategies. DVRPC staff is available to provide technical and process support to project managers, including help setting up stakeholder meetings or providing maps and analysis. See the biennial **Supplemental Projects Status Memorandum** reports or online database (anticipated in 2016) to track the progress of strategy implementation.

*For a more detailed version of the flowchart about how a project moves through the CMP, see **CMP Procedures** (DVRPC Publication #TM09029). It includes instructions for project sponsors on how to proceed from the beginning of a project.

Clarification of which projects qualify as Major SOV Capacity-Adding is also included in the **CMP Procedures document.

PROJECTS AND THE CMP

How a Project Moves Through the CMP

<p>Is the problem in a congested subcorridor? Is the problem in an emerging/regionally significant corridor?</p>	<p>if YES... Document.</p>	<p>if NO... It may not matter, depending on the project.*</p>
<p>Can the problem be addressed without building more road capacity?</p>	<p>if YES... DVRPC is available to help evaluate strategies.</p>	<p>if NO... Document this initial research.</p>
<p>If new road capacity is an alternative, is it likely to be Major SOV Capacity?***</p>	<p>if YES... Go to the next question.</p>	<p>if NO... Keep the project description current in TIP listings; DVRPC is available to help.</p>
<p>Is the new Major SOV Capacity consistent with the CMP?</p>	<p>if YES... Start considering supplemental strategies and contact DVRPC CMP staff.</p>	<p>if NO... A different SOV Capacity-adding strategy was listed – <i>Include that strategy in an alternative, include other CMP strategies as alternatives.</i></p> <p>Adding Major SOV Capacity was not listed – <i>Use the CMP Very Appropriate, Secondary, and Strategies Appropriate Everywhere to develop alternatives.</i></p> <p>The project is not in a congested subcorridor – <i>See instructions for "Evaluating Projects Outside of Congested Corridors" and checklist.*</i></p> <p>Contact DVRPC CMP staff.</p>
<p>Are the supplemental strategies set?</p>	<p>if YES... Stakeholders agree on strategies, implementation, and timeline, DVRPC RTC has adopted table.</p>	<p>if NO... DVRPC remains available to help.</p>

Supplemental Strategies

The table provides a real-world example of how a major SOV capacity-adding project can incorporate multimodal supplemental strategies to reduce congestion, get the most value from investments, and meet federal requirements.

The I-95 Reconstruction and Widening projects include five sections in central and north Philadelphia. Construction is underway and will continue over the next decade. The projects include roadway widening to eliminate lane drops, interchange improvements, and upgrades to the street network in Philadelphia. A small sample of the long list of supplemental strategies for these projects is provided. These comprehensive, multimodal commitments will allow the I-95 projects to maximize the investment of over \$2 billion in federal and state transportation funds. While this project is on the large end of the spectrum of capacity-adding projects, it provides a great example of how a coordinated set of supplemental commitments can help reduce congestion and add value.

SAMPLE OF COMMITMENTS	LEAD AGENCY/ORGANIZATION
Upgrade equipment and/or retime signals at over two dozen intersections.	PennDOT, City of Philadelphia
Install or upgrade traffic systems including cameras, variable messages signs, and detectors along I-95 and other major roads.	PennDOT
Expand park-and-ride lots.	SEPTA, PennDOT
Construct bike lanes, sidewalks, trails, and other infrastructure for bicyclists and pedestrians.	PennDOT, City of Philadelphia, Delaware River Waterfront Corporation (DRWC), Delaware River City Corporation (DRCC)
Purchase new double-decker rail cars for SEPTA's Trenton Line; Reconstruct SEPTA Route 15 Trolley on Richmond Street including new stops/platforms.	SEPTA, PennDOT
Conduct outreach in Bucks, Delaware, and Philadelphia counties to encourage and implement Transportation Demand Management strategies.	PennDOT, DVRPC, TMA Bucks, Delaware County TMA, Central Philadelphia TMA, Clean Air Council

The photos illustrate some of the supplemental strategies from the Sample CMP Commitment Table.

Signal Improvements



New Bike Lanes



New Rail Cars





Before a project is designed, the CMP can help evaluate strategies at a sketch level in order to determine which solutions are likely to be cost effective and successful. For more information, see **CMP Strategy Evaluation: Testing Short-Listed Programs (DVRPC Publication # 12042.)**

EVALUATION AND COMMUNICATION

Evaluation

The CMP provides analysis about the performance of the transportation system. However, additional types of analysis are also important to effectively evaluate the impact of strategies.

Before-and-after analysis of projects is important to help understand the effectiveness of strategies when implemented in the Delaware Valley. A range of such studies is available at www.dvrpc.org/CongestionManagement/Studies.htm. Please help keep this resource current by sharing new before-and-after studies with CMP staff.

It is also important to understand the anticipated effectiveness of potential improvement strategies in order to develop transportation projects with maximum impact. For more about this topic, see the sidebar to the left.

Communication

Reducing Congestion in Pennsylvania

FOCUS: Chester County Public Transportation Plan

What Can I Do as a Citizen?

- Visit www.dvrpc.org to learn about transportation options in Chester County.
- Contact the Chester County, Delaware Valley, or PA Turnpike Authority to learn more about public transportation options.
- Get involved with planning the future of your community. To request a CMPC Citizen's Guide and learn how to get involved, call the Chester County Public Transportation Bureau at 215.268.2873.

What Can I Do as a Municipal Official or Staff Person?

- Take actions that help manage travel through local development, energy planning, and additional alternatives.
- Encourage better alternatives for travel, including bus shelters, car-sharing, and transit alternatives (DVRPC's CAR2GO, Bus Stop Ahead QueueLine, Next Plus P+R2GO) in order to help reduce local congestion.
- Encourage the use of transit alternatives, including transit, car-sharing, and transit alternatives.
- Encourage adoption and/or implementation of a local Complete Streets policy. Transportation alternatives should be considered for all users, including disabled individuals, disabled people, bicyclists, and all modes of transit.
- Communicate with your county representatives on the DVRPC Board and other relevant groups.
- There may be more ways to fund transportation improvements than you think. The DVRPC Board and the Delaware Valley Regional Transportation Council (DVRPC Board) are the primary funding sources for the Delaware Valley Region's transportation system.

Chester County Means to Work 2012

WORKERS TO REACH 2025

2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025

2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025

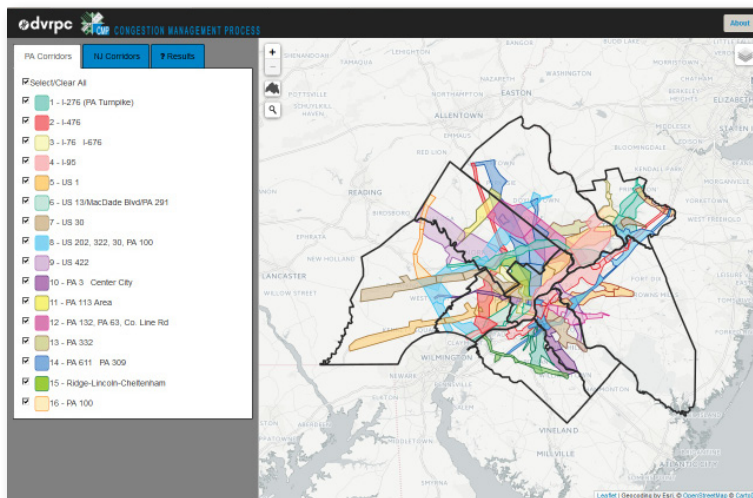
Communicating with a range of audiences is an essential element of the CMP. Newsletters, magazine articles, web pages, interactive mapping, technical reports, and face-to-face meetings are all used. The newsletters are oriented toward municipal officials and members of the public. All publications are available on the DVRPC website (www.dvrpc.org). Staff contacts are listed on the final page of this document.

Closing Thoughts

The CMP analyzes the multimodal transportation network of the region, lists strategies for all locations that minimize costs and advance regional goals, then helps the strategies advance, and finally evaluates the effectiveness of implemented strategies. It involves a wide range of participants and reinforces the links among various other processes. For example, the CMP lists existing studies for each subcorridor to reduce duplicating work, as well as strengthening the link between the Long-Range Plan and TIP.

The CMP is useful for transportation project managers, policy-makers, municipal and county officials, businesses, and citizens concerned about transportation solutions. Addressing congestion is an ongoing process, and it is most effective with participation from everyone. Together we can advance toward a better future for the Delaware Valley.

*If you're developing a project, you may want to view the technical memorandum, **CMP Procedures** (DVRPC Publication #TM09029), available from the DVRPC website in the Products and Services section under Publications.*



*If this **Overview of the CMP** helps with your work, you may want to investigate the **CMP Web Application** (www.dvrpc.org/webmaps/CMP2015/) to view the congested subcorridors, recommended strategies, strategy definitions, notes, and relevant corridor studies.*



ADVISORY COMMITTEE

Special thanks to the CMP Advisory Committee.

It consists of representatives from:

- ▶ each DVRPC county;
- ▶ PennDOT and NJDOT;
- ▶ transit authorities;
- ▶ federal partners;
- ▶ transportation management associations;
- ▶ other DVRPC committees, including the Goods Movement Task Force;
- ▶ other MPOs; and
- ▶ other participants as invited or who asked to join.



Input from the members of the CMP Advisory Committee is essential to effectively managing congestion in the Delaware Valley.

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OVERVIEW OF THE 2015 CONGESTION MANAGEMENT PROCESS

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Abstract: A Congestion Management Process (CMP) is a systematic process for managing congestion. It identifies specific multimodal strategies for all locations in the region to minimize congestion and enhance the ability of people and goods to reach their destinations. The CMP advances the goals of the DVRPC Long-Range Plan and strengthens the connection between the Plan and the Transportation Improvement Program (TIP). The 2015 DVRPC CMP is an update of the 2012 CMP.


Geographic Area Covered: The nine-county Philadelphia metropolitan area, which includes the counties of Bucks, Chester, Delaware, Montgomery, and Philadelphia in Pennsylvania, and Burlington, Camden, Gloucester, and Mercer in New Jersey

The Delaware Valley Regional Planning Commission is dedicated to uniting the region's elected officials, planning professionals and the public with the 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.



The Delaware Valley Regional Planning Commission (DVRPC) fully complies with Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, Executive Order 12898 on Environmental Justice, and related nondiscrimination statutes and regulations in all programs and activities. DVRPC's website, www.dvrpc.org,

may be translated into multiple languages. Publications and other public documents can be made available in alternative languages and formats, if requested. DVRPC public meetings are always held in ADA-accessible facilities and in transit-accessible locations when possible. Auxiliary services can be provided to individuals who submit a request at least seven days prior to a meeting. Requests made within seven days will be accommodated to the greatest extent possible. Any person who believes they have been aggrieved by an unlawful discriminatory practice by DVRPC under Title VI has a right to file a formal complaint. Any such complaint may be in writing and filed with DVRPC's Title VI Compliance Manager and/or the appropriate state or federal agency within 180 days of the alleged discriminatory occurrence. For more information on DVRPC's Title VI program, or to obtain a Title VI Complaint Form, please call (215) 592-1800 or email public_affairs@dvrpc.org.



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