BALTIMORE METROPOLITAN COUNCIL

Baltimore Regional Transportation Board
July 28, 2020

Development of a Strategy for a Congestion Management Process for the Baltimore Region

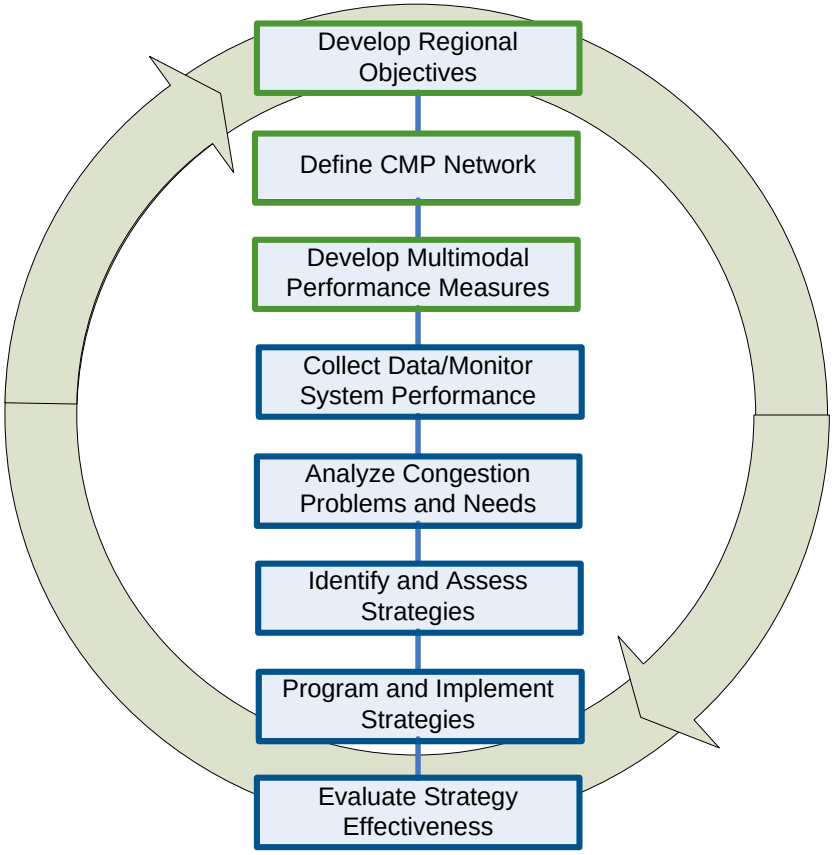
ICF

Rossi Transportation Group

SABRA & ASSOCIATES
A Mead & Hunt Company

Project Purpose: Update Congestion Management Process

Elements of the CMP



Source: FHWA Congestion Management Process Guidebook

Study Process

Establish CMP Steering Committee

Document Current Activities

- Review existing plans, studies, and data
- Interview regional stakeholders
- Summarize good CMP practices (national review)

Set Direction for the CMP

Develop Recommendations

Develop Template for Corridor Studies

CMP Steering Committee

Local Planning/Public Works/Emergency Management

- Annapolis
- Anne Arundel County
- Baltimore City
- Baltimore County
- Carroll County
- Harford County
- Howard County
- Queen Anne's County

CMP Steering Committee Meetings held:

- **Sept 2019**
- **Nov 2019**
- **Jan 2020**
- **Mar 2020**
- **May 2020**
- **Jun 2020**

State/Federal

- MDOT State Highway Administration
  - The Secretary's Office
  - Office of Planning & Preliminary Engineering
    - Travel Forecasting & Analysis Division
    - Innovative Planning & Performance Division
    - Regional & Intermodal Planning Division
  - Office of CHART & ITS Development
  - I-695 TMSO Project
  - Districts 4, 5 & 7
- MDOT Maryland Transit Administration
- MDOT Maryland Transportation Authority
- Maryland State Police
- Maryland Department of Planning
- Federal Highway Administration

Documenting Current Activities

Reviewed documents

- Maximize2040 and Maximize2045
- Transportation Improvement Program (TIP)
- Unified Planning Work Program (UPWP)
- Quarterly Congestion Analysis Report
- 2018 BRTB Transportation Management Area Certification Review Report
- MD 295 Corridor Congestion Flyer
- MDOT Consolidated Transportation Program (CTP)
- 2040 Maryland Transportation Plan (MTP)
- MDOT SHA TSMO Strategic Plan
- MDOT SHA Maryland State Highway Mobility Report
- MDOT MTA Central Maryland Regional Transit Plan
- Maryland Strategic Goods Movement Plan

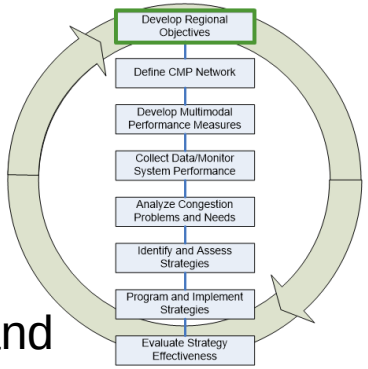
Interviewed stakeholders

- Emergency Responders
- Baltimore City
- MDOT SHA – Regional & Intermodal Planning Division / Travel Forecasting & Analysis Division / CHART
- MDOT MTA – Project Development
- MDOT MDTA – Operations
- Freight – MD Motor Truck Association, MDOT SHA Freight Planning & Motor Carrier Division
- BRTB Public Advisory Committee

Explored Peer Practices

- DVRPC
- HRTPO
- MWCOG
- NCTCOG
- NJTPA
- NYMTC
- SPC
- WILMAPCO

Congestion Management Objectives



Enhance access to jobs and other opportunities

Improve travel times and reduce traveler delay on all modes of travel

Improve freight reliability

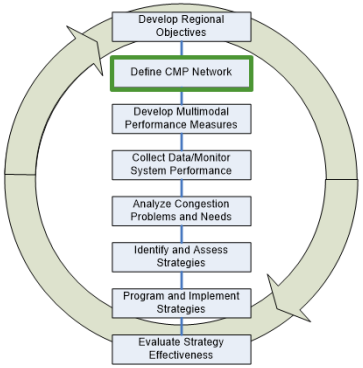
Reduce traffic incidents that contribute to traveler delays and loss of life or injury

Improve travel time reliability (consistency and predictability of travel times) and resiliency for motorists and transit

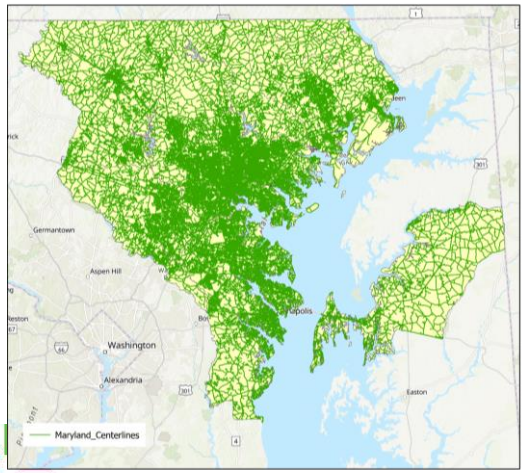
Enhance travel choices, including access to transit, safe and convenient bicycling and walking, and other alternatives to driving alone

Enhance inter-jurisdictional coordination to optimize transportation system performance

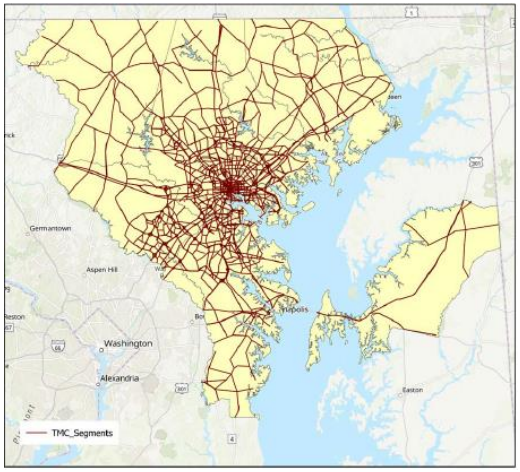
Components of CMP Network



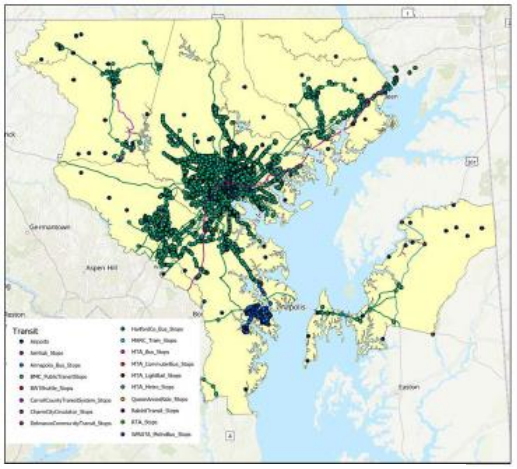
- Roadways
  - Maryland Centerlines
  - Probe Data Analytics Suite, within Regional Integrated Transportation Information System (RITIS)
  - Freight Network: National Highway Freight Network, SHA Truck Routes, Critical Urban Freight Corridors, Baltimore City Freight Network
- Transit
  - Local bus, commuter bus, statewide bus, regional bus, Metro, light rail, etc.)
- Park and Ride Facilities
  - 100+ locations
- Bike Facilities
- Sidewalks
  - Compiled where available



Maryland Centerlines



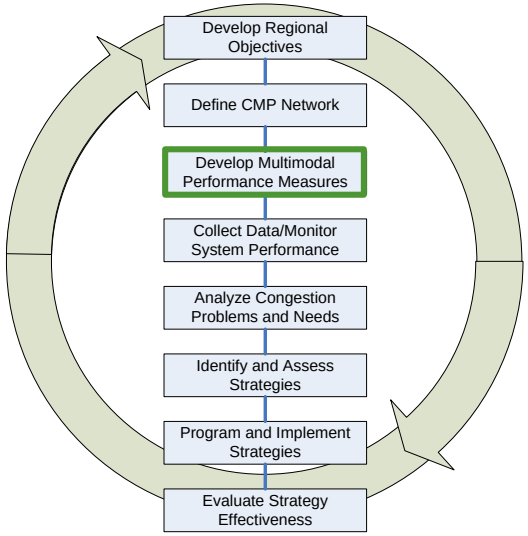
RITIS TMC Segments

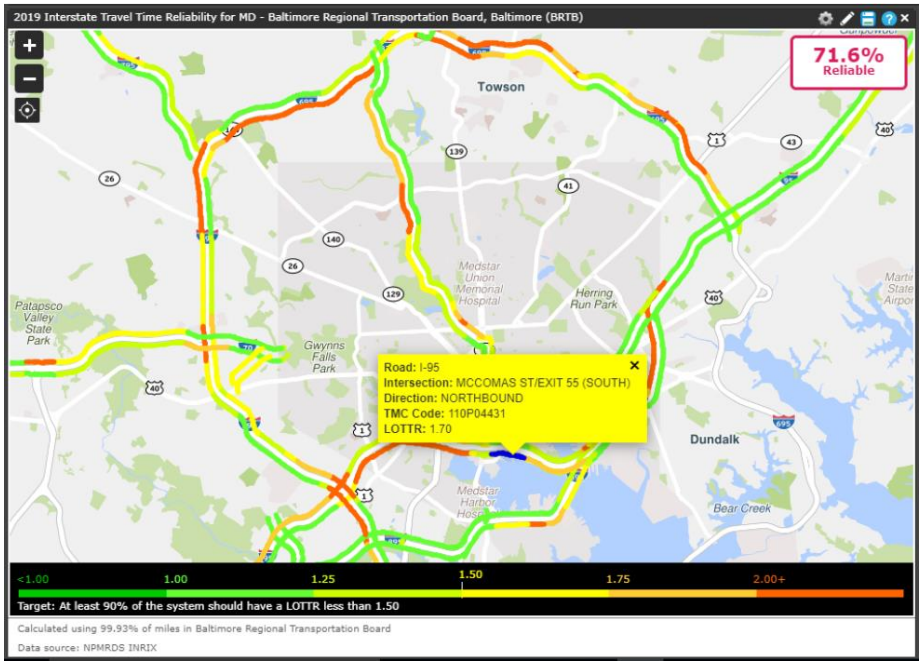


Interstate, Statewide, Regional, and Local Transit Routes and Stops

CMP Performance Metrics

- Used for monitoring performance of the network in relation to CMP objectives
- Support:
  - Identifying locations with congestion/mobility problems
  - Identifying the source of problems
  - Tracking changes in performance over time
  - Conducting more detailed analysis of regional performance measures and targets
  - Meeting Federal performance reporting requirements





Example metric:
Level of travel time reliability (LOTTR)

Performance Metrics for Use in the CMP

Objective 1: Enhance access to jobs and other opportunities

1. Number of jobs accessible within a 30-minute drive
2. Number of jobs accessible within a 45-minute transit trip

Objective 2: Improve travel times and reduce traveler delay on all modes of travel

1. Travel time index (ratio of peak-period to off-peak travel time)
2. Duration of congested conditions (e.g., on typical weekdays, weekends)
3. Person hours of peak hour excessive delay
4. Average bus speeds
5. Anticipated growth in V/C ratio in peak period (base year to 2045)

Objective 3: Improve travel time reliability and resiliency for motorists and transit

1. Level of Travel Time Reliability (LOTTR)
2. Transit on-time performance
    - Bus
    - Rail

Objective 4: Improve freight reliability

1. Truck Travel Time Reliability (TTTR) Index

Objective 5: Enhance travel choices, including access to transit, bicycling, walking, and other non-SOV modes

1. Non-SOV mode share
2. Transit network extent and frequency Access to frequent transit (secondary)
3. Bicycle network extent
4. Bicycle Level of Traffic Stress (LTS)
5. Park and ride utilization

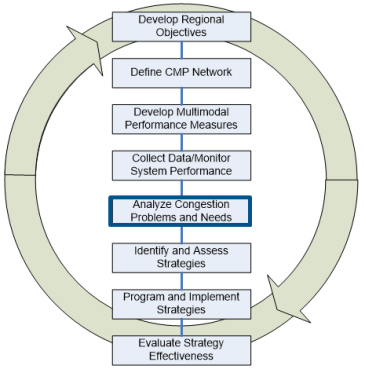
Objective 6: Reduce traffic incidents that contribute to traveler delays and loss of life or injury

1. Number of crashes
2. Number of pedestrian/bicycle crashes

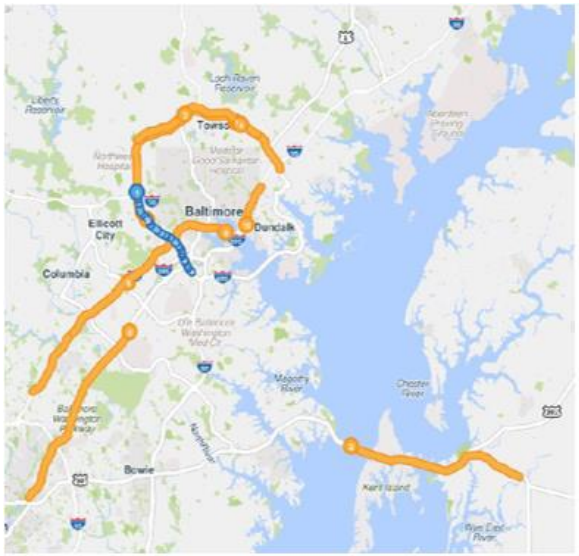
Objective 7: Enhance interjurisdictional coordination to optimize transportation system performance

To be addressed in implementation plan

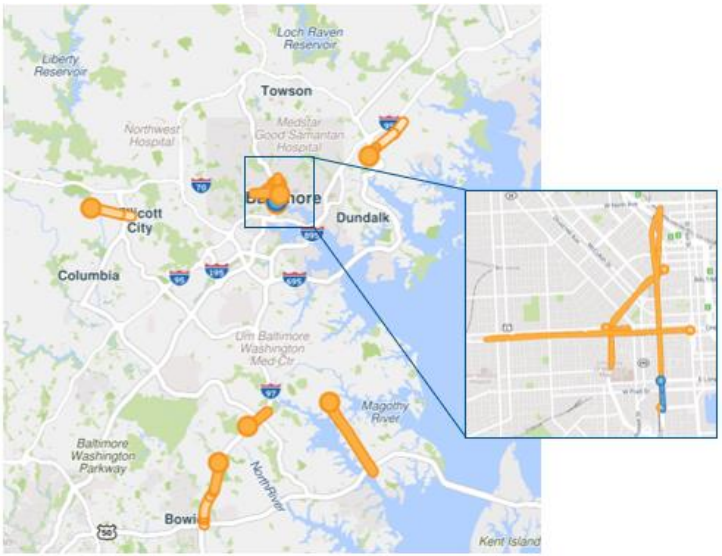
Analyzing Congestion and Mobility Needs:
Ranking Congestion Problems for Quarterly Reports



1. Modification to Bottleneck Ranking Method
   Switch from using “Base Impact” to using “Total Delay” for ranking to account for volume using the segment
2. Separate Rankings for Freeways and Non-Freeway Roadways



Existing Congestion Analysis Report, Quarter 4, 2019

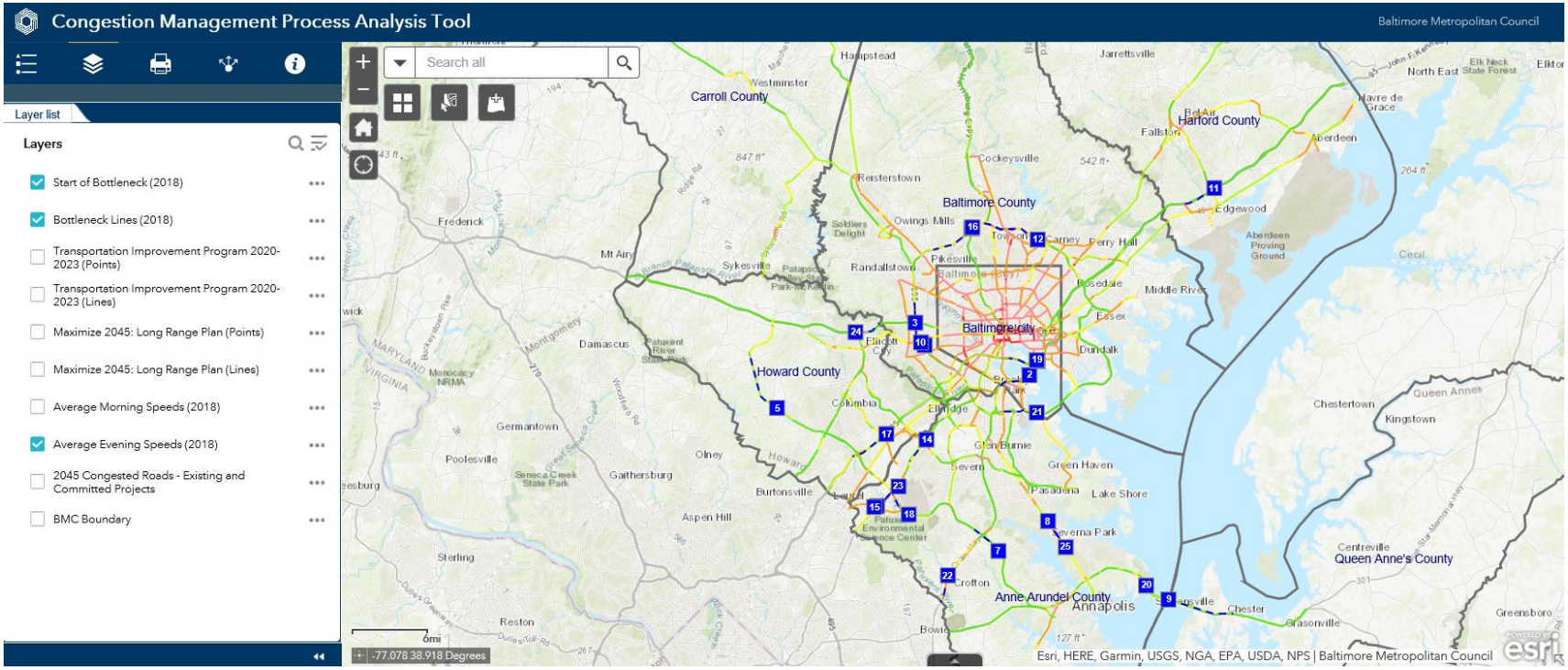


Analysis of Non-Freeway Segments, Quarter 4, 2019

Analyzing Congestion and Mobility Needs:
Integrate CMP Performance Metrics into the BMC On-line CMP Tool

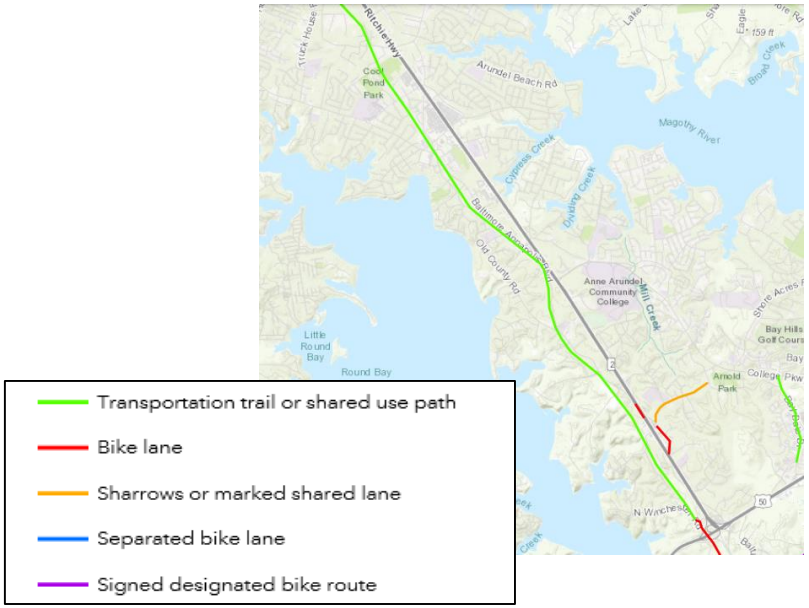
Use as key analytic tool for regional analysis of congestion and mobility issues, and to support identification of needs by local governments and partners

- Incorporate CMP performance metrics
- Update annually



Analyzing Congestion and Mobility Needs:
Identify Priority Congested Roadway Corridors

1. Identify top freeway and non-freeway bottlenecks
   - Rank the top 15 bottlenecks in each category (freeways and non-freeways) using an annual analysis of the data from the PDA Suite
2. Conduct additional analyses to characterize congestion issues
   - Whether the bottleneck appeared seasonally or across all quarters
   - Primary times of day of congestion
   - Ranking of bottleneck in terms of congestion from the individual driver's perspective
3. Identify travel options
   - Transit routes and frequencies
   - Bicycle network extent
   - Park and ride lot utilization
   - Other data as available (e.g., bus speeds)
4. Prepare corridor profile

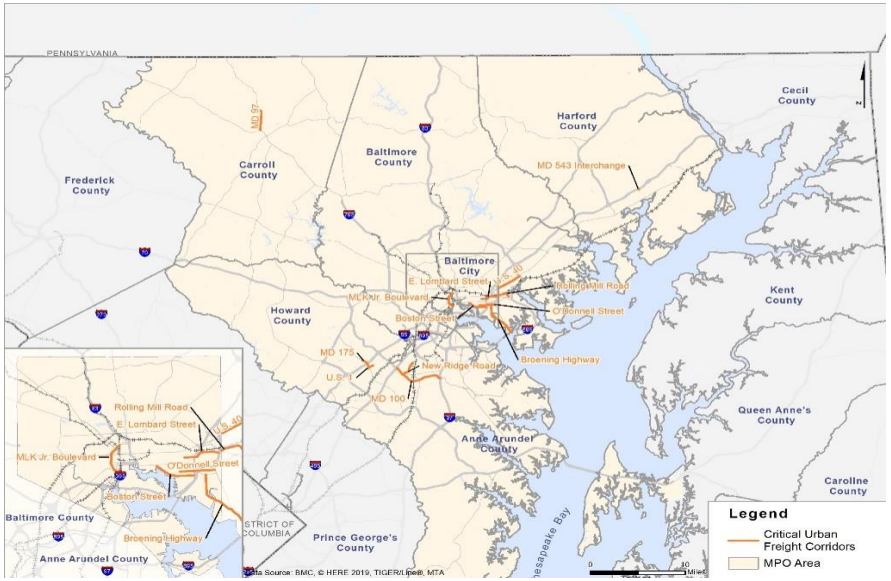


Analyzing Congestion and Mobility Needs:
Identify Priority Multimodal Needs

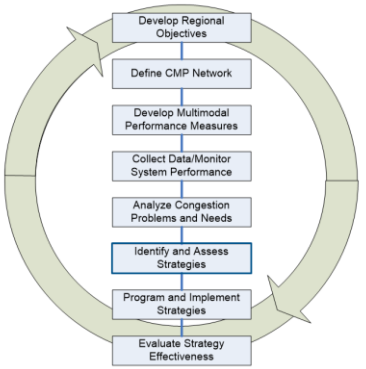
1. Map key multimodal performance metrics across the region
   - Level of travel time reliability (LOTTR)
   - Bus speeds
   - Transit on-time performance
   - Bicycle level of traffic stress
   - Park and ride lot utilization

2. Identify deficiencies (based on thresholds, examples below)
   - *Transit on-time performance:* In relation to MDOT MTA goals: Core bus - 80%; Light rail/Metro subway - 95%; MARC train - 93%
   - *Park and ride lot utilization:* Over 85% (oversubscribed), under 15% (underutilized)

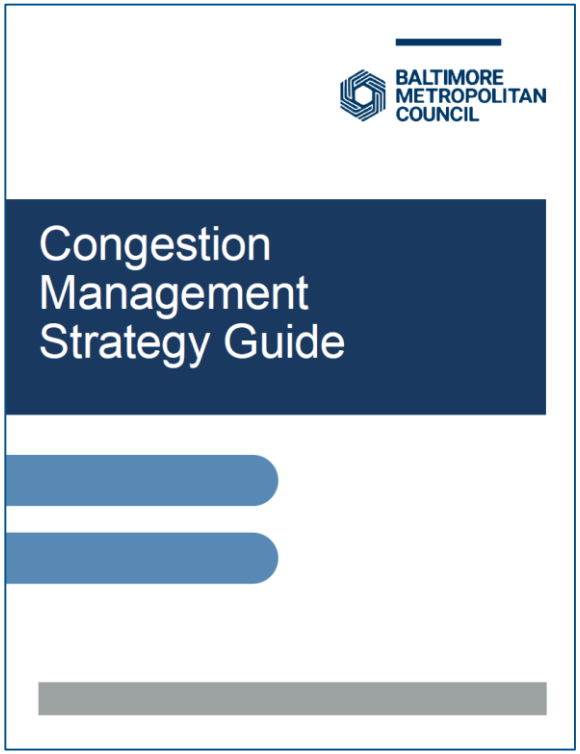
Analyze freight corridors (special analysis)
- Map travel time index (TTI) and truck travel time reliability (TTTR) index on key goods movement routes
- Can be done every 3-4 years



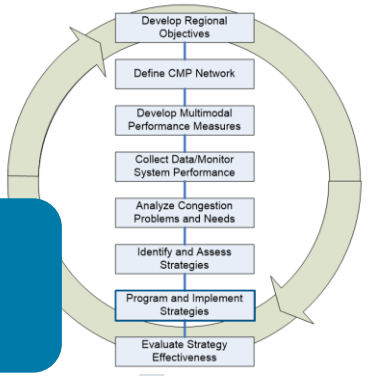
CMP Strategy Guide



- User friendly resource
- Organized by strategy categories
  - Demand Management & Regional
  - Pricing
  - Land Use
  - Transportation Systems Management & Operations (TSMO)
  - Public Transportation
  - Bicycle/Pedestrian/Micro-Mobility
  - Road Capacity
- Each strategy includes:
  - Strategy Description
  - Regional Examples
  - Applicability – Highway, arterial, local, rail, non-roadway specific
  - Relevant CMP Objectives



CMP Implementation Recommendations



1. CMP data management and sharing

Quarterly Congestion Analysis Reports
On-line CMP Tool
Other Partner Agency Reports

2. Regional discussions via proposed CMP Committee

Support priority setting and info sharing on strategy implementation and effectiveness

Support Priority Letters and CTP

3. Corridor studies

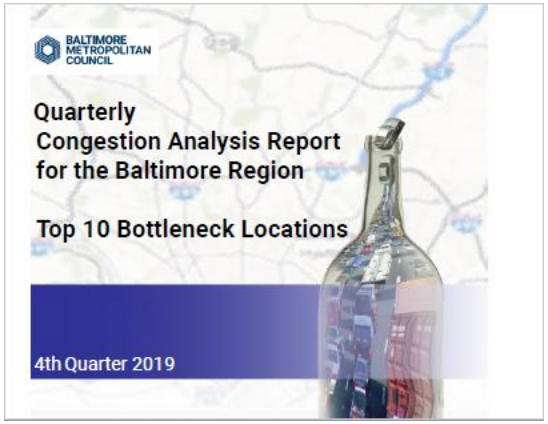
4. Long-Range Transportation Plan updates

5. Development of TIP

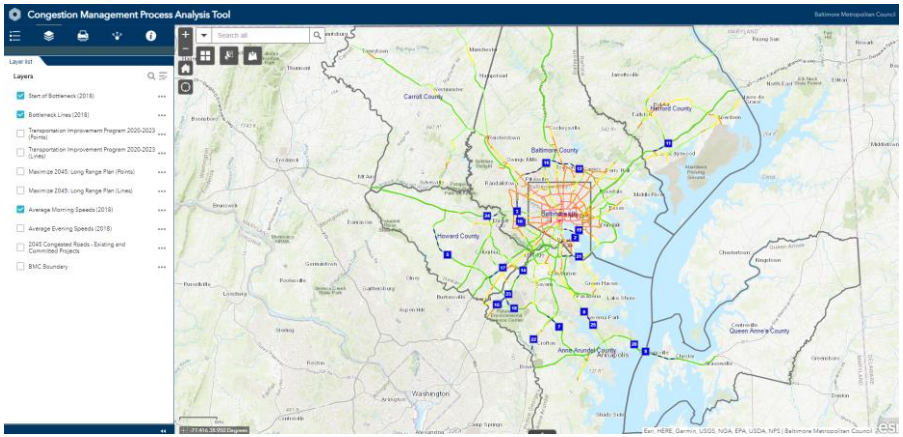
6. Analysis of SOV capacity projects

CMP Data Management and Sharing

- Quarterly Congestion Analysis Reports:
  Stakeholders gain an understanding of bottlenecks, as well as trends and issues that may contribute to or exacerbate bottlenecks



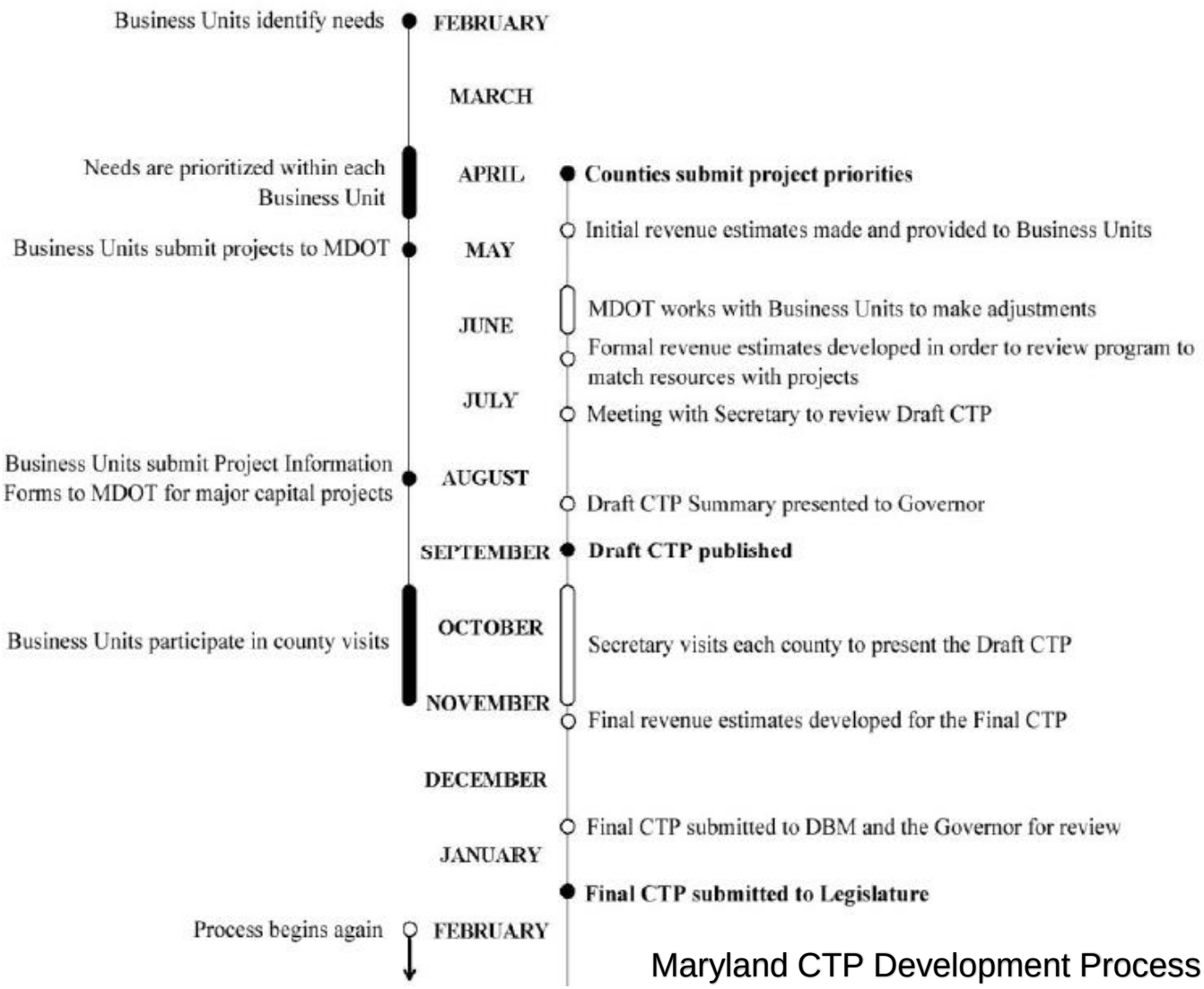
- On-line CMP Tool:
  Serves as a one-stop shop for the most relevant system performance data to support identification of needs



- Share other data sources:
  Including MDOT SHA's annual Maryland State Highway Mobility Report, MDOT MTA's Performance Improvement website, and others

Regional Discussions via CMP Committee

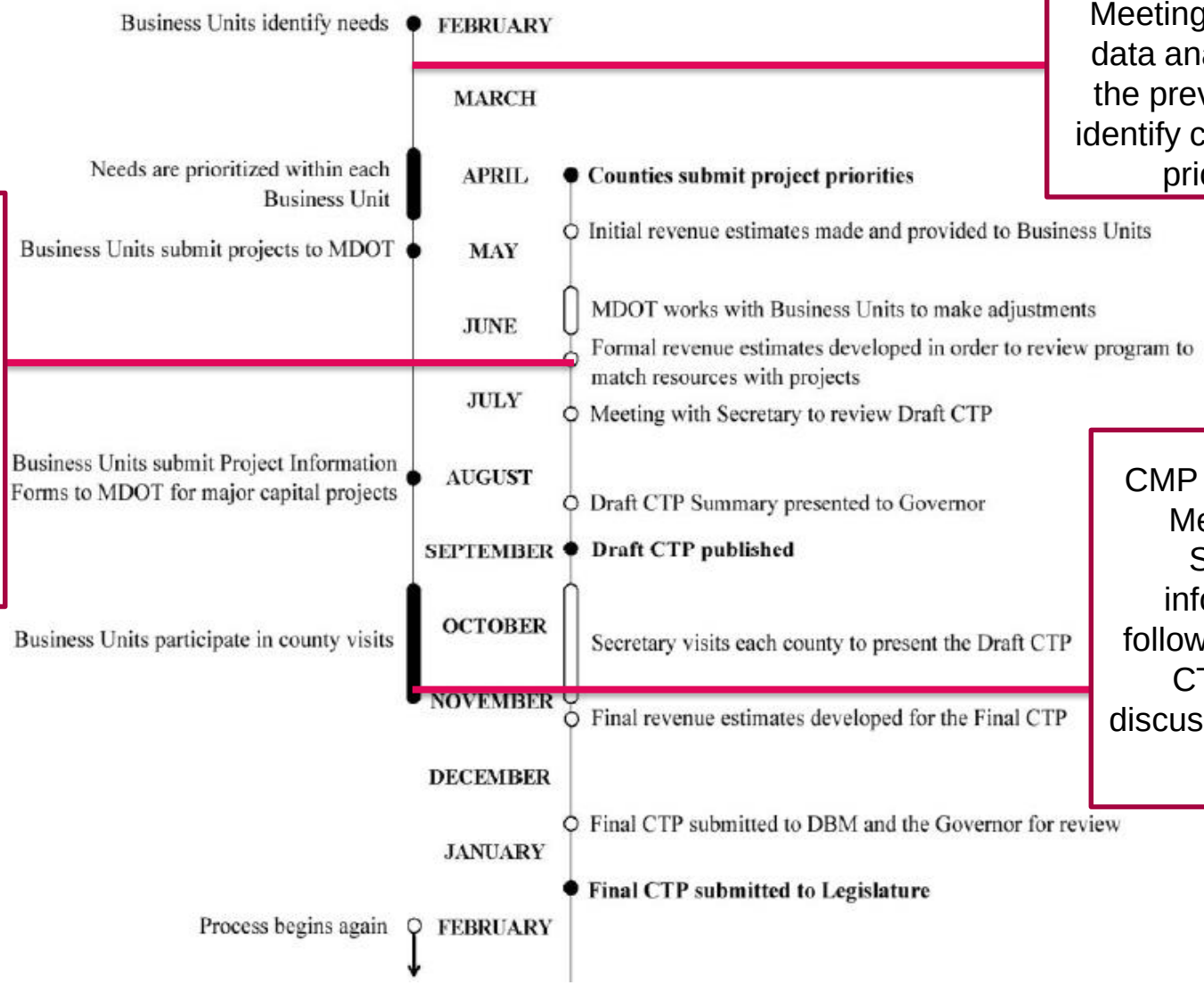
Proposed CMP Committee Schedule



Maryland CTP Development Process

Regional Discussions via CMP Committee

Proposed CMP Committee Schedule



CMP Committee Meeting 1: Review data analysis from the previous year; identify collaborative priorities

CMP Committee Meeting 2: Discussion forum for effective strategies, priorities prior to development of draft CTP

CMP Committee Meeting 3: Sharing information following the Fall CTP Tour; discussion for next year

Regional Discussions via CMP Committee
Interjurisdictional Coordination

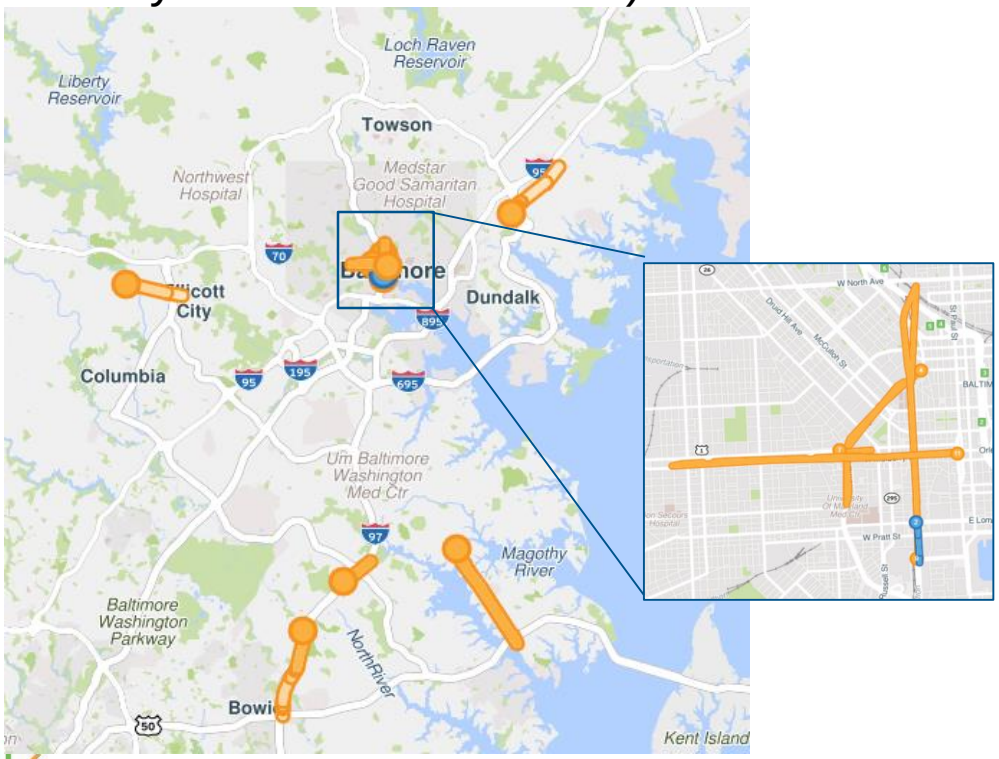
- **BRTB/BMC's role** - Facilitate the coordination through the CMP Committee meetings and track progress toward the CMP objective focused on interjurisdictional coordination

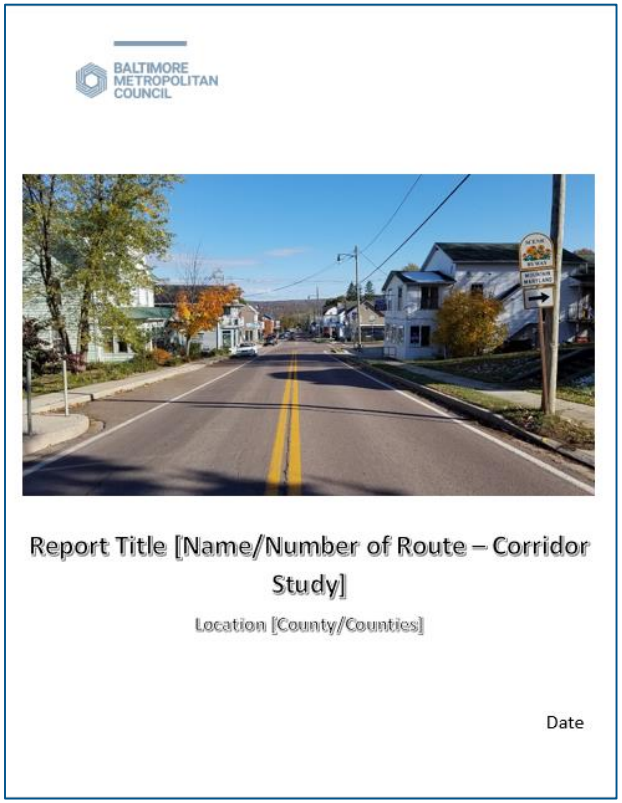
Sample checklist for BRTB/BMC to track coordination activities:

Question	Yes	No
Has the CMP Committee met at least twice this year?		
Have at least 2/3 of jurisdictions participated in at least one CMP Committee meeting?		
Have interjurisdictional needs been identified through this forum?		
Have interjurisdictional projects or area-wide strategies been identified for consideration through corridor studies or projects proceeding to the TIP?		

Corridor Study Template

- BRTB/BMC to undertake corridor studies to address congestion/mobility concerns in corridors that may not rise to the level of priority for the state agencies.
- These studies would be coordinated with MDOT SHA, MDOT MTA, local jurisdictions, and other partners.
- Created to facilitate corridor studies being prepared in a consistent manner (to be used by staff and consultants)





CMP Role in the Long-Range Transportation Plan and Transportation Improvement Program (TIP)

For Long-Range Plan

- Update project submittal form
  - Restructure the CMP strategy checklist in the form to align with the 7 types of strategies as recommended in the CMP Strategy Guidebook (e.g., addition of Bicycle/pedestrian/micromobility strategies)
- Revisit the CMP objectives and performance metrics
- Provide additional information for the System Performance Report
- Inform updates to regional performance targets

For TIP

- Capture CMP strategies in the TIP
  - For a project that addresses mobility goals, identify which CMP objectives it addresses and categories of CMP strategies associated with it
- Track CMP strategies
  - Compare each project in the TIP with the project as described in the LRTP; consider supplemental components/strategies that can be added to a project

Analysis of SOV Capacity Addition Projects

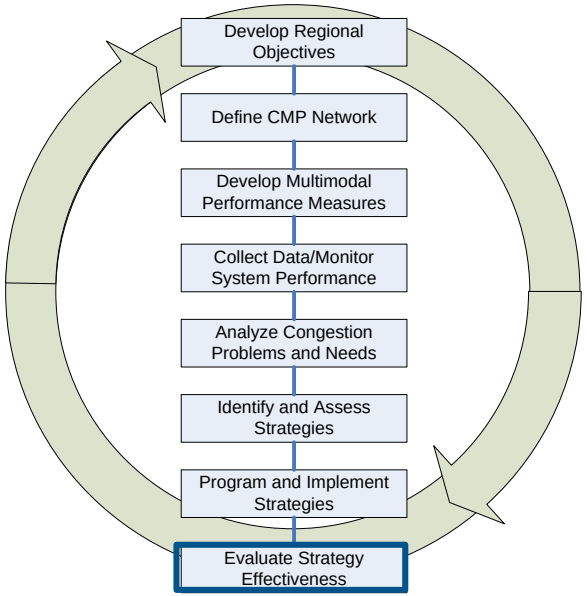
- Federal funds for SOV capacity addition projects (e.g., lane additions) are available only if the project is addressed through a CMP process.
- Sample checklist for BMC to flag and document SOV capacity addition projects:

Question	Yes	Description
Has analysis of demand management and operational strategies been conducted (e.g., may be through a corridor study and/or environmental document) to determine whether these strategies can satisfy the project need?		
Have reasonable strategies to manage demand and operations been identified either for the facility itself or general corridor area?		
Have reasonable demand management and operational strategies been incorporated into the project or committed to for implementation?		

Process to Evaluate the Effectiveness of CMP Strategies

Proposed role of BMC:

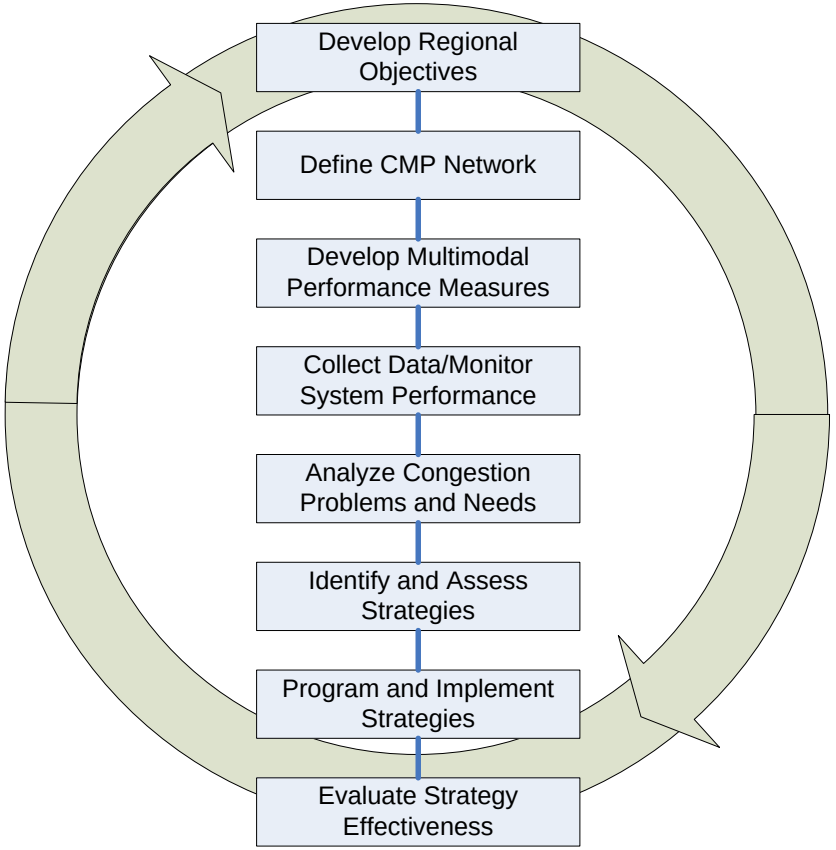
- Guidance on when, how and what performance metrics can be used for analysis
  - **Before-and-after studies**: For projects, services, or programs that change conditions along a corridor or route (e.g., traffic signal timing improvement)
  - **Studies to assess benefits in relation to what would have occurred without the strategy**: For new or on-going projects, services, or programs (e.g., new transit service, travel demand management program)



- Sharing of resources and best evaluation practices between regional and local stakeholders
  - Via CMP Committee meetings

Summary of Study Outcomes

- Updated CMP Objectives, Network, and Performance Measures
- Recommendations for:
  - On-going data collection and monitoring
  - Process to analyze congestion/mobility problems
  - Implementation process
  - Role in strategy evaluation
- CMP Strategies Guide
- Template for Corridor Studies



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