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- North Thurston Public Schools
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- Intercity Transit
- LOTT Clean Water Alliance
- Port of Olympia
- PUD No. 1 of Thurston County

**ASSOCIATE MEMBERS:**

- Lacey Fire District #3
- Puget Sound Regional Council
- The Evergreen State College
- Thurston Conservation District
- Thurston Economic Development Council
- Timberland Regional Library

**MEMORANDUM**

**TO:** Technical Advisory Committee

**FROM:** Aidan Dixon, Associate Planner  
Katrina Van Every, Transportation Manager

**DATE:** February 9, 2024

**SUBJECT:** Congestion Management Process – Multimodal Performance Measures

**PURPOSE**

Technical Advisory Committee (TAC) members will discuss the performance measures to be used for the CMP.

**Summary:**

- A congestion management process (CMP) is a systematic and regionally accepted approach for managing congestion. It provides accurate, up-to-date information on transportation system performance and assesses alternative strategies for congestion management that meet State and local needs.
- Step 3 in the CMP process is to develop multimodal performance measures that are linked to the CMP objectives established in Step 1.
- These performance measures will identify, assess, and communicate to others about congestion in our region. Thurston Regional Planning Council (TRPC) staff will lead a discussion of the potential performance measures for consideration by the TAC.
- The full list of performance measures for consideration can be found at the end of this staff report. TRPC staff have identified a subset of performance measures that could potentially be more useful for our CMP, and have highlighted them in **yellow**.

**REQUESTED ACTION**

Review, discuss, and provide feedback on proposed CMP performance measures.



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## BACKGROUND

In 2023, TRPC was designated a transportation management area (TMA) due to its growing population. As a TMA, TRPC is now required to develop a congestion management process (CMP).

The CMP is intended to serve as a systematic process that provides for safe and effective integrated management and operation of the multimodal transportation system. The process includes the following elements:

- Developing regional objectives.
- Defining the CMP Network.
- Developing multimodal performance measures.
- Collecting data and monitoring system performance.
- Analyzing congestion problems and needs.
- Identifying and assessing possible strategies.
- Programming and Implementing strategies.
- Evaluating strategy effectiveness.

## DRAFT MULTIMODAL PERFORMANCE MEASURES

Step 3 in the development of our region's CMP is the development of a set of multimodal performance measures. The overarching purpose of using performance measures in the CMP is to characterize current and future conditions on the multimodal transportation system in the region.

The action of developing performance measures is a highly iterative component of the CMP, and typically consists of three major activities:

1. Selecting performance measures,
2. Developing a data collection plan, and
3. Refining objectives and performance measures.

Through the selection of the performance measures and identification of data needs, we can come to a greater understanding of the feasibility of objectives that have been developed. If the effort required to obtain the data to track specific objectives is deemed too great, we can revise the objectives so that they can be better tracked or we can identify surrogate performance measures that are thought to be strong indicators of the performance measures directly linked to the objectives.

There are a wide range of measures that can be considered for use in the CMP. We can generally categorize measures into seven categories:

1. Volume-to-capacity based measures,
2. Travel time measures,
3. Variability of congestion/reliability,
4. Measures addressing transit system congestion/reliability,
5. Measures addressing multimodal (transit, bicycle, pedestrian infrastructure) availability,
6. Freight performance measures,
7. Accessibility measures.

Below is a preliminary list of potential performance measures compiled by TRPC staff that we can use for the CMP. The measures are categorized according to the objectives identified in Step 1. Measures that have been identified as potentially more useful and/or achievable for our region have been highlighted in yellow. Our goal is to screen down the list of potential performance measures down to a range ideally between 9 and 18, based on data availability and feasibility.

- 1) Increase the share of trips taken using transit, bicycling and walking, and other alternatives to driving alone.
  - o Local/Corridor-Level
    - Existence of sidewalks and presence of gaps
    - Existence of bicycle lanes or paths
    - Existence of pedestrian features (countdown pedestrian signals, painted crosswalks, etc.)
    - Existence of higher-frequency bus services
  - o Regional/System-Level
    - Non-SOV mode share: average daily shared ride, walking, bicycling, transit, and carpool commute trips
    - Miles of sidewalks or share of roads with sidewalks regionally
    - Miles of bicycle lanes or paths or share of roads designated as bicycle routes regionally
    - Number of intersections with pedestrian features
    - Transit ridership
    - Transit revenue hours and boarding rides per revenue hour
  
- 2) Reduce congestion and improve travel time reliability for vehicles, transit, and freight.
  - o Congestion intensity: volume/capacity measures
    - Local/Corridor-Level
      - Volume to capacity ration (V/C), for segment
      - Level of service (LOS), for segment or intersection
    - Regional/System-Level
      - Number or share of roadway miles operating at V/C ratio over 1.0
      - Number/share of roadway miles at LOS E or worse
      - Number of intersections at LOS E or worse
  - o Congestion intensity: travel time measures
    - Local/Corridor-Level
      - Travel speed (miles per hour)
      - Average delay time (difference between travel time & free-flow time)
      - Travel time index (ratio of peak-period to non-peak-period travel time)
    - Regional/System-Level
      - Average regional commute time, by mode
      - Total excess delay time (wasted travel time)
      - Share of roads experiencing travel time index over 2.0
  - o Congestion duration
    - Local/Corridor-Level
      - Hours of travel per day at V/C ratio over 1.0
      - Hours of travel per day at LOS E or worse
    - Regional/System-Level
      - Number or share of roadway miles experiencing more than x hours of congestion per day on average
  - o Congestion extent: vehicle measures
    - Local/Corridor-Level
      - Number of vehicles experiencing LOS E or worse, for a segment
    - Regional/System-Level
      - Number or share of vehicle miles traveled at LOS E or worse, regionally
  - o Congestion extent: delay measures
    - Local/Corridor-Level
      - Total delay on roadway (average delay time per vehicle x number of vehicles)
    - Regional/System-Level

- Total excess delay time (wasted travel time)
  - Reliability
    - Local/Corridor-Level
      - Planning time index – ratio of 95<sup>th</sup> percentile travel time to free flow travel time
      - Buffer index – ratio of difference between 95<sup>th</sup> percentile travel time and average travel time, divided by average travel time
    - Regional/System-level
      - Share of freeway segments with planning time index over a threshold
      - Person-miles traveled that are reliable
      - Freight tonnage
      - Freight truck travel time reliability index
  - Transit travel conditions
    - Local/Corridor-Level
      - Transit crowding
      - Transit on-time performance, by route
    - Regional/System-Level
      - Percentage of buses exceeding a certain crowding level
      - Percentage of buses arriving on-time regionally
- 3) Reduce fatal and severe injury crashes for all modes of travel.
- Local/Corridor-Level
    - Number of incidents by segment or intersection
    - Incident rate by segment or intersection
    - Number of KSIs by segment or intersection
    - KSI rate by segment or intersection
  - Regional/System-Level
    - Number of incidents regionally
    - Incident rate regionally
    - Number of KSIs regionally
    - KSI rate regionally
    - Mean incident clearance time on I-5
- 4) Plan, build, and maintain regional transportation assets to maximize their useful life while minimizing project construction and maintenance costs.
- Local/Corridor-Level
  - Regional/System-Level
    - Expenditures from TRPC call for projects for CMP projects vs. all expenditures from TRPC call for projects
    - Cost of Project vs. Reliability Index improvement
    - Pavement and bridge condition
- 5) Increase access to jobs and community destinations in the region.
- Local/Corridor-Level
    - Number of jobs/households within a defined distance or travel time from location
    - Household access to transit, by segment
    - Jobs-housing balance (ratio) within area/zone
  - Regional/System-Level
    - Share of regional jobs within 0.5 mile of transit
    - Share of regional households within 0.5 mile of transit
    - Jobs-housing balance (ratio) across each area
- 6) Engage more and a wider diversity of people in providing input on transportation decision-making.
- Number of public input responses by demographic vs. previous responses

- 7) Improve the resiliency and reliability of the transportation system.
  - Reliability
    - Local/Corridor-Level
      - Planning time index – ratio of 95<sup>th</sup> percentile travel time to free flow travel time
      - Buffer index – ratio of difference between 95<sup>th</sup> percentile travel time and average travel time, divided by average travel time
      - Existence of variable message signs (or other traveler information) by segment
    - Regional/System-level
      - Share of freeway segments with planning time index over a threshold
      - Person-miles traveled that are reliable
      - Share of freeways regionally with variable message signs
      - Mean incident clearance time on I-5
      - Freight truck travel time reliability index
  
- 8) Improve transportation connections between areas with high job concentration and areas with high concentrations of low-income households.
  - Local/Corridor-Level
    - Number of low-income households within a defined distance or travel time from location
    - Low-income household access to transit, by segment
    - Jobs-low-income household balance (ratio) within area/zone
  - Regional/System-Level
    - Share of regional jobs within 0.5 mile of transit
    - Share of low-income households within 0.5 mile of transit
    - Jobs-low-income household balance (ratio) across each area