Chapter 4: Plan Performance and Implementation Monitoring

Part Three: Congestion Management System

Federal regulations require urbanized areas with over 200,000 populations to develop and maintain a Congestion Management Process. A Congestion Management Process, or CMP, is a systematic approach to considering congestion in the long-term planning for a regional transportation system.

A CMP provides a structure and a process for:

- evaluating the performance of the region's transportation system,
- implementing a wide range of strategies to address congestion, and
- monitoring results over time to improve long-term performance.

A Congestion Management System (CMS) Baseline Report was developed in September 2004 and represents the region's initial product within the overall CMP. The purpose of a Congestion Management Process is to provide a framework for addressing congestion on the regional transportation system. While in some cases congestion may be eliminated or significantly reduced, a more realistic goal is to improve the way we *manage* congestion, now and in the future. A CMP is meant to aid in better understanding where the worst congestion is located and what the best mix of strategies is likely to be for each situation.

The 2004 Baseline CMS report is structured around three main concepts:

- Build on existing plans and capabilities: the CMS makes use of the adopted Regional Transportation Plan, the regional traffic forecasting model, and existing performance measures to define the level of congestion on the system and evaluate alternative congestion management strategies.
- Focus on major corridors, and a range of strategies: the CMS identifies major congested corridors and a preliminary set of strategies for each congested corridor. The strategies include both short range and longer term actions, and a wide array of options including operations, TDM, access management, land use measures, and adding new capacity.
- Improve the techniques for obtaining and analyzing information: the CMS incorporates a process for monitoring and evaluating transportation system performance on a more systematic basis. Future efforts will need to focus on improved data collection and analysis, better modeling tools, and ongoing coordination among individual agencies that operate different pieces of the overall system.

The CMS collects and organizes various pieces of the RTP that are related to congestion—in effect, providing a view of the RTP through a "congestion filter" to better define the different components and their connections with one another.

Congestion Management Corridors

Using the most up-to-date inputs for land use allocation and network assumptions, the model was used to simulate traffic flow on the major roadway network and compare each roadway section with the level of service or volume-to-capacity measures discussed earlier. Based on a review of this information, nine roadways have been identified as congestion management corridors for the initial CMS:

1. Interstate 5, from OR 58 interchange at Goshen to north boundary of the TMA at Coburg
2. OR 126/I-105, from Garfield Street in Eugene to Main Street/McKenzie Highway in Springfield
    a. 6th-7th couplet from Garfield to Jefferson
    b. Washington-Jefferson Bridge (I-105) from 7th to Delta Highway
    c. I-105 from Delta Highway to Interstate 5
    d. Eugene-Springfield Highway from I-5 to Main Street/McKenzie Highway
3. Beltline Highway, from Highway 99 to Interstate 5
4. Main Street/McKenzie Highway, from Mill Street (downtown Springfield) to 70th Street
5. Broadway/Franklin Boulevard, from Mill St. (Eugene) to Springfield Bridge
    a. Broadway from Mill St. to Alder St.
    b. Franklin Blvd. from Alder St. to I-5
    c. Franklin Blvd. from I-5 to Springfield Bridge
6. West 11th Avenue, from Terry Street to Chambers Street
7. Ferry Street Bridge/Coburg Road, from Broadway to Crescent Avenue
8. Southeast Eugene corridor (Hilyard-Patterson-Am. Pkwy-Willamette) from 13th to 33rd Ave.
9. 18th Avenue, from Bertelsen Road to Agate Street

While the MPO is still in the process of developing a complete Congestion Management Process, this update of the RTP shows updated current and projected area-wide congestion performance measures in Table 10. (The initial model output for the corridors shown in Table 9, *Corridor Descriptions and Estimated 2004 and Forecasted 2031 Daily Traffic*, has not yet been updated for this 2031 RTP.)

Table 9 is a shorter version of a more comprehensive set of model output in the full 2004 CMS report. The primary indicator of congestion is the *Weighted PM Peak Average V/C Ratio* for each corridor or segment of a corridor, shown for both the base year of 2002 and the horizon year of 2021. (The volume- to-capacity ratio for the corridor is calculated by weighting the different sections within the corridor by vehicle-miles of travel.) Along with this overall V/C figure for each corridor, the *Maximum PM Peak V/C Ratio* is also important. In some cases the maximum congestion level occurs at only one or two intersections along the corridor, while in other cases the model shows very high congestion over a long section of corridor—for example, Beltline from Delta to River Road.

The full 2004 CMS report discusses a set of strategies for addressing congestion within each corridor, including land use strategies; transportation demand management (TDM); intelligent transportation system (ITS) techniques and operational tools; roadway projects to add capacity; transit strategies; and bicycle/pedestrian strategies. For each corridor, the list includes projects and actions from the adopted *TransPlan* as well as additional work being done in ongoing efforts, such as the ITS plan for the area.

Congestion on the Major Roadway Network

In addition to specific corridors, the CMS also serves the purpose of monitoring congestion on the overall network of major roadways. For this 2031 RTP update, the regional travel model was run to produce updated values for four of the Key Performance Measures: congested miles of travel, roadway congestion index, network vehicle hours of delay, and percent transit mode share on congested corridors. Table 10, *Area-Wide Performance Measures*, shows the model output for each of these four measures, for the updated base year of 20042 and the RTP plan horizon year of 2031.

PM 1: Congested Miles of Travel (per cent of total VMT) — The model forecasts a five-fold increase in congested miles of travel on the major roadway network, assuming construction of the financially-constrained roadway projects in the RTP. The 2031 forecast of 21.3 percent of daily VMT as congested is still relatively small, but represents major congestion at a number of key locations on the roadway system.

PM 2: Roadway Congestion Index (RCI) — The model forecasts an increase in the RCI from 0.92 in the 2004 base year to 1.26 in 2031. This measure defines any value over 1.0 as "congested." The RCI is useful for comparing relative congestion over time, as well as providing a quick comparison of our TMA's congestion level with that of other urban areas.

PM 3: Network Vehicle Hours of Delay (VHD) — On a daily basis, the model forecasts the hours of delay due to congestion in 2031 will be about two and a half to three times the 2004 level.

PM 4: Percent Transit Mode Share on Congested Corridors — Unlike the other three measures, higher values for this measure are desirable. The overall share of travel by transit on the congested corridors is forecasted to increase from 7.1 percent to 8.6 percent over the 24-year period. Some corridors will experience significantly more of an increase in transit ridership, based on planned implementation of BRT service.

The values in Table 10 can be viewed as a set of baseline measures of congestion on the overall roadway network in the Central Lane TMA. Over time, as the CMP corridor strategies are applied and better modeling tools are developed, one of the ongoing purposes of the CMP will be to provide a central framework for monitoring congestion on the region's major roadways. This should help technical staff, policy makers and the general public gain a better understanding of where and how congestion is occurring and how best to manage it, throughout the Central Lane TMA.

Table 9

Corridor Descriptions and Estimated* 2002 and Forecasted 2021 Daily Traffic

Corridor	S/W Limit	N/E Limit	Approximate Length (mi)	Direction	2002 Weighted PM Peak Avg V/C Ratio	2002 Maximum PM Peak V/C Ratio (Peak Dir)	2021 Weighted PM Peak Avg v/c Ratio
Interstate 5	Highway 58 Interchange	North Boundary of TMA	13.1	Northbound Southbound	0.71 0.71	0.98	0.92 0.90
Oregon Hwy 126 Corridor							
6th - 7th Couplet	Garfield Street	Jefferson Street	1.1	Eastbound Westbound	0.76 0.72	0.92	0.87 0.95
Washington-Jefferson Bridge	7th Ave	Delta Highway	1.0	Northbound Southbound	0.91 0.75	1.09	1.04 0.94
Interstate 105	Delta Highway	Interstate 5 Interchange	2.6	Eastbound Westbound	0.82 0.60	1.22	0.90 0.76
Eugene-Springfield Highway	Interstate 5 Interchange	Main Street / 58th	6.4	Eastbound Westbound	0.73 0.49	0.88	0.92 0.66
Beltline Highway	Highway 99 Interchange	Interstate 5 Interchange	6.3	Northbound Southbound	0.82 0.80	1.16	0.93 0.96
McKenzie Highway (Main/SA St)	Mill Street (Springfield)	70th Street	6.1	Eastbound Westbound	0.65 0.48	0.94	0.91 0.67
Broadway / Franklin Corridor							
Broadway	Mill Street (Eugene)	Alder Street	0.3	Eastbound Westbound	0.66 0.64	0.78	0.79 0.87
Franklin Boulevard (Eugene)	Alder Street	Interstate 5 Interchange	1.3	Eastbound Westbound	0.62 0.42	0.71	0.79 0.65
Franklin Boulevard (Glenwood)	Interstate 5 Interchange	Springfield Bridges	1.6	Eastbound Westbound	0.59 0.33	0.81	0.80 0.49
West 11th Avenue	Terry Street	Chambers Street	3.4	Eastbound Westbound	0.72 0.72	1.00	0.72 0.71
Ferry St Bridge / Coburg Rd	Broadway	Crescent Avenue	3.3	Northbound Southbound	0.88 0.76	1.3+	1.01 0.90
Southeast Eugene Corridor							
Willamette / Oak	33rd Ave	13th Street	1.7	Northbound Southbound	0.62 0.74	1.02	0.65 0.80
Pearl / High / Amazon	33rd Ave	14th Street	1.7	Northbound Southbound	0.38 0.61	0.93	0.44 0.71
Patterson / Hilyard	33rd Ave	15th Street	1.7	Northbound Southbound	0.51 0.71	0.77	0.57 0.85
18th Avenue	Bertelsen Road	Agate Street	4.6	Eastbound Westbound	0.67 0.72	1.01	0.72 0.80

*Based on Adjusted EMME/2 Model Results

Table 10

Area-Wide Performance Measures

	2004	2031
PM 1: Congested Miles of Travel (Percent of Weekday VMT)	**4.1%**	**21.3%**
PM 2: Roadway Congestion Index (RCI)	**0.92**	**1.26**
PM 3: Network Vehicle Hours of Delay (VHD)	**14,140**	**40,460**
PM 4: Peak Hour Transit Mode Shares on Congested Corridors	**7.1%**	**8.6%**
McKenzie Hwy	6.9%	9.2%
Broadway / Franklin	9.4%	16.7%
W. 11th Ave	4.1%	4.9%
Ferry St Bridge / Coburg Rd	9.3%	8.7%
Southeast Eugene	7.5%	9.0%
18th Ave	5.1%	5.5%

Table 2 Notes:
PM1: % of Weekday VMT at v/c = .87 or greater
PM2: Calculated on Freeways and Principal Arterials, per TTI Urban Mobility Study methodology
PM3: Vehicle Hours difference between congested speed and posted speed
PM4: EMME/2 Model Estimates: Percent Transit Person-Miles-Traveled (PMT) of total PMT in corridor segments where transit service is available