CMP CONGESTION MANAGEMENT PROCESS

Approved by the SRTC Policy Board

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SRTC
SPOKANE REGIONAL TRANSPORTATION COUNCIL

Spokane Regional Transportation Council
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Congestion Management Process

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Executive Summary

Spokane Regional Transportation Council (SRTC) and a multi-jurisdictional Working Group have spent the last two years updating a Congestion Management Process (CMP). A CMP is a systematic and regionally-accepted approach for managing congestion that provides accurate, up-to-date information on transportation system performance and assesses alternative strategies for congestion management that meet state and local needs. SRTC has the responsibility of implementing this process, with the assistance of other area jurisdictions as dictated by federal requirements. At a regional level the CMP helps inform and guide the agency's investments as they pertain to congestion.

In metropolitan areas with a population of 200,000 or more and are designated by the Environmental Protection Agency (EPA) as an air quality non-attainment or maintenance zone, the CMP has a special significance. Transportation projects that aim to significantly increase the capacity of single occupancy vehicles (SOVs) (i.e., widening roadways or constructing new facilities) may not receive Federal funding unless the project has been identified in the regionally-adopted CMP. Additionally, the feasibility of lower-cost travel demand and operational improvement strategies must be analyzed as potential alternatives prior to increasing roadway capacity.

SRTC and the CMP Working Group, through close examination and data analysis, identified and designated sixteen congested corridors whose performance will be monitored annually. Congestion management strategies were recommended for eight corridors at the Tier 1 level, those with more significant congestion and regional importance. The strategies were individually tailored for each corridor and include a variety of travel demand, operational, freight and capacity solutions. The focus on implementation is to start with lower-cost strategies first.

In order to bring CMP strategies to fruition, they shall be incentivized through the Call for Project application process. Additional scoring opportunities for CMP strategies will assist in implementing CMP strategies by adding congestion-related scoring criteria in the competitive project selection process.

For **all** roadway projects that significantly increase SOV capacity, a CMP/ Transportation Improvement Program (TIP) Compliance Process will ensure proper process before a project appears in the TIP. This process may necessitate a Roadway Capacity Justification Report to inform the SRTC Policy Board of the need for additional capacity, reasons why the capacity is warranted and what least-cost planning efforts have been considered or previously implemented. This process is not limited to CMP Corridor projects; it pertains to all projects in the TIP. This is a necessary step in the CMP until Spokane reaches air quality attainment status, hopefully in the year 2025.

Lastly, the CMP Working Group identified fourteen performance measures to track progress of the CMP corridor's system performance and the effectiveness of CMP strategies. Ongoing collaboration with the CMP Working Group will ensure that congested conditions, corridor planning and programming are linked and will continually be evaluated and addressed in a regional setting.

Introduction

Unlike Seattle or Portland, Spokane is not known nationally for its traffic problems, yet the Spokane area has its share of recurring and non-recurring congestion, just like any other metropolitan area of half a million people. The costs of congestion are highly publicized and impact economies, the environment and our time. Every driver and passenger has a different definition of congestion, however "in the transportation realm, congestion usually relates to an excess of vehicles on a portion of roadway at a particular time resulting in speeds that are slower than normal or 'free flow' speeds."[1] Perceptions of congestion also vary but are relevant as we understand each traveler has a different tolerance level for congestion in their own community. Since alternative viewpoints of congestion exist it is important to make use of data to help frame the issue.

Regular, or recurring, congestion in most cities typically occurs during weekdays around the traditional peak commute periods of 7 to 9 AM and 4 to 6 PM and accounts for a majority of the congestion nationally. Excessive demand and diminished roadway capacity or bottlenecks are common causes of recurring congestion. Non-recurring congestion is normally caused by traffic incidents (collisions, breakdowns, debris in roadway), construction activities, and special events (sporting events, festivals, concerts). Figure 1 is a national representation of the reasons for congestion in the United States.

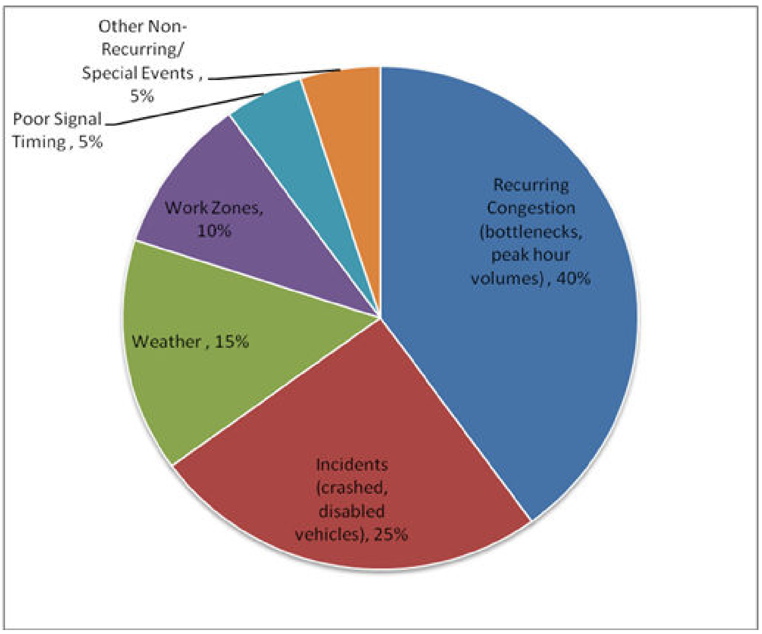

Figure 1 Reason for Congestion; FHWA, 2004

Slower speeds and traffic flow are not the only traffic problems that plague metropolitan areas; poor roadway design can result in increased potential for collisions and poor street circulation can decrease accessibility and confuse commuters and travelers. Furthermore, congestion and other traffic problems contribute to degraded air quality; decreased mobility for pedestrians and cyclists; adverse impacts to the natural and human environment; and an inefficient public transit network. Traditional congestion mitigation strategies are often costly and may fail to address or inadvertently worsen these related issues. In order to identify the current traffic issues and to develop strategies that meet local and regional needs, SRTC engaged other area jurisdictions with the Working Group in developing a CMP.

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[1] *Traffic Congestion and Reliability: Trends and Advanced Startegies for Congestion Mitigation.* (n.d.). Retrieved September 18, 2014, from FHWA : http://www.ops.fhwa.dot.gov/congestion_report/chapter2.htm

Is Congestion always a Bad Thing?

It has been the general practice of state and local transportation departments to mitigate congestion, through a variety of methods, for purposes of improving travel times and reducing the costs generated by vehicle delay. "The underlying assumption is that congestion relief is an unmitigated good" because vehicle delay costs Americans billions of dollars in wasted fuel and time each year.[2] However, "the common misinterpretation of such statistics is that our cities would be so much more economically productive if only we could eliminate the congestion that occurs on urban streets." [2] In fact, studies show that increased travel delay generally means a higher gross domestic product (GDP) per capita for cities across the United States. Simply stated, the presence of more automobiles stuck in traffic indicates that more people are traveling to or from work, meetings, shopping, and recreation, "indicating the presence of a vibrant, economically-productive city." [2] Stated another way, the more reason there is to travel to and within a city, the more travel demand it creates on its transportation infrastructure. Although certain industries would rather not develop in congested areas, such as freight shippers or warehousing firms, the presence of congestion creates demand for dense, urban land uses.

Increased traffic congestion can also encourage people to change travel behaviors by travelling shorter distances, living closer to work, travelling less or shifting travel modes. Additionally, there has been an increased preference, particularly among the millennial and baby boomer generations, to live in more urban areas with more accessibility to work and recreation. In summary, more economic activity means more travel demand and more travel demand can lead to more traffic congestion. Though congestion has its share of problems, it is not the root of all problems for a city or region, nor is it a solution for increasing economic growth in itself. Rather than eliminating congestion at first sight, it is important to understand whether its cause is negative (i.e. delay from a poorly designed traffic signal) or positive (i.e. an event being held at a newly expanded convention center).

What is Congestion Management?

Congestion management is the application of strategies to improve transportation system performance and reliability by reducing the adverse impacts of congestion and the movement of people and goods. A CMP is a systematic and regionally-accepted approach for managing congestion that provides accurate, up-to-date information on transportation system performance and assesses alternative strategies for congestion management that meet state and local needs.

A CMP is *required* in metropolitan areas with population exceeding 200,000, which are known as Transportation Management Areas (TMAs).

According to Code of Federal Regulation (CFR), 23 CFR 450.320(a) and (b), TMAs shall cooperatively address congestion management through process that provides for a safe and effective integrated management and operation of the multimodal transportation system…through the use of travel demand reduction and operational management strategies.

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[2] Dumbaugh, E. (2012, June 1). *Rethinking the Economics of Traffic Congestion.* Retrieved September 23, 2014, from City Lab : http://www.citylab.com/commute/2012/06/defense-congestion/2118/

The CMP should be reflective of regional congestion issues as well as regional goals and objectives that are specific to the Spokane Region. The CMP is not a stand-alone document; it is meant to be incorporated into the metropolitan transportation planning process. Additionally, performance measures are established to monitor multimodal transportation system performance.

In TMAs designated as ozone or carbon monoxide non-attainment or maintenance areas, "federal law prohibits transportation projects that result in a significant increase in carrying capacity for single-occupant vehicles from being programmed in these areas unless the project is addressed in the regional CMP" (23 CFR 450.320 (d) & (e)).

Before implementing such projects that significantly increase capacity, however, the CMP must utilize a *least cost planning approach*. This approach utilizes lower cost alternative travel demand reduction strategies and operational management strategies that could mitigate problems prior to the implementation of more costly strategies. If such strategies cannot improve existing conditions and adding capacity is warranted, "the CMP must identify strategies to manage the single occupant vehicle (SOV) facility safely and effectively, along with other travel demand reduction and operational management strategies appropriate for the corridor" (23 CFR 450.320(e)).

Why is the Spokane Region required to have a Congestion Management Process?

Spokane County qualifies as both a TMA and a federally-designated maintenance area for air quality; therefore, as the local Metropolitan Planning Organization (MPO), SRTC must develop a CMP and address the issue of significant SOV capacity increasing projects. This is an on-going eight step process (see Figure 2) that is developed through a multi-jurisdictional planning process and is continually updated to address the results of performance measures, emerging congestion issues, and new objectives and goals of the Metropolitan Transportation Plan, (MTP). Our current MTP is known as Horizon 2040.

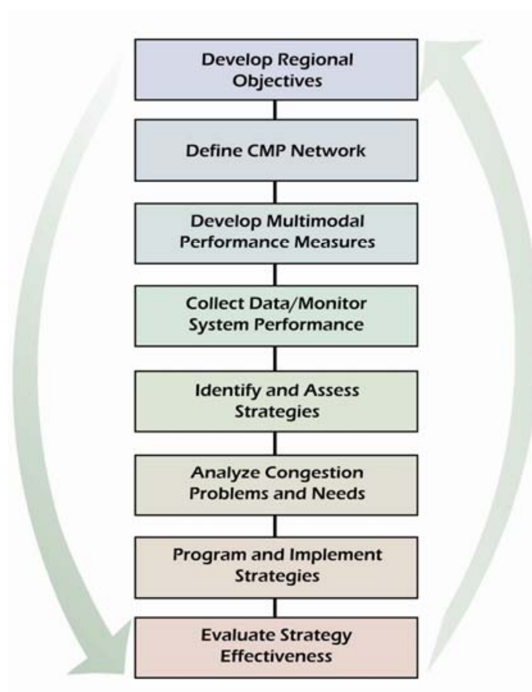

Figure 2 Steps of the CMP

Results of an FHWA recertification process in January 2012 determined that the 2007 CMP did not comply with current Federal regulations, and therefore, a corrective action was issued. In January 2013 SRTC organized a CMP Working Group to undertake the process of developing a new CMP. The composition of the CMP Working Group will remain in place to ensure continual evaluation of the Process and coordination between organizations. Representatives of the CMP Working Group come from the following organizations: Washington State Department of Transportation (WSDOT) (two representatives); Spokane Regional Transportation Management Center (SRTMC) (one representative); City of Spokane Valley (one representative); City of Spokane (one representative); Spokane County (one representative); Spokane Transit Authority (STA) (one representative); Citizen representation (one Transportation Advisory Council (TAC) member) ; and SRTC staff members (one member or more as needed for support services).

Step 1—Develop Regional Objectives

The first step of the CMP is to develop regional objectives. Therefore, before new objectives could be established, a completely new plan and a new process for identifying and measuring congestion and for developing mitigation strategies must be developed. Staff studied model CMP examples from other MPOs and selected formats, corridor identification methods, performance measurements, and strategy implementation processes from the top-rated CMPs across the nation. In particular, the CMPs from WILMAPCO (Wilmington Area Planning Council) of Delaware and MRCOG (Mid-Region Council of Governments) from New Mexico were prime models for the revised SRTC process.

Since the CMP is meant to be an integral part of the regional transportation planning process, the guiding principles of the MTP, Horizon 2040, were incorporated into the CMP, to ensure consistency in transportation planning policies. These guiding principles were used to develop congestion management objectives that move us towards fulfilling regional transportation goals, ensuring efficient use of resources and ultimately, leading to performance measures and congestion strategies that help achieve our regional vision. To understand how these guiding principles will apply to this process, CMP objectives were developed for each guiding principle in Table 1.

Guiding Principle	Objective
Economic Vitality	Raise awareness that congestion is related to economic vitality and ensure that the benefits of congestion outweigh the disadvantages
Cooperation and Leadership	Sustain coordination and follow-through with a multi-jurisdictional CMP working group
Stewardship	Invest in projects that maximize the use of existing facilities across modes in identified CMP corridors
System Operations, Maintenance, and Preservation	Pursuing solutions that are low cost/high benefit toward maintaining and preserving reliable transportation corridors and networks
Quality of Life	Accessible, multi-modal transportation for all abilities; facilities should blend in with or enhance the human environment (context sensitive design) and limit impacts to the natural environment
Choice and Mobility	Prioritize future investments to align with regional priority networks to improve connectivity and mobility
Safety and Security	Improve safety and reduce non-recurring congestion by reducing collisions

Table 1 CMP Guiding Principles and Regional Objectives

Step 2—Define CMP Network

The second step of the process was to define the Regional CMP network. SRTC staff began by inventorying all the roadways in Spokane County that were classified as a principal arterials, highways or interstates within the Urban Area, according to the FHWA Federal Functional Classification (FFC). The focus of this effort was to identify regionally important corridors that experienced the most congestion rather than identifying small segments or hot spots which may be more suitable to be studied and improved at the local level.

The inventory included a variety of travel data to indicate conditions reflecting congestion and our multi-modal transportation system. Sources of data included INRIX Traffic Analytics, the SRTC 2010 Travel Demand Model, Washington State Department of Transportation (WSDOT), Spokane Transit Authority (STA), the City of Spokane, Spokane County, and other local jurisdictions. Factors for determining a roadway's regional importance included the travel patterns of commuters, freight, and transit; whether it is a barrier or a vital connection for bicycle and pedestrian travelers; and its connection to other arterials and major activity centers. Minor arterials were considered for data collection, but the Working Group felt that congestion levels on minor arterials is not yet significant from a regional perspective.

The inventory of data was presented to the CMP Working Group in the form of tables and Geographic Information System (GIS) layered maps. In multiple meetings, Working Group members discussed conditions of arterials in their respective jurisdictions and the importance of certain corridors as part of the regional transportation network.

How we define congestion in Spokane?

The definition of congestion is different for everyone and usually is characterized by when traffic conditions become unacceptable to the travelling public. This characterization of congestion can vary considerably between different cities and regions. For a large metropolitan area, this could mean highway speeds reduced to less than 30 miles per hour (mph) during rush hour, or for a small city, congestion may be associated with a major sporting event occurring at the local university. For a medium-sized city like Spokane, however, congestion is difficult to define. Recurring slow-downs on local highways may be minor compared to those in bigger cities, but at the same time, non-recurring traffic incidents tend to be especially disruptive on busy corridors because travelers expect typical smooth operations.

The Working Group considered these points as they mapped out a network of CMP corridors. Group members decided the most important factors for choosing a corridor was current travel demand (average daily traffic), the presence of recurring or non-recurring travel time delay, reliability, collision rates, connectivity to other major roadways, regional destinations, the importance for the transport of freight and its relationship to Horizon 2040 or local long-range plans. The CMP Corridor Profiles, which includes the CMP Inventory for each corridor and the methodologies, can be found in Appendix A. The following text includes a brief description of the data or indicators that help define the presence of congestion on the identified CMP corridors.

Travel Demand

Travel demand is a major factor for determining the regional significance of a roadway, and regional significance is a major factor in defining a CMP network. Travel demand was measured in terms of Average Daily Traffic (ADT), Average Annual Daily Traffic (AADT) and Average Weekday Daily Traffic (AWDT). Among CMP corridors, principal arterials generally have 20,000 AADT or higher, State Routes about 30,000 AADT or higher and I-90 as high as 100,000 AADT. Furthermore, one can expect some level of congestion to occur on roadways with high traffic volume.

Travel Time Index

After reviewing current conditions on major corridors, staff determined that corridors known for regular periods of congestion have a travel time index (TTI) value of 1.2 (85% below ideal travel time) or higher. This index is the congestion travel time divided by the free flow time. For example, a congested travel time of 24 minutes divided by free flow travel time of 20 minutes is 24 min./20 min.=1.2 TTI. TTI is reflective of the average recurring congestion that occurs on a roadway. A threshold value for TTI was set at 1.2 as a general measure for travel delay on the CMP corridors. This value is often set at a higher threshold for other metropolitan areas, but as mentioned above, Spokane commuters are likely willing to tolerate less delay and expect their daily commute to be more consistent through the week.

Planning Time Index

Planning time index (PTI) is similar to TTI in that it depicts a value below that of the ideal travel time, but where TTI reports the actual travel times experienced on roadways, PTI shows how much time one should give him or herself to reach a destination on time 19 out of 20 times. PTI in essence, is an indicator of travel reliability. More simply put, PTI tells you how much extra "planning time" or "buffer time" you should account for to achieve arrival on time to one's destination. The greater the PTI, the more *unpredictable* travel conditions are on a corridor. Essentially, what the PTI depicts is the most delay that could occur on a corridor on a normal day. For CMP corridors with a TTI of 1.2, a high PTI would be 1.3 or more.

Collision Rate

Collisions are a source of non-recurring congestion and can cause unexpected travel delay that is not planned. This is typically measured in average collision rate per million vehicle miles traveled (VMT). The average collision rate among the CMP corridors was 2.0 per million VMT, but ranged from 0.77 to 4.75.

Due to its high traffic volume, collision rates on I-90 were low; however, CMP group members wanted to make note of how collisions on limited-access freeways have the potential to cause more travel delay due to the high travel demand and limited access and exit points, whereas on city arterials, one can typically choose an alternate, parallel route. Although no threshold of collision severity was added to the corridor profiles, one should understand that comparing the collision rate on I-90 is not comparable with that of, Sullivan Road, Francis Avenue, Division Street, or other principal arterials.

Regional Connectivity

The last indicator relates to the regional significance of a corridor in terms of connecting regional destinations and its importance to the movement of freight. For instance, I-90 is both a vital artery for connecting cities throughout the area and is, by far, the busiest freight corridor in the region. A smaller scale example is US-2, which is important in that it serves as the main access to Airway Heights and Fairchild Air Force Base.

CMP Corridors

Using the indicators above, 16 corridors were chosen as CMP corridors. These corridors were sorted into two different categories: Tier 1 and Tier 2. Tier 1 corridors are seen as the most important corridors or those with the most need for congestion relief and are selected for applying detailed congestion management strategies as a method to mitigate these issues. Tier 2 corridors will continue to be monitored because of the roadway's regional importance, but congestion management strategies will not be assigned to these corridors until conditions worsen. The following corridors were selected by the Working Group and are also found in Figure 3.

- Tier 1: Argonne/Mullan, Division, Francis, Freya/Greene, I-90 Central, I-90 East, Sullivan, US 2 West(a)
- Tier 2: 29th Avenue, Division/US 395, Grand/Stevens/Washington, Freya/Market, Hamilton, I-90 West, Maple/Ash, US 2 West(b)

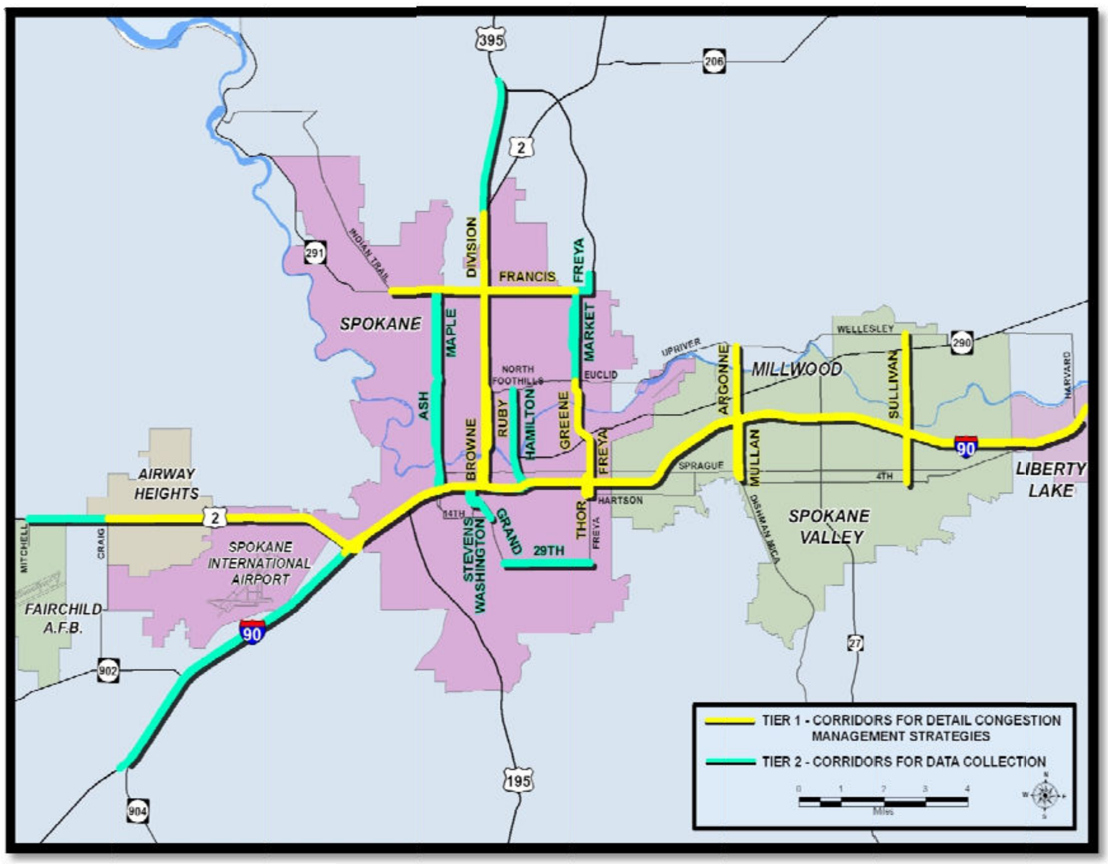

Figure 3 CMP Corridor Network

North Spokane Corridor

One other corridor that has been a major topic of discussion with relation to the CMP is the North Spokane Corridor (NSC), or Future US-395, which will serve as a limited-access bypass around Spokane once it is fully complete. Before this CMP was in place the NSC was identified by WSDOT and in Horizon

2040 as an essential component of the future of this region's transportation network. The NSC provides improved freight movement on a limited access roadway while subsequently improving congestion and safety levels on the Division Street Corridor and the Freya/Greene Corridor, which are both identified as Tier 1 corridors. At this point the NSC is partially constructed and waiting funding for completion. The benefits of this new freeway have been discussed at the Regional and Statewide level. For this reason the NSC does not appear as a new congestion management strategy as it is already in progress and pending completion.

Step 3—Develop Multimodal Performance Measures

SRTC with the assistance of a CMP Working Group developed multimodal performance measures for each CMP Guiding Principle in order to measure the progress in fulfilling these principles for each corridor. These measures will be used to track changing conditions, identify problem areas and help communicate system performance to the public and decision makers. Table 2 is a list of the performance measures, organized by guiding principle. Presently, the CMP measures are corridor level unless otherwise indicated and will be updated on an annual basis. The baseline data and methodologies used to calculate each performance measure can be found in Appendix B, Congestion Management Process- Performance Measure Analysis.

Guiding Principle	Performance Measures
Economic Vitality	• Transportation + housing costs as a percentage of median income along CMP corridors • Freight tonnage on CMP corridors • Assessed land value on CMP corridors
Cooperation and Leadership	• Attendance at CMP group meetings, committees, and public meetings
Stewardship	• Expenditures from SRTC call for projects for CMP projects vs. all expenditures from SRTC call for projects
System Operations, Maintenance, and Preservation	• Transit performance on corridors • Travel Time Index averages and peaks on corridors • Cost of Project vs. Planning Time Index improvement • Transit reliability factor
Quality of Life	• Total regional miles of bike network • Miles of sidewalk gaps filled on CMP network • Percent of households within ½ mile of transit
Choice and Mobility	Same as Quality of Life Measures
Safety and Security	• Collision rate per VMT • Incidence clearance on I-90

Table 2 CMP Guiding Principles and Performance Measures

Step 4—Collect Data/Monitor System Performance

An important part of CMP is developing a data collection plan for acquiring the data needed to support performance measures and the CMP corridor profiles that help identify and track the congestion levels in the corridors. SRTC staff reviewed best practices from other MPOs and reviewed data sources to determine what types of data is available and useful for measuring current and ongoing conditions on regional roadways. The following Table 3, Corridor Profile Inventory indicates the data that is collected; who is responsible for collecting the data and the frequency the data should be collected. This particular dataset was collected, analyzed, and used to create corridor profiles for all CMP corridors. This requires ongoing cooperation and assistance from our planning partners to be successful.

Corridor Profile Inventory - Tier 1 and 2 Corridors		
Transportation System Data Description	**Responsibility**	**Frequency**
Average Weekday Daily Traffic Range (AWDT)	SRTC	Annual
Average Annual Daily Traffic (AADT)	Jurisdiction	every 1-2 years
Type of Facility or Facilities (Functional Classification - FFC)	SRTC	FFC Update
Peak Period Maximum Load Factor on Bus	STA	Annual
Peak Period Load Factor on Corridor	STA	Annual
Number of Buses per Peak Hour	STA	Annual
Number of Park & Rides / % Usage	STA	Annual
Average Daily Truck % at Select Locations	WSDOT / Jurisdiction	FGTS Update
Average Collision Rate/Million VMT	SRTC	Annual
Average Travel Time Index Northbound AM/PM (Peak)	SRTC	Annual
Average Travel Time Index Southbound AM/PM (Peak)	SRTC	Annual
Average Planning Time Index Northbound AM/PM (Peak)	SRTC	Annual
Average Planning Time Index Southbound AM/PM (Peak)	SRTC	Annual
Bike Network	SRTC / Jurisdiction	Annual
Percent Existing Sidewalk Availability	SRTC / Jurisdiction	Annual
Corridor Length (centerline miles)	SRTC - GIS	As Needed

Tier 1 Corridors Only		
Demographics Data Description	**Responsibility**	**Collection**
Gross Population Density (Sq Mile)	SRTC	5 year ACS
Gross Employment Density (Sq Mile)	SRTC	5 year ACS
Estimate % of Population Below Poverty Level**	SRTC	5 year ACS
Estimate % of Housing Units with No Vehicle Available*	SRTC	5 year ACS
Percent of Population that is Minority*	SRTC	5 year ACS
Percent of Population Age 65 and older*	SRTC	5 year ACS
Major Activity Center present	SRTC	5 year ACS
Trends Data Description	**Responsibility**	**Collection**
Gross Population Change (2000 - 2010)*	SRTC	2020 US Census
Gross Employment Change (2000 - 2010)*	SRTC	2020 US Census
AWDT Change (2003/2004 - 2011)	SRTC	-
Average Peak Travel Speed Change & Percent Change	SRTC	-
Transit Usage Change	STA	Annual

Table 3 Corridor Profile Inventory *2000/2010 US Census Data **American Community Survey Estimates

Corridor Profiles

Individual profiles were made for each corridor as a way to study and develop an in-depth understanding of the unique characteristics that lead to congested conditions. The current profiles also establish a baseline to build on over time. A variety of sources were used for data collection, including INRIX Traffic Analytics, local jurisdictions, STA, WSDOT, and the SRTC 2010 Travel Demand Model. See Appendix A for the CMP Corridor Profiles and associated methodologies. The Corridor Profiles will also be available online at www.srtc.org/CMP. An interactive map of the CMP Corridors will be available for public viewing through SRTC's ArcGIS Online program.

Before congestion management strategies could be identified, it was necessary to determine what the causes of congestion are and where congestion occurs. Over a series of monthly meetings between SRTC staff and the CMP Working Group the focus would be on one or two of the Tier 1 corridors based on the Corridor Profiles. In addition the group members would contribute their knowledge about current conditions and recent developments on those corridors that were within their jurisdiction.

Step 5—Identify and Evaluate Strategies

After completion of data collection and individual evaluation sessions, the Working Group developed a range of alternative and innovative congestion management strategies using a least-cost planning approach which is a key element of the CMP that separates this process from other system-wide traffic studies.

In the State of Washington, all regional transportation plans developed are required to be based on – least-cost planning methodology that identifies the most cost effective facilities, services and programs. Within Washington Administrative Code (WAC 468-86-030 and WAC 468-86-080) least cost planning is defined as "a process of comparing direct and indirect costs of demand and supply options to meet transportation goals and/or polices where the intent of the process is to identify the most cost-effective mix of options."

As stated earlier, TMAs designated as ozone or carbon monoxide non-attainment or maintenance areas, like Spokane, are prohibited from implementing projects that significantly expand SOV carrying capacity on roadways without first assessing alternative strategies included in the CMP. These alternative strategies per 23 CFR 320 (c) (4) include a mix of low-cost, small capital projects; travel demand management policies and outreach initiatives; operational improvements; intelligent transportation technologies; freight/goods transport improvements; and investments in transit, bike, and pedestrian infrastructure. For the SRTC CMP, the master list of these strategies chosen for further analysis is known as the CMP Toolkit of Strategies.

CMP Toolkit

To assist in the development of strategies, the CMP Working Group created a Toolkit of Strategies. SRTC researched the best examples from other model CMPs (WILMAPCO, MRCOG and Delaware Valley Regional Planning Council) and compiled a list of strategies that could be realistically applied to this region in the near future. The list was refined through the cooperation within the CMP Working Group. The final list consisted of 37 strategies in five categories:

CMP Toolkit Strategy Categories	
	Travel Demand Management (TDM)
	Operational Improvements/ Intelligent Transportation Systems (ITS)/ Transportation System Management (TSM)
	Transit Operational Improvements
	Freight/Goods Movement
	Roadway Capacity improvements

Table 4 CMP Toolkit Strategy Categories

Examples of Toolkit Strategies included promoting a regional commuter benefit program, parking management, turning movement enhancements, ramp metering, incident management, transit signal priority, new and improved park & ride facilities, freight capacity investments, and grade-separated railroad crossings. Strategies consisting of large capital projects that are meant to increase roadway capacity are also included in the strategies list, but these are given a lower priority and are recommended for implementation only if other strategies are insufficient in mitigating congestion. Some of the strategies can be applied at the regional-scale, but most are applied to individual corridors based on the existing facility deficiencies. See Appendix C, CMP Toolkit of Strategies.

While the benefit of each strategy has not been thoroughly calculated, it is the responsibility of this process to track the benefit to cost. This will be accomplished by tracking changes in the planning time index in relationship to the project cost. It is also the responsibility of this process to incorporate the evaluation of these strategies into local planning efforts and corridor studies. Should strategy analysis at the corridor level determine that a particular strategy does not have a useful benefit; it should be removed from the corridor strategy listing.

Step 6—Analyze Congestion Problems and Needs

Before congested corridors were identified, it was necessary to define congestion in Spokane. It is undeniable that the Spokane Region lacks the traffic issues of larger metropolitan areas; however, this may also mean that commuters in this area are not willing to tolerate as much travel delay as commuters in Seattle or Los Angeles typically expect. Furthermore, collisions and other forms of non-recurring congestion can cause significant slowdowns that people are not prepared for in their daily commute. The following paragraphs contain the factors that were chosen as indicators of congestion to identify the congested corridors.

There are a variety of factors that contribute to poor levels of service (LOS) on roadways; actual congestion is not the only transportation deficiency that warrants implementation of congestion management strategies. The analytical analysis was unsuccessful in identifying adverse peak congestion issues on multiple corridors; however, other issues were identified that included high collision areas, delays at intersections, lack of accessibility for bikes and pedestrians, and lack of facilities for freight vehicles. Furthermore, though many corridors perform relatively well, the high travel demand on many of the region's roadways require monitoring and consideration of certain toolkit strategies to ensure reliable operations. One such corridor is Interstate 90, with over 100,000 vehicles on an average workday.

Following the development of these strategies, the SRTC staff and the CMP Working Group conducted a detailed analysis of each of the selected CMP corridors to identify primary corridor congestion, operational, and safety issues. Each subsequent meeting focused on one or two corridors, with SRTC staff providing the primary transportation data and group members providing additional information and recent developments on corridors from their respective jurisdictions. Previous corridor-wide or subarea studies and plans conducted were also reviewed to understand conditions and the vision decision-makers have for a corridor's future.

Once the issues were identified, group members worked cooperatively to recommend strategies for each corridor. Each strategy was reviewed for its applicability to a corridor and its potential ability to mitigate identified problems. Those strategies chosen for each corridor are encouraged to be further analyzed in future corridor studies and at the regional level before, during and after implementation. Strategies recommended by the group will be incorporated into the transportation planning process for the region. How these strategies will be incorporated into planning and ultimately implemented as corridor conditions warrant, is the focus of the next step of this report.

Table 4 indicates the categories of CMP strategies the CMP Working Group identified for individual Tier 1 Corridors and Table 5 indicates Regional CMP Strategies that can be implemented which will benefit all CMP Corridors. More detailed information regarding the individual corridor strategies can be found in Appendix D, Tier 1 Corridor Strategy Summaries and also are available online at www.srtc.org/CMP.

SRTC CMP Strategy Matrix										
Toolkit Category	**Toolkit Strategy**	**SR 291/Francis**	**US 2 -A**	**Sullivan**	**I-90 Central**	**I-90 East**	**Argonne/Mullan**	**Freya/Thor/Greene**	**US 2/US 395/Division**	**US 395/Division**
Travel Demand Management (TDM)	Ridesharing Services /Ride matching		X	X	X	X		X		
TDM	Alternate Travel Modes Outreach Events and Programs (group and individualized)	X	X		X	X			X	
TDM	Shift Peak Travel									
TDM	Local Delivery Service								X	X
TDM	Parking Management				X	X		X		
TDM	Parking Facility Management Informational Signs				X	X				
TDM	Improvements for Walking	X	X	X	X	X	X	X	X	X
TDM	Improvements for Bicycling	X	X	X	X	X	X	X	X	X
Operational Improvements, ITS, TSM	Turning Movement Enhancements	X	X	X	X	X	X	X	X	X
Operational Improvements, ITS, TSM	Circulation Improvements				X	X			X	
Operational Improvements, ITS, TSM	Limited Intersection Improvements				X	X	X	X		
Operational Improvements, ITS, TSM	Signal Improvements	X			X	X	X	X	X	X
Operational Improvements, ITS, TSM	Ramp Metering				X	X				
Operational Improvements, ITS, TSM	New or converted HOV lanes									

SRTC CMP Strategy Matrix										
Toolkit Category	**Toolkit Strategy**	**SR 291/Francis**	**US 2 -A**	**Sullivan**	**I-90 Central**	**I-90 East**	**Argonne/Mullan**	**Freya/Thor/Greene**	**US 2/US 395/Division**	**US 395/Division**
Operational Improvements, ITS, TSM	Access Management	X	X	X	X	X				X
Operational Improvements, ITS, TSM	Communication Networks	X	X	X	X	X	X	X	X	X
Operational Improvements, ITS, TSM	Traveler Information Services	X	X	X	X	X		X	X	X
Operational Improvements, ITS, TSM	Maintenance Management		X	X	X	X			X	X
Operational Improvements, ITS, TSM	Incident Management		X		X	X				
Operational Improvements, ITS, TSM	Courtesy Patrol (incident response)									
Transit Operational Improvements	Transit Service Expansion	X	X		X	X	X	X	X	X
Transit Operational Improvements	General Transit Infrastructure Improvements	X	X	X	X	X	X	X	X	X
Transit Operational Improvements	Transit Signal Priority							X	X	X
Transit Operational Improvements	Fixed Guideway Transit or Dedicated Transit Lanes							X	X	X
Transit Operational Improvements	Park and Ride Facilities -New or Improved	X			X	X	X	X		
Freight/Goods Movement	Freight Operations Improvements			X	X			X	X	X
Freight/Goods Movement	Freight Capacity Investments		X	X						
Roadway Capacity Improvements	Minor Road expansions			X	X			X		
Roadway Capacity Improvements	Hill-Climbing Lanes									
Roadway Capacity Improvements	Grade-Separated Railroad Crossings									

SRTC CMP Strategy Matrix										
Toolkit Category	**Toolkit Strategy**	**SR 291/Francis**	**US 2 -A**	**Sullivan**	**I-90 Central**	**I-90 East**	**Argonne/Mullan**	**Freya/Thor/Greene**	**US 2/US 395/Division**	**US 395/Division**
Roadway Capacity Improvements	Grade-separated Intersections					X				
Roadway Capacity Improvements	Adding Capacity/ Widening			X		X	X			
Roadway Capacity Improvements	New or Extended Roadways		X					X		

Table 5 CMP Strategies for Tier 1 Corridors

SRTC CMP Strategy Matrix										
Toolkit Category	**Toolkit Strategy**	**SR 291/Francis**	**US 2 -A**	**Sullivan**	**I-90 Central**	**I-90 East**	**Argonne/Mullan**	**Freya/Thor/Greene**	**US 2/US 395/Division**	**US 395/Division**
Regional CMP Strategies										
Travel Demand Management	Universal Transit Access Pass Program	x	x	x	x	x	x	x	x	x
Travel Demand Management	Promotion of a Regional Commuter Benefit	x	x	x	x	x	x	x	x	x
Travel Demand Management	Public Education Campaigns	x	x	x	x	x	x	x	x	x
Operational Improvements, ITS, TSM	Support ITS solutions integrated with the traffic management center	x	x	x	x	x	x	x	x	x
Transit Operational Improvements	Transit Vehicle Travel Information	x	x	x	x	x	x	x	x	x

Table 6 CMP Strategies for Regional Implementation

Step 7—Program and Implementation Strategies

Another requirement of the CMP is to develop an implementation strategy. The purpose is twofold; first to move strategies forward and second to ensure the TIP and MTP are in compliance with the CMP. In order to accomplish this, before major projects can receive federal funding jurisdictions must submit a

Call for Projects application to SRTC. New congestion and CMP scoring criteria was recommended to be added to the current application for Surface Transportation Project (STP) and the Congestion Management Air Quality (CMAQ) applications, see Table 7. The reasoning behind this revised scoring is to include more scoring opportunities for projects that aim to mitigate congestion and projects that are located on CMP corridors. This will provide incentives to incorporate recommended CMP strategies into projects and to assist in furthering the implementation of CMP strategies by giving them additional scoring in the competitive project selection processes.

Application Questions	Points Possible
6a. Please describe current congested conditions and the future projected levels of congestion after project implementation. Explain the method used.	0-5
6b. Identify where congestion occurs ☐ Tier 1 CMP Corridor ☐ Tier 2 CMP Corridor ☐ Other Roadway Bottleneck	 5 4 3
6c. Does this CMP Corridor project utilize the following CMP strategies? ☐ Travel Demand Management ☐ Operational/Transit Improvements ☐ Freight/Capacity Improvement Strategies	 5 4 3

Table 7 Call for Projects Application Congestion Management Questions

The revised application requires applicants to fill in more information about their project to better inform the committees and the SRTC Policy Board on what projects will provide the most benefit to the region.

To address compliance with the TIP, a separate decision tree process was created, called the CMP/TIP Compliance Process (see Figure 4). This process will ensure that any project that appears in the SRTC TIP has gone through a least-cost planning process and a justification process if the project significantly increases the SOV carrying capacity of roadways. This process would require that alternative strategies be analyzed and, in most instances, a Roadway Capacity Justification Report be conducted before significant capacity-increasing projects are approved for Federal funding. The Roadway Capacity Justification Report would be reviewed by members of the CMP Working Group and approved by the SRTC Board before such a project could move forward. As mentioned earlier, this CMP review process is required in TMAs that are designated as a non-attainment or maintenance zones for ozone or carbon monoxide.

Definitions for terms in the process:

***SOVCAP (Single Occupancy Vehicle Capacity Adding Project)** – a transportation project which significantly increases the carrying capacity of a roadway. In areas that are in non-attainment/maintenance zones for air quality, a SOVCAP may not receive federal funding unless consistency with the regional CMP has been demonstrated.

Exempt from this definition, are realignments which replace rather than supplement previous roadways for through traffic, turning lanes, acceleration/deceleration lanes, climbing lanes, bridge replacements, widening without adding new travel lanes, and facilities that are primarily for use by modes other than SOVs (such as bus lanes, HOV lanes, and bicycle and pedestrian facilities).

Safety Projects: There is a wide range of strategies and projects for improving safety on public roadways, which can include geometric improvements and intersection improvements that may result in adding roadway capacity, though many small capital projects and policy programs are also used to improve safety on a corridor. Projects that are funded through a safety program are considered safety projects. If not funded through safety program, a project statement must demonstrate how the project will improve safety and be accepted by the CMP Working Group.

*****Bottleneck Projects**: A bottleneck is a localized section of highway or principal arterial that experiences reduced speeds and inherent delays due to a recurring operational influence or a nonrecurring impacting event; a bottleneck is distinguished from "congestion" because it occurs on a subordinate segment of a parent facility, and not pervasively along the entire facility. Increasing capacity on a short section of roadway is one of many available methods for combating bottlenecks, along with a variety of operational and demand management strategies. A project statement must indicate the location of the bottleneck, how the project will improve a bottleneck and be accepted by the CMP Working Group.

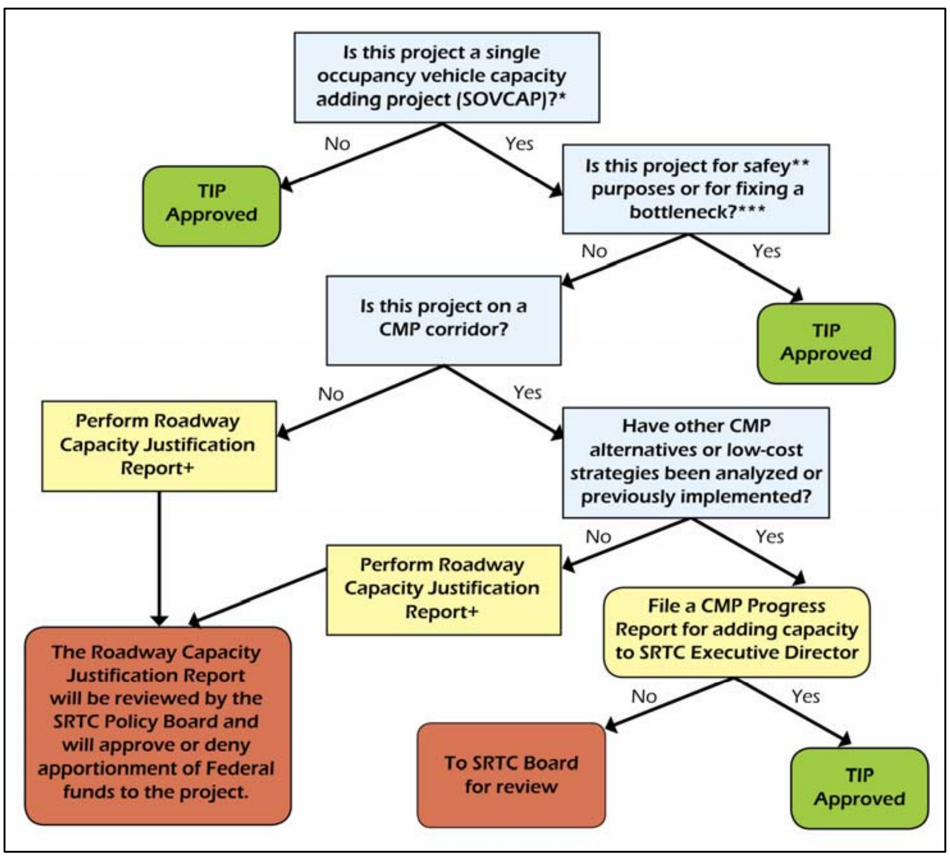

Figure 4 CMP/TIP Compliance Process

+Prior to adding significant SOV capacity on regionally significant roadways, a Roadway Capacity Justification Report shall be performed unless previously determined the project is a safety or bottleneck project. Analysis must demonstrate that travel demand reduction and operational management strategies alone cannot fully satisfy the need for additional capacity in the corridor and additional SOV capacity is warranted, as stated in 23 CFR 450.230 (d) & (e). All SOVCAP projects must include demand management or operational strategies to prevent future congestion.

The last item to address is inclusion of projects in the MTP. SRTC is currently drafting a prioritization process known as the Horizon 2040 Implementation Toolkit. This toolkit is expected to be complete before the next update of the MTP. Until that time, the CMP/TIP Compliance Process (if need be) can be utilized, however the Roadway Capacity Justification Report will not be expected to be as robust since it will be based on long-range forecasting instead of current and near term conditions.

Step 8—Evaluate Effective Strategies

The formal adoption of the CMP by the SRTC Policy Board on December 11, 2014, further guarantees SRTC staff will annually monitor developments on CMP corridors with the adopted performance measures and evaluate the effectiveness of CMP strategies that are implemented in these corridors. A complete list of the performance measures can be found in Step 3 and a detailed inventory of these performance measures are located in Appendix B. The CMP Working Group will continue to collaborate and meet quarterly or on an as needed basis and stay updated on system performance, corridor conditions, strategies and roadways capacity justification reports.

List of Appendices

A. Congestion Management Process Corridor Profiles
B. Congestion Management Process Performance Measure Analysis
C. Congestion Management Process Toolkit Strategies
D. Tier One Corridor Strategies
E. SRTC Board Approval/Meeting Minutes