600 NE Grand Ave.
Portland, OR 97232-2736
www.oregonmetro.gov

Metro | *Agenda*

2018 REGIONAL TRANSPORTATION PLAN UPDATE

RTP Performance Work Group - Meeting # 3

Date: June 27, 2016
Time: 2-4p.m.
Place: Metro Regional Center, Room 401
600 NE Grand Avenue, Portland, OR 97232

Working together across interests and communities can help ensure every person and business in the Portland metropolitan region has access to safe, reliable and affordable ways to get around. Find out more at ***oregonmetro.gov/rtp****.*

Agenda items

2:00	**Welcome & introductions**	Kim Ellis
2:05	**Partner Updates** *Who have you talked to about this work? What have you heard?*	Everyone
2:15	**Review Agenda & Brief Update on 2018 RTP**	Kim Ellis
2:20	**Continued review of Climate Smart and 2014 RTP performance** - *Locations meeting interim mobility policy* - *2040 mode shares*	John Mermin / Research Center Staff
2:40	**Discuss potential refinements to measures for 2018 RTP**	John Mermin
3:55	**Next steps**	John Mermin
4:00	**Adjourn**	

Meeting Packet	Next Meeting
• Agenda • Summary from April 25 meeting • Schedule for RTP measure refinement discussion • Considerations for congestion and reliability memo • Non-drive alone mode share in Regional Centers table	**Tuesday, September 12, 2016** RTP Performance Work Group Meeting # 4 2:30 – 4:30 pm, Room 401, Metro

Directions, travel options and parking information
Covered bike racks are located on the north plaza and inside the Irving Street visitor garage. Metro Regional Center is on TriMet bus line 6 and the streetcar, and just a few blocks from the Rose Quarter Transit Center, two MAX stations and several other bus lines. Visit our website for more information: http://www.oregonmetro.gov/metro-regional-center

600 NE Grand Ave.
Portland, OR 97232-2736
503-797-1700
503-797-1804 TDD
503-797-1797 fax
www.oregonmetro.gov

Metro | *Meeting Summary*

Performance Work Group Meeting #2
April 25, 2016, 2:00 to 4:00 PM
Metro Regional Center, Room 401

Committee Members Present:

Name	Affiliation
Abbot Flatt	Clackamas County
Kelly Rodgers	Confluence Planning
Dan Riordan	Forest Grove
Kelly Clarke	Gresham
Don Odermott	Hillsboro
Karla Kingsley	Kittleson & Associates Inc.
Ken Lobeck	Metro
Jessica Berry	Multnomah County
Bill Holstrom	Oregon Dept of Land Conservation & Development
Jon Makler	Oregon Dept of Transportation
Phil Healy	Port of Portland, TPAC
Peter Hurley	City of Portland, TPAC
Lynda David	Southwest Washington RTC, TPAC
Chris Rall	Transportation 4 America
Eric Hesse	TriMet
Steve Kelley	Washington County
Steve Adams	Wilsonville
Denny Egner	Milwaukie

Metro Staff Present
John Mermin
Kim Ellis
Cindy Pederson
Jeff Frkonja
Lake McTighe

Others Present
Nick Kobel

Meeting Overview

- John Mermin provided an overview of the agenda. He noted that Todd Juhasz from the City of Beaverton was a new member.
- He asked if there were any concerns being voiced from leadership or colleagues about the work thus far. No concerns were raised. John asked that to please let Metro staff know as soon as possible if there were concerns.

Review Performance Measures Scoping Report

John Mermin provided an overview of the content of the report and summarized major changes in the Scoping Report based on feedback such as:

- Recommending that work group provides guidance for how locals should apply Interim Mobility Policy
- Note that mobility policies are being discussed across the country and that California has passed legislation not to use auto volume/capacity, but to use VMT instead.
- Clarifying that workgroup will make some recommendations in coordination with other work groups
- Adding in reference to Clean Air Act monitoring requirements
- Updating Virginia DOT Best Practice
- Clarifying how our process influences the next round of Regional Flexible Funding Criteria (in two years) rather than the one currently underway
- Adding a task to update definitions in RTP relating to performance measurement

Work Group member comments:

- Not clear in the report how well that some of the PM are working and why or why not. More examples would be helpful. Staff noted that an upcoming report Transportation for America on performance measures would provide some additional information, and that a simplified matrix could be provided for TPAC at some point.
- For the mobility policy, jurisdictions would like whatever is adopted to also be used as the standard for development because it currently is different.
- Performance measures showing regional averages are challenging because different areas are not developed at the same level or have the same travel options. PMs for smaller geographies would be helpful. Staff noted that there are ongoing discussions, for example, of developing different mode share targets for different parts of the region. Staff also noted that smaller geographies was one impetus for the Mobility Corridors. It is challenging to provide system monitoring every two years, and there is a desire to use collected/observed data rather than modeled data.
- Member noted that a north-south mobility corridor west of 217 was needed. Staff explained that would be part of the monitoring discussion in 2017.
- While the region needs to be sensitive to the variability of different areas, this also needs to be done right. For example, if you assess PMs differently you may also need to develop different targets for different areas.
- Report is well done.
- Will there be increased discussion around equity? For example, if we look at congested VMT/capita, will we look at “which per capita?” is being impacted

Jon Makler, ODOT Region 1 Planning Manager, provided an update on the Region 1 Highway Performance Project (see pg. 14 of the Scoping Report for brief description of the project)

- Lainie Smith, who was managing the project, has retired.
- Some work group members had not heard about the project. A presentation was given to TPAC a few months ago.
- Process, so far, has been to brainstorm alternative measures and try out various scenarios in different test areas.
- Working with CH2M and have developed a preliminary safety PM. It will not be limited to freeways – would also apply to surface streets.
- Developing alternative PMs to volume/capacity (for the Portland region) and getting it adopted by the OTC will be a challenge. Concern about implications of having a different PM for the region, compared to the rest of the state.
- Focus of the project is currently on developing safety performance measure(s).
- Measure being considered: Relationship of the 95th percentile queue from an exit ramp terminal to the deceleration portion of that ramp, which is measured from the gore point. A short title might be "Exit Ramp Queue Length" and the criterion might be phrased as, "Does the 95th percentile queue extend into the deceleration portion of the exit ramp?" The deceleration portion is a function of assumed speed on the mainline. The metric can be evaluated empirically and can also be observed in simulation results but not in the regional travel demand model. It is only applicable at a freeway interchange; ODOT is also working on the analogous measure for an arterial intersection.
- FHWA webinars on congestion provide helpful information.
- Member noted that it is difficult to model congestion impacts of smaller projects that demonstrate a positive cost-benefit ratio for developers.
- Member noted that changing to VMT, as seen in California, is proving to be much simpler than modeling congestion.

Recap of April 22 Regional Leadership Forum & Regional Transportation Snapshot Next Steps

Kim Ellis provided an overview of the Regional Snapshot, now on Metro's website, and the April 22 Regional Leadership Forum

Work Group member comments:

- Attended the leadership forum and appreciated that there was big thinking and not being constrained by funding, but didn't hear any of the speakers/report backs talk about projects. Kim responded that that was on purpose – the idea was to get leaders thinking about big issues and possible big solutions, and then, later down the line, have them determine how to transform those big ideas into policies and projects. John Mermin also noted that another purpose of the forum was to bring in new community and business leaders (beyond the "usual suspects") to the table and engage them so they can help inform and shape the policy direction that will guide updating the RTP project list and investment priorities in 2017.
- Question about the data in the snapshot for number of trucks over the Columbia River. Staff noted that the data used in the snapshot was from ODOT.

Review of 2014 RTP and Climate Smart Strategy performance with adopted Performance targets

Cindy Pederson, Principal Researcher and Modeler in Metro's Research Center, provided an overview presentation of findings from preliminary modeling of the different scenarios. She provided background on the assumptions of the model and outcomes (see PPT). Jeff Frkonja noted that it is important to keep in mind the distinction between forecast/modeled data and observed/collected data.

Work Group member comments:

- Excited to see hourly breakdowns to better understand what is occurring throughout the day and to what degree that the peak period is spreading.
- Clarification that the "strategic" scenario is what is also referred to as the "state" scenario in the 2014 RTP.
- When will the regional system modeling show congestion not on just on one link and use the Dynamic Traffic Assignment? It is challenging to validate and target investments when only some parts of the system are shown as congested. Staff replied that the Dynamic Traffic Assignment model will not be used in the 2018 RTP and that work continues to transition to the regional activity-based model called DASH.
- When will Metro be using an Activity Based Model? Not in 2018 RTP. Staff will start to work with it, get training, and evaluate it before determining application in the coming year.
- Are we falling short of our targets, even though the adopted Climate Smart Strategy demonstrated we were meeting GHG targets? Staff responded that the analysis tool used in the climate smart effort, Green Step, was developed specifically to test GHG emissions reductions. The analysis presented today is based on an analysis using the regional travel demand model, which accounts for different factors GreenSTEP.
- Do we not have the right measures, or are we not capable of meeting our targets. What does it take to actually meet the targets? It would be helpful to test what it would take as we develop the PMs and targets. Staff responded that they would report back at the next meeting on what type of analysis could be conducted within the timeline and resources.
- We need to ask how aspirational should we be when setting our targets?
- It is important when we set targets or goals not to be limited by the data or tools used to measure them.
- How we report the data sometimes takes more effort than developing it because the message is so important.
- The current scenarios do not show a high return on investment for transit. How does GreenStep differ? Staff responded that Green Step and the Climate Smart Strategy analysis showed significant economic benefits associated with health, safety, household and business cost savings, etc. The RTP scenarios do show an increase in transit use, though not meeting the target to triple transit mode share. Staff reminded the work group that tripling mode share is one of several aspirational targets in the current RTP being reported today and shouldn't be looked at in isolation. The purpose of the work group to look carefully at the targets and PMs to recommend adjustments.

Next Steps

John Mermin provided next steps and adjourned the meeting.

Next steps relating to transportation modeling:

- Continue documenting 2014 RTP system performance data
- Begin review of draft Federal performance rule
- Explore new ways to measure congestion
    - Consider new definitions/thresholds
    - Take advantage of the 24 1-hour assignments
- Develop system reliability measure(s)

Next Steps for work group:

- Next meeting June 27, 2pm
    - Begin discussion of refinements to measures

- Continue to keep your colleagues informed of this work

Meeting summary prepared by Lake McTighe

Meeting materials:

Item	Topic	Document Date	Description
1	Agenda	04/25/16	Meeting Agenda
2	Performance Measures Scoping Report	04/25/16	Background report providing context to inform a focused review and refinement of performance measures and targets as part of 2018 RTP update
3	February 22 Performance work group meeting summary	04/25/16	Summary of meetings for first Performance work group meeting

RTP Performance work group - schedule for measure refinement discussion June 20, 2016

Note – 2016 discussions will focus on what measures should be included in RTP. Policy discussions of potential targets to be set for each measure will be held in 2017

I. Performance work group review (June & September)

A. Measures Recommended to be retained to inform target setting in 2017

- **Climate change** - Transportation-related greenhouse gas emissions per capita.
- **Auto Travel** - Vehicle miles traveled per person (total and per capita)
- **Bike travel** - Bicycle miles traveled (total and per capita)
- **Motor vehicle travel times** - Between key origin-destinations for mid-day and 2-hr PM peak
- **Trail Accessibility** - Number and percent of HH within ½ mile of a regional trail

B. Measures recommended to be retained (with minor adjustments) to inform target setting in 2017

- **Mode Share** - System wide for walking, biking and transit, Non-SOV% targets by 2040 design type, by mobility corridor and for central city and individual regional centers
- **Habitat impact** - Number and percent of projects that intersect high value habitat

C. Measures recommend for further discussion & refinement

- **Congestion** - Vehicle hours of delay* per person *(*defined in RTP as time accrued in congested conditions (V/C > 0.9)*
- **Interim Regional Mobility Policy** - Locations that exceed LOS threshold

II. Performance work group review of recommendations from other work groups (October)

Safety work group

- **Safety** - Fatal & severe crashes for ped, bike, motorists

Transit work group

- **Access to daily needs** - Number of essential destinations accessible within 30 minutes by bicycling & public transit for low-income, minority, senior and disabled populations
- **Transit productivity** - Boarding rides per revenue hour for HCT & bus
- **Transit travel times** - Between key origin-destinations for mid-day and 2-hr PM peak
- **Transit mode share** - Region wide share of trips by transit

Freight work group

- **Freight reliability** - Hours of delay per truck trip
- **Cost of freight delay** - Total cost of delay on freight network

Equity work group

- **Basic infrastructure** - Miles of (regional networks) of sidewalk, bikeways, and trails
- **Clean air** - Exposure to at risk levels of air pollution, e.g. CO , ozone, PM-10
- **Affordability** - Combined cost of housing and transportation
- **Access to daily needs** - Number of essential destinations accessible within 30 minutes by bicycling & public transit for low-income, minority, senior and disabled populations

III. Other measures required from MAP-21, not recommended for further refinement

- **Pavement, bridge & transit asset measures** – % of pavement in good condition on Interstate and non-Interstate NHS system

600 NE Grand Ave.
Portland, OR 97232-2736
www.oregonmetro.gov

Metro | *Memo*

Date: June 20, 2016
To: RTP Performance work group and interested parties
From: John Mermin, Regional Planner
Subject: 2018 RTP Performance Measures – considerations for congestion and reliability

Purpose

Provide the RTP Performance work group with background to inform refining regional measures for congestion and reliability.

Background

The transportation planning field has seen a shift away from its past emphasis on congestion measures such as level-of-service (LOS), defined as motor vehicle volumes divided by capacity (V/C), and delay (time spent in congested LOS conditions). Most notably, the State of California[1] has officially stopped using LOS for transportation decision-making and has moved to vehicle miles traveled and other measures. There is growing recognition that a more reliable / predictable system is a more realistic and desirable goal than an uncongested system.

The Federal Highway Administration (FHWA) reports[2] that only 40% of congestion is due to bottlenecks and increased traffic volumes. The rest is caused by less predictable factors such as crashes, weather conditions and construction. These unpredictable factors impact the reliability of the street and highway network. Performance measures that can show the day-to-day variability in travel times on the system (for all modes), would be most valuable.

Common critiques of relying on congestion as a primary performance measure include:

- More congested systems are correlated with strong economies. e. g. San Francisco Bay area, Seattle, Boston, New York, Washington D.C, Austin, etc.
- Metrics that set unrealistic "free-flow" speeds as the goal for peak travel periods are misguided, since free-flow speeds do not maximize the movement of people. Free flow speeds require increased spacing between vehicles, whereas 70% of the free-flow speed is generally considered to allow maximum throughput.
- Congestion metrics such as travel-time indices (comparing the peak to off-peak travel times) are biased toward sprawling regions with higher average speeds during peak hours but longer travel times due to larger average trip distances.
- Congestion measures often directly conflict with other goals of a region, by ignoring travelers using modes other than driving, undervaluing investments to support travel by

[1] https://www.opr.ca.gov/s_sb743.php
[2] http://www.ops.fhwa.dot.gov/congestion_report/executive_summary.htm#measure

other modes (e.g., transit, biking, walking), discouraging infill development and encouraging costly road expansion solutions.

Despite these critiques, the fact remains that most people do not enjoy spending time in traffic and our regional policymakers consider "addressing congestion" to be a high priority. The region's growth strategy is a key part of the region's comprehensive effort to address growing congestion by reducing travel distances (through compact development and focusing growth in downtowns and designated centers) and providing travel choices to help minimize time spent driving in traffic and meet other regional goals. **Attachment 1** provides an overview of the region's congestion management efforts as adopted in the 2014 Regional Transportation Plan (RTP). Those efforts are expected to continue to be implemented as part of the 2018 RTP.

Current RTP Policies, measures and targets relating to congestion

The Regional Transportation Plan considers congestion in several ways. One is *the interim regional mobility policy* table located in Chapter 2 (as well as the Regional Transportation Functional Plan). The table sets thresholds for acceptable levels of v/c-based congestion that vary by time of day and location within the region. When the Oregon Transportation Commission approved the policy as an amendment to the Oregon Highway Plan, the Commission indicated a desire for Metro and ODOT to move beyond traditional mobility measures (thus the "interim" nature of the policy).

ODOT and many local jurisdictions have chosen to use this policy table as a plan amendment review standard, using its thresholds to require developers to help fund local transportation projects, complicating the region's ability to revisit the interim mobility policy in the table. Furthermore, Metro has not had the staff capacity to revisit the policy. However, as part of the 2018 RTP update, Metro has committed to creating guidance for how to use the policy table, how it relates to other RTP performance targets and to clarify that freeways/state highways are of primary concern, not local facilities. This work is expected to commence in 2017.

The RTP includes two congestion performance targets (in place since 2010) in Chapter 2:

- By 2040, reduce vehicle hours of delay* per person by 10% compared to 2010 *(*Delay defined as time accrued in congested conditions (V/C>0.9)*
- By 2040, reduce vehicle hours of delay per truck trip by 10 percent compared to 2010. (This is inaccurately referred to as a *"freight reliability*")

The RTP includes the following system evaluation performance measures in Chapter 4:

- Number of miles of throughways, arterials and regional freight facilities that exceed the interim regional mobility policy (motor vehicle-based LOS thresholds in mid-day and 2 hour peak) and maps displaying these locations
- Total delay and cost of delay on the regional freight network in mid-day and PM peak periods

More work is needed to better measure congestion as part of the RTP systems' evaluation in 2017. That is the focus of the remainder of this memo.

Moving from Congestion to Reliability – questions for work group discussion

1. Does the performance work group agree that increased reliability as opposed to uncongested peak periods is the outcome that the region desires?
2. If so, what is the best way to shift towards measures that better represent reliability?
3. And, how can we measure reliability for all modes, not just driving?
4. If the work group wants the region to continue measuring congestion and/or we lack the data to truly measure reliability, then what is a good way to measure how congestion is changing when comparing performance across RTP investment strategies (e.g., 2015 Base year, 2040 No Build, 2040 Constrained, 2040 Strategic, 2040 Climate Smart Strategy)? Some examples include: the number of hours of the day that the system is full; how much congestion is increasing in the shoulder periods (on either sides of the AM and PM peak periods).

<u>Options for measuring congestion that move away from volume-to-capacity based measures</u>
Metro Research center staff have been testing different measures relating to congestion and reliability. These include analyzing the overall road network as well as the freight network with the following thresholds of congestion:

- V/C > .90
- V.C >1.0
- The interim regional mobility policy (V/C >.90, .99, or 1.1; varies by location & time)
- Speeds of 35 mph on freeways and 15 mph on non-freeways (consistent with the draft National Performance Measure in MAP-21)
- Maximum throughput speeds, defined as 70% of free-flow speed for each facility

Staff analyzed more times of day than have been used in past RTP analysis (utilizing the new modeling tool of 24 one-hour assignments). In addition to the traditional 4 to 6 p.m. and 12 to 1 p.m. time periods, staff has also included the 9 a.m. to 3 p.m., 6 a.m. to 7 p.m., and 12 a.m. to 11:59 p.m. time periods. Staff tested, but discarded the V/C>1.0 threshold.

Staff also tested these thresholds and time periods using a new measure - Congested Vehicle Miles Traveled (VMT) per capita. Congested VMT per capita is a measure used by the Sacramento MPO (SACOG) using a V/C>1.0 threshold, for its focus on the biggest bottlenecks affecting the most people for the largest amount of time, rather than viewing all delay across the region as equally problematic. Metro staff used a similar methodology as SACOG, but focused on testing the thresholds listed above.

The different options tested for measuring congestion are shown in **Attachment 2** to this memo. **Attachment 3** displays a series of volume-to-capacity maps and maps that identify locations that do not meet the region's interim mobility policy for each of the following RTP investment strategies

- 2015 Base year, 2040 No Build, 2040 Constrained, 2040 Strategic and 2040 Climate Smart Strategy.

Attachments

1. A comprehensive strategy to address growing congestion (Overview of the region's congestion management efforts) excerpted from the 2014 Regional Transportation Plan (RTP) *(June 20, 2016)*
2. Metro Research Center Staff - Explorations of congestion measures for 2018 RTP (June 20, 2016)
3. RTP Mobility Policy Maps*(June 20, 2016)*

Attachment 1. A comprehensive strategy to address growing congestion (Excerpt from 2014 Regional Transportation Plan (adopted July 17, 2014))

A comprehensive strategy to address growing congestion

Metro maintains a Congestion Management Process (CMP) for the Portland metropolitan region as required by federal law. The CMP includes a performance management system that informs needed capital investments, such as new or improved transit and road capacity as well as demand and system management strategies to improve performance of the existing infrastructure. In addition to traditional congestion management strategies, the region has developed non-traditional approaches to managing congestion to reduce the number of vehicles on roads and highways, improve traffic flow and improve travel-time reliability.

The region has developed non-traditional approaches to manage growing congestion and improve freight reliability, including the use of ITS, building transit-oriented development near transit stations and implementation of programs to increase walking, biking and carpooling.

Among the most cost-effective approaches to managing congestions and improving travel time reliability involves applications of Intelligent Transportation Systems (ITS). Examples of ITS include traffic signal synchronization, ramp meters, weigh-in motion transponders for commercial truck traffic, real-time road condition data, and global positioning systems that coordinate signal timing for commercial traffic and transit vehicles.[48]ITS alone cannot solve congestion problems, but they can provide relatively low-cost support to other management strategies and strategic road and transit capacity investments.[49]

Figure 1.15 shows where some of these strategies are currently being applied in the region.

Other strategies and actions the region is pursuing to address congestion include:

- Implementation of a high-occupancy vehicle (HOV) lane on one section of I-5 northbound. During the evening rush hour, when the HOV rule is in effect, drivers eligible to use that travel lane are able to travel significantly faster (45 mph) than drivers traveling in the general-purpose lanes (20-25 mph). The effects of this HOV lane are limited by bottlenecks at either end of the HOV lane section – most notably the Columbia River Crossing Bridge on the north end.

- Improved incident detection and clearance times on highways and arterials. Instituting best practices, including "move over" laws, quick clearance techniques, real-time traveler information, and scene safety measures.

[48] *Metro*, A Profile of Regional Roadway System in the Portland Metropolitan Region, 2007, p. 2.
[49] Ibid, p. 4.

- Building transit-oriented development (TOD)—mixed-use, higher density developments near transit stations to encourage transit use.

- Regional Travel Options (RTO) program to reduce drive-alone travel. Over the past 10 years, the RTO program has worked with large employers in the region to help them comply with the Employee Commute Options (ECO) rule by implementing transportation demand management (TDM) strategies. The RTO program also provided technical assistance to Transportation Management Associations (TMAs) in the region, including the Lloyd District TMA, Westside Transportation Alliance and Swan Island TMA; operated the Metro VanPool program, and operated Carpool MatchNW. **Figure 1.16** shows where demand management efforts are occurring in the region.

- Employer Outreach programs to encourage large employers to promote transit use in their workforce.

- Public education efforts to promote trip reduction. For example, in February 2006 the Oregon Department of Transportation (ODOT), Metro, TriMet, City of Vancouver and other public and private partners launched the Drive Less/Save More Campaign, to reduce drive-alone car trips that are not related to work. Such trips constitute more than two-thirds of drive-alone travel.[50]

- Consideration of peak-period pricing as a tool for managing congestion in the region's busiest travel corridors. The Traffic Relief Options Study (1999) led to a new regional policy in 2000 that requires that new highway capacity projects be evaluated for potential benefits of peak-period pricing as a tool for managing long-term mobility.

- Adoption of local parking management plans in centers and station communities and developing tools at the regional level to assist with their development.

- Promotion of walking, bicycling and transit use. Many cities in the region are helping residents learn about their choices. The City of Portland is currently running an individualized marketing project, "Smart Trips."Safe Routes to School Program activities in the region. This federally-funded program provides funding for engineering, safety education, enforcement and encouragement strategies to increase the number of students walking or bicycling to school. These strategies help reduce congestion, particularly around schools, and increase physical activity. The National Highway Transportation Administration estimates between 20-25 percent of morning rush hour traffic is due to parents driving their children to school.[51]

[50] http://www.drivelesssavemore.com
[51] http://www.saferoutesinfo.org/ask_a_question/answer.cfm?id=435. Accessed December 10, 2007.

Attachment 1. A comprehensive strategy to address growing congestion (Excerpt from 2014 Regional Transportation Plan (adopted July 17, 2014))

RTP scenarios results point to an integrated solution for managing congestion

The transportation system plays a crucial role in sustaining economic health of the region and the state of Oregon. Unmitigated congestion and delay will compromise the economy in the future. As a global trade gateway and domestic hub for commerce and tourism, the region must expand current efforts to address growing congestion, particularly on the region's mobility corridors. Business and consumer needs are expected to double the amount of goods moved on the region's waterways, runways, railways, and roadways over the next 30 years. The continued economic health of our region and state depends on effectively serving growing transportation needs of business by providing reliable highway and arterial access to gateway and hub facilities as well as on preserving the beauty and livability of the region that attracts industry and a high-quality labor pool.

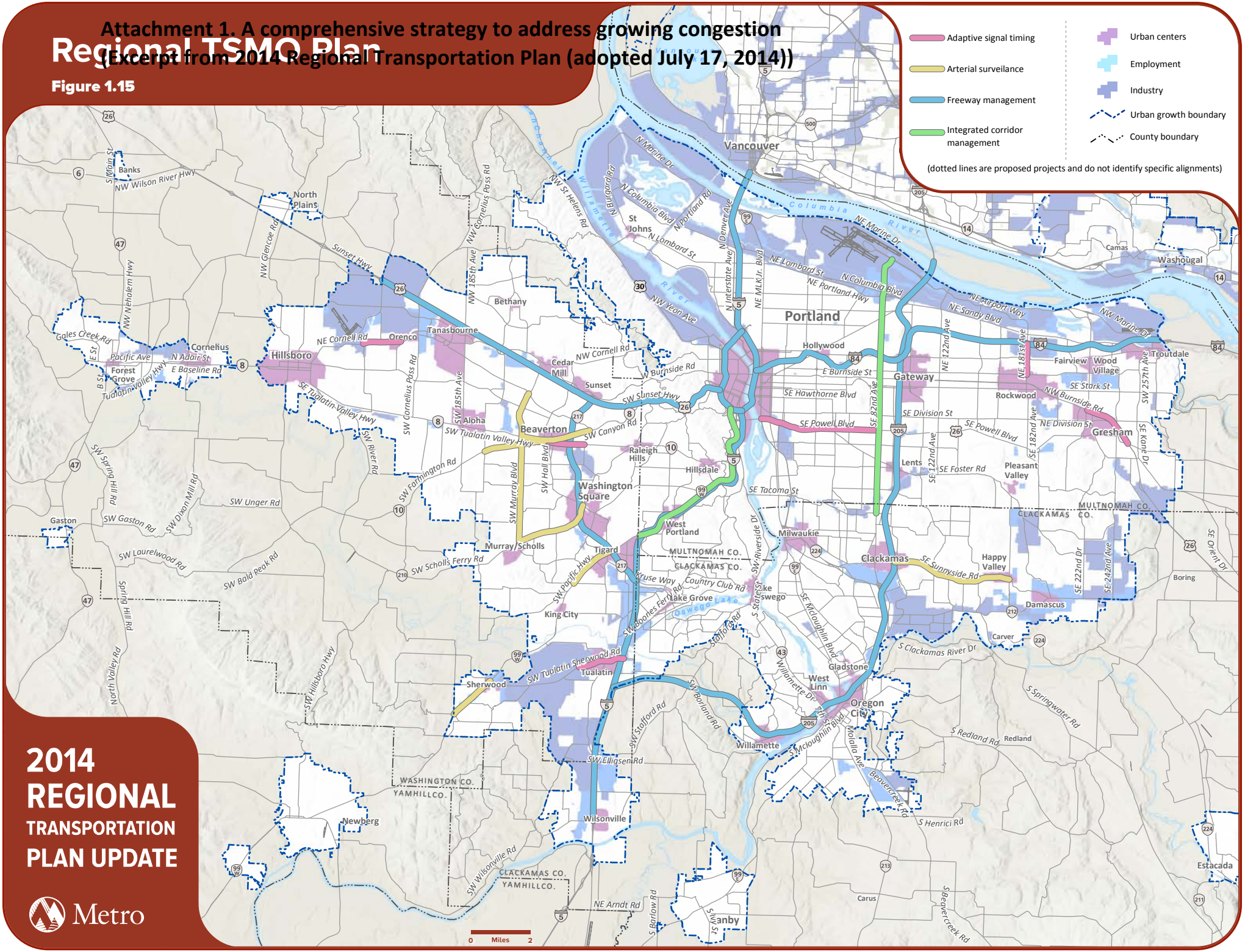
The results of the scenarios analysis support a growing body of research that suggest adding road capacity alone is not a sustainable solution to congestion. Rather, a coordinated strategy that links land use and transportation decisions, provides targeted road and highway improvements along with high quality transit service, better transportation options, and system management shows greater promise in mitigating congestion and delay into the future.

The region must pinpoint the most critical locations to mitigate roadway congestion and delay to enhance freight mobility and access to industrial areas and intermodal facilities. These strategic investments must allow us to move goods and people in ways that support our livability, economy, and environment. The region must also expand current system and demand management efforts to help preserve highway capacity for longer distance goods movement and person trips. Potential new strategies include congestion pricing, high-occupancy vehicle lanes, managed travel lanes and freight-only lanes. More evaluation of these strategies is needed to better understand their effect on the region's parallel arterials, low-income households and land use patterns to ensure any unintended consequences are identified and addressed in design and implementation.

Finally, land-use planning and environmental considerations must be integrated into transportation decisions to ensure that needed highway projects solve existing problems rather than inducing demand from outside the region and generating a new set of problems.

Attachment 1. A comprehensive strategy to address growing congestion
(Excerpt from 2014 Regional Transportation Plan (adopted July 17, 2014))

Regional TSMO Plan
Figure 1.15



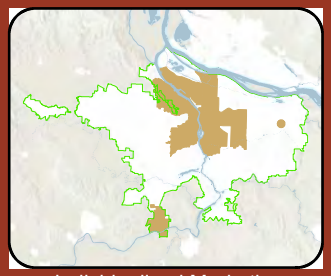
2014 REGIONAL TRANSPORTATION PLAN UPDATE

Metro

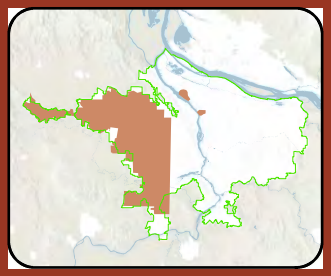
Attachment 1. A comprehensive strategy to address growing congestion

Transportation Demand Management System

Figure 1.16



Individualized Marketing



TMA

Vanpool routes
Rail & frequent bus service
Individualized marketing
TMA_Merge
TMA
HOV lane
County boundary
Urban growth boundary

Participating Employers
More
Fewer

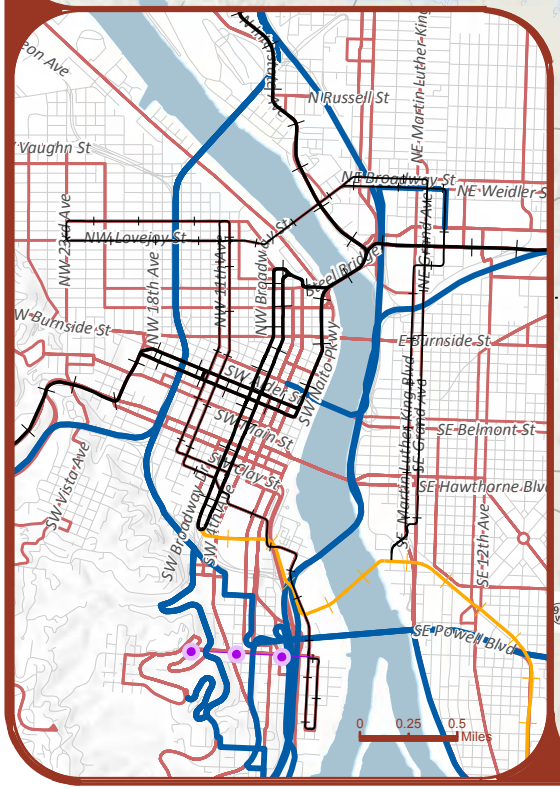
Safe Routes to School Participants - 108

Car Share Vehicles - 1,146

Participating Employers - 2,698

Vancouver
Portland
Hillsboro
Beaverton
Tigard
Tualatin
Sherwood
Forest Grove
Cornelius
Gaston
Banks
North Plains
Bethany
Tanasbourne
Orenco
Cedar Mill
Sunset
Aloha
Raleigh Hills
Hillsdale
Washington Square
West Portland
Murray/Scholls
King City
Lake Grove
Lake Oswego
Milwaukie
Clackamas
Happy Valley
Damascus
Gladstone
Oregon City
Willamette
Wilsonville
Central City
Hollywood
Gateway
Fairview
Wood Village
Troutdale
Rockwood
Gresham
Lents
Pleasant Valley

0 2.5 5 Miles



2014 REGIONAL TRANSPORTATION PLAN UPDATE

Metro

Attachment 2. Metro Research Center Staff - Exploration of congestion measures for 2018 RTP

This information is for discussion purposes and does not necessarily reflect current or future policy decisions of the Metro Council. The information is subject to change pending final modeling and analysis in 2017.

6/20/2016

Demographic Data

MPA (Metropolitan Planning Area boundary)

	2015	2040
Population	1,643,305	2,136,157
Households	637,198	896,451
Employment	895,094	1,240,653

Network Miles of Congestion (MPA facilities where v/c > 0.9)

MPA

	2015	2040 NB	2040 CON	2040 STR	2040 CSC
PM2 (4pm - 6pm)	94	208	169	153	165
MD1 (12pm - 1pm)	21	79	68	58	65
Total Network Miles (Cong. + Uncong.)	5,367	5,404	5,849	5,947	5,849

Non-SOV Mode Share

MPA	2015	2040 NB	2040 CON	2040 STR	2040 CSC
	56%	56%	58%	59%	58%

Daily Trucks

MPA

	2015	2040 NB	2040 CON	2040 STR	2040 CSC
Total trucks that travel within or through the MPA	69,317	113,700	113,700	113,700	113,700
Trucks using freight network	68,471	112,352	112,276	112,289	112,283
% of total trucks using freight network	99%	99%	99%	99%	99%
Trucks using freight network and delayed (v/c > 0.9)	36,157	77,145	74,458	72,779	73,588
% of trucks using freight network delayed	53%	69%	66%	65%	66%
Trucks using freight network and delayed (MPA Mobility Policy)	27,826	67,406	62,991	61,399	61,951
% of trucks using freight network delayed	41%	60%	56%	55%	55%
Trucks using freight network and delayed (proposed NPRM speeds**)	40,117	81,073	78,065	77,432	77,797
% of trucks using freight network delayed	59%	72%	70%	69%	69%
Trucks using freight network and delayed (maximum throughput speeds***)	48,608	90,272	88,543	88,040	88,503
% of trucks using freight network delayed	71%	80%	79%	78%	79%

Congested Vehicle Miles Traveled (VMT)

MPA (delay accrued where v/c > 0.9)

		2015	2040 NB	2040 CON	2040 STR	2040 CSC
PM2 (4pm - 6pm)	Total VMT	4,247,141	5,148,621	5,212,837	5,250,419	5,184,430
	Congested VMT	510,570	986,219	919,535	825,678	894,844
	% Congested	12.0%	19.2%	17.6%	15.7%	17.3%
	per Capita	0.31	0.46	0.43	0.39	0.42
MD1 (12pm - 1pm)	Total VMT	1,742,801	2,206,311	2,206,494	2,214,255	2,193,167
	Congested VMT	53,753	236,605	220,377	182,237	211,658
	% Congested	3.1%	10.7%	10.0%	8.2%	9.7%
	per Capita	0.03	0.11	0.10	0.09	0.10
9am - 3pm	Total VMT	10,361,257	13,453,622	13,224,942	13,226,936	13,126,451
	Congested VMT	294,051	1,763,126	1,327,324	1,017,858	1,249,014
	% Congested	2.8%	13.1%	10.0%	7.7%	9.5%
	per Capita	0.18	0.83	0.62	0.48	0.58
6am - 7pm	Total VMT	24,200,833	30,321,770	30,279,607	30,384,500	30,082,049
	Congested VMT	1,666,391	4,516,482	3,872,288	3,251,321	3,729,255
	% Congested	6.9%	14.9%	12.8%	10.7%	12.4%
	per Capita	1.01	2.11	1.81	1.52	1.75
12am - 11:59pm (All day)	Total VMT	30,361,058	38,233,223	38,058,879	38,159,008	37,800,094
	Congested VMT	1,671,472	4,558,377	3,892,382	3,268,781	3,748,254
	% Congested	5.5%	11.9%	10.2%	8.6%	9.9%
	per Capita	1.02	2.13	1.82	1.53	1.75

Congested Vehicle Miles Traveled (VMT)

*MPA (delay accrued where speed is less than NPRM** proposed speeds)*

		2015	2040 NB	2040 CON	2040 STR	2040 CSC
PM2 (4pm - 6pm)	Total VMT	4,247,141	5,148,621	5,212,837	5,250,419	5,184,430
	Congested VMT	504,342	862,208	787,356	734,222	773,704
	% Congested	11.9%	16.7%	15.1%	14.0%	14.9%
	per Capita	0.31	0.40	0.37	0.34	0.36
MD1 (12pm - 1pm)	Total VMT	1,742,801	2,206,311	2,206,494	2,214,255	2,193,167
	Congested VMT	67,566	229,847	203,497	179,927	194,519
	% Congested	3.9%	10.4%	9.2%	8.1%	8.9%
	per Capita	0.04	0.11	0.10	0.08	0.09
9am - 3pm	Total VMT	10,361,257	13,453,622	13,224,942	13,226,936	13,126,451
	Congested VMT	372,107	1,610,751	1,196,185	1,009,202	1,125,305
	% Congested	3.6%	12.0%	9.0%	7.6%	8.6%
	per Capita	0.23	0.75	0.56	0.47	0.53
6am - 7pm	Total VMT	24,200,833	30,321,770	30,279,607	30,384,500	30,082,049
	Congested VMT	1,702,877	3,970,279	3,355,253	2,971,765	3,220,075
	% Congested	7.0%	13.1%	11.1%	9.8%	10.7%
	per Capita	1.04	1.86	1.57	1.39	1.51
12am - 11:59pm (All day)	Total VMT	30,361,058	38,233,223	38,058,879	38,159,008	37,800,094
	Congested VMT	1,717,391	4,024,377	3,384,017	2,999,782	3,247,226
	% Congested	5.7%	10.5%	8.9%	7.9%	8.6%
	per Capita	1.05	1.88	1.58	1.40	1.52

Congested Vehicle Miles Traveled (VMT)

MPA (delay accrued where v/c exceeds MPA Mobility Policy)

		2015	2040 NB	2040 CON	2040 STR	2040 CSC
PM2 (4pm - 6pm)	Total VMT	4,247,141	5,148,621	5,212,837	5,250,419	5,184,430
	Congested VMT	405,204	812,791	755,287	675,209	746,835
	% Congested	9.5%	15.8%	14.5%	12.9%	14.4%
	per Capita	0.25	0.38	0.35	0.32	0.35
MD1 (12pm - 1pm)	Total VMT	1,742,801	2,206,311	2,206,494	2,214,255	2,193,167
	Congested VMT	28,503	176,722	169,050	136,389	160,529
	% Congested	1.6%	8.0%	7.7%	6.2%	7.3%
	per Capita	0.02	0.08	0.08	0.06	0.08
9am - 3pm	Total VMT	10,361,257	13,453,622	13,224,942	13,226,936	13,126,451
	Congested VMT	176,964	1,413,850	1,056,386	795,976	983,676
	% Congested	1.7%	10.5%	8.0%	6.0%	7.5%
	per Capita	0.11	0.66	0.49	0.37	0.46
6am - 7pm	Total VMT	24,200,833	30,321,770	30,279,607	30,384,500	30,082,049
	Congested VMT	1,249,115	3,693,418	3,191,367	2,632,527	3,074,047
	% Congested	5.2%	12.2%	10.5%	8.7%	10.2%
	per Capita	0.76	1.73	1.49	1.23	1.44
12am - 11:59pm (All day)	Total VMT	30,361,058	38,233,223	38,058,879	38,159,008	37,800,094
	Congested VMT	1,253,350	3,732,401	3,209,965	2,648,164	3,090,976
	% Congested	4.1%	9.8%	8.4%	6.9%	8.2%
	per Capita	0.76	1.75	1.50	1.24	1.45

Congested Vehicle Miles Traveled (VMT)

MPA (delay accrued where speed is less than maximum throughput speed - defined as 70% of free flow speed)

		2015	2040 NB	2040 CON	2040 STR	2040 CSC
PM2 (4pm - 6pm)	Total VMT	4,247,141	5,148,621	5,212,837	5,250,419	5,184,430
	Congested VMT	877,496	1,586,233	1,494,620	1,430,885	1,465,449
	% Congested	20.7%	30.8%	28.7%	27.3%	28.3%
	per Capita	0.53	0.74	0.70	0.67	0.69
MD1 (12pm - 1pm)	Total VMT	1,742,801	2,206,311	2,206,494	2,214,255	2,193,167
	Congested VMT	139,682	451,874	400,363	344,798	386,896
	% Congested	8.0%	20.5%	18.1%	15.6%	17.6%
	per Capita	0.09	0.21	0.19	0.16	0.18
9am - 3pm	Total VMT	10,361,257	13,453,622	13,224,942	13,226,936	13,126,451
	Congested VMT	787,727	3,109,773	2,420,164	2,082,041	2,329,065
	% Congested	7.6%	23.1%	18.3%	15.7%	17.7%
	per Capita	0.48	1.46	1.13	0.97	1.09
6am - 7pm	Total VMT	24,200,833	30,321,770	30,279,607	30,384,500	30,082,049
	Congested VMT	3,222,975	7,599,518	6,649,556	6,044,351	6,505,650
	% Congested	13.3%	25.1%	22.0%	19.9%	21.6%
	per Capita	1.96	3.56	3.11	2.83	3.05
12am - 11:59pm (All day)	Total VMT	30,361,058	38,233,223	38,058,879	38,159,008	37,800,094
	Congested VMT	3,242,375	7,750,293	6,712,587	6,101,471	6,564,520
	% Congested	10.7%	20.3%	17.6%	16.0%	17.4%
	per Capita	1.97	3.63	3.14	2.86	3.07

****Federal Register / Vol. 81, No. 78 / Friday, April 22, 2016 / Proposed Rules / pg. 23883**
The FHWA is proposing that ''excessive delay'' occurs on Interstates, freeways, or expressways when traffic slows to below 35 mph, and on other principal arterials and all other roads included on the NHS when traffic slows to below 15 mph.

Maximum throughput speed is assumed to be 70% of free flow speed
This represents a hypothetical speed at which facility capacity is optimized, and vehicle throughput is maximized.

Attachment 2. Metro Research Center Staff - Exploration of congestion measures for 2018 RTP

Vehicle Hours of Delay (VHD) on the MPA Freight Network

MPA (delay accrued where v/c > 0.9)

		2015	2040 NB	2040 CON	2040 STR	2040 CSC
PM2 (4pm - 6pm)	Auto VHD	3,549	7,682	6,749	6,345	6,553
	Truck VHD	134	439	343	310	335
	Total VHD	3,683	8,121	7,092	6,655	6,887
	Minutes of delay per truck using Freight Network	1.35	2.69	2.10	1.90	2.05
	% of average trip accruing delay of truck using Freight Network	5.3%	9.8%	7.8%	7.1%	7.6%
MD1 (12pm - 1pm)	Auto VHD	263	1,145	926	820	877
	Truck VHD	27	153	102	91	98
	Total VHD	290	1,297	1,028	911	975
	Minutes of delay per truck using Freight Network	0.32	1.09	0.73	0.65	0.70
	% of average trip accruing delay of truck using Freight Network	1.4%	4.3%	3.0%	2.7%	2.8%
9am - 3pm	Auto VHD	1,454	11,970	6,463	5,323	5,992
	Truck VHD	151	1,251	685	585	642
	Total VHD	1,605	13,221	7,148	5,909	6,634
	Minutes of delay per truck using Freight Network	0.29	1.48	0.81	0.69	0.76
	% of average trip accruing delay of truck using Freight Network	1.3%	5.8%	3.3%	2.8%	3.1%
6am - 7pm	Auto VHD	11,340	31,847	23,754	21,302	22,802
	Truck VHD	597	2,569	1,715	1,524	1,647
	Total VHD	11,937	34,416	25,469	22,825	24,448
	Minutes of delay per truck using Freight Network	0.65	1.72	1.15	1.02	1.10
	% of average trip accruing delay of truck using Freight Network	2.8%	6.6%	4.5%	4.0%	4.3%
12am - 11:59pm	Auto VHD	11,351	32,083	23,858	21,403	22,895
(All day)	Truck VHD	598	2,576	1,718	1,526	1,649
	Total VHD	11,949	34,659	25,575	22,930	24,544
	Minutes of delay per truck using Freight Network	0.52	1.38	0.92	0.82	0.88
	% of average trip accruing delay of truck using Freight Network	2.3%	5.5%	3.7%	3.3%	3.6%

Vehicle Hours of Delay (VHD) on the MPA Freight Network

MPA (delay accrued where v/c exceeds MPA Mobility Policy)

(assumes average PM 2-Hour threshold for 6am - 9am and 3pm - 7pm and Mid-Day threshold MPA other hours)

		2015	2040 NB	2040 CON	2040 STR	2040 CSC
PM2 (4pm - 6pm)	Auto VHD	2,886	6,507	5,851	5,513	5,699
	Truck VHD	99	347	290	263	283
	Total VHD	2,985	6,854	6,141	5,775	5,982
	Minutes of delay per truck using Freight Network	1.00	2.13	1.78	1.61	1.73
	% of average trip accruing delay of truck using Freight Network	4.0%	7.7%	6.6%	6.0%	6.4%
MD1 (12pm - 1pm)	Auto VHD	176	791	637	554	600
	Truck VHD	19	101	69	63	66
	Total VHD	195	892	707	617	666
	Minutes of delay per truck using Freight Network	0.22	0.72	0.50	0.45	0.47
	% of average trip accruing delay of truck using Freight Network	1.0%	2.9%	2.0%	1.8%	1.9%
9am - 3pm	Auto VHD	1,138	9,811	5,151	4,139	4,761
	Truck VHD	116	957	532	455	497
	Total VHD	1,254	10,768	5,683	4,594	5,258
	Minutes of delay per truck using Freight Network	0.23	1.13	0.63	0.54	0.59
	% of average trip accruing delay of truck using Freight Network	1.0%	4.4%	2.5%	2.2%	2.4%
6am - 7pm	Auto VHD	9,549	27,314	20,631	18,641	19,851
	Truck VHD	475	2,053	1,429	1,282	1,373
	Total VHD	10,024	29,367	22,060	19,923	21,224
	Minutes of delay per truck using Freight Network	0.52	1.37	0.96	0.86	0.92
	% of average trip accruing delay of truck using Freight Network	2.2%	5.3%	3.8%	3.4%	3.6%
12am - 11:59pm	Auto VHD	9,557	27,519	20,719	18,731	19,931
(All day)	Truck VHD	475	2,058	1,431	1,284	1,375
	Total VHD	10,032	29,578	22,150	20,015	21,305
	Minutes of delay per truck using Freight Network	0.42	1.10	0.76	0.69	0.73
	% of average trip accruing delay of truck using Freight Network	1.8%	4.4%	3.1%	2.8%	3.0%

Vehicle Hours of Delay (VHD) on the MPA Freight Network

*MPA (delay accrued where speed is less than NPRM** proposed speeds: < 35 mph on freeways and < 15 mph on non-freeways)*

		2015	2040 NB	2040 CON	2040 STR	2040 CSC
PM2 (4pm - 6pm)	Auto VHD	4,193	8,179	7,216	6,918	7,009
	Truck VHD	153	470	347	323	338
	Total VHD	4,346	8,649	7,563	7,241	7,347
	Minutes of delay per truck using Freight Network	1.54	2.88	2.13	1.98	2.07
	% of average trip accruing delay of truck using Freight Network	6.1%	10.4%	7.9%	7.4%	7.7%
MD1 (12pm - 1pm)	Auto VHD	401	1,448	1,169	1,038	1,117
	Truck VHD	36	181	119	106	115
	Total VHD	437	1,629	1,288	1,144	1,233
	Minutes of delay per truck using Freight Network	0.42	1.30	0.85	0.76	0.82
	% of average trip accruing delay of truck using Freight Network	1.8%	5.2%	3.4%	3.1%	3.3%
9am - 3pm	Auto VHD	2,258	13,269	7,513	6,317	7,024
	Truck VHD	205	1,369	733	635	693
	Total VHD	2,463	14,637	8,246	6,952	7,717
	Minutes of delay per truck using Freight Network	0.40	1.62	0.87	0.75	0.82
	% of average trip accruing delay of truck using Freight Network	1.7%	6.3%	3.5%	3.0%	3.3%
6am - 7pm	Auto VHD	14,188	35,344	26,687	24,566	25,669
	Truck VHD	720	2,856	1,833	1,666	1,766
	Total VHD	14,907	38,200	28,520	26,232	27,434
	Minutes of delay per truck using Freight Network	0.79	1.91	1.23	1.11	1.18
	% of average trip accruing delay of truck using Freight Network	3.3%	7.3%	4.8%	4.4%	4.7%
12am - 11:59pm	Auto VHD	14,227	35,717	26,894	24,761	25,865
(All day)	Truck VHD	721	2,866	1,841	1,673	1,773
	Total VHD	14,948	38,583	28,735	26,434	27,637
	Minutes of delay per truck using Freight Network	0.63	1.53	0.98	0.89	0.95
	% of average trip accruing delay of truck using Freight Network	2.7%	6.1%	4.0%	3.7%	3.9%

Vehicle Hours of Delay (VHD) on the MPA Freight Network

MPA (delay accrued where speed is less than maximum throughput speed - defined as 70% of free flow speed)

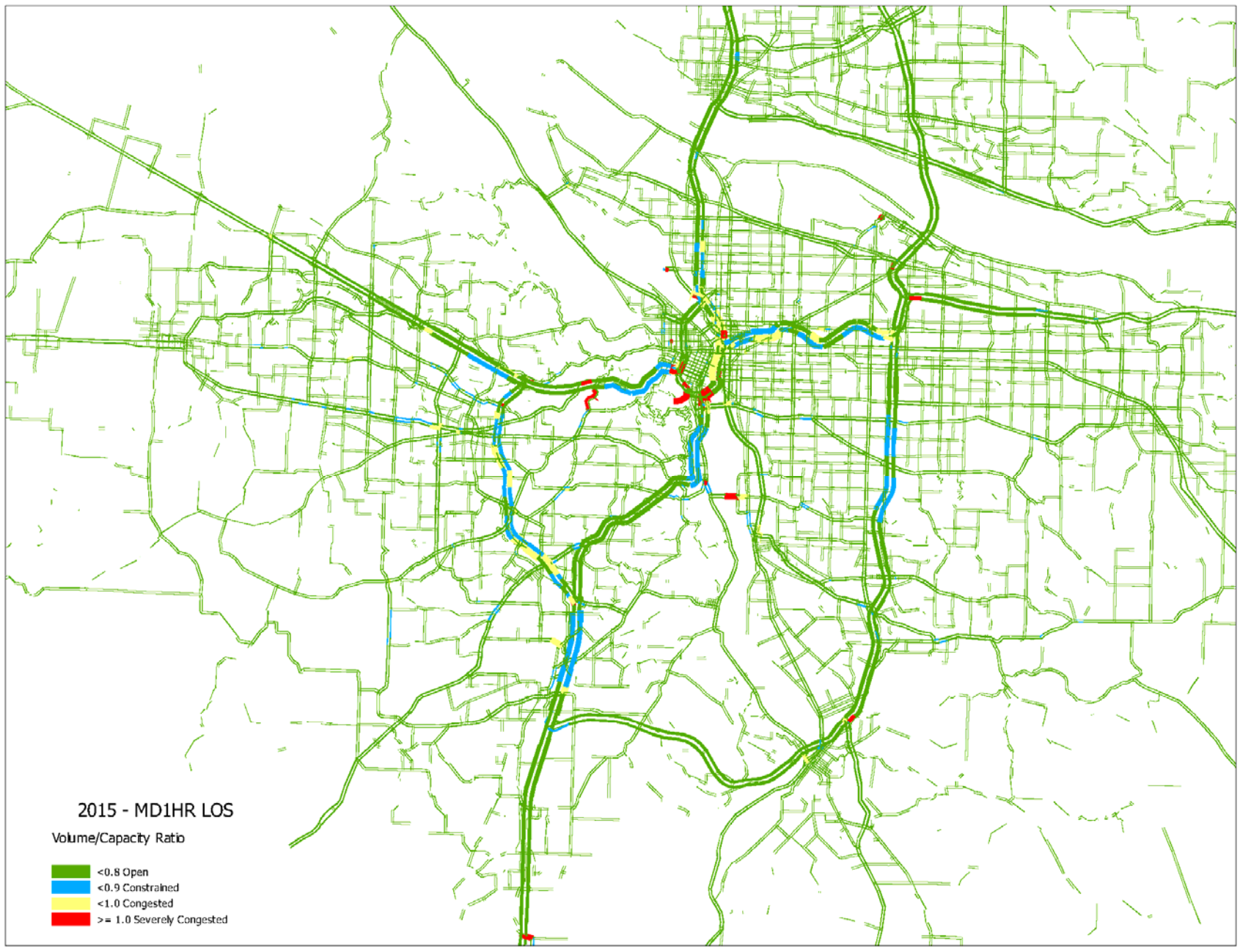
		2015	2040 NB	2040 CON	2040 STR	2040 CSC
PM2 (4pm - 6pm)	Auto VHD	7,213	14,442	12,648	12,030	12,344
	Truck VHD	217	657	534	486	523
	Total VHD	7,430	15,098	13,182	12,516	12,867
	Minutes of delay per truck using Freight Network	2.18	4.02	3.27	2.98	3.20
	% of average trip accruing delay of truck using Freight Network	8.7%	14.6%	12.1%	11.1%	11.9%
MD1 (12pm - 1pm)	Auto VHD	706	2,628	2,149	1,935	2,066
	Truck VHD	47	265	192	169	186
	Total VHD	752	2,892	2,341	2,104	2,252
	Minutes of delay per truck using Freight Network	0.55	1.89	1.38	1.21	1.33
	% of average trip accruing delay of truck using Freight Network	2.4%	7.5%	5.6%	4.9%	5.4%
9am - 3pm	Auto VHD	4,159	22,625	14,041	12,002	13,269
	Truck VHD	273	1,984	1,227	1,047	1,165
	Total VHD	4,432	24,608	15,268	13,048	14,434
	Minutes of delay per truck using Freight Network	0.53	2.35	1.45	1.24	1.38
	% of average trip accruing delay of truck using Freight Network	2.3%	9.2%	5.8%	5.0%	5.6%
6am - 7pm	Auto VHD	24,600	62,686	48,778	44,867	47,175
	Truck VHD	995	4,094	2,943	2,624	2,843
	Total VHD	25,595	66,780	51,721	47,492	50,018
	Minutes of delay per truck using Freight Network	1.09	2.74	1.97	1.76	1.90
	% of average trip accruing delay of truck using Freight Network	4.6%	10.5%	7.7%	6.9%	7.5%
12am - 11:59pm	Auto VHD	24,696	63,722	49,301	45,311	47,670
(All day)	Truck VHD	996	4,111	2,952	2,632	2,852
	Total VHD	25,692	67,834	52,253	47,943	50,522
	Minutes of delay per truck using Freight Network	1.09	2.75	1.97	1.76	1.91
	% of average trip accruing delay of truck using Freight Network	4.7%	11.0%	8.1%	7.2%	7.8%

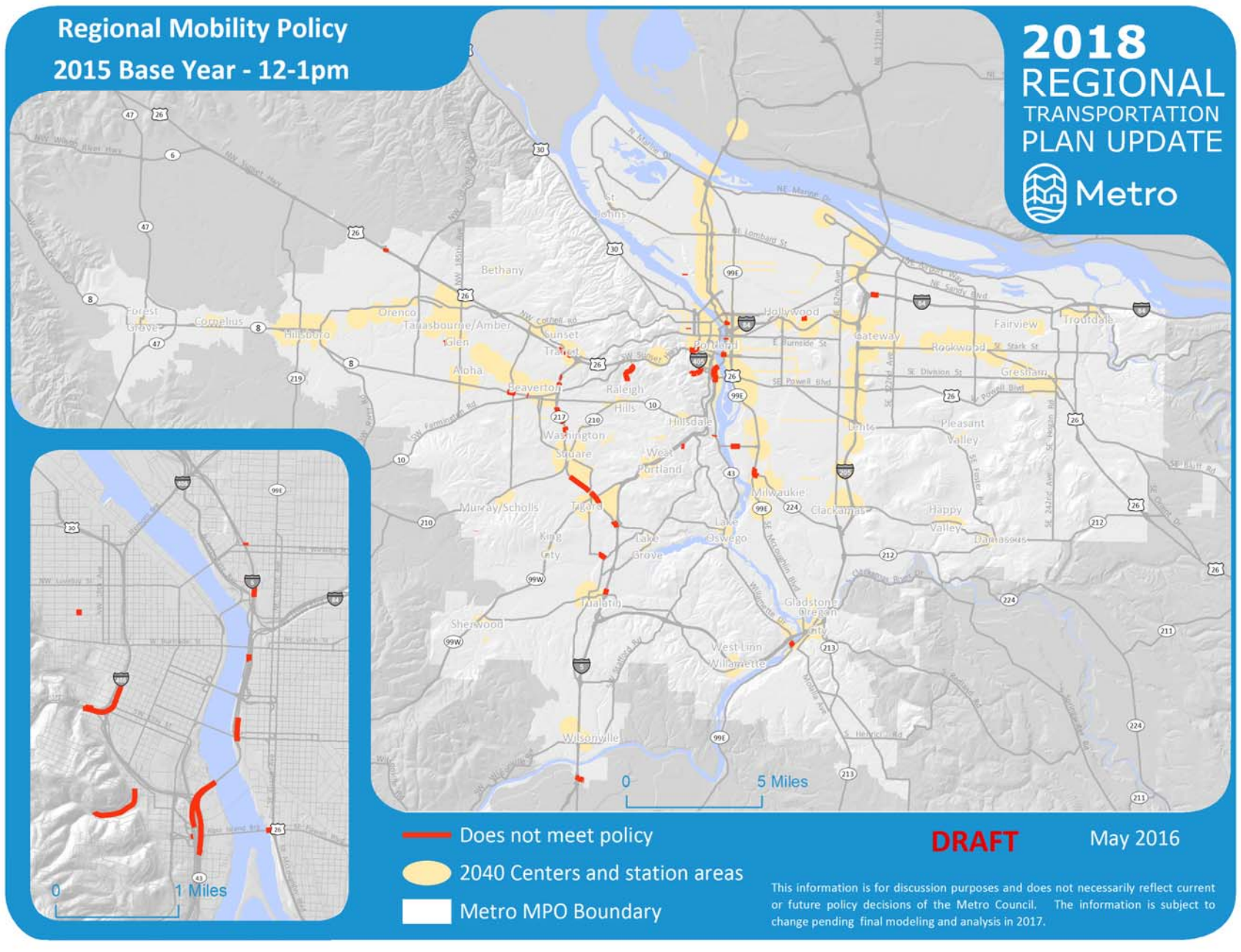
June 20, 2016

2018 REGIONAL TRANSPORTATION PLAN UPDATE

STREETS AND HIGHWAYS - System performance

2015 12-1pm





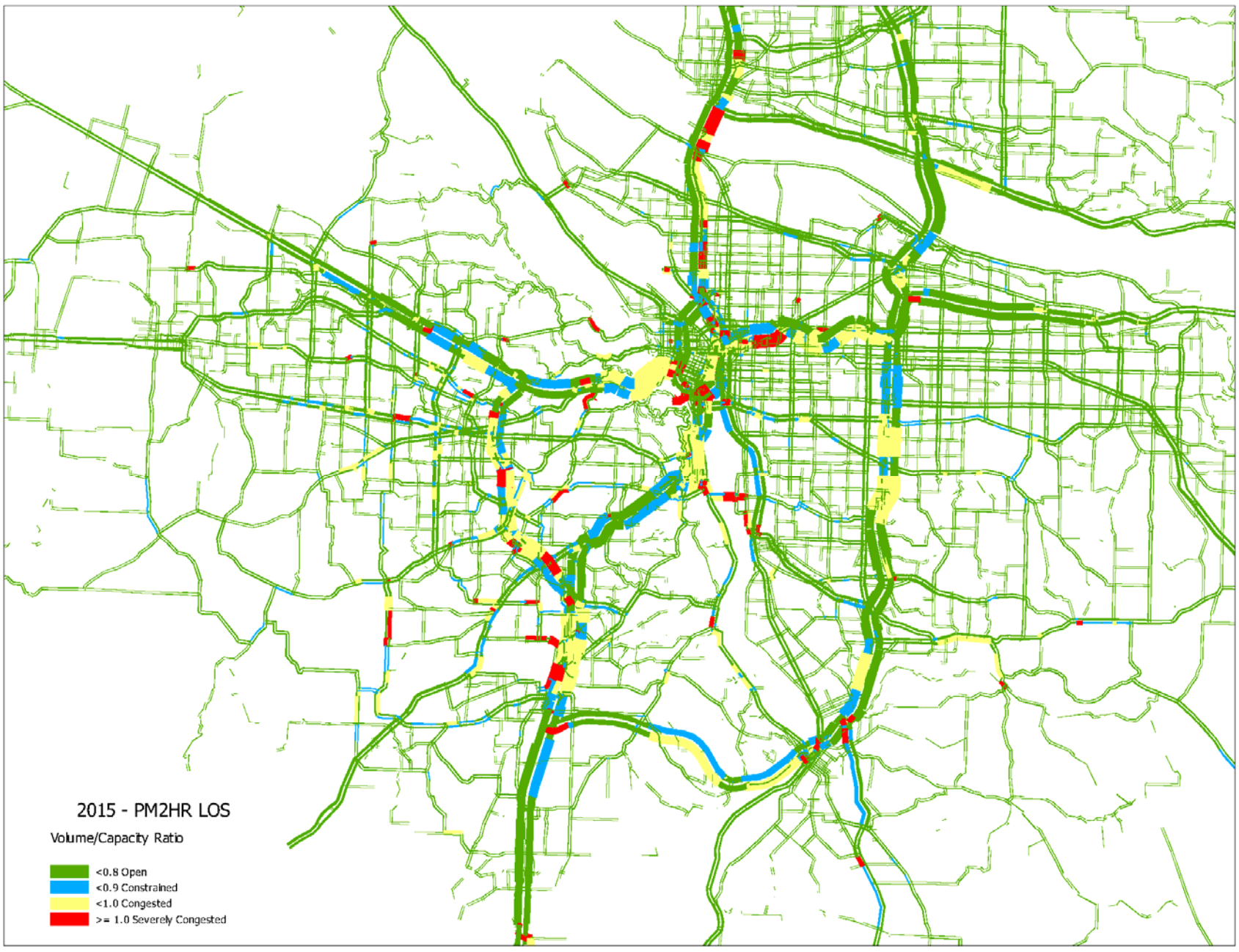
This information is for discussion purposes and does not necessarily reflect current or future policy decisions of the Metro Council. The information is subject to change pending final modeling and analysis in 2017.

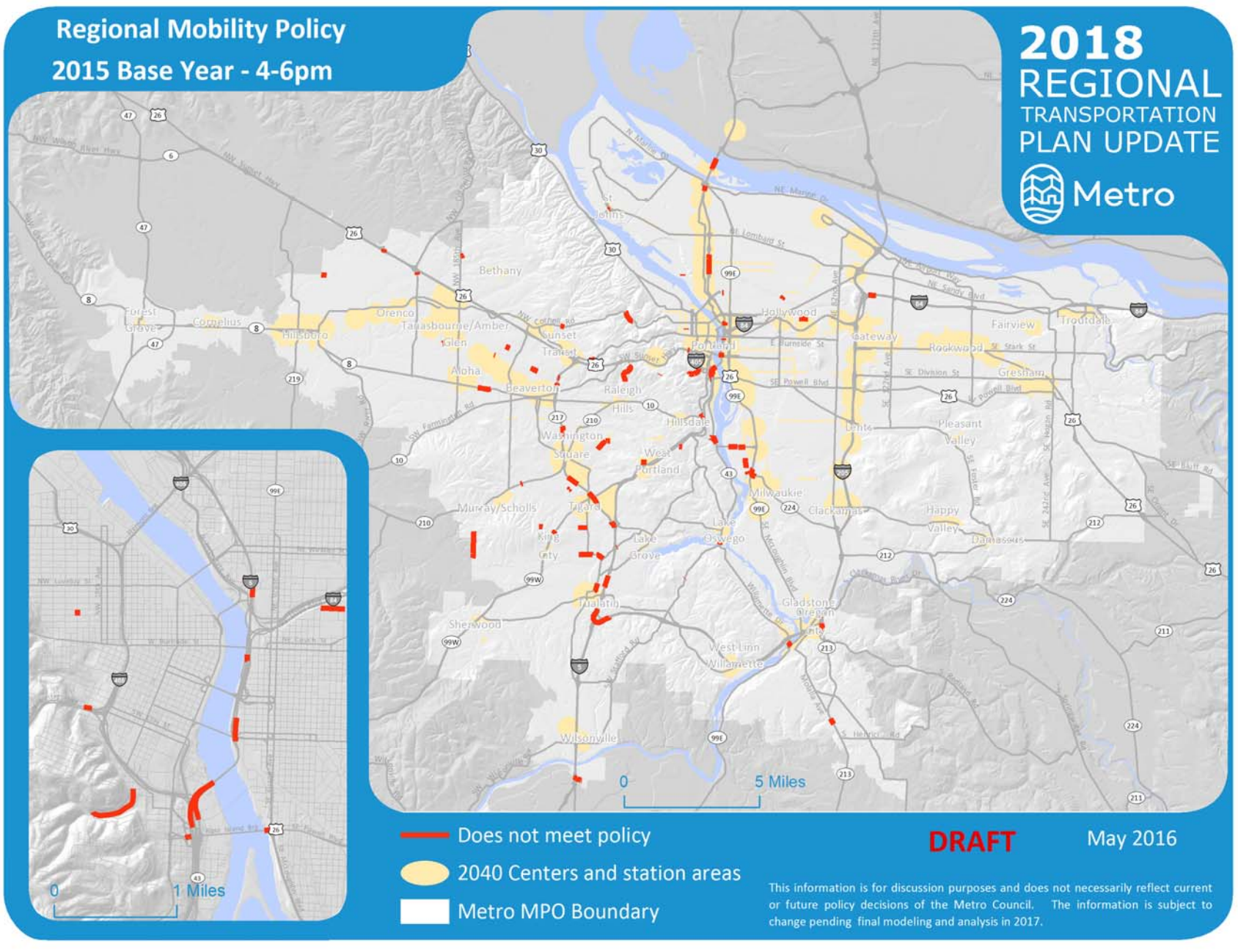
June 20, 2016

2018 REGIONAL TRANSPORTATION PLAN UPDATE

STREETS AND HIGHWAYS - System performance

2015 4-6pm





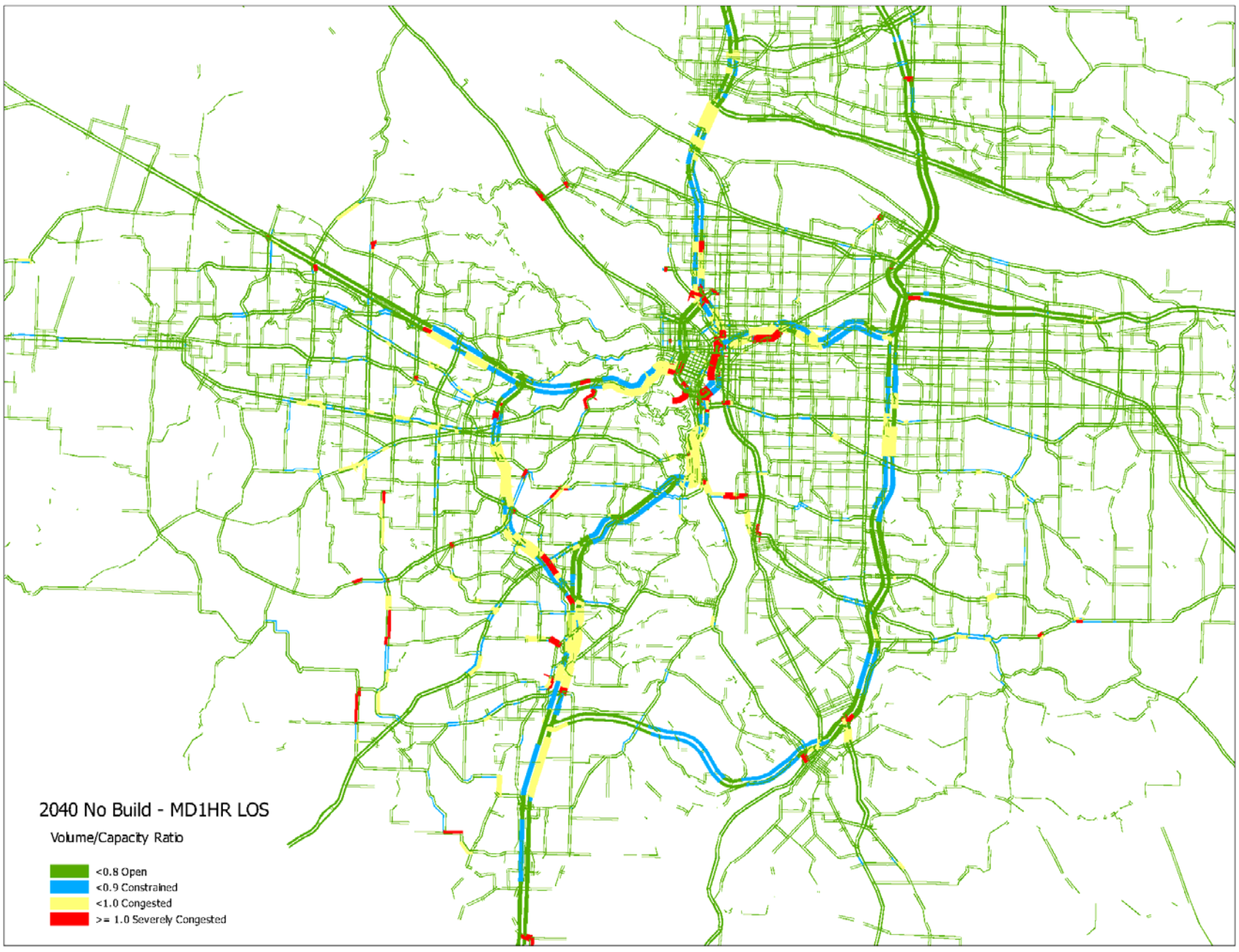
This information is for discussion purposes and does not necessarily reflect current or future policy decisions of the Metro Council. The information is subject to change pending final modeling and analysis in 2017.

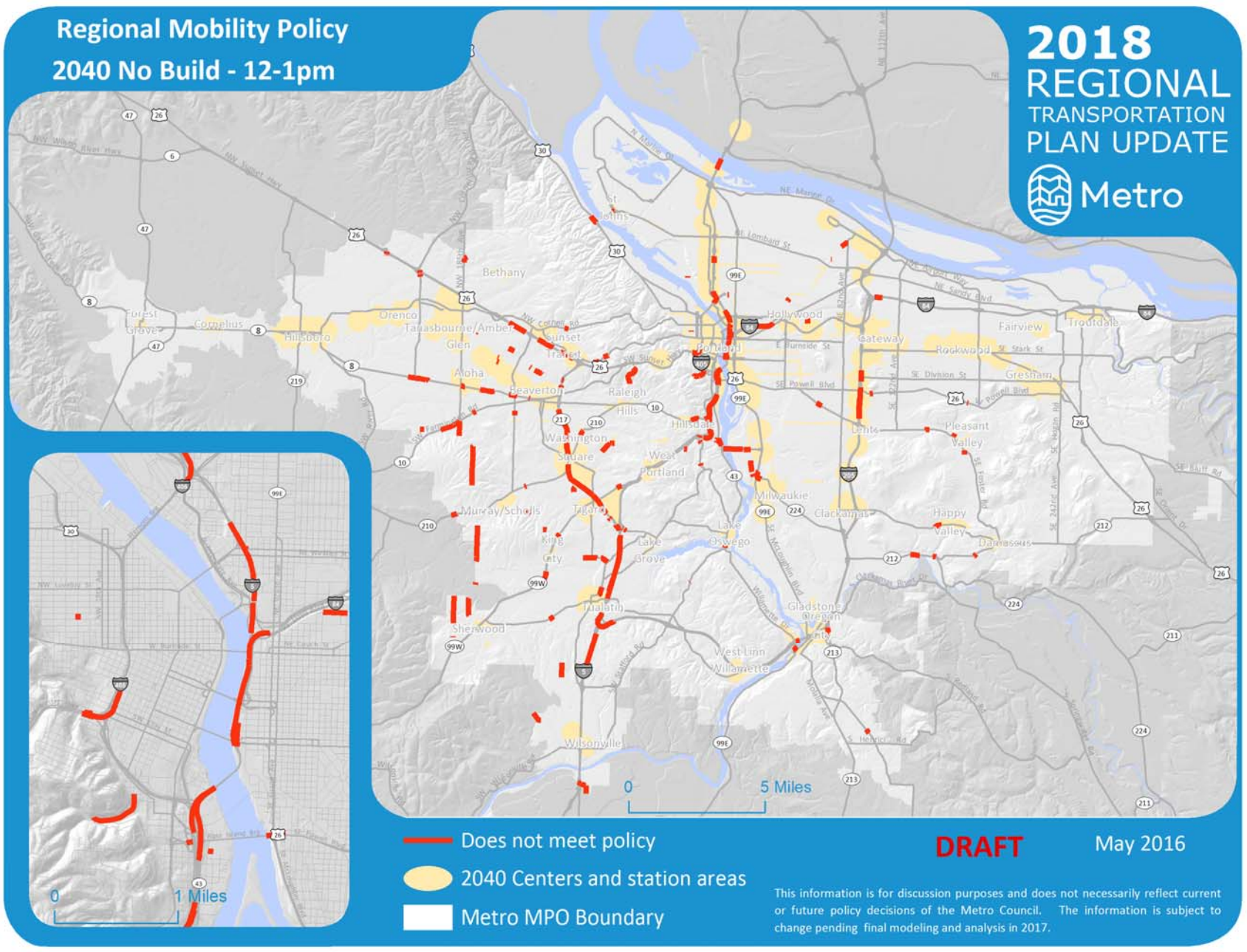
June 20, 2016

2018 REGIONAL TRANSPORTATION PLAN UPDATE

STREETS AND HIGHWAYS - System performance

2040 NO BUILD 12-1pm





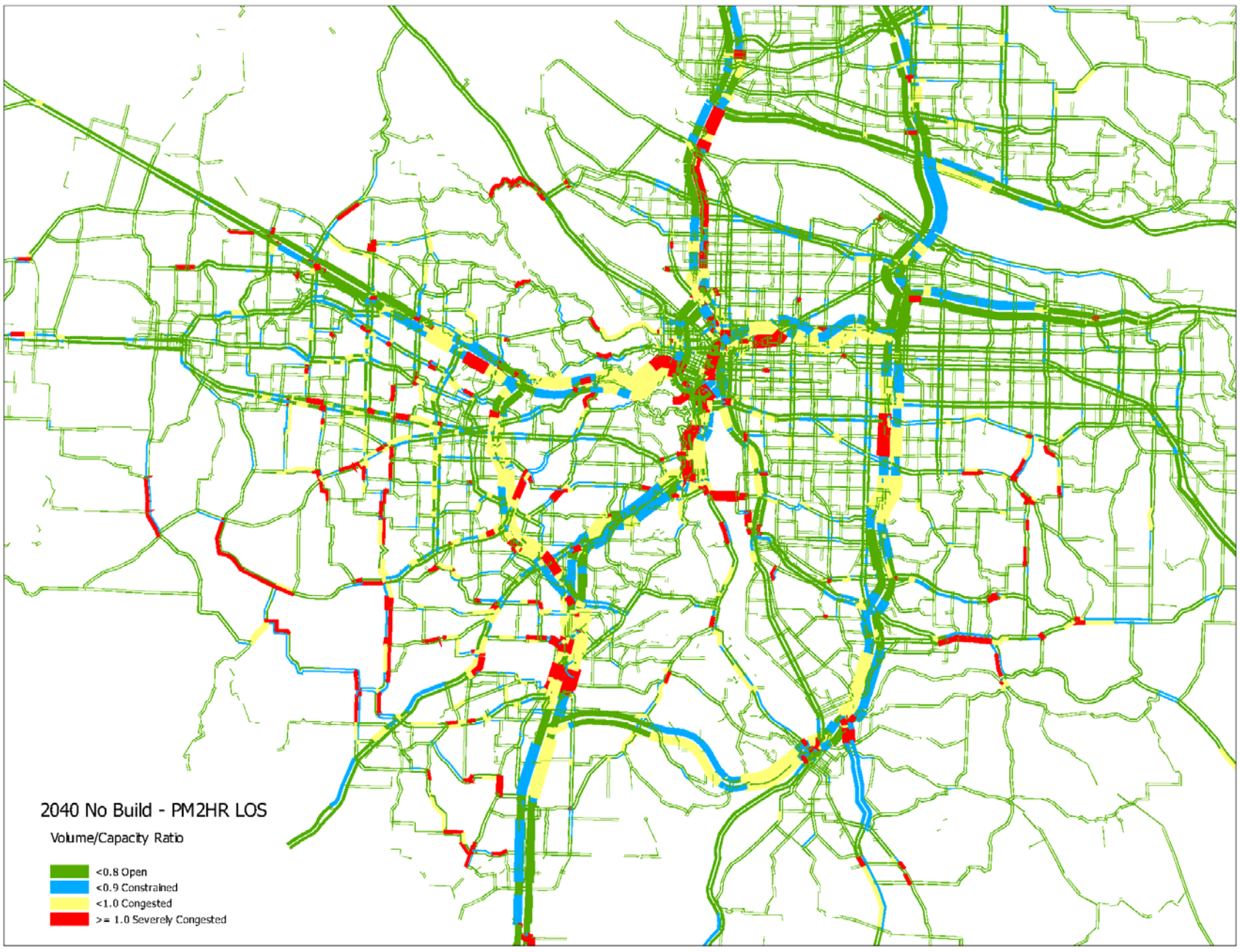
This information is for discussion purposes and does not necessarily reflect current or future policy decisions of the Metro Council. The information is subject to change pending final modeling and analysis in 2017.

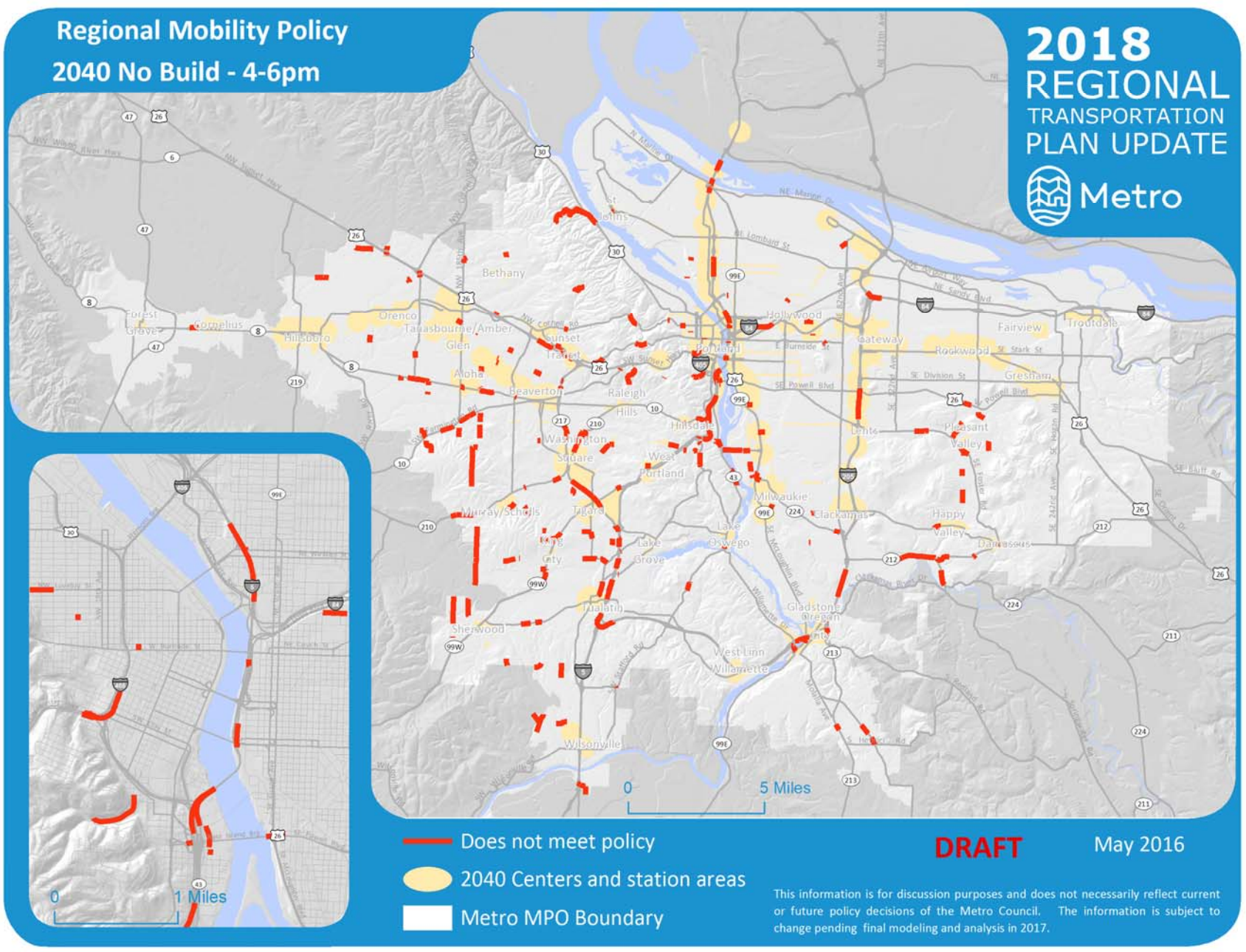
June 20, 2016

2018 REGIONAL TRANSPORTATION PLAN UPDATE

STREETS AND HIGHWAYS - System performance

2040 NO BUILD 4-6pm





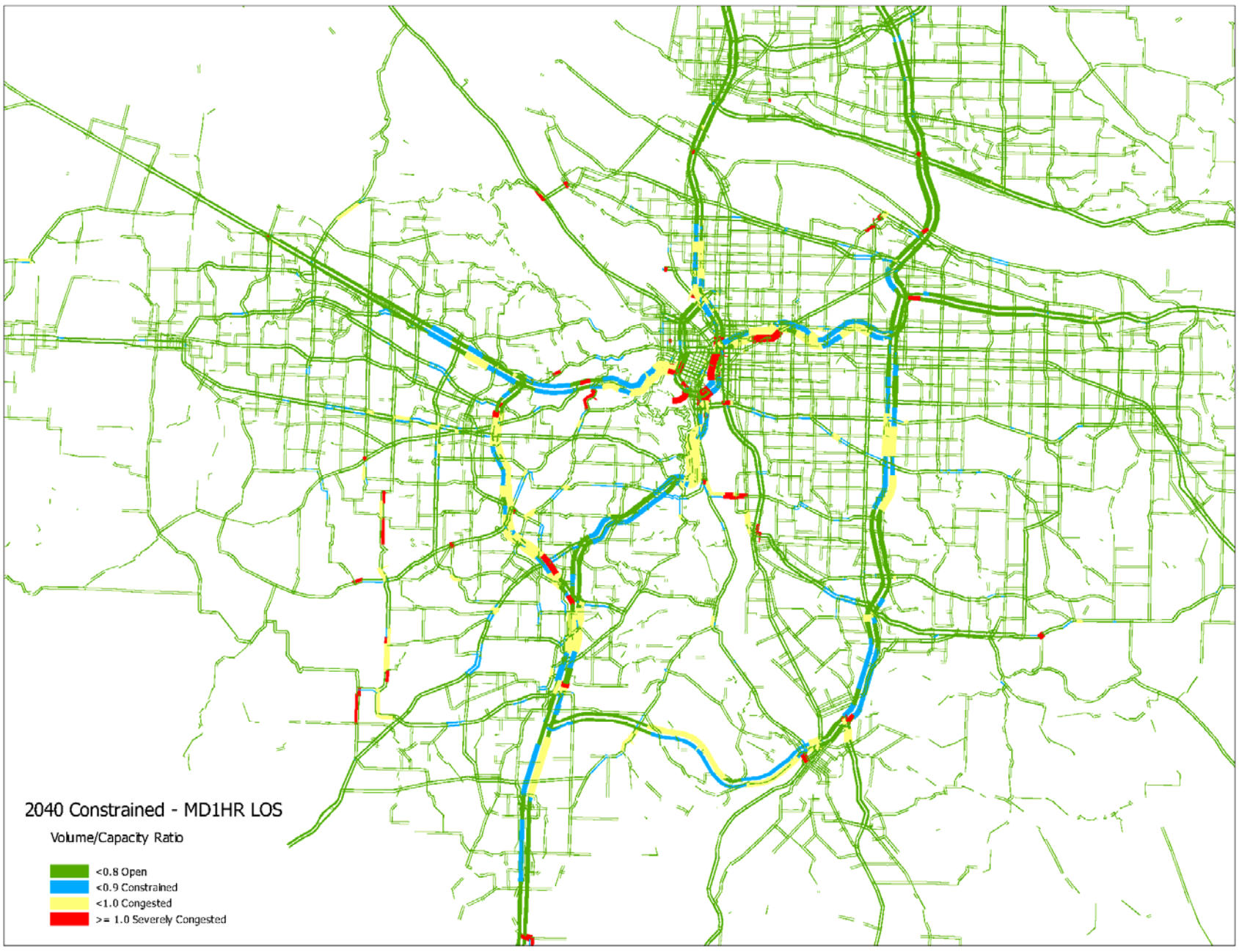
This information is for discussion purposes and does not necessarily reflect current or future policy decisions of the Metro Council. The information is subject to change pending final modeling and analysis in 2017.

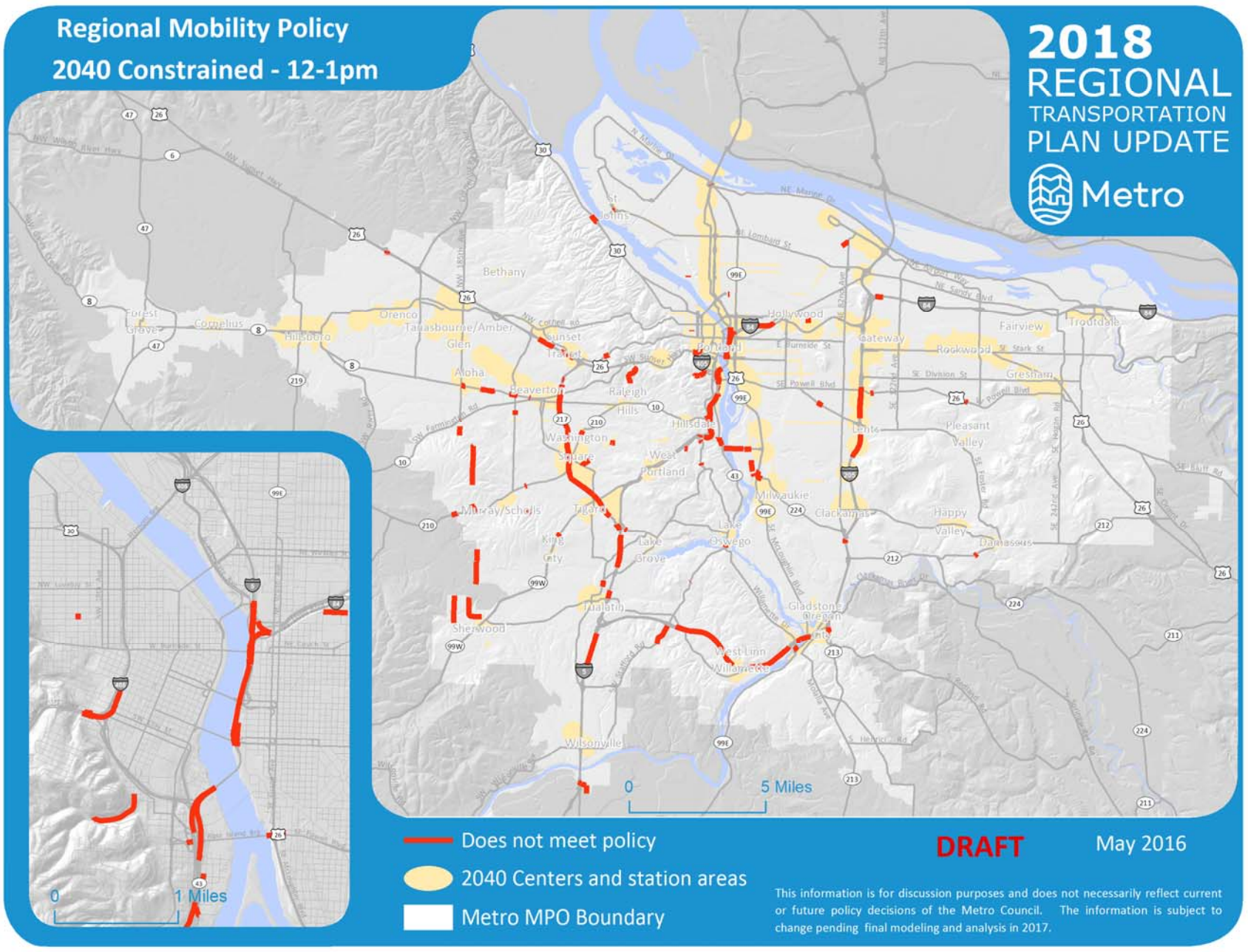
June 20, 2016

2018 REGIONAL TRANSPORTATION PLAN UPDATE

STREETS AND HIGHWAYS - System performance

2040 CONSTRAINED 12-1pm





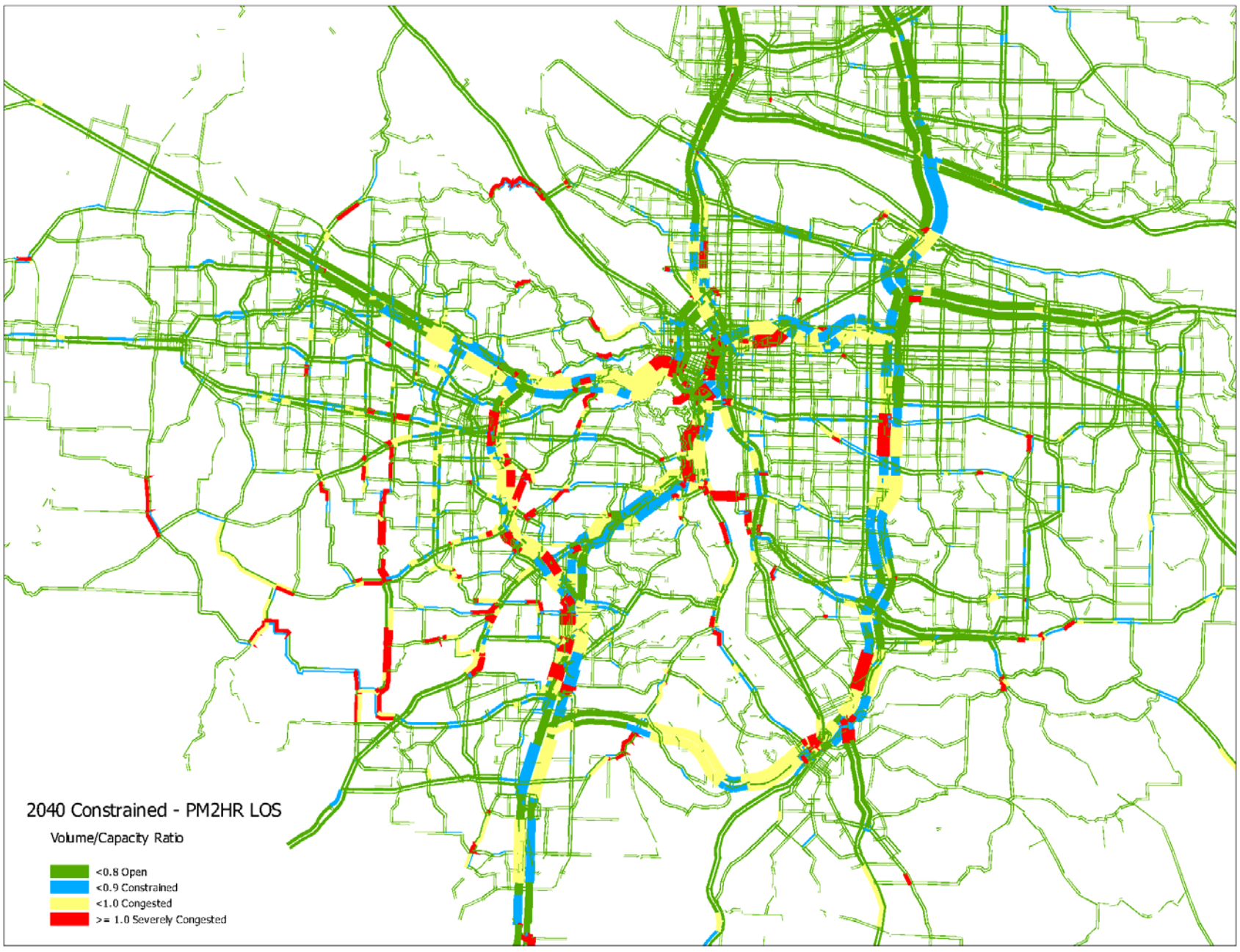
This information is for discussion purposes and does not necessarily reflect current or future policy decisions of the Metro Council. The information is subject to change pending final modeling and analysis in 2017.

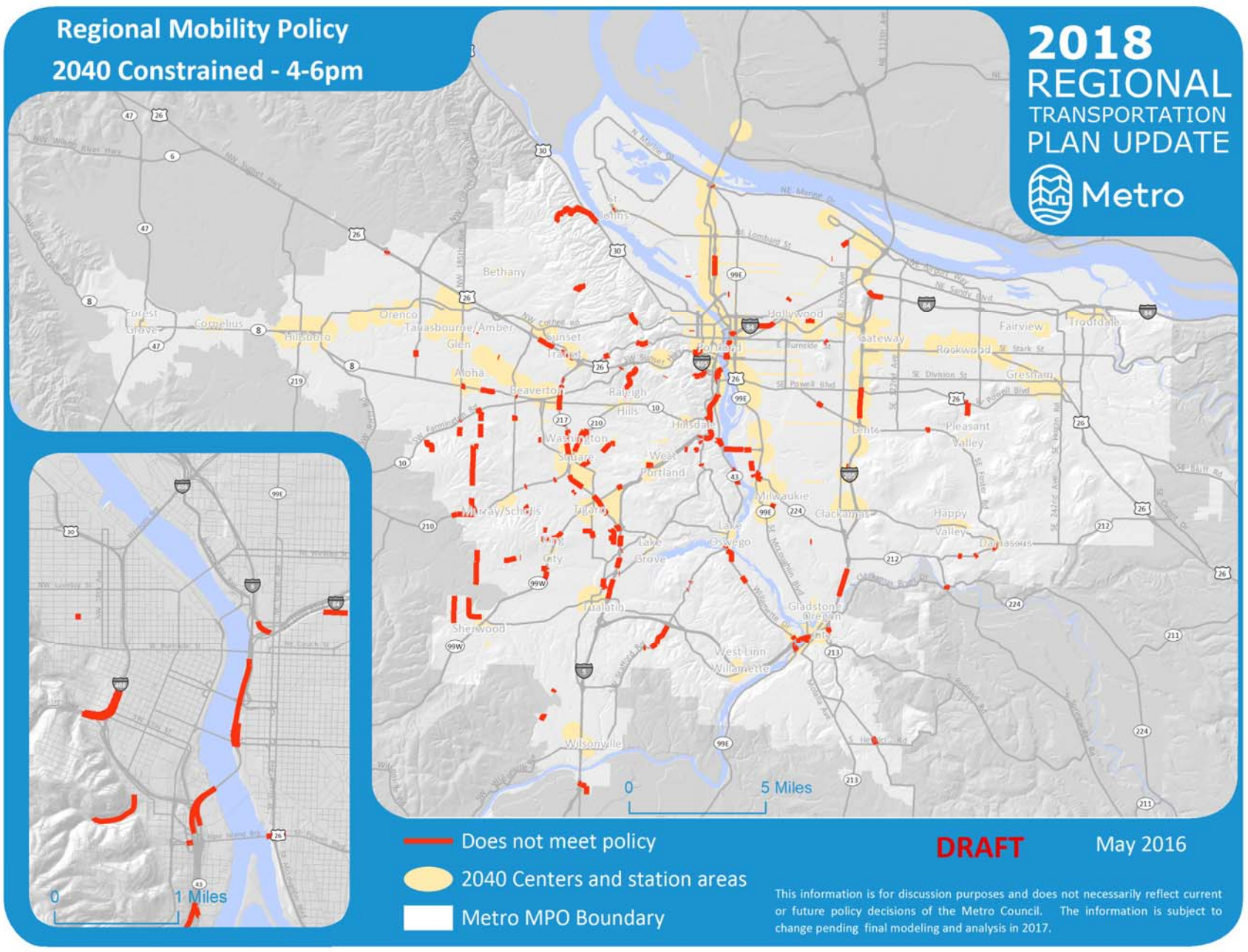
June 20, 2016

2018 REGIONAL TRANSPORTATION PLAN UPDATE

STREETS AND HIGHWAYS - System performance

2040 CONSTRAINED 4-6pm





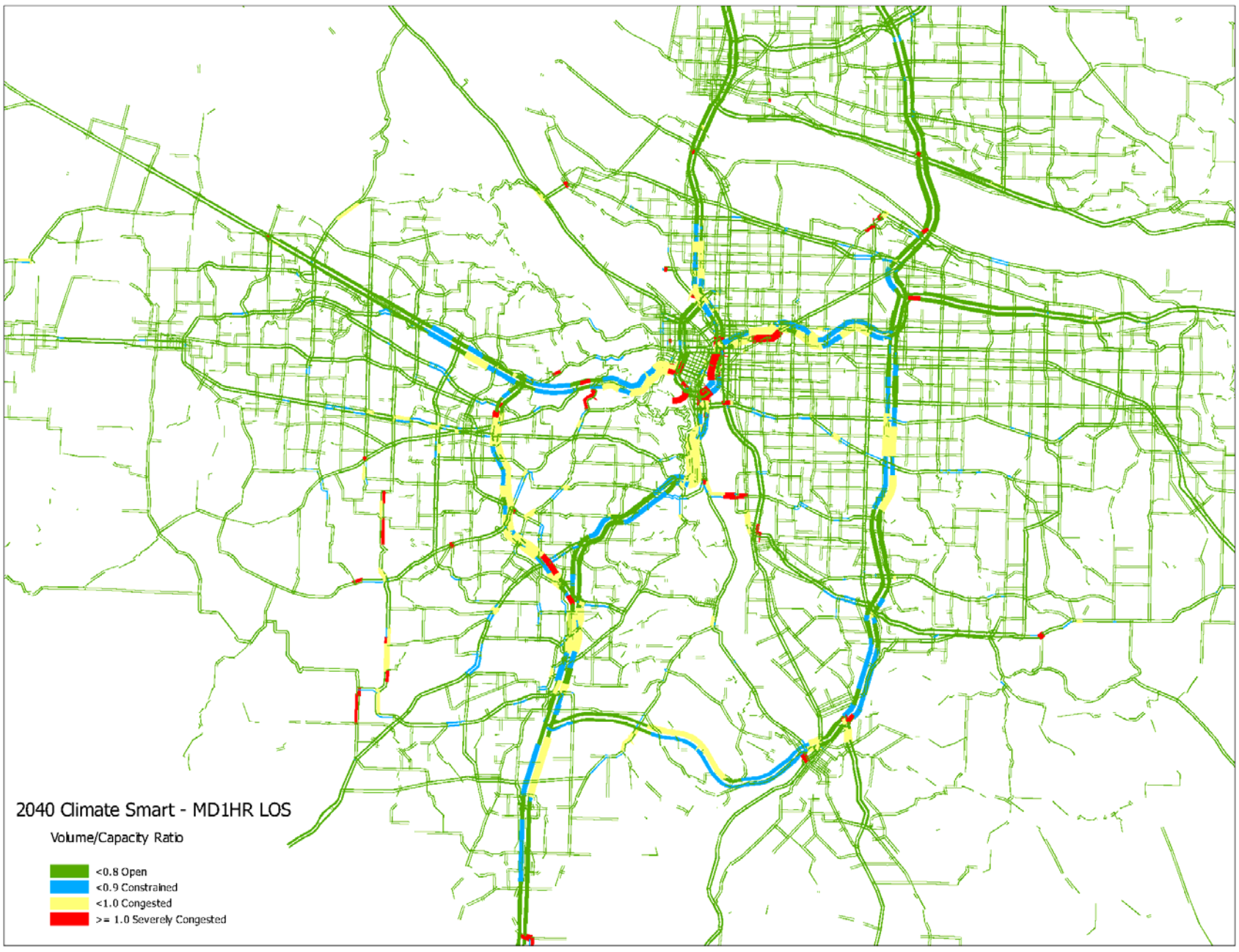
This information is for discussion purposes and does not necessarily reflect current or future policy decisions of the Metro Council. The information is subject to change pending final modeling and analysis in 2017.

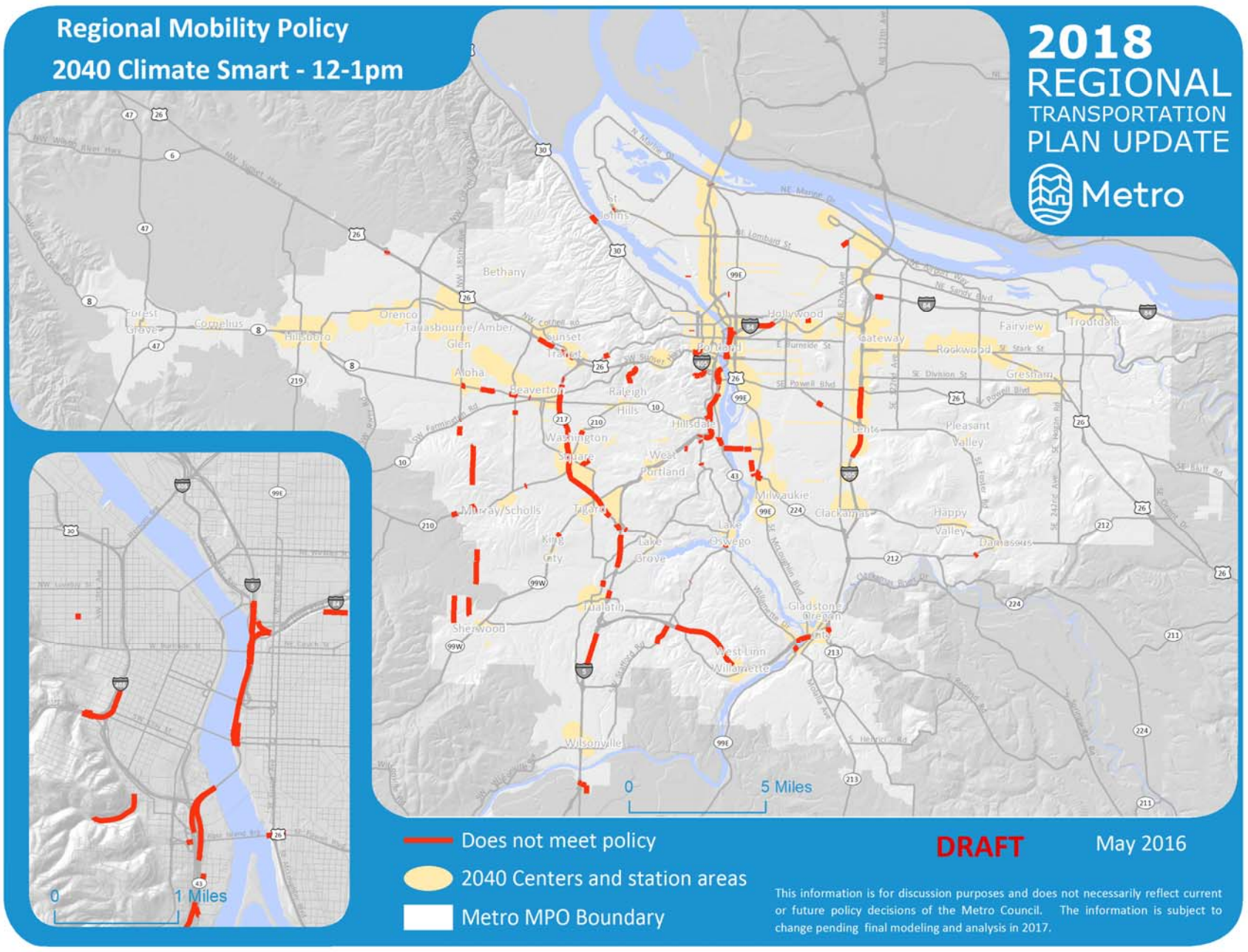
June 20, 2016

2018 REGIONAL TRANSPORTATION PLAN UPDATE

STREETS AND HIGHWAYS - System performance

2040 CLIMATE SMART STRATEGY 12-1pm





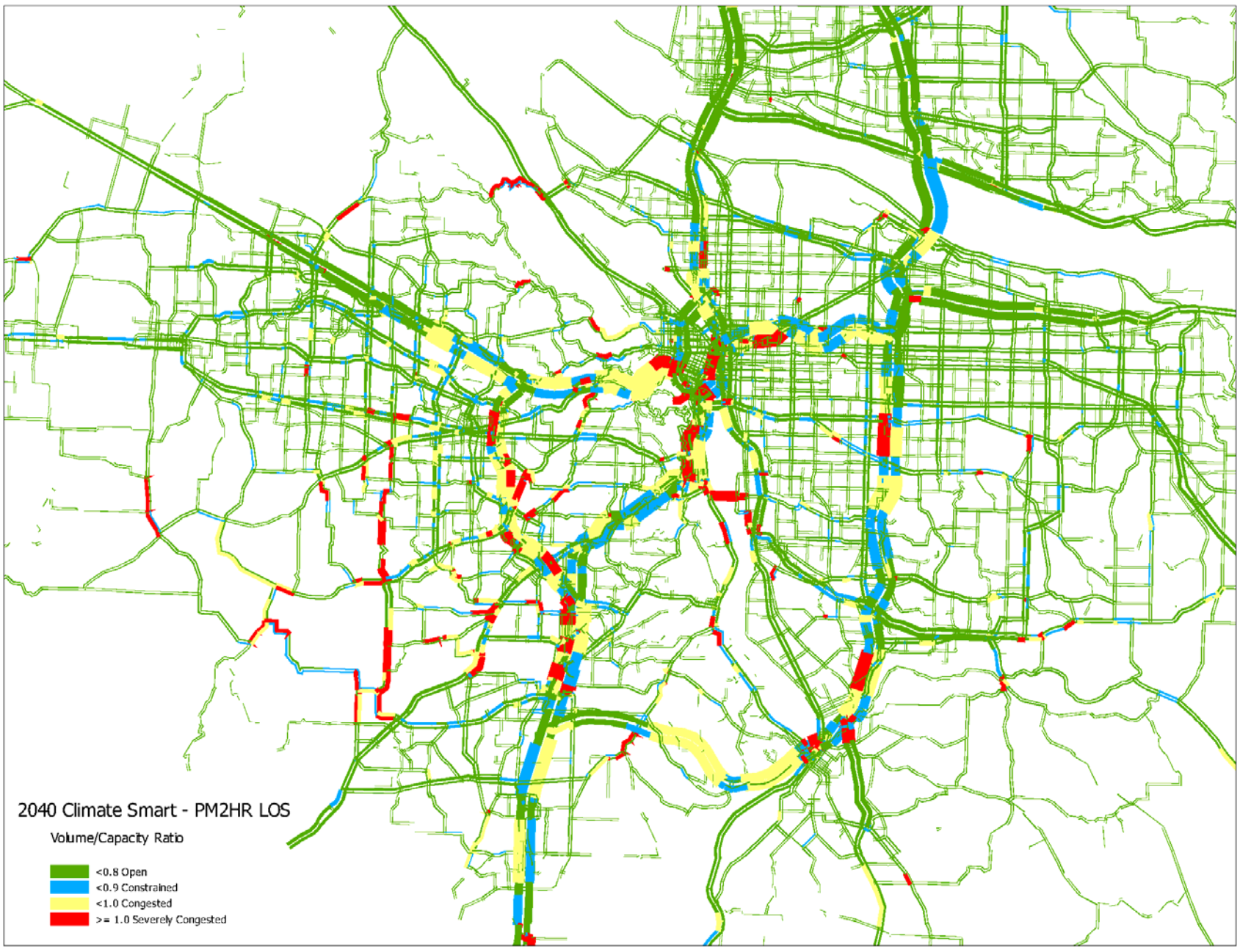
This information is for discussion purposes and does not necessarily reflect current or future policy decisions of the Metro Council. The information is subject to change pending final modeling and analysis in 2017.

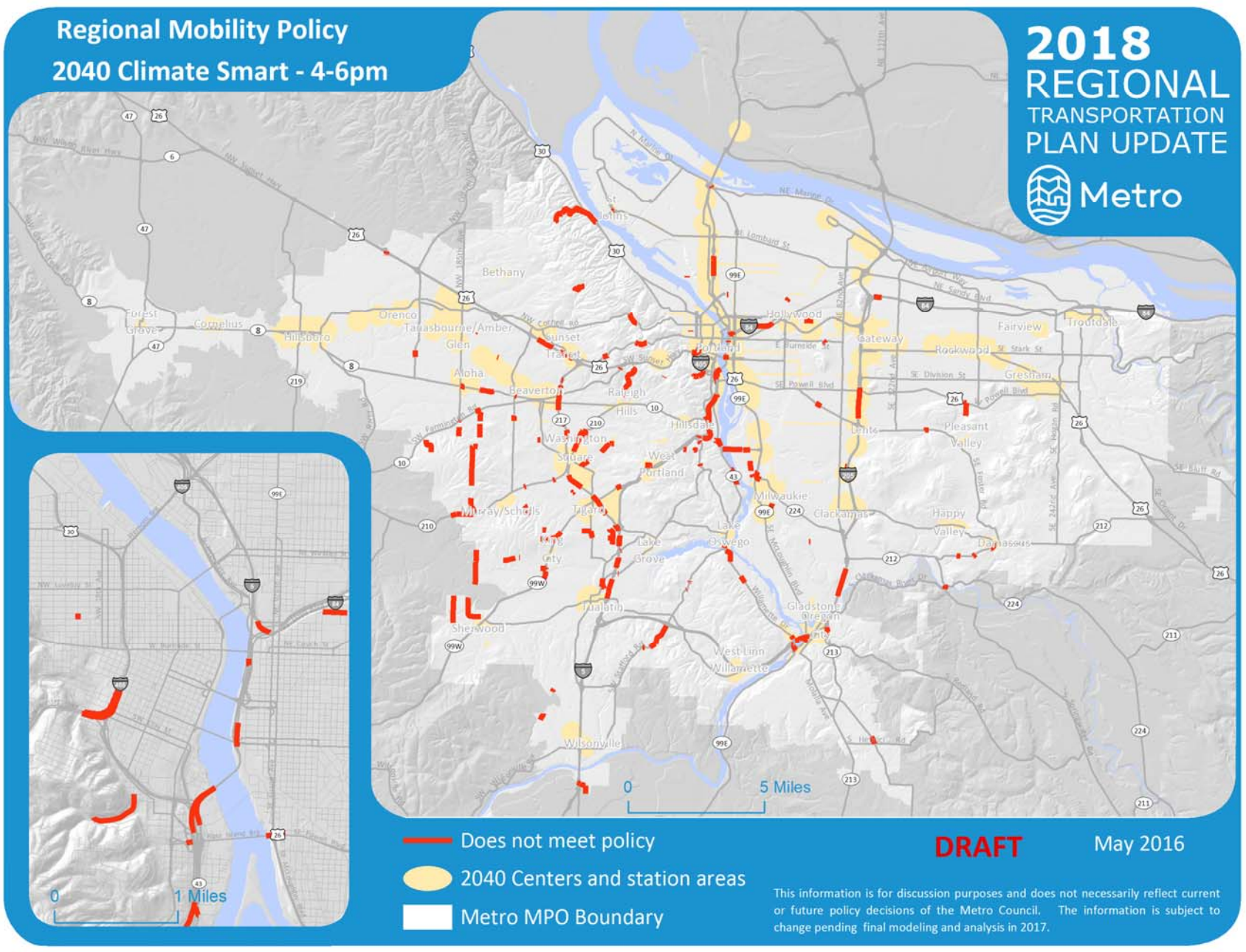
June 20, 2016

2018 REGIONAL TRANSPORTATION PLAN UPDATE

STREETS AND HIGHWAYS - System performance

2040 CLIMATE SMART STRATEGY 4-6pm





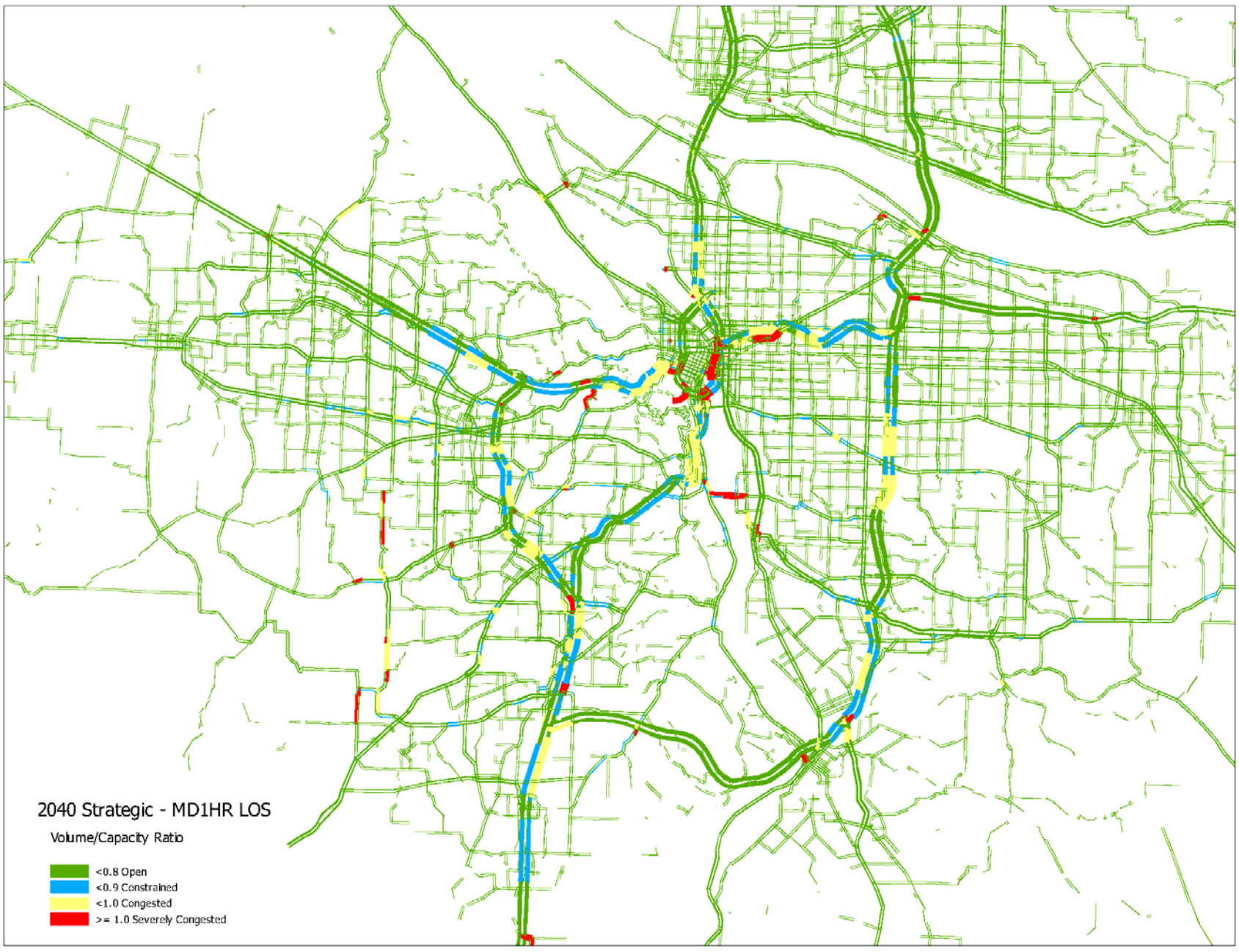
This information is for discussion purposes and does not necessarily reflect current or future policy decisions of the Metro Council. The information is subject to change pending final modeling and analysis in 2017.

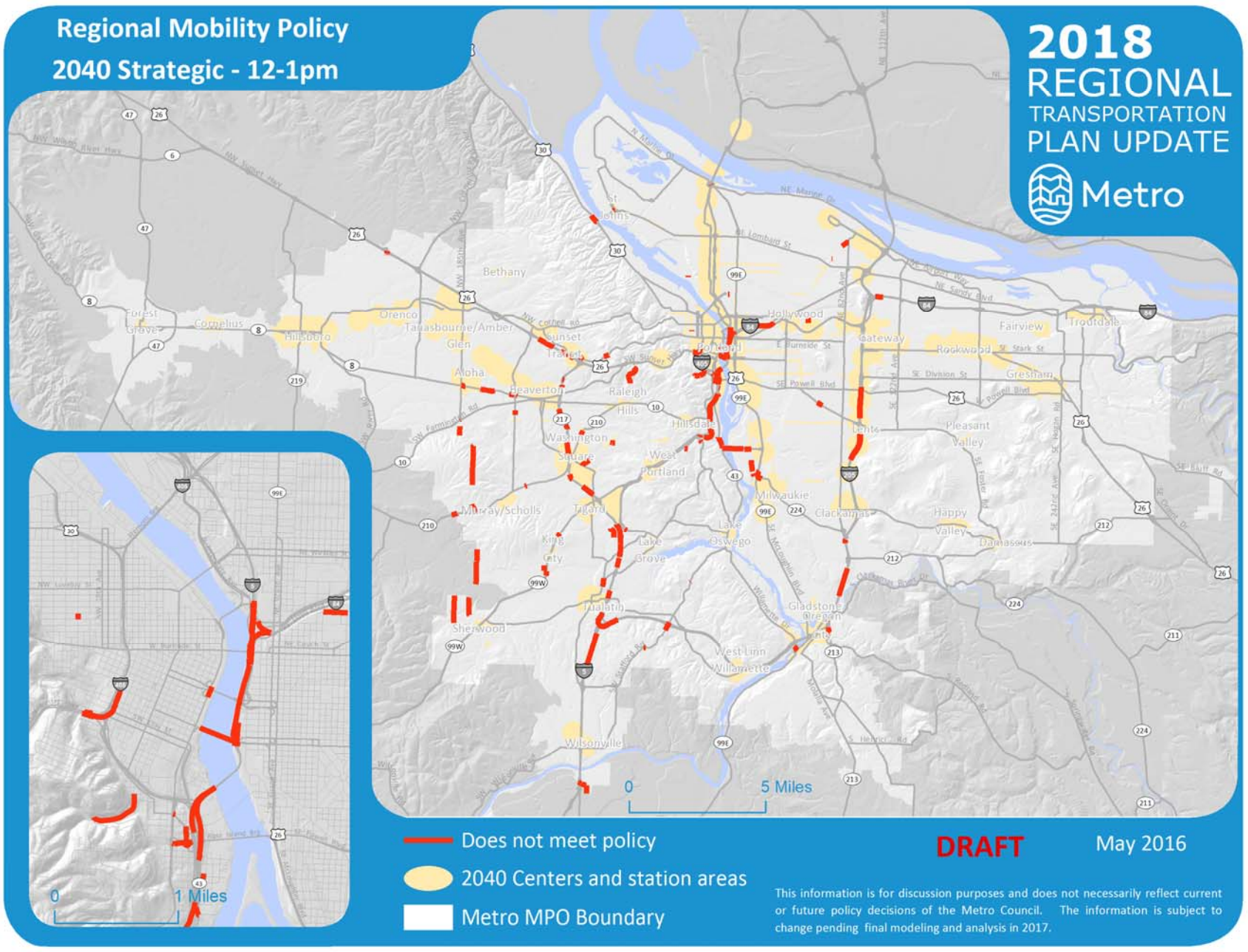
June 20, 2016

2018 REGIONAL TRANSPORTATION PLAN UPDATE

STREETS AND HIGHWAYS - System performance

2040 STRATEGIC 12-1pm





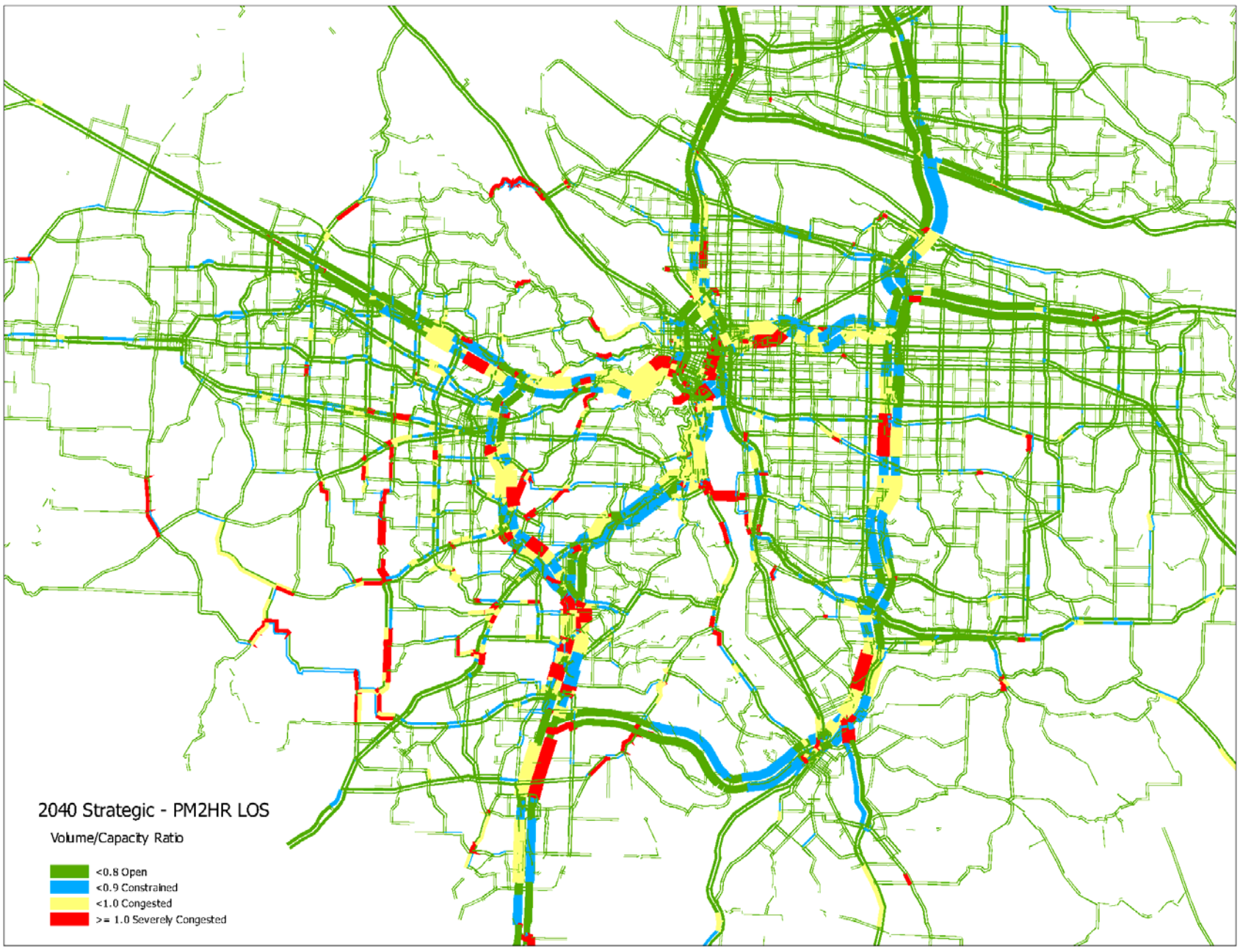
This information is for discussion purposes and does not necessarily reflect current or future policy decisions of the Metro Council. The information is subject to change pending final modeling and analysis in 2017.

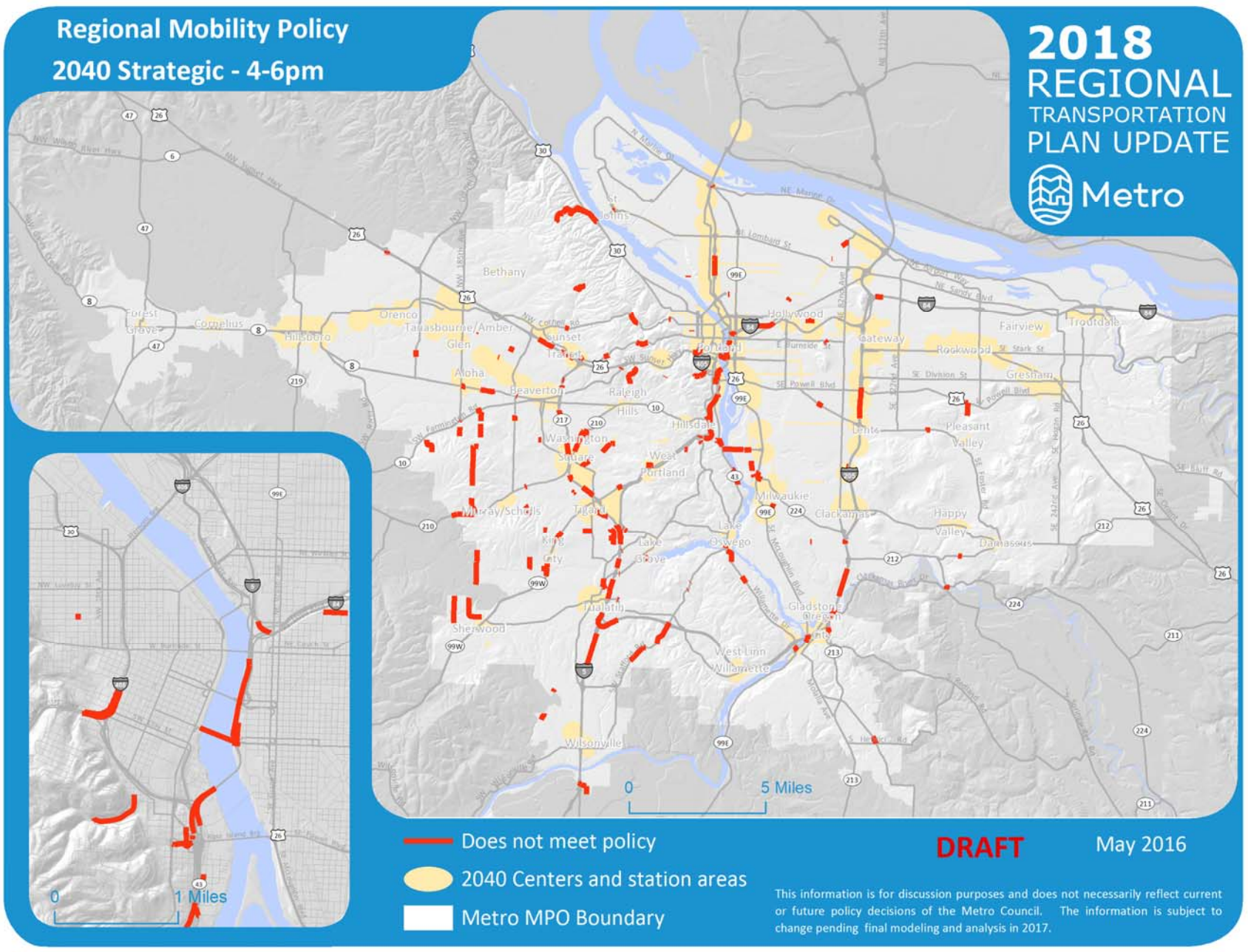
June 20, 2016

2018 REGIONAL TRANSPORTATION PLAN UPDATE

STREETS AND HIGHWAYS - System performance

2040 STRATEGIC 4-6pm





This information is for discussion purposes and does not necessarily reflect current or future policy decisions of the Metro Council. The information is subject to change pending final modeling and analysis in 2017.

June 20,2016 **Mode share for walking, bicycling, transit and shared ride (non-drive alone mode share)**

Centers NonSOV mode share	2015 Base Year		2040 No Build		2040 Constrained		2040 Strategic		2040 Climate Smart Strategy	
	Trips Within	All Trips	Trips Within	All Trips	Trips Within	All Trips	Trips Within	All Trips	Trips Within	All Trips
Portland central city	81%	66%	80%	66%	85%	73%	85%	74%	85%	74%
Amberglen regional center	62%	49%	64%	50%	67%	53%	67%	54%	67%	54%
Beaverton regional center	66%	52%	67%	51%	70%	54%	70%	55%	70%	55%
Clackamas regional center	63%	51%	66%	52%	70%	55%	71%	56%	71%	56%
Gateway regional center	65%	52%	67%	53%	70%	56%	70%	57%	70%	57%
Gresham regional center	62%	52%	62%	52%	65%	55%	65%	55%	65%	55%
Hillsboro regional center	61%	51%	63%	51%	66%	53%	66%	54%	66%	54%
Oregon City regional center	61%	50%	59%	48%	60%	49%	60%	49%	60%	50%
Vancouver, WA central business district	66%	52%	68%	53%	70%	55%	70%	56%	70%	56%
Washington Square regional center	65%	49%	66%	49%	69%	51%	69%	52%	69%	52%

* "Trips within" econmpasses all trips that occur within the center. "All trips" encompasses trips to, from and within the center.

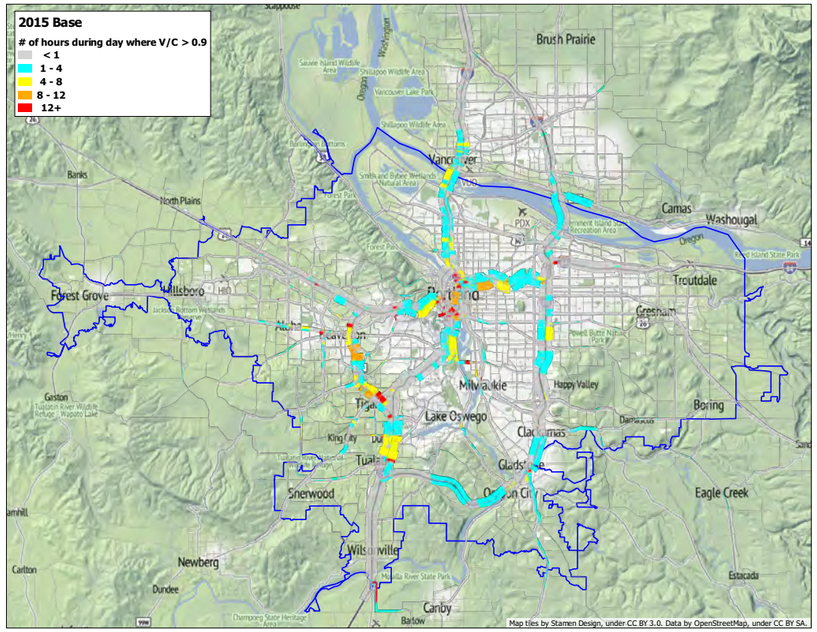
This information is for discussion purposes and does not necessarily reflect current or future policy decisions of the Metro Council. The information is subject to change pending final modeling and analysis in 2017.

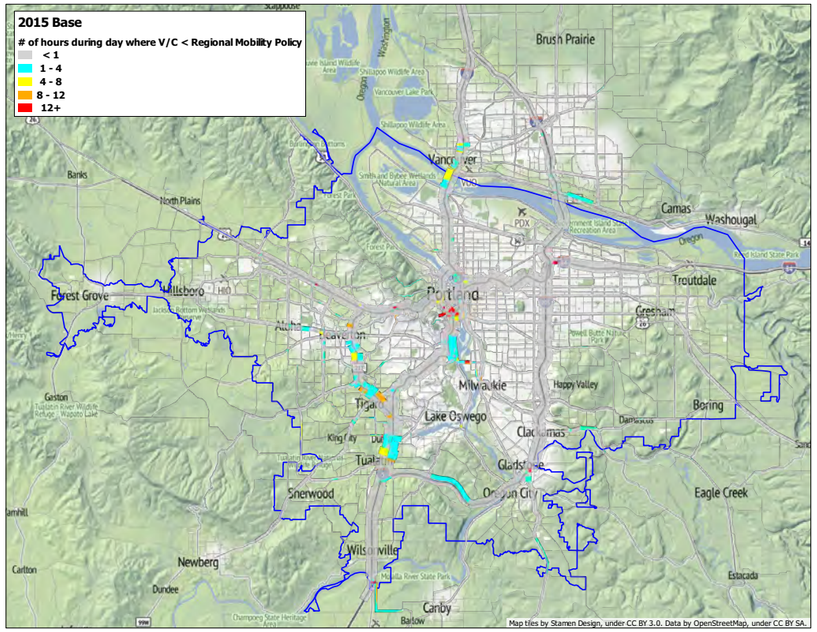
June 23, 2016

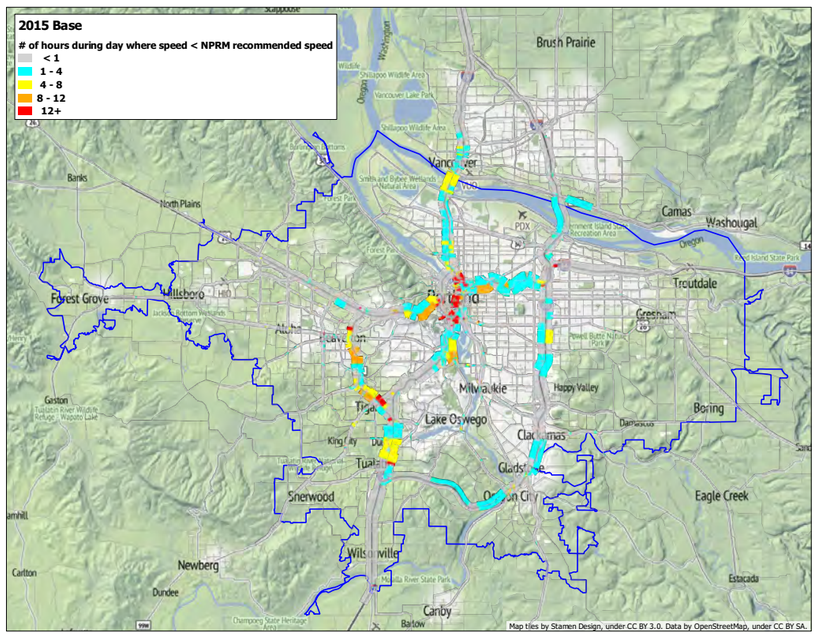
2018 REGIONAL TRANSPORTATION PLAN UPDATE

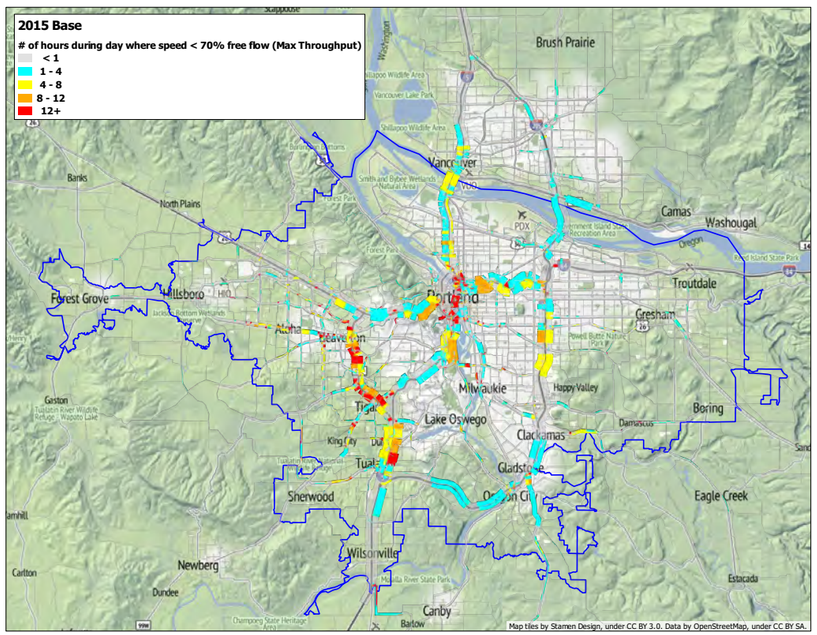
HOURS OF CONGESTION

2015









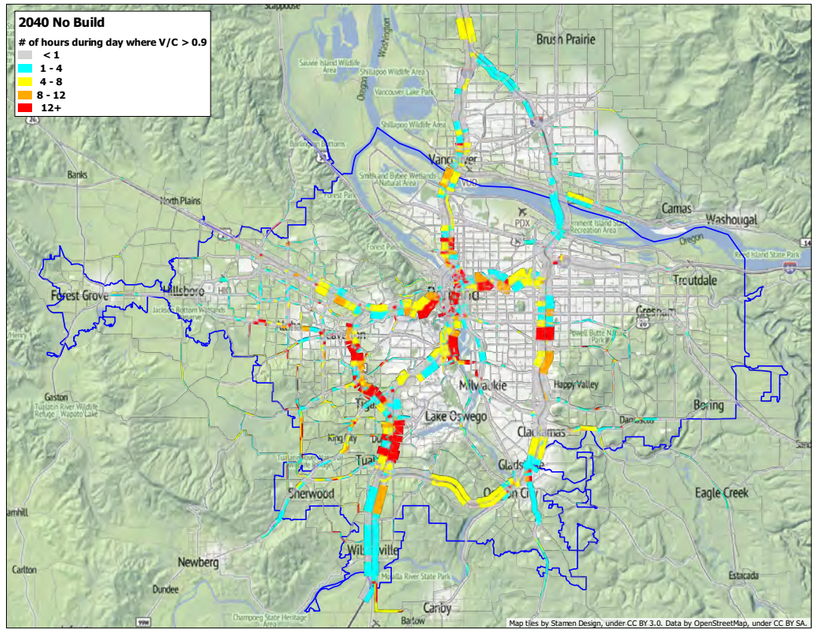
This information is for discussion purposes and does not necessarily reflect current or future policy decisions of the Metro Council. The information is subject to change pending final modeling and analysis in 2017.

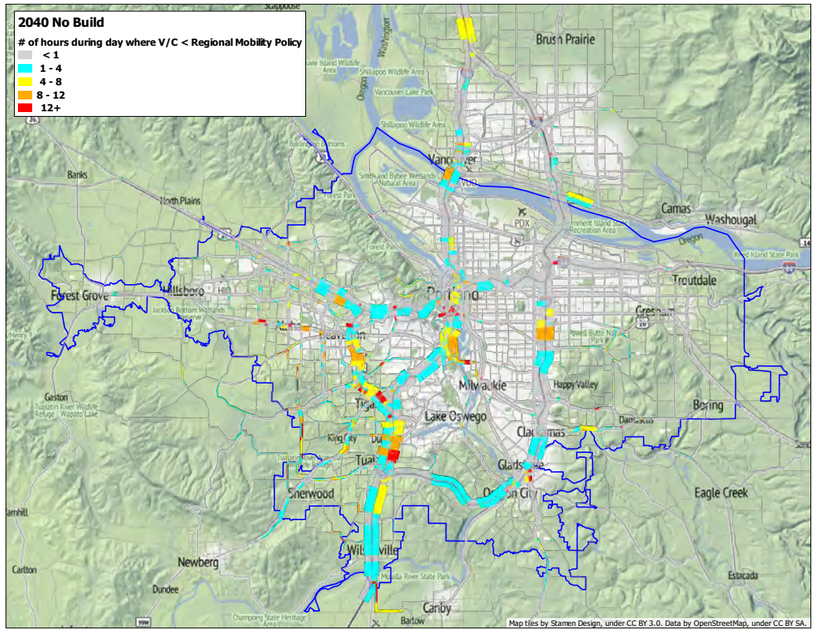
June 23, 2016

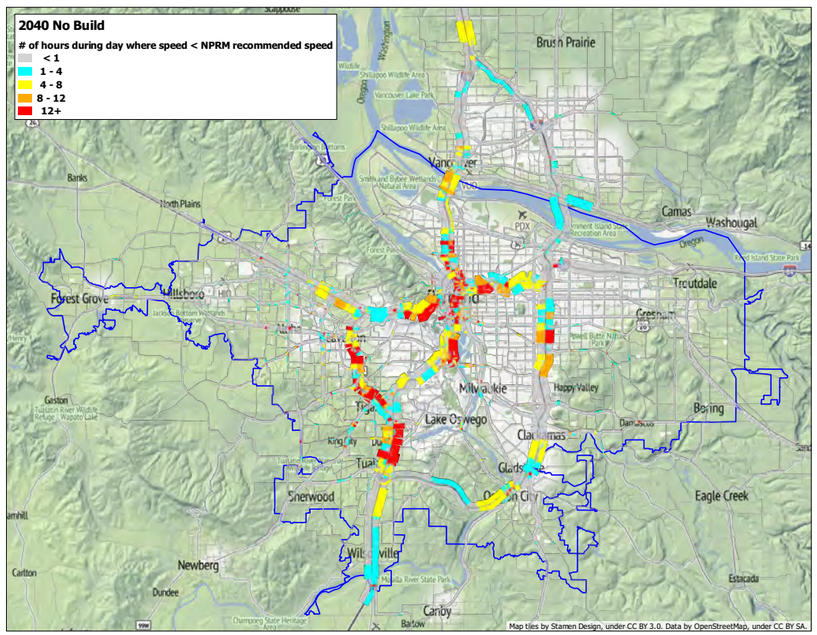
2018 REGIONAL TRANSPORTATION PLAN UPDATE

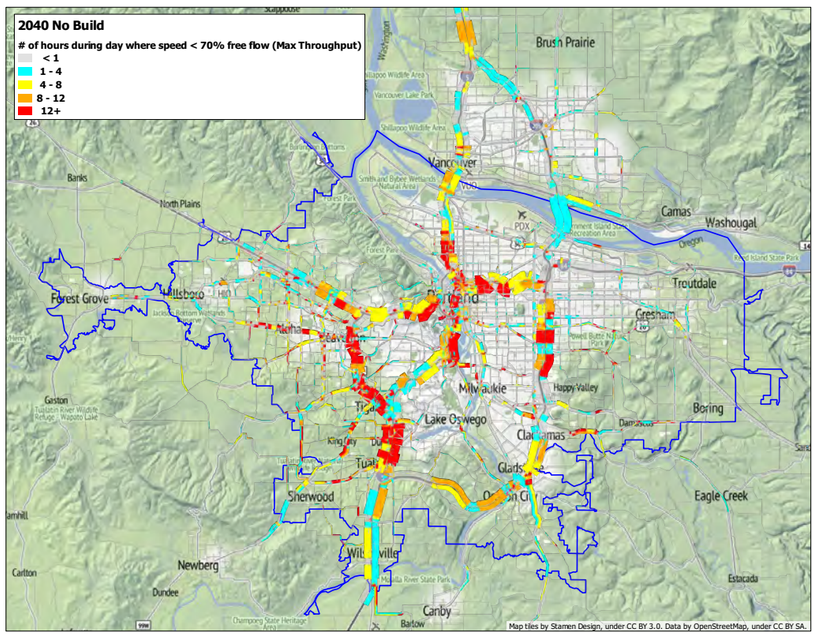
HOURS OF CONGESTION

2040 NO BUILD









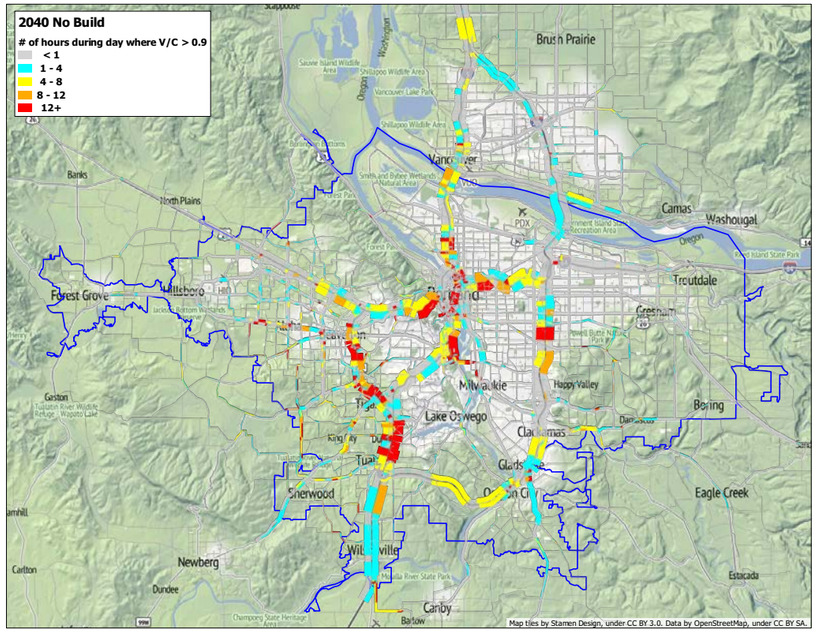
This information is for discussion purposes and does not necessarily reflect current or future policy decisions of the Metro Council. The information is subject to change pending final modeling and analysis in 2017.

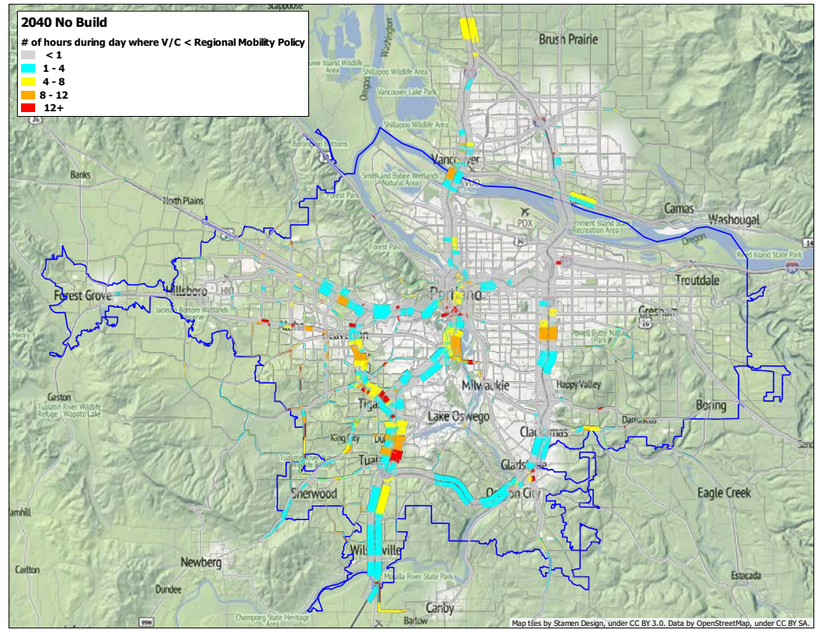
June 23, 2016

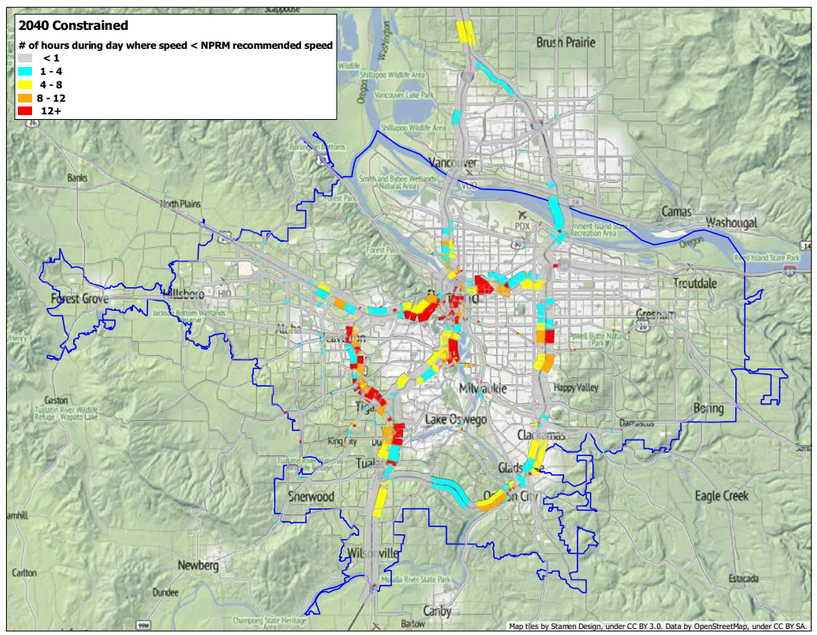
2018 REGIONAL TRANSPORTATION PLAN UPDATE

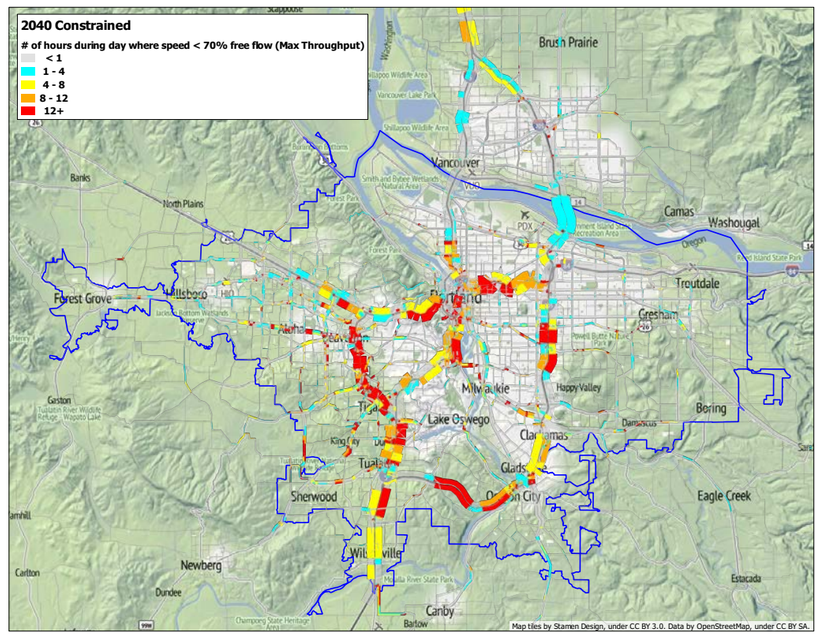
HOURS OF CONGESTION

2040 CONSTRAINED









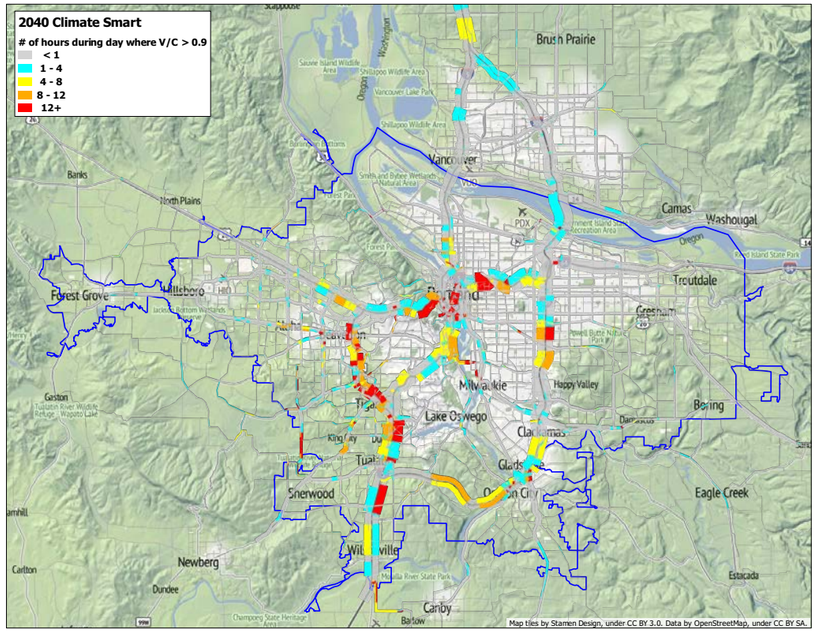
This information is for discussion purposes and does not necessarily reflect current or future policy decisions of the Metro Council. The information is subject to change pending final modeling and analysis in 2017.

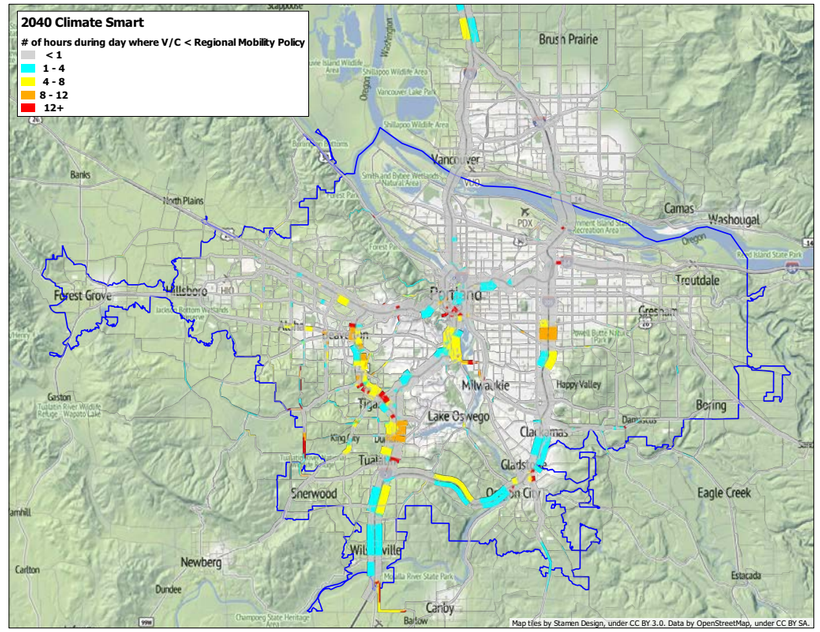
June 23, 2016

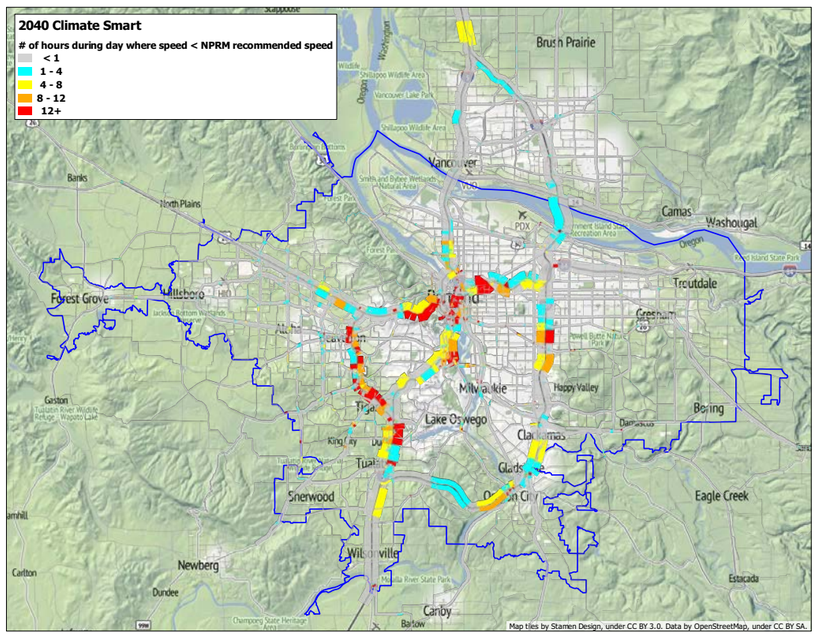
2018 REGIONAL TRANSPORTATION PLAN UPDATE

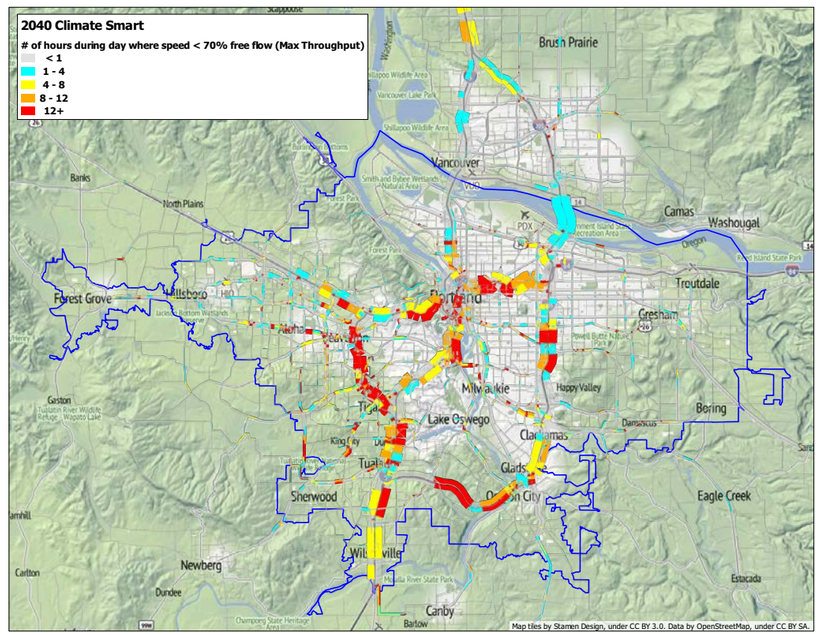
HOURS OF CONGESTION

2040 CLIMATE SMART STRATEGY









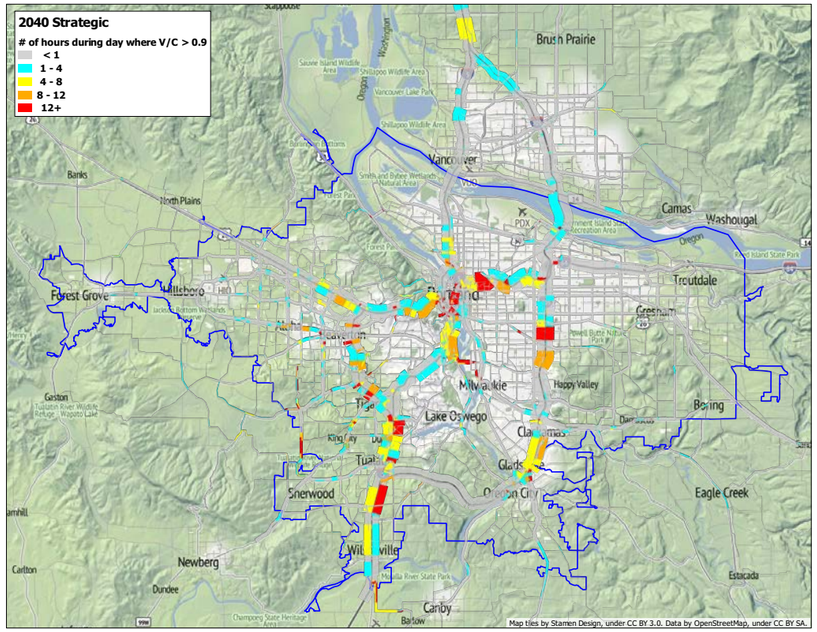
This information is for discussion purposes and does not necessarily reflect current or future policy decisions of the Metro Council. The information is subject to change pending final modeling and analysis in 2017.

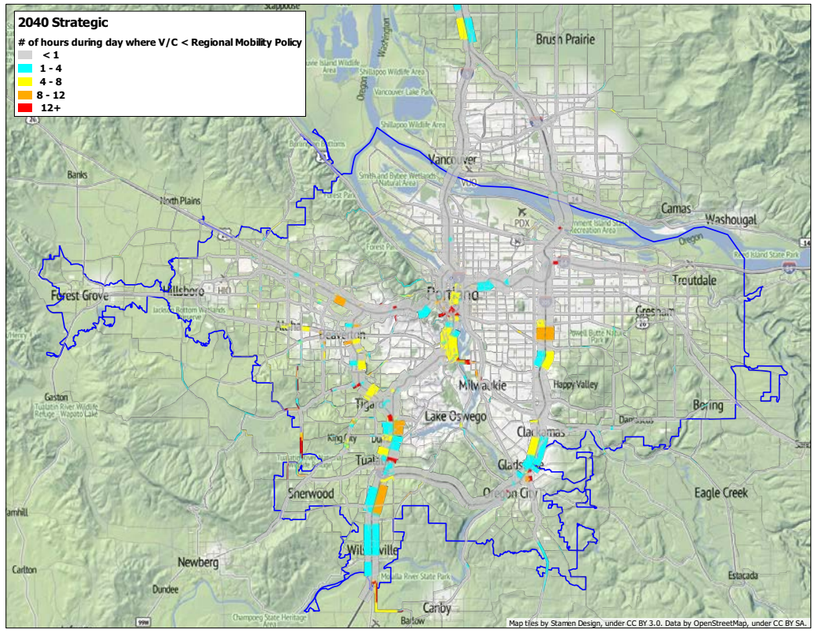
June 23, 2016

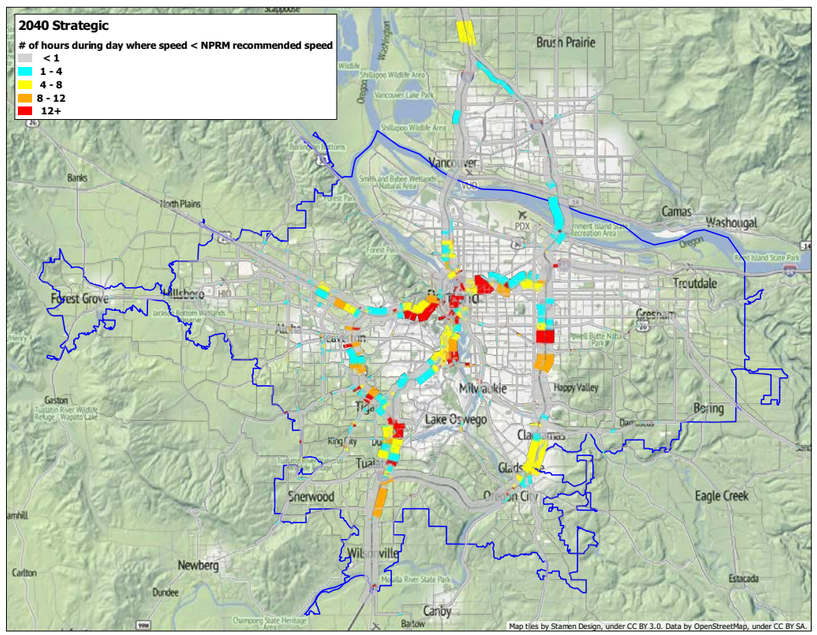
2018 REGIONAL TRANSPORTATION PLAN UPDATE

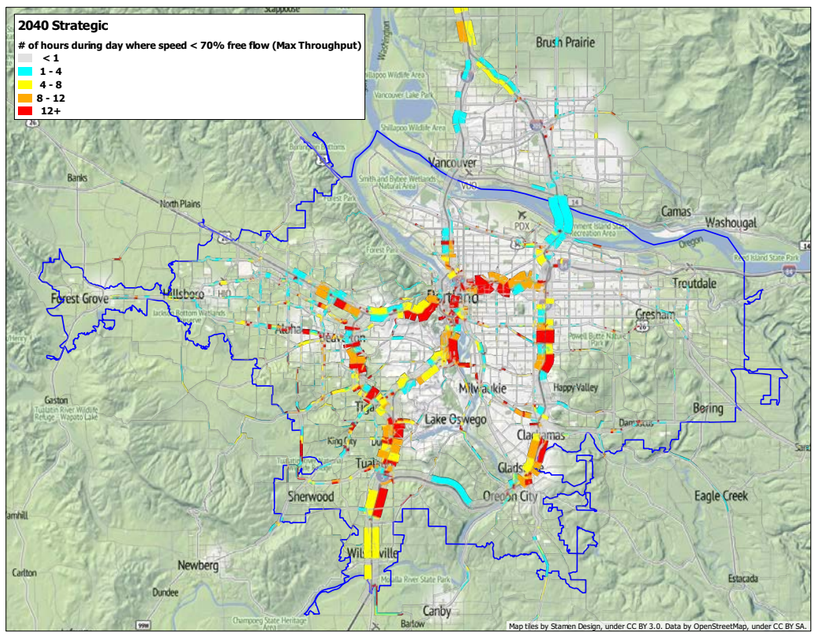
HOURS OF CONGESTION

2040 STRATEGIC









This information is for discussion purposes and does not necessarily reflect current or future policy decisions of the Metro Council. The information is subject to change pending final modeling and analysis in 2017.