BEFORE THE METRO COUNCIL

FOR THE PURPOSE OF ADOPTING THE SUBSTITUTE TRANSIT TRANSPORTATION CONTROL MEASURE (TCM) AS PART OF THE STATE AIR QUALITY STRATEGY AND REGIONAL AIR QUALITY CONFORMITY DETERMINATION	)))))	RESOLUTION NO. 13-4490 Introduced by Chief Operating Officer Martha Bennett in concurrence with Council President Tom Hughes

WHEREAS, clean air contributes to the health of Metro residents and their quality of life; and

WHEREAS, the federal Clean Air Act and other federal laws, including Code of Federal Regulations (CFR) 93.100 through CFR 93.128 contain air quality standards designed to ensure that federally supported activities meet air quality standards, and these federal standards apply to on-road transportation plans, programs and activities in the Metro area; and

WHEREAS, Chapter 340, Division 252, Transportation Conformity, of Oregon Administrative Rules was adopted to implement section 176(c) of the federal Clean Air Act, as amended, and these rules also apply to Metro area on-road transportation plans, programs and activities; and

WHEREAS, these federal and state regulations require an air quality conformity determination in order for metropolitan planning organizations (MPOs) to conduct its transportation planning and programming activities; and

WHEREAS, the federal Clean Air Act Section 176(c)(8) allows regions to replace adopted transportation control measures (TCMs) when the MPO, state air quality agency, and the U.S. Environmental Protection Agency find it necessary; and

WHEREAS, the second Portland Area Carbon Monoxide Maintenance Plan, as part of the State's air quality strategy, also provides a mechanism to substitute an existing TCM with a new proposed TCM when the MPO, the state air quality agency, and the U.S. Environmental Protection Agency agree to conduct a substitution; and

WHEREAS, Metro, the MPO for the Portland region, the Oregon State Department of Environmental Quality (DEQ), and EPA Region 10 agreed to initiate a TCM substitution process at the end of 2012 due to the potential of not meeting one of the existing TCMs; and

WHEREAS, Metro worked in coordination with DEQ, the Tri-County Metropolitan Transportation District (Tri-Met), the Oregon State Department of Transportation (ODOT), the U.S. Environmental Protection Agency, and local jurisdictions to develop the preferred TCM substitution through a collaborative process; and

WHEREAS, Metro and DEQ reviewed federal and state requirements and have determined all criteria have been met with the preferred substitute transit TCM being presented to replace the existing transit TCM; and

WHEREAS, the Transportation Policy Alternatives Committee (TPAC) took action May 31, 2013 approving the proposed TCM substitution and permitting Metro and DEQ to continue to move forward with the TCM substitution process; and

WHEREAS, DEQ undertook a 30-day public comment period and public hearing to provide community members the opportunity to provide feedback regarding the preferred substitute transit TCM; and

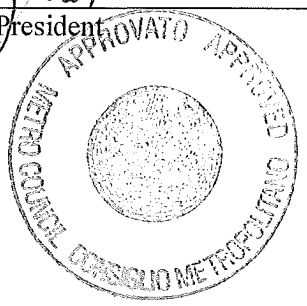
WHEREAS, the Environmental Quality Commission (EQC) reviewed the preferred TCM substitute and approved the substitute TCM on December 11, 2013; and

WHEREAS, Joint Policy Advisory Committee on Transportation approved the legislation at the December 12, 2013 meeting; now therefore

BE IT RESOLVED that the Metro Council hereby adopts the substitute transit TCM as part of the state air quality strategy and regional air quality conformity determination.

ADOPTED by the Metro Council this 19 day of December 2013.

Tom Hughes, Council President



Approved as to Form:

Allison R. Kean, Metro Attorney

STAFF REPORT

IN CONSIDERATION OF RESOLUTION NO. 13-4490, FOR THE PURPOSE OF ADOPTING THE SUBSTITUTE TRANSIT TRANSPORTATION CONTROL MEASURE (TCM) AS PART OF THE STATE AIR QUALITY STRATEGY AND FOR REGIONAL AIR QUALITY CONFORMITY DETERMINATION

Date: December 5, 2013 Prepared by: Grace Cho

BACKGROUND

In previous decades the Portland region failed to meet national air quality standards for carbon monoxide pollution and was designated a non-attainment area. As a result, the region is required to develop and implement strategies to reduce carbon monoxide emissions in order to conform to the federal Clean Air Act. To ensure compliance, federal regulations require the Joint Policy Advisory Committee on Transportation (JPACT), the metropolitan planning organization (MPO) board, to adopt an air quality plan with each Regional Transportation Plan (RTP) and Metropolitan Transportation Improvement Program (MTIP). The air quality plan includes a budget of transportation-related emissions and a series of ongoing "transportation control measures" (TCMs), which serve as strategies to reduce carbon monoxide emissions. For the Portland region, the TCMs are: 1) Increasing transit service; 2) Expanding the bicycle network; and 3) Building pedestrian connections. Until 2017, the region is expected to implement TCMs and demonstrate each MTIP and RTP conform to the provisions of the air quality plan to be eligible to receive federal funds for transportation projects within the region.

Recent transit service cuts due to the economic recession have endangered the region's ability to meet the performance standard set forth by the transit service TCM. Under the existing method for evaluating the transit service increase TCM the region is projected to fall short of the performance standard. Failure to meet a TCM performance standard can result in an air quality conformity lapse, which jeopardizes the region's ability to program federal transportation funds.

SUBSTITUTION OF TRANSPORTATION CONTROL MEASURES (TCMs)

Two provision, Section 176(c)(8) of the Clean Air Act and Appendix D9-2 of the second Portland Area Carbon Monoxide Maintenance Plan allows regions to employ a "substitution" when air quality conformity cannot be met with the TCMs identified in the statewide and regional air quality plans. A TCM substitution allows an existing TCM to be replaced with a proposed TCM that provides equal or greater pollution reduction. In accordance with federal and state rules, a TCM substitution may be initiated by the MPO, the relevant state air quality agency and U.S. Environmental Protection Agency (EPA).[1] In November 2012, the three agencies (Metro, Oregon Department of Environmental Quality, and EPA) elected to initiate a TCM substitution for the transit service TCM to prevent a conformity lapse.

TRANSPORTATION CONTROL MEASURE (TCM) SUBSTITUTION PROCESS

To initiate and develop a preferred TCM substitution, Metro and DEQ consulted the Transportation Policy Alternatives Committee (TPAC), whose membership represents local jurisdictions, regional and state partners, and community members. At the January 4, 2013 TPAC meeting, DEQ and Metro raised the issue of the region potentially not meeting the performance standard of the transit TCM identified in the adopted regional air quality plan.[2] Both agencies underscored the importance of implementing the TCMs with each MTIP and RTP; otherwise the region will risk repercussions of violating federal mandates, which affect all local agencies and projects that receive federal transportation dollars.

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[1] The Oregon Department of Environmental Quality (DEQ) in conjunction with Metro, developed a TCM substitution mechanism that was codified with the adoption of the Portland Area Carbon Monoxide Maintenance Plan in the State Implementation Plan (SIP). The TCM substitution mechanism was adopted prior to the federal TCM substitution provision, therefore the Portland Metropolitan area is subject to federal and state TCM substitution regulations.

[2] Metro. "TPAC Meeting Summary." January 4, 2013. http://www.oregonmetro.gov/index.cfm/go/by.web/id=31965

Subsequently at the January 25, 2013 TPAC meeting, members recommended Metro undertake a TCM substitution process to resolve the possibility of not meeting the transit service TCM and outlined several different TCM substitution options.[3] The following TCM substitutions were considered:

- Combine the three TCMs into a single TCM. This substitution would combine the projected emissions reductions associated with each separate TCM performance standard together into a single emissions-related performance standard, and assess the collective result of the region's progress in meeting each TCM.
- Change the Calculation Method for the Transit Service Increase TCM. This substitution would change the calculation method for the performance standard of the Transit Service Increase TCM. As stated in the existing transit service TCM, a 5-year rolling average of actual transit service hours is used.
- Rewrite the Performance Standard of the TCMs. This substitution would modify the existing performance standards for the three TCMs.
- An alternative as proposed by TPAC. This substitution would explore a proposal identified by TPAC.

At the January 25, 2013 meeting, members of TPAC selected a preferred TCM substitution, but EPA recommended to Metro, DEQ, and TriMet to pursue a different TCM substitution option during consultation of the preferred TCM. After further discussions, Metro, DEQ, and TriMet returned to TPAC at the April 26, 2013 meeting and recommended changing the calculation method for the transit TCM as the proposed substitution.[4] The main reason provided was that the change in the calculation method would provide a better reflection of the region's long-term commitment to transit. At the April 26, 2013 meeting, TPAC members agreed to move forward with the proposal to change the calculation method and directed staff to conduct the required analysis of the preferred TCM substitution.

Table 1. Existing Transit TCM and Preferred Substitute Transit TCM

	Existing Transit Service Increase TCM	**Preferred Substitute Transit Service Increase TCM**
	"Regional transit service revenue hours (weighted by capacity) shall be increased 1.0% per year. The increase shall be assessed on the basis of a 5 year rolling average of actual hours for assessment conducted between 2006-2017. Assessments made for the period through 2008 shall include the 2004 opening of Interstate MAX."	"Regional transit service revenue hours (weighted by capacity) shall be increased 1.0% per year. The increase shall be assessed on the basis of cumulative average of actual hours for assessment conducted for the entire second ten-year Portland Area Carbon Monoxide Maintenance Plan (2007 – 2017). Transit service increase will be assessed on the basis of fiscal year (July 1- June 30) beginning with FY 2008."
Geography TCM is Applicable	Portland Metropolitan Region	
Implementing Agency	TriMet	

At the May 31, 2013 TPAC meeting, Metro staff presented an analysis demonstrating the proposed TCM substitution met the following EPA and DEQ criteria for implementing a TCM substitution:

- The substitute TCM(s) must achieve equal or greater emissions reductions;

[3] Metro."TPAC Meeting Summary." January 25, 2013. http://www.oregonmetro.gov/index.cfm/go/by.web/id=31965
[4] Metro. "TPAC Meeting Summary." April 26, 2013. http://www.oregonmetro.gov/index.cfm/go/by.web/id=31965

- The substitute TCM(s) must be implemented on a schedule that is consistent with the schedule for the TCM(s) being removed from the SIP;
- The substitute TCM(s) must be accompanied by evidence of adequate personnel, and funding and authority under state or local law to implement, monitor and enforce the TCM(s);
- The substitute TCM(s) must be developed through a collaborative process that includes participation by all affected jurisdictions (state and local air pollution control agencies and state and local transportation agencies such as the MPO, state DOT, and transit providers); consultation with EPA; and reasonable notice and opportunity for public comment; and
- The equivalency of the substitute TCM(s) must be concurred on by the state air pollution control agency, the MPO and EPA. That is, EPA, the state air agency, and the MPO must all agree that on the estimated emissions reductions from the substitute TCM(s) and agree that the estimated emissions reductions equal or surpass those that would have resulted from the original TCM(s) in the approved SIP.[5]

The preferred TCM substitution analysis and presentation demonstrated the following results:

Table 2. Preferred TCM Substitution Demonstration of Criteria Being Met

Transportation Control Measure (TCM)	Calculation of TCM Emissions Reduction Benefit	Implementation Schedule	Funding, Personnel, Authority	Collaboration on Substitution Development	Public Comment
Increase transit service (Existing TCM) Regional transit service revenue hours (weighted by capacity) shall be increased 1.0% per year. The increase shall be assessed on the basis of a 5-year rolling average of actual hours for assessments conducted between 2006 and 2017.	406.7 pounds per day	2006-2017	TriMet	TPAC meetings January – May 2013	Public comment opportunities at all TPAC meetings; formal DEQ public comment period; public hearing on August 15, 2013.[6]
Increase transit service (Proposed TCM Substitution) Regional transit service revenue hours (weighted by capacity) shall be increased 1.0% per year. The increase shall be assessed on the basis of cumulative average of actual hours for assessment conducted for the entire Second Portland Area Carbon Monoxide Maintenance Plan (2007 – 2017). Transit service increase will be assessed on the basis of fiscal year (July 1- June 30) beginning with FY 2008.		2007-2017			

[5] US Environmental Protection Agency. Guidance for Implementing the Clean Air Act Section 176(c)(8) Transportation Control Measure Substitution and Addition Provision. January 2009, page 5.
[6] Following TPAC action on May 31, 2013, DEQ lead a separate process to accept public comment on the preferred TCM substitution. The process ran from July 2013-August 2013.

Greater detail regarding the preferred transit TCM substitution analysis and the documentation for meeting the TCM substitution criteria can be found in **Attachment 1**. Documentation of methodology and assumptions to conduct the TCM substitution emissions reductions equivalency analysis can be found in **Attachment 2**.

At the May 31, 2013 meeting TPAC determined all the criteria were met for the preferred transit TCM substitution and approved the process continue to move forward for public comment and adoption by Metro, DEQ, and EPA.[7]

TRANSPORTATION CONTROL MEASURE (TCM) SUBSTITUTION – DEQ PROCESS
After approval by TPAC, the process moved forward with DEQ taking on the next steps to have the substitute transit TCM adopted by the Environmental Quality Commission (EQC). DEQ announced a formal public comment period from July 15, 2013 – August 19, 2013 and scheduled a public hearing on August 15, 2013. All public comments and staff recommendations in light of public comments were placed into a report to be sent to the EQC for consideration at the December 11, 2013 meeting. At the December 11, 2013 meeting, the EQC will decide whether the preferred transit TCM substitution.

FINAL ACTIONS
Upon EQC approval and adoption, the existing transit TCM will be rescinded. The preferred TCM substitution will return to JPACT and Metro Council for a concurrence action. Following JPACT, and Metro Council actions, DEQ and Metro will submit documentation to EPA for concurrence.

ANALYSIS/INFORMATION

1. **Known Opposition:** The proposed TCM substitution has received some opposing comments during the DEQ public comment period. See DEQ authored public comment report for full record of comments received.

   Legal Antecedents:

   Federal regulations include:
   - Clean Air Act, as amended [42 U.S. C. 7401 and 23 U.S.C. 109(j)], as amended].
   - US EPA transportation conformity rules (40 CFR, parts 51 and 93)
   - US EPA Guidance for Implementing the Clean Air Act Section 176(c)(8) Transportation Control Measure Substitution and Addition Provision.

   State regulations include:
   - Oregon Administrative Rules for Transportation Conformity, (OAR Chapter 340, Division 252).
   - 2006 State Implementation Plan (SIP).
   - 2006 Portland Area Carbon Monoxide Maintenance Plan and 2007 Portland Area Ozone Maintenance Plan.

2. **Anticipated Effects:** Adoption of this resolution allows for the substitute transit TCM to go into replace the existing transit TCM and go into effect immediately for implementing the region's air quality plan and conformity purposes. The funding of proposed transportation projects in the 2015-2018 MTIP and the update of the 2014 Regional Transportation Plan update will be able to continue as scheduled.

[7] Metro. "TPAC Meeting Summary." May 31, 2013. http://www.oregonmetro.gov/index.cfm/go/by.web/id=31965

3. **Budget Impacts**: None directly by this action. Upon approval of this action, projects included in the 2015-2018 Metropolitan Transportation Improvement Program and the 2014 RTP update will be able to move forward with implementation.

RECOMMENDED ACTION

Metro staff recommends the approval of Resolution No. 13-4490.

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Metro | *Memo*

Date: May 31, 2013

To: TPAC and Interested Parties

From: Tom Kloster, Transportation Planning Manager
Grace Cho, Assistant Transportation Planner

Subject: Air Quality Conformity - Transportation Control Measures (TCMs) Substitution – Analysis Results Summary

Introduction

As an EPA designated maintenance area for carbon monoxide (CO), the Portland Metropolitan region is required to develop and implement strategies to reduce the amount of criteria pollutants released from transportation sources. The Portland Area Carbon Monoxide Maintenance Plan has three strategies which are designated as transportation control measures (TCMs). Those measures entail: 1) Increasing transit service; 2) Expanding the bicycle network; and 3) Building pedestrian connections.[1]

Recent transit service cuts have endangered the region's ability to meet the performance standard of Transit Service Increase TCM. Under the existing method for evaluating the Transit Service Increase TCM the region is projected to fall short. Failure to meet a TCM performance standard can result in an air quality conformity lapse, which jeopardizes the region's ability to program federal transportation funds.

An EPA policy allows regions to substitute an equivalent or greater pollution reduction TCM to replace an existing TCM implemented by a region when a Metropolitan Planning Organization, relevant air quality agency and EPA determine that a change is appropriate.[2] The Oregon Department of Environmental Quality (DEQ), in conjunction with Metro, developed a TCM substitution process that was codified with the adoption of the Portland Area Carbon Monoxide Maintenance Plan.[3] In accordance with the DEQ and EPA rules for a TCM substitution, consultation was conducted with the Transportation Policy Advisory Committee (TPAC). Through consultation the region elected to undergo a TCM substitution for the Transit Service Increase TCM to prevent a conformity lapse.

[1] Oregon Department of Environmental Quality, "Portland Area Carbon Monoxide Maintenance Plan ." State Implementation Plan. Volume 2 Section 4.58 Appendix D9-3.
[2] U.S. Environmental Protection Agency, "Guidance for Implementing the Clean Air Act Section 176(c)(8) Transportation Control Measure Substitution and Addition Provision." Page 1.
[3] Oregon Department of Environmental Quality, "Portland Area Carbon Monoxide Maintenance Plan ." State Implementation Plan. Volume 2 Section 4.58 Appendix D9-2.

Per EPA and DEQ policy, Metro must demonstrate the proposed TCM substitution:

- Demonstrates a collaborative process that includes participation by all affected jurisdictions (state and local air pollution and state and local transportation agencies such as the MPO, state DOT, and transit providers); consultation with EPA; and reasonable notice and opportunity for public comment;
- Can be implemented on a schedule that is consistent with the schedule for the existing TCM being removed;
- Presents evidence of adequate personnel, funding and authority under state or local law to implement, monitor and enforce the TCM;
- Provides equal or greater carbon monoxide emissions reductions; and
- Is concurred by DEQ, Metro, and EPA. [4]

The following memorandum summarizes the analysis which demonstrates the proposed substitute TCM meets DEQ and EPA requirements.

Preferred TCM Substitution Demonstration

Process of Developing the Preferred Substitute TCM and Concurrence by Metro, DEQ, and EPA

Metro and DEQ identified the Transportation Policy Advisory Committee (TPAC) as the consultation body for TCM substitution process as the membership represents jurisdictions, regional and state partners, and community members affected by a conformity lapse. At the January 4, 2013 TPAC, DEQ and Metro staff raised the issue of the region potentially not meeting the performance standard for one of the transportation control measures (TCM) identified in the adopted regional air quality plan.[5] Under federal requirements, the region is expected to implement TCMs and demonstrate each MTIP and RTP conform to the provisions of the air quality plan or risk repercussions of violating federal mandates, which affect all local agencies and projects that receive federal transportation dollars.

Subsequently at the January 25, 2013 TPAC, members recommended Metro staff and DEQ undertake a TCM substitution process to resolve the potential issue of the region not meeting the Transit Service Increase TCM.[6] In giving approval to move forward, DEQ and Metro staff presented several different TCM substitution options at the February and April TPAC meetings. The following TCM substitutions were considered:

- Combining the three TCMs into a single TCM. This substitution would combine the projected emissions reductions associated with each separate TCM threshold together into a single threshold, and assess the collective result of the region's progress in meeting each TCM.
- Change the Calculation Method for the Transit Service Increase TCM. This substitution would change the calculation method for the performance standard of the Transit Service Increase TCM. As stated in the existing transit service TCM, a 5-year rolling average of actual transit service hours is used.

[4] U.S. Environmental Protection Agency, "Guidance for Implementing the Clean Air Act Section 176(c)(8) Transportation Control Measure Substitution and Addition Provision." Page 1. & Oregon Department of Environmental Quality, "Portland Area Carbon Monoxide Maintenance Plan ." State Implementation Plan. Volume 2 Section 4.58 Appendix D9-2.

[5] Metro. "TPAC Meeting Summary." January 4, 2013. http://www.oregonmetro.gov/index.cfm/go/by.web/id=31965

[6] Metro."TPAC Meeting Summary." January 25, 2013. http://www.oregonmetro.gov/index.cfm/go/by.web/id=31965

- Rewriting the Performance Metrics of the TCM. This substitution would modify the existing performance standards for the three TCMs.
- An alternative as proposed by TPAC. This substitution would explore a proposal identified by TPAC.

At the January 25, 2013 meeting, members of TPAC selected combining the three TCMs into a single TCM substitution. However, consultation with EPA recommended Metro, DEQ and TriMet pursue a different TCM substitution option. After several discussions, Metro, DEQ, and TriMet returned to TPAC at the April 26, 2013 meeting outlining the circumstances and recommended readjusting the calculation method for the Transit Service Increase TCM as the proposed substitution.[7] At the April 26, 2013 meeting, TPAC members agreed to move forward readjustment method and allowed staff to develop the preferred TCM substitution method identified below.

Table 1. Existing TCM and Preferred Substitute TCM

	Existing Transit Service Increase TCM	**Preferred Substitute Transit Service Increase TCM**
	"Regional transit service revenue hours (weighted by capacity) shall be increased 1.0% per year. The increase shall be assessed on the basis of a 5 year rolling average of actual hours for assessment conducted between 2006-2017. Assessments made for the period through 2008 shall include the 2004 opening of Interstate MAX."	"Regional transit service revenue hours (weighted by capacity) shall be increased 1.0% per year. The increase shall be assessed on the basis of cumulative average of actual hours for assessment conducted for the entire second ten-year Portland Area Carbon Monoxide Maintenance Plan (2007 – 2017). Transit service increase will be assessed on the basis of fiscal year (July 1- June 30) beginning with FY 2008."
Geography TCM is Applicable	Portland Metropolitan Region	Portland Metropolitan Region
Implementing Agency	TriMet	TriMet

With approval from TPAC, staff has undertaken an analysis to demonstrate the proposed TCM substitution will meet EPA and DEQ requirements. Upon approval by TPAC that the TCM substitution analysis satisfactorily meets the DEQ and EPA requirements, the TCM substitution process will move forward with DEQ taking on the process to have the substitute TCM adopted by the Environmental Quality Commission (EQC). Upon EQC adoption, the existing TCM will be rescinded. The adoption process entails public comment, which would occur through summer 2013. In fall 2013, the TCM substitution will return to Metro for TPAC, JPACT and Metro Council action. Following TPAC, JPACT, and Metro Council actions, the EQC will take action to adopt the substitute TCM. DEQ and Metro will submit documentation to EPA for concurrence. For more information, see **Attachment A** for the TCM substitution timeline.

Implementation Schedule

Under the existing Transit Service Increase TCM, the language identifies an annual implementation schedule from 2006-2017. The beginning year, 2006, of the annual implementation schedule is one year prior to the approved second ten-year Portland Area Carbon Monoxide Maintenance Plan. The

[7] Metro. "TPAC Meeting Summary." April 26, 2013. http://www.oregonmetro.gov/index.cfm/go/by.web/id=31965

preferred TCM substitution identifies an annual implementation schedule for the entire second ten-year Portland Area Carbon Monoxide Maintenance Plan. The second ten-year Portland Area Carbon Monoxide Maintenance Plan is in effect from November 2007 – October 2017. Since the time frame for existing and proposed substitute TCM overlap the same ten-year period, the implementation schedule of the proposed substitute TCM is consistent with the existing TCM.

Evidence of Financial Ability and Authority to Implement the Preferred TCM Substitution

TriMet is a municipal corporation of the State of Oregon. Through enabling legislation ORS 267, TriMet has broad powers to provide mass transportation on behalf of the district.[8] Therefore, TriMet, as a transit service provider, has the authority to implement the proposed TCM substitution.

TriMet staff has confirmed expansions to date, budget forecast, and financial projections from now through 2017 to determine the following year-to-year service changes.[9] Though TriMet expects to reduce structural costs and identify additional resources to increase service well beyond these levels in the long-term, the projections TriMet has used for these calculations are the more conservative financial plan projections underlying its approved FY2014 budget.[10] The following table showing the year-to-year change in transit service illustrates that under the proposed TCM substitution the Transit Service Increase TCM performance standard has been met in previous years and that the projected future years annual transit service increase is expected to meet the proposed TCM substitution performance standard.

Projected Cumulative Transit Increase (The uppermost figures in columns C - L show the cumulative average annual service increase).
Portland Area Carbon Monoxide Maintenance Plan Period is from November 1, 2007 - October 2, 2017

Percent Change year-to-year	Fiscal Year										
22.0%	1999										
5.3%	2000										
1.6%	2001										
4.8%	2002										
2.3%	2003										
0.9%	2004										
5.4%	2005										
-1.6%	2006										
1.4%	2007										
3.3%	2008	3.34%									
3.4%	2009	3.35%	3.35%								
3.3%	2010	3.32%	3.32%	3.32%							
-5.0%	2011	1.24%	1.24%	1.24%	1.24%						
1.0%	2012	1.20%	1.20%	1.20%	1.20%	1.20%					
1.0%	2013 PROJ	1.16%	1.16%	1.16%	1.16%	1.16%	1.16%				
1.0%	2014 PROJ	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%			
1.4%	2015 PROJ	1.17%	1.17%	1.17%	1.17%	1.17%	1.17%	1.17%	1.17%		
4.9%	2016 PROJ	1.58%	1.58%	1.58%	1.58%	1.58%	1.58%	1.58%	1.58%	1.58%	
1.0%	2017 PROJ	1.52%	1.52%	1.52%	1.52%	1.52%	1.52%	1.52%	1.52%	1.52%	1.52%

[8] State of Oregon. Oregon Statute Chapter 267 – Mass Transit.
[9] TriMet. Annual Budget and Financial Forecast, 2013.
[10] Ibid.

Additionally, see **Attachment B**, a letter of commitment from TriMet in support of the TCM substitution and the substitution process.

Demonstration of Equivalent Carbon Monoxide Emissions Reduction Benefit for Preferred TCM Substitution

To demonstrate the preferred substitute TCM provides equal or greater carbon monoxide emissions reduction benefit, the same methodology was applied in calculating the emissions reduction benefit for the existing TCM to the preferred substitute TCM. The inputs to calculate the existing and proposed substitute TCM reflect the latest planning assumptions and the new MOVES2010 carbon monoxide emissions rate. More details regarding TCM substitutions technical analysis methodology and assumptions can be found in **Attachment C**.

Table 2. Preferred TCM Substitution Demonstration of Equivalent or Greater Carbon Monoxide Emissions Reduction Benefits

Transportation Control Measure (TCM)	Performance Standard	Calculation of TCM Emissions Reduction Benefit	Original TCM Emissions Reduction Benefit
Increase transit service (Existing TCM)	Regional transit service revenue hours (weighted by capacity) shall be increased 1.0% per year. The increase shall be assessed on the basis of a 5-year rolling average of actual hours for assessments conducted between 2006 and 2017.	Additional Trips Generated Per Day: 3,221 Average Transit Trip Length: 6 miles 3,221 trips x 6 miles = 19,326 miles 19,326 miles x 9.546 grams per mile = 184,486 total grams 184,486 total grams/453.592 grams per pound = 406.7 pounds per day	406.7lb/day
Increase transit service (Proposed TCM Substitution)	Regional transit service revenue hours (weighted by capacity) shall be increased 1.0% per year. The increase shall be assessed on the basis of cumulative average of actual hours for assessment conducted for the entire Second Portland Area Carbon Monoxide Maintenance Plan (2007 – 2017). Transit service increase will be assessed on the basis of fiscal year (July 1-June 30) beginning with FY 2008.	Additional Trips Generated Per Day: 3,221 Average Transit Trip Length: 6 miles 3,221 trips x 6 miles = 19,326 miles 19,326 miles x 9.546 grams per mile = 184,486 total grams 184,486 total grams/453.592 grams per pound = 406.7 pounds per day	406.7 lb/day

Based on the results of the carbon monoxide emissions reduction benefit analysis, the proposed TCM substitution will provide equal carbon monoxide reduction benefit as the existing TCM.

Since the proposed TCM substitution is a minor adjustment to the method of calculating the annual transit service increase (from a rolling average to a cumulative average) to determine if the performance standard has been achieved no change is observed between the existing TCM and the proposed substitute TCM in carbon monoxide emissions reduction benefits. This is because the original methodology assumed a constant ratio between a 1.0 percent annual transit service increase and the resulting amount of vehicle trips diverted. If a 1.0 percent annual transit service increase occurred then the TCM and emissions reduction benefits has been achieved. Since the proposed TCM substitution does not change the performance standard of 1.0 percent annual transit service increase, but only the method of calculating the service increase, the number of vehicle trips diverted do not change. This does not end up changing the inputs in calculating the emissions reduction benefits.

More details regarding TCM substitutions technical analysis methodology can be found in **Attachment C**.

While the carbon monoxide emissions reduction benefit analysis complies with EPA's and DEQ's requirements for the analysis methods, the requirements applied to the methodology limits the region's ability to show the true nature of emissions reduction benefits gained since the implementation of the TCM in 2007. The recent economic downtown forced a significant cut to transit service after several years of high transit service growth. Nonetheless, ridership and therefore ultimately diverted trips have increased even during the recession. This demonstrates while transit service may fluctuate, air quality benefits are still gained. The cumulative average method more accurately reflects the lasting positive benefits and long-term investments the region has made towards transit, including a reduction of carbon monoxide emissions and overall improved air quality.

Request
Metro, DEQ, and TriMet recommend TPAC approve the proposed TCM substitution analysis satisfactorily meets all DEQ and EPA requirements and approve the TCM substitution process to move forward towards EQC adoption.

Next Steps
Metro, DEQ, and TriMet staff will provide an update on the status of the TCM substitution process at the June JPACT meeting. Following, DEQ will prepare the necessary documentation and undergo a public comment process to prepare for the EQC adoption. See **Attachment A** for the TCM substitution timeline.

Attachment B – Technical Analysis of Proposed Transit Service Increase TCM Substitution for the Portland Metropolitan Region

Background

Clean Air Act section 176(c)(8) allows regions to employ a "substitution," when air quality and transportation planning agencies find it appropriate to modify or replace the original transportation control measures (TCMs) in an air quality plan.[1] The Oregon Department of Environmental Quality (DEQ), in conjunction with Metro, developed a substitution policy and process that was codified with the adoption of the Portland Area Carbon Monoxide Maintenance Plan.[2] A TCM substitution allows an existing TCM to be replaced with another TCM of equal or greater emissions reduction. To undergo a TCM substitution, the process entails consultation with regional stakeholders, conducting technical analysis demonstrating equivalent or greater emissions reduction, public comment, and concurrence from Metro, Oregon State Department of Environmental Quality (DEQ), and the U.S. Environmental Protection Agency (EPA).[3]

The Portland Metropolitan region proposed undergoing a TCM substitution due to a potential shortfall in meeting the Transit Service Increase TCM. The following outlines the process undertaken to demonstrate the proposed substitute TCM will provide an equal or greater carbon monoxide emissions reduction benefit.

Portland Metropolitan Region's Transportation Control Measures

As an EPA designated maintenance area for carbon monoxide, the Portland Metropolitan region is required to develop and implement strategies to reduce the amount of criteria pollutants released from transportation sources.[4] The region identified and committed to three transportation control measures (TCMs) to help mitigate impacts of criteria pollutants from transportation sources.[5] Metro and regional partners are responsible for implementing all of its TCMs to meet federal and state requirements. The three TCMs are found in Table 1.

Table 1. Transportation Control Measures and Performance Standards

Transportation Control Measure (TCM)	Performance Standard	Emissions Reduction Benefit
Increase transit service	Regional transit service revenue hours (weighted by capacity) shall be increased 1.0% per year. The increase shall be assessed on the basis of a 5-year rolling average of actual hours for assessments conducted between 2006 and 2017.	246.3 lb/day
Program and construct bikeways and trails	Jurisdictions and government agencies shall program a minimum total of 28 miles of bikeways or trails within the Portland metropolitan area between the years 2006 through 2017. A cumulative average of 5 miles of	170.1 lb/day

[1] U.S. Environmental Protection Agency, "Guidance for Implementing the Clean Air Act Section 176(c)(8) Transportation Control Measure Substitution and Addition Provision." Page 1.
[2] Oregon Department of Environmental Quality, "Portland Area Carbon Monoxide Maintenance Plan ." State Implementation Plan. Volume 2 Section 4.58 Appendix D9-2.
[3] Ibid.
[4] Oregon Department of Environmental Quality, "Portland Area Carbon Monoxide Maintenance Plan ." State Implementation Plan. Volume 2 Section 4.58 Page 21.
[5] Ibid.

	bikeways or trails per biennium must be funded from all sources from each MTIP.	
Program and construct pedestrian paths	Jurisdictions and government agencies shall program at least nine miles of pedestrian paths in mixed-use centers between the years 2006 through 2017, including the funding of a cumulative average of 1 and 1/2 miles in each biennium from all sources in each MTIP.	.9 lb/day

Proposed TCM Substitutions

In anticipation the region may not meet the performance standard for the Transit Service Increase TCM, TPAC recommended Metro, DEQ and TriMet to undergo EPA's TCM substitution process. Through a collaborative process and in consultation with EPA, the following TCM substitution is proposed:

Existing Transit Service Increase TCM Language	Proposed Substitute Transit Service Increase TCM Language
"Regional transit service revenue hours (weighted by capacity) shall be increased 1.0% per year. The increase shall be assessed on the basis of a 5 year rolling average of actual hours for assessment conducted between 2006-2017. Assessments made for the period through 2008 shall include the 2004 opening of Interstate MAX."	"Regional transit service revenue hours (weighted by capacity) shall be increased 1.0% per year. The increase shall be assessed on the basis of cumulative average of actual hours for assessment conducted for the entire second ten-year Portland Area Carbon Monoxide Maintenance Plan (2007 – 2017). Transit service increase will be assessed on the basis of fiscal year (July 1- June 30) beginning with FY 2008."

The proposed substitute TCM uses a cumulative average to-date to determine whether a 1.0 percent annual transit service increase has been achieved. This is similar as the existing TCM, which requires a 1.0 percent annual transit service increase, but the existing TCM is based on a rolling five year average of past transit service. Using the new methodology of a cumulative average accounts for all years-to-date when calculating the whether 1.0 percent service increase has been achieved. The cumulative average method for the Transit Service Increase TCM provides a longitudinal look at whether the TCM is being met throughout the life of the maintenance plan rather than a five-year snapshot.

Methodology, Emissions Model Update, and Latest Planning Assumptions Update for Calculating the Carbon Monoxide Emissions Reductions Benefit

To employ a TCM substitution, EPA and DEQ requires the new TCM meet or exceed the emission reduction benefit of the replaced TCM. However, the process requires the demonstration of equivalent carbon monoxide emissions reductions to use updated planning assumptions.[6]

Methodology

Each TCM in the regional air quality plan was assigned a performance standard as a means of measuring and monitoring the region's commitment to reducing carbon monoxide emissions. The State Implementation Plan (SIP) which serves as the statewide air quality plan established the

[6] U.S. Environmental Protection Agency, "Guidance for Implementing the Clean Air Act Section 176(c)(8) Transportation Control Measure Substitution and Addition Provision." Page 6.

methodology to calculate the emission reduction benefits of TCMs.[7] Since of premise of the proposed TCM substitution is a modification to how the TCM annual transit service increase is calculated, the emissions reduction benefit methodology was not modified. The same emissions reduction methodology outlined in the SIP was used to calculate the carbon monoxide emissions reduction benefit for the updated existing TCM and proposed TCM substitution.

For the Transit Service Increase TCM, the methodology entails:

1) Estimating the number of vehicle trips which are diverted to transit by meeting the performance standard of the TCM; and
2) Identifying the average length of transit trip.[8]

Using the estimated number of diverted vehicle trips, the average transit trip length, and a carbon monoxide emissions reduction rate, the carbon monoxide emissions reduction benefit is calculated as follows:

1) X number of diverted vehicle trips from meeting transit performance standard (per day) x average length of transit trip (in miles) = X number miles diverted per day
2) X number miles diverted x CO rate (in grams per mile) = total CO grams per day
3) X total CO grams per day/453.592 grams per pound = X total CO pounds per day[9]

Assumptions

Per EPA and DEQ rules, the latest planning assumptions must be used to when conducting a TCM substitution analysis.[10] In the methodology of calculating the carbon monoxide emissions reduction benefit for the existing and the proposed substitute TCM, there are two areas where the latest planning assumptions can be reflected: the number of diverted vehicle trips and the average transit trip length.

In 2011, Metro conducted an update to the Oregon Household Activity Survey (OHAS). The OHAS provides information regarding the region's travel behavior and habits. The 2011 OHAS indicate the average transit trip length increased from 5.9 miles to 6 miles.[11] The updated average trip length was incorporated in the analysis of the carbon emissions reduction benefit for the proposed substitute TCM and the existing TCM.

The existing Transit Service Increase TCM used 2003 reported revenue hours to determine the diverted vehicle trips diverted by meeting the Transit Service Increase TCM performance standard of 1.0% annual service increase. The 2003 revenue hours were not weighted by capacity. TriMet provided 2012 revenue hours which were used to update and determine the number of vehicle trips.[12] The 2012 revenues were not weighted by capacity. Table 2 identifies the assumptions in the diverted vehicle trips and average length used in the analysis.

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[7] Oregon Department of Environmental Quality, "Portland Area Carbon Monoxide Maintenance Plan ." State Implementation Plan. Volume 2 Section 4.58 Appendix D9-3.
[8] Ibid.
[9] Ibid.
[10] U.S. Environmental Protection Agency, "Guidance for Implementing the Clean Air Act Section 176(c)(8) Transportation Control Measure Substitution and Addition Provision." Page 6.
[11] Metro. Oregon Household Activity Survey, 2011.
Metro. Oregon Household Activity and Travel Survey, 1994.
[12] TriMet. Annual Budget and Financial Forecast, 2012.

Table 2. Transit Service Increase TCM Assumptions

Assumption	Existing Transit Service Increase TCM	Existing Transit Service Increase TCM (updated with latest planning assumptions) and Proposed Substitute Transit Service Increase TCM
Diverted Trips	TriMet reported 2003 total revenue hours was 1,677,156 resulted 88,863,600 boardings/trips. Assuming ratio of revenue hours to ridership is constant, one percent change in 2003 reported revenue hours results in an annual ridership of 89,751,153. Subtracting the difference results in an estimate of a one year increase of yearly ridership 888,553, which on a daily basis would be an increase of 2,843 riders. Assuming each rider equates to one diverted vehicle trip, the daily diverted trip for meeting the performance standard is 2,843.	TriMet reported 2012 total revenue hours was 1,600,132 resulted 101,210,444 boardings/trips. Assuming ratio of revenue hours to ridership is constant, one percent change in 2012 reported revenue hours results in an annual ridership of 102,2018,644. Subtracting the difference results in an estimate of a one year increase of yearly ridership 1,008,200, which on a daily basis would be an increase of 3,221 riders. Assuming each rider equates to one diverted vehicle trip, the daily diverted trip for meeting the performance standard is 3,221.
Average Trip Length	5.9 miles – 1994 Oregon Household Activity Survey	6.0 miles – 2011 Oregon Household Activity Survey

Model Assumptions

To ensure consistency between the carbon monoxide emissions reduction benefit established with MOBILE6.2, the MOVES2010 conversion incorporated the same base year assumptions used in MOBILE6.2. MOVES2010b was run in the emission rates mode at the county scale for the 24-hour January weekday in 2005 and was configured to produce CO rates for passenger cars and passenger trucks on urban roads. The County Data Manager was populated with inputs from Metro's most recent conformity-related MOBILE6.2 run, converted to the formats required by MOVES in accordance with EPA technical guidance. MOVES was run for three custom counties representing the various inspection and maintenance regimes that are represented by vehicles traveling in the Portland metro area: Oregon-inspected, Washington-inspected, and non-inspected. The rates produced by MOVES were stratified by hour, roadway type (restricted versus non-restricted access), average speed bin, and I/M area. Using VMT produced by the most recent conformity-related run of Metro's regional transportation model for 2005, weighted averages were applied to each of the above strata to arrive at a single CO rate (9.546 grams/mile).

Translating Performance Metrics into Emission Reduction Benefits

Prior to performing the analysis to compare the carbon monoxide emissions reduction benefit of the existing TCM and the proposed substitute TCM, Metro staff needed to update the emissions

reduction benefits of the existing TCM to reflect the latest approved EPA emissions model.[13] In March 2010, EPA implemented new rules requiring the use of the MOVES2010 emissions model for all regional air quality conformity and state implementation plan analyses.[14] The carbon monoxide emissions reduction benefits were derived from the previous carbon monoxide rate which came from the MOBILE 6.2 emissions model. Using the same methodology established in the SIP to calculate the emissions reduction benefit for the Transit Service Increase TCM, staff employed the MOVES2010 carbon monoxide rate to convert the carbon monoxide emissions reduction benefit for the existing Transit Service Increase TCM. Additionally, the emissions reduction benefit also employed the latest planning assumptions. Tables 3 - 5 illustrate the results of the conversion.

Table 3. Original Carbon Monoxide Emission Reduction Benefit Calculation – MOBILE6.2

Transportation Control Measure (TCM)	MOBILE6.2 Carbon Monoxide (CO) Emission Rate	Calculation of TCM Emissions Reduction Benefit	MOBILE6.2 Emissions Reduction Benefit
Increase transit service	6.66 CO grams per mile	Diverted Trips Per Day: 2,843 Average Transit Trip Length: 5.9 miles 2,843 trips x 5.9 miles = 16.773.7 miles 16,773.7 miles x 6.66 grams per mile = 11,712.842 total grams 11,712.842 total grams/453.592 grams per pound = 246.3 lb/day	246.3 lb/day

Table 4. Carbon Monoxide Emission Reduction Benefit Calculation – MOVES2010 Conversion without Updated Planning Assumptions

Transportation Control Measure (TCM)	MOVES2010 Carbon Monoxide (CO) Emission Rate	Calculation of TCM Emissions Reduction Benefit (unadjusted)	MOVES2010 Emissions Reduction Benefit
Increase transit service	9.546 CO grams per mile	Diverted Trips Per Day: 2,843 Average Transit Trip Length: 5.9 miles 2,843 trips x 5.9 miles = 16,773.7 miles 16,773.7 miles x 9.546 grams per mile = 160,121.740 total grams 160,121.740 total grams/453.592 grams per pound = 353.0 lb/day	353.0 lb/day

[13] U.S. Environmental Protection Agency, "Guidance for Implementing the Clean Air Act Section 176(c)(8) Transportation Control Measure Substitution and Addition Provision." Page 6.
[14] U.S. Environmental Protection Agency, Policy Guidance on the Use of MOVES2010 and Subsequent Minor Revisions for State Implementation Plan Development, Transportation Conformity, and Other Purposes."

Table 5. Carbon Monoxide Emission Reduction Benefit Calculation – MOVES2010 Conversion with Updated Planning Assumptions

Transportation Control Measure (TCM)	MOVES2010 Carbon Monoxide (CO) Emission Rate	Calculation of TCM Emissions Reduction Benefit (adjusted for updated planning assumptions)	MOVES2010 Emissions Reduction Benefit
Increase transit service	9.546 CO grams per mile	Diverted Trips Per Day: 3,221 Average Transit Trip Length: 6 miles 3,221 trips x 6 miles = 19,326 miles 19,326 miles x 9.546 grams per mile = 184,486 total grams 184,486 total grams/453.592 grams per pound = 406.7 lb/day	406.7 lb/day

TCM Substitution Demonstration of Equivalent Carbon Monoxide Emissions Reduction Benefit

Demonstration of Carbon Monoxide Emissions Reduction Benefits for Proposed TCM Substitution
Table 5 illustrates the results of the carbon monoxide emission reduction benefit analysis and compares the emissions reduction benefit for the existing TCM (with updated planning assumptions) and proposed substitute TCM.

Table 6. TCM Substitution Demonstration of Equivalent Carbon Monoxide Emissions Reduction Benefit

Transportation Control Measure (TCM)	Performance Standard	Calculation of TCM Emissions Reduction Benefit	TCM Emissions Reduction Benefit
Increase transit service (Existing TCM adjusted for MOVES and latest planning assumptions)	Regional transit service revenue hours (weighted by capacity) shall be increased 1.0% per year. The increase shall be assessed on the basis of a 5-year rolling average of actual hours for assessments conducted between 2006 and 2017.	Additional Trips Generated Per Day: 3,221 Average Transit Trip Length: 6 miles 3,221 trips x 6 miles = 19,326 miles 19,326 miles x 9.546 grams per mile = 184,486 total grams 184,486 total grams/453.592 grams per pound = 406.7 pounds per day	406.7 lb/day

Increase transit service (Proposed TCM Substitution)	Regional transit service revenue hours (weighted by capacity) shall be increased 1.0% per year. The increase shall be assessed on the basis of cumulative average of actual hours for assessment conducted for the entire Second Portland Area Carbon Monoxide Maintenance Plan (2007 – 2017). Transit service increase will be assessed on the basis of fiscal year (July 1- June 30) beginning with FY 2008.	Additional Trips Generated Per Day: 3,221 Average Transit Trip Length: 6 miles 3,221 trips x 6 miles = 19,326 miles 19,326 miles x 9.546 grams per mile = 184,486 total grams 184,486 total grams/453.592 grams per pound = 406.7 pounds per day	406.7 lb/day

Based on the results of the carbon monoxide emissions reduction benefit analysis, the proposed TCM substitution will provide equal carbon monoxide reduction benefit as the existing TCM.

Since the proposed TCM substitution is a minor adjustment to the method of calculating the annual transit service increase (from a rolling average to a cumulative average) to determine if the performance standard has been achieved no change is observed between the existing TCM and the proposed substitute TCM in carbon monoxide emissions reduction benefits. This is because in the original methodology assumed a constant ratio that if 1.0 percent annual transit service increase occurred, the result is a set amount of vehicle trips diverted. Since the proposed TCM substitution does not change the performance standard of 1.0 percent annual transit service increase, but only the method of calculating the service increase, then the vehicle trips diverted do not change. This does not end up changing the inputs in calculating the emissions reduction benefits. However, the cumulative average method more accurately reflects the lasting positive benefits and long-term investments the region has made towards transit. Subsequently this has led to a reduction of carbon monoxide emissions and overall improved air quality. The cumulative average method provides a more accurate reflection of the region's commitment to transit over the entire carbon monoxide maintenance plan.