



Advisory Committee on
Metropolitan Transportation Planning and
Greenhouse Gas Reduction Targets

Target Policy Memo

For the November 4, 2016 Meeting

Overview

Listed below are the issues previously identified for consideration by the Advisory Committee on Metropolitan Transportation Planning and Greenhouse Gas Reduction Targets. Two of the issues (I and VI) are addressed in this memo in preparation for the November 4 meeting. The other four issues are included in this memo to report on the results of previous meetings.

I.	Individual MPO targets or a single statewide target	For decision
II.	Targets for the two new MPOs	Previously addressed
III.	Statewide Transportation Strategy for future assumptions	Previously addressed
IV.	Targets between 2040 and 2050	Previously addressed
V.	2050 population assumptions (MPO share)	Previously addressed
VI.	How to express targets	For discussion

This policy memo is based on the analysis provided in two technical memos:

[Targets Technical Memo #1](#)

[Targets Technical Memo #2](#)

For Decision

I. Separated Targets

a) Base Year Adjustments

The target rules adopted in 2011 established individual metropolitan targets primarily because the targets were measured from 2005 as the base year, but the overall goal is measured from 1990. The shift of the base year affected the targets because the estimates of change in emissions from 1990 to 2005 varied among metropolitan areas. In hindsight, it is clear that there is considerable uncertainty in those area specific estimates for 1990. DLCD staff recommends averaging the data to adjust from 1990 emission estimates to 2005, rather than making individual metropolitan area adjustments.

b) Capability Adjustments

Even with a unified adjustment, it may be appropriate to set different targets from some metropolitan areas based on the perception that different areas have different capabilities to reduce GHG emissions. Three options have been discussed by the committee:

1. Establish the same target for all metropolitan areas
2. Establish one target for the Portland metropolitan area, and another target for all other metropolitan areas
3. Establish an individual target for each metropolitan area

Options 1 and 2 would rely on information in the Statewide Transportation Strategy (STS) that would be easier to implement than option 3, while remaining consistent with other state and federal plans and policies. Option 3 would be the most difficult to implement and would require a substantial amount of analysis in order to justify differences in targets for the metropolitan areas. Analysis similar to what has been done for the Strategic Assessments would need to be done for each of the metropolitan areas in order to get the information needed to accurately differentiate the targets. For this reason, the committee did not support further consideration of Option 3.

1. Establish the same target for all metropolitan areas

The initial calculation for a single statewide metropolitan area target is a 21.5% reduction in 2040, and 33.4% reduction in 2050 (section 5.1 of [Technical Memo #2](#)). This option would result in the simplest set of rules, with one schedule of targets to cover metropolitan areas throughout Oregon.

2. Establish one target for the Portland metropolitan area, and another target for all other metropolitan areas

Section 5.2 of [Technical Memo #2](#) gives the details for four options for separating the targets between the Portland metropolitan area and the other metropolitan areas.

The option in section 5.2.1 uses the model results from the STS Vision Scenario to split the reduction between Portland and the rest of the metropolitan areas. This scenario assumes a very large difference in the differences in capability between Portland and the rest of the metropolitan. The results in table 5 actually show increasing GHG emissions per capita in the smaller MPOs until 2042. The reductions in 2050 would be 49% in Portland, and 4.6% for the rest of the MPOs.

The model runs from the STS were never intended to be used for disaggregating the reduction goals to the metropolitan areas, only for creating a scenario demonstrating how the state could meet the overall reduction goal in ground passenger travel. The results suggest that relying on the capability assumptions in the STS model runs is unrealistic; therefore three other options were analyzed.

The option in section 5.2.2 assumes that the Portland metropolitan area achieves a 29% reduction target in 2035, consistent with the upper end of the findings from the preferred alternative in the Climate Smart Communities Strategy. The small metropolitan areas are assumed to make up the difference between the Portland metropolitan area emissions in 2035 and the emissions

calculated for all metropolitan areas in 2035. After 2035, it is assumed that per capita emissions for all metropolitan areas decline at the same annual rate and that the emissions in 2050 will be the same as the unified statewide target in option 1. The resulting targets shown in table 7 still place a disproportionate burden on the Portland metropolitan area, with 2050 targets for the other metropolitan areas that are smaller than the adopted 2035 targets.

Staff recommends that neither option 5.2.1 nor 5.2.2 be used because they place a disproportionate burden on the Portland metropolitan area. The following two options are recommended as viable options. Both assume that the per capita emissions in the smaller metropolitan areas will decline at the same annual rate as in the unified statewide target option.

Section 5.2.3 presents an option where the Portland metropolitan area achieves a 20% target in 2035, consistent with the lower end of the findings from the Climate Smart Communities Strategy that demonstrates the region's ability to achieve the target. The small metropolitan areas are assumed to make up the difference between the Portland metropolitan area emissions in 2035 and the emissions calculated for all metropolitan areas in 2035. After 2035, it is assumed that per capita emissions for all metropolitan areas will decline at the same annual rate and that the emissions in 2050 will be the same as the unified statewide target option. Key results from table 8 are shown below.

Year	Portland metropolitan area	Smaller metropolitan areas
2040	26%	13%
2050	37%	26%

Section 5.2.4 presents an option where the Portland metropolitan area achieves a 20% reduction target in 2035. Unlike the previous option, this option assumes that the other metropolitan areas make up the difference in emissions, achieving a 20% reduction target in 2040. This option is consistent with the lower end of the findings from the Climate Smart Communities Strategy, the findings from the Central Lane Scenario Plan, and the Strategic Assessment findings from Corvallis and Rogue Valley, which indicate that the other metropolitan areas are capable of a 20% reduction by 2040. Like the two options presented above, it assumes that per capita emissions for all metropolitan areas will decline at the same annual rate and that the emissions in 2050 will be the same as the unified statewide target option. Key results from table 9 are shown below.

Year	Portland metropolitan area	Smaller metropolitan areas
2040	25%	20%
2050	35%	30%

Staff Recommendation:

The unified state target has the benefit of simplicity; however, if the consensus of the committee is to split the target, the fourth option (from section 5.2.4) would be the best option. This option uses assumptions informed by the scenario planning efforts conducted over the last five years, and results in reasonable reduction targets for both the Portland metropolitan area and the other metropolitan areas.

For Discussion

VI. How to express targets

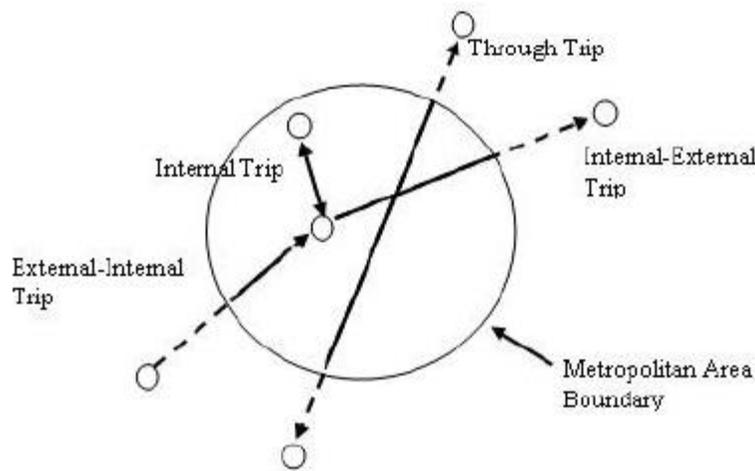
There are two issues regarding how the targets are modelled and expressed.

1. Geography: Households versus Driving

The first issue addresses the geography that is covered. The targets could measure driving on streets and roads within the metropolitan area (regardless of who does the driving) or the targets could measure driving by households that live within the metropolitan area (regardless of where the driving occurs).

The original target rule defines travel using the first approach. This would include trips passing through a metropolitan area, trips by people who live outside a metropolitan area but come into the area, and trips by people who live within a metropolitan area. Figure 1 from the adopted target rule illustrates the different types of trips, with the solid lines showing which portions should be counted.

Figure 1: Light Vehicle Travel within a Metropolitan Area



The model used in scenario planning in Oregon (GreenSTEP and Regional Strategic Planning Model or RSPM), estimate GHG emissions based on households, not roadway location. This is a more practical, less expensive, and more reliable approach. Scenario planning using these models has translated household estimates into roadway estimates by applying a constant multiplication factor that is calibrated based on 2005 travel. The factor is the ratio of metropolitan roadway VMT to metropolitan household VMT in 2005. This factor is held constant for future forecasts because the model does not have any way to forecast how it might change. Since the roadway factor is held constant, and since the targets are expressed as the ratio of future year to base year travel, the travel by people who do not live in the area does not have any effect on meeting the target. As a practical matter, only travel by metropolitan area households is counted.

The references in the rule to metropolitan area roadway travel causes confusion and concerns. Confusion is caused by the questions of how the travel from external sources is to be accounted for. Concern is caused by perceptions that local governments in metropolitan areas are being held accountable for external travel that they have limited ability to affect.

Staff Recommendation:

Staff recommends that the targets rules be amended to apply to changes in travel by households within the metropolitan area rather than to travel on roadways within the metropolitan area. The rule should also include light duty commercial vehicles based within the metropolitan area. This would allow metropolitan areas to get credit for fleet programs such as compressed natural gas and renewable natural gas.

2. Target Expression:

Senate Bill 1059 directs LCDC to set rules for GHG emission reduction targets for metropolitan areas that *“must take into consideration the reductions in vehicle emissions that are likely to result by 2035 from the use of improved vehicle technologies and fuels.”*

The adopted targets rules define the GHG reduction targets as *the “greenhouse gas emissions reduction targets are expressed as a percentage reduction in emissions per capita from 2005 emissions levels but not including reductions in vehicle emissions that are likely to result by 2035 from the use of improved vehicle technologies and fuels.”*

The application of this expression of the target in and how it is modeled has been less than ideal. So far, measuring progress against the target for all of the scenario planning work has involve the creation of a 2005 hybrid scenario that has all the 2005 characteristics except for the vehicle and fuel technologies which are future year. Then by calculating the rate of change between this 2005 hybrid scenario and the future year, we are able to remove the contributions of improvements in vehicles and fuels. The problem is that as modeled, vehicle technology doesn't just affect the emissions rates, it also affects the amount of vehicle travel. For example, if fuel economy increases, the emissions per mile goes down but the miles driven goes up because of significantly lower operating costs (on average gas-powered cars cost around three times as much per mile as electric vehicles, depending upon gas prices). This is called the rebound effect and is important to account for in emissions models, which the GreenSTEP and RSPM models do. The issue will become more problematic as the planning horizon extends farther into the future because the reductions relative to 2005 technology will become greater and greater as we plan for years further out into the future.

Section 6.2 of the memo presents two alternative options for expressing the target. One would include the improvements to vehicles and fuels into the target, the other would maintain the status quo of removing vehicles and fuels, but do so with a different definition. Both options would replace the table of baseline assumptions in the rule with a schedule of percentage decrease in the vehicle emissions rate. This would simplify the rules, while allowing us to avoid this modeling step in future target setting.

Option 1 – Establish goals rather than targets

This option would specify the overall goals for reducing emissions that would include the assumptions for change in average vehicle emissions rate. Table 11 shows the resulting goals which range from -73% in 2040 to a -83% reduction in 2050 for a unified statewide goal. This option would be very easy to apply and potentially be easy to understand, however separating out the effects of local actions would still require additional analysis and explanation in a scenario planning exercise.

Option 2 – Establish targets, but change how they are defined

The second option would specify the targets similar to what is in the existing rules. As with the first option, the rules would be changed to specify the default assumptions for the change in the average vehicle emissions rate. The procedure for calculating the target would be the same as option 1 above, but adds an additional step to calculate an equivalent target from the goal. This step is necessary to separate out the contributions in emissions reductions from vehicles and fuels.

Staff Recommendation:

The existing methods to isolate the effects of vehicle technologies and fuels should not be continued due to the distortion that will amplify as the planning horizon moves farther out. Further discussion, and possibly further analysis will be needed to find the best solution to this issue.

Previously addressed

II. Targets for the two new MPOs: Albany Area, and Middle Rogue (Grants Pass)

In 2013, two new metropolitan areas were designated within Oregon: Albany Area, and Middle Rogue (Grants Pass area). These metropolitan areas were not included in the original 2011 target rule making, and LCDC has directed the advisory committee to address whether or not targets should be set for these two new metropolitan areas. The considerations addressed in this question are as follows:

1. Would it be fair to set targets for these metropolitan areas?
2. Would excluding these metropolitan areas make much difference to GHG emission reduction?
3. How difficult would it be to set targets for these metropolitan areas?

The first question is a policy question that might best be answered by looking back at the intent of the original legislation where SB 1059 directed DLCD to set targets “to be met by each region served by a metropolitan planning organization.” Representatives from the Albany Area MPO and the Middle Rogue MPO stated that setting targets for their metropolitan areas would not be acceptable if it required MPO staff resources or was a mandated requirement.

The second question is addressed in [Technical Memo #2](#), section 3. To determine the relative effects of the inclusion of the Albany and Grants Pass metropolitan areas in the targets, the GreenSTEP model results were factored both including the Albany and Grants Pass metropolitan

areas in the metropolitan area totals, and excluding those areas from the metropolitan area totals. Given that the 2050 forecasted urban populations in those counties is about 3% of the forecasted total state population, and that the metropolitan area populations in the counties would be less than the total urban populations, the effect of the per capita GHG reduction would be to reduce total state GHG from light vehicle travel by about half of a percent.

The answer to the third question depends on the decision that is made regarding the establishment of individual or separated metropolitan area targets. If either the first or second option is chosen, then the two new metropolitan areas would have the same targets as the existing metropolitan areas and therefore would not be difficult to establish. If the third option is chosen however, then a substantial amount of effort would be required to evaluate the capabilities for those areas to make reductions compared to the capabilities of other metropolitan areas to make reductions. Since staff recommends against setting individual targets for metropolitan areas, including the new metropolitan areas into the targets would be straightforward.

Staff Recommendation:

Staff recommends including the Albany and the Middle Rogue metropolitan areas in the target rules for the following reasons:

1. Targets for two metropolitan areas are voluntary
2. Targets will be either uniform for the state or for the non-Portland metropolitan areas, which will require no resources from the MPO staff
3. The results of the analysis in [Technical Memo #2](#), show an insignificant effect on the targets by including the two metropolitan areas

III. Using the Statewide Transportation Strategy (STS) for future assumptions

The legislation that established the requirement that LCDC adopt target rules addressing all metropolitan areas also directed the Oregon Transportation Commission to adopt a statewide transportation strategy (STS) for reducing GHG emissions. Development of the STS started prior to the development and adoption of the target rules but was not completed until 2013. Extensive scenario testing was carried out to test various ways for reducing transportation sector GHG emissions to reach a 75% reduction in total emissions by 2050. The completed strategy includes ambitious assumptions for land use planning, alternative modes, systems management, pricing, as well as improvements to vehicle and fuels technologies. This is the scenario that was incorporated into the final strategy.

Section 4 of [Technical Memo #2](#) demonstrates how the assumptions of future vehicle emission rates in the STS closely align with the adopted target rules assumption and other state and federal policies, including the U.S. Corporate Average Fuel Efficiency standards and the Zero Emission Vehicle standards. The members on the Core Tech Team from the Oregon Departments of Environmental Quality and Energy agreed that the STS vehicle emissions assumption are a reasonable reflection of goals that the federal government, Oregon, and other states wish to achieve.

Staff Recommendation:

Staff recommends to use the STS as the basis for calculating the updated targets as it aligns with state plans, federal policies, and the original target rule.

IV. Updating targets as a schedule of targets for the years 2040-2050

The original target rules set targets for the year 2035. The limitation of having a target set for one specific year arose during the course of the Rogue Valley strategic assessment, where the MPO has an adopted planning horizon of 2038 which prevented a direct comparison of adopted plans to the state target. In order to prevent a situation like this to occur again and to limit the need for DLCDD to set targets every 4 years, a schedule of targets for the years 2040-2050 is proposed.

Staff Recommendation:

Staff recommends updating the target rules with a schedule of targets for the years between 2040 and 2050. Using a schedule will provide flexibility for metropolitan area planning horizons that may not align with a 2040 target.

V. Updating the 2050 population growth assumptions

The analyses done for the 2011 target rules and for the STS assumed a slightly higher population growth for the state than is now assumed in state forecasts. Section 2.2.2 in [Technical Memo #2](#) outlines the new population growth forecasts using updated numbers from the Office of Economic Analysis, the Population Research Center at Portland State University, and Metro. The current state and metropolitan area population forecasts for 2050 are 5% and 4.5% lower respectively than the forecasts assumed during the development of the target rules and the STS. Since the GHG reduction goal is expressed as the reduction in per capita emissions given a 75% reduction in total emissions from 1990 by 2050, a lower population forecast means that the target for reducing per capita emissions will be lower as well.

Staff Recommendation:

Staff recommends using updated growth assumptions in the target rules update.