ODOT Staff Report for CMAQ Program FY2019 and Beyond

The purpose of this report is to memorialize the decision making process on the funding distribution for the Congestion Mitigation and Air Quality (CMAQ) program for FY2019 and beyond. The report outlines the work with stakeholders to develop recommendations on program design and funding distribution methodology. The OTC has the final authority on the decision for how CMAQ funds will be allocated in Oregon. A final program recommendation for the OTC was agreed upon by the CMAQ Program Advisory Committee (PAC) at the June 2nd, 2017 meeting. The Commission reviewed the final PAC recommendation and heard testimony from stakeholders at the June 15th, 2017 OTC meeting. This summary report should help the OTC understand how a final recommendation was developed in order to assist with a decision on the funding distribution at the July meeting.

Federal CMAQ Funding
The CMAQ program is a flexible federal-aid funding source for transportation projects that reduce traffic congestion and improve air quality, specifically for the pollutants of ozone, carbon monoxide and particulate matter. Within this general purpose, the program can fund a wide variety of projects, each project meeting three basic criteria: *it must be a transportation project, it should generate an emissions reduction, and it should be located in or benefit a nonattainment or maintenance area.*

The Federal Highway Administration (FHWA) determines which nonattainment and maintenance areas CMAQ funds are eligible to be used within. ODOT, as the state department of transportation, and ultimately through the Oregon Transportation Commission (OTC), has the discretion on how to allocate the CMAQ funds in Oregon.

As of May 20, 2017, the FHWA rules were finalized that require ODOT and some of the MPO recipients to set performance targets for the CMAQ program. ODOT is required to set statewide emissions reduction targets for the pollutants of ozone, carbon monoxide and particulate matter for CMAQ funded projects. MPO’s with populations above 1 million and eventually 200,000 with a non-attainment or maintenance air quality status as of January 1st, 2018 must set 4-year congestion reduction targets based on annual hours of peak-hour excessive delay per capita and percentage of non-single occupancy vehicle travel. MPO’s with populations above 200,000 but below 1 million will not need to set congestion reduction targets until the second reporting period in 2022. Many of the details of how these performance measures will be calculated or how targets will be set is still to be determined and awaiting clarification by FHWA. Components of the performance measures were incorporated into funding distribution methodology and discussed later in this report.
CMAQ in Oregon

Historically, the CMAQ funds in Oregon have been distributed as a percent allocation or a flat amount to the individual eligible areas based on a formula developed in 1998. The recipients control project selection and investment decisions at their local level. The allocation formula was last modified in 2005 and agreed to by representatives from the Oregon eligible nonattainment and maintenance areas and ODOT staff. That formula remains in effect through FY2018. The eligible recipients include the Metropolitan Planning Organizations (MPOs) of Metro, Salem-Keizer, Central Lane, Rogue Valley and Middle Rogue and the cities of Klamath Falls, LaGrande, Lakeview and Oakridge. The three smallest cities (Lakeview, Oakridge, LaGrande) receive a flat amount of $65,000 per year, while the other areas receive a percentage of the remaining available funds based on the 2006 allocation formula. Below is an example of an annual allocation of CMAQ funds from FY2015:

Table 1: CMAQ Funding Distribution FY2015

<table>
<thead>
<tr>
<th>Set Annual Amount</th>
<th></th>
<th>$ 65,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>LaGrande</td>
<td></td>
<td>$ 65,000</td>
</tr>
<tr>
<td>Lakeview</td>
<td></td>
<td>$ 65,000</td>
</tr>
<tr>
<td>Oakridge</td>
<td></td>
<td>$ 65,000</td>
</tr>
<tr>
<td>subtotal</td>
<td></td>
<td>$ 195,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Percentage Allocation of Available Funds</th>
<th>$17,364,833</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portland Metro MPO</td>
<td>13,891,867</td>
</tr>
<tr>
<td>Rogue Valley MPO</td>
<td>2,431,077</td>
</tr>
<tr>
<td>Middle Rogue MPO</td>
<td>694,593</td>
</tr>
<tr>
<td>Klamath Falls</td>
<td>347,296</td>
</tr>
<tr>
<td>subtotal</td>
<td>17,364,833</td>
</tr>
</tbody>
</table>

Grand Total $ 17,559,833

Currently the decision for how to use CMAQ funds in Oregon has been delegated to the eligible areas that receive an allocation of funding. In the MPO areas, they generally combine all of the federal FHWA funds they have discretion of into one selection and prioritization effort, for each development cycle of their Metropolitan Transportation Improvement Program (MTIP). Each MPO has a slightly different process they follow to prioritize and fund projects with these various sources of federal funding.

For the smaller non-MPO represented areas (Klamath Falls, LaGrande, Oakridge, Lakeview), the city has the discretion of how best to utilize the allocation of CMAQ funds they receive.

While the federal government allows for CMAQ funds to be used for twenty different types of projects that improve air quality, the recipients of the Oregon funds have chosen to use their
funds in the categories of bicycle and pedestrian facilities and programs, paving projects, congestion reduction and traffic flow improvements, transit improvements, alternative fuels and vehicles, diesel retrofits and travel demand management/transportation options programs. A look at the projects funded between 2012 and 2016 shows the percentage of projects in each category:

Table 2: CMAQ projects funded from 2012-2016

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicycle and Pedestrian Facilities and Programs</td>
<td>36%</td>
</tr>
<tr>
<td>Paving</td>
<td>19%</td>
</tr>
<tr>
<td>Congestion Reduction and Traffic Flow Improvements</td>
<td>16%</td>
</tr>
<tr>
<td>Transit Improvements</td>
<td>11%</td>
</tr>
<tr>
<td>Alternative Fuels and Vehicles</td>
<td>9%</td>
</tr>
<tr>
<td>Diesel Retrofits</td>
<td>6%</td>
</tr>
<tr>
<td>Travel Demand Management/Transportation Options</td>
<td>4%</td>
</tr>
</tbody>
</table>

While each CMAQ eligible areas have been given the discretion to determine how best to utilize the CMAQ funding in their local area, ODOT is ultimately responsible to ensure federal requirements are met with those funds. As part of that responsibility, ODOT performs an eligibility test for each CMAQ funded project, in most cases administers the project construction or implementation, and must report annually to FHWA on the air quality benefits gained with the CMAQ funds in Oregon.

Several factors create challenges with the current program design of a formula allocation including the complexities of delivering projects with federal funds and the analysis and threshold that must be met for improving air quality with these projects. The smaller cities have additional challenges such as needing to “save up” their annual amount of funds for several years to make a federally funded investment worth the effort and unobligated balances of funds sitting idle until a project can be identified.

Changes in Eligibility
As of 2017, the following nine areas in Oregon have been confirmed as CMAQ eligible areas: Portland Metro, Salem-Keizer, Eugene-Springfield, Grants Pass, Medford-Ashland, Klamath Falls, Lakeview, Oakridge, and LaGrande. Salem-Keizer and Eugene-Springfield areas were confirmed as CMAQ eligible areas by FHWA in 2016.

The additions of Salem-Keizer and Eugene-Springfield as eligible areas created the necessity to look at the current program design, review the existing formula distribution and develop a
strategy as to how to include these two MPO areas in the Oregon CMAQ program. Information about potential changes to each area’s allocation was communicated via email in March of 2016 (Appendix A). This communication included information about the two newly eligible areas and no anticipated increase in funding from the federal government. The email also included an estimate of future funding distributions with the additional areas using a population approximation. The air quality data is unavailable to recreate the distribution calculation developed in 2006. Because Portland Metro, Grants Pass MPO and Rogue Valley MPO had already programmed their CMAQ funding, ODOT informed the recipients that no changes in the CMAQ funding allocation would be made until FY2019.

The OTC was informed of newly eligible recipients and the need to review the current program and formula at the August 2016 meeting. The OTC provided support to convene a Program Advisory Committee (PAC) to address these issues. The Commission expressed support for a funding distribution recommendation that is both strategic to help meet state goal areas and targeted to reduce transportation source emissions to improve air quality.

In December 2016, the OTC approved the potential for $14.331M in federal funding for CMAQ eligible projects and investments within the Salem-Keizer and Eugene-Springfield areas, to be split 50/50. The intention is that this funding will be allocated by both areas for the FY16-FY19 timeframe. Both Salem-Keizer and Eugene-Springfield areas will then be included in the CMAQ program in FY2019 and beyond.

**CMAQ Program Advisory Committee (PAC)**

With the support of the OTC, a PAC was assembled with a variety of stakeholders to develop recommendations on how best to utilize the CMAQ funding in Oregon. The following organizations and individuals participated in this process. OTC Chair Tammy Baney agreed to lead the conversation and chair the PAC.

**PAC Members**

- Councilor Craig Dirksen, Portland Metro MPO
- Councilor Michael Quilty, Rogue Valley MPO
- Mayor Pam VanArsdale, Middle Rogue MPO
- Mayor Christine Lundberg, Central Lane MPO
- Mayor Cathy Clark, Salem-Keizer MPO
- Mark Willrett, City of Klamath Falls
- Tom Schwetz, Lane Transit District
- Julie Brown, Rogue Valley Transit District
- Bernie Bottomly/Tom Markgraf, TriMet
- Alan Pollock, Salem Area Mass Transit District
- Gabriela Goldfarb/Steve White, Oregon Health Authority
- David Nordberg/David Collier, Oregon Department of Environmental Quality
- Rachael Tupica, Federal Highway Administration
The PAC membership focused on policy leaders and elected officials from their respective jurisdictions and subject matter experts from the state and federal agencies. Attendance at the PAC meetings also included various staff resources, mainly from the MPOs, who have been engaged in the discussions at the request of their representative on the PAC.

It was recognized that it may be difficult for the three smallest cities of Lakeview, Oakridge and LaGrande to participate in this process due to travel and staff availability. All three smaller cities were notified of the PAC and the effort that was underway. Mark Willrett, Klamath Falls City Manager, represented non-MPO recipients on the PAC. The PAC suggested a separate discussion between ODOT staff and the non-MPO areas to ensure their engagement in the process. ODOT staff met with the cities of Klamath Falls, LaGrande, Oakridge and Lakeview in April of 2017 to discuss a non-MPO allocation and program design.

The PAC was charged with the development of a recommendation for the OTC on CMAQ program design and funding distribution methodology for FY2019 and beyond.

**PAC Overview**
The PAC met five times in its entirety from December 2016 to June 2017. The staff from each of the MPO areas met twice separately for technical meetings. Each meeting was between two and four and half hours in duration. ODOT staff also had a number of one-on-one conversations with MPO staff throughout the process to address specific concerns. Here is a general outline for the meetings.

Meeting #1 – December 16th, 2016
- Overview of CMAQ Funding, Oregon history of CMAQ, and charge of the PAC.

Meeting #2 – February 21st, 2017
- Narrowing of program design options.

Staff Work Session #1– March 23rd, 2017
- Discuss program goals and performance measures. Develop factors to be included in draft formula options for PAC consideration.

Meeting #3 – April 10th, 2017
• Review draft formulas developed from staff work session. Begin to refine the strategic direction recommendations.

Staff Work Session #2 – May 1st, 2017
• Review formula concepts and complexity factors. Refine, recommend and prioritize components of a complexity factor for the PAC.

Meeting #4 – May 16th, 2017
• Continued discussion on draft formulas and possible sub-allocations. Review funding criteria.

Meeting #5 – June 2nd, 2017
• Recommend final program design and funding distribution for OTC consideration.

As mentioned previously, the PAC was charged with developing a recommendation for the OTC on program design and funding distribution methodology for FY2019 and beyond. At the August 2016 OTC meeting, the Commission expressed support for a funding distribution that is both strategic to help meet state goal areas and targeted to reduce transportation source emissions to improve air quality. The OTC provided additional guidance to the PAC at the April 2017 meeting through the discussion that the Oregon CMAQ program is not an entitlement program. It is not required that an area receive funds simply because they are eligible or received certain funding levels in the past. This OTC guidance was communicated to the PAC by Chair Baney.

The bulk of the PAC process was spent determining what factors could and should be included in a formula for funding distribution and how these factors are prioritized in a formula calculation. Agendas and meeting summaries for both the PAC and staff work sessions are available on the CMAQ PAC webpage.

The following is a general summary of the key areas of exploration and understanding, but it does not reflect the entire breadth and depth of the PAC and staff discussions. The intent is to highlight a few specific areas as part of the update to the OTC.

Understanding of Current Formula

One of the key challenges of the Oregon CMAQ program is that the current formula for the funding distribution is unable to be replicated due to lack of current air quality data. The first distribution formula was developed in 1998 with partnership with the Oregon Department of Environmental Quality (DEQ). The formula was then minimally updated in 2005. The current formula is based on three factors; population, percent emissions inventory attributable to highway vehicles and the Design Value Index (DVI) for the pollutants of ozone, carbon monoxide and particulate matter (2.5 and 10). Many of the air quality monitors used to collect data to calculate the formula no longer exist or are not maintained. ODOT and DEQ were unable to recalculate the distribution using the 1998 and 2005 methodology. Therefore,
alternative data sources and formula factors must be identified and a new formula for funding distribution must be developed as part of the PAC process.

Air Quality Data

ODOT staff met with DEQ in December of 2016 to identify alternative data sources to address the need for transportation source emission data. The objective was to provide information to the PAC on the volume of air quality emissions in each non-attainment, maintenance and attainment area that result from transportation sources. DEQ determined that there is currently no good data that can meet this objective. DEQ is unable to parse out transportation related emissions with current monitors and resources. Data monitoring equipment is expensive and it is unlikely that DEQ will re-establish any monitoring devices that would be able to separate out the emission sources. DEQ’s suggestion was to identify a proxy for transportation source emissions such as population and vehicles miles traveled.

Additionally, according to DEQ, each MPO region currently has essentially the same air quality issues for the pollutants (CO, Ozone, PM10, PM2.5). This is a change from the early 1990’s when the CMAQ funding program was established. Air quality and health risks were also addressed. The biggest health risk is the pollutant known as PM2.5, or Particulate Matter less than 2.5 micrometers. The sources for PM2.5 primarily come from wood stoves, forest fires and operations that involve the burning of fuels such as wood, and fuel burning vehicles (on and off road). A representative from DEQ presented information on the available air quality data and proxy suggestion at the February 2017 PAC meeting.

Models from Other States

ODOT staff worked with FHWA staff to consider best practices on program design and funding distribution strategies from other states. FHWA is currently doing a national scan of state CMAQ program designs. The initial results from the national scan show that nearly each state has a different program methodology. Most retain some state priority funds. FHWA presented a range of examples from seven states spanning from complete retention of funds at the state DOT to nearly full distribution to the MPOs. It’s important to note that very few states do a complete distribution to local agencies as is done in Oregon. While this information was helpful, it demonstrated that there is not a clear best practice or example for the Oregon CMAQ program.

Narrowing Program Design Options

The background information on the current formula, air quality data and potential best practices helped the PAC recognize that a complete renovation of the Oregon program was needed. The first step in this overhaul was to discuss the benefits and concerns of the program design options. ODOT staff presented four program design options to the OTC at the August 2016 meeting. These same options were discussed at the December 2016 and February 2017
meeting. These options include full formula distribution, part formula and part competitive (or targeted), full competitive and complete ODOT control.

Prior to the February PAC meeting, each recipient area was asked to complete a homework assignment to discuss their support and concerns for each program design option. The results were compiled and sent in their entirety to the PAC and an analysis was presented by ODOT staff at the February 2017 PAC meeting. Key discussion points from the PAC for each program option are listed below.

**Formula Based, Benefits**

- **Local Control:** Best to understand local needs and best administered through local project selection process, could rely on local AQ resources to assist with targeting need
- **Efficiencies:** Able to combine with other funding processes (STP-U, TAP, etc)
- **Leverage:** Mix of funds or through bonding to fund large (and very large) projects
- **Stability:** Reliable funding necessary for future planning and financial management
- **Consistency:** Familiarity with the current system
- **Targeted:** Funds go to pollution reduction projects tailored to regions needs and ensure AQ management plans and policies align with CMAQ program
- **Harmony:** Once formula is set, unnecessary to revisit funding levels for awhile

**Formula Based, Concerns**

- **Formula:** How to develop a fair and equitable formula distribution that accounts for the unique challenges faced by each recipient?
- **Consistency:** Challenging to manage quality over a state program with multiple project selection processes and differences in AQ expertise
- **Non-MPOs:** Non-MPOs receive smaller dollar amounts but beholden to same program requirements without similar level of staff capacity or AQ expertise

**Formula + Competitive (or Targeted), Benefits**

- **Admin Burden:** Potential to reduce burdens of federal fund administration requirement
- **Flexibility:** Can add/change program priorities to meet changing needs such as innovation or state goal areas
- **Larger Projects:** Potential to fund larger projects especially for non-MPO recipients
- **Funding Levels:** Can lead to even greater reduction in local % allocation. Efficiency loss by funds becoming too small to efficiently manage or leverage
- **Competing Across Regions:** Differences in how AQ is calculated per project. Equity argument – everyone deserving of better AQ not just projects that show most impact
- **ODOT Admin Burden:** Requires ODOT resources on program design and management
**Competitive, Benefits**
- **Admin Burden**: Reduce burdens on locals of federal fund administration requirement
- **ODOT Control**: Can add/change program priorities to meet changing needs such as innovation or state goal areas. ODOT quality control over results based funding
- **Larger Projects**: Potential to fund larger projects

**Competitive, Concerns**
- **Local Control**: Responsibility to improve AQ is a local issue. Limits ability to leverage and/or bond funds. Potential coordination issues between MTIP and STIP
- **Competing Across Regions**: Differences in how AQ is calculated per project. Equity argument – everyone deserving of better AQ not just projects that show most impact
- **ODOT Admin Burden**: Requires ODOT resources on program design and management. Requires staff to understand responsibilities of each SIP
- **Transparency**: Concern around an opaque process and potentially changing rules

**Full ODOT Control, Benefits**
- **ODOT Priorities**: Target funds to state goal areas and legislative priorities. Quality control on program to produce results
- **Admin Burden**: Reduced administrative burden on locals

**Full ODOT Control, Concerns**
- **Loss of Local Control**: Unable to plan or manage future funding. Responsibility to improve AQ is a local issue. Limits ability to leverage funds. Potential coordination issues between MTIP and STIP. Limits partnerships with program providers
- **ODOT Admin Burden**: Requires significant ODOT resources. Requires staff to understand responsibilities of each SIP
- **Transparency**: Concern around an opaque process and potentially changing rules

The PAC agreed that because of benefits such as efficiencies, ability to leverage, and consistency, they would support a formula based program recommendation to the OTC for consideration. Support for this program design was presented to the OTC at the April 2017 meeting as part of the PAC update. Based on the OTC directive that the funds must be used strategically, the PAC recognized the expectation that there would be additional ODOT oversight on a formula program through project selection criteria, targeted distribution of funds, a narrowed list of eligible projects and/or performance measures.

**Non-MPO Program Design**

One of the key concerns from the PAC on the formula program design is that the non-MPOs receive smaller dollar amounts but still beholden to same program requirements without similar levels of staff capacity or air quality expertise. The PAC suggested that decisions and recommendations to the OTC only be for the MPO program. The PAC requested a separate discussion between ODOT staff and the non-MPO areas to identify an appropriate program design for their size and resources.
Historically, the small non-MPO cities of Klamath Falls, LaGrande, Oakridge and Lakeview have struggled to meet air quality reporting requirements and select and deliver projects with such small amounts of federal CMAQ funds. ODOT staff met with the cities of Klamath Falls, LaGrande, Oakridge and Lakeview in April of 2017 to discuss a non-MPO allocation and program design.

Based on ODOT staff experience, one-on-one interviews with the non-MPO recipients and the April 2017 meeting, ODOT staff recommends in FY19 and beyond, 3% of the annual available CMAQ funding to be made available to these eligible cities. As discussed with representatives of these communities in April 2017, these funds will be targeted to transportation investments in their community. ODOT staff will work with the four cities each 4-year STIP cycle to identify potential investments and maximize the funding so that each area has access to a portion of the funds, based on their individual transportation needs.

Review of Factors for a Formula Distribution

The next step in the Oregon CMAQ FY2019 program development was to identify goals for a distribution formula and the factors to be considered in the calculation. The PAC agreed to the following goals for the CMAQ formula:

- Compliant with FHWA CMAQ requirements
- Supports state goal areas
- Considers risk and effort
- Considers ability to impact
- Uses existing data
- Easy to calculate
- Revisited at least every five years
- Strategic
- Sustainable

As previously discussed, air quality data that parses out transportation source emissions is unavailable. The PAC requested MPO and ODOT staff hold a work session to suggest, discuss and recommend formula factors for the PAC. Prior to the work session, MPO staff was asked to recommend and provide an explanation as to why certain factors should be included in the formula. The results were compiled and sent in their entirety to MPO staff and an analysis was presented by ODOT staff at the March 2017 staff work session. The MPO staff homework proposed the following formula factors:

- Population as a proxy for transportation related source emissions
- Federal AQ Status of Attainment, Maintenance, Limited Maintenance, Non-attainment
- Air Shed Factor (originally named the Air Shed Emission Capacity Factor)
- Transportation Control Measures (TCMs) from State Implementation Plans (SIPs)
Contingency Plan Triggers from SIPs
Local programs such transportation options, bicycle and pedestrian infrastructure and transit improvements
Federal performance measures
State greenhouse gas requirements
Environmental justice
PM2.5 levels to address greatest health risk of CMAQ pollutants

The inclusion of population, federal air quality status and an inversion factor in the formula were supported by the MPO staff (above in green). MPO staff suggested the State Implementation Plan (SIP) transportation control measures, contingency triggers, local programs and GHG requirements be considered by the PAC (above in blue). MPO staff did not support the inclusion of environmental justice factors or PM2.5 data (above in red) as part of the formula distribution. It was agreed that environmental justice should be an evaluation criteria in each of the recipients’ project selection process. The MPO staff suggested that discussion on the federal performance measures wait until the rule became final as they may not be a requirement. It’s important to note the performance measure rules did become final on May 20th, 2017. ODOT staff categorized the factors for discussion at the PAC into the following categories that ultimately became pieces of the complexity factor.

- **Level of Effort**: TCMs, Local Programs, GHG requirements, Performance Measures
- **Level of Risk**: Contingency Plan Triggers, Air Shed Factor
- **Air Quality Status**: Attainment, Maintenance, Limited Maintenance, Non-attainment

The April 2017 PAC meeting included a substantial discussion on each of these factors. The PAC agreed that Level of Effort, Level of Risk and Air Quality status were the appropriate categories and population, air quality status and an air shed factor should be included in their respective categories. However, there was not consensus at the April meeting around whether or not TCMs, local programs, GHG requirements or contingency plan triggers should be included as formula factors. The PAC requested that ODOT staff and MPO staff work together to provide more clarity as to exactly what data is available under each category.

**Development of the Complexity Factor**

The PAC asked staff to dive more deeply into federal requirements, look at state and local programs, and consider other relevant factors. Accordingly, ODOT reviewed each MPO’s SIP in an attempt to make comparisons of requirements across each MPO area. A complete description of the SIP and why it is used a comparison mechanism across each reason is included in Additional Considerations (Appendix B). The resulting work was presented at the May 2017 staff work session as the “Apples to Apples” chart (Appendix C). The Apples to Apples chart shows the requirements for each area under the Level of Effort, Level of Risk and AQ Status categories. MPO staff reviewed the chart for accuracy and developed a recommendation for the May 2017 PAC meeting on what should be included in the complexity factor. The
complexity factor used to develop the formula options. It is comprised of the data in the Level of Effort, Level of Risk and Air Quality Status categories.

Ultimately MPO staff recommended to the PAC that the following factors be part of the distribution formula:

- **Population**
- **Level of Effort**: SIP Transportation Control Measures
- **Level of Risk**: SIP Contingency Plan Measures and Air Shed Factors
- **Air Quality Status**: Designation of attainment, non-attainment, maintenance or limited maintenance

The details of this work session can be found in the Staff Work Session Recommendations memo (Appendix D) developed for the May 2017 PAC meeting. It is important to highlight the discussion around the decision to not include local programs in the Level of Effort category. ODOT staff initially included local programs such as support for transit capital projects and operations, transportation options, and bicycle and pedestrian infrastructure in the Level of Effort category. Because each MPO invests in these areas, it is not possible to easily distinguish the effort level differences. Thus it is hard to determine which area has an advantage which is necessary when establishing a score for each factor included in the formula.

Ultimately, at the May 2017 meeting, the PAC supported the below components to be included in the formula. ODOT staff scored each component and calculated a complexity factor for each MPO area.

- **Level of Effort (LOE)**: SIP Transportation Control Measures
- **Level of Risk (LOR)**: SIP Contingency Plan Measures and Identified Existing challenge
  - Inversion Factor as an identified issue in the SIP
  - Annual Hours of Peak-Hour Excessive Delay Per Capita (note: Texas Transportation Institute congestion data used as proxy for the illustrative examples)
- **Air Quality Status as of fiscal year 2019 (AQ Status)**
  - Non-attainment
  - Attainment with a maintenance plan
  - Attainment with a limited maintenance plan
  - Attainment

Each component of the complexity factor was evaluated by ODOT staff using a 1.0-2.0 scale. Each component were given a ranking based on the effort required (such as funding, political, etc) for each MPO area. The methodology for evaluating the complexity factor score was demonstrated to the PAC at the June 2017 meeting.
Between the May and June 2017 PAC meetings, FHWA finalized the federal performance measures rule. Congestion reduction targets is an emphasis area for the federal CMAQ program. Therefore ODOT staff made the recommendation that a congestion measure be included in Level of Risk. Metro received a high ranking, Salem-Keizer and Eugene –Springfield MPOs received a medium ranking and Rogue Valley and Middle Rogue MPOs received a low ranking. This staff recommendation was supported by the PAC.

Formula Development

At this point in the process, the final major decision for the funding recommendation was the method for calculating the formula. Whether or not the formula was additive or multiplicative had significant impacts on the funding allocations for each area. The process to reach an agreement on a formula calculation took place during Staff Meeting #2 in May and PAC Meetings 4 and 5 in May and June.

The different methods for calculating the formula were introduced at the April 2017 PAC meeting and discussed at the May PAC meeting. The formula options outlined at the May 2017 PAC meeting are as follows:

- Population Only (Level of Impact)
- Additive with the Complexity Factors Weighted (Level of Impact + Complexity Factors)
- Multiplier with the Complexity Factor Unweighted (Level of Impact x Complexity Factors)

The PAC agreed that population is a necessary component of the formula but there had been debate as to how heavily it is weighted or considered. The MPO staff agreed that population is a good proxy for ability to impact and complexity. Areas with a larger population can have a larger impact on improving statewide air quality, but may have challenges in doing so given the scale of projects needed to address air quality issues.

The additive calculation method creates the potential for areas with smaller populations to receive more funds than a straight percent population allocation. In the additive options, the PAC supported population calculated at 80% of the total allocation. Population is a significant consideration in this scenario for reasons described above regarding impact and complexity. The 20% allocation for the complexity factor helps to balance the allocation to communities with smaller populations. Within the 20% allocation for the complexity factor, each component of Level of Effort, Level of Risk and Air Quality Status also received a weighting. Weighting for Level of Effort, Level of Risk and Air Quality Status allows for prioritization within each category. However, calculating the complexity factor in this manner does not reflect any sort of scaling for the size of the target area. For example, a small MPO and a large MPO with the same complexity factor score would receive the same allocation.

The multiplicative scenario emphasizes the ability for population to impact air quality improvement. This formula focuses the allocation to locations with the greater number of transportation related programs and challenges accounted for in the complexity factor AND the
greater number of people in the MPO area. The challenge with the multiplicative approach is if one of the recipients has a population with a magnitude greater than the other eligible areas, the allocation for the other recipients can be much smaller than a straight population allocation.

Each MPO area had strong opinions about each formula option discussed at the May PAC meeting. Ultimately there was a divide between Metro being unable to accept an additive option and Salem-Keizer, Eugene-Springfield, Rogue Valley and Middle Rogue MPOs unable to accept a multiplier option. Metro suggested a compromise for both the additive and multiplicative options. They suggested a scaling of the complexity factor in the additive method according to population and cap the population in the multiplicative option and thus capping the total amount an area could receive.

The additive option compromise includes weighting the complexity factor by population. This accounts for the scale required to implement any of the transportation related programs that make up the complexity factor. For example, a large and small MPO may have the same complexity factor score but the large MPO would receive a great portion of the complexity factor allocation to address the greater funding required to implement projects and programs.

The multiplicative option compromise includes capping population to address the issue of a large MPO receiving a magnitude greater of funding. For example, if an MPO has 70% of the population amongst all the MPOs, a 10% cap will limit the MPO to a 77% maximum allocation.

ODOT staff developed the suggested compromises between meetings for a total of five calculation options to be discussed at the June 2017 PAC meeting.

- Option 1: Population Only
- Option 2a: Additive with Complexity Factor weighted by population
- Option 2b: Additive with Complexity Factor weighted by Level of Effort, Level of Risk and Air Quality Status
- Option 3a: Multiplicative: Population multiplied by the complexity factor
- Option 3b: Multiplicative: Population capped then multiplied by the complexity factor

ODOT staff also developed a spreadsheet with each option calculated to demonstrate the formula distribution for each MPO. Details on the calculations and the results are included as Appendix E and F. ODOT staff met one-on-one with PAC members and associated staff prior to the June PAC meeting to discuss the formula calculation options and answer any questions or concerns around the scoring of the complexity factor. At the June PAC meeting, ODOT staff walked through five calculation method options with the group.

Please note that additional considerations for a base allocation amount were made for the Middle Rogue MPO. Federally funded projects under $500,000 require significant ODOT resources to administer. ODOT staff proposed that MPO recipients should receive a minimum funding level of $450,000. This minimum allocation when combined with the local match
requirement reaches this $500,000 threshold. In many of the calculations, Middle Rogue did not meet this threshold. Scenarios 2a and 3b reflect this minimum recommendation for the Middle Rogue MPO. The $450,000 minimum threshold was taken off the top of the total allocation. Therefore, the difference between the initial calculation and the $450,000 threshold for Middle Rogue MPO was distributed using the scenario calculation among the remaining recipients.

After significant discussion around concern of the inequitable reductions from the historic allocations, the PAC ultimately favored formula calculation option 2a: additive with Complexity Factor weighted by population

\[
\text{CMAQ Formula} = 0.8(\text{Population}) + 0.2(\text{Complexity Factor} \times \text{Population})
\]

As discussed above an addition calculation creates the potential for areas with smaller populations to receive more funds than a straight percent population allocation. Multiplying the complexity factor accounts for the scale required to implement any of the transportation related programs that make up the complexity factor. Therefore, option 2a accounts for both geographic equity and effort needed to implement required programs.

The results of the formula are shown in the table below. The critical numbers in the table are the percent allocation. Rough amounts are shown for illustrative purposes and use the FY2016 CMAQ MPO dollar amount, and historical numbers shown for comparison. As noted, an adjustment was made for Middle Rogue MPO to get a minimum of $500,000, which was viewed as the lowest amount feasible to meaningfully administer a program.

### Table 3: MPO Formula Allocation with a Minimum Amount for Middle Rouge (2016 dollars)

<table>
<thead>
<tr>
<th>MPO</th>
<th>Percent Allocation</th>
<th>Rough Amount</th>
<th>Historical (2016) Numbers for comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portland Metro</td>
<td>73%</td>
<td>$12.5M</td>
<td>$14.1M (82%)</td>
</tr>
<tr>
<td>Salem-Keizer</td>
<td>9%</td>
<td>$ 1.6M</td>
<td>N/A</td>
</tr>
<tr>
<td>Central Lane</td>
<td>9%</td>
<td>$ 1.6M</td>
<td>N/A</td>
</tr>
<tr>
<td>Rogue Valley</td>
<td>6%</td>
<td>$ 1.1M</td>
<td>$ 2.5M (14%)</td>
</tr>
<tr>
<td>Middle Rogue</td>
<td>3%</td>
<td>$ 0.5M</td>
<td>$ 0.7M (4%)</td>
</tr>
</tbody>
</table>

The PAC noted that the Rogue Valley MPO would see a substantial reduction from previous CMAQ allocations. The PAC considered options for lessening the impact to Rogue Valley. Some PAC members suggested that a permanent bump up may be appropriate. Presented below is an option for bridging funding for Rogue Valley MPO, bumping up their allocation to around 8.5 percent in the short-term but phasing down to their percent according to the formula (6%)
within five years. One option discussed at the PAC was to do this by taking money from the three larger MPOs. The table below shows how that could be done.

Table 4: MPO Formula Allocation with a Minimum Amount for Middle Rouge and Phased-down Funding for Rogue Valley (2016 dollars - million)

<table>
<thead>
<tr>
<th>MPO</th>
<th>FY 2019</th>
<th>FY 2020</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>$</td>
<td>%</td>
<td>$</td>
<td>%</td>
</tr>
<tr>
<td>Portland Metro</td>
<td>72%</td>
<td>$12.3</td>
<td>72%</td>
<td>$12.4</td>
<td>72%</td>
</tr>
<tr>
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<td>9%</td>
<td>$1.5</td>
<td>9%</td>
<td>$1.5</td>
<td>9%</td>
</tr>
<tr>
<td>Central Lane</td>
<td>9%</td>
<td>$1.5</td>
<td>9%</td>
<td>$1.5</td>
<td>9%</td>
</tr>
<tr>
<td>Rogue Valley</td>
<td>8%</td>
<td>$1.4</td>
<td>8%</td>
<td>$1.3</td>
<td>7%</td>
</tr>
<tr>
<td>Middle Rogue</td>
<td>3%</td>
<td>$0.5</td>
<td>3%</td>
<td>$0.5</td>
<td>3%</td>
</tr>
</tbody>
</table>

Program Accountability

Beyond a formula allocation, the PAC briefly discussed options for increased accountability after funding is distributed to the MPOs. A few options were shared with the OTC in June 2017. Based on the OTC discussion and previous comments from the PAC, the option of narrowing the list of eligible CMAQ projects seemed to be preferred. ODOT staff suggested the list be narrowed by looking at closely related state goals identified in OTC adopted transportation plans. These goals included environment, health, and equity. Following the June OTC meeting, ODOT staff used those goals and associated plan policies to narrow the federal list of eligible CMAQ projects, also considering MPO interests and historic spending. Some items, like traffic flow improvements, were refined to be eligible only when there are congested conditions; other eligible project categories like market research focus groups and freight strategies were removed. The narrowed list was shared with the PAC for feedback. A few minor edits were made and the document finalized (Appendix G).

Based on the PAC recommendations and comments from OTC members, a redesigned CMAQ funding program design (see below) is being shared with the OTC to consider for approval.

CMAQ Program Design for FY2019 and Beyond

The OTC will be requested to consider taking action on three program components described below that make up CMAQ.
1. Eligible Rural Cities (non-MPOs)

Carve out 3% of CMAQ funding to rural cities, with annual funding to the largest city and targeted funding every three years to the other three.

2. Eligible MPOs

Allocate funds via a formula with phased funding for Rogue Valley MPO.

3. Increase Accountability After CMAQ Funds are Distributed

Narrow the list of eligible CMAQ projects.

Next Steps

Following approval of the CMAQ program design, ODOT staff will work with the MPOs and rural cities on their precise allocations. ODOT will also develop program guidance for CMAQ recipients and provide administrative support as needed. Moving forward ODOT will confer with recipients on a regular basis at Quarterly MPO Transit-District meetings or by pulling staff together. Changes to the eligible areas, including any factors considered in the MPO funding allocation, will be tracked so that modifications to the allocations can be considered. The OTC may consider what actions or adjustments may be needed as part of the 2-3 year update cycle of the 4-year STIP, similar to other funding programs that are part of the STIP. This will provide an opportunity to consider adjustments to the way CMAQ funds are used in Oregon, to consider any modifications to which areas are eligible, and to adjust for any changes made at the state or federal level.
All-

As some of you may have heard, FHWA recently confirmed for us that both Salem and Eugene are now CMAQ eligible areas. This will require an update to the current funding allocation formula that was last approved back in 2006 with the passage of SAFETEA-LU. There are several issues with the current formula and the ability to reproduce it, as well as other challenges and opportunities that have been brought up over the years. It is our intent to bring our key stakeholders (i.e. CMAQ eligible areas and others) together to discuss options for best utilizing CMAQ funds and make a recommendation to the OTC for consideration/approval this Fall. More details will be coming out soon about the schedule of events and meeting invites.

I recognize that the timing of this presents some challenges, especially to those of you working on your MTIP development. Knowing that the work of this group and the decision of the OTC will change the current allocation (simply by adding Salem and Eugene), I would strongly recommend taking a conservative approach as you do your project solicitation/selection efforts.

With the passage of the FAST Act, CMAQ funds in Oregon did see an increase. With the inability to fully use the existing allocation formula (due to lack of some specific air quality data), we can use population as a very close proxy for the formula. Below is an example of what the allocations could look like, when Salem and Eugene are added. While I don’t believe this will be the final recommendation going to the OTC this fall, this does give you a sense of what the impact to your area could be.

Many of you are experts in this area and I welcome the discussions we are going to have over the coming months. I ask for your patience as we work through this process and your participation and partnership.

Any questions or concerns about the process or timing, please let me know.

I’ve cc’d a number of people that I know are interested about this topic. Please forward this message to anyone I may have missed.

-Mac

<table>
<thead>
<tr>
<th>Oregon CMAQ Funding - FAST Act</th>
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</thead>
<tbody>
<tr>
<td><strong>Annual Amounts</strong></td>
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<tr>
<td>without Salem/Eugene</td>
</tr>
<tr>
<td>with Salem/Eugene</td>
</tr>
<tr>
<td>City</td>
</tr>
<tr>
<td>-------------</td>
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<tr>
<td></td>
</tr>
<tr>
<td>Medford</td>
</tr>
<tr>
<td>Grants Pass</td>
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<tr>
<td>Klamath Falls</td>
</tr>
<tr>
<td>Eugene</td>
</tr>
<tr>
<td>Salem</td>
</tr>
<tr>
<td>Lakeview</td>
</tr>
<tr>
<td>Oakridge</td>
</tr>
<tr>
<td>LaGrande</td>
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<td></td>
</tr>
</tbody>
</table>

*Distribution based on population, which closely matches 2006 CMAQ allocation formula

Butch, Ted K., Mike B....can you share this message with your local agency contacts, and also share their contact info with me, please.

**McGregor “Mac” Lynde**  
ODOT-Active Transportation Section Manager  
555 13th St NE  
Salem, OR 97301  
Office: 503-986-3880
Additional Considerations

Why the SIP?

The PAC asked staff to dive more deeply into federal requirements, look at state and local programs, and consider other relevant factors. Accordingly, ODOT reviewed each MPO’s SIP in an attempt to make comparisons of requirements across each MPO area. The State Implementation Plan (SIP) is the federally-enforceable plan to assure healthy air through the attainment and maintenance of the National Ambient Air Quality Standards (NAAQS) set forth in the Clean Air Act (CAA). Each State is required to have a SIP (which is the sum of all the local SIP) which contains the control measures and strategies developed through a public process, formally adopted by the State, and submitted by the Governor's designee to EPA (ie – Oregon DEQ) as revisions to their plan to attain and maintain the national ambient air quality standards. The SIP is required and approved by EPA.

SIPs generally establish limits or work practice standards to minimize emissions of the criteria air pollutants or their precursors. The criteria air pollutants include sulfur dioxide, particulate matter, nitrogen oxides, lead, carbon monoxide, and ozone. The EPA has established standards, ie- NAAQS, for these pollutants. SIPs also include special control strategies for nonattainment areas -- areas that are not meeting the NAAQS. These control strategies often include measures such as vehicle inspection and maintenance programs, lower gasoline vapor pressures, gas pump vapor recovery, and other reasonably available control technologies (RACT).

SIP requirements particular to nonattainment areas mandate such elements as emission inventories, monitoring network, an air quality analysis, modeling results, attainment demonstrations, enforcement mechanisms, and regulations which have been adopted by the State to attain or maintain NAAQS.

The SIP is a living document which can be revised by the State as necessary to address the unique air pollution problems in the State.

DEQ Funding

During the 2007 Oregon Legislative session, as part of the approval of both the ODOT and DEQ budgets, federal funding from the CMAQ program was directed to the Clean Diesel Engine Fund managed by DEQ. The biennial amount is $500,000 or $250,000 annually. To meet the requirement, before any allocation of CMAQ funding is distributed, the $250,000 annually is taken off-the-top and made available for the DEQ managed Clean Diesel Engine Fund. Projects identified must still meet FHWA program eligibility and are held to the same requirements as all other CMAQ funded projects.
<table>
<thead>
<tr>
<th>level of effort</th>
<th>Transportation Control Measures (SIP requirements)</th>
<th>Portland Metro</th>
<th>Salem-Keizer</th>
<th>Eugene-Springfield</th>
<th>Grants Pass</th>
<th>Rogue Valley</th>
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<td>ECO Rule program</td>
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<tr>
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<td>level of risk</td>
<td>Contingency Plan Measures (SIP requirements)</td>
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<td>Convene Advisory Committee to evaluate appropriate actions</td>
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<tr>
<td></td>
<td>Revoke industrial growth allowance</td>
<td>*</td>
<td></td>
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<td>Transit service increase</td>
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<td>Transportation Options</td>
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<td>Local Programs</td>
<td>Mandatory/Voluntary-Scenario Planning (GHG)</td>
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Appendix C
Staff Work Session Recommendations to PAC
Congestion Mitigation and Air Quality (CMAQ) Investment Program Design FY19 and beyond May 2017

On May 1st staff from Metro, Salem-Keizer, Central Lane, and Rogue Valley met to discuss potential approaches for distributing CMAQ funding to the MPOs. This memo summarizes recommendations and outstanding questions for the consideration of the CMAQ Program Advisory Committee (PAC).

Funding Distribution Scenarios for the Oregon Transportation Commission
At the start of the staff work session, ODOT talked about outcomes of the April OTC meeting and the next presentation to the OTC on June 15th. The OTC was complementary of the work of the PAC and staff, recognizing the challenge in front of the group. They reiterated the need for the program to be strategic and remained open to multiple distribution options of the CMAQ money. The OTC asked that staff return in June with potential distribution scenarios for discussion. At the staff work session, ODOT shared potential scenarios that could be discussed with the OTC, including the following:

- Formula distribution with factors for level of effort and risk/complexity
- Formula distribution with certain proportions of those allotments targeted at specific activities (e.g. transportation options)
- Part formula distribution with targets for specific activities and part competitive

ODOT suggested that there were multiple combinations of these program designs and recognized that neither the staff nor PAC were likely to recommend a partially or fully competitive program.

Staff at the work session recommended the following scenario be considered, which they seemed to favor:

- Formula distribution with factors for level of effort and risk/complexity
  - Further demonstrate strategic use of funds by showing how investments help achieve key state outcomes

At the upcoming May 16th PAC meeting, members will get a preview of potential distribution scenarios to be shared with the OTC in June, and may choose to make a recommendation to the OTC.

Formula Factors
Going with the direction to date from the PAC, the staff focused on a formula distribution approach, accounting for factors such as risk and level of effort. The PAC asked staff to dive more deeply into federal requirements, look at state and local programs, and consider other factors. Accordingly, ODOT reviewed each MPOs State Implementation Plan (SIP) in an attempt to make comparisons of requirements across areas, developed a strawman proposal for how state requirements and local programs might be considered, as well as posed other complexity factors.

Federal
For the Federal requirements, staff reviewed ODOTs findings from the SIPs, which included a list of Transportation Control Measures and Contingency Plan Measures. A few items were found to be missing
from the list that staff suggested be added. In addition an item was removed from the list, as it represented a discrete project that is now complete.

Generally the group determined that the SIP Transportation Control Measures were a good proxy for level of effort and commitments made to address transportation source air pollution. While there was some debate about why the SIPS are different and what future SIPS may look like, ODOT pointed out that the group needs to go with the best available information, which is in the existing SIPS. When a SIP is modified in the future, the formula should be recalculated with any changes made.

SIP Contingency Plan Measures were discussed at length. The group distinguished the Contingency Measures as “what if,” in that they represented a body of work to be undertaken if one of the triggers occurs. Triggers include things like ambient air quality levels, a NAAQS violation, as well as other measures incorporated into a SIP such vehicle miles traveled (VMT) per capita limitations. The discussion focused on how likely any of the triggers would occur. Several of the staff recommended that only those Contingency Measures related to VMT or other transportation-specific triggers should be considered in the distribution formula. The reasoning given was that VMT is most closely tied to transportation and it is possible the VMT trigger could be reached in areas like Metro. Additionally, it was argued that the risk of triggering an ambient air quality contingency measure for certain pollutants was unlikely given that monitoring data show CO and PM10 to be far under the NAAQS and therefore should not be included in the calculation. Additionally, it was noted that there are different types of Contingency Measures, ranging from forming a committee to taking an action, and that different weights should be considered.

Generally the group determined that the SIP Contingency Measures were a good proxy for level of risk.

Staff also recommended adding “air shed factors” (e.g. inversion) to the consideration of level of risk, separate and distinct from the Contingency Measures. In particular, Rogue Valley has raised the issue of the inversion problem in their area, where air gets trapped in their valley due to the geography. This issue is highlighted in the area’s SIP. Thus less pollution in the RVMPO may have the same or greater impact as a larger amount of pollution elsewhere because the emissions do not dissipate as quickly as other areas. RVMPO has this issue well documented and staff from some of the other MPOs mentioned they would consult with their technical experts about the question of inversion or other complicating air shed characteristics in their areas.

In addition to level of effort and level of risk, the group came to agreement that federal air quality status should be considered in the formula. Although most areas have the same status (i.e. are in attainment with a maintenance plan), some will be changing soon and others will over time. Staff recommended that air quality status be broken down into the following three categories: non-attainment, attainment with a maintenance plan, and attainment. ODOT staff will consider adding in a fourth category, attainment with a limited maintenance plan, to be discussed at the May PAC meeting.

State
At the PACs last meeting there was a lengthy discussion on GHG requirements and voluntary programs. Based on that conversation ODOT reframed these as “state” factors, separating out “state requirements” (e.g. GHG) from “local programs” which help all MPOs to achieve state policies and plans (e.g. Oregon Transportation Options Plan) as well as rules (e.g. Transportation Planning Rule), but with flexibility in implementation (e.g. transportation option programs, transit service increases, pedestrian facilities, etc.). A conversation similar to the PAC ensued with staff, debating if state and local programs should be considered in a federal investment program, as well as how to compare local programs, and if one is eliminated from consideration in the CMAQ formula that the other be as well.
ODOT pointed out the challenge of comparing local programs across MPOs because of their differences (apples and oranges) and similarities (all have same type of program so it becomes a wash – all get credit). Staff gave nod to these challenges and some were willing to eliminate this factor entirely, however others felt that if local programs are eliminated state requirements should be too. A compromise was reached to divorce State factors from the formula and have the PAC and OTC consider if an ‘off the top’ allocation should be made to support state requirements (e.g., GHG).

Population
The PAC has previously agreed that population is a necessary component of the formula but there has been some debate as to how heavily it is weighted or considered. The staff agreed that population is a good proxy for level of impact and complexity. Areas with a larger population can have a larger impact on improving statewide air quality, but may have challenges in doing so given the scale of projects needed to address air quality issues.

Recommended Factors
Ultimately staff recommended that the following factors be part of the distribution formula:
- Level of Impact and Complexity: Population
- Level of Effort: SIP Transportation Control Measures
- Level of Risk: SIP Contingency Plan Measures and Air Shed Factors
- Air Quality Status: Federal designation of attainment or non-attainment

Formula Calculation
The majority of the staff work session focused on formula factors but a brief conversation was had on how the formula should be calculated. All agreed that population should be a driver. Some saw population as a multiplier against the factors while others saw population as a weighted factor in addition to the others. A multiplier structure accounts for complexities in implementation based on the size of population, while an additive formula holds population independent of the other factors. It was noted that prior federal and state CMAQ distribution formulas used a population multiplier formula. The basic difference in approaches is shown below.

Formula Factors
- Level of Impact and Complexity (Population)
- Level of Effort (LOE)
- Level of Risk (LOR)
- Air Quality Status (AQ Status)

Calculation Options
- Multiplier: \((Population) \times (LOE + LOR + AQ\ Status)\)
- Additive: \((Population) + (LOE + LOR + AQ\ Status)\)

ODOT will also look other calculation options, including multipliers for every factor and a straight population calculation.

Potential Weights
Each approach would require some weighting of the factors. Participants made initial suggestions on the relative importance of the three non-population factors. All agreed that LOE should be the primary factor. In general, the average of the suggestions was about: LOE = 60%, LOR = 20%, AQ Status = 20%.

For the multiplier, ODOT will take the weighting information to start to generate potential calculation approaches and alternatives to be shared with the PAC.

For the additive approach, a determination would need to be made on how much to weight each factor, including population. For additive options, the group seemed to favor population being most heavily weighted, followed by LOE, with LOR and AQ Status weighted similar to relative proportions above.

**May PAC Meeting**
The focus of the next PAC meeting will be on confirming the formula factors and working towards agreement on the formula calculation. ODOT will provide the PAC and staff with sample approaches and calculations to help support the conversation.
CMAQ Formula Scenarios for PAC #5 Meeting

*Congestion Mitigation and Air Quality (CMAQ) Investment Program Design FY19+
June 2017*

This memo summarizes the formula scenario options and calculation methodologies for consideration by the CMAQ Program Advisory Committee (PAC) at the June 2\textsuperscript{nd}, 2017 meeting.

Each formula option is comprised of two components: population of the MPO area and the complexity factor.

**Population**

The population numbers are provided by the Population Research Center at Portland State University and updated every two years. The boundary area is the Metropolitan Planning Area. These numbers are consistent with the population numbers used in the state’s planning funds distributed to the MPOs (otherwise known as PL funds).

**Complexity factor**

A complexity factor for each MPO area was calculated using the following information:

- *Level of Effort (LOE):* SIP Transportation Control Measures
- *Level of Risk (LOR):* SIP Contingency Plan Measures and Identified Existing challenge
  - Inversion Factor as an identified issue in the SIP
  - Annual Hours of Peak-Hour Excessive Delay Per Capita (note: TTI congestion data used as proxy for the illustrative examples)
- *Air Quality Status as of fiscal year 2019 (AQ Status)*
  - Non-attainment
  - Attainment with a maintenance plan
  - Attainment with a limited maintenance plan
  - Attainment

Each transportation related program that comprise the Level of Effort, Level of Risk and Air Quality Status factors was evaluated by ODOT staff using a 1.0-2.0 scale. Scores for each component were given a ranking based on the effort required (such as funding, political, etc) for each MPO area. The complexity factor score was then weighted by population, level of effort, level of risk, and air quality status in scenarios 2 and 3 as described below in the scenario discussion.

**Additional Considerations**

Minimum funding levels in scenarios 2a and 3b:

Federally funded projects under $500,000 require significant ODOT resources to administer. ODOT staff proposes that MPO recipients should receive a minimum funding level of $450,000. This minimum allocation when combined with the local match requirement reaches this $500,000 threshold. Scenarios 2a and 3b reflect this minimum recommendation for the Middle Rogue MPO. The $450,000 minimum threshold was taken off the top of the total allocation. Therefore, the difference between the initial
calculation and the $450,000 threshold for Middle Rogue MPO was distributed using the scenario calculation among the remaining recipients.

**Scenario Descriptions**

**Scenario 1, Population Only**

Population in this scenario represents a proxy for ability to impact and complexity (ie – number of jurisdictions requires a greater level of coordination). The percent population was calculation for each MPO area.

\[
\text{(MPO Population/Total Population of all MPOs) \times 100}
\]

**Scenario 2, Additive**

Population in the additive scenarios is calculated at 80% of the total allocation. Population is a significant consideration in this scenario for reasons described above regarding impact and complexity. The additive scenarios create the potential for areas with smaller populations to receive more funds than a percent population allocation. This 20% allocation for the complexity factor helps to balance the allocation to communities with smaller populations.

The 80% population allocation for both 2a and 2b was calculated using the following method:

\[
0.8(\text{Percent Population} \times \text{Total Allocation})
\]

The complexity factor \((\text{LOE} + \text{LOR} + \text{AQ Status})\) is the remaining 20% of the allocation.

**Scenario 2a: Additive with the complexity factor weighted by population**

As described above, population accounts for 80% of the total allocation in this scenario. The complexity factor accounts for 20% of the allocation. In 2a, the complexity factor is weighted by population. This weighting by population accounts for the scale required to implement any of the transportation related programs that make up the complexity factor. For example, a large and small MPO may have the same complexity factor score but the large MPO would receive a great portion of the complexity factor allocation to address the greater funding required to implement projects and programs.

The MPO total allocation is as follows:

\[
0.8(\text{MPO Percent Population} \times \text{Total Allocation}) + 0.2(\text{MPO Complexity Factor Weighted by Population} \times \text{Total Allocation})
\]

MPO complexity factor allocation weighted by population was calculated using the following method:

\[
((\text{MPO Complexity Factor Score} \times \text{MPO % Population}) / \text{Sum of Weighted Population for all MPOs}) \times \text{Complexity Factor Allocation for all MPOs}
\]
Scenario 2b: Additive with the complexity factor weighted by LOE, AQ Status and LOR

As described above, population accounts for 80% of the total allocation and the complexity factor accounts for 20% for the additive options. The 2b scenarios (1-4) weight the LOE, AQ Status and LOR in various ways in the complexity factor. In these options, the complexity factor does not reflect any sort of scaling for the size of the target area. For example, a small MPO and a large MPO with the same complexity factor score in the LOE, AQ Status and LOR fields would receive the same allocation. Scenario 2b allows for MPO populations smaller than the biggest MPO recipient to exceed the population only allocation.

MPO complexity factor allocation weighted by LOE, AQ Status and LOR was calculated using the following method:

The MPO total allocation for Scenario 2b.1-4 is as follows:

\[
0.8 (\text{MPO percent population} \times \text{TOTAL ALLOCATION}) + 0.2 (\text{MPO complexity factor weighted by LOE, AQ Status, LOR} \times \text{TOTAL ALLOCATION})
\]

Scenario 2b.1, MPO complexity factor weighted at 60% LOE, 20% AQ Status, 20% LOR

\[
(0.2 \times (\text{MPO LOE score/sum of LOE scores for all MPOS}) + 0.2 \times (\text{MPO AQ Status score/sum of AQ Status scores for all MPOS}) + 0.6 \times (\text{MPO LOR score/sum of LOE scores for all MPOS})) \times \text{COMPLEXITY FACTOR ALLOCATION FOR ALL MPOS}
\]

Scenario 2b.2, MPO complexity factor weighted at 20% LOE, 20% AQ Status, 60% LOR

\[
(0.2 \times (\text{MPO LOE score/sum of LOE scores for all MPOS}) + 0.2 \times (\text{MPO AQ Status score/sum of AQ Status scores for all MPOS}) + 0.6 \times (\text{MPO LOR score/sum of LOE scores for all MPOS})) \times \text{COMPLEXITY FACTOR ALLOCATION FOR ALL MPOS}
\]

Scenario 2b.3, MPO complexity factor weighted at 40% LOE, 20% AQ Status, 40% LOR

\[
(0.4 \times (\text{MPO LOE score/sum of LOE scores for all MPOS}) + 0.2 \times (\text{MPO AQ Status score/sum of AQ Status scores for all MPOS}) + 0.4 \times (\text{MPO LOR score/sum of LOE scores for all MPOS})) \times \text{COMPLEXITY FACTOR ALLOCATION FOR ALL MPOS}
\]

Scenario 2b.4, MPO complexity factor weighted at 20% LOE, 60% AQ Status, 20% LOR

\[
(0.2 \times (\text{MPO LOE score/sum of LOE scores for all MPOS}) + 0.6 \times (\text{MPO AQ Status score/sum of AQ Status scores for all MPOS}) + 0.2 \times (\text{MPO LOR score/sum of LOE scores for all MPOS})) \times \text{COMPLEXITY FACTOR ALLOCATION FOR ALL MPOS}
\]

Scenario 3, Multiplicative

The multiplicative scenarios emphasize the ability for population to impact air quality improvement. This formula focuses the allocation to locations with the greater number of transportation related programs and challenges accounted for in the complexity factor AND the greater number of people in the MPO
area. The challenge with the multiplicative approach is if one of the recipients has a population with a magnitude greater than the other eligible areas, the allocation for the other recipients can be much smaller than a straight population allocation. Scenario 3a demonstrates this scenario. Scenario 3b works to address this issue by implementing an allocation cap via population. For example, if an MPO has 70% of the population amongst all the MPOs, a 10% cap will limit the MPO to a 77% maximum allocation.

Scenario 3a: Multiplicative, Population * Complexity Factor

The multiplicative scenario is calculated using the following method:

\[
\text{POPULATION} \times \text{COMPLEXITY FACTOR}
\]

Scenario 3b: Multiplicative, Population CAPPED * Complexity Factor

As described above, a capped population factor helps limit the allocation for any recipient with a magnitude greater population. Scenarios 3b.1-3 show a population cap at 10%, 7.5% and 5%. Therefore, no MPO can receive MORE than 10%, 7.5% or 5% than their population allocation.

Scenario 3b.1-3, Capped Population at 10%, 7.5% and 5%

The maximum percent allocation is calculated using the following method:

\[
\begin{align*}
110\% & \times \left( \frac{\text{POPULATION OF MPO}}{\text{SUM OF POPULATION OF ALL MPOS}} \right) \\
107.5\% & \times \left( \frac{\text{POPULATION OF MPO}}{\text{SUM OF POPULATION OF ALL MPOS}} \right) \\
105\% & \times \left( \frac{\text{POPULATION OF MPO}}{\text{SUM OF POPULATION OF ALL MPOS}} \right)
\end{align*}
\]

The maximum percent allocation is determined for each recipient. If a recipient exceeds their maximum, their allocation is capped and the remaining balance is distributed among the MPOs that did not reach their maximum allocation.

\[
\text{CAPPED MPO % ALLOCATION} - \left( 100\% \times \left( \frac{\text{MPO COMPLEXITY FACTOR SCORE} \times \text{MPO % POPULATION}}{\text{SUM OF POPULATION} \times \text{COMPLEXITY FACTOR FOR UNCAPPED MPOS}} \right) \right)
\]

June PAC Meeting

The focus of the next PAC meeting will be working towards agreement on the formula calculation. ODOT will provide the PAC and staff with sample approaches and calculations to help support the conversation.
<table>
<thead>
<tr>
<th>Scenario Description</th>
<th>Metro</th>
<th>Salem-Keizer MPO</th>
<th>Central Lane MPO</th>
<th>Rogue Valley MPO</th>
<th>Middle Rogue MPO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>Amount</td>
<td>%</td>
<td>Amount</td>
<td>%</td>
</tr>
<tr>
<td>Historical % Allocation for FY16</td>
<td>82%</td>
<td>$14,086,017</td>
<td>N/A</td>
<td>0</td>
<td>N/A</td>
</tr>
<tr>
<td>Population Only</td>
<td>69%</td>
<td>$11,873,466</td>
<td>$ (2,212,551)</td>
<td>11%</td>
<td>$1,857,921</td>
</tr>
<tr>
<td>Additive: Complexity Factor weighted by population</td>
<td>73%</td>
<td>$12,576,563</td>
<td>$ (1,509,454)</td>
<td>9%</td>
<td>$1,609,009</td>
</tr>
<tr>
<td>Additive: Complexity Factor weighted at 60/20/20 (LOE/AQ/LOR)</td>
<td>67%</td>
<td>$11,544,184</td>
<td>$ (2,541,833)</td>
<td>10%</td>
<td>$1,747,892</td>
</tr>
<tr>
<td>Additive: Complexity Factor weighted at 20/60/40 (LOE/AQ/LOR)</td>
<td>65%</td>
<td>$11,243,750</td>
<td>$ (2,842,267)</td>
<td>11%</td>
<td>$1,856,873</td>
</tr>
<tr>
<td>Additive: Complexity Factor weighted at 40/20/40 (LOE/AQ/LOR)</td>
<td>66%</td>
<td>$11,393,967</td>
<td>$ (2,692,050)</td>
<td>10%</td>
<td>$1,802,382</td>
</tr>
<tr>
<td>Additive: Complexity Factor weighted at 20/60/20 (LOE/AQ/LOR)</td>
<td>62%</td>
<td>$10,618,923</td>
<td>$ (3,467,094)</td>
<td>13%</td>
<td>$2,162,020</td>
</tr>
<tr>
<td>Multiplicative: pop * complexity factor</td>
<td>89%</td>
<td>$15,388,950</td>
<td>$ (1,302,933)</td>
<td>4%</td>
<td>$613,362</td>
</tr>
<tr>
<td>Multiplicative: pop CAPPED * complexity factor at 1.1 Pop/$450k MIN</td>
<td>76%</td>
<td>$13,060,812</td>
<td>$ (1,025,205)</td>
<td>8%</td>
<td>$1,297,606</td>
</tr>
<tr>
<td>Multiplicative: pop CAPPED* complexity factor at 1.075 Pop/$450k MIN</td>
<td>74%</td>
<td>$12,763,976</td>
<td>$ (1,322,041)</td>
<td>8%</td>
<td>$1,400,469</td>
</tr>
<tr>
<td>Multiplicative: pop CAPPED * complexity factor at 1.05 Pop/$450k MIN</td>
<td>72%</td>
<td>$12,467,139</td>
<td>$ (1,618,878)</td>
<td>9%</td>
<td>$1,503,333</td>
</tr>
</tbody>
</table>
Narrowed List of Eligible CMAQ Projects

Introduction
At the June Oregon Transportation Commission (OTC) meeting, ODOT staff presented a number of increased CMAQ accountability options to be applied following formula allocations. This was done to support OTC interest in assuring strategic use of CMAQ funds. The three main options presented included:

1. Performance-based approach, where a MPO would have full discretion to select projects from the list of allowable CMAQ project types and report on how those projects contributed to state goals such as the environment, health, and equity.
2. Narrowed list of eligible CMAQ projects. Under this option the list of allowable CMAQ projects would be reduced to focus in on those projects most likely to positively impact state goals such as the environment, health, and equity.
3. Targeted approach, where a portion of each MPOs allocation would be targeted to specific activities such as transportation options, and vehicle and fuel efficiency improvements.

Option 3 appeared not to be favored because it would carve up an already small pot of money. ODOT staff communicated that Option 1 was not necessarily favored by the MPOs because of increased administrative burdens of having to measure and report on the outcomes of CMAQ projects in each area. Option 2 appeared to have the highest level of support for its simplicity and alignment with state goals adopted in the OTCs statewide transportation plans.

Option 2 will be presented to the OTC for approval – along with other CMAQ program design elements – at their meeting in July.

The purpose of this document is to lay out the approach for narrowing the list of eligible CMAQ projects, and present the list.

Background
The goal of the federal CMAQ program is to provide funding for transportation projects and programs to states and local governments in order to meet the requirements of the Clean Air Act. Funding is available to support congestion reduction and improve air quality for areas that are currently in or formerly have been in nonattainment for the National Ambient Air Quality Standards for ozone, carbon monoxide, or particulate matter. The federal program has identified twenty different project types for eligible use of CMAQ funds (click here to view the list). Projects must demonstrate a marked improvement in air quality and FHWA guidance suggests that cost-effectiveness (i.e. volume of emission reductions for cost of project) be considered.

States are allowed discretion as to how projects are prioritized for funding.
Historically, the recipients of the Oregon funds have chosen to use their funds in the categories of bicycle and pedestrian facilities and programs, paving projects, congestion reduction and traffic flow improvements, transit improvements, alternative fuels and vehicles, diesel retrofits and travel demand management/transportation options programs. A historical look at the projects funded between 2012 and 2016 shows the percentage of projects in each category.

### Table: CMAQ Project Types Historically Funded by MPOs from 2012-2016

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicycle and Pedestrian Facilities and Programs</td>
<td>36%</td>
</tr>
<tr>
<td>Paving</td>
<td>19%</td>
</tr>
<tr>
<td>Congestion Reduction and Traffic Flow Improvements</td>
<td>16%</td>
</tr>
<tr>
<td>Transit Improvements</td>
<td>11%</td>
</tr>
<tr>
<td>Alternative Fuels and Vehicles</td>
<td>9%</td>
</tr>
<tr>
<td>Diesel Retrofits</td>
<td>6%</td>
</tr>
<tr>
<td>Travel Demand Management/Transportation Options</td>
<td>4%</td>
</tr>
</tbody>
</table>

**Approach**

The Oregon Department of Transportation and Oregon Transportation Commission is granted the flexibility by the Federal Highway Administration to narrow the list of projects eligible for funding and develop program criteria for project selection. ODOT staff recommends that the number of eligible project types is reduced to prioritize project types that support both state transportation policy goals, MPO priorities, and have a measurable impact on air quality improvements. The three policy goals selected to help screen and narrow the list of eligible projects come from OTC adopted transportation plans, and include environment, health, and equity. Each goal is summarized below, including information on the types of polices it includes – this language comes from the OR-Plan website, which is a repository and relational database of Oregon’s statewide transportation plan’s goals and policies.

**Environment**: Environmental sustainability focuses on the environment and impacts from transportation, such as clean air and water. Policies cover promotion of low and zero emission modes, technologies and fuels that reduce greenhouse gas (GHG) emissions, construction and maintenance practices, and environmental stewardship.

**Health**: Health focuses on the outcome of transportation infrastructure and choices on personal and public health, such as physical activity associated with walking or biking, or the impact of vehicle pollutants on chronic disease. It also touches on access to medical services. Policies cover health considerations, data, and analysis to inform health/transportation-related decision making.

**Equity**: Equity is providing opportunities and choices for people of all ages, abilities, and incomes in urban, suburban, and rural areas across the state to reach their destinations and to access transportation options, assuring transportation disadvantaged populations are served. It is also about guiding ODOT’s interactions with the public and stakeholders to ensure a meaningful two-way dialogue to inform decisions. Policies cover Title VI and Environmental Justice populations, as well as equity.
considerations related to public involvement and engagement strategies, data, and analysis to inform decision making.

Based on the goal areas above, in looking at the type of projects MPOs have historically funded, and potential cost-effectiveness of different types of efforts, ODOT staff narrowed the list of eligible CMAQ projects to seven categories. The categories include: public transportation improvements, transportation option (aka transportation demand management) strategies, pedestrian and bicycle infrastructure, vehicle and fuel efficiency (including diesel retrofits), intelligent transportation systems, traffic flow improvements and paving for dust mitigation in rural areas. The next section discusses the specifics of eligible projects under these categories and the table below describes how each broad category benefits the identified state goals.

Table: Description of How Each Eligible Category Helps to Further State Goals.

<table>
<thead>
<tr>
<th>Eligible Category</th>
<th>State Goals</th>
<th>Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Public Transportation Improvements</strong></td>
<td>Increasing or enhancing public transportation service means more people are likely to ride than drive alone. A higher share of the transit fleet that is low-no emissions helps to improve overall air quality.</td>
<td>Added or expanded service can reach transportation disadvantaged areas, providing new opportunities to reach essential services. Transit is also low cost, helping to reduce the amount each household spends on transportation.</td>
</tr>
<tr>
<td><strong>Transportation Option Strategies</strong></td>
<td>More people choosing to telecommute, drive off-peak hours, or carpool, vanpool, take the bus, walk to bike, helps reduce overall emission and improve air quality.</td>
<td>These types of strategies seek out low income and transportation disadvantaged groups, and facilitate their opportunities for travel to jobs and critical services.</td>
</tr>
<tr>
<td><strong>Bicycle and Pedestrian Infrastructure</strong></td>
<td>Biking and walking are zero emission modes, thus they are the most energy efficient modes.</td>
<td>Walking is zero cost and the only option available to some low income groups. Biking is the second lowest cost transportation mode.</td>
</tr>
<tr>
<td><strong>Vehicle and Fuel Efficiency</strong></td>
<td>Cleaner fuels have less carbon intensity and are better for the environment. Diesel retrofits, in-particular, are important for reducing key pollutants like black carbon. Turning over fleets to no-low emission vehicles can substantially reduce emissions.</td>
<td>Poor air quality impacts all people and some of the worse conditions may be in low cost neighborhoods. Fewer high-pollutant vehicles and cleaner fuels can benefit these locations.</td>
</tr>
<tr>
<td><strong>Intelligent Transportation Systems (ITS)</strong></td>
<td>ITS can improve air quality by smoothing traffic and creating less stops-and-</td>
<td>Health benefits from these types of projects come from overall improved air quality. Equity benefits from these types of projects come from improved air quality for all</td>
</tr>
<tr>
<td>Eligible Category</td>
<td>Environment</td>
<td>State Goals</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Traffic Flow Improvements</td>
<td>Traffic flow modification can improve air quality by smoothing traffic and creating less stops-and-starts, thus reducing idling.</td>
<td>Health benefits from these types of projects come from overall improved air quality.</td>
</tr>
<tr>
<td>Dust Mitigation</td>
<td>Dust creates fine particulates, clouding overall air quality.</td>
<td>Fine particulates from dust can be harmful to public health, and may increase asthma rates.</td>
</tr>
</tbody>
</table>

**Narrowed Eligible Projects**

The seven categories are further defined below with the specific type of allowable projects. CMAQ recipients will be required to select projects under these seven categories.

**Public Transportation Improvements**

- Capital projects, including:
  - Transit stop infrastructure to support increased use of buses and trains
  - Bus pullouts to improve roadway traffic flow and enhance transit rider safety
  - Fixed guideways or tracks for high-capacity transit improvement to reach more riders
- Capital purchases, including: electric or alternative fuel transit vehicles with no or low emissions
- Operational improvements, including:
  - New or expanded service to reach transportation disadvantaged populations and others
  - Increased frequency of existing routes to increase service capacity and accommodate a broader array of potential riders

**Transportation Option Strategies**, including:

- Support for Transportation Management Associations working on geographic-specific congestion issues
- Employer based programs that support alternative work schedules, telecommuting, bus passes, carpooling, etc.
- Safe Routes to School education and encouragement programs that help kids to safely use the transportation system and have interest in taking the bus, biking or walking, which can help reduce school-related congestion. Preferred priority towards Title I schools.
- Targeted transportation options (education and outreach), making people, employees, or students aware of new, enhanced, or existing transit service and biking and walking opportunities
- Traveler information to support awareness of travel choices and help people plan ahead to use public transit or other modes
- Vanpool/rideshare operations and capital expenses so people can rideshare rather than drive alone to and from work or school
- Congestion pricing to send a monetary signal to roadway users on the cost of congestion and impacts in an effort to lessen worsening congestion

**Pedestrian and Bicycle Infrastructure**, including:
- Completing gaps or addressing biking or walking mobility issues near transit, schools, downtowns, employment centers, shopping and to medical services to provide people with the ability to use these modes to reach critical destinations and services
- Off-road paths within and connecting communities that provide a statewide benefit according to the Regional Paths policy (2.5D) of the Oregon Bicycle and Pedestrian Plan

**Vehicle and Fuel Efficiency Efforts**, including:
- Diesel engine retrofits of school buses and government fleet vehicles as one of the top cost-effective approaches identified by FHWA to improve air-quality
- Electric charging station infrastructure to encourage no-emission vehicle use
- Compressed Natural Gas (CNG) or Recycled Natural Gas (RNG) fueling stations and infrastructure to encourage low-emission vehicle use
- Vehicle purchases for government fleets, including: electric and alternative fuel vehicles with low-no emissions

**Intelligent Transportation Systems** for congestion reduction, including:
- Signal synchronization to improve traffic flow, with fewer stops and starts
- Multi-modal traveler information to share information on crashes and detours and reduce intermittent delay that negatively impacts air quality
- Electronic toll collection systems to implement congestion pricing as discussed above
- Incident clearance equipment and management programs to help reduce intermittent delay

**Traffic Flow Improvements** for congestion reduction, including:
- Transit signal priority
- High-Occupancy Vehicle (HOV) or High-Occupancy Toll (HOT) lanes
- Turn lane additions/improvements and intersection modifications when a threshold – such as Volume-to-Capacity (V/C) – is reached. The threshold is to be determined in collaboration with the ODOT Transportation Planning and Analysis Unit.

**Road Dust Mitigation** (rural communities only) to remove fine particulates, including:
- Paving gavel streets
- Purchase of a street sweeper