AIR QUALITY AND CLIMATE CHANGE EVALUATION GUIDANCE

The following guidance provides additional details regarding the process followed by PSRC to evaluate projects for potential air quality and climate benefits. As a reminder, air quality/climate is a key criterion for all PSRC funding competitions, regardless of program. Cost-effectiveness is incorporated into the criteria for projects competing for Congestion Mitigation and Air Quality Improvement Program (CMAQ) funds.

Project Evaluation

The Air Quality / Climate Change criterion evaluates every project, regardless of funding source, for the potential to reduce both greenhouse gas emissions and fine particulate emissions. These are the two top priority pollutants identified at the state and regional level - in particular, diesel exhaust and the reduction of diesel particulates is identified as the air pollutant most harmful to public health. This priority is also identified in federal legislation and is a key component of CMAQ funding.

PSRC uses a technical project-level emissions estimation tool based on national and regional research and data to evaluate projects. Applicants provide detailed information based on the scope and extent of their projects, tailored to reflect the potential emissions reduction from each type of project. The tool is provided as a resource in the call for projects, and is being updated in time for the 2024 process to reflect current research and state of the practice process. This includes research into available data and best practices for the incorporation of "induced demand," which in general addresses capacity expansions on highways and major arterials.

Two key factors in the final score are the magnitude of the project's potential emissions reductions, and the timing of the air quality benefits – i.e., when will the full potential emissions reductions occur. The timing of the air quality benefits is important to help the region continue to meet current and future air quality standards, as well as to assist the region and state in reaching the state's greenhouse gas emissions reduction limits.

Projects resulting in a substantial reduction in emissions will score the highest under this criterion. In general, this includes projects that 1) eliminate a substantial number of vehicle trips; 2) reduce a significant amount of vehicle miles traveled; 3) convert vehicles or facilities to alternative fuels; and/or 4) reduce a significant amount of fine particulates through the reduction of heavy duty diesel truck idling or the shortening of heavy duty diesel truck trip lengths.

Projects competing for CMAQ funds will be evaluated on their emissions reduction potential as well as their useful life and the amount of funding requested, so that projects resulting in the most cost-effective reduction of emissions will score the highest. In addition, the air quality / climate score is of higher value for projects requesting CMAQ funds.

Emission Reduction Potential from Various Project Scopes

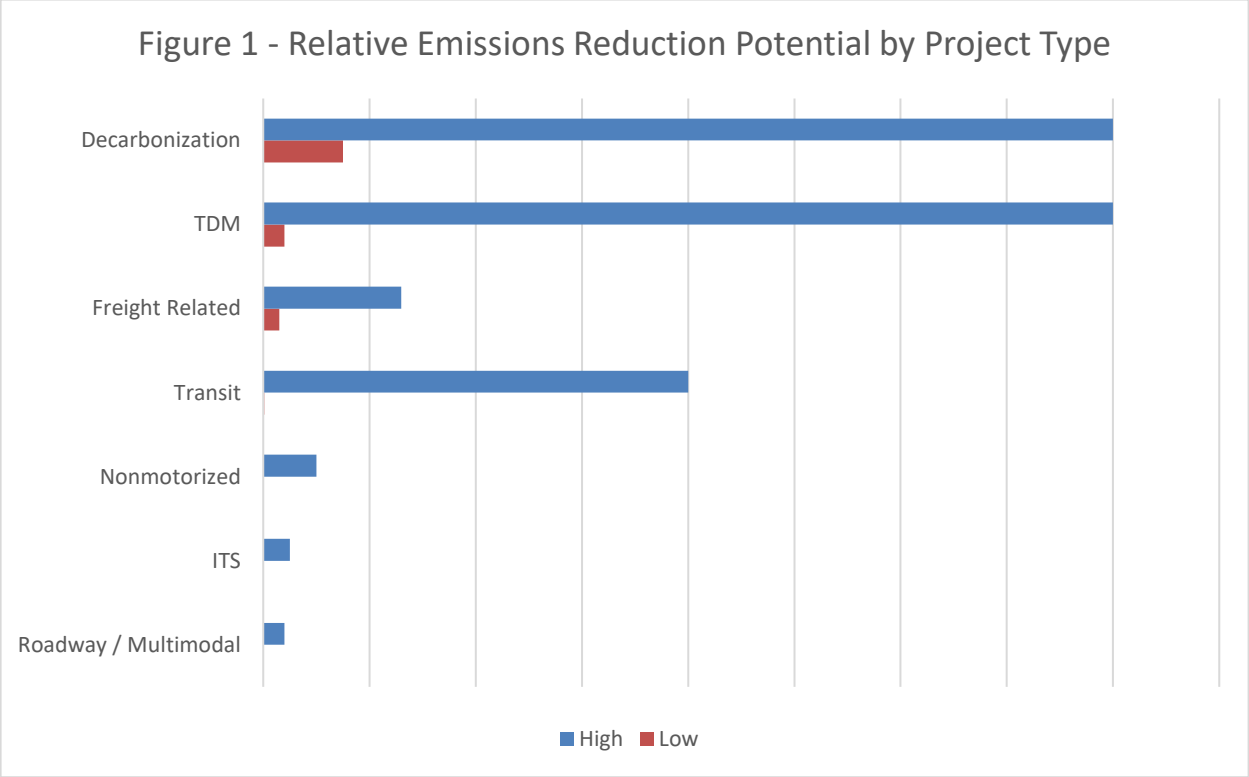
In the application, project sponsors will be asked to provide information based on the scope and extent of their projects. Questions are tailored to reflect the potential emissions reduction from various elements that may be contained within each project. If the sponsor has reliable quantified data – e.g. from an environmental impact analysis, traffic study, or other analytic process – they are encouraged to provide that reference information.

This information will depend on the type of improvement, as well as the extent to which the improvements will extend within the regional system. The application will provide detailed questions specific to the various potential scope elements to assist in this evaluation, relative to the key determining factors for each element's potential to reduce emissions. PSRC then uses this information along with default assumptions and regional data to evaluate each project using the project-level emissions estimation tool.

Example questions that will be used to evaluate potential emissions reductions include:

- HOV/BAT Lane Projects – what are the roadway and travel conditions before and after the proposed project, including average daily traffic and speeds? How many transit routes use the facility now and are anticipated in the future? Does this project connect to or expand an existing HOV/BAT lane system? What is the length of the project and the population served?
- Transit Projects – what is the current transit ridership in the area? What is the average trip length? What is the population served that will be expected to use the new/improved service? What is the expected ridership due to the project?
- ITS Projects – what is the current and expected average daily traffic and speed along the corridor? What are the expected improvements in speed from this project? What are the transit routes along the corridor, and will this project improve transit reliability on the corridor? What is the percentage of heavy trucks using the facility?
- Bicycle/Pedestrian Projects - what is the length of the facility? What are the connections to other bicycle/pedestrian facilities and to the larger system? Does the facility connect to transit? PSRC uses regional GIS and population information to identify the
- Roadway / Intersection Improvement Projects – how many lanes exist before and after the project? What is the annual average daily traffic before and after the project? What is the percentage of heavy trucks using the facility? What is the anticipated reduction in travel delay expected from the project?
- Vehicle Replacement Projects – what is the age of the vehicles being replaced? How many vehicles will be replaced? What is the average miles driven by the existing vehicles?

Figure 1 below displays the range of potential emission reductions from a variety of project types, based on actual projects awarded CMAQ funds. The data is provided from PSRC's emissions estimation reporting and national data from the CMAQ Public Access System.



Note: some of the "Low" values are too small to appear on the chart

As illustrated by the data above, there may be a wide range of emissions benefits from projects, and the magnitude of the project's scope and the interaction with the surrounding population and transportation system are critical to the final result. The evaluation criteria and application seek information on the elements included in a project that would reduce emissions, depending on the type of improvement as well as the extent to which the improvements will extend within the regional system.

Emission Reduction Calculations

PSRC staff will calculate the expected reduction in emissions for all applications. As described above, the calculation will be made utilizing project-specific data provided in the applications and PSRC's project-level emissions estimation tool. Data provided by the project sponsor will be considered on the condition that the source of the data is provided and is considered reasonable and based on sound methodology. Project types that are not captured by the tool will be evaluated by PSRC staff using project data and other available resources.

While emission reductions will be estimated for all pollutants, the criteria is based on carbon dioxide equivalent (CO_2e) and fine particulate matter ($PM_{2.5}$) emissions. CO_2e is used as a representative for all gaseous pollutants because project changes result in similar emissions reduction trends from these pollutants. $PM_{2.5}$ is considered separately and on a different scale due to the emphasis placed on reduction of this pollutant in federal, state and regional policy.

Under coordination with the Puget Sound Clean Air Agency and the Regional Project Evaluation Committee, the simplified calculation of annual emissions reductions per project for the purposes of scoring is as follows:

Annual emissions reduction = (annual tons of CO_2e) + (annual pounds of $PM_{2.5}$)

The air quality / climate score for the CMAQ competition will be weighted higher and will be determined differently than in the competition for funds from the Surface Transportation Block Grant Program (STBG). Rather than strictly being scored on the magnitude and timing of emissions reduction, CMAQ projects will be evaluated on the cost-effectiveness of the potential emissions reductions. The CMAQ program guidance directs the use of cost-effectiveness in the selection of projects, and the following methodology will be used to select projects applying for CMAQ funds.

Cost effectiveness = [(funding request) / (useful life)] / (annual emissions reduction)

Only the requested CMAQ funds will be considered as part of the cost effectiveness evaluation. Total project cost is not applicable for this evaluation.

The application includes a question about the project's useful life. In most cases, this value will be applied using Figure 2 below. This table is derived from FHWA and FTA guidance and project evaluation summaries. The FHWA data is supported by the Congestion Mitigation and Air Quality Improvement (CMAQ) Program, 2020 Cost-Effectiveness Tables Update." The FTA data is derived from the most recently published FTA Circular, but an additional resource is the Default Useful Life Benchmark (ULB) Cheat Sheet. Project types that are not included in Figure 2 must provide background data to support the proposed useful life value.

The cost effectiveness value will be in units of dollars requested per emissions reduced. Lower values are considered to be more cost effective than higher values. Projects resulting in the lowest cost effectiveness values will score the highest under this criterion. As an example, higher scores would be expected from projects that demonstrate high emissions reductions, request modest funding amounts, and have longer useful lives, thereby resulting in a cost effective reduction in emissions.

Air Quality / Climate Score – Equity Component

As adopted by the board for the 2024 project selection process, the Air Quality / Climate criteria will also provide points to projects that are located in areas identified between 7 and 10 for diesel pollution and disproportionate impacts in the Washington Environmental Health Disparities map.

Figure 2: Useful Life Estimates for CMAQ Projects

Project Type	Useful Life (in years)
Traffic Flow Improvements	
Signalization	10
Freeway Management	10
HOV / Business Access Transit Lanes	20
Shared Ride Programs	
Regional Ridesharing	2
Vanpool Programs - Assistance	2
Vanpool Programs - Purchase of Vans	4
Park and Ride - Surface Lots	12
Park and Ride - Structure	12
Transportation Demand Management Programs and Activities	
Trip Reduction Programs and Outreach / Advertising	2
Bicycle / Pedestrian Facilities	
Bicycle & Pedestrian Facilities	15
Transit Improvements	
Bus	
Large Heavy-Duty Bus (35-40 ft. and articulated buses) - Purchase	12
Small Heavy-Duty Bus (approximately 30ft) - Purchase	10
Medium, Medium-Duty Bus (25-35 ft.) - Purchase	7
Medium, Light-Duty Bus (25-35 ft.) - Purchase	5
Operations - Existing Service	Tie to length of grant
Operations - New Service	Tie to length of capital investment
Ferry	
Passenger Ferry - Purchase	25
Other Ferry - Purchase	30
Rail & Trolley	
Fixed Guideway Steel-Wheeled (i.e. streetcar or light rail)	25
Fixed Guideway Electric Bus	15
Heavy Rail Vehicle	25
New Rail Services - Track & Stations/Centers	30
Other	
Amenities	2
Bus Shelters	10
Other Improvements	
Alternative Fuel Buses	4
Freight / Intermodal Projects	20
Engine Retrofit Technologies	Varies - utilize and cite resources provided by the U.S. Environmenal Protection Agency, U.S. Department of Energy, etc.

Sources:

Federal Highway Administration, 2008. SAFETEA-LU: CMAQ Evaluation and Assessment - Phase I Final Report

Federal Transit Administration, 2015. Circular 5300.1 State of Good Repair Grants Program: Guidance & Application Instructions