CONGESTION MITIGATION AND AIR QUALITY PROGRAM BEST PRACTICES SCAN

Final Report

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Prepared for:

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EXECUTIVE SUMMARY

This study was commissioned by the New Mexico Department of Transportation (NMDOT). The study's main objectives are to understand the current state of practice in the solicitation, evaluation and selection of transportation projects eligible for funding under the federal Congestion Mitigation and Air Quality Improvement (CMAQ) program and to recommend best practices for completing these tasks. More specifically, NMDOT is interested in current practice within states that received so called "flexible" CMAQ funds. These are states that generally have relatively modest transportation-related air quality problems and therefore are given greater flexibility in how CMAQ funds can be used as explained in this report.

E.1 Study Approach

We evaluated these questions through four research tasks. We started by completing a literature review focused on prior studies that have evaluated the CMAQ program or CMAQ projects. Next, we evaluated how DOTs and Metropolitan Planning Organizations (MPOs) have spent CMAQ funds in the past 5 years by evaluating the Federal Highway Administration's (FHWA) CMAQ Public Access System. We also searched DOT and MPO websites for information about how they manage their CMAQ programs. We searched every DOT website in states that receive some amount of flexible CMAQ funds. We also searched a small number of MPO websites for MPOs that have sponsored CMAQ projects using flexible funds. The aim of the web search was to identify the range of methods currently used for soliciting, evaluating and selecting CMAQ projects in areas that receive flexible CMAQ funds. Finally, we also requested information about best practices in CMAQ program management from academics, consultants, and local, region, state and federal agency staff who are experts in transportation and air quality.

Using the information collected though these four tasks, we then summarize the current state of the practice and identify best practices. We use this summary along with our own research experience and expertise to make specific recommendations to NMDOT on the management of its CMAQ program and the use of flexible CMAQ funds.

E.2 Summary of CMAQ Funding Priorities

A review of all CMAQ projects funded between 2011 and 2015 reveals that congestion reduction projects are generally the most common project type, followed by bicycle, pedestrian and transit projects. Congestion reduction and transit projects also account for the largest share of CMAQ funding, while pedestrian and bicycle projects accounted for a relatively small share of funding. The large share of congestion reduction projects is partially due to the broad range of projects covered by this category. The funding priorities of DOTs, which account for a very small share of all CMAQ projects, was somewhat different than that of MPOs. DOTs spent a greater share of flexible CMAQ funds on non-CMAQ eligible projects (i.e., projects eligible under the surface transportation program (STP)) than MPOs did. Transit, pedestrian and bicycle projects were also less common when DOTs were the sponsor, while travel demand management and inspection and maintenance programs were more common. This difference between DOTs and MPOs is likely due to DOT projects taking place in more rural areas or on state highways where bicycle, pedestrian and transit projects would be less effective or practical.

E.3 Summary of Our Recommendations for NMDOT

In fiscal year 2017, for the first time, most, if not all, of New Mexico's CMAQ funds will be flexible. This means NMDOT now has great latitude in how it programs these funds. Previously, as required by federal program requirements, a large share of these funds had to be spent in national ambient air quality non-attainment or maintenance areas for carbon monoxide, ozone, or particulate matter on projects that would reduce vehicle emissions. The result was that a large share of funds was required to be spent in

Bernalillo County which was a carbon monoxide maintenance area. CMAQ funds can now be spent almost anywhere in the state and for almost any type of transportation project.

A particular challenge for NMDOT is considering proposals from outside the Albuquerque metropolitan area where there has historically been few concerns linked to vehicle emissions. This includes many of the state's smaller and rural communities where local officials may not be aware of CMAQ funding or which types of projects may be eligible, where there may not be any experience in evaluating the air quality benefits of transportation projects, and where adequate resources for evaluating the potential air quality benefits of projects may not exist. Considering these factors we make the following recommendations.

E.3.1 Project Solicitation

Since all CMAQ funds are now flexible, almost any local government agency is eligible to use them unless NMDOT chooses to restrict funding for particular uses. It is likely that many local government agencies outside of the Albuquerque metropolitan area are unaware of this source of funding and what types of projects are eligible. Therefore, NMDOT should put significant resources into distributing information to municipalities about any opportunity they have to propose projects for CMAQ funding.

Since NMDOT will likely develop a CMAQ project solicitation and evaluation process, and because many small communities likely have no experience with evaluating the air quality benefits of transportation projects, the application process should be highly informative. Application materials should provide a summary of eligibility requirements, what information and data the sponsor will need to provide and how proposals will be evaluated. A pre-application workshop or webinar would likely be very useful in answering questions and ensuring that applications are complete, contain eligible projects and provided useful information. These actions were identified as best practices used by many DOTs and MPOs.

Estimating emission reductions is likely to be one of the most significant challenges in New Mexico. A common approach used by many MPOs and DOTs is to guide project sponsors, step by step, though the emission estimating process using detailed forms or emission calculators. These calculations often require numerous additional data and assumptions which require resources (data and expertise) that some municipalities in New Mexico may not have. Therefore, a better approach may be for NMDOT to collect standard project information about projects from local sponsors that can then be used by NMDOT staff or consultants to estimate emissions.

E.3.2 Project Evaluation

It is common practice to rate proposals by scoring individual project criteria or creating a rubric that prioritizes projects qualitatively. Scoring approaches are most common, but either approach can work well if thoughtfully designed. In either case, NMDOT should design an evaluation scheme as a way to communicate the agency's priorities to project sponsors. Scoring schemes with fewer and more general criteria or qualitative rubrics are preferable as they leave more room for NMDOT staff to consider unique project features and local context. Evaluation schemes with too many specific criteria may discourage innovative or unique projects and increase the analytical burden. To the extent that NMDOT wishes to achieve a certain mix of projects in different categories (e.g., bicycle and pedestrian, travel demand management, and traffic flow improvement projects), either approach can be applied separately to each category, using unique criteria for each. This helps to ensure that each type of project is evaluated using the most relevant criteria.

Emission reduction benefits should be a priority in any evaluation to the extent NMDOT aims to continue to program projects under the goals of the CMAQ program. The use of general cost effectiveness tables which are available from several prior studies may not be reliable for use in New Mexico. The cost

effectiveness of most CMAQ projects are very context dependent and previous studies have focused on larger urban areas and projects in places with more severe air quality and congestion problems than those in that exist in New Mexico. Therefore, NMDOT should evaluate the emission reduction potential or cost effectiveness of each project that is submitted, rather than relying on more generalized tables and guidance. To facilitate these evaluations, NMDOT should consider the development of an emission calculator or standardized set of assumptions and calculation formulas, a practice that we found to be both very common and considered very helpful. NMDOT could also, over time as it evaluates more CMAQ proposals, create its own cost effectiveness tables or guidance for local project sponsors.

While not standard practice for most MPOs or DOTs, NMDOT should also strive to consider the lifecycle costs and benefits of each project to the extent that resources allow. Such an approach would provide a fairer comparison of projects with relatively modest emission reductions that have relatively long lifetimes; for projects with high capital costs that also provide benefits over a long period of time; and for projects where the emission benefits are likely to change over time.

E.3.3 Project Selection

NMDOT should consider a CMAQ specific project selection committee if it intends to continue to use CMAQ funds to improve air quality. The membership of a CMAQ specific project selection committee should consider two criteria: regional representation and air quality expertise. Since projects are context sensitive, ensuring that each region of the state is represented along with both large and small communities should be a priority. Furthermore, given the historical lack of air quality problems in New Mexico, it is likely that few transportation engineers or planners have air quality expertise. Therefore, a CMAQ selection committee should include individuals with this expertise. The New Mexico Environment Department Air Quality Bureau and the Albuquerque-Bernalillo County Air Quality Control Board may have personal with mobile source air quality expertise. NMDOT could also consider assistance from consultants.

1 INTRODUCTION

1.1 Study Purpose

This study was commissioned by the New Mexico Department of Transportation (NMDOT). The study's main objectives are to understand the current state of practice in the solicitation, evaluation and selection of transportation projects eligible for funding under the federal Congestion Mitigation and Air Quality Improvement (CMAQ) program and to recommend best practices for completing these tasks. More specifically, NMDOT is interested in current practice within states that received so called "flexible" CMAQ funds. These are states that generally have relatively modest transportation related air quality problems and therefore are given greater flexibility in how CMAQ funds can be used as explained in this report.

In fiscal year 2016, approximately 40% of the $11 million in CMAQ funds apportioned to New Mexico were flexible[1], which has been the case for many years. For fiscal year 2017, nearly all of this amount will be flexible[2]. This increase in flexibility means that CMAQ funds can now be spent anywhere in the state for almost any type of transportation project or program. Previously, 60% of the funds were required to be spent in non-attainment and maintenance areas and on CMAQ eligible projects and programs. This meant that most CMAQ funds were provided to Metropolitan Planning Organizations (MPOs) where the non-attainment and maintenance areas were located. MPOs used their own transportation planning processes to select and program the funds. However, since this requirement no longer exists, NMDOT now has complete flexibility in how to program the full amount of CMAQ funds across the state for a wide variety of project and program types. This report provides information and guidance to assist NMDOT in developing a process for programing its CMAQ funds under the assumption that the main goal continues to be improving air quality and reducing congestion.

1.2 Study Approach

Our study evaluated these questions through four research tasks. We started by completing a literature review focused on prior studies that have evaluated the CMAQ program or CMAQ projects. The literature mostly consists of prior government studies. We supplemented the literature review with a general overview of common decision making methods applicable to transportation projects. We did not complete an in-depth review of the research literature pertaining to the effectiveness of individual strategies for reducing transportation emissions as this was outside the scope of the project and available budget.

Next, we evaluated how DOTs and MPOs have spent CMAQ funds in the past 5 years by evaluating the Federal Highway Administration's (FHWA) CMAQ Public Access System[3]. The CMAQ Public Access System is a database that contains information about every CMAQ project completed since 1992, including project emission reduction estimates, costs, location and description. We stratified our analysis of the database by DOT and MPO sponsored projects that used flexible and non-flexible funds.

We also searched DOT and MPO website for information about how they manage their CMAQ programs. We searched every DOT website in states that receive some about of flexible CMAQ funds. We also searched a small number of MPO websites for MPOs that have sponsored CMAQ projects using flexible

[1] FHWA FY2016 CMAQ apportionment table: https://www.fhwa.dot.gov/legsregs/directives/notices/n4510805/n4510805_t14.cfm

[2] The FHWA apportionment tables indicate that 100% of the New Mexico CMAQ apportionment is flexible; however, NMDOT indicates a small portion is considered CMAQ-mandatory for a portion of the El Paso, Texas PM-10 non-attainment area that falls within New Mexico. FHWA FY2017 CMAQ apportionment table: https://www.fhwa.dot.gov/legsregs/directives/notices/n4510812/n4510812_t14.cfm

[3] CMAQ Public Access System: https://fhwaapps.fhwa.dot.gov/cmaq_pub/

funds. The aim of the web search was to identify the range of methods currently used for soliciting, evaluating and selecting CMAQ projects in areas that receive flexible CMAQ funds.

Finally, we also requested information about best practices in CMAQ program management from academics, consultants, and local, region, state and federal agency staff who are experts in transportation and air quality. The request was made by sending out a brief e-mail to a list-serve maintained by the Transportation Research Board of the National Academies standing committee on Transportation and Air Quality (ADC20). The committee list-serve includes past and present members of the committee, researchers that have submitted research papers to the committee for consideration in prior Transportation Research Board annual meetings, and other researchers, consultants and agency staff interested in transportation air quality research and policy.

Using the information collected through these four tasks, we then summarize the current state of the practice and identify best practices. We use this summary along with our own research experience and expertise to make specific recommendations to NMDOT on the management of its CMAQ program and the use of flexible CMAQ funds.

1.3 Overview of the CMAQ Program

The CMAQ program was established by the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA). The program was a response to the Clean Air Act Amendments of 1990, which increased the emphasis on reducing vehicle emissions as a way to attain the National Ambient Air Quality Standards (NAAQS). The CMAQ program's main objective is funding transportation programs and projects that will contribute to attainment of the NAAQs. It has been re-authorized in each subsequent federal transportation bill.

A wide range of transportation projects and programs linked to reducing vehicle emissions in non-attainment and maintenance areas are eligible for CMAQ funds [23 U.S.C. §149(b) (2015)]. These include, but are not limited to, programs and projects that result in the direct reduction of vehicle emissions though vehicle technologies and alternative fuels; establish or operate a traffic control and management center; that improve traffic flow including traffic signal control improvements, HOV lanes, intersection improvements, and intelligent transportation systems; shifts traffic to off-peak hours or other modes; increases vehicle occupancy; and reduce travel demand including car sharing, telecommuting, alterative work hours, and pricing. Projects that increase roadway capacity for single occupancy vehicles are explicitly prohibited [23 U.S.C. §149(b)(3) (2015)].

The CMAQ program is one of several surface transportation programs funded by the Highway Trust Fund and managed by the FHWA. The FHWA, using formulas that have changed over time as new transportation bills are passed, apportions funds from the overall surface transportation budget to each state and to each program. Each program provides funding to states for different surface transportation needs such as the construction of new infrastructure, maintenance of existing infrastructure, safety projects, infrastructure for non-motorized transportation, and air quality improvement. Since the needs of individual states may differ and change over time, federal law allows states to move up to 50 percent of the funds from one program to another [23 U.S.C. §126 (2015)]. For example, 50 percent of CMAQ program funds could be moved into a state's Surface Transportation Block Grant (STBG) program where they could then be used for building new highway capacity, which is an activity not allowed under the CMAQ program.

The CMAQ program includes additional provisions to further increase its flexibility. Each state receives a minimum CMAQ apportionment regardless of whether or not it has now or has ever had any non-attainment or maintenance areas. The minimum apportionment is a legacy carried forward from

SAFETY-LU, and prior transportation bills, that guaranteed states a minimum of one-half a percent of total CMAQ program funding regardless of if they had any air quality problems. The FAST Act does not explicitly contain a minimum apportionment; however, it uses a formula to determine a state's CMAQ funding that depends in part on the level of CMAQ funds apportioned just prior to the implementation of MAP-21 in 2009 [23 U.S.C. §104(b)(4)(A) (2015)]. Basically, the minimum apportionment received in 2009 under SAFETY-LU is carried forward, with some adjustment, by MAP-21, and the FAST Act carries forward the MAP-21 process.

In states with non-attainment and maintenance areas, a portion of the CMAQ apportionment must be spent in non-attainment and maintenance areas. The exact amount depends on the size of the population in non-attainment and maintenance areas, the air pollutant(s) involved, and the severity of air quality problems (see section V of FHWA, 2013). In states such as California that have large populations in non-attainment and maintenance areas, all CMAQ funds must be spent in non-attainment and maintenance areas. However, in states with less widespread air quality problems, a portion of the CMAQ funds (up to 100% in some cases) may be used outside of non-attainment and maintenance areas [23 U.S.C. §149(d) (2015)]. These funds are commonly referred to as "flexible" CMAQ funds. Not only can flexible CMAQ funds be used outside of non-attainment and maintenance areas, they can be used for activities that are eligible for funds from the STBG program [23 U.S.C. §149(d)(2)(A)(b) (2015)] in addition to the CMAQ program. This flexibility allows CAMQ funds to be spent on a much wider range of transportation projects, including those that have no air quality benefit, since most types of surface transportation projects are eligible for STBG funds [23 U.S.C. §133(b)].

To summarize, states may both transfer up to 50% of CMAQ funds to other transportation programs and then, according to the conditions set forth in the state flexibility section of the CMAQ program [23 U.S.C. §149(d) (2015)], use some portion of the remaining CMAQ funds for STBG or CMAQ eligible projects. In New Mexico, where there is only one, very small, non-attainment area, a large portion of CMAQ funds are flexible.

Despite the many requirements and restrictions for using federal-aid highway funds, and CMAQ funds in particular, states are afforded nearly complete discretion in how to evaluate the emission reduction benefits of CMAQ projects. The CMAQ program restricts funding to transportation projects that reduce emissions [23 U.S.C. §149(b) (2015)]. Furthermore, as a federal-aid highway program, projects must meet all other rules and regulations pertaining to federal-aid highway projects. This includes that projects be included in an MPO's transportation plan and transportation improvement program (TIP), or state transportation improvement program (STIP) for projects located outside of areas overseen by MPOs, and that all National Environmental Policy Act (NEPA) requirements are met. While states must demonstrate the emission reduction benefits of CMAQ projects, there are no requirements for how a state evaluates the emission reduction potential of CMAQ projects or how a state weights emission reductions against other project costs and benefits. The FHWA expects states to quantitatively estimate emission reductions for all CMAQ projects except when "it is not possible to accurately quantify emission benefits"[1]. and to weigh the cost effectiveness of emission reductions heavily in prioritizing projects for funding (FHWA, 2013). Legislation authorizing the CMAQ program also emphasizes the consideration of cost effectiveness [23 U.S.C. §149(i)(2) (2015) and 23 U.S.C. §149(g) (2015)]. FHWA also requires states to report emission reductions and cost effectiveness estimates annually in the CMAQ Public Access System database, except for projects using flexible CMAQ funds (FHWA, 2013, 2004). Projects using flexible CMAQ funds must be entered into the database but emission reduction estimates are not to be reported.

[1] Section VII(A)(2), FHWA, 2013. Interim Program Guidance Under MAP-21.

States and MPOs are also afforded wide discretion on the methods they use to solicit, rate and ultimately select CMAQ projects. The FHWA's CMAQ Program Interim Guidance (FHWA, 2013), however, does layout the agency's expectations. These include that the project selection process be transparent, in writing, and publicly available; that agencies involved in rating proposed projects and committees involved in making final decisions are identified; and that the process and basis for rating proposed projects is clear. The guidance and the CMAQ legislation [23 U.S.C. §149(h) (2015)] also encourage states and MPOs to coordinate with air quality agencies when making project selection decisions.

2 LITERATURE REVIEW

The purpose of this literature review is to identify studies and reports that provide knowledge and methods that may be used for selecting CMAQ projects and evaluating their benefits and cost effectiveness. We searched for studies in peer-reviewed scientific journals, studies commissioned by federal government agencies, and graduate student theses and dissertations. This search turned up several federal government-sponsored studies, one peer-reviewed journal article, and one thesis. There is also a very large body of academic literature on decision analysis and decision making frameworks in general, and specifically regarding transportation projects; however, a full review of that literature is outside the scope of this project given time and budget constraints. Therefore, we provide a brief overview of the decision analysis literature but do not provide an in-depth review of the latest research or methods.

2.1 CMAQ Studies

Prior studies mostly consist of congressionally-mandated CMAQ program cost effectiveness studies (FHWA, 2014, 2009, 2008; TRB, 2002) or FHWA CMAQ program guidance (FHWA, 2013, 2015a, 2015b). Many of these have aims closely aligned to the present study commissioned by the NMDOT in that they seek to understand how MPOs and DOTs select and evaluate projects for CMAQ program funds and provide guidance on best practices. An effort to understand the relative cost effectiveness of different mobile source emission reduction strategies is also very common since the CMAQ program legislation [23 U.S.C. §149(i)(2) (2015) and 23 U.S.C. §149(g) (2015)] and FHWA guidance (FHWA, 2013) emphasize cost effectiveness.

Note that the prior studies reviewed here consider practices, outcomes and make recommendations for MPOs and DOTs that were facing relatively significant air quality problems and received mandatory CMAQ apportionments. Prior studies have not specifically focused on the practices of DOTs and MPOs in areas with relatively clean air that receive mostly flexible CMAQ funds, which is one of the specific aims of our study. Provided that the intent of NMDOT and other DOTs and MPOs receiving flexible CMAQ funds is to continue investing in activities that promote emission reductions and air quality improvement, the findings from these prior studies should be relevant.

2.1.1 CMAQ Program Administration and Project Selection Methods

Two comprehensive reviews of the CMAQ program include detailed case studies of practices in use by several MPOs (FHWA, 2009; TRB, 2002). The TRB (2002) study reviewed practices in use by five MPOs that include the cities of Los Angeles, CA, Chicago, IL, Houston, TX, Washington, D.C., and Albany, NY. The FHWA (2009) study reviewed the practices of seven additional MPOs that include the cities of Birmingham, AL, Boston, MA, Denver, CO, Fort Collins, CO, Medford, OR, Pittsburg, PA, and San Francisco, CA. The findings and recommendations of each study were similar and are discussed below.

2.1.1.1 Project Solicitation

MPOs and DOTs typically follow one of three general approaches for developing their CMAQ program. A common approach is a periodic solicitation for project proposals from local governments and state

agencies (typically regional DOT offices) through a dedicated call for CMAQ projects. Calls for CMAQ project proposals often include applications that provide information about which projects types are eligible for CMAQ program funds, what information project sponsors should provide in their proposals, and how projects will be evaluated by the MPO or DOT. An advantage of a CMAQ-specific call for proposals is that the DOT or MPO can use the application process to request CMAQ program-specific information for each proposal that can aid in the decision making process. For example, the application can ask project sponsors to identify how the project meets CMAQ eligibility guidelines and to provide emission reduction estimates or information that can be used to evaluate potential emission reductions.

A CMAQ-specific call has many other benefits as well. The call for proposals can provide additional restrictions on project types that go beyond those of the federal CMAQ program to encourage development of projects that are likely to be most effective in a particular state or MPO. The particular emission reduction effectiveness of a project will depend on each region's unique land-use and transportation context and the project should also respond to other important regional needs. For example, a region with a busy port or intermodal freight facility that has concerns about fine particulate matter (PM2.5) emissions may want to guide CMAQ program funds to projects that would reduce heavy-duty diesel truck emissions.

CMAQ-specific calls are also an opportunity to provide guidance or set requirements for how CMAQ project air quality and other co-benefits are estimated so that projects can be more easily compared and ranked. A common application requirement is for project sponsors to estimate emission reductions using a table of tabulated emission factors or simple sketch planning tools and calculators. In other cases, applications require project sponsors to provide information that the MPO or DOT can then use to estimate emission reductions such as the change in vehicle miles traveled (VMT), average speed or use of a specific emission reducing technology. These practices help to standardize the information across individual project proposals and reduces the analytical burden on project sponsors; for example, from having to use an emission factor model such as MOVES or EMFAC (in California), which may require knowledge and resources not available to all project sponsors.

Furthermore, CMAQ-specific calls are an opportunity to let project sponsors know how their proposals will be evaluated. This can help further guide the development of the most effective projects given the DOTs or MPOs air quality and overall transportation goals. Knowledge of how proposals will be evaluated may also encourage project sponsors to provide information that is more relevant for rating and selecting projects.

MPOs and DOTs also solicit CMAQ projects though their regular regional or state-wide planning processes. In these cases, a greater burden may be placed on the MPO or DOT to determine a project's eligibility for CMAQ program funds and for estimating emissions reductions. In regions that have non-attainment and maintenance areas, the regional and state-wide planning process may already consider air quality impacts of most projects in order to satisfy conformity and state implementation plan (SIP) requirements. In these cases, it may be relatively more advantageous to role the CMAQ process into the overall transportation planning process. An additional advantage of this process is that MPOs and DOTs can consider the full range of proposed projects and their eligibility for funding under each surface transportation program which may allow for more strategic use of these funds. For example, some projects, such as the improvement of intersections or construction of bicycle infrastructure may be eligible for funds from several different programs (e.g., NHPP, STBP, HSIP and TAP *[for bicycle projects]*), while a project to retrofit heavy-duty diesel engines may only be eligible for CMAQ program funds.

Lastly, some portion of CMAQ funds may be reserved for particular projects or programs. It is very common for DOTs to simply pass through CMAQ funds to MPOs, and state laws in some places require this (FHWA, 2009). However, in other places DOTs may withhold a portion of CMAQ funds and solicit projects from individual project sponsors as discussed above or they may set aside a portion of CMAQ funds for use on projects and programs coordinated by the DOT that are thought to be particularly effective at reducing mobile source emissions. For example, in Massachusetts the DOT sets aside a portion of CMAQ funds for managing a statewide rideshare program and distributes the remainder to MPOs (FHWA, 2009).

2.1.1.2 Project Ranking and Selection

When projects are submitted by individual project sponsors, MPOs and DOTs must rate and select projects for funding. Most MPOs and DOTs evaluated by the TRB and FHWA studies follow a process where projects are scored for their responsiveness to multiple selection criteria by a CMAQ project selection committee and then a final determination is made by the MPO board or state transportation commission (or equivalent) where additional considerations may be taken into account. The criteria that are scored and their relative weights in the ranking process are highly variable. All MPOs and DOTs consider a project's likely emissions reductions and most also consider cost effectiveness and congestion reduction. Beyond these criteria there is a wide range of practice.

Considering the wide range of practice and the unique context and planning goals of each region, the TRB and FHWA studies identified several best practices. While most MPOs and DOTs have CMAQ project selection committees, the makeup of committees varies. Both the TRB and FHWA studies recommend that representatives from local and state air quality agencies be placed on these committees or otherwise have some involvement in the project review process. The argument is that since the CMAQ program focuses heavily on air quality improvements it would be prudent to involve air quality experts in addition to transportation engineers and planners. The involvement of air quality experts is important for both validating emission reduction estimates and evaluating if projects are responsive to the particular air quality concerns of a region. Both studies noted that it was not common practice to include air quality agency experts despite federal legislation[1] and guidance encouraging this (FHWA, 2013).

Both studies also found that scoring and ranking projects by project type was common and the TRB (2002) study promoted this as an example of good practice. It is considered more fair to compare similar projects to each other, especially with regard to their emissions reduction potential, since each type of project likely has numerous other co-benefits that would be difficult to compare across categories. However, allocating CMAQ funds to high ranking projects in different categories still poses a challenge.

The use of simple spreadsheet models and sketch planning software tools are also encouraged. These tools were found to be useful for ensuring that common and acceptable methodologies were used by individual project sponsors to estimate emission reductions and other project outcomes. By standardizing the analytical procedures used as much as possible it is believed that projects are more easily and fairly compared. Furthermore, the provision of these tools reduces the analytical burden on local project sponsors who may not have the knowledge or resources to complete their own emission reduction analysis using common modeling tools such as MOVES.

Both studies also emphasize the importance of considering CMAQ project co-benefits in addition to emissions reductions. The TRB (2002) study notes that the primary focus should be on a projects' ability to reduce emissions and not congestion reduction since most other surface transportation programs can fund congestion relief projects. Both studies emphasized the importance of also considering a project's

[1] 23 U.S.C. §149(h) (2015)

economic, safety and ecological impacts as is common for transportation projects funded under any other federal-aid highway program. Furthermore, the TRB (2002) study recommends consultation with local experts to understand which co-benefits (and emissions reductions) are most important in individual jurisdictions to aid in the project selection process. This is likely even more relevant at the state-wide level.

While both studies found many examples of best practices being used by the MPOs studied, several common challenges and deficiencies were also noted. Data and reporting requirements were considered the biggest challenges by MPOs in the FHWA (2009) study. While the provision of standardized spreadsheet and sketch planning tools along with CMAQ-specific project applications help address this challenge, it was noted in both studies that estimating benefits was still very difficult to accomplish given the high level of uncertainty present in most models that are used and the relative lack of data and methods for evaluating some project types. These observations led to a common recommendation that project sponsors, MPOs or DOTs assess the outcomes of completed CMAQ projects for the purpose of evaluating the performance of the procedures used to select those projects and the relative performance of different project types. Without such post evaluation it is unclear how adequate current project selection practices are. Despite this clear need, both studies noted the practical difficulties in completing post project evaluations, with the biggest barrier being a lack of incentives for project sponsors and funds to perform such evaluations. The FHWA (2009) study also notes that life cycle costs and benefits were rarely computed even though different project types have different useful lives and their emission reductions benefits are likely to vary over time. It was noted that there is currently no requirement to complete a life cycle assessment but that such an analysis would provide a more robust approach for selecting the most cost effective projects

2.1.2 CMAQ Project Cost Effectiveness

Three studies have evaluated the cost effectiveness of individual CMAQ project types (FHWA, 2008, 2015a; TRB, 2002) and one additional study has evaluated the effectiveness of the entire CMAQ program (Adler et al., 1998). Two of these studies were federally mandated evaluations of the CMAQ program (FHWA, 2008; TRB, 2002) while the other was aimed at providing guidance to MPOs, DOTs and project sponsors (FHWA, 2015a, 2015b). The potential for projects funded though the CMAQ program to reduce emissions is mandatory but the CMAQ program[1] and FHWA guidance (FHWA, 2013) also state that cost effectiveness in reducing emissions should also be an important consideration in selecting projects.

Table 1 and Table 2 compare the cost effectiveness estimates for volatile organic compounds (VOC) and PM2.5 emission reductions from the three studies that have made such estimates. In each table, cost effectiveness is represented as dollars per ton of pollutant reduced. Each study took place at a different time, so we adjusted all monetary figures to 2017 dollars to account for general price inflation using the consumer price index. Even after adjusting for inflation, the cost effectiveness values show a large range of variation within and between studies. At least part of the variation between studies occurs because each uses different methods to estimate cost effectiveness. The TRB (2002) study was based on a meta-analysis of prior published studies that had estimated the emission reduction potential and costs of CMAQ eligible project types. It did not evaluate actual CMAQ projects. The FHWA (2008) study conducted by ICF evaluated a relatively small sample of CMAQ project (67 projects) and annualized costs over each project's expected lifetime using a 7% social discount rate. The FHWA (2015a) study conducted by the US DOT Volpe Center also evaluated actual CMAQ projects, and also created a number of additional scenarios that were similar to the actual scenarios to test the potential range of cost effectiveness that may be possible. It is unclear if the study annualized costs and if so, what discount rate was used. Further

[1] 23 U.S.C. §149(h) (2015)

complicating the comparison, the TRB (2002) and FHWA (2008) studies provided high and low cost effectiveness estimates while the FHWA (2015a) study provided low and median cost effectiveness estimates.

In order to facilitate a cross comparison of the three studies, we also classified the cost effectiveness estimates made by each study into quartiles which are indicated in Table 1 and Table 2 by different color shading. We then sorted the cost effectives tables from lowest to highest cost effectiveness using the FHWA (2015a) median cost effectiveness estimates. Table 1 compares VOC cost effectiveness estimates. We choose VOCs since this was the only emission type reported by all three studies. Table 2 compares PM2.5 cost effectiveness estimates. Only two of the studies estimate PM2.5 cost effectiveness; however, we included these because the relative cost effectiveness of strategies to reduce PM2.5 may be very different than for strategies targeting other criteria air pollutants since heavy-duty trucks are the primary source of PM2.5.

Table 1 Comparison of CMAQ Project Cost Effectiveness Estimates (2017 Dollars per Ton of VOC Reduced)

	TRB 2002[a]		FHWA 2008[b]		FHWA 2015a[c]	
Project Type	**Low**	**High**	**Low**	**High**	**Low**	**Median**
Electric Charging Stations					3,366,000	7,446,000
Subsidized Transit Fares/Other Subsidies	1,128	664,110			2,550,000	6,528,000
Bike Sharing					869,040	5,508,000
Roundabouts					442,680	4,386,000
Intermodal freight					38,760	2,652,000
Regional Ridesharing	1,692	22,560	97,180	558,220	548,760	2,142,000
Car Sharing					729,300	1,734,000
Transit Service Upgrades/Amenities	5,358	169,200	12,430	1,695,000	281,520	1,326,000
Bicycle/Pedestrian Facilities	5,922	486,450	622,630	6,780,000	241,740	698,700
Transit Service Expansion	11,985	2,777,700	99,440	1,695,000	43,860	504,900
Park-and-Ride Lots	12,126	996,870	15,820	9,605,000	165,240	473,280
Incident management	3,243	767,040	1,130	110,740	38,760	175,440
Heavy Duty Vehicle Engine Replacement					26,520	151,980
Extreme-Temperature Cold-Start Technology					10,200	140,760
Truck Idle Reduction					3,060	125,460
Diesel Engine Retrofits			7,910	765,010	262	12,240
Intersection Improvements	8,460	180,480	2,260	6,328,000	13,260	67,320
High-Occupancy Vehicle Lanes	22,137	475,170	21,357,000			
Vanpool programs	7,332	125,490	38,420	178,540		
Travel Demand Management	3,243	11,604,300	18,080	32,770,000		
Conventional-fuel Bus Replacements	15,510	56,259	962,760	1,695,000		
Alternative Vehicle Fueling Facilities	9,447	802,290	171,760	3,277,000		
Alternative Fuel Vehicles	5,640	44,556				
Inspection and Maintenance	2,538	8,178				
Charges and Fees	1,128	69,654				

* Colors represent quartiles: gray = 1st, blue = 2nd, green = 3th, and orange = 4th

[a] TRB, 2002. The Congestion Mitigation and Air Quality Improvement Program: Assessing 10 Years of Experience -- Special Report 264.

[b] FHWA, 2008. SAFETEA-LU 1808: Congestion Mitigation and Air Quality Improvement Program Evaluation and Assessment - Phase 1 Final Report (No. FHWA-HEP-08-019). Prepared by ICF International for the Federal Highway Administration.
[c] FHWA, 2015. FHWA - Cost Effectiveness Tables Summary. Prepared by USDOT Volpe National Transportation Systems Center for the Federal Highway Administration.

Table 2 Comparison of CMAQ Project Cost Effectiveness Estimates (2017 Dollars per Ton of PM2.5 Reduced)

	FHWA 2008[a]		FHWA 2015a[b]	
Project Type	Low	High	Low	Median
Electric Charging Stations			15,300,000	33,660,000
Subsidized Transit Fares			11,220,000	28,560,000
Bike Sharing			3,774,000	25,500,000
Roundabouts			1,734,000	17,340,000
Intersection Improvement	499,460	120,006,000	1,530,000	13,260,000
Regional Ridesharing	4,746,000	27,233,000	2,244,000	8,976,000
Car Sharing			3,264,000	7,854,000
Employee Transit Benefits			2,244,000	6,222,000
Service Upgrades/Amenities	449,740	101,813,000	422,280	5,814,000
Alternative Vehicles/Fueling Facilities		763,880	444,720	4,590,000
Freight/Intermodal Projects	90,400	14,916,000	87,720	4,284,000
Bicycle/Pedestrian Facilities	55,822,000	635,173,000	1,020,000	3,264,000
Incident Management			637,500	3,060,000
Extreme-Temperature Cold-Start Technologies			81,600	3,060,000
Transit Service Expansion	5,650,000	23,956,000	226,440	2,754,000
Park-and-Ride Lots	696,080	313,575,000	736,440	2,142,000
Heavy Vehicle Engine Replacements			17,340	126,480
Truck Idle Reduction	124,639	196,168	488	77,520
Diesel Engine Retrofits	9,040	2,373,000	1,530	38,760
Freeway Management	485,900	153,567,000		
Vanpool Programs	1,695,000	9,379,000		
Travel Demand Management	954,850	195,377,000		

* Colors represent quartiles: gray = 1st, blue = 2nd, green = 3th, and orange = 4th
[a] FHWA, 2008. SAFETEA-LU 1808: Congestion Mitigation and Air Quality Improvement Program Evaluation and Assessment - Phase 1 Final Report (No. FHWA-HEP-08-019). Prepared by ICF International for the Federal Highway Administration.
[b] FHWA, 2015. FHWA - Cost Effectiveness Tables Summary. Prepared by USDOT Volpe National Transportation Systems Center for the Federal Highway Administration.

Our comparison of prior cost effectiveness estimates generally reveals little consistency across studies. The only area where results are consistent is that truck idle reduction and diesel engine retrofits are among the most cost effective activities for reducing PM2.5 emissions. The lack of consistency apparent in all other CMAQ project types is not surprising and is likely the result of several factors. First, as noted above, different analytical methods were used in each study. Studies that annualized costs may arrive at very different results than those that divide one year's worth of emission reductions by a project's total costs. In the latter case, the cost effectiveness of projects with long lifetimes would be under estimated. Second, and most critically, each study is based on a sample of prior studies or projects, and these samples are relatively small. The cost effectiveness of most strategies is highly context dependent, and

therefore without a very large sample, the cost effectiveness estimates should be expected to be both imprecise and inaccurate. For example, a project that adds one mile of bicycle lane to a gap in an extensive bicycle infrastructure network could be very cost effective, while a project that adds one mile of standalone bicycle lane may not be. Third, the studies were conducted at different points in time and its possible that both methods for estimating cost effectiveness have changed and that certain types of projects have become more or less cost effective. For example, signal timing projects may have become more effective over time as new more effective and/or less costly technologies have been adopted.

We conclude that is it unlikely that any study could produce robust and generalizable estimates of the cost effectiveness for most CMAQ project types. Most projects that do not involve the application of new vehicle or fuel technology reduce vehicle emissions by influencing travel behavior, which is an exceedingly difficult and context sensitive task. Almost any project type could be very cost effective or completely ineffective depending on the specific application.

2.1.3 Methods for Decision Analysis in Transportation

Based on a review of prior studies evaluating CMAQ program practices at MPOs and DOTs and our own evaluation described in the following sections of this report, almost every MPO and DOT is performing some type of a multi-criteria decision analysis (MCDA) to aid in selecting CMAQ projects. MCDA is commonly used to evaluate decisions that involve multiple criteria that are not easily converted to a common unit of analysis (e.g., money) or easily quantified. This is often the case with transportation projects, and in particular for those where environmental impacts are an important consideration. The main alternatives to MCDA are cost benefit analysis (CBA) and unstructured decision making, where no formal process is used.

The advantages of MCDA are that multiple and diverse criteria can be considered in a single decision analysis framework. There is no need to determine the equivalent monetary value of each benefit or dis-benefit as there is in a CBA. Additionally, quantitative and qualitative criterion can be considered together. However, MCDA has drawbacks as well. There are many methods for performing a MCDA, each using different techniques for scoring and weighting individual criteria to produce an overall ranking of alternatives (Linkov et al., 2006). Regardless of the approach taken, the choice of scoring and weighting schemes, which is necessarily subjective, directly affects project outcomes (Beria et al., 2012; Browne and Ryan, 2011; Kiker et al., 2005; Macharis and Bernardini, 2015). Most MCDA elicit scores and weights from panels of subject matter experts (Linkov et al., 2006; Saaty, 2008). If the panel lacks certain expertise, its members harbor biased views regarding the importance of certain criteria, or do not share the same values as affected community members, than the outcome of a MCDA may not be robust (Macharis et al., 2009; Macharis and Bernardini, 2015; Nadafianshahamabadi et al., 2017). For example, Nadafianshahamabadi et al (2017) find that the favorability of a large urban freeway project differs if community members or transportation planning professionals scored each project criteria in a MCDA. Differences seem to occur due to both differences in each group's technical knowledge and also differences in values or what's most important. These concerns highlight the importance of the recommendations made in prior studies and current FHWA guidance (FHWA, 2013) that MPOs and DOTs conduct a transparent and public process, consult with local experts, and including air quality experts on CMAQ project selection panels.

The main alternative to MCDA is CBA, which is also often required for new federal regulations. The apparent simplicity and intuitiveness of weighing a project's overall costs and benefits has led to the popularity of CBA as the most common method for evaluating public sector projects (in the private sector, profit would be the main criterion). It is also commonly viewed as a relatively objective analysis technique as it seemly does not rely on the subjective scoring and weighing schemes or assessments by

individuals. However, performing a CBA for all but the most simple decisions is exceedingly complex and far from objective. Project costs are relatively well known or easy to estimate while most project benefits are subject to much greater uncertainty. The models and forecasts used to estimate project benefits require many assumptions which inherently incorporate some level of subjectivity and uncertainty to the process. Furthermore, because benefits and dis-benefits accrue over the life of a project, costs must be either annualized or the net present value of benefits and dis-benefits must be calculated. In either case, the analyst must choose a social discount rate to account for differences in the value of near term versus distant benefits and costs. A larger social discount rate results in upfront costs being relatively more important than benefits that occur in the future. Social discount rates typically range from 3% to 7%, and best practice is to evaluate projects using a range of plausible rates. However, some economists have argued for using social discount rates as low as 1% (Stern, 2007). The choice of discount rates can have a large impact on the outcome of a CBA.

The debate over how to most efficiently address the threat of global climate change provides a good example of the complexities and subjectivity of CBA. The Stern Review (Stern, 2007) argued that immediate and strong action should be taken to reduce greenhouse gas emissions to minimize the cost of climate change damages now and into the future. However, several prominent economists disputed the Stern Review's conclusions and argued for a more gradual and less aggressive approach to reducing greenhouse gas emissions (Mendelsohn, 2008; Nordhaus, 2007; Weitzman, 2007). These economists claimed that Stern used too low of a social discount rate and too long of a project analysis time period. In this context, a lower discount rate and a longer analysis period, all else being equal, increases the cost of future climate damages relative to the near term costs of mitigating greenhouse gas emissions. If a higher discount rate had been used, a shorter analysis period, or both, the future cost of climate damages would not justify the aggressive actions recommended by the Stern Review. In this case, arguably everyone is an expert and the differing conclusions are not the result of miscalculation or inferior analytical methods or data. They are the result of differences in opinion about the ethics of intertemporal equity and risk aversion (Dietz and Stern, 2008).

The cost effectiveness studies discussed above are similar to a CBA, although only one particular benefit is considered, emission reductions, and the value of these reductions are not monetized and are usually not discounted either. The lack of monetization is a critical weakness of most CMAQ cost effectiveness estimates, including those made by individual project sponsors, MPOs and DOTs. By not monetizing emission reductions, the analysis assumes that the marginal benefit of a unit of emission reduction is constant across space and time, neither of which is likely true. For example, a unit reduction of an air pollutant such as CO or PM, which present localized health effects, in a densely populated area would have a much greater benefit than a unit reduction in a remote area where there may be no benefit. Similarly, emissions reductions in proximity to sensitive receptors such as schools, hospitals and places with larger populations of seniors may be more beneficial than reductions occurring elsewhere. Benefits may also change over time, for example, as population patterns and the ambient concentration of air pollutants change. Benefits are not typically discounted either. That means a project expected to produce a unit of emissions reduction 10 years (or 100 years) from now is just as attractive as one that produces those benefits today or, in other words, that the social discount rate is zero. This is widely known to be a false assumption.

Furthermore, it is well established that low income and minority communities are more likely to be located nearer to more heavily trafficked roadways (Rowangould, 2013; Tian et al., 2013) or live in areas where they are exposed to higher concentrations of mobile source air pollutants (Chakraborty, 2009; Houston et al., 2004, 2014; Jerrett, 2009; Rowangould, 2015). US DOT's 2012 order on Environmental Justice directs the agency to "greatest extent practicable" achieve environmental justice as part of its

mission[1]. It would therefore be inconsistent to allocate CMAQ funds solely on the basis of cost effectiveness as environmental justice concerns should also be considered.

While methods exist for evaluating the air quality (Cook et al., 2008; Rowangould, 2015; US EPA, 2010) and health impacts of transportation projects (Dhondt et al., 2012; US EPA, n.d.) they are extremely resource intensive and therefore impractical for the routine evaluation of potential CMAQ projects. Comprehensive air quality analyses are most often performed when evaluating large transportation projects in CO or PM non-attainment areas that are likely to impede progress towards attaining the NAAQS or in other circumstances where significant air quality impacts are expected. Without performing a detailed air quality analysis, CMAQ project evaluations could still consider the size and characteristics of the communities most likely to benefit from a project in addition to cost effectiveness. For directly emitted air pollutants such as CO, primary PM2.5 and many other air toxics, these would be communities in areas relatively close (within several hundred meters) to roadways (see reviews by Karner et al., 2010 and Zhou and Levy, 2007). Projects aimed at reducing ozone precursors (i.e., NOx and VOCs) in areas with ozone problems would generally produce regional benefits.

3 REVIEW OF FUNDED CMAQ PROJECTS

We reviewed all CMAQ projects that have received funding between the years 2011 and 2015. These projects were identified from the FHWA CMAQ Public Access System[2] database. The database contains a record for each project that includes the project title, a short project description, the CMAQ project type, the project cost, project location, the MPO area where the project took place or if it was outside of an MPO area, if the project took place in a non-attainment area, and emission reduction estimates. This information is provided directly by project sponsors, MPOs or DOTs. The aim of our analysis is to understand how MPOs and DOTs in and outside of non-attainment areas have used CMAQ funds.

During 2016, 30 states received some amount of flexible CMAQ funds[3]. These are states with few or no non-attainment or maintenance areas. Flexible CMAQ funds can be used for projects outside of non-attainment and maintenance areas and can also be used on projects that are eligible for funds under the surface transportation program (MAP-21 and prior transportation bills) or surface transportation block grant program (FAST Act). Given this flexibility, we expect that MPOs and DOTs that receive flexible funds may program a different portfolio of projects through their CMAQ program than those that do not. To investigate this question, we plotted the percentage of CMAQ projects funded and the percentage of CMAQ project funding for each CMAQ project type over the time period 2011 to 2015 (Figure 1). We created separate plots for both MPO and DOT sponsored projects located in non-attainment and maintenance areas and those that were not (Figures 2 – 5). Projects located outside of non-attainment and maintenance areas are likely projects using flexible funds although some of them may be state-wide projects that benefit multiple non-attainment and maintenance areas.

Most CMAQ projects are programmed or occur in MPO areas (Table 3). Between 2011 and 2015, 84% of CMAQ projects occurred in MPO areas that were also non-attainment or maintenance areas, while 7% occurred in MPO areas that were in attainment. Over this same time period, only 9.2% of CMAQ projects occurred outside of MPO areas, with more occurring in attainment areas (5.6%) than non-attainment areas (3.6%). There is little variation in the breakdown of projects from year to year, except for 2015 when the

[1] US DOT Order 5610.2(a): Department of Transportation Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.
https://www.fhwa.dot.gov/environment/environmental_justice/ej_at_dot/orders/order_56102a/
[2] CMAQ Public Access System: https://fhwaapps.fhwa.dot.gov/cmaq_pub/
[3] FHWA FY2016 Apportionment Table:
https://www.fhwa.dot.gov/legsregs/directives/notices/n4510805/n4510805_t14.cfm

number of projects in MPO areas that were in attainment more than doubled from 92 in 2014 to 232 in 2015 and the number of projects in non-attainment and maintenance areas decreased from 1,407 in 2014 to 1,052 in 2015.

Table 3 Frequency of CMAQ Projects by Agency Type and Attainment Status

	DOT		MPO	
Year	Attainment	Non-Attainment/Maint.	Attainment	Non-Attainment/Maint.
2011	107	59	73	1,430
2012	96	39	78	1,387
2013	86	62	88	1,418
2014	77	67	92	1,407
2015	79	61	232	1,052

To complete our analysis of prior CMAQ projects it was necessary to determine project type categories for the CMAQ projects. Projects that used flexible CMAQ funds are identified in the database as "STP/CMAQ" projects. Some of these projects are CMAQ-type projects and others are activities that are only eligible under the STP or STBG program. In most cases we were able to assign STP/CMAQ projects to one of the standard CMAQ project types or an additional category of "other" for activities that are ineligible for CMAQ funding based on a review of a project's title and description provided in the FHWA CMAQ database. In some cases it was necessary to look up individual projects from an MPO's or DOT's website using their TIP or STIP identification numbers for more information. Classifying projects that are ineligible for CMAQ funding beyond a catch-all "other" category was beyond the scope of our analysis.

Overall, as shown in Figure 1, about 40% of all CMAQ projects and CMAQ funding are classified as congestion reduction and traffic flow improvements. Examples include intersection and traffic signal control improvements, incident management systems, high occupancy vehicle lanes (including tolled lanes), congestion and VMT charging schemes, and a wide range of intelligent transportation system projects. The next most common type of project are bicycle and pedestrian projects, accounting for about 20% of CMAQ projects and just over 10% of CMAQ funding. Examples include construction of bicycle and pedestrian facilities that are not exclusively recreational, outreach programs for encouraging safe bicycle use, and funding for a state bicycle/pedestrian coordinator. The other major CMAQ project types are transit projects, accounting for close to 15% of CMAQ projects and 30% of CMAQ funding. Transit projects include construction and operating assistance for new transit projects, replacement of transit vehicles, and fare subsidies. Other project types account for less than 10% of CMAQ projects and CMAQ funding. Little to no funding has been used for freight and intermodal projects, diesel engine retrofits and advanced truck technologies, or alternative fuels and vehicles. The lack of diesel engine retrofit and advanced truck technologies projects is notable since this was the one project type where there appeared to be some consensus regarding its high cost effectiveness (see Table 2). There was very little year to year variation in the types of projects funder over the five-year period that we evaluated.

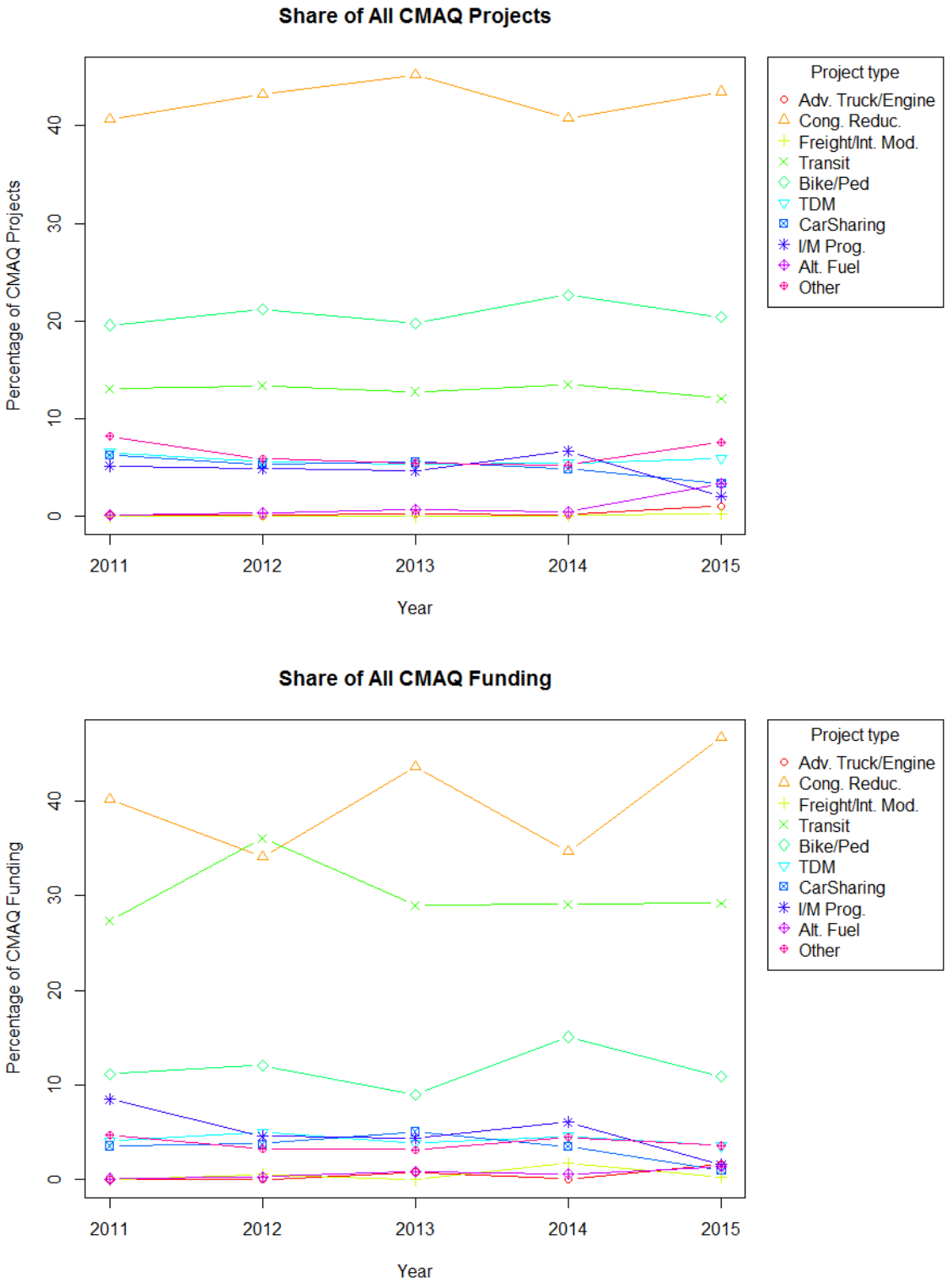

Figure 1 Share of Projects Funded by the CMAQ Program by Project Type from 2011-2015

3.1 State Department of Transportation Projects

As shown in Table 3, only a small share of CMAQ projects occurred outside of MPO areas where DOTs programed the projects. The projects programed by DOTs were, as expected, different than those programed by MPOs.

In attainment areas, 40% to 80%, of CMAQ projects fell into the "other" category (Figure 2). This category represents projects that were entered into the FHWA CMAQ database as "STP/CMAQ" projects and which we further classified as being a non-CMAQ eligible project type (i.e., a STP or STBG project). The share of CMAQ project funding spent on "other" projects was more variable and ranged between 5% to 70% over the 5-year period. The relatively small share of projects programed by DOTs results in a large amount of year to year variation in the funding share trends since a few expensive projects can have a relatively large amount of influence.

In attainment areas, congestion reduction projects were also relatively common. They accounted for approximately 10% to 30% of projects and 10% to 50% of funding. The frequency of projects in other CMAQ categories was relatively small. The amount of funding for projects in other CMAQ categories was also relatively small, but more variable. Just under 10% of funding per year was spend on bicycle and pedestrian projects. Transit, freight and intermodal projects received relatively large shares of funding in some years and nearly nothing in others.

CMAQ projects that occurred outside of MPO areas that were also in non-attainment or maintenance areas were different than those that occurred in attainment areas (Figure 3). Transit and congestion management projects were most common and accounted for the largest shares of funding. Travel demand management projects were also more common, accounting for 10% to 20% of projects and between 5% and 55% of funding. Inspection and maintenance programs were also common, though they did not account for a large share of funding.

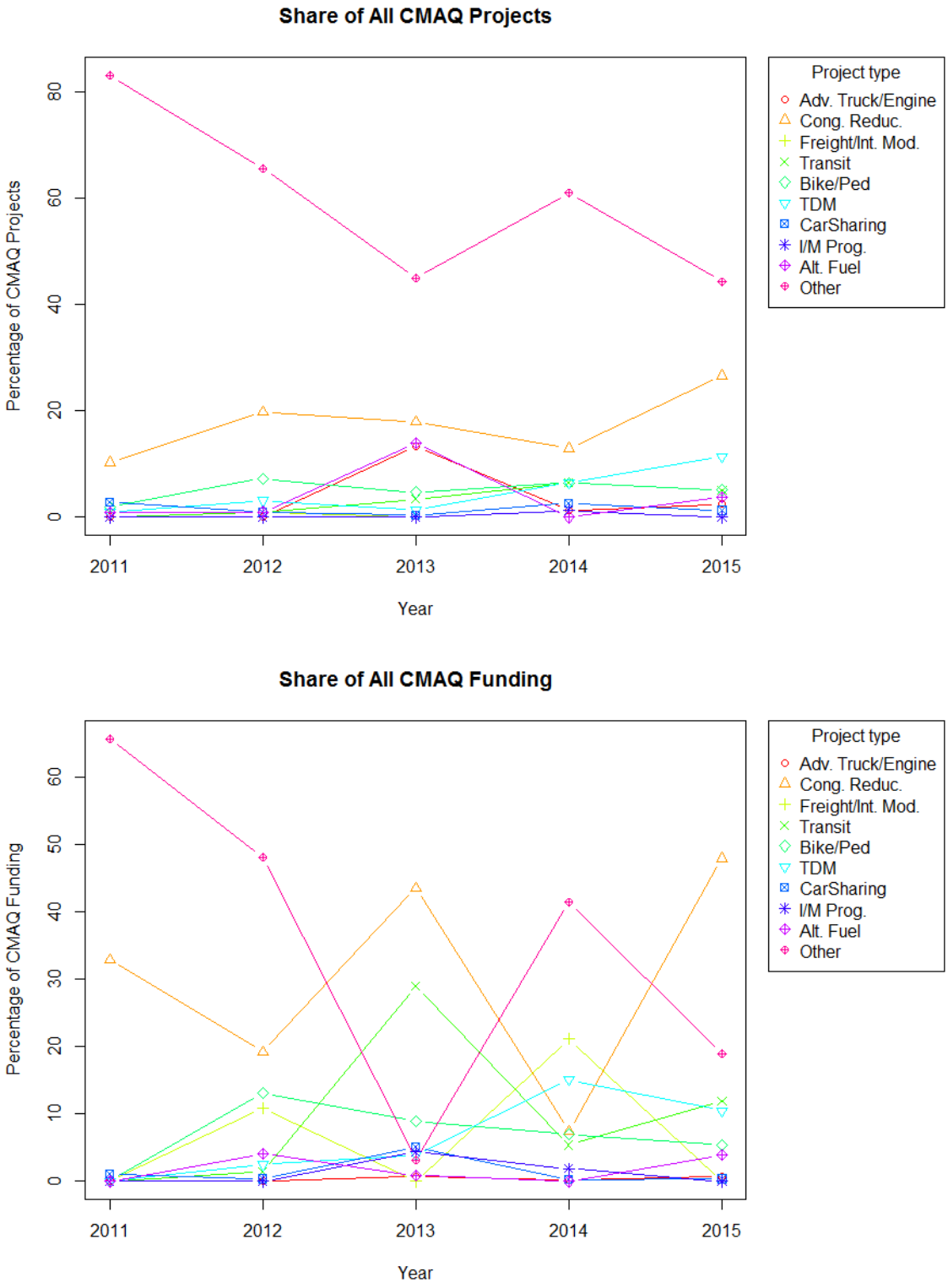

Figure 2 Share of State DOT Projects Funded by the CMAQ Program by Project Type from 2011-2015 in Attainment Areas

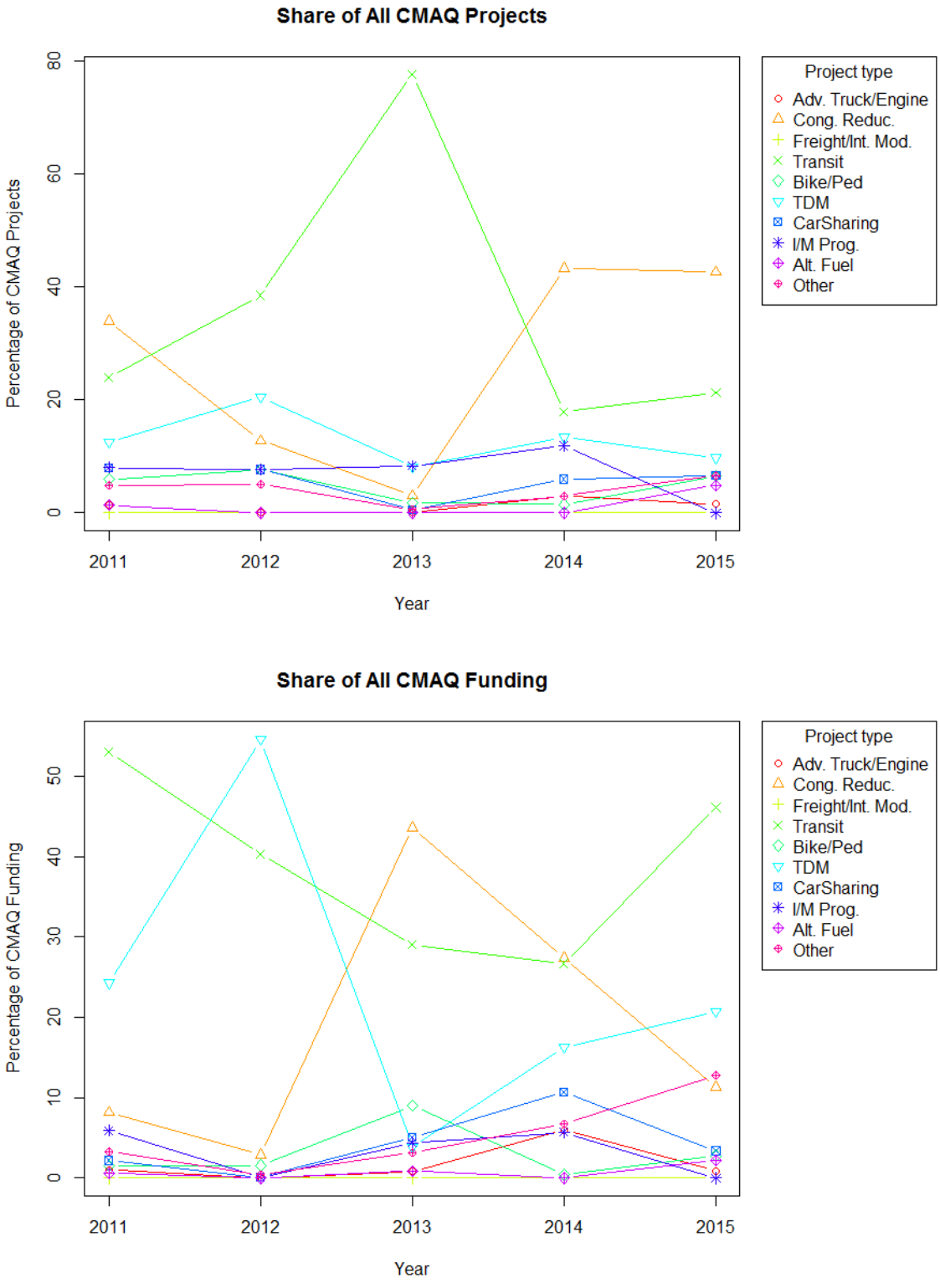

Figure 3 Share of State DOT Projects Funded by the CMAQ Program by Project Type from 2011-2015 in Non-Attainment Areas

3.2 Metropolitan Planning Organization Projects

Most CMAQ projects occur in MPO areas and therefore Figure 4 and Figure 5, which show the frequency of CMAQ projects and project funding by project type for projects in MPO areas, look very similar to Figure 1. In fact, Figure 1 and Figure 5 are nearly identical. Like the overall trends (Figure 1), the most common CMAQ projects in MPO areas that are also non-attainment or maintenance areas are congestion reduction, pedestrian and bicycle, and transit projects. In MPO areas that are in attainment, the share of congestion reduction projects and funding is also about the same (40% to 50% of projects and 40% to 60% of funding); however, there are notably fewer transit, pedestrian and bicycle projects (Figure 5). Transit, pedestrian and bicycle projects appear to be replaced by "other" projects and alternative fuel/vehicle projects.

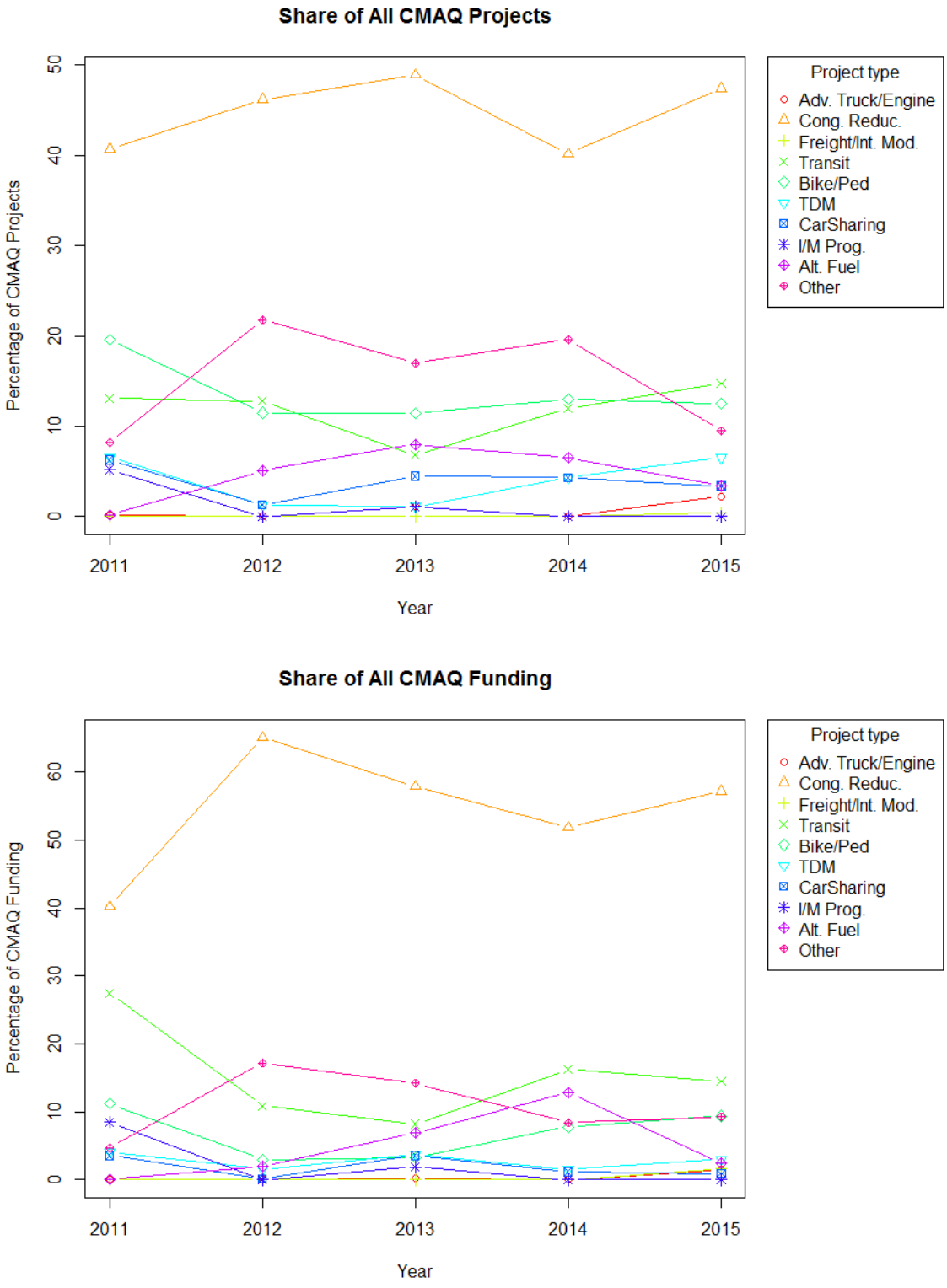

Figure 4 Share of MPO Projects Funded by the CMAQ Program by Project Type from 2011-2015 in Attainment Areas

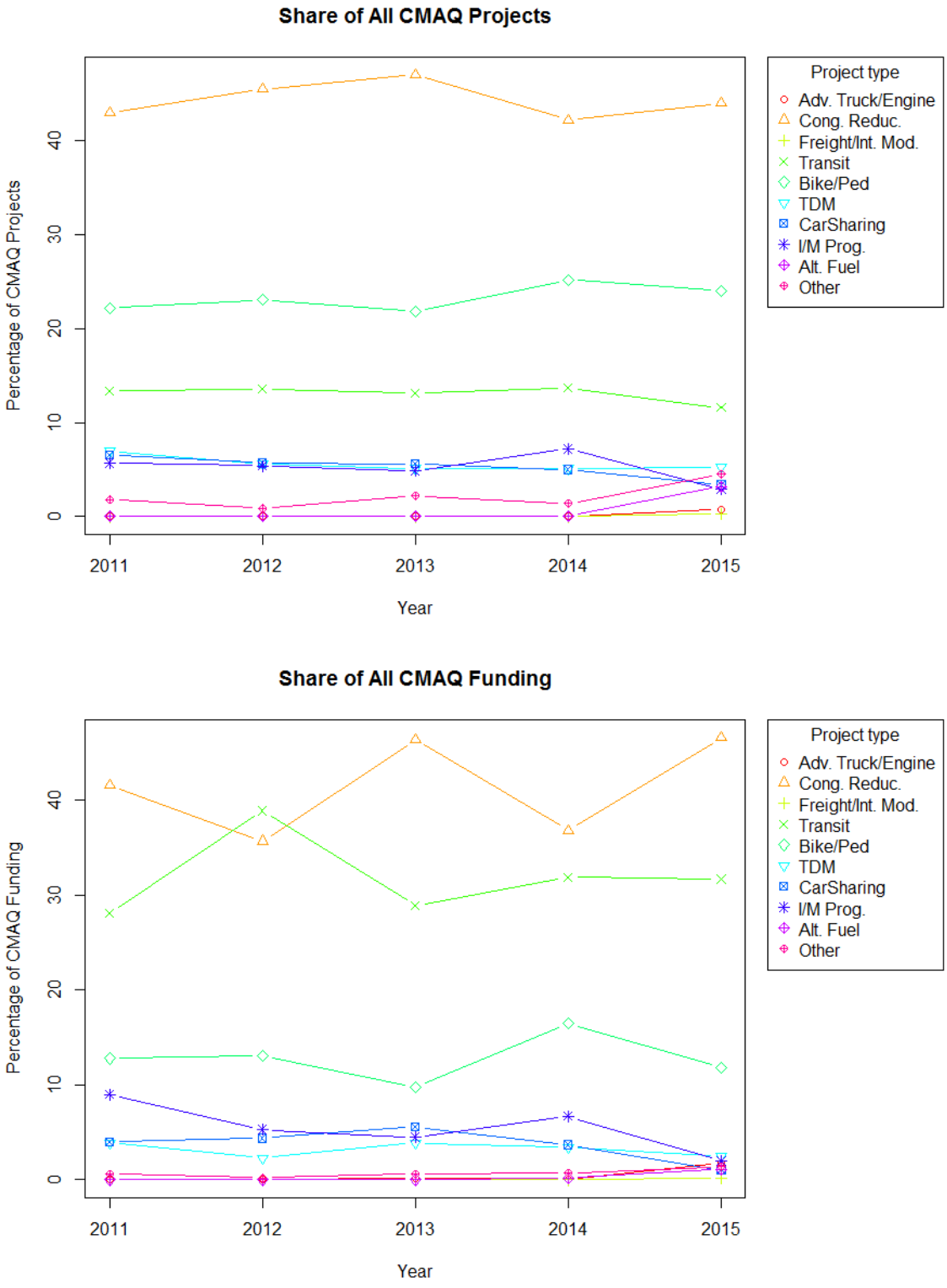

Figure 5 Share of MPO Projects Funded by the CMAQ Program by Project Type from 2011-2015 in Non-Attainment Areas

3.3 Conclusions

A review of CMAQ projects funded between 2011 and 2015 reveals that congestion reduction projects are generally the most common project type, followed by bicycle and pedestrian and transit projects. Congestion reduction and transit projects also account for the largest shares of CMAQ funding, while pedestrian and bicycle projects accounted for a relatively small share of funding. The large share of congestion reduction projects is partially due to the broad range of projects covered by this category. The priorities of DOTs, which accounted for a very small share of CMAQ projects, were somewhat different than MPOs. DOTs spent a greater share of flexible CMAQ funds on non-CMAQ eligible projects (i.e., STP projects) than MPOs did. Transit, pedestrian and bicycle projects were also less common when DOTs were the sponsor, while travel demand management and inspection and maintenance programs were relatively more common. This difference between DOTs and MPOs is likely due to DOT projects taking place in more rural areas or on state highways where bicycle, pedestrian and transit projects would be less effective or practical. Overall, there were no notable changes in the frequency or project types or funding over the analysis period.

4 CMAQ PROJECT SELECTION PRACTICES

The CMAQ program defines what types of transportation projects and programs are eligible for CMAQ funds but does not set requirements for how DOTs and MPOs program CMAQ funds. FHWA provides additional guidance (FHWA, 2013) to DOTs and MPOs that sets the agency's expectations regarding how projects should be solicited, rated and selected. The FHWA guidance, encourages DOTs and MPOs to make all CMAQ project solicitation and selection information publicly available and in writing, to develop a transparent process and to provide potential project sponsors with full information about how projects will be rated and ultimately selected. The FHWA guidance also states that FHWA expects quantitative emission reduction estimates for each CMAQ project except when it is not possible to accurately quantify emission benefits. FHWA also strongly encourages the consideration of a project's cost effectiveness while also acknowledging that other factors may be important. While the FHWA guidance states the agency's expectations it does not set any additional requirements beyond those stated in the CMAQ legislation. Therefore, DOTs and MPOs maintain great latitude in how they manage their CMAQ funds.

We reviewed publically available information about DOT and MPO CMAQ programs from the websites of each DOT that received some amount of flexible CMAQ funds and a small sample of MPOs that also received flexible CMAQ funds. A summary of our main findings from this review are discussed below. The appendix contains individual summaries for each DOT and MPO we reviewed.

4.1 State Departments of Transportation

In 2016, 30 states received some amount of flexible CMAQ funds including New Mexico (Table 4). We scanned the websites of each state's DOT with the aim of identifying information about how CMAQ projects are solicited, evaluated and selected for funding or in other words programmed. Generally, we found that DOTs provided much less information about their CMAQ processes than MPOs, which we attribute to the fact that the vast majority of CMAQ funds are programed by MPOs. Many DOT websites provided very little, if any, information about their CMAQ programs. These were generally DOTs that received nearly all of their CMAQ apportionment as flexible funds and opted to roll their CMAQ funds into their STP and STIP processes. In other cases, DOTs provided very little information because they passed CMAQ funds along with most programming responsibility to MPOs. However, some DOTs do program CAMQ funds and in these cases information about project solicitation, rating and selection processes were provided on their websites. The remainder of this section summarizes what we found for

these DOTs, focusing on broad trends and unique approaches. A brief summary of information we collected for each DOT is provided in Appendix A and B.

Table 4 DOTs that receive flexible CMAQ funds (excluding New Mexico)

State	CMAQ Program	Flexible Limiting Amount	% Flexible Fund
Dist. of Col.	7,396,045	2,434,843	32.9
Delaware	9,324,000	3,006,389	32.2
Utah	9,459,217	3,119,801	33.0
Louisiana	11,173,976	3,730,310	33.4
Kentucky	10,030,012	6,622,703	66.0
Alabama	8,352,352	8,352,352	100.0
Kansas	9,289,807	9,289,807	100.0
Idaho	9,381,634	9,381,634	100.0
Mississippi	10,952,077	9,399,024	85.8
Wyoming	10,172,351	9,560,552	94.0
Nebraska	10,043,141	10,043,141	100.0
Maine	10,052,038	10,052,038	100.0
New Hampshire	10,102,892	10,102,892	100.0
Hawaii	10,112,182	10,112,182	100.0
Rhode Island	10,182,126	10,182,126	100.0
South Carolina	12,787,927	10,251,062	80.2
North Dakota	10,269,941	10,269,941	100.0
West Virginia	10,486,423	10,486,423	100.0
Iowa	11,026,407	11,026,407	100.0
Indiana	34,495,688	11,093,572	32.2
Arkansas	12,020,933	11,425,985	95.1
Oklahoma	11,475,481	11,475,481	100.0
Vermont	11,564,050	11,564,050	100.0
South Dakota	11,974,988	11,974,988	100.0
Montana	14,532,987	13,074,535	90.0
Florida	13,273,959	13,273,959	100.0
Wisconsin	21,094,452	15,480,443	73.4
Alaska	24,958,810	16,017,290	64.2
Michigan	54,183,343	54,183,343	100.0

4.1.1 Project Solicitation Methods

Most DOTs issue annual or biannual calls for CMAQ projects. Calls often include application forms (see Appendix B for examples), information about project eligibility, and general information about the CMAQ program. Calls typically go out to MPOs, regional DOT offices, and municipalities.

Many DOT websites that we reviewed did not provide any information about how CMAQ projects are solicited. This was generally the case for DOTs that rolled the CMAQ evaluation and selection process into their overall STIP or STP project selection process, or passed CMAQ funds through to MPOs to program. For example, Nebraska does not have a formal CMAQ process. The Nebraska DOT states that it generally uses CMAQ funds for STP eligible projects; however, the DOT does accept unsolicited letters requesting CMAQ funding. In Kansas, the DOT devolves all CMAQ project selection tasks to MPOs in the state. DOTs may also lack a CMAQ project solicitation because the DOT withholds the funds for specific state projects. For example, the Rhode Island DOT uses all of its CMAQ funds to support intercity commuter rail and bus transit.

From the DOTs that manage a project solicitation process, we identified several practices that we consider examples of good practice. Some DOTs made greater efforts to more broadly solicit calls for proposals. For example, in New Hampshire, the DOT goes as far as posting the call in the news media and holds pre-application workshops for potential project sponsors. The pre-application workshops provide an opportunity for potential project sponsors to ask questions about project eligibility, the application process, and what information they will need to provide. Several DOTs specifically remind potential project sponsors that non-governmental organizations may also propose projects by partnering with a local or regional government agency. Additionally, many DOTs provided information on their websites or with their application packages, about how projects would be evaluated. In the simplest example, a list of funding priorities is provided as was the case in Montana. In other cases, detailed tables of project scoring and weighting schemes were provided which we describe in more detail in the following section. Taken together, these practices are likely to result is a more diverse, yet responsive, pool of CMAQ project proposals as they aim to clearly communicate to all potential project sponsors what activities are eligible and the priorities of the DOT.

Most DOTs have specific CMAQ project application forms that are distributed with their calls for CMAQ proposals or that are available on their websites (Appendix B). For the most part, the forms are similar in that they ask for standard information about the project such as a broad description of the activities that will take place, where the project is located, sponsoring agencies, a budget, if the project is included in an approved TIP or STIP, and which CMAQ-eligible activity the project corresponds to. While each application also asks for information about the project's effect on congestion and air quality, the level of detail varies. The most streamlined applications, such as that used by Wisconsin, request a narrative explaining the projects impacts on congestion and air quality, but does not specifically require calculations or an explanation of calculation methods and assumptions. In other cases, such as in Kentucky and Iowa, the DOT specifically asks that calculations be provided along with assumptions. In still other cases, such as New Hampshire and Indiana, the DOT requires that local project sponsors work with MPOs or the DOT to complete their air quality analysis. Montana provides spreadsheet models and Michigan provides Adobe Acrobat forms that provide emission estimates for different project types. Users must still enter some data that require estimation and assumptions such as the amount of VMT that is reduced; however, at a minimum the emission modeling steps are standardized.

We consider applications that request calculations for any quantitative information along with data sources and descriptions of all assumptions to be examples of the best practices observed in the DOTs we reviewed. Spreadsheet models or forms that produce calculations are also a good tool for standardizing some aspect of congestion and emission reduction estimates, but they generally still require many data inputs that must also be estimated or modeled and that also require numerous assumptions. Spreadsheet models and similar tools may also not cover every possible project type. These tools alone do not necessarily replace the need for a clear explanation of calculation methods, data sources and assumptions. The approach used by New Hampshire and Indiana may also be a good practice; however, that depends on if more standardized and transparent, and potentially more accurate, estimates outweigh the cost of the greater burden placed on MPO and DOT staff, their consultants, and other resources.

4.1.2 Scoring and Ranking Schemes

Projects that have been proposed by local sponsors and MPOs are generally rated in some way and then ranked in order of funding priority. Two methods were common: scoring and weighting schemes and project priority rubrics or lists. Some DOTs had no formal process outside of the process used for general TIP or STIP project selection. These DOTs were generally those that received all CMAQ funds as flexible funds.

The most common method is to score each project by assigning points based on how well the project responds to individual criteria. The size of emissions reductions and emissions reduction cost effectiveness are important components of all scoring and ranking schemes. A project sponsor's record of completing projects, or completing them on time, is also a common criterion. However, other criteria that may be scored and their relative weight vary widely. States such as Wisconsin have a simple scoring scheme that focuses mostly on cost effectiveness. States at the other end of the spectrum such as Indiana have a long list of detailed scoring criteria that result in cost effectiveness accounting for only up to 20 points out a total possible score of 90. Examples of individual DOT scoring and weight schemes are available in Appendix A.

An alternative approach to explicitly scoring proposals based on individual criteria is to develop a prioritized list of project types or a rubric that prioritizes projects in several different categories. This approach can be as simple as the ordered list of funding priorities used by the Montana DOT. It can also be a rubric, which prioritizes project types in several general categories. For example, Louisiana uses a rubric that classifies projects into three levels of priority (high, medium and low) for five categories of project types (traffic flow and ITS, alternative fuel/diesel retrofits, transit/diesel retrofits, TDM, and bike/ped).

There are pros and cons to each approach. Systems that score projects based on set criteria can be more transparent and may seem more objective. Project sponsors know how their project will be evaluated and the relative importance of each component to the DOT. However, scoring systems can be inflexible. A ridge scoring system may not capture the benefits of a unique project. For example, a project that reduces emissions near a school or day care center where air quality improvements would be more beneficial to these sensitive receptors. An additional concern with scoring schemes is that how the scheme is created can affect which projects are prioritized. For example, a congestion relief project with a low cost effectiveness would score very low using Wisconsin's scoring scheme and potentially very high using Indiana's. Therefore, it is important that the process of creating scoring schemes be transparent in addition to how the scores are used. Prioritized lists and rubrics, like scoring schemes, let project sponsors know the priorities of the DOT but are generally more flexible. Methods that avoid assigning points, or minimize the number of project attributes or outcomes that are explicitly scored, leave more room for DOTs to weigh the relative importance of different factors on a case by case basis. The effectiveness of most CMAQ projects and the relative importance of other project outcomes is highly context sensitive. A project evaluation method that allows for the consideration of each project's unique context is therefore desirable. The main tradeoff between each approach is a greater sense of objectivity versus a potentially more robust and flexible, albeit potentially more subjective, process.

In either case, the project selection process ultimately depends on the DOT's final judgment where the project ranks, whether determined by a score or otherwise, makes up only part of the overall decision. However, arguably, a score seems to carry greater weight and it may be hard to decline a highly-scored project that for other reasons is not as attractive as projects that were scored lower. The best practices in our judgement are those that have a scoring scheme or prioritization scheme that provide enough detail to communicate to sponsors the priorities of the agency, that maintains the focus on the CMAQ program's primary aim of emissions reductions and cost effectiveness, yet allows flexibility for the DOT to consider each project's specific context and unique features. A more flexible process is also less likely to discourage potentially unique and innovative projects.

4.1.3 Project Selection

Once projects have been prioritized in some manner as described above, a final decision must be made. A final decision typically considers prior scoring and ranking exercises but also considers other attributes of

projects that may not have been considered. Typically, geographical equity is considered so that all funds do not flow to the same municipalities or region. It is also common to ensure a variety of projects types are selected (e.g., modal diversity). If the rating process did not consider a sponsor's past performance on completing projects, that is also a common consideration at this stage. The quality of proposals are also often evaluated; for example, how likely are the purported benefits to be realized based on the data and calculation methods that were used.

Two governance structures are most common in making these final vetting decisions: CMAQ-specific committees and general DOT boards that are also responsible for vetting other types of projects. In either case, a final decision is reserved for a state's transportation commission, commissioner, or equivalent high level authority.

About half of the DOTs we reviewed that manage their CMAQ program use a CMAQ-specific project selection committee to accomplish this final project vetting. In some cases, the committee also screens pre-applications or even works with project sponsors on their applications. CMAQ committees (which may go by various names) include a broad range of members that typically include DOT engineering and planning staff, a representative from the state's environmental department, and a representative from FHWA. It is also common to include members from MPOs. For example, New Hampshire includes representatives from each of the state's 9 regional planning commissions. Two DOTs also included members representing transit interests (DOT transit engineers or transit agency officials). Other DOTs use more general project selection boards, rolling the vetting of CMAQ projects into their overall STIP or STP process. In other cases, such as Kansas, all decision making is devolved to MPOs.

The most important component of either a CMAQ specific or more general DOT project selection committee is the makeup of the committee. The one, unique aspect of the CMAQ program is its focus on air quality and the requirement that emission reductions be estimated. Therefore, any committee should have members who are experts in vehicle emission modeling and mobile source air quality issues. Other aspects of the CMAQ applications are not very different than any other transportation project proposal and therefore their does not appear to be a strong argument for or against CMAQ specific project panels.

4.2 Metropolitan Planning Organizations

We also evaluated how MPOs programmed their CMAQ funds. Because there are a very large number of MPOs and because NMDOT is specifically interested in the practice of DOTs we selected just a small sample of MPOs to evaluate. We used three different approaches for selecting MPOs.

First, we evaluated four MPOs that received some amount of flexible CMAQ funds. They were the Puget Sound Regional Council, Southeastern Wisconsin PRC, Metropolitan Council of the Twin Cities, and South Jersey Transportation Planning Organization. Note, that relatively few MPOs actually received flexible funds based on our analysis of the FHWA CMAQ database (Table 5). These MPOs were selected because they represent urban areas of different size and geographic location.

Table 5 MPOs Receiving CMAQ Flex-Fund (2010-2015)

MPOs in Nonattainment or Maintenance Areas		MPOs in Attainment Area
Anchorage Metropolitan Area Transportation Study	Lexington Area MPO	Broward County MPO
Fairbanks Metropolitan Area Transportation System	Capital Regional Planning Commission	Pinellas County MPO
Merced County Association of Governments	Imperial Calcasieu Regional Planning and Development Commission	Hillsborough County MPO
SCAG (RCTC)	Boston MPO	Palm Beach County MPO
Sacramento Area Council of Governments	Metropolitan Council of the Twin Cities Area	Mid-America Regional Council
Kings County Association of Governments	Memphis MPO	Southern New Hampshire Planning Commission
Tulare County Association of Governments	East-West Gateway Coordinating Council	Nashua Regional Planning Commission
Calaveras County RTPA	Missoula Transportation Policy Coordinating Committee	Rockingham MPO
Metropolitan Transportation Commission	Great Falls City-County Planning Board	South Jersey Transportation Planning Organization
Nevada County RTPA	Yellowstone County MPO	Rocky Mount Metropolitan Planning Organization
Stanislaus Association of Governments	Regional Transportation Commission of Clark County	Capital Area Metropolitan Planning Organization/Local Planning Agency
San Joaquin County Council of Governments	Washoe County Regional Transportation Commission	Rogue Valley Metropolitan Planning Organization (RVMPO)
Southeastern Connecticut COG	Delaware Valley Regional Planning Commission	Northern Tier Regional Planning & Development Commission RPO
Metropolitan Washington COG	North Jersey Transportation Planning Authority	Cache MPO
National Capital Region Transportation Planning Board	High Point Metropolitan Planning Organization	
Miami Urbanized Area MPO	Southwestern Pennsylvania Commission MPO	
Community Planning Association of Southeast Idaho	Lancaster County MPO	
Bannock Planning Organization	Mountainland Association of Governments	
Chicago Area Transportation Study	Puget Sound Regional Council	
Northwestern Indiana RPC	Southeastern Wisconsin RPC	
Northeastern Indiana Regional Coordinating Council	Louisville Area MPO	

We also reviewed four MPOs that were likely to represent good or best practices based on our prior knowledge of their activities, evaluations made in prior studies, and the response from our inquiry to the Transportation and Air Quality committee of the Transportation Research Board. These included the Chicago Metropolitan Agency for Planning (CMAP), Delaware Valley Regional Planning Commission (DVRPC), Atlanta Regional Commission (ARC) and Wasatch Front Regional Council (WFRC).

Finally, we sent an e-mail request to a list serve maintained the Transportation and Air Quality committee of the Transportation Research Board requesting information on innovative and best practices in CMAQ programming. While this request did not specifically request information from DOTs or MPOs, most of the feedback concerned the practices of MPOs. The purpose of the e-mail request was to identify other

unique or potentially robust practices that our literature review and scan of DOT and MPO websites may have missed. We used the results of this process to help select the MPOs above that likely represent best practices. We followed up with most of those who responded to our e-mail inquiry by phone or through e-mail to better understand how they viewed their process and what they believed were specific strengths and weaknesses. The following section summarizes our evaluation of these three tasks.

4.3 Project Solicitation

Methods for soliciting CMAQ projects were generally the same as those used by DOTs. Many MPOs issue CMAQ-specific calls while others include them within their general TIP process. In some cases, DOTs issue the call but project sponsors submit proposals through MPOs. Calls go out to local agencies and are often publically posted on the MPO's website. One notable process that we believe is an example of good practice is that used by the ARC. ARC coordinates with state and local government officials to develop the emphasis areas for its CMAQ call. This was the only example in all the DOTs and MPOs we reviewed that mentioned a multi-agency process for developing a CMAQ call for proposals. Other DOTs and MPOs may do something similar but did not provide any information.

MPOs were much more likely to have detailed application packages for CMAQ projects. Application packages typically included detailed instructions, emphasized priority project types, and included standardized forms for estimating emission and other project benefits. Many MPOs had forms or other tools that automatically estimated emission benefits and cost effectiveness (see Appendix D for examples). ARC had one of the most comprehensive and detailed emission estimation calculators, which estimated changes in VMT, hours of delay, criteria and greenhouse gas emissions. ARC staff are also available to help local project sponsors collect required input data. WFRC also uses a detailed calculator that is very similar to ARCs. Similar to some DOTs, two of the MPOs we evaluated request information from project sponsors that are then used to estimate emission benefits and cost effectiveness. The PSRC, in particular, requests very detailed data from project sponsors which lays out data requirements for each project type so that PSRC staff can estimate emission reductions. MPOs in general also placed more emphasis on project integration with the region's long range regional transportation plan. ARC and PSRC are good examples of this (see Appendix C). For example, PSRC scores projects on their applicability to addressing transportation within "centers" and also connections between centers. ARC screens all projects with a set of "policy filters", which for example, require roadway capacity projects to enact complete streets components, provide multi-modal options, and be located in priority areas.

Overall, MPOs appeared to have more comprehensive project solicitation processes than DOTs, particularly with regards to application materials and tools.

4.4 Scoring and Ranking Schemes

Almost all MPOs that we reviewed rate proposals using a system of scores and weights. In general, the scoring and weighting schemes were also more detailed and comprehensive than those used by the DOTs we evaluated. See CVRPC for an example of a detailed scoring and weighting scheme. In some cases the scoring and weighting schemes applied to all projects (not only CMAQ); for example, the process used by ARC. In these cases, there were usually categories relevant to CMAQ projects, such as emission reductions and emission reduction cost effectiveness. As mentioned above, many MPOs also provided detailed application instructions which also contained information about each MPO's priorities, which sometimes contained ranked lists and rubrics of priority project types.

Our review of MPOs revealed several examples of scoring methods that were not covered in our review of DOT methods. CMAP scores CMAQ proposals using categories and points that differ by project type. For example, transit projects are scored based on ridership (15 points) and reliability or asset condition (15 points) while bicycle project are scored based on safety and attractiveness (10 points), transit access

(10 points) and facility connectivity (10 points). CMAP's method tailors the scoring scheme to what is more relevant for different types of projects. ARC used a unique process for determining criteria weights. They surveyed local government staff and asked them to rank each criteria from most to least important. The result is the two dimensional rubric shown in Figure 6 that indicates the proportion of weight given to each of 12 criteria for each project type (the color shading also indicates the relatively weight of each criteria, with darker green indicating greater weight). This scoring scheme is used for all programs, not just CMAQ. ARC's process avoids some of the subjectivity and potential bias that can occur when creating scoring and weighting schemes. CVRPC was unique among the DOTs and MPOs we evaluated in that their scoring scheme was the only one the included points for addressing environmental justice, which is generally a major concern with regards to mobile source emissions (Houston et al., 2014; Rowangould, 2013; Tian et al., 2013).

Table S2 – Criteria Weights by Project Type[4]

Criteria	Bike/Ped/Trail	Roadway Asset Management	Roadway Expansion & TSM&O	Transit Expansion	Transit Asset Management[5]
Asset Management & Resiliency	-	14.9 %	-	-	22.0 % / 19.2 %
Mobility & Congestion	13.7 %	13.8 %	13.0 %	13.5 %	-
Safety	14.5 %	14.4 %	13.4 %	8.5 %	22.0 % / 19.2 %
Network Connectivity	14.4 %	12.9 %	12.4 %	13.5 %	-
Reliability	-	-	12.1 %	12.0 %	-
Multimodalism	12.6 %	11.8 %	11.3 %	10.2 %	-
Employment Accessibility	10.4 %	10.2 %	10.3 %	11.6 %	24.3 % / 21.2 %
Land Use Compatibility	11.5 %	-	-	10.5 %	-
Social Equity	9.7 %	8.3 %	7.0 %	9.5 %	20.8 % / 18.2 %
Air Quality & Climate Change	6.3 %	-	7.3 %	6.5 %	0.0 % / 12.6 %
Goods Movement	-	8.1 %	7.8 %	-	-
Cultural & Environmental Sensitivity	6.8 %	5.5 %	5.3 %	4.1 %	11.0 % / 9.6 %

Figure 6 ARC's Project Criteria Weights

4.5 Project Selection

Overall, the final vetting and selection of CMAQ projects was similar to the procedures used by the DOTs we evaluated.

Some MPOs used CMAQ specific selection committees. These committees typically included transportation planners and engineers, transit agency staff and in some cases air quality or environmental agency staff. They also often included representative of local government and also FHWA and DOT staff as well. DVRPC was unique in that its CMAQ committee also included members representing business interest and the general public. The Southern Wisconsin RPC has all CMAQ project reviewed independently by the planning commission's staff, Wisconsin DOT, and the Wisconsin Department of Natural Resources. These agencies then meet and agree on a final list.

In other cases, the MPO's usual process for evaluating TIP projects is used rather than a CMAQ-specific committee. For MPOs such as ARC where air quality is a major transportation planning concern, the use

of a more general project selection is not necessarily a limitation because air quality considerations are a normal part of the planning process. For MPOs with relatively few air quality concerns, a more general project selection process may fail to properly vet the emission reduction benefits or projects seeking CMAQ funds.

Finally, as was the case for DOTs, after a final round of vetting the ultimate decision for programing CMAQ projects is made by the MPO's board or the state DOT.

5 CONCLUSIONS AND DISCUSSION: BEST PRACTICES & RECOMMENDATIONS FOR NMDOT

We were challenged by NMDOT with ultimately recommending the top 5 best examples of practice for programing CMAQ projects at the statewide level and recommending a general assessment framework. In this final section we draw from the information discussed in the previous sections of this report, conversations we had with individuals that were a result of the e-mail solicitation to the Transportation Research Board Transportation and Air Quality Committee, and our professional experience and judgement to highlight best practices and make specific recommendations for NMDOT to consider as it considers how to best program its CMAQ funds.

5.1 Best Practices

No single DOT or MPO in our opinion is an example of best practice for NMDOT. Some of the MPOs with the most robust practices face transportation and air quality challenges of both a very different scale and context than NMDOT. For example, ARC has one of the most comprehensive CMAQ programming processes out of the DOTs and MPOs that we reviewed. However, ARC's methods are tailored to the challenges of planning a large urban area with severe congestion and air quality problems. ARC staff have specific expertise in specific areas such as air quality and transit modeling and access to state of the art modeling tools. NMDOT faces a very different set of problems, a sparsely populated state with relatively minor congestion and air quality problems. Within this context, NMDOT likely has fewer resources than ARC for evaluating the air quality impacts of such a wide variety of project types. While we have provided a list, as requested, of MPOs and DOTs that have the best overall practices, we caution that not every practice is one we consider to be a good example and not every practice would be applicable to NMDOT.

The top 5 for NMDOT:

1. Atlanta Regional Commission
2. New York State Department of Transportation
3. Michigan Department of Transportation
4. New Hampshire Department of Transportation
5. Louisiana Department of Transportation

Each of these MPOs or DOTs offers something we considered unique and an example of a best practice. ARC has a very comprehensive process, both for CMAQ programming and for their overall TIP. What is particularly impressive is ARC's robust emission and congestion benefit calculator, their method for creating a scoring and weighting scheme based on the input of staff from municipalities in the region, and their multi-tiered project screening process that ensure projects fit within ARC's overall plan for the region. ARC does not use a CMAQ-specific selection committee, but provides a relatively large amount of CMAQ-specific information and tools for project sponsors to use. Air quality and congestion are two factors that are important in all ARC projects.

New York State DOT is selected for many of the same reasons as ARC. They have a very comprehensive CMAQ process including a detailed emission benefit calculator. NYSDOT also distributes a concise CMAQ guidebook[1] to project sponsors that explains basic project eligibility and the NYSDOT application and evaluation process. Furthermore, NYSDOT requires that project sponsors attend a mandatory workshop that further explains the application process and expectations. One difference from ARC is that NYSDOT requests information from project sponsors which they then input into their emission benefit calculation tool. NYSDOT also withholds some CMAQ funds for statewide projects and programs. The efforts NYSDOT makes to inform potential project sponsors with concise guidance documents and workshops are practices that we think may be very relevant to NMDOT. New Mexico is a large rural state, and it is likely that many potential project sponsors are unfamiliar with the CMAQ program and its requirements. We also think that the approach where NYSDOT performs emission calculations may be a more realistic approach for a state such as New Mexico than the procedures used by many other DOTs and MPOs where individual project sponsors must make these estimates.

We include the Michigan DOT because it was the DOT with the most comprehensive and tailored set of CMAQ project application forms. The forms automatically perform some calculations, structure required inputs and require no specialized software. The use of these detailed forms could help staff from small towns and rural communities perform detailed emission reduction calculations. However, the forms do require numerous inputs that may still represent a significant burden for some agencies.

We also include New Hampshire DOT because of their significant outreach efforts. New Hampshire DOT distributed CMAQ requests for proposals widely; for example, by even issuing press releases to major media outlets. This recruitment effort was followed by pre-application workshops that provided additional information about the CMAQ program, its requirements, how proposals would be evaluated and information that projects sponsors would have to provide. Furthermore, NHDOT requests information from project sponsors which it then uses to perform emission reduction estimates which reduces the burden on the many small and rural communities within the state. Additionally, NHDOT uses a CMAQ selection committee composed of representatives from every region in the state that may ensure some amount of regional equity in the process and local expertise in specific regional priorities.

Finally, we include Louisiana as an example of the best alternative to the scoring and weighting schemes that were very common for both DOTs and MPOs. The DOT in Louisiana, uses a priority rubric. Project types in five general categories are assigned one of three qualitative priorities as shown in Figure 7. The rubric provides more flexibility to consider unique projects by not assigning predetermined weights to very specific criteria. Rating projects in different categories also seems more useful. For example, diesel retrofits have been shown to be very cost effective at reducing PM2.5 emissions; however, if PM2.5 is not a local issue or if there is not a lot of heavy duty diesel truck traffic in the area, then this strategy's high effectiveness is not very relevant. Most DOTs and MPOs expressed a desire to fund projects of various types; a rubric such as the one in Figure 7 is one way to help accomplish that goal.

[1] NYSDOT CMAQ Guidebook: https://www.dot.ny.gov/divisions/operating/opdm/local-programs-bureau/tap-cmaq/repository/TAP-CMAQ-Guidebook-2016.pdf

	Traffic Flow & ITS	Alternative Fuel/Diesel Retrofits	Transit/Diesel Retrofits	TDM	Bike/Ped
High Priority	Traffic signal coordination Intersection improvements (CMP routes & roundabouts)	Idling controls Diesel fleet conversion/retrofit Purchase (start-up) or expansion of alternative fuel fleet (non-transit) vehicles Passenger vehicle IM controls	Fleet retrofitting Start-up or expansion of alternative fuel transit vehicles	Employer incentives Alternative transportation incentive program (ex. transit incentives) Carpool/Vanpool programs, start-up, or expansion PR, advertising, and outreach (employer & school) Improved transit information to the public	New Bike/Ped facilities providing direct access to existing transit and/or schools
Medium Priority	Roadway ITS Transit ITS Speed limit enforcement Intersection improvements (low truck traffic volume) Intermodal freight improvements Access management Incident management improvements	Clean fuel incentive programs, infrastructure, or vehicles Heavy duty IM controls	Transit start-up or expansion Start-up or expansion of diesel transit vehicles	Congestion/Value pricing Start-up or expansion of employer services organizations	New Bike/Ped facilities linking existing bike/ped facilities (addresses "missing link" sections) Installing pedestrian or bike access to facilitate high use during peak travel times (access to major destinations)
Low Priority	Interoperable communications HOV lanes	Vehicle repair subsidy (in IM areas)		Park and ride lots Shared car program	Pedestrian and bicycle projects intended primarily for use during non-work trip times

-Transportation Control Measures in the SIP have the greatest priority.
-Projects consisting of aspects that can be a combination of multiple descriptions may receive a higher priority ranking.
-Interoperable communications is the exchanging of data in a quick and efficient manner so agencies from different jurisdictions or different locations can act promptly to remedy a situation. Interoperable communications is eligible for CMAQ funds.

Figure 7 Louisiana DODT CMAQ Project Priority Rubric

5.2 Recommendations for NMDOT

NMDOT faces several relatively unique challenges. In fiscal year 2017, for the first time, most, if not all, of New Mexico's CMAQ funds will be flexible[1]. That means NMDOT has great latitude in how it programs these funds. Additionally, New Mexico is a very large state with a very small population and therefore there is relatively little congestion and few areas with significant air quality concerns. This situation, is unlikely to change much in at least the near future as population and economic growth have been slow. The relatively rural nature of the state and few historical air quality problems means that many communities who are potential CMAQ project sponsors likely lack the resources to evaluate the emission

[1] The FHWA apportionment tables indicate that 100% of the New Mexico CMAQ apportionment is flexible; however, NMDOT indicates a small portion is considered CMAQ-mandatory for a portion of the El Paso, Texas PM-10 non-attainment area that falls within New Mexico. FHWA FY2017 CMAQ apportionment table: https://www.fhwa.dot.gov/legsregs/directives/notices/n4510812/n4510812_t14.cfm

and congestion reduction benefits of many types of CMAQ eligible projects. Considering these factors we make the following recommendations.

5.2.1 Project Solicitation

Since all CMAQ funds are now flexible, almost any local government agency is eligible to use them. It is unlikely that most local government agencies outside of the Albuquerque metropolitan area are aware of this source of funding and what type of projects are eligible. Therefore, NMDOT should put significant resources into distributing information to municipalities about any opportunity they have to propose projects for CMAQ funding. This could be facilitated though NMDOT's Local Technical Assistance Program (LTAP) program and mailing lists maintained by municipal government and county government associations.

Since this process will likely be new and because many small communities likely lack experience in air quality projects, the application process should be highly informative. Application materials should provide a summary of eligibility requirements, what information and data the sponsor will need to provide and how proposals will be evaluated. We think that a pre-application workshop or webinar as is done in New York State or New Hampshire would likely be very useful in answering questions and ensuring that applications are complete, contain eligible projects and provided useful information.

Estimating emission reductions is likely to be one of the most significant challenges in New Mexico. Not even the Mid Region Council of Governments (MRCOG), the state's largest MPO, estimates vehicle emissions in its planning process. While it may be possible to guide project sponsors, step by step, though the emission estimating process using detailed forms or emission calculators there are other important limitations. These calculations often require numerous additional data and assumptions which require resources (data and expertise) that some municipalities may not have. Therefore, a better approach may be that used by PSRC, NHDOT, or NYSDOT where standard project information is collected from project sponsors that the MPO or DOT then uses to estimate emissions. This is often a collaborative process as the DOT or MPO will likely need to assist the project sponsor in collecting other necessary data and making reasonable assumptions.

5.2.2 Project Evaluation

NMDOT may use a system that rates proposals using a system that assigns points and weights to individual project criteria or a rubric that prioritizes projects qualitatively. In either case, NMDOT should design the rating scheme as a way to communicate the agency's priorities to project sponsors. That is, NMDOT should expect project sponsors to submit projects that are responsive to the rating scheme. For example, a rating scheme that aims to assign points to many different criteria may result in very little diversity in proposed projects because proposers can do the math and figure out what specific type of project scores most highly. Assigning points and weights to each criteria is also a challenge and open to various biases. Schemes with fewer and more general criteria or those using qualitative rubrics are preferable. They leave more room for NMDOT staff to consider unique project features and local context. To the extent that NMDOT wishes to achieve a certain mix of project types, either approach can be applied individually to different categories of projects as was done by the DOT in Louisiana and CMAP.

Emission reduction benefits should be a priority in any evaluation to the extent NMDOT aims to continue to program projects under the goals of the CMAQ program, even though the funds are now flexible. The use of general cost effectiveness tables, such as those considered in the literature review are unlikely to be very reliable for use in New Mexico. As discussed throughout this report, the effectiveness of each project is very context dependent. The cost effectiveness studies consider prior CMAQ or CMAQ type projects. Few of these studies likely represent conditions prevalent in New Mexico. Therefore, NMDOT should make its own emission reduction estimates for each project that is submitted, rather than relying on more

generalized tables and guidance. To facilitate these calculations, an emission calculator such as that used by ARC, NYSDOT or many of the other MPOs reviewed should be considered. FHWA has also developed emission estimation tools for intersection improvements, traffic signalization and diesel engine retrofit projects which are available for free on its CMAQ Toolkit website[1]. NMDOT could also, over time as it evaluates more CMAQ proposals, generate its own rubric of which types of projects appear to be most cost effective in New Mexico.

While not standard practice in most MPOs or DOTs, NMDOT should also strive to consider the lifecycle costs and benefits of each project to the extent that resources allow. Such an approach would provide a fairer comparison of projects with relatively modest emission reductions that have relatively long lifetimes; for projects with high capital costs that also provide benefits over a long period of time; and for projects where the emission benefits are likely to change over time.

5.2.3 Project Selection

NMDOT should consider a CMAQ-specific project selection committee if it intends to continue to use CMAQ funds for projects that improve air quality. If NMDOT simply roles its CMAQ funds in with STBG funds, then a specific committee would not make much sense. The membership of a CMAQ-specific project selection committee should consider two criteria: regional representation and air quality expertise. Since projects are context sensitive, ensuring that each region of the state is represented along with both large and small communities should be a priority. Furthermore, given the historical lack of air quality problems in New Mexico, it is likely that few transportation engineers or planners have air quality expertise. Therefore, a CMAQ selection committee should include individuals with this expertise. It is unclear which agency currently has staff with expertise in mobile source emission modeling and related air quality concerns. The New Mexico Environment Department Air Quality Bureau[2] and the Albuquerque-Bernalillo County Air Quality Control Board[3] may have personal with mobile source air quality expertise. NMDOT could also consider assistance from consulting firms and researchers that have expertise in evaluating the air quality impacts of transportation projects and programs.

5.2.4 Meeting Performance Management Requirements

We were also asked to consider how our recommendations would help NMDOT meet FHWA's proposed performance management requirements pertaining to the CMAQ program. The rules are now final[4] and require the following three performance measures:

1. Annual Hours of Excessive Peak-Hour Delay (PHED),
2. Percent of Non-Single Occupancy Vehicle Travel (Non-SOV),
3. Total Emissions Reductions.

The first two performance measures are required for urbanized areas with a population greater than one million or non-attainment or maintenance areas with a population greater than 200,000 [23 C.F.R. §490.703 (2017)]. These do not appear to be applicable to New Mexico or any of its MPOs since no urbanized area currently has a population exceeding 1 million or 200,000 in a non-attainment or maintenance area. The third performance measure applies to all non-attainment and maintenance areas [23 C.F.R. §490.803], and therefore may apply to the PM10 non-attainment area in Dona Ana County.

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[1] FHWA CMAQ Emissions Calculator Toolkit website: https://www.fhwa.dot.gov/environment/air_quality/cmaq/toolkit/

[2] New Mexico Environment Department Air Quality Bureau: https://www.env.nm.gov/air-quality/

[3] Albuquerque-Bernalillo County Air Quality Control Board: https://www.cabq.gov/airquality/air-quality-control-board

[4] https://www.federalregister.gov/documents/2017/01/18/2017-00681/national-performance-management-measures-assessing-performance-of-the-national-highway-system

However, the regulation also states that it only applies to CMAQ apportionments for non-attainment and maintenance areas. According to FHWA's FY 2017 CMAQ apportionments, all New Mexico CMAQ funds are flexible which suggests that this performance measure may not apply. In either case, the reporting requirements for third performance measure requires no new data collection efforts. The estimated total emission reductions from CMAQ projects in the non-attainment or maintenance area are to be entered into the CMAQ Public Access System in the same way as they are today.

If the first two performance measures were to ever apply to an urbanized area within New Mexico, NMDOT or an MPO would need to collect and/or evaluate new traffic and travel data. These would not be data typically collected and evaluated for prioritizing CMAQ projects. They are aggregate, regional, transportation metrics.

The PHED performance metric can be estimated using vehicle probe data that has been made available to states by FHWA[1] and therefore would not require the collection of any new data. The FHWA provides step by step procedures on how the vehicle probe data should be used to estimate this performance metric in 23 C.F.R. §490.711. The percent of Non-SOV travel can likewise be estimated using existing data sources; however, DOTs and MPOs are given two additional options to that involve collecting more detailed data [23 C.F.R. §490.709 (2017)]. DOTs and MPOs may use existing US Census Bureau American Community Survey commute to work mode share data for their regions. However, DOTs and MPOs may also use commute to work or household travel mode share data collected through regional travel surveys or from measurements of actual travel by model. While MPOs in New Mexico do conduct household travel surveys periodically, they would likely need to be conducted on a more regular and frequent basis. Furthermore, since current transit, bicycle and walk mode shares are very small in the Albuquerque metropolitan planning area a very large sample size would be need to collect accurate information on share of travel by each of these modes. To the best of our knowledge, the DOT and no MPO in the state has an existing program to measure actual travel by each mode.

[1] https://ops.fhwa.dot.gov/freight/freight_analysis/perform_meas/vpds/npmrdsfaqs.htm

6 REFERENCES

Adler, K., Grant, M., Schroeer, W., 1998. Emissions Reduction Potential of the Congestion Mitigation and Air Quality Improvement Program: A Preliminary Assessment. Transportation Research Record: Journal of the Transportation Research Board 1641, 81–88. doi:10.3141/1641-10

Beria, P., Maltese, I., Mariotti, I., 2012. Multicriteria versus Cost Benefit Analysis: a comparative perspective in the assessment of sustainable mobility. Eur. Transp. Res. Rev. 4, 137–152. doi:10.1007/s12544-012-0074-9

Browne, D., Ryan, L., 2011. Comparative analysis of evaluation techniques for transport policies. Environmental Impact Assessment Review 31, 226–233. doi:10.1016/j.eiar.2010.11.001

Chakraborty, J., 2009. Automobiles, Air Toxics, and Adverse Health Risks: Environmental Inequities in Tampa Bay, Florida. Ann. of the Association of Am. Geographers 99, 674–697. doi:10.1080/00045600903066490

Cook, R., Isakov, V., Touma, J.S., Benjey, W., Thurman, J., Kinnee, E., Ensley, D., 2008. Resolving Local-Scale Emissions for Modeling Air Quality near Roadways. Journal of the Air & Waste Management Association 58, 451–461. doi:10.3155/1047-3289.58.3.451

Dhondt, S., Beckx, C., Degraeuwe, B., Lefebvre, W., Kochan, B., Bellemans, T., Int Panis, L., Macharis, C., Putman, K., 2012. Health impact assessment of air pollution using a dynamic exposure profile: Implications for exposure and health impact estimates. Environmental Impact Assessment Review 36, 42–51. doi:10.1016/j.eiar.2012.03.004

Dietz, S., Stern, N., 2008. Why Economic Analysis Supports Strong Action on Climate Change: A Response to the Stern Review's Critics. Rev Environ Econ Policy 2, 94–113. doi:10.1093/reep/ren001

FHWA, 2015a. Congestion Mitigation and Air Quality (CMAQ) Improvement Program Cost-Effectiveness Tables Development and Methodology. Prepared by USDOT Volpe National Transportation Systems Center for the Federal Highway Administration.

FHWA, 2015b. FHWA - Cost Effectiveness Tables Summary. Prepared by USDOT Volpe National Transportation Systems Center for the Federal Highway Administration.

FHWA, 2014. Air Quality and Congestion Mitigation Measure Outcomes Assessment Study: Final Technical Report (No. FHWA-HEP-15-002). Prepared by Battelle and Texas A&M Transportation Institute for the Federal Highway Adminstration.

FHWA, 2013. Interim Program Guidance Under MAP-21.

FHWA, 2009. SAFETEA-LU 1808: Congestion Mitigation and Air Quality Improvement Program Evaluation and Assessment: Phase II Final Repor (No. FHWA-HEP-09-026). Prepared by USDOT Volpe National Transportation Systems Center for the Federal Highway Administration.

FHWA, 2008. SAFETEA-LU 1808: Congestion Mitigation and Air Quality Improvement Program Evalutation and Assessment - Phase 1 Final Report (No. FHWA-HEP-08-019). Prepared by ICF International for the Federal Highway Administration.

FHWA, 2004. Federal Highway Administration CMAQ Project Tracking System User's Guide.

Houston, D., Li, W., Wu, J., 2014. Disparities in Exposure to Automobile and Truck Traffic and Vehicle Emissions Near the Los Angeles–Long Beach Port Complex. Am J Public Health 104, 156–164. doi:10.2105/AJPH.2012.301120

Houston, D., Wu, J., Ong, P., Winer, A., 2004. Structural Disparities of Urban Traffic in Southern California: Implications for Vehicle-Related Air Pollution Exposure in Minority and High-Poverty Neighborhoods. J Urban Affairs 26, 565–592. doi:10.1111/j.0735-2166.2004.00215.x

Jerrett, M., 2009. Global Geographies of Injustice in Traffic-Related Air Pollution Exposure. Epidemiology 20, 231–233. doi:10.1097/EDE.0b013e31819776a1

Karner, A.A., Eisinger, D.S., Niemeier, D.A., 2010. Near-Roadway Air Quality: Synthesizing the Findings from Real-World Data. Environmental Science & Technology 44, 5334–5344. doi:10.1021/es100008x

Kiker, G.A., Bridges, T.S., Varghese, A., Seager, T.P., Linkov, I., 2005. Application of multicriteria decision analysis in environmental decision making. Integr Environ Assess Manag 1, 95–108. doi:10.1897/IEAM_2004a-015.1

Linkov, I., Satterstrom, F.K., Kiker, G., Batchelor, C., Bridges, T., Ferguson, E., 2006. From comparative risk assessment to multi-criteria decision analysis and adaptive management: Recent developments and applications. Environment International, Environmental Risk Management - the State of the Art 32, 1072–1093. doi:10.1016/j.envint.2006.06.013

Macharis, C., Bernardini, A., 2015. Reviewing the use of Multi-Criteria Decision Analysis for the evaluation of transport projects: Time for a multi-actor approach. Transport Policy 37, 177–186. doi:10.1016/j.tranpol.2014.11.002

Macharis, C., de Witte, A., Ampe, J., 2009. The multi-actor, multi-criteria analysis methodology (MAMCA) for the evaluation of transport projects: Theory and practice. J. Adv. Transp. 43, 183–202. doi:10.1002/atr.5670430206

Mendelsohn, R., 2008. Is the Stern Review an Economic Analysis? Rev Environ Econ Policy 2, 45–60. doi:10.1093/reep/rem023

Nadafianshahamabadi, R., Tayarani, M., Rowangould, G.M., 2017. Differences in expertise and values: Comparing community and expert assessments of a transportation project. Sustainable Cities and Society 28, 67–75. doi:10.1016/j.scs.2016.08.027

Nordhaus, W.D., 2007. A Review of the "Stern Review on the Economics of Climate Change." Journal of Economic Literature 45, 686–702.

Rowangould, G., 2015. A new approach for evaluating regional exposure to particulate matter emissions from motor vehicles. Transportation Research Part D: Transport and Environment 34, 307–317. doi:10.1016/j.trd.2014.11.020

Rowangould, G., 2013. A census of the US near-roadway population: Public health and environmental justice considerations. Transportation Research Part D: Transport and Environment 25, 59–67. doi:10.1016/j.trd.2013.08.003

Saaty, T.L., 2008. Decision making with the analytic hierarchy process. International Journal of Services Sciences 1, 83–98. doi:10.1504/IJSSci.2008.01759

Stern, N., 2007. The Economics of Climate Change: The Stern Review. Cambridge University Press.

Tian, N., Xue, J., Barzyk, T.M., 2013. Evaluating socioeconomic and racial differences in traffic-related metrics in the United States using a GIS approach. J Expos Sci Environ Epidemiol 23, 215–222. doi:10.1038/jes.2012.83

TRB, 2002. The Congestion Mitigation and Air Quality Improvement Program: Assessing 10 Years of Experience -- Special Report 264.

US EPA, 2010. Transportation Conformity Guidance for Quantitative Hot-spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas (No. EPA-420-B-10-040). United States Environmental Protection Agency, Research Triangle Park, NC.

US EPA, n.d. How BenMAP-CE Estimates the Health and Economic Effects of Air Pollution [WWW Document]. URL https://www.epa.gov/benmap/how-benmap-ce-estimates-health-and-economic-effects-air-pollution (accessed 4.24.17).

Weitzman, M.L., 2007. A Review of The Stern Review on the Economics of Climate Change. Journal of Economic Literature 45, 703–724. doi:10.1257/002205107783217861

Zhou, Y., Levy, J., 2007. Factors influencing the spatial extent of mobile source air pollution impacts: a meta-analysis. BMC Public Health 7. doi:10.1186/1471-2458-7-89

7 APPENDIX A: SUMMARY OF STATE DOT CMAQ PRACTICE SCAN

7.1 District of Columbia

Summary

District of Columbia is designated as non-attainment for the ozone. District of Columbia received about $7.4 million of CMAQ funds for FY2016, 32.9% of which ($2.4 million) was flexible. CMAQ funding is used for "Direct Emissions Reduction Program" which supports projects such as idle reduction, purchase of fuels that produce lower emissions, retrofit of existing diesel engines with catalysts or filters, repowering of vehicles with lower emissions generating engines, and vehicle replacement. DOT website does not contain any further details.

Links to online information

Emission Inventories: https://doee.dc.gov/service/air-quality-planning
Project Solicitation: http://www.wemovedc.org/resources/DraftPlan/F-Freight_Element.pdf (Page f-5)

7.2 Delaware

Delaware State is designated as non-attainment for the ozone and maintenance for the PM2.5. State of Delaware received about $9.3 million CMAQ fund for FY2016, 32.2% of which ($3 million) was flexible. In Delaware State, CMAQ program is pooled with STIP.

How are projects solicited?

DOT website does not contain any further details.

What specific project selection tools, methods, rating systems, or performance measures are used?

For STIP project selection, there is a rubric with seven criteria and their weights that is showed in Table 6.

Table 6 STIP Selection Process, Delaware DOT

Criteria	Weight
Safety	33%
System operation effectiveness	24.8%
Multi-modal mobility/flexibility/access	15.6%
Revenue generation/economic development/jobs and commerce	7.9%
Impact on the public/social disruption/economic justice	7.2%
Environmental impact/stewardship	6.5%
System preservation	5%

Who makes project selection decisions?

MPOs are responsible for project prioritization and selection. Delaware DOT responsibility of final approval is subject to the preview of the Council on Transportation (COT). COT consists of three representatives from three counties of the state.

Links to online information

Emission Inventories: http://www.wilmapco.org/aq/
Project Selection Tool: https://www.deldot.gov/information/pubs_forms/CTP/archived/ctp16-21/CTPFY16-FY21Complete.pdf (Page 22)
Project Selection Decisions: https://www.deldot.gov/information/pubs_forms/CTP/archived/ctp16-21/CTPFY16-FY21Complete.pdf (Page 21)

7.3 Utah

Summary

Utah is designated as non-attainment for the ozone, PM10, PM2.5, and maintenance for the CO. State of Utah received about $9.5 million CMAQ fund for FY2016, 33% of which ($3.1 million) was flexible. In Utah State, MPOs are responsible for selecting CMAQ projects. Wasatch Front Regional Council (WFRC) developed a "CMAQ Emission Analysis Form" that is an excel-based tool to calculate emissions changes.

How are projects solicited?

Utah DOT (UDOT) allocates CMAQ funds to two metropolitan areas each year while they are programmed over six years. For example, the last call for projects was for funds available during 2017-2023. MPOs should send notices to transportation agencies and communities within their metropolitan area. Projects should be submitted through MPO website. Each applicant submits a "project concept report" which describes the characteristics of current condition and the future project as well as a "CMAQ Project Evaluation From" to determine the air quality benefits. The project sponsors are also responsible for filling and submitting a "Cost Estimation Form".

What specific project selection tools, methods, rating systems, or performance measures are used?

Concept Cost Estimate Form is an excel-based tool to calculate costs of projects. It calculates project costs by type by considering inflation rate for planning year. This tool calculates the cost of projects such as roadway and drainage, traffic, safety & ITS, structures, environmental and landscaping, utilities, right of way, and incentives projects (Appendix B, 8.3.1). There is not any more specific project selection method available in Utah DOT. CMAQ Emission Analysis Form requires a set of inputs from users for each project type and it automatically calculates emissions reduction for PM2.5, CO, NOx, VOC, PM10. Table 7 shows what information is necessary for each project type. It also calculates VHT, VMT, vehicle starts eliminated and emissions benefit/cost which is defined as annual Kg of emissions reduced*project life/$1,000 spent (Figure 8). A copy of the application form is found in Appendix B, 8.1.1.

Table 7 User Inputs for CMAQ Emission Analysis, Utah DOT

<table>
<tr><td>General required information for all projects</td><td>Inputs
- Contact Information
- Project Information:
• Project Location
• Project Description: basic cost elements (right-of-way, materials, pavement quantities, equipment costs, labor costs, etc.) and assumptions in calculating project cost</td></tr>
<tr><td>General Inputs For All Projects</td><td>Inputs
- Effective Day
- Type Of Vehicle Affected By This Project
- Project Life
- CMAQ Fund Requested</td></tr>
<tr><td>Project Type</td><td>Input</td></tr>
<tr><td>Advanced Traffic Management System Or Intelligent Transportation System</td><td rowspan="3">Inputs
- Reduced Vehicle Delay Daily In 2023 (VHT)(need detailed analysis of estimated reduction in vehicle delay for the year 2023 resulting from this project)
Formula For Emissions Calculation
Annual Emissions Reduction= Reduction Delay*Idle Rates* Days</td></tr>
<tr><td>Intersection And Signals</td></tr>
<tr><td>Incident Management</td></tr>
<tr><td>Transit- Bus Service</td><td rowspan="2">Inputs
- Auto Occupancy</td></tr>
<tr><td>Transit-Capital</td></tr>
</table>

Transit-Fares Transit-ITS Transit-LRT Services Transit-New ECO Pass	- New Bus Riders - One-Way Passenger Trip Distance - Daily Bus Miles - Annual Day VMT Reduced for Bus Service **Formula For Emissions Calculation** Annual Emissions Reduction= (Reduced LD VMT*(Run Rates)+LD Starts * Start Rated – Bus VMT*(Bus Run Rates))*Days
Bicycle	**Inputs** - CMAQ funds requested - Method A: Estimated Daily Bicycle Commuters - Method B: Average Annual Daily Traffic (Bicycle Commuters (AADT*0.24*0.005)); (Work Trips= 24% of AADT) - One-Way Bicycle Trip Distance - Reduced Daily VMT for This Bicycle Project **Formula For Emissions Calculation** Annual Emissions Reduction: (Reduced LD VMT*(Run Rates)+LD Starts*LD Start Rates)*Days
Pedestrian	**Inputs** - Estimated Daily Pedestrians - One-Way Pedestrian Trip Distance(Not To Exceed 2 Miles: Suggestion) - Reduced Daily VMT for This Pedestrian Project **Formula For Emissions Calculation** Annual Emissions Reduction: (Reduced LD VMT*(Run Rates)+LD Starts*LD Start Rates)*Days
Park and Ride	**Inputs** - Parking Stalls - Parking Rate - One Way Trip Length - Reduced Daily VMT for This park and ride project - Reduced VMT=Stalls*Parking Rate*Trip Length **Formula For Emissions Calculation** Annual Emissions Reduction= Reduced LD VMT*(Run Rates)*Days
Vanpool Expansion	**Inputs** - Expansion Vans - Van Occupancy - One Way Trip Length - Reduced Daily VMT For Vanpools(Excluding Driver) **Formula For Emissions Calculation** Annual Emissions Reduction: (Reduced LD VMT*(Run Rates)+LD Starts*LD Start Rates)*Days
Rideshare Management-Carpools	**Inputs** - Carpools - Carpool Occupancy - One Way Trip Length - Reduced Daily VMT for Carpools **Formula For Emission Calculation** Annual Emissions Reduction: (Reduced LD VMT*(Run Rates)+LD Starts*LD Start Rates)*Days
Rideshare Management-Vanpools	**Inputs** - Vanpools - Carpool Occupancy - One Way Trip Length - Reduced Daily VMT For Vanpools **Formula For Emissions Calculation** Annual Emissions Reduction: (Reduced LD VMT*(Run Rates)+LD Starts*LD Start Rates)*Days

Alternative Fuel	**Inputs** - Alternative Fuel Emission Rates-2023 (emission rates all processes: start, running, evaporation, extended idle, refueling and for Co, Nox, Voc, Pm10, Pm2.5) - Daily VMT For All Vehicles To Be Replaced With Alternative Fuel Versions **Formula For Emissions Calculation** - Annual Emissions Reduction: (Daily VMT*(Diesel Emission Rates-CNG Emission Rates))*Days

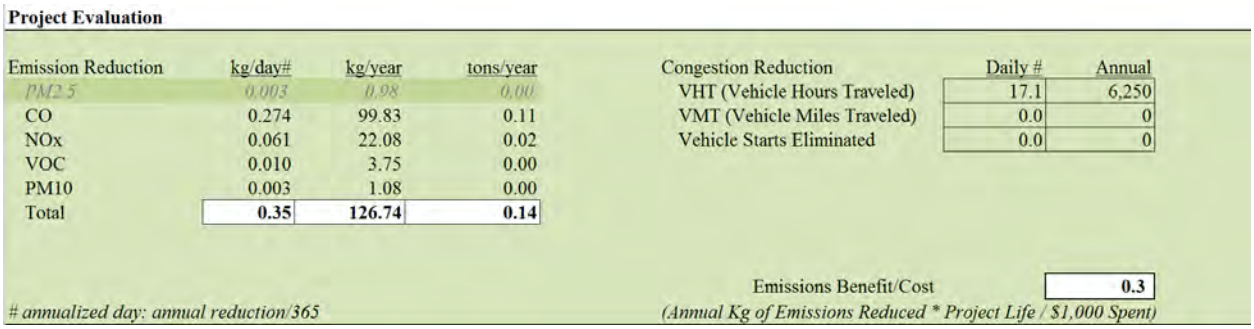


Figure 8 Project Results Evolution, Utah DOT

Who makes project selection decisions?
Representatives from UDOT, Utah Area Transportation Technical Advisory Committees (UTA), FHWA, and local governments visit project sites. MPO staffs evaluate and prioritize the projects and present them to the Transportation Technical Advisory Committees, County Councils of Governments (COGs), and the Transportation Committee of the MPO board.

Links to online information
CMAQ Main Page: https://www.udot.utah.gov/main/f?p=100:pg:0:::1:T,V:232,
Emission Inventories: https://documents.deq.utah.gov/air-quality/air-quality-policy/DAQ-2017-002764.pdf (Page 1) and https://documents.deq.utah.gov/air-quality/annual-reports/DAQ-2017-001541.pdf (Page 11)
Project Solicitation: http://www.wfrc.org/new_wfrc/index.php/wfrc-programs/transportation-improvement-program-tip/congestion-mitigation-air-quality-cmaq-program and https://www.udot.utah.gov/main/uconowner.gf?n=200309291653012 (Page 8, 9, 10)
Cost Estimation Form: http://wfrc.org/new_wfrc/publications/2018-2023_TIP/18%20-%2023%20Concept%20Project%20Cost%20Estimate%20Form.xls
WFRC CMAQ Emission Analysis Form: http://wfrc.org/new_wfrc/publications/2018-2023_TIP/CMAQ%20Emissions%20Analysis%20Forms%202017%20MOVES.xlsx

7.4 Louisiana

Summary
Louisiana State is designated as non-attainment for the Ozone. State of Louisiana received about $11.2 million CMAQ fund for FY2016 which of 33.4% ($3.7 million) was flexible. Louisiana DOT (DOTD) issues a call for CMAQ projects from the state, MPOs and municipalities every other year. A project selection committee comprised of staff from DOTD, Louisiana Department of Environmental Quality, and FHWA. They evaluate and rank the projects following FHWA CMAQ project selection guidance. The committee also uses the “Project Selection Tool for CMAQ Projects” to help guide project ranking. This tool is a table that designates projects in five general categories (traffic flow and ITS, alternative fuels and diesel retrofits, transit and diesel retrofits, TDM, and bike and pedestrian projects) as either high, medium and low priority. The applicants themselves should provide an air quality calculation. The

Capital Region Planning Commission (CRPC) is an MPO located in a non-attainment area which can perform an emissions analysis and prepare the air quality report for proposals.

How are projects solicited?
DOTD issues a call for CMAQ projects every other year from the state, MPOs and municipalities. Their website does not contain any further details about instructions that may be included in the solicitation.

What specific project selection tools, methods, rating systems, or performance measures are used?
DODT uses a "Project Selection Tool for CMAQ Projects" which is a rubric that designates projects in five different categories as being either high, medium or low priority (Figure 9). DODT states that it also follows FHWA guidance in selecting projects, including the use of quantitative air quality analysis when possible.

Who makes project selection decisions?
A CMAQ project selection committee ranks the projects. The selection committee consists of: DODT transportation planning engineer, DODT air quality engineer, DODT road design representative, FHWA representative, Louisiana Department of Environmental Quality representative, and DODT public transit administrator.

Links to online information
CMAQ Main Page:
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Multimodal/Transportation_Planning/Pages/CMAQ.aspx
Emission Inventories: https://www3.epa.gov/airquality/greenbook/anayo_la.html
Project Solicitation and Selection Tool:
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Multimodal/Transportation_Planning/Misc%20Documents/CMAQ%20Selection%20Process.pdf
FHWA CMAQ project selection guidance:
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Multimodal/Transportation_Planning/Misc%20Documents/CMAQ%20Interim%20Program%20Guidance%20Nov.%202013.pdf
Specific Program Information:
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Administration/LPA/Misc%20Documents/LPA_Specific_Program_Information.pdf (Page 3)

	Traffic Flow & ITS	Alternative Fuel/Diesel Retrofits	Transit/Diesel Retrofits	TDM	Bike/Ped
High Priority	Traffic signal coordination Intersection improvements (CMP routes & roundabouts)	Idling controls Diesel fleet conversion/retrofit Purchase (start-up) or expansion of alternative fuel fleet (non-transit) vehicles Passenger vehicle IM controls	Fleet retrofitting Start-up or expansion of alternative fuel transit vehicles	Employer incentives Alternative transportation incentive program (ex. transit incentives) Carpool/Vanpool programs, start-up, or expansion PR, advertising, and outreach (employer & school) Improved transit information to the public	New Bike/Ped facilities providing direct access to existing transit and/or schools
Medium Priority	Roadway ITS Transit ITS Speed limit enforcement Intersection improvements (low truck traffic volume) Intermodal freight improvements Access management Incident management improvements	Clean fuel incentive programs, infrastructure, or vehicles Heavy duty IM controls	Transit start-up or expansion Start-up or expansion of diesel transit vehicles	Congestion/Value pricing Start-up or expansion of employer services organizations	New Bike/Ped facilities linking existing bike/ped facilities (addresses "missing link" sections) Installing pedestrian or bike access to facilitate high use during peak travel times (access to major destinations)
Low Priority	Interoperable communications HOV lanes	Vehicle repair subsidy (in IM areas)		Park and ride lots Shared car program	Pedestrian and bicycle projects intended primarily for use during non-work trip times

-Transportation Control Measures in the SIP have the greatest priority.
-Projects consisting of aspects that can be a combination of multiple descriptions may receive a higher priority ranking.
-Interoperable communications is the exchanging of data in a quick and efficient manner so agencies from different jurisdictions or different locations can act promptly to remedy a situation. Interoperable communications is eligible for CMAQ funds.

Figure 9 Project Selection Tool for CMAQ Projects, Louisiana DOT

7.5 Michigan

Summary

The entire state of Michigan is designated as attainment. State of Michigan received about $54.2 million CMAQ fund for FY2016 which of 100% is flexible. Michigan DOT (MDOT) has a guidance that supplements the FHWA CMAQ guidance. This guidance provides information about how MDOT administers the CMAQ program. This guidance also includes the requirements for requesting an obligation of CMAQ funds.

How are projects solicited?

Each year, MDOT conducts a call for CMAQ Projects. Corresponds to STIP and TIP planning years, the last call was for FY 2017-2020 and the applicants were encouraged to submit projects through 2020. Applications submit their proposals online through the MDOT Grant System. If the applicants need to know how MDOT ranks the projects, they should look at the FHWA CMAQ project selection guidance. There are a set of forms available for applicants to help them calculate emissions benefits. MDOT has provided an instruction to help applicants to fill the forms. Besides the general information required for proposed projects, MDOT also lists additional information needed for the specific projects that is shown

in Table 8. A qualitative assessment will be accepted if quantifying the emissions benefits is impossible. After a set-aside amount for MDOT and Local Traffic Operation Centers (TOCs) and the Michigan VAN (MichiVan) Rideshare program, Michigan's remaining CMAQ apportionment is allocated to counties based on their population.

Table 8 Additional Items Needed for Specific Projects, MDOT

Project Type	Additional Items Needed
Carpool Lot Expansion	- The number of additional spaces
Dedicated Turn Lanes	- The length of the lanes
Intersection Improvements/Ramp Modifications	- Diagram of the modification
Non-Motorized Paths	- Maps detailing the location of the proposed path - the land uses that surround the path - How the path provides access to jobs, services, and centers of trade - All connections to other non-motorized paths, if applicable
Signal Interconnection	- All locations in the Location Description - The number of signals in the Work Description
Traffic Operations Center (TOC)	- Specific activities to be funded
Transit	- Vehicle lease/purchase - Operating Assistance - Equipment
Shared Ride (RideShare)	- Marketing or Capital

What specific project selection tools, methods, rating systems, or performance measures are used?
Emissions calculation and registration forms are categorized based on the project types as follows:

- Dedicated turn lanes (one intersection approach only)
- Dedicated turn lanes (adjacent approaches of intersection)
- Dedicated turn lanes (opposite approaches of intersection)
- Dedicated turn lanes (all 4 approaches of intersection)
- Roundabouts
- Park and ride lots
- Rideshare: standard
- Rideshare: enhanced
- Traffic operations centers operations
- Signal interconnects (one corridor only)
- Signal interconnects (multiple corridors)
- Signal optimization or actuation, not part of an interconnect project
- Bus purchase or replacements
- Bus purchase or replacements
- Operation of new public transit services
- Operation of new public transit services
- Non-motorized pathway
- Diesel retrofits

Besides the general required information, the applicants should provide emission factors based on travel speed if the projects include light duty vehicle, all vehicles, or transit bus vehicles. MDOT has developed a guidance document which provides emission factors (grams/mile) based on different travel speed bins for VOC, NOx, CO, and PM2.5. The general outputs of the calculation tool include peak and off-peak

VMT, average peak and off-peak speed, change in emissions, and cost per kilogram over the life of the projects. The calculation forms are found in Appendix B, 8.4.1.

Who makes project selection decisions?
In Michigan, MDOT and FHWA determine the eligibility of all CMAQ projects. A multi-disciplinary sub-committee consisting of state program managers, local agency program representatives and planners, and representatives from FHWA evaluates each application.

Links to Online Information
CMAQ Main Page:
http://www.michigan.gov/mdot/0,4616,7-151-9621_11041_60661---,00.html
Emission Inventories**:** http://www.michigan.gov/documents/deq/deq-aqd-aqe-mi_attainment_status_map_407842_7.pdf
Call for Projects: https://www.michigan.gov/documents/mdot/CMAQ_CFP2017-2020_LetterLocals_505585_7.PDF
Instruction of Calculation Forms:
http://www.michigan.gov/documents/mdot/MDOT_CMAQEmissionFormsInstr_437269_7.pdf
Additional Items Needed for Specific Projects:
http://www.michigan.gov/documents/mdot/Reminder_of_Items_Needed_for_Eligibility_Determination_09_21_2012_398748_7.pdf
Emission Factors:
http://www.michigan.gov/documents/mdot/MDOT_CMAQ_EmissionFactorsTables_437123_7.pdf

7.6 Iowa

Summary
The entire state of Iowa is designated as attainment. State of Iowa received about $11 million CMAQ fund for FY2016 which of 100% was flexible. The Iowa Department of Transportation (Iowa DOT) created the Iowa's Clean Air Attainment Program (ICAAP) which uses CMAQ funds to help finance transportation projects and programs that result in reducing VOC, NOx, CO and, under certain conditions, particulate matter. Iowa DOT has provided a guidebook that illustrates project selection process and decision making. Project ranking is a rubric that scores the projects based on six criteria.

How are projects solicited?
Iowa DOT calls for projects each year. The project sponsor applicants should prepare and submit the application forms to the Iowa's Clean Air Attainment Program, Iowa DOT. A copy of the application form is shown in Appendix B, 8.1.2. Project sponsors should use quantitative methods to assess the impacts of their projects on the air quality and/or traffic congestion. They also should describe the source of data, assumptions, and methodologies they used for evaluation. Iowa DOT has provided a set of tables of emission factors for VOC, CO, NOx, CO2 for all type of vehicles which can be used for emissions calculation (Appendix B, 8.4.2). For congestion mitigation projects, the sponsors should use travel demand models to calculate average daily traffic volume. The sponsors submit the application including the MPO or Regional Planning Agency resolution, to the Iowa DOT Office of Systems Planning.

What specific project selection tools, methods, rating systems, or performance measures are used?
All proposed projects are evaluated and ranked using a range of points associated with the criteria listed in Table 9. Iowa DOT identified the types of projects that have the highest priority for CMAQ funding including projects that:

- Demonstrate a direct benefit in reducing or eliminating O3, CO, PM-2.5 or PM-10 air pollution;

- Reduce single occupant vehicle (SOV) trips or vehicle miles of travel (VMT);
- Reduce vehicle congestion and improve traffic flow on highways and streets;
- Implement the TCMs or other transportation-related projects identified in an approved SIP (if needed); and
- Assist in developing management systems for traffic congestion, public transportation, or intermodal facilities.

Table 9 Project Evaluation Criteria, Iowa DOT

Points	Criteria
0-25	Traffic flow improvement
0-25	VMT or SOV trip reduction
0-20	Vehicle emission reduction estimates
0-15	Degree of transportation-related air pollution or traffic congestion
0-30	Project cost effectiveness relative to air quality benefits
0-115	Total possible points

Who makes project selection decisions?
The Office of Systems Planning and the ICAAP Project Evaluation Committee determine the eligibility of the proposals and evaluate them for accuracy. The Office of Systems Planning presents the ranked proposals to the Iowa Transportation Commission (ICAAP Project Evaluation Committee) for final authority. The committee is composed of five members, one representative from each of the following organizations: Iowa DOT, Iowa Department of Natural Resources, Iowa Public Transit Association, MPOs, and Regional Planning Agencies.

Links to online information
CMAQ Main Page:
http://www.iowadot.gov/systems_planning/icaap.htm
Emission Inventories: https://www3.epa.gov/airquality/greenbook/ancl.html
Guidebook: http://www.iowadot.gov/systems_planning/pdf/ICAAP_Application_Handbook.pdf
Emission factors:
http://www.iowadot.gov/systems_planning/pdf/2008%20Areawide%20Vehicle%20Emissions.PDF

7.7 Montana

Summary
Montana is designated as non-attainment for the PM10 and PM2.5. State of Montana received about $14.5 million CMAQ fund for FY2016 which of 90% ($13.1 million) was flexible. Montana Department of Transportation (MDT) has provided a study to introduce a set of methods and excel-based tools to estimate air pollution emissions and cost-effectiveness.

How are projects solicited?
No information is available.

What specific project selection tools, methods, rating systems, or performance measures are used?
Table 10 shows what type of projects have high priority for CMAQ fund. MPOs are responsible for ranking the projects through the planning process coming from an approved metropolitan LRTP and metropolitan TIP.

Table 10 CMAQ Strategies Priority Ranking, Montana DOT

Rank	Strategy
1	Congestion Relief and Traffic Flow Improvement
2	Equipment Purchase (Street Sweepers)
3	Diesel Engine Retrofit
4	Bicycle & Pedestrian
4	Carpooling and Vanpooling
4	Public Education and Outreach Activities
7	Idle Reduction
8	Alternative Fuels
8	Transit Improvements
8	Travel Demand Management
8	Freight/Intermodal

MDT also developed a set of emission quantification spreadsheet tools that can be used by the MDT and local agencies to estimate the emission changes associated with various CMAQ projects. Each tool has three worksheets: an "instruction" which provides detailed steps that the applicant/user needs to take; a "tool" that gets inputs from users and calculates emission benefits; and a "calculation" sheet which contains a set of emission rates and VMT which are hidden. The following inputs are required to run the "tool" worksheets (links to spreadsheets are not found).

- **Traffic Flow Improvement Projects**: this tool estimates the emission benefits of traffic flow improvement projects. the applicants are required to provide a set of inputs such as analysis year, road type, road grade, link average peak hour traffic, number of daily peak hours, length of link, number of days of use per year, average speed before/after signal synchronization, and fraction of annual operating days in winter/summer. Emissions benefits are automatically calculated based on a database of Montana-specific emission rates by running the MOVES model.
- **Street Sweeping Programs:** this tool is used to estimate emission reductions of street sweeping programs. Users' inputs are road length, road average daily traffic, annual days with application of antiskid abrasive, average delay between applications of antiskid abrasive, is the road to be swept a limited access road, winter months, number of "wet" days during non-winter months, number of "wet" days during winter months, vehicle weights. Annual PM10 and PM2.5 emissions for no/with sweeping are calculated.
- **Road Paving Programs:** this tool is employed for emissions benefit quantification for road paving programs. Users' input includes: road length, traffic volume, days with antiskid abrasive, antiskid abrasive delay, limited access road, traffic speed, days with frozen precipitation, winter months, wet days – non-winter months, wet days - winter months, vehicle weight, unpaved road surface silt content, unpaved road moisture content, and road surface silt loading. Emissions benefits are automatically calculated.
- **Vehicle Miles Traveled and Trip Reduction Projects:** this tool estimates the emissions benefits of projects designed to reduce VMT or trips. User should provide a set of inputs such as analysis year, affected number of operating days per year and the fractional number of operating days by season, total number of trips starts eliminated per day and average length of the eliminated trips, total number of trips per day with reduced VMT and the average decrease in mileage of such trips, total number of

new trips starts added per day and the average length of these trips, total number of replacement trips per day with increased VMT and average increase in VMT, and the fractional road type mix of the affected VMT. Daily and annual emissions benefits are automatically calculated.

A spreadsheet tool is also developed to estimate the cost effectiveness of these projects based on the emission reductions quantified by the emission tools. This tool allows users to define the project parameters and provides the resulting emissions benefits. The users need to provide inputs for project lifetime, project cost year, capital cost, annual operations and maintenance costs, other costs, cost savings, and a discount rate. The output of the project cost tool is the annualized project cost.

Who makes project selection decisions?

Montana MPOs and local government agency officials have project prioritization authority. MPOs, MDT, and transit agencies develop CMAQ project selection processes in accordance with the metropolitan and/or statewide planning process. The Montana Transportation Commission approves the final projects. This commission consists of five members who are appointed by the Governor for a four-year term.

Links to online information

CMAQ Main Page: http://www.mdt.mt.gov/research/projects/planning/cmaq.shtml
http://www.mdt.mt.gov/mdt/organization/railtran_multimodal.shtml
Planning Requirements & Funding Programs:
https://www.mdt.mt.gov/other/webdata/external/cdb/lag_manual/ch_2.pdf

7.8 New Hampshire

Summary

The entire state of New Hampshire is designated as attainment. State of New Hampshire received about $10.1 million CMAQ fund for FY2016 which of 100% was flexible. New Hampshire DOT (NHDOT) only lists the eligible projects for CMAQ fund and does not provide any specific tool to select and rank them. NHDOT provides three opportunities for the applicants: a format of the letter of interests (LOI), a set of pre-application workshops, and technical assistance in developing air quality analysis.

How are projects solicited?

The CMAQ application process typically occurs every other year. An announcement will be made to all nine regional planning councils (RPC), through a press release to the NH media outlets and through DOT website. The applicants show their interests through a letter of interests. They should provide an approximate cost of their projects and general benefits of air pollution reduction. A copy of LOI is shown in Appendix B, 8.1.9. The LOI's are submitted to both the NHDOT program manager and the transportation planner at the appropriate regional planning commission. Pre-application workshops are then held to help applicants learn about the current application process, details of funding, evaluation criteria, and project development process. MPOs or planning commotion of each urban area and NH Department of Environmental Services (NH DES) or the NH Department of Transportation calculate air quality emission changes for projects in local and regional projects or statewide projects respectively. The following list is necessary data that the applicants must provide:

- Traffic volumes, including turning volumes at intersections
- Signal timings and/or delays
- Travel distances and speeds
- Number of transit vehicles, frequencies, distances, ridership information, both current levels and forecasts

- Vehicle types impacted (passenger cars, heavy trucks, etc.) and model years if relevant
- Idle time and vehicle starts affected
- Current and forecasted usage (park & rides, bike/pedestrian lanes)
- Documentation of all assumptions.

What specific project selection tools, methods, rating systems, or performance measures are used?
NHDOT does not provide a scoring tool and it only asks if the projects are among one the following project categories:

- Traffic control measures (TCM)
- Extreme low-temperature cold start programs
- Alternative fuels & vehicles
- Congestion reduction & traffic flow improvements
- Transit improvements
- Bicycle & pedestrian facilities & improvements
- Travel demand management
- Public education and outreach activities
- Transportation management associations
- Carpooling & vanpooling programs
- Freight/intermodal
- Diesel engine retrofits & other advanced technologies
- Idle reduction
- Training
- Inspection/maintenance programs
- Experimental pilot projects

Who makes project selection decisions?
Regional planning commissions and NHDOT both score the projects. The CMAQ Advisory Committee then reviews the scores and sends then to the NHDOT commissioner for the final decision. The chair of CMAQ advisory committee is the ranking Executive Council member and is consists of representatives of all 9 regional planning commissions, NH Department of Environmental Services, Federal Highway Administration and the NH Department of Transportation.

Links to online information
CMAQ Main Page: https://www.nh.gov/dot/org/projectdevelopment/planning/cmaq/index.htm
CMAQ Guidebook:
https://www.nh.gov/dot/org/projectdevelopment/planning/documents/LPAManual.pdf (Page 15)
And
https://www.nh.gov/dot/org/projectdevelopment/planning/documents/airqualityfactsheet.pdf
Letter of interests:
https://www.nh.gov/dot/org/projectdevelopment/planning/documents/CMAQLOImodel.doc

7.9 Wisconsin

Summary
Wisconsin is designated as non-attainment for the ozone and PM10. State of Wisconsin received about $21.1 million CMAQ fund for FY2016 which of 73.4% ($15.5 million) was flexible. The Wisconsin

Department of Transportation (WisDOT) ranks the projects based on a set of scores on a scale with a maximum score of 5 points.

How are projects solicited?
WisDOT programs CMAQ projects for a five-year cycle. For example, WisDOT solicited the projects in 2015 for State Fiscal Years (SFY) 2016-2020. However, because approved projects in previous award cycles are already programmed for 2016, 2017 and 2018, WisDOT will allocate new funding to projects starting in 2019 and later. In the program cycle, a sponsor can propose projects for fiscal years 2016 – 2020. WisDOT staffs decide which projects to program each year. Applicants should use the application form to submit their proposals. There is also an instruction on how the application form should be filled. The application form asks about the type of projects, environmental and cultural issues and details of projects based on project types. Sponsors must email application(s) and attachments to the appropriate WisDOT Region email address. Table 11 shows the required inputs based on project types. A copy of the application form is attached in Appendix B, 8.1.3. After applicants provide all necessary information, WisDOT, affected MPOs, and Wisconsin Department of Natural Resources (WisDNR) estimate CMAQ project emission reductions. The results then are submitted to FHWA. WisDOT than asks approved CMAQ applicants for infrastructure projects to participate in a training workshop.

Table 11 Required Inputs, Wisconsin DOT

Project Types	Inputs
Projects Affecting the Road Network	- How many miles of arterial, highway or local road will the project affect? - What is the daily VMT on this segment? - What are the changes in speed different travel periods? - What portion of daily VMT can be attributed to the change in speed for the designated time periods? - What are traffic counts for the affected segment?
Transit, Rideshare, Bicycle and Pedestrian Projects	- How many new or replacement trips are expected and from which modes? - How much of the new or replacement use is for work or other utilitarian trips? - How many auto trips will be eliminated? - What is the average trip distance of eliminated auto trips?
Applied Research or Demonstration Projects	- For what applied research area will the results have application? - How will project activities directly reduce emissions?
Alternative/Clean Fuel, Engine Idling Reduction and Diesel Retrofit Development Projects	- How many vehicles will be affected? - What is the total VMT per year for each vehicle type? - What is the quantity of fuel used per day? - What is the certification standard (and/or fuel type) expected for each vehicle? - What time of day will idling reduction operations occur? - Will the project replace existing vehicles or enlarge a fleet?
Area-wide Voluntary Trip Reduction and TMA Activities	- How many employers and employees will participate or be affected? - What is the organization's average passenger occupancy? - What are the length and frequency of affected trips? - What are the trip times for peak vs. non-peak trip hours?
all projects, to the extent not already addressed in answers to the questions above	- Why is the proposed project necessary to address non-attainment levels of fine particulate matter and/or ozone in the county in which the proposed project will occur? - How will the project sponsor ensure that the project is timely implemented in accordance with the Project Costs and Dates section of this application? - What obstacles must be overcome to implement this project?

	- What will make this project a success, especially as compared to other proposed projects of the same or similar type? How will the project sponsor measure project success in the form of congestion and/or emissions reductions? - How, if at all, does the proposed project add connectivity to the state's multi-modal transportation network, including bicycle, pedestrian and transit facilities? - Describe the manner in which the proposed project would provide a cost-effective benefit to the public.

What specific project selection tools, methods, rating systems, or performance measures are used?
Table 12 shows the evaluation criteria and scoring structure. WisDOT will determine emissions reductions scores applying the following scale in Table 13.

Table 12 Project Evaluation Criteria, Wisconsin DOT

Criterion	Score
- Emissions Reduction Score	1- 4, only full or half points permitted
- Project type emphasized by MAP- 21	if Yes, add 0.5
- Unique or innovative project type among applications	If Yes, add 0.5
- Sponsor history of unsuccessful or untimely CMAQ Project Implementation	If Yes, subtract up to 1 point
- Cumulative WisDOT Score	out of 5

Table 13 Emission Reduction Scoring

Reduction in Air Pollution Emissions per unit cost	Score 0-0.5	Score 0.5-1	Score 1-5	Score 5-15	Score 15-30	Score 30-40	Score 40-50	Score 50+
Emissions Reductions Score	0.5	1	1.5	2	2.5	3	3.5	4

Wisconsin DOT gives priority to applications that show one or more of the following factors:

- Produces a high level of vehicle emissions reduction
- Shows significant potential to reduce vehicle trips and/or VMT
- Produces reduction in traffic congestion and/or vehicle emissions
- Implements a strategy that is incorporated into a MPO Congestion Management Process
- Promotes technology-based improvements in vehicle and/or fuel emissions
- Stimulates inter-jurisdictional/inter-organizational coordination and cooperation that is otherwise unlikely
- Improves connections between travel modes and/or the efficiency of the transportation system
- Involves collaboration of the public and private sectors to improve air quality and mobility
- Expands scope, convenience, and/or level of service of a public transportation system, or reinstates a canceled route not previously funded by the CMAQ program
- Implements a comprehensive, well-planned overall trip reduction strategy
- Is innovative, and has the potential for widespread implementation
- Implements local and regional transportation planning goals
- If the project is an alternative fuel dispenser, it will be located close to a freeway or other concentrated source of potential users, and will be open to the public
- Will have high levels of utilitarian (non-recreational) trips (bicycle and pedestrian facilities)
- If the project involves traffic control, it is a comprehensive effort of corridor, area, or system-wide scope. In general, stand-alone signals or roundabouts at individual intersections will not be funded.

Who makes project selection decisions?
Local sponsors accept and review project applications within their jurisdiction. Sponsors then prioritize project proposals and submit them to the appropriate WisDOT Region office. WisDOT Region and Local Programs and Finance (LPF) review the applications. WisDOT LPF staffs send a comprehensive list of eligible project applications to the CMAQ project selection committee to review and rank. The CMAQ selection committee is comprised of MPOs, WisDOT and Wisconsin Department of Natural Resources staffs, and representatives from FHWA, federal transit administration and EPA.

Links to Online Information
CMAQ Main Page: http://wisconsindot.gov/Pages/doing-bus/local-gov/astnce-pgms/aid/cmaq.aspx
Guideline: http://wisconsindot.gov/Documents/doing-bus/local-gov/astnce-pgms/aid/cmaq-guide.pdf
Call for Projects:
http://wisconsindot.gov/Documents/doing-bus/local-gov/astnce-pgms/aid/cmaq-memo.pdf
Application From: http://wisconsindot.gov/Documents/doing-bus/local-gov/astnce-pgms/aid/cmaq-app.docx
Application Instructions:
http://wisconsindot.gov/Documents/doing-bus/local-gov/astnce-pgms/aid/cmaq-instruct.pdf
Project Evaluation Process: http://wisconsindot.gov/Documents/doing-bus/local-gov/astnce-pgms/aid/cmaq-eval.pdf

7.10 Indiana

Summary
Indiana is designated as non-attainment for the ozone. State of Indiana received about $34.5 million CMAQ fund for FY2016 which of 32.2% ($11.1 million) was flexible. In coordination with Indiana DOT (INDOT), each MPO scores and ranks the project. Since MPO staffs develop their own CMAQ selection process, we reviewed the CMAQ program performed by Ohio Kentucky Indiana Regional Council of Governments (OKI) which receives a sub-allocation of CMAQ funds from Indiana DOT in supplement of other information. OKI has developed a document that includes prioritization process, program policies and guideline, and evaluation criteria. The project selection is based on a table that includes the evaluation criteria and their scores.

How are projects solicited?
INDOT, FHWA, and the MPOs agree to call CMAQ projects each year or based on TIP/STIP cycle. In Indiana State, MPOs and INDOT should post their proposed applications, project selection process, and CMAQ projects in current TIP on the MPO FTP site. CMAQ project sponsors may be asked to provide more detailed project information. OKI provided an application from which is found in Appendix B, 8.1.4. This information is used by MPO staffs to calculate emission reductions.

What specific project selection tools, methods, rating systems, or performance measures are used?
OKI developed eight criteria, each scored on a different scale (Table 14).

Table 14 Project Evaluation Criteria, Ohio Kentucky Indiana Regional Council of Governments

Criteria	Measure	Points
1. Project Type (Maximum Points =10)	Regional rideshare/vanpool programs	10
	Congestion reduction, traffic flow improvements & its	10
	Transit vehicle replacement	8
	Freight/intermodal including diesel engine retrofits	7
	Public education and outreach	6

	Transit service upgrades			5
	Pedestrian/bicycle			4
	Alternative fuels and vehicles- non transit			4
	Employer-based programs			4
	Travel demand management			3
	Modal subsidies and vouchers			3
	Transit facility upgrades			2
	Other TCM's and misc			2
2. Cost Effectiveness (Maximum Points =15) *Sliding scale	High emissions reduced per dollar cost; low dollar cost Per kilogram reduced Medium Low			20 * *
3. Other Benefits (Maximum Points =15)	Improved safety			0 – 2
	Fixed route transit			0 – 2
	Bicycle/pedestrian			0 – 2
	Improved freight movement			0 – 2
	Benefits environmental justice population			0 – 2
4. Existing Modal Quality of Service (LOS)	Very low			15
	Low			10
	Medium			4
	High			0
5. Positive Impact on LOS (Maximum Points =15)	High impact			15
	Medium impact			10
	Low impact			3
	No impact			0
6. Status of Project (Maximum Points =10)	Construction plans complete			10
	Non construction activity ready for authorization			8
	Row clear and complete			8
	Environmental document complete			6
	Environmental document underway			2
7. Non-Federal Match of Requested CMAQ Funds of the phase(s) cost (Maximum Points =10)	Above 40%	5	Greater than $2.0 m	5
	>35 to 40%	4	$1.0 m to $2.0 m	4
	>30 to 35%	3	>$500,000 to $1.0 m	3
	>25 to 30%	2	$150,000 to $500,000	2
	>20 to 25%	1	$50,000 to $150,000	1
	Up to 20%	0	$0 to $50,000	0
8. History of Project Delivery By Project Sponsor in the previous 2 years	One project slipped past programmed year			-5
	Two or more projects slipped past programmed year			-10
	One or more projects cancelled			-10
Maximum Points				**90**

Who makes project selection decisions?
MPO staffs conduct the emissions reduction analysis. Results then will be forwarded to INDOT. Following INDOT's determination of concurrence, INDOT request FHWA to approve the projects.

Links to online information
CMAQ Guidance And Application Form: http://www.oki.org/wp-content/uploads/2015/10/OKI-Indiana-CMAQ-Program-Instructions-and-Application.pdf
CMAQ Eligibility Presentation: http://www.indianampo.com/assets/cmaqeligibilityprocess.pdf
CMAQ roles and responsibilities: http://www.indianampo.com/assets/roles_responsibilities_manual2.pdf

7.11 Nebraska

Summary

The entire state of Nebraska is designated as attainment. State of Nebraska received about $10 million CMAQ fund for FY2016 which of 100% was flexible. Nebraska Department of Road (NDOR) generally uses these funds on STP-eligible projects. NDOR is currently working on the criteria and a formal process for MPO's to ask CMAQ funds for CMAQ-type projects. In the interim, requests and approvals will be reviewed by the NDOR Planning and Project Development Engineer.

How are projects solicited?
The Nebraska Department of Road accepts applications for CMAQ funding after project call. However, applicants are encouraged to request their funds through supporting public agencies that function as CMAQ project sponsors. There is not any specific application form; however, applications should include: project description, purpose and need for the project, project size, scope, location and timetable, estimate of the project cost and local or private contribution, and requested CMAQ funding amount. The applicants should also answer whether the transportation project likely contribute to the attainment or maintenance of a national ambient air quality standard. NDOR encourage applicants to have a quantitative or qualitative analysis of the change in pollution.

What specific project selection tools, methods, rating systems, or performance measures are used?
The criteria for NDOR's selection are as follows:

- Would the transportation project be eligible for CMAQ funds? Does the project fit one of the seventeen eligible transportation projects or programs?
- Would the transportation project contribute to the attainment or maintenance of National Ambient Air Quality Standards (NAAQS)? Would the project benefit an area within Nebraska where there is concern for maintaining the NAAQS?
- Would the project Quantitative Analysis expect emission reductions or the Qualitative Assessment provide logical reasoning of expected emission benefits.
- Would the project strategy likely provide a high level of effectiveness in reducing air pollution?
- What is project cost, the local or private contribution and the proposed schedule or timetable?

Who makes project selection decisions?
NDOR recommends MPOs to select and rank the projects. NDOR then approves the final projects. Further information regarding project selection decision is not available.

Links to online information
Application Instruction: http://www.roads.nebraska.gov/media/6848/letter-explain.pdf
Project Selection Process: http://www.advocacyadvance.org/site_images/content/Navigating_MAP-21_Workshop_Funding_Profile_NDOR2013.pdf

7.12 Rhode Island

Summary
The entire state of Rhode Island is designated as attainment. State of Rhode Island received about $10.2 million CMAQ fund for FY2016 which of 100% was flexible. CMAQ fund is pooled with STIP. Rhode Island uses CMAQ funds for commuter rail operating expenses and bus rapid transit. While transit projects are typically paid for three years, these projects will continue using CMAQ fund. Rhode Island DOT (RIDOT) recommends that new transit projects are also covered in CMAQ program.

How are projects solicited?

Current CMAQ projects are included in FFY 17- 25 STIP. RIDOT has developed an application from for STIP projects that also contains the project evaluation criteria (Appendix B, 8.1.5). The applicants submit their proposals to RIDOT Intermodal Planning.

What specific project selection tools, methods, rating systems, or performance measures are used?
In RIDOT, the selection process is based on seven criteria including mobility, cost effectiveness, environmental impact, economic development, safety and security, support for state and local goals, and equity. Each criterion is categorized into high priority, medium priority, and low priority.

Who makes project selection decisions?
The CMAQ committee which consists of staff of the MPO, RIDOT, RI Department of Environmental Management, Transit Administration and members of Technical Advisory Committee use guiding principles in their decision making to reach a consensus.

Links to Online Information
CMAQ Main Page (STIP): http://www.planning.ri.gov/statewideplanning/transportation/tip.php
Application Form: http://www.planning.ri.gov/documents/tip/2016/RIPTA_TIP_2.pdf
STIP: http://www.planning.ri.gov/documents/tip/2017/RI_STIP_FFY2017_2025_Amended_123016.pdf (Page 17, 22) and http://www.planning.ri.gov/documents/tip/RIDOT.pdf

7.13 South Carolina

Summary
South Carolina is designated as non-attainment for the ozone. State of South Carolina received about $12.8 million CMAQ fund for FY2016 which of 80.2% ($10.3 million was flexible). There is not any specific guidance for CMAQ project selection in South Carolina Department of Transportation (SCDOT). The following information is summarized from an “Engineering Directive Memorandum”.

How are projects solicited?
CMAQ projects are pooled with STIP. no more information is available.

What specific project selection tools, methods, rating systems, or performance measures are used?
The South Carolina commission developed three mandatory criteria for CMAQ projects; however, these criteria are very basic. CMAQ projects must be within nonattainment or maintenance areas, must come from a long-range transportation plan and transportation improvement program (TIP) or the current STIP, and must reduce air pollution. Air quality analysis is required for all projects.

Who makes project selection decisions?
Selected projects and their air quality benefits and assumptions will be submitted to SCDOT for review. The emissions analysis methodology should be approved through interagency consultation. MPO study team or a technical group provide MPO governing board with the final project list before submitting to SCDOT. The list then will be submitted to the SCDOT Office of Planning for final approval. Figure 10 shows the process flow of CMAQ project selection.

Links to Online Information
Engineering Directive Memorandum: http://info2.scdot.org/ED/ED/ED-61.pdf
Process Flow of CMAQ Project Selection: http://www.scdot.org/inside/pdfs/stip_audit.pdf

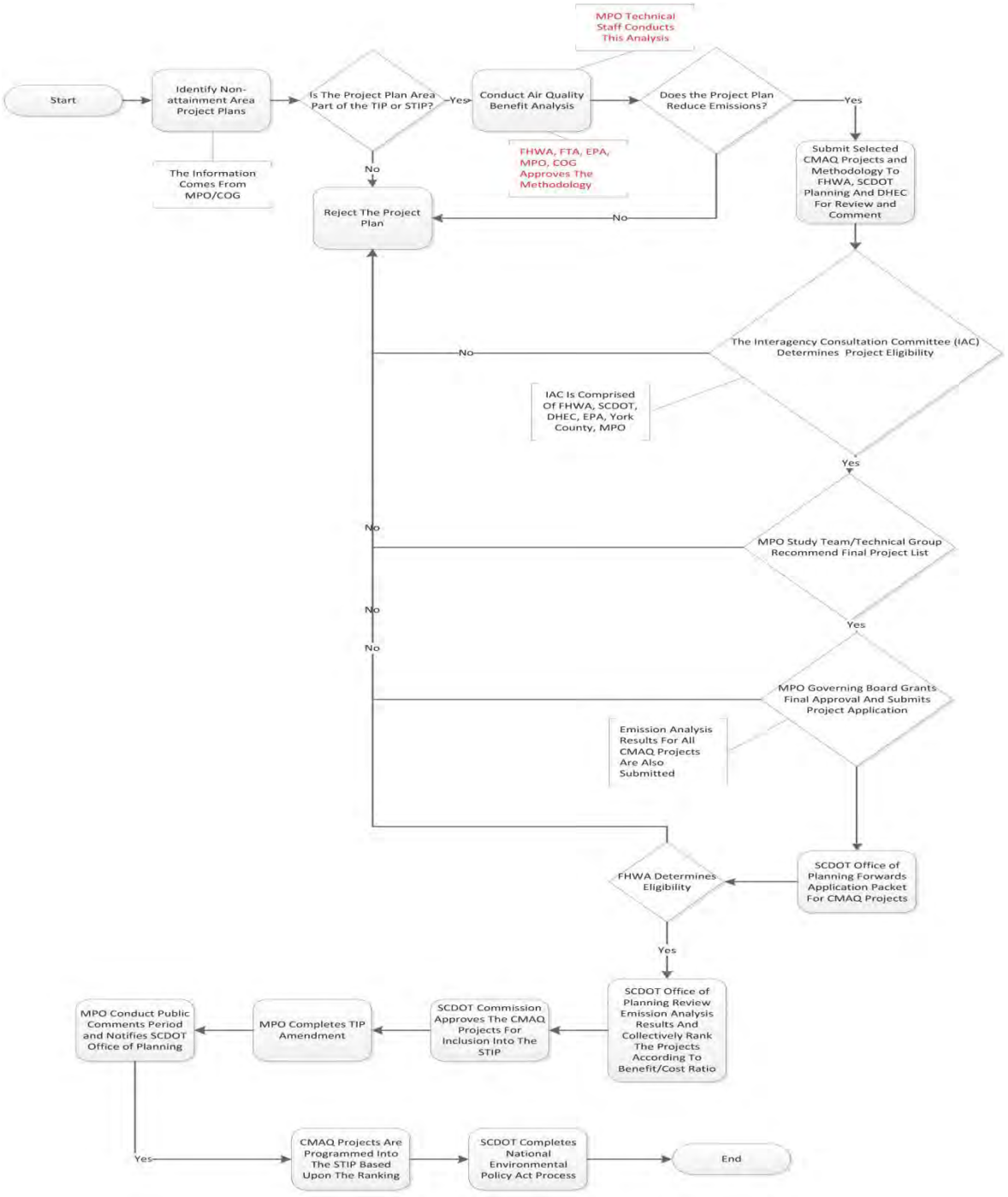


Figure 10 Project Selection Process, South Carolina DOT

7.14 Vermont

Summary

The entire state of Vermont is designated as attainment. State of Vermont received about $11.6 million CMAQ fund for FY2016 which of 100% was flexible. CMAQ program is combined with STIP and it is mostly used for new transit services. Vermont agency of transportation (VTrans) uses a quantitative method to rank and score the projects.

How are projects solicited?
VTrans solicits input from each regional planning commissions and MPOs and all projects should be ranked based on the VTrans quantitative scoring method. New public transit routes which are paid by CMAQ program are annually solicited through an open process from transit providers.

What specific project selection tools, methods, rating systems, or performance measures are used?
VTrans provides the following scoring system for different type of projects (Table 15). However, the transit projects are not included in the table. Transit projects are evaluated to see how they meet regional goals including: supporting cost-effectiveness, connecting to other regions and intermodal transportation, being consistent with current transportation policy plan, and supporting air quality attainment.

Table 15 Project Evaluation Criteria, Vermont DOT

Project Type	Measures	Points
Paving	Pavement Condition Index	20
	Benefit/Cost	60
	Regional Priority	20
Bridge	Bridge Condition	30
	Remaining Life	10
	Functionality	5
	Load Capacity and Use	15
	Waterway Adequacy and Scour Susceptibility	10
	Project Momentum	5
	Regional Input and Priority	15
	Asset – Benefit Cost Factor	10
Roadway	Highway System	40
	Cost per vehicle mile	20
	Regional Priority	20
	Project Momentum	20
	Designated Downtown project	-
Traffic Operations (Intersection Design)	Intersection Capacity	40
	Accident Rate	20
	Cost per Intersection Volume	20
	Regional Input and Priority	20
	Project Momentum	10

Who makes project selection decisions?
VTrans assesses the projects based on a long-term view of the overall transportation network and prefers projects with low long-term costs. Further information is not available.

Link to online information
STIP: http://vtrans.vermont.gov/sites/aot/files/portal/documents/stip/2016Final_version2.pdf (Page 94)

7.15 North Dakota

Summary
The entire state of North Dakota is designated as attainment. State of North Dakota received about $10.3 million CMAQ fund for FY2016 which of 100% was flexible. CMAQ is not viewed as a stand-alone plan in North Dakota DOT (NDDOT) and it is combined with STIP. CMAQ fund is also used for developing Transportation Alternatives (TA) program. There is not any further information regarding how NDDOT performs CMAQ program.

Link to online information

STIP: https://www.dot.nd.gov/manuals/programming/STIP/finalstip20162019.pdf (Page 68)

7.16 Alabama

Summary

The entire state of Alabama is designated as attainment. State of Alabama received about $8.3 million CMAQ fund for FY2016 which of 100% was flexible. CMAQ program is combined with STIP program and the CMAQ funds might be used for Highway Bridge Program (HBP) in order to construct new bridges. We could not find any further information.

Link to online information

STIP: http://www.dot.nd.gov/manuals/programming/STIP/finalstip20172020.pdf (Page 61)

7.17 Oklahoma

Summary

The entire state of Oklahoma is designated as attainment. State of Oklahoma received about $11.5 million CMAQ fund for FY2016 which of 100% was flexible. We could not find any further information.

Link to online information

https://ok.gov/odot/

7.18 Maine

Summary

The entire state of Maine is designated as attainment. State of Maine received about $10.1 million CMAQ fund for FY2016 which of 100% was flexible. Maine DOT website does not contain any details about CMAQ program. STIP and other programs do not have any information about CMAQ program, too.

Link to online information

http://maine.gov/mdot/

7.19 Mississippi

Summary

Mississippi is designated as non-attainment for the ozone. Memphis non-attainment area crosses the Tennessee-Arkansas-Mississippi border. Memphis Urban Area MPO and West Memphis MPO both cover the non-attainment area. The ozone nonattainment area covers Shelby County Tennessee, Crittenden County in Arkansas and part of DeSoto County in Mississippi. State of Mississippi received about $11 million CMAQ fund for FY2016 which of 85.8% ($9.4 million) was flexible. Mississippi DOT (MDOT) does not have a stand-alone program for CMAQ and it is combined with STIP. MDOT may review the need to transfer from CMAQ to FTA for capital transit projects. In addition, CMAQ is used to develop Transportation Improvement Program (TIP) for Memphis metropolitan area. However, MDOT website does not contain any details about CMAQ program.

Links to online information

STIP:
http://mdot.ms.gov/documents/intermodal%20planning/public%20transit/State%20Management%20Plan.pdf (Page 87)
http://mdot.ms.gov/FiveYearPlanData/Current%20STIP/2017-2020%20STIP%20Final.pdf (Page 245)

7.20 West Virginia

Summary

Entire state of West Virginia is designated as attainment. State of West Virginia received about $10.5 million CMAQ fund for FY2016 which of 100% was flexible. CMAQ program is combined with STIP. West Virginia DOT website does not contain any details about CMAQ program.

Link to online information

STIP:
http://www.transportation.wv.gov/highways/programplanning/STIP/Documents/Stip_16_21/STIP_16_21_Narrative.pdf

7.21 Hawaii

Summary

The entire state of Hawaii is designated as attainment. State of Hawaii received about $10.1 million CMAQ fund for FY2016 which of 100% was flexible. CMAQ fund are mostly programmed to address congestions based on Hawaii state STIP program. Hawaii DOT website does not contain any details about CMAQ program.

Link to online information

STIP: http://hidot.hawaii.gov/highways/files/2013/01/stip-Entire-Report.pdf (Page 170)

7.22 Idaho

Summary

The entire state of Idaho is designated as attainment. State of Idaho received about $9.4 million CMAQ fund for FY2016 which of 100% was flexible. Applicants should provide air quality benefits for air pollution emissions reduction. Applications should be submitted to Idaho Transportation Department. Projects which are a part of the Plan for the Control of Air Pollution in the State of Idaho are giver higher priority.

How are projects solicited?

There is an annual call for CMAQ projects. Air quality analysis is needed for each CMAQ project submittal.

What specific project selection tools, methods, rating systems, or performance measures are used?

Besides evaluating projects based on the air quality benefit and cost-effectiveness, projects are evaluated according to the specific criteria which are showed in Table 16.

Table 16 Evaluation Criteria, Idaho DOT

Project type	Evaluation Criteria
Road Surfacing Project	• Target appropriate season and location of problem; • Preventative in nature; • Part of a capital improvement plan for the local jurisdiction; • Provide long-term solutions; • Result in reduced maintenance; • Increase safety; • Efficient and flexible; and • Consider benefit/cost and value engineering/project life in choice of surfaces.
Dust Control and Prevention Projects	• Serve as seed money or pilot projects as part of a long-term implementation plan; • Purchase additional equipment, as opposed to replacement; • Meet ITD/IDEQ specifications for such equipment;

	• Used in nonattainment and/or problem areas; and • Coordinate use of equipment to problem relationship for time/frequency/location.
Transit Capital Equipment Purchase Projects	• Follow all Federal Transit Administration grant requirements; • Preferably use alternative and clean fuels; • Demonstrate administrative capacity for operation and maintenance; • Demonstrate need for purchase (waiting list, ridership trends, planned outreach strategies, etc.); • Result in intermodal connectivity; • Decrease VMT and congestion (result in mode shift); and • Flexible use of equipment.
Transit Start-Up and Operation	• Address an air quality issue which can be aided by new public transit; • Occur where public transit service is limited or nonexistent; • Coordinate with all existing public transit service providers in the area; • Serve as new service provision, not as replacement of existing service; • Coordinate with ITD-Division of Public Transportation; and • Short-term duration, with provisions for local long-term operation and maintenance.
Intelligent Transportation Systems Planning and Projects	• Focus on location to address an identified air quality problem (e.g., corridor, intersection, etc.); • Cost efficient; • Offer safety improvements and efficient traffic flow; • Address system-wide coordination requirements; • Focus on Carbon Monoxide nonattainment and problem areas; • Apply signal warrant requirements; and • Result in a system-wide benefit.
Bicycle and Pedestrian Projects	• Serve a transportation purpose; • Link to a community or regional transportation system; • Operate within three relational aspects of intermodal transportation system (in rank order) through: 1. Impact-designed to reduce the number of vehicles on existing corridors during peak travel volumes; 2. Proximity-serves the same people within the same travel corridor as existing systems and modes; and 3. Function-creates or improves existing system to provide safe and convenient route from origin to destination. • Be part of a long-range transportation plan at local, district, or state levels; • Meet design standards specified by the ITD Bicycle and Pedestrian Coordinator, the ITD Design Manual, and/or AASHTO standards; • Document information using acceptable VMT, pedestrian traffic models, actual local studies, links to promotional effort; and • Designate maintenance responsibilities, Bicycle/Pedestrian Facilities.
Special Studies, Strategic Planning, and Air Quality Monitoring Projects	• Specific as to their relationship to transportation; • Focus on direct air quality improvement projects and programs; • Maintain a defined schedule and set of deliverables; • Assure scientific/statistical procedures are followed; • Improve local information and data sources; • Result in better decision making; • Eliminate unwarranted future projects; and • Limit need for future studies.
Alternative Transportation Education/Promotion/Outreach Projects	• Specific as to their relationship to transportation; • Maintain a defined schedule and set of deliverables; • Available as reference information (formal report or summary) for other jurisdictions;

	• Improve local information and data sources; and • Focus on direct air quality improvement projects and programs.

Who makes project selection decisions?
CMAQ Technical Review Committee reviews the applications and forwards it to the Idaho Transportation Board. According to "Board policy B-11-05", CMAQ Technical Review Committee consists of a Transportation Planner, a Statewide Air Quality Analyst, Public Transportation analyst, a representative for environmental interests, Local Highway Technical Advisory Council Administrator, A knowledgeable citizen-at-large representing citizen involvement, a rotating local/regional representative who has received CMAQ program funds in the past, but is not an applicant in the current solicitation timeframe; and a rotating Regional Office Air Quality staff person for regional air quality interests.

Links to online information
Call for Projects: http://apps.itd.idaho.gov/Apps/MediaManagerMVC/PressRelease.aspx/Preview/326
Guidance: http://apps.itd.idaho.gov/apps/Fund/itip2018/FY18ProgramUpdateManual.pdf
(Page f-53)

7.23 Wyoming

Summary
Wyoming is designated as non-attainment for the ozone and PM10. State of Wyoming received about $10.2 million CMAQ fund for FY2016 which of 94% ($9.6 million) was flexible. CMAQ program is managed by Office of Local Government Coordination of Wyoming DOT (WYDOT). WYDOT evaluates and ranks the projects following FHWA CMAQ project selection guidance.

How are projects solicited?
WYDOT determined three goals for CMAQ program: reducing air pollution and having less non-attainment areas, enabling local governments to reduce air quality, and supplement the STP program. Every year, WYDOT calls for projects. The priority is given to the projects which are effective in reducing particular matter. Applicants should illustrate how their proposed projects change air pollution from current condition. Pre and post project air quality monitoring and cost-effectiveness should be contained in the project application. Applications should include any relevant data supporting the effectiveness of the project in reducing emissions. The county or its representative should submit the applications to the Office of Local Government Coordination at WYDOT. During the application cycle, there is a conference call to help the applicants. WYDOT also has provided an application from which questions about project type and project air pollution effects. A copy of application form is available in (Appendix B, 8.1.6).

What specific project selection tools, methods, rating systems, or performance measures are used?
There is not any specific method for projects selection.

Who makes project selection decisions?
CMAQ Advisory Committee evaluates the applications and makes funding recommendation to the Wyoming Transportation Commission who makes the final decision.

Links to online information
CMAQ Main Page:
http://www.dot.state.wy.us/home/planning_projects/transportation_programs/cmaq.html

Call for Projects:
http://www.dot.state.wy.us/files/live/sites/wydot/files/shared/Local_Government/CMAQ/FY%202017%20Application%20Info/FY2017CMAQApplicationCoverLetter.docx
Application Form:
http://www.dot.state.wy.us/files/live/sites/wydot/files/shared/Local_Government/CMAQ/CMAQ%20FY%2016%20Fill%20In%20Application.docx

7.24 Arkansas

Summary

Arkansas is designated as maintenance for the ozone. State of Arkansas received about $12 million CMAQ fund for FY2016 which of 95.1% ($11.4 million) was flexible. No further information is available.

Link to online information

http://www.arkansashighways.com/

7.25 South Dakota

Summery

The entire state of South Dakota is designated as attainment. State of South Dakota received about $12 million CMAQ fund for FY2016 which of 100% was flexible. Each year South Dakota DOT, Project Development Office submits the proposed projects with their amount of obligation, project description and location, and air quality benefits to the FHWA. No further information is available.

Link to online information

https://www.fhwa.dot.gov/federalaid/stewardship/agreements/sd.pdf (Page 47)

7.26 Florida

Summary

The entire state of Florida is designated as attainment. State of Florida received about $13.2 million CMAQ fund for FY2016 which of 100% was flexible. Florida DOT (FDOT) evaluates and ranks the projects following FHWA CMAQ project selection guidance. There is minimal information about CMAQ performance in FDOT.

How are projects solicited?

Call for projects occurs every year. Based on FDOT policy, eligible activities include new bicycle and pedestrian facilities, bicycle and pedestrian safety and education, and Americans with Disabilities Act (ADA) projects.

What specific project selection tools, methods, rating systems, or performance measures are used?

There is not any specific project selection process and FDOT evaluates and ranks the projects following FHWA CMAQ project selection guidance.

Who makes project selection decisions?

Candidate projects should be submitted to MPO or county and FDOT decides about the final approval list.

Link to online information

Work Program Instructions: http://www.fdot.gov/workprogram/Development/WPILog20151116.pdf (Page 150)

7.27 Kentucky

Summary

Kentucky is designated as non-attainment for the ozone and PM2.5. State of Kentucky received about $10 million CMAQ fund for FY2016 which of 66% ($6.6 million) was flexible. Kentucky DOT does not provide any specific method for ranking the projects. To receive the CMAQ funding, the applicants are needed to complete the requirements by Federal Highway Administration, the Kentucky Transportation Cabinet (KYTC) Office of Local Programs (OLP), and the State Clearinghouse.

How are projects solicited?

Local and state government agencies can apply for the CMAQ funding in late summer/early fall based on an annually announced call. Non-profits and private sector, however, need to cooperate with local or state agencies to apply for funding. Applications should provide requirements from Federal Highway Administration CMAQ, the Kentucky Transportation Cabinet (KYTC) Office of Local Programs (OLP), and the State Clearinghouse. Applicants should submit their proposals as well as their application form to both MPO and Office of Local Programs (OLP). The application form requires emissions reduction calculation for VOC, CO, NOx, PM10, and PM2.5 and the methodology used to determine each reduction. Applications should also include detailed engineer's estimate or project cost estimate. A copy of application form is found in Appendix B, 8.1.7.

What specific project selection tools, methods, rating systems, or performance measures are used?

There is not any specific process for selecting projects. Eligible projects should be in one of the CMAQ areas and should result in CO_2, NO_X, VOCs, PM2.5, and PM10 emissions reduction from transportation. Additional typical benefits from these projects such as GHG emissions reduction, mobility, and safety improvement are also considered when awarding the CMAQ but they are not necessary.

Who makes project selection decisions?

MPO and the Office of Local Programs simultaneously receive the applications for projects fall within the urban areas, and the OLP directly receives the applications fall within rural areas. Applicants will have time to correct their application until the end of application cycle for missing information or ineligibility based on the OLP, FHWA, and the appropriate KYTC District Office decision during the eligibility evaluation process. Finally, the recommendation list of prioritized projects will be provided to the OLP by the MPO.

Links to online information

CMAQ Main Page: http://transportation.ky.gov/local-programs/pages/congestion-mitigation-and-air-quality.aspx
Application Form: http://transportation.ky.gov/Organizational-Resources/Forms/TC%2020-24.docx
Guidance:
http://transportation.ky.gov/Organizational-Resources/Form%20Instructions%20Library/tc2024i.pdf

7.28 Kansas

Summary

The entire state of Kansas is designated as attainment. State of Kansas received about $9.3 million CMAQ fund for FY2016 which of 100% was flexible. Project priorities set by relevant Metropolitan Planning Organization or local project sponsors.

How are projects solicited?

The local project sponsors are responsible for developing a Request for Proposal (RFP) or a Request for Qualification (RFQ) (Appendix B, 8.1.8). The RFP/RFQ should include what are the evaluation criteria and their relative weights. Kansas DOT (KDOT) recommends local sponsors to encourage the Disadvantage Business Enterprise (DBE) to participate in CMAQ program. KDOT has provided a separate guidance for DBE Program for STP/CMAQ Funded Planning, Education, and Outreach Projects. The local project sponsors are responsible for submitting the RFP/RFQ to the KDOT Project Manager. After KDOT completes its review, the request letter is sent to KDOT's Office of Civil Rights for review and placement of a DBE participation, if appropriate. When a RFP/RFQ is approved, it should be advertised by the local project sponsor. The process continues with an interview/consultant selection process. After the interview, the local sponsor sends the final list to the KDOT for approval. A complete description of solicitation process can be found in Appendix B, 8.2.1.

What specific project selection tools, methods, rating systems, or performance measures are used?
There is not any specific evaluation method.

Who makes project selection decisions?
CMAQ committee is responsible to review project candidates and priority recommendations to the programming committee. CMAQ committee consists of:

- Air Quality Forum: Alternative Fuel, Diesel Retrofit, Outreach/Other
- Active Transportation: Bicycle/Pedestrian
- Kansas & Missouri STP: Traffic Flow
- Regional Transit Coordinating Council: Transit

Links to online information
Guidance: http://transportation.ky.gov/Organizational-Resources/Form%20Instructions%20Library/tc2024i.pdf and http://marc.org/Regional-Planning/Creating-Sustainable-Places/assets/KDOT-STP-CMAQ-Project-Guidance.aspx
Application from: http://www.ksdot.org/Assets/wwwksdotorg/bureaus/burLocalProj/Forms/1302.xlsx

7.29 Alaska

Summary
Alaska is designated as non-attainment for the PM2.5 and PM10, and maintenance for CO. State of Alaska received about $25 million CMAQ fund for FY2016 which of 64.2% ($16 million) was flexible. In Alaska, there is not a separate program for CMAQ fund and it provides funding to projects in the State Implementation Plan (SIP) that have the highest air quality benefits. SIP is run by Alaska Department of Environmental Conservation (DEC) to response the Clean Air Act. Any further details regarding CMAQ program are not available in DOT website. Since MPOs set project selection policy and process, we looked at the Fairbanks Metropolitan Area Transportation System (FMATS) CMAQ selection process. FMATS uses a table to define the criteria and their scores.

How are projects solicited?
No information available.

What specific project selection tools, methods, rating systems, or performance measures are used?
Figure 11 shows the evaluation criteria.

Who makes project selection decisions?

CMAQ committee consists of representatives from Alaska Department of Environmental Conservation, Fairbanks Metropolitan Area Transportation System, City of Fairbanks, City of North Pole, Fairbanks North Star Borough, Alaska DOT from the Fairbanks CMAQ Project Evaluation Board (hereinafter Board) and a chair. The Fairbanks North Star Borough mayor and then Alaska Department of Natural Resources will approve and include the project in the STIP based on their rank, scheduling time, and availability of CMAQ funding for Fairbanks PM2.5 nonattainment area.

Links to online information
SIP:
http://www.legfin.akleg.gov/BudgetReports/GetSupportDocuments.php?Years=2016&Type=proj&Number=42192
Evaluation Criteria: http://fmats.us/wp-content/uploads/2014/12/2015-Approved-Criteria-CMAQ.pdf
Decision Making Process: http://fmats.us/wp-content/uploads/2012/08/10.04.10-Signed-MOA.pdf

FMATS CMAQ Scoring Criteria
Approved Janaury 21, 2015

	Scoring Criteria	5	3	1	0
1.	MANDATED PROGRAMS/ MEASURES (Weight = 5)				
		Project supports a federal/ state mandated air quality program. Project supports a control strategy in an approved or final draft SIP.	Project supports a contingency measure in an approved or final draft SIP.	N/A	Not required.
2.	PROJECT SUPPORT (Weight = 4)				
		Project nominated by DEC and presented to EPA for consideration as a future control measure or contingency measure.	Project reviewed and supported by the FMATS Policy Committee for priority funding consideration.	Project nominated or supported by borough or city resolution.	N/A
3.	LIFE OF PROJECT BENEFITS (Weight = 2)				
		Long-term benefits (10+ years)	5-10 year	N/A	Less than 5 years.
4.	PROJECT READINESS (Weight = 2)				
		Ready to start implementation in the current or coming fiscal year.	Ready to start in 1-2 years.	N/A	Ready to start in more than 2 years.
5.	FUNDING CONTRIBUTIONS (Weight = 2)				
		Local or other contribution of 10% or more.	5% - 9%	1% - 4%	Minimal or none.
6.	OTHER PROJECT BENEFITS (*Transit, Safety, Pedestrian, Traffic, Etc*) (Weight = 2)				
		Project provides significant non-air quality benefits.	Project provides moderate non-air quality benefits.	N/A	No identifiable other benefits.
7.	SPECIAL CONSIDERATIONS (Weight = 3)				
		Points assigned only by the FMATS Policy Committee to a limited number of projects in recognition of any special needs or project considerations. (0 – 5 points)			

Figure 11 Evaluation Criteria, Fairbanks Metropolitan Area Transportation System

8 APPENDIX B: DOT CMAQ FORMS AND APPLICATIONS

8.1 DOT CMAQ Application forms

8.1.1 Utah DOT Application Form

Project Evaluation Concept Report Form (2018-2023 TIP)

Please complete information in all yellow shaded cells.

Funding Year	2023	Project Improvement	Bicycle	Funding Type	CMAQ

Project Information

Name of Project	
Location: From	
To	
Project Length	miles
City	
County	UDOT Region

Contact Information

Agency	
Primary Contact	
Phone	
Cell Phone	
e-mail	

Project Description -

Describe the Purpose/ Need for this Project *(limit 325 characters)*	

Type of Project	Capacity	Fnctional Classification (click here for Map)		Regional Transportation Plan (click here for RTP Interactive Map)	

Costs Estimates should be calculated from the ***"18 - 23 Concept Cost Estimate Form"***

2023 Estimated Project Cost		Federal Funds Requested		Local Funds	

Average Pavement Width		Average Right of Way		Number of Lanes	
Existing		Existing		Existing	
Proposed		Proposed		Proposed	

Project Details - *Traffic Information*

Click area link to access WFRC 2040 Traffic Projections

Average Daily Traffic 2014		Click here to access - UDOT AADT Map	Wasatch Front 2040 Projection		Ogden/ Layton Area	Salt Lake/ West Valley

Total Number of Accidents	2011	2012	2013	2014	Latest Year - Total
Number of Accidents for Each Type					
Property	2011	2012	2013	2014	Property
Injury	2011	2012	2013	2014	Injury
Fatalities	2011	2012	2013	2014	Fatalities

Project Evaluation Concept Report Form (2018-2023 TIP)

Please complete information in all yellow shaded cells.

Project Details - *Pavement Information*

Are you following a Current Pavement Management Plan

Existing Pavement Condition

Coordination between Sponsor & Utah Transit Authority

Last Year of Maintenance

Last Year of Pavement Treatment

Project Details - *Vision Implementation / Growth Principles / Economic Improvements*

Click Here to Access the Wasatch Choice for 2040 Vision Brochure

Does the project accommodate Pedestrian Traffic (Cross Walks, Side Walks, Lighting, etc.)

Does the project accommodate Transit (Turning Radii, Bus Stop, etc.)

Does the project accommodate Bike Traffic *(with Signing, Striping, or Separate lane)*

Efforts to Preserve the Corridor
((How much Right-of-Way has been acquired) / (Total Amount of Right-of-Way necessary for the Project))
(Percent of Corridor Preserved)

Percent of Freight Trucks

Does the project help implement one of the Corridors, Communities, or Centers in the Wasatch Choice for 2040 Vision *(see link above)*

Project Details - *Operation, TSM/ TDM, & ITS Improvements*

Does the project Improve: Signal Phasing | Signal Timing | Other Signal

Project Includes ITS Components

Project Includes Access Management Improvements

Project Includes Intersection or Interchange Improvements

Does the Project Include Transit Infrastructure Improvements

List Other TSM/ TDM Improvements

Project Details - *For Intersection Projects*

Calculated Delay Reduction (vehicle hours per day)

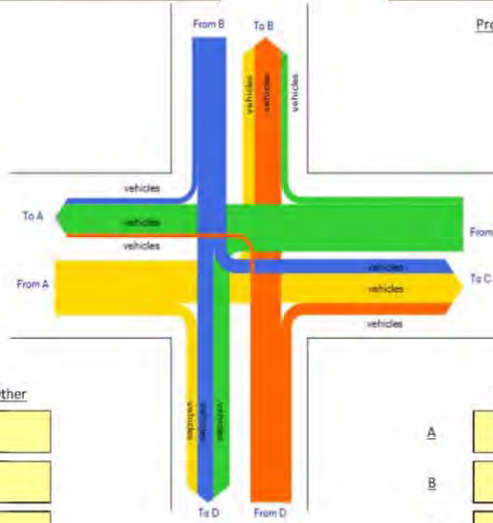
Source of data

Source Contact

Phone

Existing Traffic Distribution

A to B		B to A	
A to C		B to C	
A to D		B to D	
C to A		D to A	
C to B		D to B	
C to D		D to C	



Proposed Traffic Distribution

A to B		B to A	
A to C		B to C	
A to D		B to D	
C to A		D to A	
C to B		D to B	
C to D		D to C	

Existing Number of Lanes

	R Turn	Thru	L Turn	Other
A				
B				
C				
D				

Proposed Number of Lanes

	R Turn	Thru	L Turn	Other
A				
B				
C				
D				

Project Evaluation Concept Report Form (2018-2023 TIP)

Please complete information in all yellow shaded cells.

Why should this project be considered a priority over other projects submitted?

Why should this project be selected or Why is this project necessary? *(limit 1000 Characters)*	

Submission Details -

	Completed Forms
All Projects Must Complete the "18-23 Project Evaluation Concept Report Form"	
All Projects Must Complete the "18-23 Concept Project Cost Estimation Form"	
CMAQ Projects Must Complete the "CMAQ Emission Analysis Form 2017"	
Include Drawings (Cross Section, Aerial or scale drawings)	
Include Project jpg's (Project Location, Aerials, or Project Improvements)	

NOTE - *The project pictures may be used to display and present the project to the TAC's and Others for Evaluation*

Please submit all information in a Hard Copy and an Electronic Copy Format to **Ben Wuthrich**

Email Address - bwuthrich@wfrc.org *Mailing Address - 295 North Jimmy Doolittle Road, Salt Lake City, Utah 84116*

Projects to be considered will need to meet the eligibility criteria for the Surface Transportation Program (STP) or the Congestion Mitigation/ Air Quality (CMAQ) program and be sponsored by a public agency. The requested information in this "Project Evaluation Concept Report" along with other evaluation criteria such as V/C, modeled delay reduction, project field review, etc. will be used to prioritize and score each project in preparation for project discussion and recommendation.

Should you have any questions or require additional assistance concerning this report, please contact Ben Wuthrich at (801) 363-4230 ext. 1121 (Office), (801) 647-3228 (Cell) or email at bwuthrich@wfrc.org

How many "Project Evaluation Concept Reports" did your jurisdiction submit? (Including STP, CMAQ, and TAP)		Out of all your jurisdiction's project submissions, what priority would this project be to your Agency?	

Please Note; this "Project Evaluation Concept Report" has been developed for identifying and evaluating projects for the Surface Transportation Program (STP) funds and the Congestion Mitigation/ Air Quality (CMAQ) funds. This report will help advance the project through the development process. Supplemental information neccessary to verify project data should accompany each project portfolio or project may be removed from project evaluation and consideration.

8.1.2 Iowa DOT Application Form

☐ statewide Long-Range Transportation Plan?

Notes: [1] Requires a public agency as co-sponsor of application.
[2] The term "project" means any ICAAP infrastructure or program proposal.
[3] The Iowa Department of Transportation will use the priority ratings to reflect the sponsor.

Project costs ***(An itemized breakdown must be included on an attached sheet.)***

Total cost $ _____

Iowa's Clean Air Attainment Program Fund request $ _____

Applicant match *(20 percent minimum)* $ _____

	List all applicant match sources	Amount	Assured or anticipated (date anticipated)
1.			
2.			
3.			

Are any state funds involved in this project? ☐ Yes ☐ No

If yes, please explain the source and conditions. _____

Are any other federal funds involved in this project? ☐ Yes ☐ No

If yes, please explain the source and conditions. _____

Estimated project development schedule

Design	Start date	_____	Completion date	_____
Land acquisition	Start date	_____	Completion date	_____
Construction	Start date	_____	Completion date	_____

Has any part of this project been started? ☐ Yes ☐ No

If yes, explain _____

How do you plan to measure the success of this project? _____

Page 2 of 6

Required documentation and narrative information

The following documents and narratives must be attached to this application. In the upper right-hand corner of each document or narrative write the corresponding letter shown below.

☐ A. A **narrative** assessing existing congestion/air quality conditions, outlining the concept of the proposed project, and providing adequate project justification. How will this project reduce congestion, reduce travel, or single occupant vehicle usage, and/or improve air quality? Which transportation-related pollutant(s) are being addressed: carbon monoxide, ozone, or particulate matter?

☐ B. A **detailed map** identifying the location of the project and clearly differentiating the subject project from any past or future project phases.

☐ C. An **itemized breakdown** of the total project costs. This documentation does not need to be a detailed, line-item type of estimate. However, it must accomplish two objectives: 1. It must show the method by which the cost estimate was prepared; and 2. It must enable a reviewer to determine if the cost estimate is reasonable. The manner in which these objectives are achieved may vary widely depending on the type, scope and complexity of the project. Absent a fully itemized list of costs, some general guidelines for possible methods of estimating each type of project cost are provided on Attachment A.

☐ D. A **time schedule** for the total project development.

☐ E. An **official certification** from the applicant's governing body (authority) that it shall:

(1) Commit the necessary local matching funding for project implementation.
(2) Upon project completion, be responsible for adequately maintaining and operating the project for public use during the project's useful life.

☐ F. An **adopted formal resolution** from the appropriate MPO or RPA declaring the sponsor's proposed project or program conforms to the MPO's or RPA's regional transportation planning process. (For MPOs, the project or program must be identified in the fiscally-constrained transportation plan and, if applicable, the congestion management plan in transportation management areas (TMAs)

☐ G. **Calculations for** vehicle emission reductions and total project cost-effectiveness for the targeted pollutants. Project applicant must show through a quantitative analysis how many kilograms of pollutant will be reduced (carbon monoxide (CO), volatile organic compounds (VOC), nitrogen oxides (NOx), and, if applicable, particulate matter (PM). Project sponsor must calculate the cost-effectiveness of the project by: Dividing the total annualized project cost by the number of kilograms per year of pollutant reduced ($ per kg). Applicant must also show all assumptions and source of data used to calculate the estimates. The applicant must use the most current vehicle emission factors developed by the Iowa Department of Natural Resources and consistent with the Environmental Protection Agency's MOBILE 6.2 air quality model. These emission factors are periodically updated and may be obtained from the Iowa DOT's ICAAP website at: www.iowadot.gov/systems_planning/icaap.htm.

☐ H. Completed **Minority Impact Statement** attached to application

The award of ICAAP funds; any subsequent funding or letting of contracts for design, construction, reconstruction, improvement, or maintenance; and the furnishing of materials shall not involve direct or indirect interest of any state, county, or city official, elective or appointive. All of the above are prohibited by Iowa Code 314.2, 362.5, or 331.342. Any award of funding or any letting of a contract in violation of the foregoing provisions shall invalidate the award of ICAAP funding and authorize a complete recovery of any funds previously disbursed.

Certification

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating local authority. I understand the attached **official endorsement(s)** binds the participating local governments to assume responsibility for adequate maintenance of any new or improved facilities.

If ICAAP funding assistance is approved for the project described in this application, I understand that an executed contract between the applicant and the Iowa Department of Transportation is required before such funding assistance can be authorized for use in implementing the project.

Representing the _____
(name of applicant's governing authority)

_____ _____
Signature Date

_____ _____
Typed name and title (governing authority official) Typed date

IOWADOT
Form 105101twd (12-16)

MINORITY IMPACT STATEMENT

Pursuant to 2008 Iowa Acts, HF 2393, Iowa Code 8.11, all grant applications submitted to the State of Iowa that are due beginning Jan. 1, 2009, shall include a Minority Impact Statement. This is the state's mechanism for requiring grant applicants to consider the potential impact of the grant project's proposed programs or policies on minority groups.

Please choose the statement(s) that pertains to this grant application. Complete all the information requested for the chosen statement(s). Submit additional pages as necessary.

☐ The proposed grant project programs or policies could have a disproportionate or unique **positive** impact on minority persons.

Describe the positive impact expected from this project.

Indicate which groups are impacted.

☐ Women ☐ Persons with a disability ☐ Blacks ☐ Latinos ☐ Asians
☐ Pacific Islanders ☐ American Indians ☐ Alaskan Native Americans ☐ Other

☐ The proposed grant project programs or policies could have a disproportionate or unique **negative** impact on minority persons.

Describe the negative impact expected from this project.

Present the rationale for the existence of the proposed program or policy.

Provide evidence of consultation with representatives of the minority groups impacted.

Indicate which groups are impacted.

☐ Women ☐ Persons with a disability ☐ Blacks ☐ Latinos ☐ Asians
☐ Pacific Islanders ☐ American Indians ☐ Alaskan Native Americans ☐ Other

☐ The proposed grant project programs or policies are **not expected to have** a disproportionate or unique impact on minority persons.

Present the rationale for determining no impact.

I hereby certify that the information on this form is complete and accurate, to the best of my knowledge.

Name _____

Title _____

Definitions

"Minority Persons," as defined in Iowa Code 8.11, means individuals who are women, persons with a disability, Blacks, Latinos, Asians or Pacific Islanders, American Indians, and Alaskan Native Americans.

"Disability," as defined in Iowa Code 15.102, subsection 7, paragraph "b," subparagraph (1):
b. As used in this subsection:
(1) *"Disability"* means, with respect to an individual, a physical or mental impairment that substantially limits one or more of the major life activities of the individual, a record of physical or mental impairment that substantially limits one or more of the major life activities of the individual, or being regarded as an individual with a physical or mental impairment that substantially limits one or more of the major life activities of the individual.

"Disability" does not include any of the following.
(a) Homosexuality or bisexuality
(b) Transvestism, transsexualism, pedophilia, exhibitionism, voyeurism, gender identity disorders not resulting from physical impairments or other sexual behavior disorders
(c) Compulsive gambling, kleptomania, or pyromania
(d) Psychoactive substance abuse disorders resulting from current illegal use of drugs

"State Agency," as defined in Iowa Code 8.11, means a department, board, bureau, commission, or other agency or authority of the State of Iowa.

ATTACHMENT A

Itemized breakdown of total project costs guidelines.

Construction costs – these may be based on historical averages for entire projects of similar size and scope. Examples include:

- Typical cost per mile of trail (i.e., $200,000 per mile for moderate terrain and limited number of structures)
- Typical cost per square foot of bridge deck
- Typical cost per installed mile of fiber optic traffic signal interconnect cable (i.e., $178,000 per mile)
- Typical cost per traffic signal upgrade (i.e., $163,000 per lump sum signal bid item)

Design/Inspection costs – these may be estimated based on the following typical percentages of construction costs:

- 8 to 10 percent for preliminary up through final design and letting activities
- 12 to 15 percent for construction inspection activities

Right of way acquisition costs – these may be estimated based on the following:

- Impact and description of impact
- Typical cost per square foot for permanent right of way
- Typical cost per square foot for temporary easements

Utility and railroad costs – these may be estimated based on the following:

- Impact and description of impact
- Typical cost per linear foot of relocated or reconstructed facility (track, pipe, electrical lines, etc.)
- Typical cost per installation (railroad switches, utility poles, transformers, control boxes, etc.)

Indirect cost (if outreach activity) – if indirect costs are involved (e.g., wages) based on the following:

- Estimated hours
- Estimated hourly rate, salary
- Estimated fringe, direct
- Other direct cost estimate
- Other indirect cost estimate

8.1.3 Wisconsin DOT Application Form

WisDOT 2016-2020 CMAQ Program Application

NOTE: This application is required for each proposed 2016-2020 program cycle CMAQ project. Please review and utilize CMAQ Program Application instructions when completing this application.

Project Applicant and Application Type

Name, Location of Public Sponsor and Sponsor Type:

Sponsor Name:

Sponsor Type: ☐ State ☐ County ☐ City ☐ Village ☐ Town ☐ Tribal Nation
(Check appropriate box)

Project Title:

Describe location, boundaries and length of the project:

County:

Street Address of Project (if located on a highway or road):

Note: Attach one black and white project location map on one sheet of paper, size 8½ X 11

Name of the MPO representing the project (check one):

☐ Southeastern Wisconsin Regional Planning Commission (SEWRPC)
☐ Bay-Lake Regional Planning Commission (BLRPC) – for Sheboygan Metropolitan Planning Area only
☐ Non-Metropolitan Planning Area

Project Representative Contact Person(s) Information:

Primary Public Sponsor Agency Contact Information:

Name: Title: Street Address: Phone: ( ) -

Municipality: State: **WI** Zip:

Fax: ( ) - E-mail:

Secondary Public Sponsor Agency or Private Organization Contact Information:

Organization / Agency Name:

Name: Title: Street Address: Phone: ( ) -

Municipality: State: **WI** Zip:

Fax: ( ) - E-mail:

4/15/2015 A-1

Project Activity

CMAQ Category:

Indicate which ONE of THREE categories best identifies the proposed project:

- ☐ Project reduces the number of vehicle trips and/or vehicle miles traveled (VMT).
- ☐ Project reduces the per mile rate of vehicle emissions related to traffic congestion.
- ☐ Project reduces the per mile rate of vehicle emissions through improved vehicle and fuel technologies.

CMAQ Improvement Type:

Indicate the appropriate improvement type(s) by checking all of the boxes which apply to the proposed project:

- ☐ Public Transportation
- ☐ Bicycle/Pedestrian
- ☐ Car and Vanpooling
- ☐ Park & Ride Lot
- ☐ Traffic Flow Improvement (e.g. System Signalization)
- ☐ Diesel Retrofit
- ☐ PM2.5 Emissions Reduction
- ☐ Other If Other, Please Describe:

Project Summary (100 words or less). Please copy and paste your response from a Word Document.

Existing Facilities & Projects

Rail Facilities:

Does a railroad facility exist within 1,000 feet of the project limits? ☐ Yes ☐ No

If yes, specify: **SELECT**

If yes, does the project physically cross a rail facility? ☐ Yes ☐ No

Is the proposed project location in an area with known safety issues? ☐ Yes ☐ No

If yes, specify: (consider applying for Highway Safety Improvement Program (HSIP) funds if applicable)

Is this project on or parallel to a local road or street? ☐ Yes ☐ No

If Yes, provide the name of the road or street:

Does this project cross a state or federal highway? ☐ Yes ☐ No

Does this project run parallel to a state or federal highway? ☐ Yes ☐ No

Will this project be constructed as part of another planned road project? ☐ Yes ☐ No

If Yes, specify if this is a state, county, or local project and when the road project is scheduled for construction:

Will any exceptions to standards be requested? ☐ Yes ☐ No

If Yes, provide a brief description of the exceptions that may be requested:

Environmental/Cultural Issues

Agriculture Comments:	☐ Yes	☐ No	☐ Not Investigated
Archaeological sites Comments:	☐ Yes	☐ No	☐ Not Investigated
Historical sites Comments:	☐ Yes	☐ No	☐ Not Investigated
Designated Main Street area Comments:	☐ Yes	☐ No	☐ Not Investigated
Lakes, waterways, floodplains Comments:	☐ Yes	☐ No	☐ Not Investigated
Wetland Comments:	☐ Yes	☐ No	☐ Not Investigated
Stormwater management Comments:	☐ Yes	☐ No	☐ Not Investigated
Hazardous materials sites Comments:	☐ Yes	☐ No	☐ Not Investigated
Hazardous materials on existing structure Comments:	☐ Yes	☐ No	☐ Not Investigated
Upland habitat Comments:	☐ Yes	☐ No	☐ Not Investigated
Endangered/threatened/migratory species Comments:	☐ Yes	☐ No	☐ Not Investigated
Section 4(f) Comments:	☐ Yes	☐ No	☐ Not Investigated
Section 6(f) Comments:	☐ Yes	☐ No	☐ Not Investigated
Through/adjacent to tribal land Comments:	☐ Yes	☐ No	☐ Not Investigated

Miscellaneous Issues

Construction Schedule Restrictions (trout, migratory bird, local events):

Real Estate: Was any real estate acquired or transferred in anticipation of this project? ☐ Yes ☐ No

If yes, please explain.

Right of Way (ROW) *(NOTE: It is recommended that local funds be used to acquire right of way)* Is the project on an existing right of way? ☐ Yes ☐ No If Yes, have you obtained a permit from the WisDOT Regional Office Maintenance Section to conduct work on the right of way? ☐ Yes ☐ No

Check all boxes that apply to ROW acquisition for this project:

☐ None ☐ Less than ½ acre ☐ More than ½ acre

☐ Parklands ☐ Large parcels ☐ Temporary interests

Maintenance *(only complete this section if project application involves a trail project):*

Will the facility be snowplowed in the winter? ☐ Yes ☐ No
Comment:
If no to the above question, will the trail allow snowmobile use in the winter? ☐ Yes ☐ No
Comment:
Anticipated fee for trail use: ☐ Yes ☐ No
Comment:
Anticipated equestrian use on trail: ☐ Yes ☐ No
Comment:

Other Funding Sources: Has the municipality anticipated, requested or been approved for other federal or state funding from WisDOT for the improvement? ☐ Yes ☐ No

If yes, please indicate all of the other funding sources that are anticipated, have been requested or approved with the associated project ID(s):

Highway Safety Improvement Program (HSIP)	☐ Anticipated	☐ Requested	☐ Approved	ID:
Local Roads Improvement Program (LRIP)	☐ Anticipated	☐ Requested	☐ Approved	ID:
Railroad Programs	☐ Anticipated	☐ Requested	☐ Approved	ID:
Surface Transportation Program - Rural	☐ Anticipated	☐ Requested	☐ Approved	ID:
Surface Transportation Program - Urban	☐ Anticipated	☐ Requested	☐ Approved	ID:
Transportation Alternatives Program	☐ Anticipated			
Transportation Enhancements Program			☐ Approved	ID:
Bicycle & Pedestrian Facilities Program			☐ Approved	ID:
Safe Routes to School			☐ Approved	ID:
Transportation Economic Assistance Program	☐ Anticipated	☐ Requested	☐ Approved	ID:
Flood Damage Aids	☐ Anticipated	☐ Requested	☐ Approved	ID:
Other:	☐ Anticipated	☐ Requested	☐ Approved	ID:

Other Concept Notes: Provide any additional relevant project information that has not been covered in another section of the application.

CONFIDENTIAL INFORMATION

Project Costs and Dates

NOTE: do not include pages A-5 and A-6 in the Concept Definition Report (CDR)

Project Costs Complete the table below for the appropriate fiscal years of the application/project cycle (2016-2020). If a sponsor proposes to construct a project in phases throughout multiple years, schedule the project costs as appropriate and provide further details in the project description. You must attach a detailed breakdown of project costs in Microsoft Excel as part of responding to the Narrative Response/Attachment 1. This detailed breakdown must clarify assumptions made in creating the budget such that a third party reviewer would be able to substantiate the assumptions. This will not count against the 3-page narrative report text limit.

Project Dates In addition to providing fiscal year in the table below, within the attached breakdown of project costs please provide estimated month and year the project will begin for each project phase. Design work is typically completed in six months, real estate transactions and railroad crossing approvals take at least a year to complete, and projects should be built within one construction season unless the project is very large.

Submit a separate application and budget for each project or stand-alone project segment for which you are willing to accept funding, or for a bike trail section that could function as a separate facility. Project requests are not considered for partial funding.

Applicants should reference the WisDOT 2015 Cost Estimate Table **prior to completing this section of the application:** http://wisconsindot.gov/Pages/doing-bus/local-gov/astnce-pgms/highway/tools.aspx

NOTE: Requesting design and construction projects in the same fiscal year is not allowed.

☐ **Tied Projects? Please indicate which projects will be tied (if applicable):**

☐ **Construction:**

Basis for Construction Estimate: ☐ Itemized ☐ Per Square Foot ☐ Past Projects

☐ WisDOT 2014 Cost Estimate Table (see hyperlink above) ☐ Other, please specify:

Project Prioritization

If a sponsor is submitting more than one project in an urbanized area within an MPO, the sponsor must rank each project in priority order, e.g., 1 (highest priority) to 5 (lowest), for the local priority among five projects. MPO staff will use the local ranking as a guide during application review prioritization that occurs prior to the meeting of the WisDOT CMAQ selection committee. Local sponsor prioritization for projects outside of MPO areas is also strongly recommended. **Project Priority:**

☐ FY 2017 ☐ FY 2018 ☐ FY 2019 ☐ FY 2020

Construction (minimum $200,000):

Federal Share of the Participating Construction Cost (80%)		$
Local Share of the Participating Construction Cost (20%)		$
Non-Participating Construction Cost (100% Local)		$
A. Subtotal Construction Costs	$	
B. State Review for Construction *(see instructions, page I-7, Table 1)*	Percentage: %	$
Construction with State Review Cost Estimate (sum lines A and B)		**$**

☐ **Design:**

☐ 100% Locally Funded (state review is required to be included as 100% locally funded) **OR**

☐ 80% Federally Funded ("state review only" projects are not allowed)

Project Priority:

☐ FY 2017 ☐ FY 2018 ☐ FY 2019 ☐ FY 2020

A. Plan Development (see instructions page I-9, Table 1)	Percentage: %	$
B. State Review for Design (see instructions, page I-9, Table 1)	Percentage: %	$
Design with State Review Cost Estimate (sum lines A and B)		**$**

☐ **Real Estate:** (Recommend funding with local funds.)

Project Priority:

☐ FY 2017 ☐ FY 2018 ☐ FY 2019 ☐ FY 2020

Total Real Estate Cost (round to next $1,000) **$**

☐ **Other:** (Planning, Administration, or other non-infrastructure projects):
Project Priority:

☐ FY 2017 ☐ FY 2018 ☐ FY 2019 ☐ FY 2020

Total Other Cost (round to next $1,000) **$**

☐ **Utility:** (Compensable utility costs must be $50,000 minimum per utility. Recommend funding with local funds.)
Project Priority:

☐ FY 2017 ☐ FY 2018 ☐ FY 2019 ☐ FY 2020

Total Utility Cost (round to next $1,000) **$**

NOTE: WisDOT Utility Policy link: http://roadwaystandards.dot.wi.gov/standards/util/chapter17.pdf

WisDOT Information – Shaded area to be completed by WisDOT staff only.

Additional Confidential Information		
FOR WISDOT USE ONLY – enter the following information at application review		
WisDOT Region Comments on Application:		
FOR WISDOT USE ONLY – enter the following information after project approval		
Approved Federal Funding Amount: Construction: **$**	Design: **$**	Real Estate: **$**
Other: **$**	Utility: **$**	

Narrative Response/Attachment 1

Provide a narrative response attachment answering questions 1 through 6, making sure to provide information in response to each sub-question. Please limit the response to **three double-spaced** pages, using a **minimum 11-point font size**. Answers will be used to calculate emissions estimates.

1. **For Projects Affecting the Road Network:**
   - How many miles of arterial, highway or local road (segment) will the project affect?
   - How many daily vehicle miles are currently traveled (VMT) on this segment?
   - What are the changes in speed (FET studies) for morning, evening/night and peak travel periods?
   - What portion of daily VMT can be attributed to the change in speed for the designated time periods?
   - What are traffic counts for the affected segment?
2. **For Transit, Rideshare, Bicycle and Pedestrian Projects:**
   - How many new or replacement trips are expected and from which modes i.e. biking or walking?
   - How much of the new or replacement use is for work or other utilitarian trips?
   - How many auto trips will be eliminated?
   - What is the average trip distance of auto trips that will be eliminated?
3. **For Applied Research or Demonstration Projects:**
   - For what applied research or demonstration area will the results have application?

- How will project/program activities directly reduce emissions?

4. **For Alternative/Clean Fuel, Engine Idling Reduction and Diesel Retrofit Development Projects:**
   - How many vehicles or engines will be affected?
   - What is the total number of miles driven per year for each vehicle type?
   - What is the quantity of fuel pumped or used per day?
   - What is the certification standard (and/or fuel type) expected for each vehicle or engine type?
   - What time of day will idling reduction operations occur?
   - Will the project replace existing vehicles or enlarge a fleet?

5. **For Area-wide Voluntary Trip Reduction and TMA Activities:**
   - How many employers and employees will participate or be affected?
   - What is the organization's average passenger occupancy (APO)?
   - What are the estimated length and frequency of affected trips?
   - What are the estimated trip times for peak vs. non-peak trip hours?

6. **For all projects, to the extent not already addressed in answers to the questions above, describe project benefits by answering the following questions:**
   - Why is the proposed project necessary to address non-attainment levels of fine particulate matter and/or ozone in the county or counties in which the proposed project will occur?
   - How will the project sponsor ensure that the project is timely implemented in accordance with the Project Costs and Dates section of this application?
   - What obstacles or problems must be overcome to implement this project?
   - What will make this project a success, especially as compared to other proposed projects of the same or similar type? How will the project sponsor measure project success in the form of congestion and/or emissions reductions?
   - How, if at all, does the proposed project add connectivity to the state's multi-modal transportation network, including bicycle, pedestrian and transit facilities?
   - Briefly describe the manner in which the proposed project would provide a cost-effective benefit to the public.

7. **Reference project Costs and Dates on this application form and provide detail if applicable or appropriate.**

Key Program Requirements Confirmation

Please confirm your understanding of the following project conditions by **typing your name, title and initials** at the bottom of this section. **A Head of Government/Designee with fiscal authority for the project sponsor must initial this section and sign this application. Sponsor consultant(s) should not initial or sign project applications.**

a. Private organizations proposing projects generally must have a public sponsor such as a local government unit or transit operator.

b. The project sponsor or private partner must provide matching dollar funding of at least 20% of project costs.

c. This is a reimbursement program. The project sponsor must finance the project until federal reimbursement funds are available.

d. The project sponsor will pay to the state all costs incurred by the state in connection with the improvement that exceed federal financing commitments or other costs that are ineligible for federal reimbursement. In order to guarantee the project sponsor's foregoing agreements to pay the state, the project sponsor, through its duly executed officers or officials, agrees and authorized the state to set off and withhold the required reimbursement amount as determined by the state from any monies otherwise due and payable by the state to the municipality.

e. The project sponsor must not incur costs for any phase of the project until that phase has been authorized for federal charges and the WisDOT Region has notified the sponsor that it can begin incurring costs. Otherwise, the sponsor risks incurring costs that will not be eligible for federal funding.

f. The project sponsor will follow the applicable federal and state regulations required for each phase of the project. Some of these are described in the Guidelines. The requirements include, but are not limited to, the following: a Qualifications Based Selection (QBS) process for design and engineering services (Brooks Act); real estate acquisition requirements of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 and amendments; competitive procurement of construction services; Davis-Bacon wage rates on federal highway right-of-way projects; WisDOT FDM & Bicycle Facilities Handbook; ADA regarding accessibility for the disabled; MUTCD regarding signage; U.S. Department of the Interior standards for historic buildings. Each WisDOT Region can provide copies of the current *Sponsor's Guide to Non-Traditional Transportation Project Implementation*, and references for sections of the Facilities Development Manual (FDM) and other documents necessary to comply with federal and state regulations. **Applicants who plan to implement their projects as Local Let Contracts using the Sponsor's Guide must become certified that they are capable of undertaking these projects.**

g. If applying for a bicycle facility, it is understood that All Terrain Vehicles (ATVs) are not allowed. Snowmobile use is only allowable by local ordinance. Trail fees may only be charged on a facility if the fees are used solely to maintain the trail. WisDOT reserves the right to require that facilities be snowplowed as part of a maintenance agreement where year round use by bicyclists and pedestrians is expected.

h. The project sponsor agrees to maintain the project for its useful life. Failure to maintain the facility, or sale of the assets improved with FHWA funds prior to the end of its useful life, will subject the sponsor to partial repayment of federal funds or additional stipulations protecting the public interest in the project for its useful life.

i. If the project sponsor should withdraw the project, it will reimburse the state for any costs incurred by the state on behalf of the project.

j. The project sponsor agrees to state delivery and oversight costs by WisDOT staff and their agents. These costs include review of Design and Construction documents for compliance with federal and state requirements, appropriate design standards, and other related review. These costs will vary with the size and complexity of the project. The sponsor agrees to add these costs to the project under the same match requirements 80% / 20% match requirements.

k. Projects that are fully or partially federally funded must be designed in accordance with all applicable federal design standards, even if design of the project was 100% locally funded.

l. As the project progresses, the state will bill the project sponsor for work completed that is ineligible for federal reimbursement. Upon project completion, a final audit will determine the final division of costs as between the state and the project sponsor. If reviews or audits reveal any project costs that are ineligible for federal funding, the project sponsor will be responsible for any withdrawn costs associated with the ineligible work.

m. ***For 100% locally-funded design projects, costs for design plan development and state review for design are 100% the responsibility of the local project sponsor. Project sponsors may not seek federal funding only for state review of design projects.

n. The project sponsor acknowledges that the requisite project completion timeline for approved CMAQ projects will be memorialized in a state-municipal agreement, and failure to comply with the applicable project timeline can jeopardize federal funding.

o. Federally-funded transportation construction projects, with the exception of sidewalks, are likely improvements that benefit the public at large. Improvements of this type cannot generally be the basis of levying a special assessment pursuant to Wis. Stat. § 66.0703. Municipalities who wish to obtain project

funding via special assessment levied against particular parcels should seek advice of legal counsel. See Hildebrand v. Menasha, 2011 WI App. 83.

I confirm that I have read and understand project conditions (a) through (n) above:

Name: _____ Title: _____

Accepted (please initial here): _____

Fiscal Authorization and Signature

Application prepared by a consultant? ☐ Yes ☐ No
If yes, consultant information and signature required below.

Consultant Company Name: Company Location (City, State):

Consultant Signature (electronic only): **Date:**

NOTE: On Local Program projects, it is not permissible for a consultant to fill out applications gratis (or for a small fee) for a municipality and then be selected to do the design work on a project. A municipality could start their consultant selection process early enough and make the application part of the scope of services with the understanding that all costs incurred prior to authorization will be the responsibility of the local municipality. See FDM 8-5-3 for additional information:
http://roadwaystandards.dot.wi.gov/standards/fdm/08-05.pdf#fd08-05-3.1

Sponsor Agency:

Contact Person: (Note: must be Head of Government or Designee)

Title:

Address:

Telephone:

Email:

Only one project sponsor is allowed per project. As a representative of the project sponsor, the individual that signs below confirms that the information in this project application is accurate. A local official, not a consultant, must sign the application. I understand that completion of this application does not guarantee project approval for federal funding.

Head of Government/Designee Signature (electronic only): **Date:**

Application and Attachments

Submit applications and attachments utilizing the contact information contained in the corresponding CMAQ Program Application Instructions. Eligible applications must be **postmarked on or before *June 15, 2015***, and must include the following documents:

☐ A completed application **in Microsoft Word format**

☐ Narrative Response/Attachment 1: limited to three double-spaced pages of minimum 11-point font size and in Microsoft Word or PDF format

☐ Cost Estimate Detail as required in the Project Costs and Dates section of this application **in Microsoft Excel format**

☐ Project map: printed in black & white, on one sheet of paper size 8½ X 11

☐ **Optional attachment(s): no more than six pages of project description, additional photos, and maps**

WisDOT Information – Shaded area to be completed by WisDOT staff only.

FOR WISDOT USE ONLY – enter the following information at application review
NOTE: Please add any WisDOT application comments in the comments section on the Confidential page A-5.
Subprogram: Project Improvement Type:
Anticipated Environmental Document Type (e.g., programmatic, ER, EA, EIS):
Region Reviewer's Name:
Reviewer's Title:
Date Received:
WisDOT Region Reviewer's Signature: Date:
FOR WISDOT USE ONLY – enter the following information after project approval
Project ID(s)

8.1.4 Indiana DOT Application Form

Congestion Mitigation and Air Quality Program

Application for OKI CMAQ Funding

General Information		
Date:		
Entity Name:		
Project Name:		
Contact Information		
Contact Name:		
Title:		
Street Address:		
City:	State: Ohio	Zip:
Phone:	Email:	

OKI Congestion Mitigation/Air Quality (CMAQ) Program for Indiana – Page 16

Project Information
1. Project Type: CMAQ funds can be used on a variety of project types designed to address congestion mitigation and/or emissions reductions. A project will be awarded points based on the type of project. (Refer to the Example of Project Types Descriptions in the Guidance). Some projects may involve multiple project types; however consideration will only be given based on the primary project type. ☐ Congestion Reduction, Traffic Flow improvements and Intelligent Transportation Systems ☐ Transit Vehicle Replacement(s) ☐ Freight/Intermodal, including Diesel Engine Retrofits ☐ Public Education and Outreach ☐ Transit Service Upgrades ☐ Pedestrian / Bicycle Facilities ☐ Alternative Fuels and Vehicles - Non-Transit ☐ Employer-based Programs ☐ Travel Demand Management ☐ Modal Subsidies and Vouchers ☐ Transit Facility Upgrades ☐ Other **Below, please provide a complete and detailed description of the project and its relation to the intermodal transportation system. Describe the characteristics of the project and how it will benefit the public, with a focus on reducing congestion and/or emissions. Include location maps, elevations, and photographs, as necessary, to fully illustrate the project (limit three pages). Attach to document.**
2. Emissions Reduction / Cost Effectiveness ($/kg) This is a measure of the project's ability to reduce emissions (HC, NO_X, and $PM_{2.5}$) per dollar invested ($ per kg). To be completed by OKI Staff in coordination with project sponsor after application submittal
3. Other Benefits: Many projects have ancillary or additional benefits beyond the primary goals of the CMAQ program. Please briefly describe if and how the proposed project benefits the below factors. Please reference

sources for all data cited and describe below. Environmental Justice population descriptions and maps can be found in Chapter 16 of the OKI 2040 Regional Transportation Plan.

a. Safety:

b. Fixed Route Transit:

c. Bicycle / Pedestrian:

d. Improved Freight Movement:

e. Benefits Environmental Justice Populations:

Additional considerations:

4. Existing Modal Quality of Service (QOS): Documents the existing congestion in the project area. Points will not be awarded if the project currently operates at a high QOS. This is equivalent to highway LOS C or better. The applicant must provide documentation and data showing how the QOS was determined. For transit projects, the application is to provide information to assess the "quality of service" primarily with respect to the lack of capacity for which the project will provide benefits. Similarly, for bike or pedestrian projects, information is to be provided to demonstrate the poor level of service being provided for users of those modes. However, for transit, bike and pedestrian projects, lack of service or absence of a facility does not equate to poor level of service. Information must be provided that demonstrates there is demand for the service or facility that is not being met **(If unsure leave blank for OKI staff)**

- ☐ Very low
- ☐ Low
- ☐ Medium
- ☐ High

Describe the Current QOS for the project:

5. **Positive Project Impact to Quality of Service (QOS) :** Please describe the road, transit and bicycle/pedestrian impacts based on the Low, Medium and High impacts table:

Project Type:

☐ Road ☐ Transit ☐ Bicycle / Pedestrian

Impact:

☐ High ☐ Medium ☐ Low

Briefly describe how your project impacts the QOS:

ROAD QOS IMPACTS		
HIGH	**MEDIUM**	**LOW**
The project will improve the LOS from F to C	The project will improve the LOS from F to D or from E to C	The project will improve the LOS from F, E or D by one level or substantially reduce delay if resulting LOS remains F
TRANSIT QOS IMPACTS		
HIGH	**MEDIUM**	**LOW**
Significantly reduces transit vehicle crowding, increases service capacity significantly, increases service reliability significantly. Interconnect or fare coordination project, bus turnouts at major intersections, intermodal facility accommodating major transfers, reduces travel time.	Increases service reliability in a minor capacity, interconnect or fare coordination project, general bus turnouts, and intermodal facility accommodating major transfers.	Increases passenger comfort or convenience, bike racks.
BICYCLE AND PEDESTRIAN QOS IMPACTS		
HIGH	**MEDIUM**	**LOW**
Facility that will primarily serve commuters and/or school sites, sidewalks where none exist. Completes final pieces of a significant regional route.	Mixed use bicycle/pedestrian facility (recreation & commuter), usable sidewalk segments including upgrades and new installations and signage.	Public educational, promotional, and safety programs that promote and facilitate increased use of non-motorized modes of transportation.

6. Status of Project: The closer a project is to the construction/implementation phase, the more favorable consideration it will receive. Indicate the existing development status of the project:

- ☐ Construction plans are complete
- ☐ Non-construction activities are ready for authorization to advance
- ☐ Right-of-way acquisition is complete and certified by INDOT District Real Estate Administrator
- ☐ Environmental document is complete and certified by INDOT District Environmental Manager
- ☐ Preliminary development activities are underway

What is the current status of property ownership necessary to construct/implement the improvement?

Briefly describe the current phase and status of the project indicating next steps and timeframe for completion. Provide the project identification number (PID) if one exists.

7. Project Funding Breakdown and Non-Federal Match Weight: The Non-Federal Match of Requested CMAQ Funds – The criteria rewards applicants that increase their local share to "overmatch" the required rate for local participation or are contributing significant sums to a large project. The standard match rate for federal CMAQ funds is 20 percent (although there are exceptions); however, the applicant can gain additional consideration through overmatching in accordance with the table in item 7 of the Guidance. Each phase requesting CMAQ funds must have at least 20% non-federal match. Previous expenditures are not an allowable match. Attach a copy of a certified Engineer's Estimate adjusted for construction year inflation.

Phase Description	State Fiscal Year	CMAQ $ Request	CMAQ % Share	Other Federal $ Secured	Other Federal $ Source	Local $ Match	Local $ Match Source	Phase $ Totals
Preliminary Engineering	20__	$	0%	$		$		$
Detailed Design	20__	$	0%	$		$		$
Right of Way	20__	$	0%	$		$		$
Construction	20__	$	0%	$		$		$
FUNDING TOTALS		$		$		$		$

Briefly Describe Non-Federal match sources and support documentation:

8. Past Performance: It is critical that projects that compete for and receive OKI CMAQ dollars be delivered on time and within budget. Therefore, an applicant who has accepted CMAQ dollars in SFY 2015 or later and allows the project to be delayed beyond the initial program year of obligation or cancelled will be penalized on all subsequent applications for a period of two years. Exceptions may be granted by the OKI for circumstances beyond the control of the applicant.

To be completed by OKI Staff after application submittal

Authorized Signature: The undersigned certifies: (1) he/she is authorized to request and accept financial assistance from the Ohio Kentucky Indiana Regional Council of Governments (OKI); (2) to the best of his/her knowledge and belief, all representations that are a part of this application are true and accurate; (3) all official documents and commitments of the applicant that are part of this application have been duly authorized by the governing body of the applicant; and, (4) should the requested financial assistance be provided, that the chief executive officer of the sponsoring agency is aware that he/she must enter into a partnering agreement with the Ohio Department of Transportation for the roles and responsibilities necessary to ensure compliance with all federal and state regulations and requirements and provide certification of the availability and commitment of non-federal matching funds.

_____

Signature (electronic, or print and sign) Date

_____

Name (type/print)

_____

Title

Application Checklist:

- ☐ **Completed Application Form**
- ☐ **Certified Engineer's Estimate (attached)**
- ☐ **Maps and illustrations (attached)**
- ☐ **Signature provided by entity respresentative with execution authority**

8.1.5 Rhode Island DOT STIP Application Form

New Project Application

Transportation Improvement Program

RI SPP

CONTACT

Contact Information

Agency/Organization RIPTA

Contact Person Amy Pettine Title Ex Dir, Planning

Mailling Address 705 Elmwood Avenue

City Providence Zip Code 02906

Phone 401-784-9500 x216 Email

PROJECT INFORMATION

Type of Project *select all that apply*

- ☐ Bridge
- ☐ Pavement
- ☐ Drainage
- ☐ Planning
- ☐ Traffic
- ☑ Transit
- ☐ Bicycle
- ☐ Pedestrian
- ☐ Transportation Enhancement
- ☐ Other

Project Description

Project Title Green Vehicles and Fleet Expansion

Location by Street Name Statewide

Project Limits - From To

Please include an 8.5" x 11" map of the site, indicating project limits.

Provide a brief description of the proposed project:

Part I: Expand the state transit vehicle fleet by an additional 45 low- or no-emission vehicles
Part II: Transform the state transit vehicle fleet by replacing current buses with low- or no-emission vehicles as they reach the end of their useful life, reaching a fully green fleet by 2034.

Funds for this project have not been identified. The project is proposed for the fiscally unconstrained years of the TIP (2021 - 2026).

RIPTA operates 230 vehicles during the weekday peak. Sixty-three (63) of these vehicles are currently low-emission (hybrid-electric vehicles that produce less air pollution and improved gas mileage). While we use a variety of operational and equipment techniques to keep emissions low, RIPTA envisions a cleaner future – one where our entire fleet is made up of low-or no-emission vehicles.

In addition, RIPTA wants to operate a fleet with enough vehicles to meet current demand. Our Comprehensive Operational Analysis established minimum frequencies for areas meeting certain criteria, but we do not have the buses nor the operating budget to serve all areas at the minimum level. Staff estimate that another 40-45 vehicles are needed during the peak in order to meet this basic level of service.

In 2017 RIPTA will request UPWP funds to review the most cost-effective fleet technology over the long-term, including consideration of capital infrastructure improvements such as battery charging stations; maintenance impacts; and the relative "green" of various vehicle technologies (from production to tailpipe) within the Rhode Island context.

STATE PLANNING COUNCIL | One Capitol Hill, Providence, RI 02908 | www.planning.ri.gov

PROJECT INFORMATION

Describe need for proposed project:

Rhode Island has set a target for reducing emissions to 45% below 1990 levels by 2035. RIPTA can contribute to this effort by 1) increasing the mode split to transit and 2) reducing vehicle emissions.

Increasing the fleet size to meet current demand will allow RIPTA to improve frequency and span of service, making transit a more attractive choice for riders.

Using green vehicles will reduce current emissions. RIPTA currently operates 230 vehicles using low-sulphur ("clean") diesel, of which 63 are hybrid-electric vehicles ("low-emissions"). Unlike standard household cars and trucks, the vehicles operate continuously for much of the day. Each vehicle replaced with a no-emission vehicle would have an outsized impact on air quality, in particular in the urban areas where the majority of service is located.

Describe anticipated municipal or state transportation network or economic development benefits:

Green vehicles have a number of tangible and intangible benefits:

1) Mobility – Increasing the number of vehicles serving the state will allow RIPTA to serve new areas of the state and improve frequency in existing aras.
2) Cost Effectiveness – RIPTA will work with municipalities and RIDOT to coordinate with local priority projects, leveraging resources
3) Economic Development - Investments in transit are attractive to job-seekers. Taking transit reduces household transportation costs, putting more money into the local economy. Having a state with a fully green transit fleet would be a unique feature for the state.
4) Transit infrastructure construction creates design and construction jobs
5) Environment and Climate Change: Alternative fuel vehicles reduce tailpipe emissions. Investing in a cost-effective alternative fuel choice will help Rhode island meet its greenhouse gas emission reduction targets
6) Local and State goals: A green fleet aligns with Rhode Island's Greenhouse Gas Emissions reduction targets. If we choose battery-operated vehicles, service would be quieter and less-disruptive than standard buses.
7) Safety and Security: Newer vehicles have improved safety features.
8) Equity and Health: Low and no-emission emit fewer pollutants, improving health (particularly in urban areas where the majority of service is located)

Is the project consistent with the local Comprehensive Plan? ☑ Yes ☐ No

Is the project on the Federal Aid System? ☐ Yes ☑ No

Is the project on the National Highway System? ☐ Yes ☑ No

CRITERIA

Evaluation Criteria

Please address the following topics as they relate to the project. Refer to "An Overview of TIP Guiding Principles" for more information. Submission **must not exceed** 2 pages, single-spaced, 12-point font.

1. Mobility Benefits
2. Cost Effectiveness
3. Economic Development
4. Environmental Impact
5. Supports Local and State Goals
6. Safety and Security
7. Equity

PROJECT ESTIMATES

Project Estimates

	ROW	Study	Design	Construction	Total
Estimated Project Costs	none	300,000	TBD	TBD	TBD
				Total Cost	TBD
				Amount Requested through TIP Process	none

Is there funding from other sources committed to this project? ☐ Yes ☐ No

Source	Amount
RIPTA plans to request UPWP Planning funds through the MPO planning grants	300,000
Purchase price - TBD	TBD
Total	TBD

Estimated date of construction _____

CERTIFICATION

Applicant Certification

I attest that the information provided on this application is in true and accurate.

Applicant's Signature _____ Date _____

Chief Executive Officer's Signature _____ Date _____

8.1.6 Wyoming DOT Application Form

Application for

Congestion Mitigation/Air Quality (CMAQ) Funding

Fiscal Year 2016 (October 1, 2015 – September 30, 2016)

Sponsor Data:

Name of Project Sponsor: WYDOT ALSO

Sponsor's DUNS: _____ Project Name: _____

Requested CMAQ Funding Amount: $_____

Do you currently have any outstanding CMAQ projects? ☐ Yes ☐ No

If yes, what is the funding amount and what are your plans for completion?

_____

Check the entity that best describes your organization:

☐ County ☐ Municipality ☐ Tribal Government ☐ Joint – Please Specify _____

CMAQ Program Notes:

- The Sponsor must initiate the appropriate authorizing action prior to submittal of a project application and must include evidence of such action with the application.
- Historically, the CMAQ Selection Committee has selected Projects based on a Sponsor's impact by industrial road traffic, i.e. energy development related traffic. While other uses may be considered under the CMAQ guidelines, as administered by FHWA, the emphasis in the past has been on those counties impacted by this type of traffic.
- If the project application is approved by the Transportation Commission of Wyoming, the Project Sponsor agrees to enter into a project agreement with WYDOT for funding and project responsibilities.
- Projects may have joint Sponsors, but one of the Sponsors must assume the role of primary Sponsor.
- Joint Sponsors should have a cooperative agreement in place between the participating parties prior to submittal of an application.
- It is believed, with the limited amount of funding available within this program, the Selection Committee will continue to focus on these types of Projects this year and in the future. Please do not let this discourage you from applying for funding under the FY 2016 CMAQ Program, as all eligible Projects will be considered for funding by the Selection Committee based on funds availability.

Primary Project Sponsor

Primary Point of Contact: _____

Phone: _____ Fax: _____ Email: _____

This person will act as the liaison between the Sponsor and the Local Government Coordination Office to ensure compliance with various state and federal program requirements.

Name of Individual with Signatory Authority: _____

Title of Individual with Signatory Authority: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

Physical Address: _____

City: _____ State: _____ Zip: _____

Committed Local Match: $_____

Source of Local Match (ex. 6th penny, General Fund, etc.): _____

LPA Certification: ☐ Yes ☐ No DATE: _____

Project Delivery Systems Questionnaire: ☐ Yes ☐ No DATE: _____

If Applicable: Consultant Selection Policy: ☐ Yes ☐ No DATE: _____

Joint Sponsor (if applicable)

Name of Joint Sponsor: _____

Phone: _____ Fax: _____ Email: _____

Joint Sponsor's DUNS: _____

Contact Person Name & Title: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

Physical Address: _____

City: _____ State: _____ Zip: _____

Committed Local Match from Joint Sponsor: $_____

Source of Local Match (ex. 6th penny, General Fund etc.): _____

LPA Certification: ☐ Yes ☐ No DATE: _____

Project Delivery Systems Questionnaire: ☐ Yes ☐ No DATE: _____

If Applicable: Consultant Selection Policy: ☐ Yes ☐ No DATE: _____

Project Type

Check the box(s) which best describes the type of project proposed:

☐ **County Road Dust Suppression** (Chemical applications, i.e. Magnesium Chloride)

☐ **County Road Upgrading** (Placing gravel to reduce dust problems)

☐ **Acquisition of Right-of-Way required for this Project**

☐ **Preliminary Engineering**

☐ **Utility Adjustment**

☐ **Environmental Mitigation**

☐ **Other Air Quality improvements to Public Road(s)**

☐ **Air Quality Testing and Monitoring**

WYDOT is currently determining the most cost effective method to obtain air quality monitoring. Air Quality Monitoring is a requirement of this Project and arrangements for pre-Project and post-Project testing is the responsibility of the Project Sponsor. It is still the responsibility of the Project Sponsor to make arrangements for this Air Quality Monitoring to be completed. The work under this funding cycle would most likely start in the spring of 2015. Include in your project description any relevant data supporting the effectiveness of your proposed project in reducing the targeted pollutant(s). This could include a summary of past air quality tests noting the percentage reduction in PM after treatment. Air quality monitoring is an eligible expense for reimbursement under the CMAQ Program. A "Best Practice" would be for the Project Sponsor to periodically update their air quality data to demonstrate the effectiveness of the CMAQ Program. Air Quality Monitors are available from the University of Wyoming – Local Technical Assistance Program/Technology Transfer (LTAP/T^2) for use by project sponsors to capture this data:

Wyoming Technology Center

University of Wyoming

Dept. 3295

1000 E. University Avenue

Laramie, WY 82071

Email: wyt2c@uwyo.edu

Phone: 307-766-6743

Fax: 307-766-6784

Note: The intent of the CMAQ Program is for the Project Sponsor to competitively bid the Project to a qualified contractor. If the County uses its own workforce, a Public Interest Finding (PIF) must be sent to and approved by the WYDOT District Engineer for your respective area prior to beginning work. Submission of this form does not guarantee approval for use of Force Account.

Indentify the type of suppressant(s) to be used?

Is this application **ONLY** for the purchase of Dust Suppressant?

☐ Yes ☐ No

If No:

Is the County proposing to seek reimbursement for utilization of its own forces for any chemical applications, or will the county be using a qualified contractor?

☐ County Forces ☐ Qualified Contractor

If using County Forces and incorporating gravel or fill dirt:

Where is gravel of fill dirt coming from?

Has the Pit been previously cleared through the National Environmental Policy Act (NEPA)?

☐ Yes ☐ NO

For a complete listing of CMAQ information, including the Official FHWA Guidance for the program, please visit:

http://www.fhwa.dot.gov/environment/cmaqpgs/

Project Description

CMAQ Projects emphasize improving air quality by addressing Transportation-induced source emission and reducing Ozone (O_3) precursors, such as: Volatile Organic Compounds (VOC's), Nitrogen Oxides (NO_X), Carbon Monoxide (CO) and Particulate Matter (PM, aka dust); describe the proposed dust or compound suppressant technique, and current condition of the roadway. Include a description of any geographical or environmental features which may be sensitive or negatively affected by the addition/inclusion of this project. (An example would be a stream crossing or wetland intrusion.) Include a very clear location map, along with identifiable boundaries of the general area. This map should be in a standard 8.5" x 11" letter size format.

Anticipated Project Start Date: _____

Anticipated Project Completion Date: _____

Public Involvement/ Planning and Design Considerations

What groups were/are involved in the planning?

Are there community concerns regarding this project? ☐ Yes ☐ No

If yes, what are they?

Does the project conform to all local ordinances, rules and regulations? ☐ Yes ☐ No

Are any variance approvals required?

Project Right-of-Way

Does the Sponsor currently own the property on which the improvements will be constructed?

☐ Yes ☐ No

Can the Sponsor provide a certification of Right-of-Way clearance for the affected land?

☐ Yes ☐ No

What is the current ownership status of the required Right-of-Way for the project?

Are there any Real Property and/or Right-of-Way remaining to be acquired?

☐ Yes ☐ No

If so, what amount?

Will any required Real Property and/or Right-of-Way be purchased with TAP funds?

☐ Yes ☐ No

If the title of the property held by the public is in doubt, a title search would be advisable Donated land may be incorporated into the project to be eligible for match, but pre- approval by WYDOT's LGC office is required. If the donated land is not part of the project scope included in this application, it will not be considered for use as match. Donation value must be supported by an appraisal from a certified appraiser.

Private property may be allowed under regulation and policies of the program. Extra care is required in the development of the project agreement to ensure that there is a public access to the affected property.

Environmental Considerations

As part of the Project, the Sponsor must comply with all Federal and State environmental regulations. Projects involving construction or combined with a larger construction/reconstruction Project will require completion of an ***Environmental Field Review***, prior to a Categorical Exclusion being issued. The Environmental Field Report must be submitted to WYDOT and a ***Categorical Exclusion*** must be issued by the Federal Highway Administration (FHWA) prior to construction.

In addition, it may be necessary to contact the State Historic Preservation Office and the Corps of Engineers (Federal) for input and approval of the Project. (**Note:** planning only Projects are exempt from the Environmental Field Review Report)

Note: if the proposed Project is to apply a chemical dust suppressant to reduce dust on a county road, the Project can be included in a ***Blanket Categorical Exclusion*** issued by WYDOT. To be included in WYDOT's ***Blanket Categorical Exclusion***, the Project must be conducted on an established, existing county road section and within the Right-of-Way. If however, the Project involves construction/reconstruction/re-alignment and/or combines other Federal, State and/or Local funding, the Sponsor will be required to complete an Environmental Field Review (as above) which will be submitted to WYDOT and forwarded to the Federal Highway Administration for their issuance of a Categorical Exclusion.

Example of how this Environmental issue may be addressed in your application:

This proposed Project is for application of Magnesium Chloride to act as dust suppressant on an existing and established County Road section, therefore we propose to have WYDOT include it in a WYDOT Blanket Categorical Exclusion for FY15 CMAQ Projects.

Does this proposed project have any unusual environmental features associated with it?

Are there any registered historic structures or sites involved with the project?

Are there any live watercourses or bodies of water being encountered?

Has the county done this type of Project in the past?

☐ Yes ☐ No

Is there data to support its effectiveness (i.e air quality test)?

☐ Yes ☐ No

Project Maintenance

Who will perform perpetual maintenance on the project? (If the responsible party for maintenance is not the Sponsor, please attach a copy of the maintenance agreement.)

Who will be responsible for funding the maintenance?

Project Administration

The Federal Highway Administration (FHWA) through 23 Code of Federal Regulations (CFR) 635.105 and WYDOT require that the project sponsor designate a "responsible charge" to administer the project. This person must be a full time **employee** of the project sponsor. Ideally, this person would be the person(s) listed in the Project Sponsor Section above. Use of a consultant does not relieve the project sponsor of this requirement.

If the Project Sponsor will be utilizing a consultant for any work related to this application and proposed project, If a consultant is used, Brooks Act (40 USC 1102(2)) must be followed; a template policy and guidance may be found at:

http://www.dot.state.wy.us/home/business_with_wydot/local_public_agencies.default.html

If Sponsor is going to seek reimbursement from WYDOT for these services through the CMAQ Program, a copy of the Project Sponsor's Consultant Services Policy must be submitted to WYDOT – LGC.

ANY COST INCURRED PRIOR TO RECEIPT OF THE NOTICE TO PROCEED WILL NOT BE ELIGIBLE FOR REIMBURSEMENT.

Please provide the following requested information:

Name & Address of the project administrator (if different than the contact person)

The administrator will also act as the liaison between the Sponsor and the Local Government Office to insure compliance with various State and Federal Program requirements.

Will the project design and contract bidding documents be produced by the Sponsor's staff or by a consultant?

Who will review the project design and contract bid documents for the Sponsor?

Who will perform the construction management?

Project Budget

Cost estimates should be incorporated in this budget to reflect the costs that are expected to be incurred in the Project. The budget will aid in the process of selection of any Project proposal for a CMAQ Project. The budget line items should not be understood to be absolute, as they may be changed later, if necessary, to reflect actual costs after the Project has begun.

Project Element	***CMAQ* funds (80%)**	***Local Cash Match* funds (20%)**	**Total (100%)**
Preliminary Engineering Costs	$	$	$
Right-of-Way Costs	$	$	$
Utility Adjustment Costs	$	$	$
Administrative/Legal Costs	$	$	$
Dust Suppression Application Costs	$	$	$
Air Quality Monitoring	$	$	$

Construction Engineering Costs	$	$	$
Construction Costs	$	$	$
Total	$	$	$

Project Funding

Federal CMAQ funds requested (80% of project costs): $_____

Local Cash Match (cash or other match) (20% of Project costs): $_____

Amount of proposed over-match funding (not required): $_____

A detailed description of what the proposed over-match will be must be attached to the application. Donated land must have an appraisal; In-Kind services must have a description of the service as well as an explanation on which the value is based.

Total Project Cost: $_____

Name of Applicant/Project Sponsor and Date

Type name and date here

Signature of Authorized Official and Title of Authorized Official

---

Mail the application to:

Wyoming Dept. of Transportation
Office of Local Government Coordination
5300 Bishop Blvd.
Cheyenne, WY 82009-3340
Planning Building, Room 215
Cheyenne, WY 82009-3340

Phone #: 307 - 777 - 4862
Fax #: 307 - 777 - 4759
Email: mariah.johnson@wyo.gov
sara.janes@wyo.gov
rob.rodriguez1@wyo.gov

One (1) original application needs to be mailed in or emailed in PDF format along with any other supporting documentation.

8.1.7 Kentucky DOT Application Form

KENTUCKY TRANSPORTATION CABINET
Department of Rural and Municipal Aid
OFFICE OF LOCAL PROGRAMS

TC 20-24
Rev. 10/2016
Page 1 of 7

CONGESTION MITIGATION AIR QUALITY (CMAQ) PROGRAM APPLICATION

SECTION 1: APPLICANT INFORMATION		
PROJECT COUNTY	**PROJECT CITY**	**HIGHWAY DISTRICT**
CONGRESSIONAL DISTRICT	**METROPOLICAN PLANNING ORGANIZATION (MPO)**	
PROJECT TITLE		
SPONSOR NAME		
ADDRESS		**CITY**
ZIP	**PHONE**	

INSTRUCTION: The person designated as the Person in Responsible Charge will be the contact for the life of the project and should be able to answer any questions regarding this project. All correspondence and other documents from the Kentucky Transportation Cabinet (KYTC) will be sent to this person. Applicants will be responsible for notifying the Office of Local Programs if the point of contact for the project changes. FHWA defines a Person in Responsible Charge as a full-time employee of the Local Public Agency (LPA). The responsibilities of this person can be found in 23 CFR 635.105.

POINT OF CONTACT		**CONTACT EMAIL**	

SAI Number

CAGE # *(from SAM website)*

SECTION 2: PROJECT CATEGORY

INSTRUCTION: For the category that most fits your project, check one of the boxes below. Please see the FHWA Interim Guidance for more information on each category.

- ☐ Traffic Control Measures (TCMs)
- ☐ Alternative Fuels and Vehicles
- ☐ Congestion Reduction and Traffic Flow Improvements
- ☐ Bicycle and Pedestrian Facilities and Programs
- ☐ Public Education and Outreach Activities
- ☐ Transportation Management Associates (TMAs)
- ☐ Carpooling and Vanpooling
- ☐ Freight/Intermodal
- ☐ Diesel Engine Retrofits & Other Advanced Truck Technologies
- ☐ Idle Reduction
- ☐ Training
- ☐ Inspection/Maintenance (I/M) Programs
- ☐ Experimental Pilot Projects

Has this project previously received federal CMAQ funds?
If "Yes", please list years:_____

CONGESTION MITIGATION AIR QUALITY (CMAQ) PROGRAM APPLICATION

SECTION 3: PROJECT DESCRIPTION

Non-Infrastructure Project

INSTRUCTION: Provide a thorough description of any non-infrastructure (non-construction) project. Include all items for which you are requesting funding. A separate Project Cost Estimate should be attached as Attachment C.

Does this project include operating assistance? Yes ☐ No ☐

CONGESTION MITIGATION AIR QUALITY (CMAQ) PROGRAM APPLICATION

SECTION 3: PROJECT DESCRIPTION *(cont.)*

Infrastructure Project

INSTRUCTION: For infrastructure activities, provide the location and a detailed project description.

LOCATION

STREET NAME	Is this a state road? ☐ Yes ☐ No

TYPE OF IMPROVEMENT

FROM	**TO**	**LENGTH**	**GPS COORDINATES**

Describe the project and all items requested to include side of road, direction, and all other relevant information.

CONGESTION MITIGATION AIR QUALITY (CMAQ) PROGRAM APPLICATION

SECTION 3: PROJECT DESCRIPTION *(cont.)*

TRAFFIC CONTROL MEASURES

Is your request based on a traffic or engineering study? ☐ Yes ☐ No

Describe traffic control measures requested to include signs, signals, roadway markings, crosswalks, school zones, and any other relevant information.

RIGHT OF WAY

Federally funded transportation projects must follow the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 *(Uniform Act)*. If the project is awarded funding the applicant will be required to provide the proof of public right of way. Temporary easements may be required as part of the project and must be in compliance with the Uniform Act.

Does sufficient public right of way exist to build this project? ☐ Yes ☐ No

If no, is acquisition or dedication of a permanent public easement planned? ☐ Yes ☐ No If yes, explain these plans to include time frame.

If the applicant is required to acquire property or permanent public easements, list the number of properties and property owners affected by the acquisition.

CONGESTION MITIGATION AIR QUALITY (CMAQ) PROGRAM APPLICATION

SECTION 3: PROJECT DESCRIPTION *(cont.)*

MAINTENANCE PLAN

Describe how the completed project will be maintained for public use. Include plans for income generated after completion.

SECTION 4: PROJECT READINESS

PROJECT SCHEDULE

List each phase of the proposed project and provide an approximate completion time in months.

PHASE TYPE	PROJECT PHASE DESCRIPTION	APPROXIMATE COMPLETION TIME
Design		
Right of Way		
Utilities		
Construction		

What level of engineering/design has been completed for this project? Include any barriers to technical feasibility.

List all local government entities, contacts, and civic groups that have been involved in the development of the project.

List any active Office of Local Program projects (to include TE, SRTS, CMAQ, TCSP, and Scenic Byways) currently held by the project sponsor. Include the updated phase of each and the estimated dates of completion.

CONGESTION MITIGATION AIR QUALITY (CMAQ) PROGRAM APPLICATION

SECTION 6: PROJECT BUDGET COST

IMPORTANT: The Office of Local Programs uses the budget and estimate to determine the amount of funding; therefore, the amounts listed for each phase of the project must be as accurate as possible. To find out more information about cost estimates, consult the Local Public Agency (LPA) Guide.

Enter the total estimated cost for each phase of the project OR the Non-Infrastructure Project Total Cost.

PHASE	COST
Design (All design activities including PE, Phase I and II design)	
Right of Way	
Utilities	
Construction (Including construction inspection, materials testing and administration)	
Contingency (10%)	
TOTAL PROJECT COST	**$0.00**
TOTAL FEDERAL SHARE (80%)	
Non-Infrastructure Project Total Cost (If Applicable)	

LOCAL PUBLIC AGENCY (LPA) MATCH

CMAQ projects require a 20% match. KYTC will accept forms of match to include cash, property dedicated to the project, professional services, employee labor, agency-owned materials, and equipment. Match for selected must be properly documented and authorized by FHWA as project funding is set up. Please note that one match for a project has been approved you will not be able to change the type of match.

ITEM	AMOUNT
TOTAL MATCH PROVIDED	**$0.00**
TOTAL PROJECT COST (Federal Funds + Total Match)	

FINANCIAL FEASIBILITY

Will the funds requested in this application fully fund the project? ☐ Yes ☐ No

If no, provide the gap amount and how the difference will be covered.

CONGESTION MITIGATION AIR QUALITY (CMAQ) PROGRAM APPLICATION

SECTION 7: ENVIRONMENT

Describe how the project improves non-motorized connectivity. Does the project reduce VMT (Vehicle Miles Traveled), particulate matter, and/or greenhouse gas emissions?

ACQUATIC & TERRESTRIAL

Does the project impact wetlands? ☐ Yes ☐ No If yes, how many acres?

Is this project on the floodplain? ☐ Yes ☐ No *(If yes, coordinate with the Kentucky Division of Water.)*

Does the project impact agricultural lands? ☐ Yes ☐ No

Does the project potentially impact endangered species? ☐ Yes ☐ No

CULTURAL, HISTORIC, & ARCHAEOLOGICAL RESOURCES

Is the area or part of the area of the project eligible to be listed in the National Register of Historic Places?
☐ Yes ☐ No *(If yes, attach the National Register nomination form with the application.)*

Will there be any earth disturbance associated with this project? ☐ Yes ☐ No *(If yes, completion of an archaeological survey prior to the beginning of the project may be required.)*

SECTION 8: EMISSION REDUCTIONS

VOC	CO	NOx	PM_{10}	$PM_{2.5}$
Regional Reduction (kg/day)	**Regional Reduction (kg/day)**	**Regional Reduction (kg/day)**	**Regional Reduction (kg/day)**	**Regional Reduction (kg/day)**

Describe the methodology used to determine each reduction.

8.1.8 Kansas DOT Application Form

KANSAS DEPARTMENT OF TRANSPORTATION - BUREAU OF LOCAL PROJECTS

PROJECT PROGRAMMING REQUEST

☑ New Project	☐ Amend Existing Project		Date:
Program Year:	**Funding Program:**		
KDOT District	**MPO**	**MPO TIP #**	
County	**City**	**Route / Corridor**	**Functional Classification**
Project Sponsor / Lead Agency			
Project Mgr / Contact	**Phone**	**E-mail Address**	
Project Title			
Project Length:	**miles**	**Desired Letting Date:**	
Letting Type:	☐ KDO	☐ LPA	☐ Force Account
Location, Project Limits, Description, Scope of Work			
Purpose and Need			
Project Benefits			

RR within 1/2 mile?	RR Company Name	No. of Tracks	Existing Crossing Protection

In accordance with the Bureau of Local Projects (BLP) Memo 99-11, dated December 16, 1999, we are required, under the Comprehensive Transportation Program (CTP), to collect and record total costs of all work phases of projects. This includes local agency federal-aid and state-aid projects that include any non-participating, pre-construction local agency costs for preliminary engineering (plan design), rights of way and utility adjustments. Please show your estimate of the cost for all work phases below:

Project Cost Estimate	*Participating*	*Non-Participating*	*Total*
PE (Design)	$ -	$ -	$ -
Utilities	$ -	$ -	$ -
ROW	$ -	$ -	$ -
CE (Inspection)	$ -	$ -	$ -
Construction Total	$ -	$ -	$ -
	$ -	$ -	$ -
	$ -	$ -	$ -
	$ -	$ -	$ -
	$ -	$ -	$ -
	$ -	$ -	$ -
	$ -	$ -	$ -
			$ -
Project Totals	**$ -**	**$ -**	**$ -**

1302 Sheet 1 of 2 DOT Form 1302 (Rev. 10/2016)

KANSAS DEPARTMENT OF TRANSPORTATION - BUREAU OF LOCAL PROJECTS

PROJECT PROGRAMMING REQUEST

BE IT RESOLVED: That sufficient funds from 0

are now, or will be available and are hereby pledged to the Secretary in the amount and at the time required for the supplementing of federal funds available for the completion of this project. Prior to Federal Authorization, any project expenditures made by the LPA are ineligible for federal funding and remain the responsibility of the LPA. Upon cancellation of the project by the LPA, the LPA shall reimburse the Secretary within thirty (30) days after receipt of statement of cost incurred by the Secretary prior to cancellation.

Please sign below in accordance with your local policy.

Recommended for Approval:

Appropriate Local Officials

Title

Title

ATTEST:

Title

Title

Title

8.1.9 New Hampshire DOT Letter of Interest

Date

SAMPLE
LETTER OF INTEREST

Mr. William Rose, Senior Planner
Bureau of Planning & Community Assistance
NH Department of Transportation
7 Hazen Drive, PO Box 483
Concord, NH 03302-0483

RE: Congestion Mitigation & Air Quality Program

Dear Mr. Rose:

Please accept this correspondence on behalf of the Town of _____ signaling our interest in applying for Congestion Mitigation & Air Quality (CMAQ) Program funds in the recently announced application cycle.

We estimate that we will be requesting approximately $100,000 in federal funds through this program for the construction of a new Park & Ride lot at the intersection of NH 113 and Main Street here in the Town of _____. We've selected this project as a potential recipient of these CMAQ monies given that the location is subject to a great deal of commuter traffic during peak periods, the fact that the Town owns a medium- sized lot on one of the conveniently located roadways, a need for an additional transit stop in the area, and the desire for just this type of project as evidenced at our last two Town Meetings via petition. We believe that this project specifically meets with the following eligibility criteria:

#5 - Transit Improvements
#10 - Carpooling & Vanpooling Programs

The contact person for this application process will be:

John Doe, Town Administrator
Telephone: 555-1212, Ext. 10
Email: johndoe@www.com

Thank you for your time and consideration.

Sincerely,

John Doe
Town Administrator

8.2 DOT CMAQ Solicitation Supplemental Information

8.2.1 Kansas DOT Solicitation Process

Appendix A

KDOT Procurement Standards for STP/CMAQ Funded Planning, Education, and Outreach Projects

Consultant Services	Type of Bid	Notes
< $5,000	Local project sponsors are encouraged to solicit consultant services with estimated costs of less than $5,000 by obtaining comparative pricing via telephone, fax, letter, or email bids.	• Procurement of services under this $5,000 threshold are not required to go through KDOT's STP/CMAQ Procurement Process, but the task or activity must be eligible and programmed as part of an approved scope of the project prior to the start of any solicitation efforts. • Formal advertising is not required. • It is recommended that a general scope of the work activity be developed for the purposes of any solicitation efforts made. • KDOT considers it a best practice to keep on file documentation in support of any solicitation efforts made and so that this information may be made available to KDOT and/or USDOT upon request for review. Documentation includes, but is not limited to, bid tabs, telephone bid sheets, email or fax quotations. • The setting of DBE goals will not apply for services procured under this threshold; however, the local project sponsor is strongly encouraged to include contacts with DBE firms in any solicitation efforts that are made.
>$5,000 but < $25,000	The solicitation of consultant services with estimated costs of greater than $5,000 but less than $25,000 shall be made by obtaining written project proposals. KDOT's STP/CMAQ Procurement Process may be required depending on the appropriateness of a DBE goal.	•The minimum expectation for the procurement of consultant services is detailed to the left. The local project sponsor shall actively solicit written proposals for consultant services within this range. Depending on the scope and nature of the work activity, however, the procurement of consultant services within this range may require a formal bidding and procurement process for the purposes of reviewing for and the establishment of a DBE goal. The local project sponsor is expected to contact KDOT prior to the initiation of the solicitation process in order to determine the appropriate procurement method and process. This is largely dependent upon the potential DBE consulting opportunities expected in the work activity. • The local project sponsor is expected to advertise the work activity for a minimum of 14 days through appropriate means and actively solicit potential firms. The local project sponsor must advertise a scope of the work activity along with the evaluation criteria that will be used to select the firm. • Documentation of the solicitation efforts are required and must be kept on file so that they may be made available to KDOT and/or USDOT upon request for review. Acceptable forms of documentation include, but are not limited to, submitted project proposals, procurement summaries, evidence of advertisement efforts, and all associated letters, emails or faxes. Documentation must include an evaluation of the proposals based on a set of evaluation criteria and justification for the selection of the consultant based upon qualifications. • The setting of DBE goals may or may not apply for services procured within this range as previously stated. If no goal is formally set for the work activity, the local project sponsor is strongly encouraged to include contacts with DBE firms in their solicitation efforts.
>$25,000	KDOT STP/CMAQ Procurement Process is required, formal competitive bidding process, and advertising is mandatory	• Procurement of services greater than the $25,000 threshold must go through the KDOT STP/CMAQ Procurement Process and DBE Goal Setting process. • Documentation of the solicitation process is required and must be kept on file so that it may be made available to KDOT and/or USDOT upon request for review. • All other additional requirements as to the procurement of consultant services as prescribed by state and federal rules and regulations apply.

1. Please note that if the procurement procedures of the local project sponsor or the local project sponsor's fiscal agent are more strict than these standards, then the most stringent of the standards will apply. If the local project sponsor's procedures require formal bidding, then the KDOT STP/CMAQ Procurement Process shall be followed.

2. KDOT reserves the right to require the procurement process when the scope and nature of the work could present subcontracting opportunities upon which DBE goals may be placed.

3. Work that is estimated to be just at or near a particular threshold may require a higher type of bidding process. Alternatively, flexibility exists to conduct a bidding process at a lower level depending on the scope and nature of the work to be performed. KDOT strongly encourages discussing the type of bid required with KDOT staff in advance of the expected procurement process.

4. Under any solicitation efforts, the local project sponsor must demonstrate diversity in the firms from whom they are soliciting bids. Diversity includes both the active solicitation of DBE and non-DBE firms as well as the active solicitation of a variety of different firms amongst all procurement processes conducted by the local project sponsor.

5. The project or activity for which consultant services are being procured must be eligible and included in an approved scope of the project. The KDOT Project Manager must be aware of the purchase of such services through approval of the project and reimbursement is subject to review for eligibility and allowability.

Appendix B

KDOT Procurement Standards for STP/CMAQ Funded Planning, Education, and Outreach Projects

Purchase of Goods		Notes
< $5,000	Local project sponsors are encouraged to solicit goods with estimated costs of less than $5,000 by obtaining comparative pricing via telephone, fax, letter, or email bids.	• For the procurement of goods under this $5,000 threshold the local project sponsor is encouraged to solicit bids from an appropriate number of bidders. • KDOT considers it best practice to keep on file documentation in support of any solicitation efforts made and retain this information so that it be made available to KDOT and/or USDOT upon request for review. Documentation includes, but is not limited to, bid tabs, telephone bid sheets, email or fax quotations. • Formal advertising is not required. • It is recommended that a general bid specifications for the good to be purchased be developed for the purposes of any solicitation efforts made.
>$5,000 but < $25,000	The solicitation of goods with estimated costs of greater than $5,000 but less than $25,000 shall be made by obtaining comparative pricing via letter, fax, or email bids. A minimum of three written bids are required to be obtained.	• For the procurement of goods within this range there must be efforts made to solicit bids from an appropriate number of bidders and a public posting of the bid item must be made. A minimum 3 day public posting of this solicitation is required and shall be publicized in a manner that reaches many potential bidders. Bids should be received via sealed bid, fax, email, or similar written format. •Specifications for the bid item shall be detailed in the public posting. • Documentation of the solicitation efforts and public posting must be on file and made available to KDOT/USDOT upon request. • The lowest bid meeting the local project sponsors specifications should be selected, and if not, justifications for doing otherwise must be documented in the file.
> $25,000	Formal competitive solicitation of bids and advertising is mandatory	• The local project sponsor may follow the procurement procedures of their own agency or fiscal agent provided they are at least as stringent as the State. Alternatively, the local project sponsor may defer the KDOT Procurement Procedures if no such local procedures exist. • The local project sponsor is encouraged to consult with KDOT in advance in order to ensure competitive solicitation and advertising. • Advertising for a minimum of 14 days is expected. • For purchases at or above this threshold the local project sponsor must contact the KDOT project manager to determine if any additional oversight to the project is required. • The lowest bid meeting the local project sponsors specifications should be selected, and if not, justifications for doing otherwise must be documented in the file.

1. Please note that if the the procurement procedures of the local project sponsor or the local project sponsors's fiscal agent are more strict than these standards, then the most stringent of the standards will apply. KDOT must approve the procurement procedures of the Local Project Sponsor prior to initiation of the bidding process.

2. The type of bid required is also dependent on the nature of the goods to be purchased. Purchases that are estimated to be just at or near a particular threshold may require a higher type of bidding process. Alternatively, flexibility exists to conduct a bidding process at a lower level depending upon the nature of the good to be purchased. KDOT strongly encourages discussing the type of bid required with KDOT staff well in advance of the procurement process.

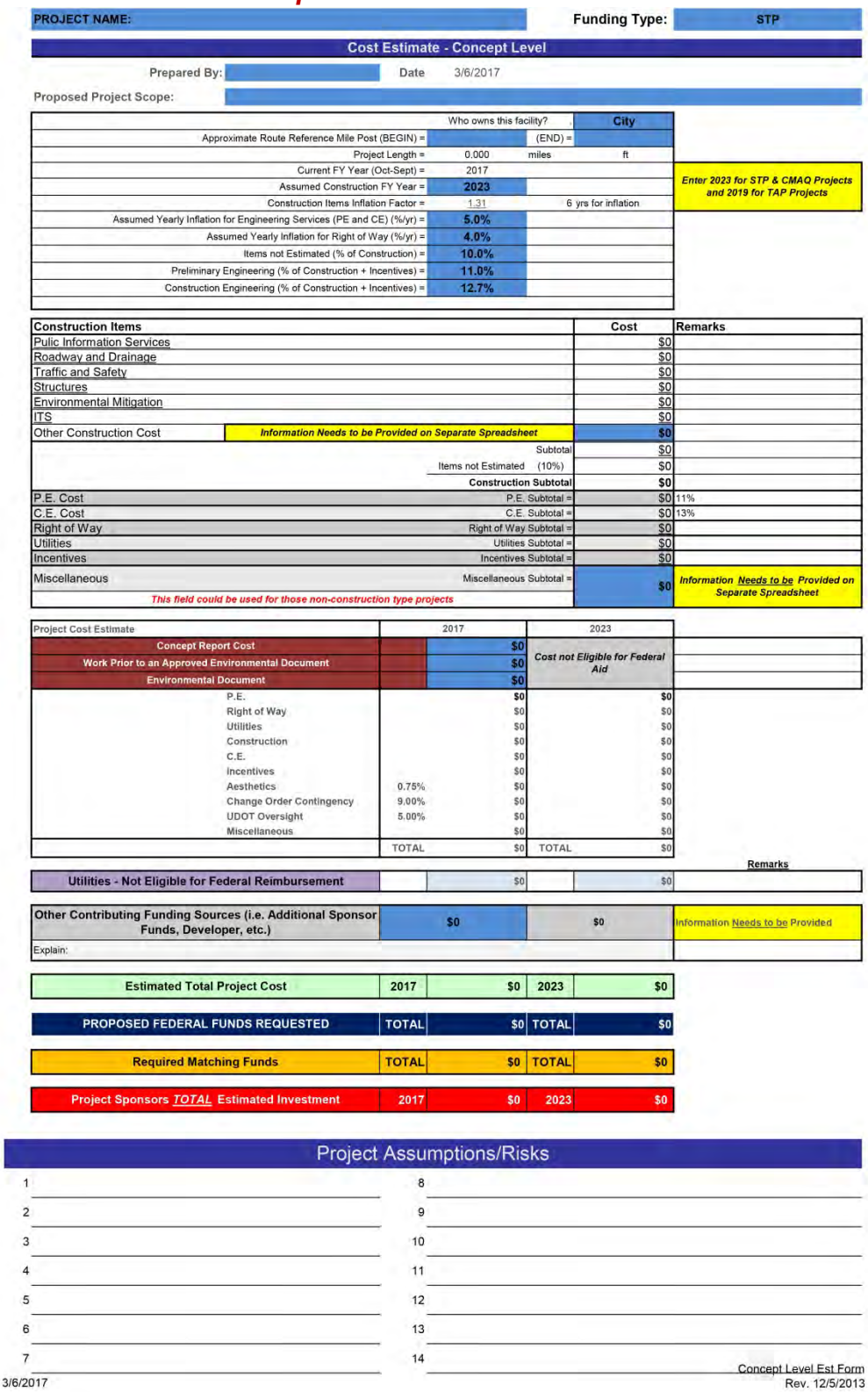
3. The goods to be purchased must be eligible and included in the approved scope of the project. The KDOT Project Manager must be aware of the purchase of such goods through approval of project scope and reimbursement is subject to review for eligibility and allowability.

4. DBE goals typically are not placed on the purchase of goods.

revised 7/1/2012

8.3 DOT CMAQ Cost Estimations Forms

8.3.1 Utah DOT Concept Cost Estimate Form



PROJECT NAME:		Funding Type:	STP

Cost Estimate - Concept Level

Prepared By: | Date 3/6/2017

Proposed Project Scope:

	Who owns this facility?		City	
Approximate Route Reference Mile Post (BEGIN) =		(END) =		
Project Length =	0.000	miles	ft	
Current FY Year (Oct-Sept) =	2017			*Enter 2023 for STP & CMAQ Projects and 2019 for TAP Projects*
Assumed Construction FY Year =	2023			
Construction Items Inflation Factor =	1.31		6 yrs for inflation	
Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) =	5.0%			
Assumed Yearly Inflation for Right of Way (%/yr) =	4.0%			
Items not Estimated (% of Construction) =	10.0%			
Preliminary Engineering (% of Construction + Incentives) =	11.0%			
Construction Engineering (% of Construction + Incentives) =	12.7%			

Construction Items			Cost	Remarks
Pulic Information Services			$0	
Roadway and Drainage			$0	
Traffic and Safety			$0	
Structures			$0	
Environmental Mitigation			$0	
ITS			$0	
Other Construction Cost	*Information Needs to be Provided on Separate Spreadsheet*		$0	
		Subtotal	$0	
		Items not Estimated (10%)	$0	
		Construction Subtotal	**$0**	
P.E. Cost		P.E. Subtotal =	$0	11%
C.E. Cost		C.E. Subtotal =	$0	13%
Right of Way		Right of Way Subtotal =	$0	
Utilities		Utilities Subtotal =	$0	
Incentives		Incentives Subtotal =	$0	
Miscellaneous		Miscellaneous Subtotal =	$0	*Information Needs to be Provided on Separate Spreadsheet*
This field could be used for those non-construction type projects				

Project Cost Estimate		2017	2023	
Concept Report Cost		$0	*Cost not Eligible for Federal Aid*	
Work Prior to an Approved Environmental Document		$0		
Environmental Document		$0		
P.E.		$0	$0	
Right of Way		$0	$0	
Utilities		$0	$0	
Construction		$0	$0	
C.E.		$0	$0	
Incentives		$0	$0	
Aesthetics	0.75%	$0	$0	
Change Order Contingency	9.00%	$0	$0	
UDOT Oversight	5.00%	$0	$0	
Miscellaneous		$0	$0	
	TOTAL	$0	TOTAL $0	

					Remarks
Utilities - Not Eligible for Federal Reimbursement		$0		$0	
Other Contributing Funding Sources (i.e. Additional Sponsor Funds, Developer, etc.)	$0		$0		Information Needs to be Provided
Explain:					
Estimated Total Project Cost	2017	$0	2023	$0	
PROPOSED FEDERAL FUNDS REQUESTED	TOTAL	$0	TOTAL	$0	
Required Matching Funds	TOTAL	$0	TOTAL	$0	
Project Sponsors *TOTAL* Estimated Investment	2017	$0	2023	$0	

Project Assumptions/Risks

1		8	
2		9	
3		10	
4		11	
5		12	
6		13	
7		14	

3/6/2017 Concept Level Est Form Rev. 12/5/2013

8.4 DOT CMAQ Emission Estimation Forms

8.4.1 Michigan DOT Emission Calculation Form

Michigan Department of Transportation 2608 (10/13)

COST MODULE FOR PROJECTS WITH MULTIPLE FORMS OR FOR CUSTOM PROTOCOLS

Replaces Worksheet 00

PROJECT NAME

SUBMITTER

FISCAL YEAR

NUMBER OF INDIVIDUAL EMISSION FORMS ASSOCIATED WITH THIS COST EFFECTIVENESS CALCULATION

Contact: If you should have any trouble with this form, please contact Edward Fowler (517) 241-0171

Cost Effectiveness Calculation for Multiple Forms Project (340 Day per Year)

Line No.	Description of Data Item/Formula	VOC	NOx	CO	PM2.5
1	Design life of this project in years				
2	Total cost of the project (CMAQ plus match $) Enter whole number, no decimals				
3	Emissions change in KG/day (Sum of all applicable worksheets)				
4	Conversion to tons per day	0	0	0	0
5	Emissions change over the life of the project (Kg/Life)	0	0	0	0
6	Emissions change over the life of the project (Tons/ Life)	0	0	0	0
7	Cost per ton over the design life	$0	$0	$0	$0
8	Cost per Kg over the design life	$0.00	$0.00	$0.00	$0.00

Cost Effectiveness Calculation for Multiple Forms Project (240 Day per Year)

Line No.	Description of Data Item/Formula	VOC	NOx	CO	PM2.5
1	Design life of this project in years				
2	Total cost of the project (CMAQ plus match $) Enter whole numbers, not decimals				
3	Emissions change in KG/day (Sum of all applicable worksheets)				
4	Conversion to tons per day	0	0	0	0
5	Emissions change over the life of the project (Kg/Life)	0	0	0	0
6	Emissions change over the life of the project (Tons/Life)	0	0	0	0
7	Cost per ton over the design life	$0	$0	$0	$0
8	Cost per Kg over the design life	$0.00	$0.00	$0.00	$0.00

Michigan Department of Transportation 2609 (10/13)

INTERSECTION IMPROVEMENTS (AT ONE APPROACH ONLY)

Replaces Worksheet 1

PROJECT NAME

INTERSECTION

SUBMITTER

FISCAL YEAR

Contact: If you should have any trouble with this form, please contact Edward Fowler (517) 241-0171

Line No.	Description of Data Item/Formula	VOC	NOx	CO	PM2.5
1	Length of improvement on approach (miles)				
2	24-hour, 2-way traffic volume				
3	Percent of travel in peak periods (7-9 a.m. & 5-6 p.m.) (Percentages should be entered as i.e., .10 for 10%)				
4	Peak period VMT = L1*L2*L3 (miles/day)				
5	Off-peak period VTM = L1*L2*(1-L3) (miles/day)	0	0	0	0
6	BEFORE IMPLEMENTATION: Average peak travel speed (mph)				
7	BEFORE IMPLEMENTATION: Average off-peak travel speed (mph)				
8	Expected increase in peak period speed (mph)				
9	Expected increase in off-peak period speed (mph)				
10	AFTER IMPLEMENTATION: Average peak speed (mph) = L6+L8				
11	AFTER IMPLEMENTATION: Average off-peak speed (mph) = L7+L9				
12	BEFORE IMPLEMENTATION: Peak emission factor for speed on L6 (g/mi)				
13	AFTER IMPLEMENTATION: Peak emission factor for speed on line 10 (g/mi)				
14	Change in peak emission factor=L13-L12 (g/mi)				
15	BEFORE IMPLEMENTATION: Off-peak emission factor for speed on line 7 (g/mi)				
16	AFTER IMPLEMENTATION: Off-peak emission factor for speed on line 11 (g/mi)				
17	Change in off-peak emission factor=L16-L15 (g/mi)				
18	Change in peak daily emissions=L4*L14 (g/day)				
19	Change in off-peak daily emissions=L5*L17 (g/day)	0.000	0.000	0.000	0.000
20	Total change in emissions=L18+L19 (g/day) [(-)=Reduction; (+)=Increase]	0.000	0.000	0.000	0.000
21	For comparative purpose only: Conversion to Tons/ year=(L22*.0011Tons)*340	0.000	0.000	0.000	0.000
22	Change in emissions for this approach = (L20/1000) (Kg/day)	0.000	0.000	0.000	0.000
23	Project design life in years				
24	Total project cost for this application (CMAQ plus Match) ($)				
25	Emission change over the life of the project=L21*L23 (Tons/Life)	0	0	0	0
26	Emission change over the life of the project =(L22*340)*L23 (Kg/Life)	0.000	0.000	0.000	0.000
27	Cost per Ton over the life of the project=(L24/L25)(-1) (Tons/Life)	$0.00	$0.00	$0.00	$0.00
28	Cost per Kilogram over the life of the project=(L24/ L26)(-1)(Kg/Life)	$0.00	$0.00	$0.00	$0.00

COMMENTS Insert any additional comments you feel are necessary here.

Michigan Department of Transportation 2810 (10/13)

INTERSECTION IMPROVEMENT: IMPROVEMENTS ARE ON ADJACENT APPROACHES OF INTERSECTION

Replaces Worksheet 2

PROJECT NAME

INTERSECTION

SUBMITTER

FISCAL YEAR

Contact: If you should have any trouble with this form, please contact Edward Fowler (517) 241-0171

Line No.	Description of Data Item/Formula	VOC	NOx	CO	PM2.5
1	Improvement length-arterial approach 1 *ADT for approach 1 (miles/day)				
2	Improvement length-arterial approach 2 *ADT for approach 2 (miles/day)				
3	Percent of daily travel in peak periods for approach 1 (cannot exceed 1) i.e., enter .10 for 10%				
4	Percent of daily travel in peak periods for approach 2 (cannot exceed 1) i.e., enter .10 for 10%				
5	Peak period VMT approach 1 = L1*L3 (miles/day)				
6	Peak period VMT approach 2 = L2*L4 (miles/day)				
7	Off-peak period VMT approach 1 = L1*(1-L3) (miles/day)	0.000	0.000	0.000	0.000
8	Off-peak period VMT approach 2 = L2*(1-L4) (miles/day)	0.000	0.000	0.000	0.000
9	BEFORE IMPLEMENTATION: Average peak travel speed approach 1 (mph)				
10	BEFORE IMPLEMENTATION: Average peak travel speed approach 2 (mph)				
11	BEFORE IMPLEMENTATION: Average off-peak travel speed approach 1 (mph)				
12	BEFORE IMPLEMENTATION: Average off-peak travel speed approach 2 (mph)				
13	Expected increase in peak period speed approach 1 (mph)				
14	Expected increase in peak period speed approach 2 (mph)				
15	Expected increase in off-peak period speed approach 1 (mph				
16	Expected increase in off-peak period speed approach 2 (mph)				
17	AFTER IMPLEMENTATION: Average peak speed approach 1 = L9+L13(mph)				
18	AFTER IMPLEMENTATION: Average off-peak speed approach 1 = L11+L15(mph)				
19	AFTER IMPLEMENTATION: Average peak speed approach 2 = L10+L14(mph)				
20	AFTER IMPLEMENTATION: Average off-peak speed approach 2 = L12+L16(mph)				
21	BEFORE IMPLEMENTATION: Peak emission factor for speed on L9 (g/mi)				
22	BEFORE IMPLEMENTATION: Peak emission factor for speed on L10 (g/mi)				
23	AFTER IMPLEMENTATION: Peak emission factor for speed on L17 (g/mi)				
24	AFTER IMPLEMENTATION: Peak emission factor for speed on L19 (g/mi)				
25	Change in peak emission factors approach 1 =L23-L21 (g/mi)				
26	Change in peak emission factors approach 2 =L24-L22 (g/mi)				
27	BEFORE IMPLEMENTATION: Off-peak emission factor for speed on L11 (g/mi)				
28	AFTER IMPLEMENTATION: Off-peak emission factor for speed on L18 (g/mi)				
29	BEFORE IMPLEMENTATION: Off-peak emission factor for speed on L12 (g/mi)				
30	AFTER IMPLEMENTATION: Off-peak emission factor for speed on L20 (g/mi)				
31	Change in off-peak emission factor approach 1 =L28-L27 (g/mi)				
32	Change in off-peak emission factor approach 2 =L30-L29 (g/mi)				
33	Peak daily emissions reduced approach 1 =L5*L25 (g/day)				

MDOT 2610 (10/13)

Line No.	Description of Data Item/Formula	VOC	NOx	CO	PM2.5
34	Peak daily emissions reduced approach 2 =L8*L26 (g/day)				
35	Off-peak daily emissions reduced Approach 1 =L7*L31 (g/day)	0.000	0.000	0.000	0.000
36	Off-peak daily emissions reduced Approach 2 =L8*L32 (g/day)	0.000	0.000	0.000	0.000
37	Change in emissions approach 1 =L33+L35 (g/day) [(-)=Reduction; (+)=Increase]	0.000	0.000	0.000	0.000
38	Change in emissions approach 2 =L34+L36 (g/day) [(-)=Reduction; (+)=Increase]	0.000	0.000	0.000	0.000
39	Comparative purpose only: Convert to Tons per Year=(L40*.0011Tons)*340 (Tons/Yr)	0.000	0.000	0.000	0.000
40	Total change in emissions =[(L37+L38)*(1Kg/1000g)] (Kg/day)	0.000	0.000	0.000	0.000
41	Project design life in years				
42	Total project cost for this application (CMAQ plus Match) ($)				
43	Emission change over the life of the project=L39*L41 (Tons/Life)	0.000	0.000	0.000	0.000
44	Emission change over the life of the project=(L40*340)*L41 (Kg/Yrs)	0.000	0.000	0.000	0.000
45	Cost per Ton over the life of the project=(L42/L43) ($/Tons/Yrs)	$0.00	$0.00	$0.00	$0.00
46	Cost per Kilogram over the life of the project=(L42/L44) ($/Kg/Yrs)	$0.00	$0.00	$0.00	$0.00

COMMENTS

Michigan Department of Transportation 2611 (10/13)

INTERSECTION IMPROVEMENT: IMPROVEMENTS ARE ON OPPOSITE APPROACHES OF INTERSECTION

Replaces Worksheet 3

PROJECT NAME

INTERSECTION

SUBMITTER

FISCAL YEAR

Contact: If you should have any trouble with this form, please contact Edward Fowler (517) 241-0171

Line No.	Description of Data Item/Formula	VOC	NOx	CO	PM2.5
1	Improvement length-arterial approach 1 *ADT for approach 1 (miles/day)				
2	Improvement length-arterial approach 2 *ADT for approach 2 (miles/day)				
3	Percent of daily travel in peak periods for approach 1 (cannot exceed 1) (Example: .25 = 25%)				
4	Percent of daily travel in peak periods for approach 2 (cannot exceed 1) (Example: .25 = 25%)				
5	Peak period VMT approach 1 = L1*L3 (miles/day)				
6	Peak period VMT approach 2 = L2*L4 (miles/day)				
7	Off-peak period VMT approach 1 = L1*(1-L3) (miles/day)	0.000	0.000	0.000	0.000
8	Off-peak period VMT approach 2 = L2*(1-L4) (miles/day)	0.000	0.000	0.000	0.000
9	BEFORE IMPLEMENTATION: Average peak travel speed approach 1 (mph)				
10	BEFORE IMPLEMENTATION: Average peak travel speed approach 2 (mph)				
11	BEFORE IMPLEMENTATION: Average off-peak travel speed approach 1 (mph)				
12	BEFORE IMPLEMENTATION: Average off-peak travel speed approach 2 (mph)				
13	Expected increase in peak period speed approach 1 (mph)				
14	Expected increase in peak period speed approach 2 (mph)				
15	Expected increase in off-peak period speed approach 1 (mph)				
16	Expected increase in off-peak period speed approach 2 (mph)				
17	AFTER IMPLEMENTATION: Average peak speed approach 1 = L9+L13(mph)				
18	AFTER IMPLEMENTATION: Average off-peak speed approach 1 = L11+L15(mph)				
19	AFTER IMPLEMENTATION: Average peak speed approach 2 = L10+L14(mph)				
20	AFTER IMPLEMENTATION: Average off-peak speed approach 2 = L12+L16(mph)				
21	BEFORE IMPLEMENTATION: Peak emission factor for speed on L9 (g/mi)				
22	BEFORE IMPLEMENTATION: Peak emission factor for speed on L10 (g/mi)				
23	AFTER IMPLEMENTATION: Peak emission factor for speed on L17 (g/mi)				
24	AFTER IMPLEMENTATION: Peak emission factor for speed on L19 (g/mi)				
25	Change in peak emission factors approach 1 =L23-L21 (g/mi)				
26	Change in peak emission factors approach 2 =L24-L22 (g/mi)				
27	BEFORE IMPLEMENTATION: Off-peak emission factor for speed on L11 (g/mi)				
28	AFTER IMPLEMENTATION: Off-peak emission factor for speed on L18 (g/mi)				
29	BEFORE IMPLEMENTATION: Off-peak emission factor for speed on L12 (g/mi)				
30	AFTER IMPLEMENTATION: Off-peak emission factor for speed on L20 (g/mi)				

Line No.	Description of Data Item/Formula	VOC	NOx	CO	PM2.5
31	Change in off-peak emission factor approach 1 =L28-L27 (g/mi)				
32	Change in off-peak emission factor approach 2 =L30-L29 (g/mi)				
33	Change in peak daily emissions approach 1 =L5*L25 (g/day)				
34	Change in peak daily emissions approach 2 =L6*L26 (g/day)				
35	Change in off-peak daily emissions approach 1 =L7*L31 (g/day)	0.000	0.000	0.000	0.000
36	Change in off-peak daily emissions approach 2 =L8*L32 (g/day)	0.000	0.000	0.000	0.000
37	Change in emissions approach 1 =L33+L35 (g/day) [(-)=Reduction, (+)=Increase]	0.000	0.000	0.000	0.000
38	Change in emissions approach 2 =L34+L36 (g/day) [(-)=Reduction, (+)=Increase]	0.000	0.000	0.000	0.000
39	Comparative purpose only: Convert to Tons per Year=(L40*.0011Tons)*340 (tons/Yr)	0.000	0.000	0.000	0.000
40	Total change in emissions=[(L37+L38)*(1Kg/1000g)] (Kg/day)	0.000	0.000	0.000	0.000
41	Project design life in years				
42	Total project cost for this application (CMAQ plus Match) ($)				
43	Change in emissions over the life of the project =L39*L41 (Tons/Life)	0.000	0.000	0.000	0.000
44	Change in emissions over the life of the project =(L40*340)*L41 (Kg/life)	0.000	0.000	0.000	0.000
45	Cost per Ton over the life of the project=(L42/L43) ($/Tons/Life)	$0.00	$0.00	$0.00	$0.00
46	Cost per Kilogram over the life of the project=(L42/L44) ($/Kg/Yrs)	$0.00	$0.00	$0.00	$0.00

COMMENTS

Michigan Department of Transportation
2612 (10/13)

INTELLIGENT TRANSPORATION SYSTEM (ITS) DEVELOPMENT
GENERAL APPROACH

Replaces Worksheet 4

PROJECT NAME

INTERSECTION

SUBMITTER

FISCAL YEAR

Contact: If you should have any trouble with these worksheets please contact Edward Fowler (517) 241-0171

Line No.	Description of Data Item/Formula	VOC	NOx	CO	PM2.5
1	Number of miles of facilities affected (Set to 1.0-Not used)	1	1	1	1
2	24-hour, VMT over affected facilities: (vehicles a day)				
3	Percent of daily travel in peak periods (cannot exceed 100) (Enter as i.e., .25 for 25%)				
4	Peak period VMT = L1*L2*L3 (miles)(day)	0.000	0.000	0.000	0.000
5	Off-peak period VMT = L1*L2*(1-L3) (miles)(day)	0.000	0.000	0.000	0.000
6	BEFORE IMPLEMENTATION: Average peak travel speed (mph)				
7	BEFORE IMPLEMENTATION: Average off-peak travel speed (mph)				
8	Expected increase in peak period speed (mph)				
9	Expected increase in off-peak period speed (mph)				
10	AFTER IMPLEMENTATION: Average peak speed (mph) = L6+L8				
11	AFTER IMPLEMENTATION: Average off-peak speed (mph) = L7+L9				
12	BEFORE IMPLEMENTATION: Peak emission factor for speed on L6 (g/mi)				
13	AFTER IMPLEMENTATION: Peak emission factor for speed on line 10 (g/mi)				
14	Change in peak emission factor=L13-L12 (g/mi)				
15	BEFORE IMPLEMENTATION: Off-peak emission factor for speed on line 7 (g/mi)				
16	AFTER IMPLEMENTATION: Off-peak emission factor for speed on line 11 (g/mi)				
17	Change in off-peak emission factor=L16-L15 (g/mi)				
18	Change in peak daily emissions=L4*L14 (g/day)	0.000	0.000	0.000	0.000
19	Change in off-peak daily emissions=L5*L17 (g/day)	0.000	0.000	0.000	0.000
20	Total change in emissions=L18+L19 (g/day) [(-)=Reduction; (+)=Increase]	0.000	0.000	0.000	0.000
21	Comparative purpose only: Conversion to Tons/Year=(L20* 0011Tons)*340	0.000	0.000	0.000	0.000
22	Change in emissions=[(L20)/(1Kg/1000g))] (Kg/day)	0.000	0.000	0.000	0.000
23	Project design life in years				
24	Total project cost for this application (CMAQ plus Match) ($)				
25	Emission change over the life of the project=L21*L23 (Tons/Life)	0.000	0.000	0.000	0.000
26	Emission change over the life of the project =(L22*340)*L23 (Kg/Life)	0.000	0.000	0.000	0.000
27	Cost per Ton over the life of the project=(L24/L25) ($/Tons/Life)	$0.00	$0.00	$0.00	$0.00
28	Cost per Kilogram over the life of the project=(L24/L26) ($/Kg/Life)	$0.00	$0.00	$0.00	$0.00

COMMENTS

Michigan Department of Transportation 2613 (10/13)

PARK AND RIDE LOT DEVELOPMENT/EXPANSION

Replaces Worksheet 5

PROJECT NAME

INTERSECTION/LOCATION

SUBMITTER

FISCAL YEAR

Contact: If you should have any trouble with these worksheets please contact Edward Fowler (517) 241-0171

Line No.	Description of Data Item/Formula	VOC	NOx	CO	PM2.5
1	Number of spaces (all lots combined)				
2	Percent of spaces occupied (on average day)				
3	Number of cars parked (at all lots)=L1*L2				
4	Estimated total VMT diverted each day from driving alone (miles/day)				
5	Average trip length=L4/L3 (miles)				
6	Speed for emissions factor (mph)(use local St. speed to simulate congested				
7	Emissions factor for assumed speed (light duty gas vehicles) (g/mi)				
8	Total change in emissions=L4*L7 (grams/day) [(-)=Reduction; (+)=Increase]	0.000	0.000	0.000	0.000
9	Comparative purpose only. Conversion to Tons/ Year=(L10*.0011Tons)*240	0.000	0.000	0.000	0.000
10	Total change in emissions=L8/1000g (Kg/day)	0.000	0.000	0.000	0.000
11	Project design life in years				
12	Total project cost (CMAQ plus Match) ($)				
13	Emission change over the life of the project=L9*L11 (Tons/Life)	0	0	0	0
14	Emission change over the life of the project =(L10*240)*L11 (Kg/Life)	0.000	0.000	0.000	0.000
15	Cost per Ton over the life of the project=(L12/L13) ($/ Tons/Life)	$0.00	$0.00	$0.00	$0.00
16	Cost per Kilogram over the life of the project=(L12/ L14) ($/Kg/Life)	$0.00	$0.00	$0.00	$0.00

COMMENTS

Michigan Department of Transportation 2614 (10/13)

RIDESHARE PROMOTION: STANDARD PROGRAM

Replaces Worksheet 6

PROJECT NAME

SUBMITTER

FISCAL YEAR

Contact: If you should have any trouble with these worksheets please contact Edward Fowler (517) 241-0171

Line No.	Description of Data Item/Formula	VOC	NOx	CO	PM2.5
1	Number of daily vehicle trips saved				
2	Diverted VMT				
3	Average trip length=L2/L1 (miles)				
4	Average speed for diverted trips (mph)				
5	Emissions factor for assumed speed on L4 (grams/ mile, light duty gas vehicles)				
6	Comparative purpose only: Convert to Tons per Year=(L7*.0011Tons)*240	0.000	0.000	0.000	0.000
7	Total change in emissions=L2*L5/1000g (Kg/day) [(-)Reduction; (+)Increase]	0.000	0.000	0.000	0.000
8	Project design life in years				
9	Total project cost (CMAQ plus Match) ($)				
10	Emission change over the life of the project=L6*L8 (Tons/Life)	0.000	0.000	0.000	0.000
11	Emission change over the life of the project =(L7*240)*L8 (Kg/Life)	0.000	0.000	0.000	0.000
12	Cost per Ton over the life of the project=(L9/L8)/(L10) ($/Tons/Life)	$0.00	$0.00	$0.00	$0.00
13	Cost per Kilogram over the life of the project=(L9/L8)/ L11 ($/Kg/Life)	$0.00	$0.00	$0.00	$0.00

COMMENTS

Michigan Department of Transportation 2615 (10/13)

RIDESHARING PROMOTION: ENHANCED PROGRAM INCLUDING TELECOMMUTING AND FLEXIBLE WORK HOURS

Replaces Worksheet 7

PROJECT NAME

SUBMITTER

FISCAL YEAR

Contact: If you should have any trouble with these worksheets please contact Edward Fowler (517) 241-0171

Line No.	Description of Data Item/Formula	VOC	NOx	CO	PM2.5
	CARPOOL				
1	Number of Matchlists distributed in previous Fiscal Year (1 list per person)				
2	Expected distribution increase in this fiscal year=(L1 +50%)=(L1*1.5)	0.000	0.000	0.000	0.000
3	Expected number of new participants, includes existing+enhanced =(L2*25%)	0.000	0.000	0.000	0.000
4	Average round trip carpool trip length (one day)				
5	Daily VMT reduced = L3 * L4	0.000	0.000	0.000	0.000
6	Annual VMT reduced=L5*240	0.000	0.000	0.000	0.000
	VANPOOL VMT CALCULATIONS				
7	No. of vanpools in service				
8	Average Occupancy of RideShare vans				
9	No. of round trip miles				
10	Reduced Annual VMT Vanpooling=L7*L8*L9*240 workdays	0.000	0.000	0.000	0.000
11	Total VMT Reduction = (L6+L10) (year)	0.000	0.000	0.000	0.000
	EMISSIONS IMPACT FROM DIVERSION				
12	Regional Daily Average Speed (mph, 1990 Final Base Emission Inventory)				
13	Emission Factor (Light Duty Gas Vehicles) using speed from L12				
14	Annual Emissions Reduced from Diversion =(L11*L13)/1000 (kg/year)	0.000	0.000	0.000	0.000
15	Daily Emissions Reduced from Diversion=(L14)/240 (Kg)	0.000	0.000	0.000	0.000
	TELECOMMUTING				
16	Estimated number of employed in major office centers				
17	Percentage of employees participating, (i.e , enter 25 for 25%)				
18	Number of telecommuting employees =(L16*L17)				
19	Number of days per week telecommuting				
20	Assumed round trip miles				
21	Annual VMT saved =L18*L19*L20*52 weeks/(year)	0.000	0.000	0.000	0.000
	EMISSION IMPACTS FROM TELECOMMUTING				
22	Regional Daily Average Speed (mph)				
23	Emission Factor (Light Duty Gas Vehicles)				
24	Annual Emissions Reduced from Diversion =(L21*L23)/1000 (kg/year)	0.000	0.000	0.000	0.000
25	Daily Emissions Reduced from Diversion= (L24)/240 (Kg/day)	0.000	0.000	0.000	0.000
26	Total Annual VMT Reduction = L11+L21	0.000	0.000	0.000	0.000
27	Total Annual Emissions Reduced=L14+L24 (Kg/year)	0.000	0.000	0.000	0.000
28	Total Daily Changes in Emission = (L15+L25)(-1) (Kg/day)	0.000	0.000	0.000	0.000

MDOT 2615 (10/13)

Line No.	Description of Data Item/Formula	VOC	NOx	CO	PM2.5
29	Project design life in years (Yrs)				
30	Total project cost for this application (CMAQ plus Match) ($)				
31	Change in emissions over the life of the project =(((L28*240)*.0011)*L29)	0.000	0.000	0.000	0.000
32	Change in emissions over the life of the project =(L28*240)*L29 (Kg/Life)	0.000	0.000	0.000	0.000
33	Cost per Ton over the life of the project=(L30/L31)(-1) ($/Tons/Life)	$0.00	$0.00	$0.00	$0.00
34	Cost per Kilogram over the life of the project=(L30/L32)(-1) ($/Kg/Life)	$0.00	$0.00	$0.00	$0.00

COMMENTS

Michigan Department of Transportation 2616 (10/14)

TRAFFIC MONITORING PROGRESSION IMPROVEMENTS AUTOMATED (ATMS)

Replaces Worksheet 8

PROJECT NAME

INTERSECTION

SUBMITTER

FISCAL YEAR

Contact: If you should have any trouble with these worksheets please contact Edward Fowler (517) 241-0171

Line No.	Description of Data Item/Formula	VOC	NOx	CO	PM2.5
	VMT(mi)				
1	Principal Arterial Freeway				
2	Principal Arterial Non-Freeway				
3	Minor Arterial				
4	Collector				
5	Local				
	BEFORE: DAILY TRAVEL SPEEDS (mph)				
6	Principal Arterial Freeway				
7	Principal Arterial Non-Freeway				
8	Minor Arterial				
9	Collector				
10	Local				
11	Expected increase in ALL Travel Speeds				
	AFTER: DAILY TRAVEL SPEEDS (mph)				
12	Principal Arterial Freeway = L6+L11				
13	Principal Arterial Non-Freeway=L7+L11				
14	Minor Arterial = L8+L11				
15	Collector = L9+L11				
16	Local = L10+L11				
	BEFORE: EMISSIONS FACTOR (see worksheet) (g/mi)				
17	Principal Arterial Freeway (speed on L6)				
18	Principal Arterial Non-Freeway (speed on L7)				
19	Minor Arterial (speed on L8)				
20	Collector (speed on L9)				
21	Local (speed on L10)				
	AFTER: EMISSION FACTORS (See worksheet) (g/mi)				
22	Principal Arterial Freeway (speed on L12)				
23	Principal Arterial Non-Freeway (speed on L13)				
24	Minor Arterial (speed on L14)				
25	Collector (speed on L15)				
26	Local (speed on L16)				

Line No.	Description of Data Item/Formula	VOC	NOx	CO	PM2.5
	CHANGE IN EMISSION FACTORS (g/mi)				
27	Principal Arterial Freeway = L22 - L17				
28	Principal Arterial Non-Freeway = L23 - L18				
29	Minor Arterial = L24 - L19				
30	Collector = L25 - L20				
31	Local = L26 - L21				
	DAILY CHANGE IN EMISSIONS (g/day)				
32	Principal Arterial Freeway = L1*L27				
33	Principal Arterial Non-Freeway = L2*L28				
34	Minor Arterial = L3*L29				
35	Collector = L4*L30				
36	Local = L5*L31				
37	Comparative purpose only: Convert to Tons/Year =(L38*.0011Tons) (Tons/Yr)	0.000	0.000	0.000	0.000
38	Annual emissions changed=L39*240 days (Kg/Yr)	0.000	0.000	0.000	0.000
39	Total daily emissions changed=(L32+L33+L34+L35 +L36) /1000g (Kg/day)	0.000	0.000	0.000	0.000
40	Project design life in years (Yrs)				
41	Total project cost (CMAQ plus Match) ($)				
42	Emission change over the life of the project=L37*L40 (Tons/Life)	0.000	0.000	0.000	0.000
43	Emission change over the life of the project =(L38*L40) (Kg/Life)	0.000	0.000	0.000	0.000
44	Cost per Ton over the life of the project=(L41/L42) ($/ Tons/Life)	$0.00	$0.00	$0.00	$0.00
45	Cost per Kilogram over the life of the project=(L41/ L43) ($/Kg/Life)	$0.00	$0.00	$0.00	$0.00

COMMENTS

Michigan Department of Transportation 2617 (10/13)

TRAFFIC SIGNAL INTERCONNECTION, MODERNIZATION AND/OR OPTIMIZATION

Replaces Worksheet 9

PROJECT NAME

INTERSECTION

SUBMITTER

FISCAL YEAR

Contact: If you should have any trouble with these worksheets please contact Edward Fowler (517) 241-0171

Line No.	Description of Data Item/Formula	VOC	NOx	CO	PM2.5
1	Number of miles of arterials affected (miles)				
2	24-hour, 2-way traffic volume: (vehicles a day)				
3	Percent of travel in peak periods (enter % as .25 for 25%)				
4	Peak period VMT = L1*L2*L3 (miles)(day)				
5	Off-peak period VMT = L1*L2*(1-L3) (miles)(day)	0.00	0.00	0.00	0.00
6	BEFORE IMPLEMENTATION: Average peak travel speed (mph)				
7	BEFORE IMPLEMENTATION: Average off-peak travel speed (mph)				
8	Expected increase in peak period speed (mph)				
9	Expected increase in off-peak period speed (mph)				
10	AFTER IMPLEMENTATION: Average peak speed (mph) = L6+L8				
11	AFTER IMPLEMENTATION: Average off-peak speed (mph) = L7+L9				
12	BEFORE IMPLEMENTATION: Peak emission factor for speed on L6 (g/mi)				
13	AFTER IMPLEMENTATION: Peak emission factor for speed on line 10 (g/mi)				
14	Change in peak emission factor=L13-L12 (g/mi)				
15	BEFORE IMPLEMENTATION: Off-peak emission factor for speed on line 7 (g/mi)				
16	AFTER IMPLEMENTATION: Off-peak emission factor for speed on line 11 (g/mi)				
17	Change in off-peak emission factor=L16-L15 (g/mi)				
18	Peak daily emissions reduced=L4*L14 (g/day)				
19	Off-peak daily emissions reduced=L5*L17 (g/day)	0.000	0.000	0.000	0.000
20	Total change in emissions=L18+L19 (g/day) [(-)=Reduction; (+)=Increase]	0.000	0.000	0.000	0.000
21	Comparative purpose only: Convert to Tons/Year =L22*0.0011Tons/Kg (Tons/Yr)	0.000	0.000	0.000	0.000
22	Annual change in emissions=L23*240days (Kg/Yr)	0.000	0.000	0.000	0.000
23	Change in emissions=[(L20)/(1Kg/1000g))] (Kg/day)	0.000	0.000	0.000	0.000
24	Project design life in years (Yrs)				
25	Total project cost (CMAQ plus Match) ($)				
26	Emission change over the life of the project=L21*L24 (Tons/Life)	0.000	0.000	0.000	0.000
27	Emission change over the life of the project=(L22*L24) (Kg/Life)	0.000	0.000	0.000	0.000
28	Cost per Ton over the life of the project=(L25/L26) ($/Tons/Life)	$0.00	$0.00	$0.00	$0.00
29	Cost per Kilogram over the life of the project=(L25/L27) ($/Kg/Life)	$0.00	$0.00	$0.00	$0.00

COMMENTS

Michigan Department of Transportation 2618 (10/13)

BUS PURCHASE

Replaces Worksheet 10

PROJECT NAME

SUBMITTER

FISCAL YEAR

Contact: If you should have any trouble with this form please contact Edward Fowler (517) 241-0171

Line No.	Description of Data Item/Formula	VOC	NOx	CO	PM2.5
1	Number of new clean diesel buses				
2	Annual vehicle hours/bus (hours)				
3	Vehicle brake horsepower rating (bbp)				
4	New HC emission factor (grams/bbp)				
5	After HC emissions from new buses = (L1*L2*L3*L4) (g/year)				
6	Number of old diesel buses				
7	Annual vehicle hours/bus (hours)				
8	Vehicle brake horsepower rating (bbp)				
9	Old HC emission factor (grams/mile)				
10	Before HC emission from new buses = (L6*L7*L8*L9) (g/year)				
11	Annual change in HC emissions = ((L10-L5)/1000g) (Kg/Yr)	0.000	0.000	0.000	0.000
12	Comparative purpose only: Convert to Tons/ Year=L11*0.0011Kg (Tons/Yr)	0.000	0.000	0.000	0.000
13	Number of service equivalent days per year (Annual revenue hrs/Daily revenue				
14	Estimated change in HC emissions=(L11/L13) (Kg/ day)	0.000	0.000	0.000	0.000
15	Project design life in years (Yrs)				
16	Total project cost for this application (CMAQ plus Match) ($)				
17	Change in Emissions over the life of the project =L12*L15 (Tons/Life)	0.000	0.000	0.000	0.000
18	Change in Emissions over the life of the project =(L11*L15) (Kg/Life)	0.000	0.000	0.000	0.000
19	Cost per Ton over the life of the project=(L16/L17) ($/ Tons/Life)	$0.00	$0.00	$0.00	$0.00
20	Cost per Kilogram over the life of the project=(L16/ L18) ($/Kg/Life)	$0.00	$0.00	$0.00	$0.00

COMMENTS

Michigan Department of Transportation 2619 (10/13)

TRAVEL DEMAND MANAGEMENT PROGRAM (TDM)

Replaces Worksheet 11

PROJECT NAME

INTERSECTION

SUBMITTER

FISCAL YEAR

Contact: If you should have any trouble with these worksheets please contact Edward Fowler (517) 241-0171

Line No.	Description of Data Item/Formula	VOC	NOx	CO	PM2.5
1	Daily VMT in area covered by program				
2	Percent of daily VMT in peak period				
3	Weighted average proportion reduction in work trips due to TDM programs at 11 national sites (derived from COMSIS, Evaluation of Travel Demand Management Measures to Relieve Congestion, Federal Highway Administration, 1990, Table 4-Comparison of Top individual TDM programs, p.26	0.160	0.160	0.160	0.160
4	Daily VMT reduction=L1*L2*L3	0.000	0.000	0.000	0.000
5	Speed: Use local St. speed to simulate congestion conditions (mph)				
6	Emission factor for speed from L5 (light duty gas vehicles) (g/mi)				
7	Compairative purpose only: Convert to Tons/Year =L8*0.0011 (Tons/Yr)	0.000	0.000	0.000	0.000
8	Annual change in emissions=L10*240days (Kg/Yr)	0.000	0.000	0.000	0.000
9	Annual VMT reduction=L4*240days	0.000	0.000	0.000	0.000
10	Daily change in emissions=(L4*L6/1000g)(-1) (Kg/day)	0.000	0.000	0.000	0.000
11	Project design life in years (Yrs)				
12	Total project cost for this application (CMAQ plus Match) ($)				
13	Change in Emissions over the life of the project=L7*L11 (Tons/Life)	0.000	0.000	0.000	0.000
14	Change in emissions over the life of the project =(L8*L11) (Kg/Life)	0.000	0.000	0.000	0.000
15	Cost per Ton over the life of the project=(L12/L13) ($/Tons/Life)	$0.00	$0.00	$0.00	$0.00
16	Cost per Kilogram over the life of the project=(L12/L14) ($/Kg/Life)	$0.00	$0.00	$0.00	$0.00

COMMENTS

Michigan Department of Transportation 2620 (10/13)

OPERATION OF NEW PUBLIC TRANSPORTATION SERVICES

Replaces Worksheet 12

PROJECT NAME

SUBMITTER

FISCAL YEAR

Contact: If you should have any trouble with these worksheets please contact Edward Fowler (517) 241-0171

Line No.	Description of Data Item/Formula	VOC	NOx	CO	PM2.5
1	Number of new buses in service				
2	Average occupancy per bus				
3	Total round trip in miles				
4	**Reduced** VMT=L1*L2*L3				
5	Regional daily speed (mph, from 1990 final base inventory)				
6	Emission factor for speed from L5 (g/mi, Transit Bus Vehicles)				
7	Annual VMT reduction=L4*240 workdays	0.000	0.000	0.000	0.000
8	Annual emissions change=L10*240days (Kg/Yr)	0.000	0.000	0.000	0.000
9	Compairative purpose only: Convert to Tons/ Year=L8*0.001Tons (Tons/Yr)	0.000	0.000	0.000	0.000
10	Daily emissions change=(L4*L6/1000g) (Kg/day)	0.000	0.000	0.000	0.000
11	Project design life in years (Yrs)				
12	Total project cost for this application (CMAQ plus Match) ($)				
13	Emission change over the life of the project=L9*L11 (Tons/Life)	0.000	0.000	0.000	0.000
14	Emission change over the life of the project=(L8*L11) (Kg/Life)	0.000	0.000	0.000	0.000
15	Cost per Ton over the life of the project=(L12/L13)(-1) ($/Tons/Life)	$0.00	$0.00	$0.00	$0.00
16	Cost per Kilogram over the life of the project=(L12/ L14)(-1) ($/Kg/Life)	$0.00	$0.00	$0.00	$0.00

COMMENTS

Michigan Department of Transportation 2621 (10/13)

CONSTRUCT NON-MOTORIZED PATHWAY

Replaces Worksheet 13

PROJECT NAME

SUBMITTER

FISCAL YEAR

Contact: If you should have any trouble with these worksheets please contact Edward Fowler (517) 241-0171

Line No.	Description of Data Item/Formula	VOC	NOx	CO	PM2.5
1	Length of pathway (mi)				
2	Average Daily Traffic (ADT) along impacted roadways				
3	VMT along primary parallel roadway=L1*L2 (mi/day)				
4	Decimal percentage of pedestrian and bicycle travel				
5	Total VMT diverted from automotive to pedestrian/ bicycle mode=L3*L4 (mi/day)				
6	Average speed along impacted roadway(s) (mph)				
7	Emission factor for speed on L6 (use passenger cars) (g/mi)				
8	Annual VMT reduction=L5*180 bike/walking days (mi)	0.000	0.000	0.000	0.000
9	Annual emission reduction=(L11)*180days (Kg/yr)	0.000	0.000	0.000	0.000
10	For compaitrative purpose only: Conversion to Tons/ Year=(L9*.0011Kg)	0.000	0.000	0.000	0.000
11	Changes in Emissions=(L5*L7)(-1)/1000 (Kg/day)	0.000	0.000	0.000	0.000
12	Project design life in years (Yrs)				
13	Total project cost for this application (CMAQ plus Match) ($)				
14	Emission reduction over the life of the project=L10*L12 (Tons/Life)	0.000	0.000	0.000	0.000
15	Emission reduction over the life of the project=(L9*L12) (Kg/Life)	0.000	0.000	0.000	0.000
16	Cost per Ton over the life of the project=(L13/L14) ($/ Tons/Life)	$0.00	$0.00	$0.00	$0.00
17	Cost per Kilogram over the life of the project=(L13/ L15) ($/Kg/Life)	$0.00	$0.00	$0.00	$0.00

COMMENTS

Michigan Department of Transportation
2622 (10/13)

SIGNAL TIMING REVISIONS AT ONE LOCATION

Replaces Worksheet 14

PROJECT NAME

INTERSECTION

SUBMITTER

FISCAL YEAR

Contact: If you should have any trouble with these worksheets please contact Edward Fowler (517) 241-0171

Line No.	Description of Data Item/Formula	VOC	NOx	CO	PM2.5
1	24-hour traffic count entering intersection (sum all approaches)				
2	Decimal equivalent/proportion of travel in peak periods (cannot exceed 1)				
3	Peak period ADT = L1*L2*				
4	Off-peak period ADT = L1*(1-L2)	0.0	0.0	0.0	0.0
5	BEFORE: Average peak intersection delay in seconds per vehicle (red time + yellow time)				
6	BEFORE: Average off-peak intersection delay in seconds per vehicle (red time + yellow time)				
7	Peak period idle emission factor (g/mile) for 2.5 mph from tables				
8	Off-peak period idle emission factor (g/mile) for 2.5 mph from tables.				
9	BEFORE: Peak emission at intersection due to idling=((L3*L5*L7)/3600 seconds per hour)	0.000	0.000	0.000	0.000
10	BEFORE: Off-peak emission at intersection due to idling=((L4*L6*L8)/3600	0.000	0.000	0.000	0.000
11	AFTER: Average peak intersection delay in seconds per vehicle (red time + yellow time)				
12	AFTER: Average off-peak intersection delay in seconds per vehicle (red time + yellow time)				
13	AFTER: Peak emission at intersection due to idling=((L3*L11*L7)/3600 seconds per hour)	0.000	0.000	0.000	0.000
14	AFTER: Off-peak emission at intersection due to idling=((L4*L12*L8)/3600 seconds per hour)t	0.000	0.000	0.000	0.000
15	Change in peak daily emissions after improvement=(L13-L9/1000) (Kg/day)	0.000	0.000	0.000	0.000
16	Change in off-peak daily emissions after improvement=(L14-L10/1000) (Kg/day)	0.000	0.000	0.000	0.000
17	Annual change in emissions=L19*340 (Kg/Yr)	0.000	0.000	0.000	0.000
18	Comparative purpose only: Convert to Tons/ Year=(L17*0.0011)	0.000	0.000	0.000	0.000
19	Total daily change in emissions=L15+L16 (Kg/day) [(-)=Reduction; (+)=Increase]	0.000	0.000	0.000	0.000
20	Project design life in years (Yrs)				
21	Total project cost for this application (CMAQ plus Match) ($)				
22	Change in Emissions over the life of the project=L18*L20 (Tons/Life)	0.000	0.000	0.000	0.000
23	Change in Emissions over the life of the project=(L17*L20) (Kg/Life)	0.000	0.000	0.000	0.000
24	Cost per Ton over the life of the project=(L21/L22)(-1) ($/Tons/Life)	$0.00	$0.00	$0.00	$0.00
25	Cost per Kilogram over the life of the project=(L21/ L23)(-1) ($/Kg/Life)	$0.00	$0.00	$0.00	$0.00

COMMENTS

Michigan Department of Transportation 2623 (10/13)

DIESEL ENGINE RETROFIT (USING VERIFIED TECHNOLOGIES)

Replaces Worksheet Retro

PROJECT NAME

AREA

SUBMITTER

FISCAL YEAR

Contact: If you should have any trouble with these worksheets please contact Edward Fowler (517) 241-0171

Line No.	Description of Data Item/Formula	VOC	NOx	CO	PM2.5
1	Number of fleet trucks to receive technological advancements				
2	Average number of miles each truck travels per day				
3	Average speed the fleet travels				
4	Current emissions factor based on the scale provided in the look-up table (see below)				
5	Total fleet VMT per day = (Line 1)*(Line 2)				
6	Current fleet emissions production = (Line 5)*(Line 4) [g/mi]				
7	Estimated efficiency from the EPA's verified technology list click here (given in decimal equivilant)*				
8	Calculated emissions reduction based on efficiency factor = (Line 6)*(Line 7)[g/day]				
9	Annual emission reduction=((Line 8*340days)/1000g) [Kg/Yr]	0.00	0.00	0.00	0.00
10	Annual emission reduction in TONS per Year = (Line 9)*(.0011) [Ton/Year]	0.00	0.00	0.00	0.00
11	Daily emissions reduction of entire fleet =(Line 8/1000g) [Kg/day]	0.00	0.00	0.00	0.00
12	Project life in years (Yrs)				
13	Total project cost for this application (CMAQ plus Match) ($)				
14	Emission reduction over the life of the project=L10*L12 (Tons/Life)	0.00	0.00	0.00	0.00
15	Emission reduction over the life of the project=(L9*L12) (Kg/Life)	0.00	0.00	0.00	0.00
16	Cost per Ton over the life of the project=(L13/L14) ($/Tons/Life)	$0.00	$0.00	$0.00	$0.00
17	Cost per Kilogram over the life of the project=(L13/L15) ($/Kg/Life)	$0.00	$0.00	$0.00	$0.00

COMMENTS

8.4.2 Iowa DOT Emission Factors

Areawide_3-40mph_2008.txt

M6.2 emission factors for 2008 areawide scenario.

3.1mph

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.3571	0.3697	0.1268		0.0414	0.0012	0.0019	0.0957	0.0063	1.0000
Fuel Economy (mpg):	24.0	18.6	14.3	17.3	9.6	31.8	20.0	7.2	50.0	16.3
Composite Emission Factors (g/mi):										
Composite VOC :	15.676	9.581	13.652	10.621	12.434	1.524	2.399	1.239	7.72	11.558
Composite CO :	41.36	33.72	49.00	37.62	52.94	4.233	4.765	8.928	80.50	37.009
Composite NOX :	1.943	1.852	2.445	2.004	2.296	2.019	2.438	12.712	1.02	3.013
Composite CO2 :	369.9	475.8	619.2	512.4	927.8	320.2	510.0	1419.7	177.4	563.19

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.3571	0.3697	0.1268		0.0414	0.0012	0.0019	0.0957	0.0063	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0038	0.0039	0.0051	0.0042	0.0446	------	------	------	0.0142	0.0054
ECARBON:	------	------	------	------	------	0.0862	0.0768	0.1297	------	0.0127
OCARBON:	------	------	------	------	------	0.0243	0.1105	0.0633	------	0.0063
SO4:	0.0005	0.0006	0.0007	0.0006	0.0011	0.0002	0.0002	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0043	0.0046	0.0058	0.0049	0.0457	0.1106	0.1875	0.1939	0.0144	0.0250
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Tire:	0.0020	0.0020	0.0020	0.0020	0.0022	0.0020	0.0020	0.0065	0.0010	0.0024
Total PM:	0.0117	0.0119	0.0131	0.0122	0.0533	0.1180	0.1948	0.2058	0.0207	0.0328
SO2:	0.0068	0.0087	0.0114	0.0094	0.0170	0.0030	0.0048	0.0132	0.0033	0.0091
NH3:	0.1017	0.1010	0.0970	0.1000	0.0451	0.0068	0.0068	0.0270	0.0113	0.0905

4mph

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.3571	0.3697	0.1268		0.0414	0.0012	0.0019	0.0957	0.0063	1.0000
Fuel Economy (mpg):	24.0	18.6	14.3	17.3	9.6	31.8	20.0	7.2	50.0	16.3
Composite Emission Factors (g/mi):										
Composite VOC :	10.894	6.809	9.775	7.566	9.130	1.466	2.313	1.179	6.68	8.185
Composite CO :	33.54	28.14	40.26	31.24	48.54	3.981	4.497	8.254	65.88	30.708
Composite NOX :	1.830	1.759	2.318	1.901	2.317	1.943	2.346	12.236	0.99	2.877
Composite CO2 :	369.9	475.8	619.2	512.4	927.8	320.2	510.0	1419.7	177.4	563.19

Vehicle Type: / GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.3571	0.3697	0.1268		0.0414	0.0012	0.0019	0.0957	0.0063	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0038	0.0039	0.0051	0.0042	0.0446	------	------	------	0.0142	0.0054
ECARBON:	------	------	------	------	------	0.0862	0.0768	0.1297	------	0.0127
OCARBON:	------	------	------	------	------	0.0243	0.1105	0.0633	------	0.0063
SO4:	0.0005	0.0006	0.0007	0.0006	0.0011	0.0002	0.0002	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0043	0.0046	0.0058	0.0049	0.0457	0.1106	0.1875	0.1939	0.0144	0.0250
Brake:	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053

Page 1

9 APPENDIX C: SUMMARY OF MPOS CMAQ PRACTICE SCAN

9.1 Puget Sound Regional Council

Summary

Seattle metropolitan area is designated as a maintenance area for PM10 and CO. Puget Sound Regional Council (PSRC) received CMAQ flexible fund for 1 project in 2014.

How are projects solicited?

PSRC distributes a call for projects to all public agencies and interested parties. Applicants should fill screening forms and application form online. Application form questions about project type, project impacts, and the details about the projects which will be used to calculate air quality by PSRC staff (Table 17). In addition to the questions, application form also provides evaluation criteria and their weights and explains how PSRC evaluates the projects. RSRC also developed an instruction for the application form that guides applicants how to fill the form by using an example. A copy of the application form is found in Appendix D, 10.1.1.

Table 17 Required Information to Calculate Air Quality, Puget Sound Regional Council

Project Type	Required Information
Diesel Particulate Emissions Reduction Projects	Describe the types of vehicles, vessels, engines, duty cycles, etc. being addressed. Describe the emissions vintage of the existing engines, and the number of vehicles to be addressed. Describe how often they are used, where they are used, how much fuel is consumed annually and when the benefits from this project will occur.
Roadway Capacity (general purpose and high occupancy lanes)	Describe the roadway and travel conditions before and after the proposed project, including average daily traffic and travel speeds. Describe the potential for multimodal connections, shorter vehicle trips, etc. Describe the transit routes currently using the facility and anticipated in the future. Does this project connect to or expand an existing high occupancy vehicle or business access transit lane system? What is the length of the project and the population served? What source of data indicates the expected conversion of single occupant vehicle trips to transit or carpool?
Transit	Describe the current transit ridership in the project area. Describe the current transit routes serving the project area, including average trip length. If a park-and-ride lot, how many stalls are being added? Describe how the amenities (or other components of the project) are expected to encourage new transit ridership and shift travel from single occupant vehicles to multimodal options. Describe the population served that will be expected to use the new/improved service. What source of data indicates the expected conversion of single occupant vehicle trips to transit?
Bicycle/Pedestrian Facilities	Describe the length of the proposed facility, including connections to other non-motorized facilities and to the larger non-motorized system. Describe the expected travel shed (i.e., land use and population surrounding the project). Does the facility connect to transit? What is the expected population served, and what source of data indicates the expected conversion of single occupant vehicle trips to this mode?
Intelligent Transportation Systems (signalization, etc.)	Describe the existing conditions in the area, including level of service, average daily traffic, average speed, etc. Describe how the project is expected to improve traffic flow through improved speeds, reducing idling, reducing accidents, etc. What is the percentage of heavy trucks using the facility? Does the project improve traffic flow for particular modes (e.g. HOVs) or types of vehicles? What are the transit routes along the corridor, and will this project improve transit reliability on the corridor?
Alternative Fuels or Vehicle Technology	Describe the change in fuel or vehicle technology. How many vehicles are affected? What are the current conditions?
Other	Describe how your project has the potential to reduce emissions through technology, improved management or other means, e.g. “no idling” signage & enforcement, auxiliary

	power units to operate heating, cooling & communications equipment, truck stop electrification, etc.

PSRC then calculates the change in air pollution emissions for CO2, PM2.5, CO, NOx, and VOC. The calculation is based on the specific data provided for each project, EPA emission factors, and other regional and national general data. In addition, PSRC calculates projects cost effectiveness using the following formula.

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

What specific project selection tools, methods, rating systems, or performance measures are used?

PSRC first divides projects into two classes: "Centers" that describes the projects located within a designated regional growth centers and "Connections" that includes the project for connecting designated regional growth centers. For each project type, a set of criteria and their weights are developed. Figure 12 shows the evaluation criteria and scores. Each criterion is detailed in Table 18.

	CMAQ Funding	Maximum Points Per Question
Category	Category Specific – Choose only one (A or B)	
A.	Centers	
	Problem Significance (includes population served)	10
	Project Impact	10
	Circulation Within a Center	10
	Center Development	10
B.	Connections	
	Problem Significance (includes population served)	10
	Project Impact	10
	Mobility Benefits	10
	System Connectivity	10
D.	Project Readiness	
	Secured Funding	20
E.	Air Quality	40
	Cat. A or B Maximum Points Available	100

Figure 12 Evaluation Criteria, Puget Sound Regional Council

Table 18 Detailed Project Evaluation Criteria, Puget Sound Regional Council

Problem Significance			
	16-20 points	11-15 points	0-10 points
Centers	Project addresses a problem with county-wide effects AND impacts a significant number and variety of users and/or modes.	Project addresses a predominantly local problem with limited countywide benefits AND affects a moderate number and variety of users and/or modes.	Project addresses a local problem with no countywide benefits AND affects a limited number and variety of users and/or modes
Connections	Project addresses a problem with county-wide effects AND; affects a facility with a	Project indirectly addresses a county-wide problem by targeting a significant local	Project addresses a predominantly local problem with countywide benefits

	level of service of F for two or more hours OR affects a significant number and variety of users and/or modes.		issue AND; affects a facility with a level of service of E for two or more hours OR affects a moderate number and variety of users and/or modes.		AND; affects a facility with a level of service of D for two or more hours OR affects a limited number and variety of users and/or modes.	
Project Impact						
	15 points		9-14 points		0-8 points	
Centers & Connections	Project provides a long-term solution that will substantially address the targeted problem;		Project partially addresses the targeted problem with a long-term solution, but relies upon other measures for full improvement;		Project provides a short-term solution that marginally addresses the targeted problem;	
Accessibility						
	10 points		6-9 points		0-5 points	
Centers	Project significantly improves access within a center AND benefits a variety of travel modes AND benefits a large number of users;		Project improves circulation for one or more modes within a center AND benefits a moderate number of users;		Project offers limited improvement to circulation for one or more modes within a center AND benefits a limited number of users;	
Center Development						
Connections	Project significantly increases activities and densities within a center; OR significantly streamlines the efficient movement of freight AND implements specific policies in locally adopted plan;		Project will moderately increase activity and densities within a center; OR moderately streamlines the efficient movement of freight AND implements general policies in locally adopted plan;		Project supports a limited amount of increased activity OR provides minimal or no demonstrated improvements to efficient movement of freight AND is consistent with locally adopted goals;	
Mobility Benefits						
	10 points		6-9 points		0-5 points	
Connections	Project expands person carrying capacity between centers OR helps a center meet its development goals OR improves access for multiple modes;		Project improves and/or benefits developments along a major corridor leading to and from a center OR improves circulation for two or more modes;		Project improves and/or benefits developments in minor roadways that connect to major corridors leading to and from a center OR provides limited improvements for one mode;	
System Connectivity						
Connections	Project addresses critical linkages in a major connecting corridor OR eliminates a significant bottleneck in system performance		Project addresses important (not critical) gaps in the development of a corridor OR provides limited relief to a bottleneck in system performance;		Project addresses marginal gaps/barriers with limited efficiency improvements; OR minimal or no demonstrated improvement to identified bottleneck in system performance;	
Project Readiness						
	20 points	16 points	12 points	8 points	4 points	
Centers & Connections	50% matching funds and above	40% matching funds	30% matching funds	20% matching funds	13.5% matching funds	

Who makes project selection decisions?

PSRC sends a list of applicable projects to Washington State DOT (WSDOT) for final approval.

Link to online information
CMAQ Main Page: http://www.psrc.org/funding/cmaqstpfta/
Application Form: http://www.psrc.org/assets/14049/2016SnohomishCwScoringCriteria.pdf
Call for Projects: http://www.psrc.org/assets/7906/Section_1_-_Introductory_Memo.pdf?processed=true
Guidance: http://www.psrc.org/assets/13377/16_Final_2016_Air_Quality_Guidance.pdf

9.2 Southeastern Wisconsin Regional Planning Commission

Summary
In 2014 and 2015, Southeastern Wisconsin MPO received $28.2 million CMAQ funds for 24 projects. Southeastern Wisconsin has one multi-state ozone non-attainment area and a PM2.5 maintenance area.

How are projects solicited?
Air quality emission is calculated by the Southeastern Wisconsin Regional Planning Commission staff. There is not further information regarding CMAQ project solicitation.

What specific project selection tools, methods, rating systems, or performance measures are used?
Evaluation is based on four criteria and their potential scores that range from 0 to 5.

- **Implementation of regional plan**

1.0 point: implements regional plan
0.8 point: consistent with regional plan
0.0 point: inconsistent, or in conflict, with regional plan

- **Degree to which project may be expected to deliver benefits**

1.0 point: project construction/ implementation
0.9 point: promotion/marketing on a collaborative/regional basis to encourage change
0.8 point: promotion/marketing to encourage change
0.6 point: planning/engineering/research/study

- **Extent of benefit**

1.0 point: daily or average weekday benefit
0.9 point: seasonal or weekend benefit
0.8 point: special event travel benefit

- **Provision of alternative to automobile travel**

1.0 point: alternative for daily utilitarian travel
0.9 point: alternative for recreational or special event travel
0.8 point: does not provide alternative

- **Bicycle facilities**

1.0 point: facility is recommended in the bicycle element of the regional plan – off-street trail or surface arterial street
0.90 point: facility is an off-street trail, and not recommended in the bicycle element of the regional plan
0.50 point: facility is on collector/land access street

- **Pedestrian facilities**

0.0 point: use of congestion mitigation and air quality improvement program funds for sidewalk facilities is considered an extremely low priority

For projects rather than an alternative to the automobile for daily utilitarian travel, the following criteria would be considered:
0.95 point: communities with a job/housing imbalance: moderate cost, lower cost, or both

0.95 to 0.99 point: communities with no or limited public transit service

Who makes project selection decisions?
Representatives from all three Southeastern Wisconsin Regional Planning Commission Staff, Wisconsin Department of Transportation (WisDOT) and Wisconsin Department of Natural Resources (WDNR) evaluate the projects independently. An interagency meeting then is held to reach agreement about the eligible projects. Second meeting with the chair of TIP committee helps to finalize the recommended project list. This list is forwarded to the Wisconsin DOT for approval.

Link to online information
Guidance and Evaluation Criteria:
http://www.sewrpc.org/SEWRPCFiles/Transportation/Files/TSSP/2019-2020-CMA-Memo-00231364.pdf
Decision Making Process: http://www.sewrpc.org/SEWRPCFiles/Transportation/Files/TSSP/2019-2020-CMA-Memo-00231364.pdf

9.3 Metropolitan Council of the Twin Cities

Summary
In 2012 to 2015, Metropolitan Council of the Twin Cities received about $70 million for 28 CMAQ projects. In 2012, it received flexible CMAQ fund for metro-wide procurement and installation of electric vehicle charging stations. The Minneapolis-Saint Paul region is within a limited maintenance area for carbon monoxide. Project selection process is based on five criteria and their scores.

How are projects solicited?
Call to projects would be published in the State Register, posted on the Metropolitan Council website's homepage, and released via email to a list of existing and past TDM recipients, and interested persons on file with the Metropolitan Council.

What specific project selection tools, methods, rating systems, or performance measures are used?
The following list shows the evaluation criteria used for CMAQ project selection:

- Project Clarity and Readiness (10% of total): Completeness and understandability of the application and project.
- Integration and Coordination (10% of total): Project demonstrates coordination and integration with other regional resources, plans, initiatives, or infrastructure.
- Innovation (20% of total): Project is new to the region or a specific geographic area; project consists of an expanded scope; or has incorporated significant modifications to an existing program.
- Effect on Congestion Mitigation (30% of total): Project has a focus of and an effect on congestion in the peak period in an area or corridor.
- Effect on Emissions Reductions (30% of total): Project has a focus of and an effect on emissions reduction in an area or corridor.

Who makes project selection decisions?
A selection recommendation committee is made up of the following representatives: one staff from Minnesota DOT, one Metropolitan Council staff member, one Metro Transit staff member, and two at-large members to bring the total to a minimum of five. Metropolitan Council staff first ranks the projects and send it to the selection committee. The selection recommendation committee provides a list of projects for approval by the Transportation Advisory Board.

Link to online information
Guidance: https://metrocouncil.org/getdoc/0f41e0aa-d9bf-4ef9-a597-cdb2ff4e3b4c/BusinessItem.aspx

9.4 South Jersey Transportation Planning Organization

Summary

South Jersey Transportation Planning Organization (SJTPO) received $26.5 million CMAQ fund for nine projects during 2011-2015. A CNG conversions purchase of CNG fueled vehicles project is paid using the flexible portion of CMAQ fund. Project selection is based on using a rubric tool with three criteria and their specific scores.

How are projects solicited?

SJTPO calls for projects each year through its website. Collecting proposals has begun on 13th march 2017 for FY 2018. The applicants should fill and submit the application form available in SJTPO website. A quantitative air pollution analysis in required (whenever possible). At least, the effects of a project on the ozone reduction should be included. If a qualitative analysis is conducted, applicants should explain how the project reduces VMT and delay, and how it promotes multimodal transportation. However, SJTPO recommends sponsors to calculate air pollution emissions. A copy of the application form is available in Appendix D, 10.1.2.

What specific project selection tools, methods, rating systems, or performance measures are used?

Table 19 shows details on the scoring criteria.

Table 19 Evaluation Criteria, South Jersey Transportation Planning Organization

A. Air Quality Benefit • Project described in sufficient detail: size, scope, location, timetable • Emissions benefit analysis conducted o Must be quantitative for most projects (signal improvement, alternative fuel vehicles, etc.) o May be qualitative only when emissions cannot be accurately quantified (education, outreach, etc.) • Cost-effectiveness (estimated emissions reduction in kilogram per CMAQ dollar spent over the lifecycle of the emission benefit)	Score (out of 60)
B. Preferred Project Type • Identified by FHWA as cost-effective • Emissions benefit well supported in research • Experience with similar projects • Support of regional goals • Environmental justice area served	Score (out of 20)
C. Deliverability • FHWA or FTA funding • Environmental or cultural issues • Project readiness • Capability of sponsor to complete and maintain project	Score (out of 20)

Who makes project selection decisions?

After project submission, first SJTPO staff checks whether the proposed projects are eligible and if they are complete and clear. The CMAQ selection committee then ranks the projects based on the above mentioned evaluation criteria and forwards a recommended list to the Technical Advisory Committee (TAC). TAC can accept or reject the list. SJTPO Policy Board then makes a decision based on the TAC-endorsed CMAQ project list.

Links to online information

Main Page: http://sjtpo.org/cmaq/

Application Form: http://sjtpo.org/wp-content/uploads/2016/06/FY-2018-CMAQ-Application.pdf

Evaluation Criteria: http://sjtpo.org/wp-content/uploads/2016/06/FY-2018-CMAQ-Proposal-Evaluation.pdf

9.5 Chicago Metropolitan Agency for Planning

Summary

Northeastern Illinois is designated as non-attainment for the ozone and PM2.5. Projects are ranked and selected based on their air quality cost-effectiveness within in their project type category. Project selection tool is a table that designates projects in four general categories (highway, transit, bicycle, and direct emissions reduction projects).

How are projects solicited?

The Chicago Metropolitan Agency for Planning (CMAP) issues a call for CMAQ projects every other year. An announcement will be made through CMAP website. The recent call ended on March 3, 2017. Applicants should use an online tool named "eTIP database, Call for Projects (CFP) portal" to submit their projects. eTIP database includes projects funded by federal programs. The eTIP database requires applicants to enter information about their projects type, location, and funding. There is also a mapping application in the eTIP portal that allows applicants draw their project locations. A copy of the application form is available in Appendix D, 10.1.3. Applicants are not required to calculate emissions benefits. They should submit the emissions benefit forms which provide necessary inputs for calculating air pollution emissions by CMAP staff. The emissions benefit form differs for each type of projects including bicycle facility projects, demonstration projects, signal interconnect projects, traffic flow improvement projects, and transit projects. All emission benefit forms are found in Appendix D, 10.2.1. Applicants should also complete an input module worksheet if they propose traffic flow improvement projects. This form questions about traffic flow details before and after an improvement project. A copy of the module worksheet is available in Appendix D, 10.2.2.

What specific project selection tools, methods, rating systems, or performance measures are used?

Table 20 shows the evaluation criteria and their weights. If projects are among recommended projects of 2040 regional plan, or if they are supportive of transit and parking management, they will be given additional 10 points. For projects that do not fit any of the categories, cost effectiveness of emission reduction is the only evaluation criterion.

Table 20 Evaluation Criteria, Chicago Metropolitan Agency for Planning

Project type	Criteria and Weights			
Highway	Reliability 15	Safety 5	On CMP* network 5	Transit Benefit 5
Transit	Ridership 15		Reliability (transit service) or asset condition (transit facilities) 15	
Bicycle	Safety & attractiveness 10		Transit accessibility 10	Facility connectivity 10
Direct Emissions Reduction	Benefits sensitive population 20		Annual health benefits 5	Improves public fleets 5

Who makes project selection decisions?

The selection committee consists of representatives from Chicago Metropolitan Agency for Planning, DuPage County Division of Transportation (Counties), Chicago Department of Transportation, Illinois

Department of Transportation, Regional Transportation Authority, Illinois Environmental Protection Agency, and Council of Mayors. The CMAQ project selection committee ranks the projects and submits the ranked projects to the Metropolitan Planning Organization Policy Committee for review. The Illinois Department of Transportation makes the final decision.

Links to online information
CMAQ Main Page: http://www.cmap.illinois.gov/mobility/strategic-investment/cmaq/program-development
CMAQ Guidance: http://www.cmap.illinois.gov/documents/10180/604402/FFY2018-22+CMAQ+-+2018-2020+TAP+Application+Booklet/b508ed03-850e-472c-9b5b-efb89fef68e7

9.6 Delaware Valley Regional Planning Commission

Summary
Delaware Valley Regional Planning Commission (DVRPC) is a designated MPO for Philadelphia metropolitan area. The nine-county DVRPC area is designated as non-attainment for the ozone and PM2.5, and maintenance area for CO. Evaluation tool is a table with six criteria including project readiness, sponsor capacity, emissions/VMT reduction, long-term viability of emissions benefit, local contribution, and projects serving an environmental justice community. There is a set of sub-criteria under each criterion which measures the performance of the project.

How are projects solicited?
An announcement will be made through DVRPC website. DVRPC staffs calculate the emissions reduction based on information provided in the emission analysis forms submitted by the applicants. Each application should meet three pre-screening criteria in addition to general evaluation criteria including consistency with long-range plan or local comprehensive plan goals, located within a DVRPC congested sub-corridor, and applicant must be a public agency or have a public agency sponsor the project. A copy of the application form is found in Appendix D 10.1.4. The emission analysis forms are not available.

What specific project selection tools, methods, rating systems, or performance measures are used?
Table 21 shows the evaluation criteria and sub-criteria.

Table 21 Evaluation Criteria, Delaware Valley Regional Planning Commission

	Criteria	Weight (out of 100)	Score (%)	Weighted Score (weight × score)	Best Possible Score**
1. Project Readiness: Project readiness refers to the likelihood that a project will be implemented in a timely fashion					**25**
1.	High	25	100%	25	
2.	Medium	25	50%	12.5	
3.	Low	25	25%	6.75	
4.	Not ready	25	0	0	
2. Sponsor Capacity: Sponsor capacity refers to the project sponsor's ability and commitment to implement the project should CMAQ funding be awarded.					**25**
1.	High	25	100%	25	
2.	Medium	25	50%	12.5	
3.	Low	25	25%	6.75	
3. Emissions/VMT Reduction					**20**

1.	Modeled emissions reductions for fine particles ($PM_{2.5}$) + nitrogen oxides (NOx) + volatile organic compounds (VOC) = >50 kilograms per day (kg/day) or VMT reduction > 10,000 VMT/day	20	100%	20	
2.	Modeled emissions reductions for $PM_{2.5}$ + NOx + VOC = 10– 49.9 kg/day or VMT reduction between 1,000 and 10,000 VMT/day	20	50%	10	
3.	Modeled emissions reductions for $PM_{2.5}$ + NOx + VOC = <10 kg/day or VMT reduction <1,000 VMT/day	20	25%	5	
4. Long-Term Viability of Emissions Benefit: The value of a project for helping the region meet and maintain the air quality standards depends on whether those benefits can be sustained over time.					**20**
1.	Projects that provide benefits for reducing emissions, Vehicle Miles Traveled, improving operations, or reducing congestion for >10 years.	20	100%	20	
2.	Projects with identifiable, >5 years, emissions benefit (benefit may expire as technology is replaced or equipment ages) or outreach project or transit subsidy with identified funding >5 years.	20	50%	10	
3.	Emissions benefit dependent on future funding; funding beyond first 5 years is uncertain.	20	25%	5	
5. Local Contribution: percentage of the total project cost represented by local contribution.					**5**
1	>75%	5	100%	5.0	
2	50–74.9%	5	75%	3.75	
3	35–49.9%	5	50%	2.50	
4	20–34.9%	5	25%	1.25	
5	<20%	5	0	0.00	
6. Projects Serving an Environmental Justice Community					**5**
1	Yes	5	100%	5	
2	No	5	0	0	
	Best Possible Score*				**100**

Who makes project selection decisions?

CMAQ subcommittee reviews the projects for basic eligibility. The CMAQ Subcommittee consists of representatives from DVRPC's member governments and agencies, and representatives of interests (business and freight, transit, and the general public). The selection committee then evaluates the projects based on above mentioned criteria. The geographic distribution of projects is also considered to make sure that CMAQ program is balanced and includes a mix of all eligible project types. Recommended projects will be forwarded to the DVRPC Board for selection. Selected projects then go to the Pennsylvania Department of Transportation for inclusion in the STIP.

Links to online information

CMAQ Main Page: http://www.dvrpc.org/cmaq/

CMAQ Guidance: http://www.dvrpc.org/cmaq/pdf/DVRPC_2015_CMAQ_Program_Guidance.pdf

Application Form: http://www.dvrpc.org/cmaq/doc/DVRPC_2016_PA_CMAQ_application_12-29-15.doc

9.7 New York State Department of Transportation

Summary

New York State is designated as non-attainment for the ozone, PM10, PM2.5, and maintenance area for CO. The project selection consists of two steps: the first step is checking general eligibility of the projects and the second step is evaluating projects based on a set of criteria and their weights by using a specific tool named "CMAQtraq".

How are projects solicited?

New York DOT (NYSDOT) issues a call every other year. Applicants can submit their projects before project deadline for more assistance. The applicants are taught about the CMAQ program, pre-application review process, the application, and key requirements through a NYSDOT workshop. Applicants use the CMAQtraq online tool to submit their projects. They should supply the required inputs to run the tool. CMAQtraq tool uses this information or the pre-loaded CMAQ emission factors to calculate the emissions benefits. CMAQtraq is found in Appendix D, 10.1.5. NYSDOT also provides an excel-based spreadsheet estimator to calculate the price of transportation infrastructure. The required inputs for CMAQ benefit calculation is found in Appendix D, 10.2.3.

What specific project selection tools, methods, rating systems, or performance measures are used?

The first step of evaluation is based on a set of questions and a negative answer to any of these questions will prevent the project from being further considered.

- Is the project in one of the 19 eligible counties?
- Does the project fit into one or more of the eligible CMAQ categories?
- Does the project submission include data so calculations of the estimated emissions benefits for targeted pollutants (VOC, NOX, CO, PM2.5, PM10) may be made?
- Does the project have an eligible Sponsor?
- Did the Sponsor attend the TAP-CMAQ Informational Workshop?
- Does the project have the necessary matching funds?
- Is the application complete? Are all project application attachments and supporting documentation included and was the application submitted by the October 21, 2016 deadline?
- Has the sponsor demonstrated that the project is ready to go and can be completed within the established timeframe?

The second phase of evaluation is based on Table 22 which includes the evaluation criteria and their weights for different types of projects.

Table 22 Evaluation Criteria, New York DOT

Category	Evaluation Criteria	Available Points
Project Benefits & Proposed Solution	• How significant is the identified problem? • How well does the proposed project address the stated problem? • Is the proposed work technically feasible, and implementable?	**20**

Technical Benefits: Emission Reduction & Congestion Mitigation	**Emission Reduction** • Reductions in targeted CO, ozone precursors: NOX and/or VOC, PM2.5, PM10 in the area. **Congestion Mitigation** • How well does the project reduce volume? • How well does the project improve travel time? • How well does the project improve modal options and accessibility?	**30**
Innovation	• How does this project include unique characteristics, consider new approaches or use innovative techniques to address the problem? • Does the project include cost-effective solutions and/or creative/innovative ways to deliver the project? • Does the project leverage other partnerships or fund sources?	**20**
Project Schedule and Budget	• Are the estimates reasonable for the scope and in relation to the schedule/timeline for completion? • Does the schedule and budget reflect the steps needed to fully execute a federal-aid transportation project? • Is the project timeframe to construction/implementation within 18 months?	**20**
Ability to Deliver the Project	• Sponsor's past performance using federal aid; • Capacity to implement/begin construction within 18 months.	**10**
Total Points		**100**

Who makes project selection decisions?
The Office of Environment/Environmental Science Bureau reviews the projects for completeness determination. The Policy and Planning Division, and then FHWA finalize the selected projects.

Links to online information
CMAQ Main Page: https://www.dot.ny.gov/tap-cmaq
CMAQ Guidance: https://www.dot.ny.gov/divisions/operating/opdm/local-programs-bureau/tap-cmaq/repository/Appendix-C-CMAQ-Eligibility-Requirements.pdf
Application Form: https://www.dot.ny.gov/divisions/operating/opdm/local-programs-bureau/tap-cmaq/repository/TAP-CMAQ%20Application%20updated%209-20-16.pdf
Cost Estimate Tool: https://www.dot.ny.gov/divisions/operating/opdm/local-programs-bureau/tap-cmaq/repository/Quick%20Estimating%20Tool.xls

9.8 Atlanta Regional Commission

Summary
Atlanta region is designated as non-attainment for the ozone and PM2.5. CMAQ project selection process is based on three steps including filtering the eligible projects; evaluating projects based their air quality emissions benefits; and final evaluation using further consideration if needed. Emissions benefits are calculated by using "CMAQ calculator" tool which also can estimate changes of travel delay and VMT.

How are projects solicited?
Atlanta Regional Commission (ARC) announces a call for CMAQ to the ARC Transportation Coordinating Committee (TCC). Then ARC staff collaborates with the Transportation and Air Quality Committee (TAQC) Subcommittee and with Georgia DOT (GDOT) to develop project priorities. CMAQ program package then will be presented to the Transportation Coordinating Committee for publish. The priority projects are travel demand management projects, clean vehicle & technology programs, transit

service start-up operation (and expansion), roadway ITS /operations/incident management, and managed lanes.

What specific project selection tools, methods, rating systems, or performance measures are used?
Projects are first reviewed based on FHWA Program Guidance. Table 23 shows the evaluation criteria of the first round.

Table 23 First Step Evaluation Process, Atlanta Regional Commission

General Filters	Project must originate from a locally adopted plan Sponsors must have Qualified Local Government (QLG) status current or pending Project must be federal aid eligible
Roadway Capacity Filters	Project must be located on a regional or national priority transportation network Project must include a complete streets component that is context sensitive to the existing community Rural projects should support economic competitiveness by improving multi-modal connectivity between regional centers
Transit Capacity Filters	Projects that are estimated to cost $20 million or more must demonstrate a firm financial package Project must demonstrate a firm financial package

If the projects meet the above mentioned criteria, they will be evaluated based on a cost/benefit analysis of emissions reduction, the ability to deliver the projects submitted, a calculation of how many people live and work within ¼ mile of the project, and the annual reduction in vehicle hours of delay. Figure 13 shows what criteria are used to evaluate each project type. Each project is only compared with other projects of the same type. Figure 14 illustrates the survey results. Higher number means higher weight.

Atlanta Region's Plan Goals	Performance Criteria	Project Types								
		Bicycle	Pedestrian	Trail	Roadway Asset Management & Resiliency	Roadway Expansion	Roadway Transportation Systems Management & Operations	Transit Expansion	Transit Asset Management	Misc. Emissions Related Projects
World Class Infrastructure	Mobility & Congestion	✓	✓	✓	✓	✓	✓	✓		
	Reliability					✓	✓	✓		
	Network Connectivity	✓	✓	✓	✓	✓	✓	✓		
	Multimodalism	✓	✓	✓	✓	✓	✓	✓		
	Asset Management & Resiliency				✓				✓	
Healthy Livable Communities	Safety	✓	✓	✓	✓	✓	✓	✓	✓	
	Air Quality & Climate Change	✓	✓	✓		✓	✓	✓	✓[1]	✓
	Cultural & Environmental Resources	✓	✓	✓	✓	✓	✓	✓	✓	
	Social Equity	✓	✓	✓	✓	✓	✓	✓	✓	
	Land Use Compatibility	✓	✓	✓				✓		
Competitive Economy	Goods Movement				✓	✓	✓			
	Employment Accessibility	✓	✓	✓	✓	✓	✓	✓	✓	

Figure 13 Project Evaluation Matrix, Atlanta Regional Commission

Criteria	Bike/Ped/Trail	Roadway Asset Management	Roadway Expansion & TSM&O	Transit Expansion	Transit Asset Management[5]
Asset Management & Resiliency	-	14.9 %	-	-	22.0 % / 19.2 %
Mobility & Congestion	13.7 %	13.8 %	13.0 %	13.5 %	-
Safety	14.5 %	14.4 %	13.4 %	8.5 %	22.0 % / 19.2 %
Network Connectivity	14.4 %	12.9 %	12.4 %	13.5 %	-
Reliability	-	-	12.1 %	12.0 %	-
Multimodalism	12.6 %	11.8 %	11.3 %	10.2 %	-
Employment Accessibility	10.4 %	10.2 %	10.3 %	11.6 %	24.3 % / 21.2 %
Land Use Compatibility	11.5 %	-	-	10.5 %	-
Social Equity	9.7 %	8.3 %	7.0 %	9.5 %	20.8 % / 18.2 %
Air Quality & Climate Change	6.3 %	-	7.3 %	6.5 %	0.0 % / 12.6 %
Goods Movement	-	8.1 %	7.8 %	-	-
Cultural & Environmental Sensitivity	6.8 %	5.5 %	5.3 %	4.1 %	11.0 % / 9.6 %

Figure 14 Criteria Weights, Atlanta Regional Commission

ARC developed a set of criteria in addition to the above mention criteria which cannot be easily quantified including, sponsor priority, regional equity, deliverability and benefit-cost or cost-

effectiveness. Cost-effectiveness of each project type is calculated by using the definitions in the Figure 15.

Project Type	Cost-Effectiveness & B/C Methods	Units
Bicycle/Pedestrian/Trail	Lifecycle cost per user per year	$/User/yr
Roadway Asset Management & Resiliency	Lifecycle cost per annual average daily traffic AADT	$/AADT/yr
Roadway Expansion	Traditional B/C Ratio	-
Roadway TSM&O	Lifecycle cost per change in vehicle hours of delay per day	$/ΔVHD/day
Transit Expansion	Lifecycle cost per boardings per day	$/Boarding/day
Transit Asset Management	Lifecycle cost per sum of criteria pollutants per day	$/Σ pollution/yr

Figure 15 Definition of Cost-Effectiveness/Cost-Benefit, Atlanta Regional Commission

ARC also developed an emission calculator which can quantify emissions reductions associated with the eight-hour ozone standard (ozone precursors NOx and VOC), annual PM2.5 standard (PM2.5 and NOx), and greenhouse gases. CMAQ Calculator is also able to estimate changes in travel delay and VMT. This tool can estimate emission reduction from five types of transportation strategies including roadway ITS/operations/incident management, transit start-up operations and expansion, managed lanes, travel demand management, and clean fuel and technology. Required input data and methodology to estimate air pollution emissions for each project type is explained in a technical report. Due to time and space limitation, we only show how this tool works by using one example, regional bike/pedestrian projects. A copy of the calculation sheet for bike/pedestrian projects is found in Appendix D, 10.2.4. Following data are required to be provided by users for bike/pedestrian projects:

- ADT between origin and destination of route
- Capacity of parallel arterial (vph)
- Posted Speed on parallel arterial (mph)
- Number of activity centers within ½ mile of project
- Within 2 miles of a university or college (Y/N)
- Area type
- Predicted Total Daily Bicycle Demand (optional input to use in place of first six inputs)
- Predicted Total Daily Pedestrian Demand (optional input to use in place of first six inputs)
- Does this project have a bicycle component?
- Does this project have a bicycle component?
- Average length of bicycle trips (miles)
- Does this project have a pedestrian component?
- Average length of pedestrian trips (miles)
- Length of bike/ped project (miles)

CMAQ Calculator has a set of default values for some inputs and the users can modify them. In this example, default average length of bicycle and pedestrian trips are considered 1.8 and 0.5 miles respectively. Users, however, can change them, if they have more accurate data. After providing required inputs, a method is needed to calculate emission change. ARC first calculates the auto trips reduced as a result of increased bike and pedestrian trips generated by the projects. Increased biking and walking trips are then translated into reduced VMT. Speed and VMT before and after the project are then used to calculate emission rate. Change in emissions is calculated by subtracting the “after project” emissions from the “before project” emissions. Table 24 shows the results of our example project.

Table 24 an Example of CMAQ Calculator Results, Atlanta Regional Commission

Results	
DELAY/VMT IMPACT	
Reduction in Annual Vehicle Hours of Delay	9,167
Annual Auto VMT Reduced	138,311
TOTAL REDUCTION	
Total Annual Reductions in GHG Emissions (g CO2 /year)	71,006,415
Total Annual Reductions in PM NOx Emissions (g/year)	64,267
Total Annual Reductions in PM Emissions (g/year)	3,648
Total Annual Reductions in NOx Emissions (g/year)	77,190
Total Annual Reductions in VOC Emissions (g/year)	29,334
Total Daily Reductions in GHG emissions (short tons/day)	0.313
Total Daily Reductions in PM NOx Emissions (short tons/day)	0.00028
Total Daily Reductions in PM Emissions (short tons/day)	0.00002
Total Daily Reductions in NOx Emissions (short tons/day)	0.00034
Total Daily Reductions in VOC Emissions (short tons/day)	0.00013

Who makes project selection decisions?
As shown in Figure 16, the decisions are made by using "Key Decision Process". ARC staff first reviews the projects for general eligibility and if they match to regional policy. The staff then technically evaluates the projects. At the third tier, ARC staff, project sponsors and policymakers evaluate the projects for any further consideration that cannot be accounted for in a technical exercise and they make the final decision.

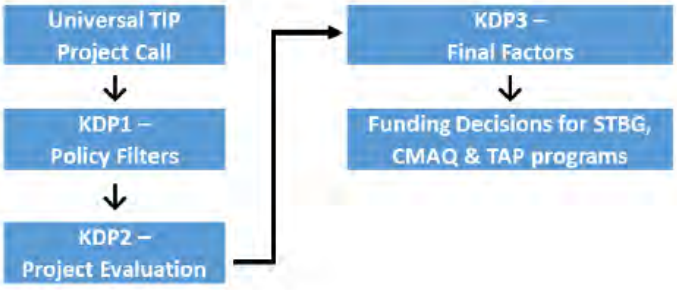


Figure 16 Key Decision Process Framework, Atlanta Regional Commission

Links to Online Information
CMAQ Main Page: http://www.atlantaregional.com/transportation/transportation-improvement-program/congestion-mitigation-and-air-quality-program
CMAQ Calculator: http://www.atlantaregional.com/File%20Library/Environment/Air/ARC_AQCal_Version2_20161227.xlsx
Technical Report: http://www.atlantaregional.com/File%20Library/Environment/Air/ARC-CMAQ-Calculator-Documentation.pdf
Guidance: http://www.atlantaregional.com/File%20Library/Environment/Air/ARC-CMAQ-Calculator-Documentation.pdf
Project Evaluation: http://documents.atlantaregional.com/transportation/projsolicitation/2017/project_eval_documentation.pdf

Project Solicitation:
http://documents.atlantaregional.com/tcc/cmaq/CMAQ_Funding_Recommendations.pdf

10 APPENDIX D: MPO CMAQ FORMS AND APPLICATIONS

10.1 MPO CMAQ Application Forms

10.1.1 Puget Sound Regional Council Application Form

2016 SCT ICC COUNTYWIDE
STP and CMAQ Scoring Criteria

This scoring criteria's purpose is intended to be used as a worksheet for you to gather the information needed in the online application. The order of the worksheet may not be in the same order as online application on PSRC's website at the following link:
http://www.psrc.org/funding/selection/fhwa-fta-project-selection/

Project Category:

☐ Centers (Section A)

☐ Connection, Node or Corridor (Section B)

☐ Preservation (Section C)

Project Title:

Project Sponsor:

	Sponsor	Co-sponsor
Agency:		
Contact:		
Address:	City/State Zip	City/State Zip
Phone:		
Fax:		
Email:		

Fundamental Questions:

1. **Select if appropriate:** ☐ Rural ☐ Non-motorized ☐ Preservation
2. **In the table below, identify the phase(s) funding is being requested, the amount, and expected year of obligation:**

*** Applicants may apply for more than one phase, but funding awards are limited to: Preliminary engineering phase "plus one", (i.e. PE + ROW, or PE + CN. ROW + CN are not eligible for funding.**

Phase	funding Amount Requested	Year of Obligation

3. **Is this project consistent with T2040? (To be eligible for federal funding a project must be in or consistent with Transportation 2040, the regions long range metropolitan transportation plan.)**
   ☐ Yes ☐ No

4. **Does this project support land use plans and goals consistent with local transportation and land use elements of the applicable comprehensive plan?**
   ☐ Yes ☐ No

5. **If requesting STP funds, is this project on the Federal-Aid System?**
   ☐ Yes ☐ No Indicate Federal Functional Classification Code: ☐

   If requesting CMAQ funds, is this project on the Federal-Aid System? (Not applicable for trails)

   ☐ Yes ☐ No ☐ Trail
   If yes indicate the Federal Functional Classification Code: ☐

6. **For this project is your agency requesting:**
   ☐ STP ☐ CMAQ

Note: Preservation projects ***must*** request funding under the STP program only.

Project Location:

Project Description: Include scope, justification, need, and/or purpose. Limit response to ½ page maximum.

Attachments:

☐ **Vicinity Map** (8.5 x 11)
☐ **Project Graphics** (*2-- 8.5" x 11" pages max.)*

Category Specific Questions

All projects must be consistent with the comprehensive plan of each jurisdiction in which the project is located. Jurisdictions comprehensive plans must be certified by PSRC as being consistent with GMA, Vision 2040 and Transportation 2040.

1. Is this project specifically identified in a local comprehensive plan?

   ☐ Yes. Indicate (1) plan name, (2) relevant section(s) and (3) page number where it can be found:

   ☐ No. Describe how this project is consistent with the applicable local comprehensive plan, citing specific local policies and provisions the project supports. Please include documentation.

Select one of the following three categories that best fits your project and follow the corresponding instructions:

2. Is this project located within or connects to a designated regional growth center, a manufacturing or industrial center or locally designated center?

   ☐ Yes. Indicate center (1) name and (2) type.

   - ☐ Centers: Project must be located within a designated regional growth center, a manufacturing or industrial center or locally designated center. Complete Section A and proceed directly to Part 2.
   - ☐ Connections: Project must be connected to a designated regional growth center, a manufacturing or industrial center or locally designated center. Complete Section B and proceed directly to Part 2.
   - ☐ Preservation: Paving project must be located within or connect to a designated regional growth center, a manufacturing industrial center or locally designated center. Complete Section C and proceed directly to Part 2.

A. Centers

A1. Problem Significance

Describe the nature and magnitude of the problem (safety, concurrency, congestion, incomplete sidewalk, bicycle or trail network, inadequate transit service or access to facilities, freight delays, economic development constraints etc.) that your project is seeking to address Include a discussion of the population impacted by the problem. . Describe the type and number of users who will benefit, including minority, low-income and/or other protected classes as identified in the Presidential Executive Orders for Environmental Justice.

a.	16-20 points	Project addresses a problem with county-wide effects AND impacts a significant number and variety of users and/or modes.
b.	11-15 points	Project addresses a predominantly local problem with limited countywide benefits AND affects a moderate number and variety of users and/or modes.
c.	0-10 points	Project addresses a local problem with no countywide benefits AND affects a limited number and variety of users and/or modes.

A2. Project Impact

Identify how your project will remedy the existing or anticipated problem (i.e. improves safety conditions, raises the level of service, completes a missing sidewalk, bicycle path or trail, adds transit capacity in an underserved area, reduces travel time or modal conflict, promotes economic development etc.)

a.	15 points	Project provides a long-term solution that will substantially address the targeted problem;
b.	9-14 points	Project partially addresses the targeted problem with a long-term solution, but relies upon other measures for full improvement;
c.	0-8 points	Project provides a short-term solution that marginally addresses the targeted problem;

A3. Circulation Within A Designated Regional Growth Center, A Manufacturing or Industrial Center, or Locally Designated Center

Describe how the project will provide access to a major destination or significantly improve circulation, movement of people and/or goods to destinations (i.e. employment sites) within the designated center. Describe the type and number of users who will benefit, including minority, low-income and/or other protected classes as identified in the Presidential Executive Orders for Environmental Justice. If appropriate, describe how the project contributes to transportation demand management and commute trip reduction opportunities.

a.	10 points	Project significantly improves access within a center AND benefits a variety of travel modes AND benefits a large number of users;
b.	6-9 points	Project improves circulation for one or more modes within a center AND benefits a moderate number of users;
c.	0-5 points	Project offers limited improvement to circulation for one or more modes within a center AND benefits a limited number of users;

A4. Center Development

Describe how the project will assist the center to develop in a manner consistent with adopted policies and or plans. Describe how the project will support increased activity in the center and otherwise implement adopted development plans. Describe how the project results in more reliable travel for various user groups, including residents, transit riders, employees, goods transporters and customers.

a.	10 points	Project significantly increases activities and densities within a center; OR significantly streamlines the efficient movement of freight AND implements specific policies in locally adopted plan;
b.	6-9 points	Project will moderately increase activity and densities within a center; OR moderately streamlines the efficient movement of freight AND implements general policies in locally adopted plan;
c.	0-5 points	Project supports a limited amount of increased activity OR provides minimal or no demonstrated improvements to efficient movement of freight AND is consistent with locally adopted goals;

B. Connections

B1. Problem Significance

Describe the nature and magnitude of the problem (safety, concurrency, congestion, incomplete sidewalk, bicycle or trail network, inadequate transit service or access to facilities, freight delays, economic development constraints etc.) that your project is seeking to address. Include a discussion of the population impacted by the problem. Describe the type and number of users who will benefit, including minority, low-income and/or other protected classes as identified in the Presidential Executive Orders for Environmental Justice.

a.	16-20 points	Project addresses a problem with county-wide effects AND; affects a facility with a level of service of F for two or more hours OR affects a significant number and variety of users and/or modes.
b.	11-15 points	Project indirectly addresses a county-wide problem by targeting a significant local issue AND; affects a facility with a level of service of E for two or more hours OR affects a moderate number and variety of users and/or modes.
c.	0-10 points	Project addresses a predominantly local problem with countywide benefits AND; affects a facility with a level of service of D for two or more hours OR affects a limited number and variety of users and/or modes.

B2. Project Impact

Identify how your project will remedy the existing or anticipated problem (i.e. raises the level of service, completes a missing walkway, adds transit capacity in an underserved area, reduces travel time or modal conflict etc.) and will provide long-term improvements to safety or congestion.

a.	15 points	Project provides a long-term solution that will substantially address the targeted problem;
b.	9-14 points	Project partially addresses the targeted problem with a long-term solution, but relies upon other measures for full improvement;
c.	0-8 points	Project provides a short-term solution that marginally addresses the targeted problem;

B3. Mobility Benefits

Describe how the project benefits centers and connecting corridors by providing for a range of travel modes. If appropriate, describe how the project contributes to transportation demand management and commute trip reduction opportunities.

a.	10 points	Project expands person carrying capacity between centers OR helps a center meet its development goals OR improves access for multiple modes;
b.	6-9 points	Project improves and/or benefits developments along a major corridor leading to and from a center OR improves circulation for two or more modes;;
c.	0-5 points	Project improves and/or benefits developments in minor roadways that connect to major corridors leading to and from a center OR provides limited improvements for one mode;

B4. System Connectivity

Describe how the project creates more reliable and efficient travel flows along the corridor by filling missing links or removing barriers along connecting corridors and to/from centers.

a.	10 points	Project addresses critical linkages in a major connecting corridor OR eliminates a significant bottleneck in system performance;
b.	6-9 points	Project addresses important (not critical) gaps in the development of a corridor OR provides limited relief to a bottleneck in system performance;
c.	0-5 points	Project addresses marginal gaps/barriers with limited efficiency improvements; OR minimal or no demonstrated improvement to identified bottleneck in system performance;

C. Preservation

- Eligible roadways must be at least an urban collector (or above) or a minor collector (or above) to be eligible for STP funds;
- It is assumed that sponsors have an existing PMS rating systems in place, which evaluates roadway segments on a scale of 1 to 100. If sponsor does not have a PMS system in place, alternate methods may be available to evaluate roadways for grant purposes.

C1. Pavement Preservation Level of Effort:

Does your agency have a pavement management program? ☐ *Yes (5 pts.)* ☐ No (0 pts.)
If yes provide a short description of your program:

Does your agency have identified sources of funding for pavement preservation projects?
☐ *Yes (5 pts.)* ☐ No (0 pts.)

If yes provide a brief description of these sources:

Provide average PCI of agency's system wide roadway system.

System wide PCI

a. 10 points 70 or above
b. 8 points Between 50 and 69
c. 0 points 49 or below

C2. Roadway Condition

Describe the preservation priorities of the agency and the nature and magnitude of the problem that the project is attempting to solve. What preservation method will be used on this road and how was it determined? What is the most recent PCI for this road? (For projects covering several roadways, provide the average or median score and provide a brief summary of each.) If PCI is less than 50, provide justification for minimum 7 year extended pavement life.

	Proposed Treatment
Points	Asphalt Surface Treatment PCI
0	80 to100
30	60 to 79
20	50 to 59
10	40 to 49*
0	0 to 39

	Proposed Treatment
Points	Overlay PCI
0	70 to 100
20	60 to 69
30	50 to 59
15	40 to 49
0	0 to 39

*Double chip seal must be proposed

C3. Project Significance

Describe how the project will benefit a locally recognized center. Include the type and number of users benefited, the ADT, and the federal functional classification.

Centers & Corridors (Circle correct category)

10 points	Within Centers
8 points	Connecting Corridor within ½ mile of center
5 points	Connecting Corridor outside ½ mile of center

Transit Service

5 points	Project area has transit service
0 points	Project area does not have transit service

Identify transit route(s) that serve your project area:

http://www.commtrans.org/busservice/systemmaps/

ADT

5 points	>15,000
4 points	>10,000
3 points	> 5,000
2 points	5,000 or less

Federal Functional Classification (Circle classification)

Points	Rural Functional Classification (under 5,000 population)	Urban Functional Classification (Over 5,000 population)
10	02 Principal Arterial	14 Principal Arterial
10	06 Minor Arterial	16 Minor Arterial
5	07 Major Collector	17 Collector (Major/Minor)
5	08 Minor Collector	

Part 2 – Questions for All Projects

D. Air Quality

Please select all of the elements in the list below that are included in the project's scope of work, and provide the requested information below.

- ☐ Diesel Particulate Emissions Reduction Projects (e.g. diesel engine retrofits)
- ☐ Roadway Capacity (general purpose and high occupancy lanes)
- ☐ Transit
- ☐ Bicycle/Pedestrian Facilities
- ☐ Intelligent Transportation Systems (signalization, etc.)
- ☐ Alternative Fuels or Vehicle Technology
- ☐ Other

Diesel Particulate Emissions Reduction Projects: Describe the types of vehicles, vessels, engines, duty cycles, etc. being addressed. Describe the emissions vintage of the existing engines, and the number of vehicles to be addressed. Describe how often they are used, where they are used, how much fuel is consumed annually and when the benefits from this project will occur.

Roadway Capacity (general purpose and high occupancy lanes): Describe the roadway and travel conditions before and after the proposed project, including average daily traffic and travel speeds. Describe the potential for multimodal connections, shorter vehicle trips, etc. Describe the transit routes currently using the facility and anticipated in the future. Does this project connect to or expand an existing high occupancy vehicle or business access transit lane system? What is the length of the project and the population served? What source of data indicates the expected conversion of single occupant vehicle trips to transit or carpool?

Transit (park-and-ride lots, new or expanded transit service, transit amenities, etc.): Describe the current transit ridership in the project area. Describe the current transit routes serving the project area, including average trip length. If a park-and-ride lot, how many stalls are being added? Describe how the amenities
(or other components of the project) are expected to encourage new transit ridership and shift travel from single occupant vehicles to multimodal options. Describe the population served that will be expected to use the new/improved service. What source of data indicates the expected conversion of single occupant vehicle trips to transit?

Bicycle/Pedestrian Facilities: Describe the length of the proposed facility, including connections to other non-motorized facilities and to the larger nonmotorized system. Describe the expected travel shed (i.e., land use and population surrounding the project). Does the facility connect to transit? What is the expected population served, and what source of data indicates the expected conversion of single occupant vehicle trips to this mode?

Intelligent Transportation Systems: Describe the existing conditions in the area, including level of service, average daily traffic, average speed, etc. Describe how the project is expected to improve traffic flow through improved speeds, reducing idling, reducing accidents, etc. What is the percentage of heavy trucks using the facility? Does the project improve traffic flow for particular modes (e.g. HOVs) or types of vehicles (e.g. transit buses or freight trucks)? What are the transit routes along the corridor, and will this project improve transit reliability on the corridor?

Alternative Fuels or Vehicle Technology: Describe the change in fuel or vehicle technology. How many vehicles are affected? What are the current conditions?

Other: Describe how your project has the potential to reduce emissions through technology, improved management or other means, e.g. "no idling" signage & enforcement, auxiliary power units to operate heating, cooling & communications equipment, truck stop electrification, etc.

Other Considerations (innovations, addressing practical design, etc.):

- Please describe any innovative components included in your project: these could include design elements, cost saving measures, or other innovations.
- Please describe the process that your agency has used to determine the benefits of projects.
- Please describe any additional aspects of your project not previously addressed in the application that could be relevant to the final project recommendation and decision-making process.

E. Project Readiness

Applicants may apply for more than one phase, funding awards are limited to: Preliminary engineering phase "plus one", (i.e. PE + ROW, or PE + CN. ROW + CN are not eligible for funding.)
Additional information regarding PSRC's project tracking policies can be found at:
http://www.psrc.org/transportation/tip/tracking check link

D1. Secured Funding

Information from the Budget & Schedule worksheet will be used to score this question.

What percentage of matching funds is provided for this project?

Category A &B	Category C	
20 points	10 points	50% matching funds and above
16 points	8 points	40% matching funds
12 points	6 points	30% matching funds
8 points	4 points	20% matching funds
4 points	2 points	13.5% matching funds

Note: A minimum match of 13.5% for each project phase is required.
For example, if CN is $100,000, a minimum of $13,500 of local agency match is required.

D2. Project Schedule

Information from the Table below and the Budget & Schedule worksheet will be used to score this question.

Design Status (% complete): Choose an item.

Project Phase	Status	Actual or Expected Completion Date
Preliminary Engineering		
Environmental Approval		
Right-of-Way Certification		

If construction funds are being requested, please describe any ROW needs for the project, including the number of parcels needed, whether property owners are expected to cooperate (and your agency's experience with condemnation and/or whether it is willing to go to condemnation if needed).

When does the sponsor plan to obligate this funding for the first phase of this project?

- Score will be based on earliest phase obligated.

Construction Phase:

a.	10 points	Project will be ready to obligate for construction or program to obligate for implementation by June 1st of the first year.
b.	8 points	Project will be ready to obligate for construction or program to obligate for implementation within 2nd year.
c.	6 points	Project will be ready to obligate for construction or program to obligate for implementation within 3rd year.

Right-of-way Phase:

d.	8 points	Project will be ready to obligate for right-of-way by June 1st of the first year.
e.	6 points	Project will be ready to obligate for right-of-way within 2nd year.
f.	4 points	Project will be ready to obligate for right-of-way within 3rd year.

Design Phase:

g.	7 points	Project will be ready to obligate for design by June 1st of the first year.
h.	5 points	Project will be ready to obligate for design within 2nd year.
i.	3 points	Project will be ready to obligate for design within 3rd year.

Planning Study:

j.	1 points	Project will be ready to obligate for standalone study (Non-motorized Plan, Complete Streets Plan, Bike Plan, etc.) within 1st thru 3rd year.

2016 - CMAQ
Snohomish County ICC
Countywide Process Scoring Matrix

	CMAQ Funding	Maximum Points Per Question
Category	Category Specific – Choose only one (A or B)	
A.	Centers	
	Problem Significance (includes population served)	10
	Project Impact	10
	Circulation Within a Center	10
	Center Development	10
B.	Connections	
	Problem Significance (includes population served)	10
	Project Impact	10
	Mobility Benefits	10
	System Connectivity	10
D.	Project Readiness	
	Secured Funding	20
E.	Air Quality	40
	Cat. A or B Maximum Points Available	100

10.1.2 South Jersey Transportation Planning Organization Application Form

SOUTH JERSEY TRANSPORTATION PLANNING ORGANIZATION
CONGESTION MITIGATION AND AIR QUALITY PROGRAM (CMAQ)
FY 2018 APPLICATION

The Congestion Mitigation and Air Quality Improvement Program (CMAQ) is a federal program that funds projects and programs that improve air quality and reduce traffic congestion. These funds will be available for projects and programs throughout the SJTPO region via a competitive process. Please refer to the CMAQ Application Guide on our website for more information.

APPLICATION DEADLINE: JUNE 14, 2017

SECTION 1: PROJECT OVERVIEW

Project Name:

Type of Project:

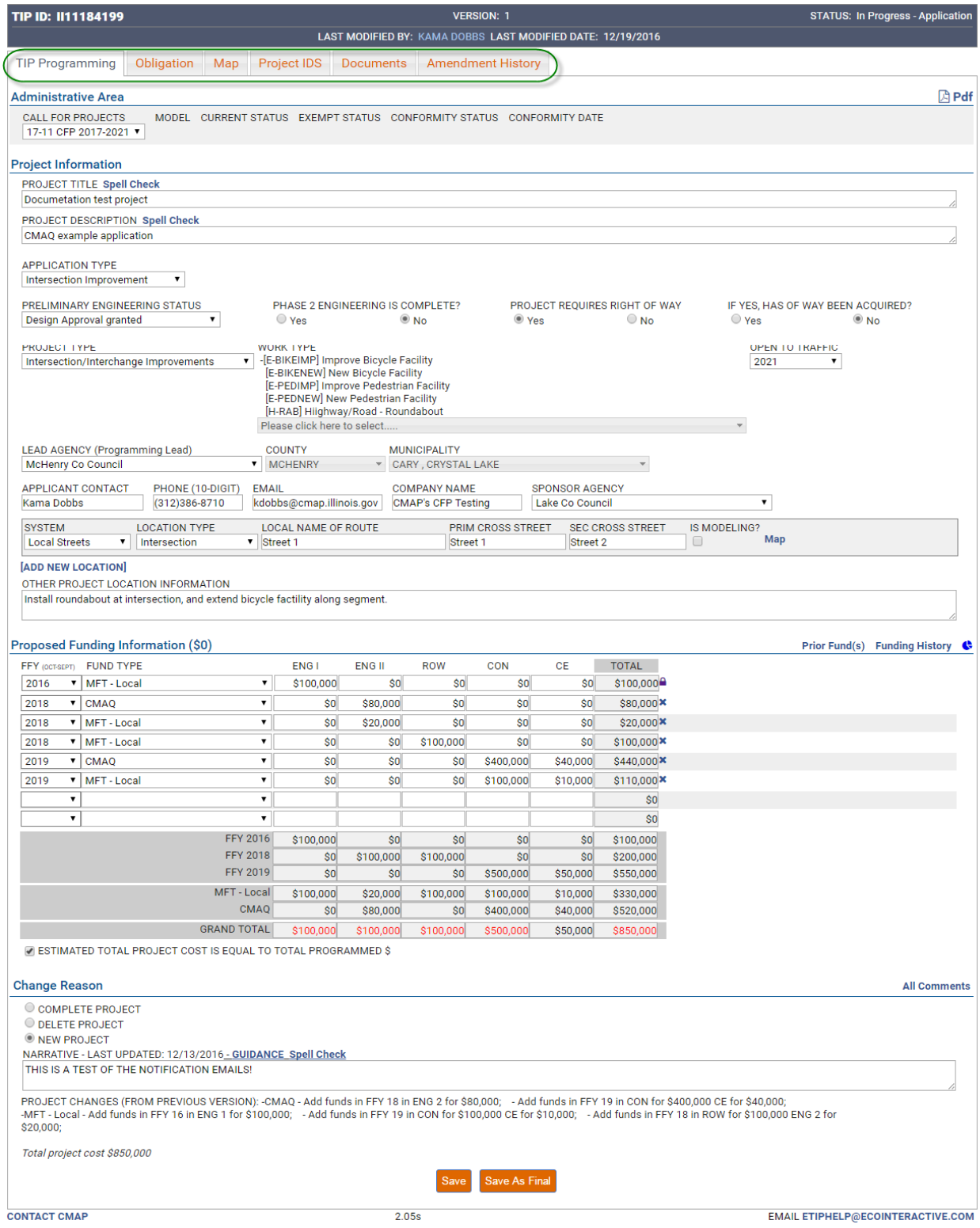
Project Location – Please list all applicable street names, route numbers, mileposts or cross streets, and project limits:

Municipality(s):

County or Counties:

2

10.1.3 Chicago Metropolitan Agency for Planning Application Form



TIP ID: II11184199 VERSION: 1 STATUS: In Progress - Application

LAST MODIFIED BY: KAMA DOBBS LAST MODIFIED DATE: 12/19/2016

TIP Programming | Obligation | Map | Project IDS | Documents | Amendment History

Administrative Area Pdf

CALL FOR PROJECTS: 17-11 CFP 2017-2021 | MODEL | CURRENT STATUS | EXEMPT STATUS | CONFORMITY STATUS | CONFORMITY DATE

Project Information

PROJECT TITLE Spell Check
Documetation test project

PROJECT DESCRIPTION Spell Check
CMAQ example application

APPLICATION TYPE: Intersection Improvement

PRELIMINARY ENGINEERING STATUS: Design Approval granted

PHASE 2 ENGINEERING IS COMPLETE? Yes / No

PROJECT REQUIRES RIGHT OF WAY Yes / No

IF YES, HAS OF WAY BEEN ACQUIRED? Yes / No

PROJECT TYPE: Intersection/Interchange Improvements

WORK TYPE: -[E-BIKEIMP] Improve Bicycle Facility; [E-BIKENEW] New Bicycle Facility; [E-PEDIMP] Improve Pedestrian Facility; [E-PEDNEW] New Pedestrian Facility; [H-RAB] Hiighway/Road - Roundabout; Please click here to select.....

OPEN TO TRAFFIC: 2021

LEAD AGENCY (Programming Lead): McHenry Co Council | COUNTY: MCHENRY | MUNICIPALITY: CARY , CRYSTAL LAKE

APPLICANT CONTACT: Kama Dobbs | PHONE (10-DIGIT): (312)386-8710 | EMAIL: kdobbs@cmap.illinois.gov | COMPANY NAME: CMAP's CFP Testing | SPONSOR AGENCY: Lake Co Council

SYSTEM	LOCATION TYPE	LOCAL NAME OF ROUTE	PRIM CROSS STREET	SEC CROSS STREET	IS MODELING?
Local Streets	Intersection	Street 1	Street 1	Street 2	Map

[ADD NEW LOCATION]

OTHER PROJECT LOCATION INFORMATION
Install roundabout at intersection, and extend bicycle factility along segment.

Proposed Funding Information ($0) Prior Fund(s) Funding History

FFY (OCT-SEPT)	FUND TYPE	ENG I	ENG II	ROW	CON	CE	TOTAL
2016	MFT - Local	$100,000	$0	$0	$0	$0	$100,000
2018	CMAQ	$0	$80,000	$0	$0	$0	$80,000
2018	MFT - Local	$0	$20,000	$0	$0	$0	$20,000
2018	MFT - Local	$0	$0	$100,000	$0	$0	$100,000
2019	CMAQ	$0	$0	$0	$400,000	$40,000	$440,000
2019	MFT - Local	$0	$0	$0	$100,000	$10,000	$110,000
							$0
							$0
	FFY 2016	$100,000	$0	$0	$0	$0	$100,000
	FFY 2018	$0	$100,000	$100,000	$0	$0	$200,000
	FFY 2019	$0	$0	$0	$500,000	$50,000	$550,000
	MFT - Local	$100,000	$20,000	$100,000	$100,000	$10,000	$330,000
	CMAQ	$0	$80,000	$0	$400,000	$40,000	$520,000
	GRAND TOTAL	$100,000	$100,000	$100,000	$500,000	$50,000	$850,000

ESTIMATED TOTAL PROJECT COST IS EQUAL TO TOTAL PROGRAMMED $

Change Reason All Comments

COMPLETE PROJECT
DELETE PROJECT
NEW PROJECT

NARRATIVE - LAST UPDATED: 12/13/2016 - GUIDANCE Spell Check
THIS IS A TEST OF THE NOTIFICATION EMAILS!

PROJECT CHANGES (FROM PREVIOUS VERSION): -CMAQ - Add funds in FFY 18 in ENG 2 for $80,000; - Add funds in FFY 19 in CON for $400,000 CE for $40,000; -MFT - Local - Add funds in FFY 16 in ENG 1 for $100,000; - Add funds in FFY 19 in CON for $100,000 CE for $10,000; - Add funds in FFY 18 in ROW for $100,000 ENG 2 for $20,000;

Total project cost $850,000

Save | Save As Final

CONTACT CMAP 2.05s EMAIL ETIPHELP@ECOINTERACTIVE.COM

10.1.4 Delaware Valley Regional Planning Commission Application Form

Delaware Valley Regional Planning Commission (DVRPC)
Competitive Congestion Mitigation and Air Quality Improvement (CMAQ) Program
Pennsylvania DVRPC Counties

DVRPC 2016 Competitive CMAQ Program Project Application Form

Thank you for your interest in DVRPC's Competitive CMAQ program. This year's program is for the five Pennsylvania counties of Bucks, Chester, Delaware, Montgomery, and Philadelphia. The following forms must be completed in full for each proposed project (Emissions Analysis Forms may not be applicable for all submissions):

- Application Checklist;
- Project Abstract;
- Application Form (this form);
- Project Emissions Analysis Form (if applicable); and
- Project Readiness Checklist.

You may download these forms at www.dvrpc.org/CMAQ and fill them out electronically. Application documents should be returned to DVRPC electronically (preferred) or by mail. **Applications must be received by 5:00 PM on April 21, 2016.** Please review the full *DVRPC 2016 Competitive Congestion Mitigation and Air Quality (CMAQ) Program Guidance* ("Guidance") for further instructions on filling out the appropriate application forms, deadlines, and application submission procedures. In addition to these forms, applicants will be required to submit letters of commitment from project partners.

1. Applicant Contact Information:

Contact Person: _____

Title: _____

Agency/Organization:
_____

Street Address:
_____

City: _____ State: _____ Zip Code _____

Phone Number: _____ Fax Number: _____

Email: _____

Project Sponsor:
_____

Project Ownership:
_____

DVRPC 2016 CMAQ Competitive Program Application 1

2. Project Title: _____

3. Project Location: Street Name and Project Limits:

_____

_____

Municipality(s):_____

County(s):_____

4. Have you coordinated your project with your host county? Yes___NO___

Please attach a map of the project area with the project limits clearly identified.

Please be as specific as possible regarding the location. Project location information will be used to perform preliminary environmental screening.

5. Project Pre-Screening Questions

All applicants must meet the following three criteria (Questions A–C), where applicable, to receive further funding consideration.

A. Is your project consistent with the goals of the DVRPC *Connections* Long-Range Plan (available at *www.dvrpc.org/Connections/*), county, or municipal comprehensive plan?
____ Yes ___ No

i. Identify the plan and plan goal (describe in the space provided) that your project implements:

___ DVRPC *Connections* Long-Range Plan
___ County Comprehensive Plan
___ Municipal Comprehensive Plan

ii. What plan goal(s) does this project address?

B. Is your project located within a corridor identified as a congested sub-corridor in the DVRPC Congestion Management Process (CMP)? *(Applicants can use the interactive CMP webpage at www.dvrpc.org/webmaps/cmp for corridor maps and lists of appropriate strategies to implement in those corridors.) Projects that are solely air quality improvements, such as diesel retrofits and alternative fuel vehicles, and do not have a congestion reduction component, will not be judged on this question.*

___ Yes ___ No

Which sub-corridor is the project located within?

_____

If you have any questions about the CMP sub-corridors that your project will serve, please contact DVRPC's CMP staff at 215-238-2948.

C. Is the applicant a public agency? If not, do you have a letter of commitment from a sponsoring public agency? *(See the program Guidance for applicant and sponsor eligibility requirements.)*

Public Agency ___ Yes ___ No
Have Sponsor Commitment Letter ___ Yes ___ No

6. Project Category: Please select the CMAQ-eligible project category that best describes your project. Applicants are required to complete the appropriate Emissions Analysis Forms (if they are provided by DVRPC, as indicated on the chart below). Emissions Analysis Forms can be downloaded at www.dvrpc.org/CMAQ. Where forms are not provided, the applicant is required to demonstrate how the project will result in a reduction of emissions or Vehicle Miles Traveled (VMT), through a separate narrative description. *(See the program Guidance for detailed descriptions of eligible project categories.)*

	Project type	Emissions Analysis Form provided?
	Transit Improvements/Programs*	Yes
	Congestion Reduction and Traffic Flow Improvements	Yes
	Bicycle and Pedestrian Facilities and Programs	Yes
	Diesel Engine Retrofits and Advance Truck Technologies	Yes
	Transportation Demand Management	Yes
	Park and Ride Facility Improvements	Yes
	Other project types	
	Idling Reduction Activities	No
	Freight/Intermodal Projects	No
	Alternative Fuel Vehicles	Yes
	Public Education and Outreach	No
	Training	No
	Extreme Cold Start Program	No
	Experimental Pilot Program	No

*New Jersey applicants seeking funds to purchase vehicles must coordinate vehicle specifications with New Jersey Transit.

7. Project Description: Provide a detailed description of the candidate project or program. Identify how the project will reduce emissions (nitrogen oxides [NOx], volatile organic compounds [VOC], and/or fine particles [$PM_{2.5}$]) or VMT. Identify attachments as needed. Be sure to review the selection criteria and address the criteria in the project narrative.

8. Emissions Benefit

Please describe the long-term outlook for sustaining the emissions benefit of the project. Be as specific as possible in identifying the lifespan of the emissions benefits of the project, including the expected lifespan of any technology; vehicle purchase; or outreach, education, or transit enhancement.

9. Project Readiness

A. Describe steps taken to advance project deliverability/readiness to date. Please be sure to complete the Project Readiness checklist:

B. Is this a request for construction funding? Has the preliminary or final design been completed to federal standards?

C. Please describe your organization's experience implementing projects using federal funds.

D. What is the project's timeline for implementation?
Please provide a timeline for implementing this project. Timelines should include important milestones for completing the project, including but not limited to obtaining a commitment for local, non-federal matching dollars; completing preliminary design for construction projects; identifying and obtaining the required regulatory permits; and a completion deadline. These milestones and timeline will be used to judge project readiness and sponsor familiarity with implementing federally funded projects.

10. Sponsor Capacity

A. Describe the commitment of the project sponsor to implement the project.

B. Describe the involvement of participating partners.

C. Project Ownership: Who will own, operate, and maintain this project after it is completed? Do you have a letter of commitment to own and maintain the project?

11. **Environmental Justice (EJ):** Does this project serve a Census Tract with three or more "Indicators of Potential Disadvantage?" (*Applicants should use DVRPC's Environmental Justice screening tool at www.dvrpc.org/webmaps/EJ2014 to determine the number of indicators and which disadvantaged populations are in the project area.)*

___ Yes ___ No

Please identify the affected disadvantaged populations in the project area:

If you have any questions about the mapping tool or the disadvantaged populations in your project area, please contact DVRPC's Public Involvement Manager at 215-238-2817.

12. **Cost Estimate/CMAQ Funding Request**

Please complete the table below for the funding breakdown and phases of work that apply to your project. Please be sure you have carefully reviewed the sections of the program Guidance titled "What Are Eligible Costs and How Are Projects Funded?" (p. 4) and "What Procedures and Regulatory Requirements Apply?" (p. 19) before detailing your project's financial breakdown and estimating the project duration. Under the "Duration of Phase" column, indicate the number of months you estimate it will take to complete each phase and when you anticipate the phase to be completed. Duration of phase should be given as a range in months (e.g., "18–24 months"). Be advised that unrealistic estimates of project duration (i.e., overly optimistic) may jeopardize the selection of the project.

A. Project Cost Estimate:

Phase of Work	Total Estimated Cost of Phase	Proposed CMAQ Funds	Non-CMAQ Funds	Duration of Phase/Estimate of Completion date
Remaining Planning, Preliminary Engineering, Environmental Clearance				
Final Design				
Land Acquisition				
Utility Relocation				
Construction (including inspection)				
Other (operating costs, overhead costs, capital equipment, staff, etc.) Please provide details in 9B below.				
Total				

B. Explanation of "Other" expenses from above. This section is especially important for project sponsors who are proposing marketing, incentive, or other non-construction type projects.

ITEM	Description	Purpose	Cost
Equipment			
Staff			
Supplies			
Operating Costs			
Overhead			
Other (explain)			
Other (explain)			
Other (explain)			
Total			

C. Source/contact person responsible for cost estimate

Name/Title	
Agency/Firm	
Telephone #	

D. Will other state or regional funds be applied to this project? If so please list the sources of those funds.

___ Yes ___ No

Amount	Source of Funds

E. What are the sources of the local funds and in-kind contributions?

Amount	Source of Funds

13. Scalability

If the full amount of requested funding is not available, can your request be scaled down to fund a portion or phase of the proposed project?

___ Yes ___ No

How would you rescale your project?

14. Plan for Continuous Funding Beyond CMAQ Four-Year Time Limit

(This item does not pertain to all applicants. Proceed to item 14 if this does not apply.)

Certain CMAQ eligible activities (e.g., operating costs or expenses for new transit services or transportation demand strategies, and intermodal facilities—see the program Guidance on page 6.) carry a four-year limitation for CMAQ operating assistance. Projects that fall into this category must include a plan for continuing the funding of the service beyond the fourth year of operation. Project sponsors should be able to demonstrate a reduced need for CMAQ operating funds as a project progresses from the first year to the fourth year of operations, what the source of funds will be that will supplant CMAQ funding beyond the fourth year of operation, and how the service will become self-supporting.

Do you anticipate the ability to reduce your need for operating assistance if you have applied for a four-year grant? If possible, indicate reduced funding requests for first through fourth years.	First-Year Funding Request	Second-Year Funding Request	Third-Year Funding Request	Fourth-Year Funding request
	$	$	$	
Identify the anticipated funding source that will replace CMAQ funds beyond the fourth year of service.				
Please detail any other information that explains your plan to make the service self-supporting.				

15. Documentation of Commitments

Please check the appropriate boxes below.

A. Applicants must submit a letter(s) affirming commitments to provide matching funds identified in Question 11E.

Letter of Commitment to provide matching funds:

	Enclosed (please attach to application)
	Letter to be submitted by May 21, 2016

B. Applicants must submit a letter(s) affirming commitments from the party identified in Question 9C, whom will own, maintain, and operate the project.

Letter of Commitment to own, operate, and maintain project:

	Included as part of matching funds letter
	Enclosed (please attach to application)
	Letter to be submitted by May 21, 2016

C. Public–Private Partnerships must submit a letter of intent between the two parties indicating a willingness to enter into a formal agreement (see the program Guidance on page 2).

Letter of Intent to enter into an Agreement (Public–Private Partnerships):

	Included as part of matching funds letter
	Enclosed (please attach to application)
	Letter to be submitted by May 21, 2016

We realize that additional time beyond the project submittal deadline may be necessary for you to obtain these letters. These letters must be signed by an official authorized to make commitments for the governmental organization or by other authorized personnel as appropriate. **If these letters cannot be included with your application package, please forward by May 21, 2016, or your application will be removed from consideration.**

15. Instructions for Submittal

Please submit your application electronically to:

CMAQ@DVRPC.org

Please send a "notice of application" email separate from application documents in case of issues with delivery of your application package.

If you cannot submit the application electronically, please mail or deliver two copies of your completed application to the DVRPC offices. Applications must be received by **5:00 p.m. on April 21, 2016**. Applications received after the due date will not be considered.

Please submit the completed application to:

CMAQ Application Office
DVRPC
190 N. Independence Mall West, 8th Floor
Philadelphia, PA 19106

10.1.5 New York State Department of Transportation Application Form

2016 TAP/CMAQ Application General Instructions

Please consult the Guidebook and Appendices to review the specific eligibility requirements and project types for each program prior to beginning the Application. The Application is designed to facilitate and streamline program eligibility determinations based on the various program requirements as described in the Guidebook.

To maximize funding opportunities, use the Application Instructions in completing this form.

Application Information Requirements

Information necessary to complete the Application includes.

- The 2016 TAP/CMAQ Program Guidebook and associated Application Instructions
- Sponsor Information - Full legal entity name, address, phone number, e-mail address, names and titles of contact person(s)
- NYS Grants Gateway ID and SFS Vendor ID, as applicable
- TAP/CMAQ Federal Aid Workshop attendance dates
- Detailed Project Description information, including: Project, county, facility, project limits, project description, project eligible activity categories (and any applicable sub-categories) for which funding is being applied, and current project status
- Specific and detailed Project Budget and Funding Source information
- ROW documentation, including the NYSDOT Highway Work Permit if within a State Highway ROW
- Project deliverables supporting documentation, including a project map as applicable
- Data necessary to determine emissions reductions (CMAQ only)
- Expected Benefits to the Public Interest
- Information on any Innovative/Creative Aspects of the Project
- Documentation of Community Support (TAP only)
- Status of Environmental Process

Completing the Application

The Application is a PDF-Fillable form. Please download and save the Application to your computer to complete the form. Web browsers such as Apple Safari, Google Chrome, and Mozilla may have their own non-Adobe PDF readers set as the default reader. To use one of these browsers, change the default PDF viewer setting to Adobe Reader. If Internet Explorer is used as the browser, no action is needed.

All Users must have Adobe Acrobat Standard or Pro and Adobe Reader version 9 or higher to maximize the functionality in the form. Please be sure to enable the form, see Application Instructions for details.

To enter large amounts of text into the Application, consider using a word processing program to type the entry, and then cut and paste the entry into the form. Also, to facilitate the submission of required attachments, you may need to compress (zip) any large files prior to attaching them to an e-mail, as the overall e-mail file size limit is approximately 20MB.

To navigate through the form, use the "Tab" function as that will ensure that questions will be completed in the correct order. Responses to a question will determine what fields will be seen and be required to complete. Required fields are designated by a preceding asterisk (*).

Although more than one project may be submitted for consideration for TAP and CMAQ programs, only one project per Application maybe submitted. All applications, including supporting documentation, must be submitted no later than October 21, 2016.

PART A: INITIAL ELIGIBILITY ASSESSMENT

***SPONSOR Entity Name:**

***Sponsor Type:**

***Date Sponsor Attended Workshop:**

☐ **Check here if you have attended an Application Pre-Review Session in your regional area.**

***NYS GRANTS GATEWAY ID:**

***SFS VENDOR ID:**

***Project County:** Select the project county. TAP funding is available statewide. CMAQ funding is only available in identified counties. Refer to the Guidebook and Instructions for the list of Counties and applicable funding sources.

Albany
Allegany
Bronx
Broome
Cattaraugus
Cayuga
Chautauqua
Chemung
Chenango

*** Short Title of Proposed Project:**

*** Select the category that best represents the scope of your project (categories 7 and 8 will require an additional choice). Selection of a category is not a guarantee of funding under that category. Refer to the Program Guidebook for additional guidance on category.**

Project Categories	TAP Eligible	CMAQ Eligible
☐ 1. Construction, Planning, and Design of On-road and Off-road Facilities for Pedestrians, Bicyclists, and other non-motorized forms of transportation including Bike Lanes, Paths and Sidewalks	x	x
☐ 2. Construction Planning and Design of Infrastructure-related Projects to Provide Safe Routes for Non-Drivers to Access Daily Needs	x	
☐ 3. Conversion and Use of Abandoned Railroad Corridors for Trails for Pedestrians, Bicyclists and Other Non-motorized Transportation Users	x	x
☐ 4. Construction of Turnouts, Overlooks, and Viewing Areas	x	
☐ 5. Safe Routes to School	x	
☐ 6. Planning, Design and Construction of Boulevards	x	x
☐ 7. Community Improvement Activities, including Landscaping and Streetscape Improvements	x	
☐ 8. Environmental Storm Water Management Activities	x	
☐ 9. Travel Demand Management and Ride Sharing, includes Park and Ride, Ride Share, Car Share, Bike Share, Employee Transit Benefits, and Educational Outreach		x
☐ 10. Congestion Reduction and Traffic Flow Improvements, Includes Signalization, Freeway Management, and Intersection Improvements		x
☐ 11. Transit Improvements, includes Service Expansion and Amenities, Park and Rides, Employee Transit Benefits		x
☐ 12. Freight Intermodal Improvements, includes Intermodal Freight Facilities and Programs, Truck Stop Electrification, Heavy Vehicle Engine Replacements		x
☐ 13. Alternative Fuel and Clean Vehicle project, includes EV and CNG Fuel Stations, Extreme Temperature Cold Start Technology, Diesel Retrofits, Heavy Vehicle Engine Replacements, Dust Mitigation and Idle Reduction		x
14. Other (Please describe)	TBD	TBD

***Based upon the County the Project is located in, and the Project Category(ies) selected above, select the funding source(s) for which you are applying:**

***FOR CMAQ CATEGORIES ONLY**: Complete the following sections, which correspond to above selected project category(ies).

Anticipated Benefits	Before	After
Number of Vehicles (daily)		
Fuel Type of Vehicles		
Miles per Day per Vehicle		
Service Operation Days per Year		
Average Speed		

Type of Vehicle

For Additional Buses:

Transit	Bus Offset
Number of Additional Transit Buses	
Average Speed of Transit Vehicles	
Miles per Day per Transit Vehicle	
SOV Vehicle Induction, if applicable	

Hours of Idle Reduced per Vehicle per Day (if applicable)

Type of Vehicle

User Supplied Emission Factors (Alternative Method)	Before (grams/mile)	After (grams/mile)
VOC		
NO_X		
PM_{10}		
$PM_{2.5}$		
CO		
CO_2		

Bikeway Information (Alternate Method)

Segment Length of Associated Roadway

Vehicular AADT on Associated Roadway

Average Vehicular Speed on Associated Roadway

Average Days per Year Used for Non-Recreational Travel

% Short Trip

Bicycle Diversion Factor

***FOR CMAQ CATEGORIES ONLY- BENEFITS DOCUMENTATION:** In the box below, describe the source and methodologies used to obtain the numbers reported in the Charts above. Box is limited to the visible space.

SAVE FORM

PART B: PROJECT INFORMATION

***Short Project Description**: Provide a description of what will be constructed and/or implemented and the beneficial outcomes of the project. Space is limited to the visible area.

***Project Location (Town, City or Village):**

Facility Name (if applicable):

Facility Address (if applicable):

***Project Limits**: For linear projects, provide begin and end locations (Street Names, Mile Markers, etc.):

From:

To:

***Project Coordinates:** Provide approximate mid-point for linear projects. All Longitude numbers should be entered as negative numbers prefaced with a "-" sign. Fields are formatted as decimals (NNN.NNNNNN).

Latitude:

Longitude:

☐ ***Please attach a Project map as Attachment B**

***Project Benefits:** Provide a detailed description of the project benefits. Space is limited to the visible area.

Anticipated Project Implementation | Anticipated Project Completion

***Detailed Description of Project:** Concisely describe the proposed project, indicating what will be designed and constructed; or developed and implemented; the issues or opportunities to be addressed; and expected outcomes and project deliverables. Space is limited to the visible area.

***Describe Innovative/Creative Aspects of Project:** Identify any creative/innovative project aspects. Examples include use of new technology, unique project characteristics, use of cost effective solutions, unique partnerships, etc.

SAVE FORM

PART C: PROJECT ESTIMATE AND FUNDING SOURCES

☐ ***A Detailed Project Estimate is required as Attachment C.**

Using the figures from your Detailed Project Estimate, complete the following:

Use of Funds	TOTAL
ROW	
Prelim. Design	
Final Design	
Construction	
Construction Insp	
Project Manager	
Other: Type in...	
TOTAL PROJECT COST	

1. Total Project Cost:
2. Amount of Funds Requested: Min $250,000 , Max $5 Million
3. Total Remainder to be Funded:
4. Enter the Amount of Local Match: Minimum 20%
5. Amount of Other Funds Required:
6. Describe the source of "Other Funds"

PART D: PROJECT COMPONENTS

*** Indicate the current project status:**

***RIGHT-OF-WAY**

Identify the host entity:

Provide the lease/contract term, in years:

Lease/Contract expiration date:

Describe any extension terms:

***Right of Way Certification:** Select the choice(s) that best describe(s) the project's ROW needs. Use Control and Shift keys to select multiple descriptions if applicable.

Owner
Lessee
Need to acquire property as part of the project

Number of anticipated ROW acquisitions:

Will the project have an effect on any district, site, building, structure or object that is listed, or may be eligible for listing on the National Register of Historic Places?

Describe any other ROW needs or requirements:

***STATUS OF ENVIRONMENTAL REVIEWS:**

State Environmental Quality Review Act (SEQR):

Explain:

National Environmental Policy Act (NEPA):

Explain:

☐ **Attach SEQR and/or NEPA information as Attachment D as applicable**

*In the Chart below, select the status that best represents the project deliverable:

Project Deliverables:	Status	Anticipated Completion Date
Draft Design Report		
Advanced Detail Plans (ADPs)		
Plans, Specifications, and Estimates (PS&Es)		
Bid Proposal Documents		

☐ **Attach Project Schedule as Attachment E**

☐ **Attach supporting documents (plans, drawings, survey or other) as Attachment F**

☐ **Attach any other relevant documents. Label those Attachments alphabetically, beginning with Attachment G**

PART E: CONTACT INFORMATION

*** SPONSOR Entity Name:**

*Address: 1

Address 2:

*City:

*State: NY

*Zip Code:

*Phone #:

Fax Number:

*E-mail:

***SPONSOR Contact Information:**

Salutation:

*First Name:

*Last Name:

*Title:

☐ **Check here to use the same address information as entered above. If different, please complete the following:**

Address 1:

Address 2:

City:

State: NY

Zip Code:

Phone #:

Fax Number:

E-mail:

PART F: FINALIZE AND SUBMIT APPLICATION

Include required attachments in the e-mail transmittal of the application form. Attached files should be in common business formats, such as PDF, doc, xls, etc. File size, for attachments and the application is limited to approximately 20MB. This Application form is approximately 3MB. Please note that large attachments may affect the ability to submit the application, please zip file attachments if possible.

Large optional attachments may be e-mailed separately and must be received prior to the application deadline. Be sure to include the Short Title of the application in the subject line of any separate e-mail transmittals, and number any additional e-mail submissions, e.g. 1of 2, 2 of 2, etc.

SAVE FORM

ATTACHMENTS (AS APPLICABLE):

A. Documentation of Community Support for Project
B. Project Map
C. Detailed Project Estimate
D. SEQR or NEPA Information
E. Project Schedule
F. Plans or Drawings
G. Other relevant documents and correspondence, Project Management Plan (PMP) if available

OPTIONAL: Please use this space to provide any additional information that should be considered. Space is limited to the visible area.

***CERTIFICATION:**

I acknowledge that I have read the appropriate guidance for the program to which I am applying (TAP/CMAQ) and understand the application instructions, the program requirements and the terms and conditions associated with the reimbursement program.

***ATTESTATION:**

By entering my name in the digital signature space below, I certify that I am authorized on behalf of the Sponsor and its governing body to submit this application. I further certify that all of the information contained in this application and in all statements, data and supporting documents which have been made or furnished for the purpose of receiving assistance for the project described in this application are true, correct and complete to the best of my knowledge and belief. I acknowledge that offering a written instrument knowing that the written instrument contains a false statement or false information, with the intent to defraud the State or any political subdivision, public authority, or public benefit corporation of the State, with the knowledge or belief that it will be filed with or recorded by the State or any political subdivision, public authority or public benefit corporation of the State, constitutes a crime under New York State Law.

DIGITAL SIGNATURE INFORMATION:

Entering your digital signature in the box below locks the fields above the signature. To remove your digital signature, click the right button on your mouse and select "Clear Signature" to release the fields. You can then correct any errors or add additional information. The document will need to be re-signed before it can be submitted.

***Sponsor Signature:**

Save a Copy of this Application

Print Completed Application for Your Records

Submit TAP/CMAQ APPLICATION to NYSDOT

(TAP-CMAQ@dot.ny.gov)

Application Form and supporting documents must be received by October 21, 2016

Materials received after the application deadline will not be considered.

10.2 MPO Emission Estimation Forms

10.2.1 Chicago Metropolitan Agency for Planning Emission Benefit Forms

CMAP Project Application Demonstration Projects – Emissions Benefit Inputs
Project Title:
Please describe improvements, including how you expect this to benefit air quality or reduce congestion and how it can be applied to other parts of the region, etc:
Demonstration Evaluation Plan. Describe how the project will be evaluated to determine actual emissions benefits realized. use additional pages if necessary:
What are the regional application of this project?
Describe any other projects, either underway or completed, with which this project is related:
What further projects do you anticipate resulting from this project?

CMAP CMAQ PROJECT APPLICATION OTHER PROJECTS – Emission Benefits Form
PROJECT EMISSIONS BENEFIT DATA Project Title:
Auto trips eliminated per day (round trips):
Length of auto trips eliminated (one-way miles to the nearest tenth):
Auto trips diverted to the new facility (round trips):
Line-haul length of trips diverted (one-way miles to the nearest tenth):
Affected days per year:
Project life (years):
Current traffic volume (ADT – indicate year):
Length of project or number of units provided:
Utilization rate (percent):
Describe method used to estimate benefits. Provide basis for parameters used to estimate benefits (e.g., diversion rate, auto occupancy, trip length. See instructions):

CMAP CMAQ Project Application Direct Emissions Reduction – Emissions Benefit Form

PROJECT EMISSIONS BENEFIT DATA Project Title:

Complete this section for each group of vehicles (type, engine, technology, etc.). Use additional sheets as needed.

Vehicle Type: ☐School Bus ☐Transit Bus ☐Refuse Hauler ☐Short Haul ☐Long Haul ☐Delivery Truck

(check one) ☐Emergency Vehicle ☐On-Highway ☐City/County Vehicle

☐Passenger Locomotive ☐Switch Engine ☐Other: _____ specify

Vehicle Size: ☐Class 2b (8,501 - 10,000 lbs.) ☐Class 3 (10,001 - 14,000 lbs.) ☐Class 4 (14,001 - 16,000 lbs.)

(check one) ☐Class 5 (16,001 - 19,500 lbs.) ☐Class 6 (19,501 - 26,000 lbs.) ☐Class 7 (26,001 - 33,000 lbs.)

☐Class 8a (33,001 - 60,000 lbs.) ☐Class 8b (60,001 and over) ☐School Bus ☐Transit Bus

Horsepower ☐0 ☐1 ☐3 ☐6 ☐11 ☐16 ☐25 ☐40 ☐50 ☐75 ☐175

(check one) ☐300 ☐600 ☐750 ☐1000 ☐1200 ☐2000 ☐ 3000

Current Fuel Type: ☐LPG ☐LNG ☐CNG ☐Biodiesel 100 ☐Biodiesel 20 ☐Biodiesel 10 ☐Biodiesel 5

(check one) ☐E85 ☐Diesel, 3,400 ppm sulfur ☐Diesel, 500 ppm sulfur ☐Diesel, 15 ppm sulfur ☐Emulsion

Model Year (all vehicles in a group should have the same model year): _____

Before project: Fuel Consumed (gallons per year of current fuel type for all vehicles in the group combined): _____ gallons

After project: Fuel Consumed (gallons per year of current fuel type for all vehicles in the group combined): _____ gallons

Before project Annual Vehicle Miles/vehicle in group: _____ miles Annual Idling Hours/vehicle in group: _____hours

After project Annual Vehicle Miles/vehicle in group: _____ miles Annual Idling Hours/vehicle in group: _____hours

Technology to be Applied	# veh	Technology to be Applied	# veh
Diesel Oxidation Catalyst		Recalibration	
Diesel Oxidation Catalyst + Closed Crankcase Ventilation		Selective Catalytic Reduction	
Diesel Particulate Filter		Exhaust Gas Recirculation + Diesel Particulate Filter	
Hybrid Electric Replacement w/ Diesel Particulate Filter		Emissions Control Devices	
Partial Flow Filter		Other	
Compressed Natural Gas (CNG) Replacement		Engine Repower	
Lean NOx Catalyst/Diesel Particulate Filter		Engine Replacement	

Post-Implementation Fuel Type: ☐LPG ☐LNG ☐CNG ☐Biodiesel 100 ☐Biodiesel 20 ☐Biodiesel 10 ☐Biodiesel 5

(check one) ☐E85 ☐Diesel, 3,400 ppm sulfur ☐Diesel, 500 ppm sulfur

☐Diesel, 15 ppm sulfur (non-road only) ☐Emulsion ☐Electricity

Diesel Vehicle Replacement Applicants
Expected remaining life of vehicles being replaced (years):_____

Total Number of Vehicles (all groups combined): _____ vehicles

Indicate on the map the location of where vehicles will be in service.

Time of day that vehicles will be in operation (hour): From_____to _____.

Ridership Demographics (If vehicle is for transit service):% over 65 in age _____, % under 5 in age _____, median household income _____, % minority _____

CMAP CMAQ Project Application Signal Interconnects – Emission Benefits Form	
PROJECT EMISSIONS BENEFIT DATA Project Title:	
Project Length (miles):	
Distance between the last two signals at both ends of the project (miles): Show the location of all signal on the map	North/West End:_____ South/East End:_____
Posted Speed (miles per hour – for each segment):	
Current Traffic Volume (ADT – Indicate year for each segment):	
If project is part of a transit signal priority (TSP) corridor, give name:	
Are the subject roadways included as part of the Congestion Management Process Highway System: ☐ Yes ☐ No	
Is the project location identified in IDOT's 5% Safety Location report: ☐Yes ☐No If "Yes" is checked, indicate in the project description how the project will address the safety issues.	
PROJECT DESCRIPTION	

CMAP CMAQ/TAP Project Application Bicycle Facility – Emission Benefits Form

PROJECT EMISSIONS BENEFIT DATA Project Title:
Indicate the current status of the bicycle environment where the proposed facility will be constructed. Are bike lanes present? If so, give width.
Indicate the connectivity of bikeways resulting from the project: ☐ Project fills a gap between existing bikeways ☐ Project intersects an existing bikeway ☐ Project extends an existing bikeway ☐ Project is a new isolated bikeway segment
Describe how the proposed bicycle facility integrates with transit service.
Provide the following for the road(s) of the facility or adjoining to the off-road facility (use separate sheet for multiple roads): Traffic volumes (AADT): _____, # of Thru Lanes_____, Lane Width: _____, Width of Outside Paved Shoulder: _____, Speed Limit: _____, % of Heavy Vehicles: _____, Pavement Condition : _____, % of On-street Parking Occupied: _____.
Is the project identified in an approved or adopted plan: ☐ Yes ☐ No Attach documentation of the plan or provide a link to the document on a publicly available website.
PROJECT DESCRIPTION (Use this space to provide additional details on the project.)

CMAP CMAQ Project Application Traffic Flow Improvements - Emission Benefits Form

PROJECT EMISSIONS BENEFIT DATA Project Title:

Type of Project (Check All that Apply):

Intersection Type:

☐Roundabout

☐Restricted Crossing U-Turn (J-Turn)

☐Median U-Turn

☐Diverging Diamond Interchange

☐Conventional

Bottleneck Eliminations:

☐Highway-Rail Grade Separation

☐Two-Way Left Turn Lane

☐Realignment

☐Remove Obstruction

☐Vertical Clearance

☐Truck Route Improvement

Turn Lanes:

☐Add Dual Left Turn Lanes

☐Add Single Left Turn Lanes

☐Add Right Turn Lanes

☐Multiple Turn Lane Types

Reconstruction:

☐Full Intersection Reconstruction (existing signal)

☐Traditional Interchange Reconstruction

Signals:

☐Signal Modernization

☐New Signalization

Project Length (Miles – Bottleneck Elimination And Multiple Intersections Only): _____

Posted Speeds (Miles Per Hour For Each Street): _____

Bi-Directional AADTs by Approach: North Leg (North Approach): _____; South Leg: _____;
West Leg: _____; East Leg: _____;
Year: _____

Do queues currently clear on the major street at signalized intersections in the pm peak period? ☐Yes ☐No

Are the subject roadways included as part of the Congestion Management Process Highway System? ☐Yes ☐No

Is the project location identified in IDOT's 5% Safety Location report? ☐Yes ☐No
If "Yes" is checked, indicate in the project description how the project will address the safety issues.

Will bicycle facilities be added as part of this project? ☐Yes ☐No
If "Yes" is checked, describethe bicycle facility in the project description providing details asked for on the bicycle facility application form.

Travel Time Reliability Improvements (Check All that Apply to this Application – see p 9-10 of Information Booket)

Systematic Improvements:

☐Integrated Corridor Management

☐Work zone management

☐Truck travel information systems

☐Strategies to improve transit on-time performance

☐Ramp metering

☐Road weather management systems

☐Special event management

☐Traffic signal interconnect

☐Adaptive signal control

Spot improvements:

☐Highway-rail grade separation (>10K AADT + >10K annual minutes of delay lasting >10 minutes)

☐Implementation of effective crash reduction strategy

☐Highway-rail grade separation in ICC top 20 delay list

☐Highway-rail grade separation (>5K AADT + >5K annual minutes of delays lasting > 10 minutes)

☐Access management strategy

☐Other highway-rail grade separation

Incident Detection:	Incident Response:	Incident Recovery:
☐Traffic Management Center (TMC) ☐Computer-aided dispatch ☐Real-time traffic surveillance ☐Integration of real-time probe data ☐Establishment of detector health prog	☐Expansion of response operations ☐Dispatch improvements ☐Response equipment	☐Expediting accident investigation process ☐Dynamic message signs ☐Incident-responsive ramp meters ☐Speed Management Systems ☐On-scene communication, coordination and cooperation ☐Development of highway closure detour routes

PROJECT DESCRIPTION

CMAP CMAQ Project Application Transit Projects - Emission Benefits Form

PROJECT EMISSIONS BENEFIT DATA Project Title:

Project Type (Check One): ☐Facility Improvement ☐Service And Equipment ☐Access to Transit

New One Way Riders: _____

Length of Typical One Way Transit Trip (Miles To The Nearest Tenth): _____

Percent of New Riders Arriving by Automobile: _____

Project Life (Years): _____

Provide Basis for Parameters Used to Estimate Benefits (e.g., new one way riders, distance, % arriving by automobile):

SERVICE IMPROVEMENTS

On-Time Performance - Route to be Improved: _____ System-Wide:_____

Reliability Enhancements (Check All that Apply):

Rail	Bus	
☐New Vehicles	☐New Vehicles	☐Transit signal priority
☐Upgraded Switches	☐Queue Jump/Bypass Lanes	☐Multi-Door Boarding with Off-board Fare Collection
☐Upgraded Power Supply	☐Off-board Fare Collection	☐Bus-on-Shoulders
☐Positive Train Control	☐ Reduced Stops/Express Service	☐Managed Lanes
☐Station Consolidation	☐New Dispatching/Decision Support Systems	☐Dedicated Bus Way
☐Track Improvements	☐Passenger Vehicle Movement Restrictions	☐Far-side Stops
☐Reduction of Freight/Vehicle/Pedestrian Interference		☐Bus Stop Upgrades
		☐Near Level Boarding

FACILITIES/CAPITAL IMPROVEMENTS

Existing Asset Condition (1-5 TERM scale): _____

Description and Location of Service (For Equipment Purchases):

Net Number Of New Vehicle Parking Spaces: _____ Net Number Of New Bicycle Parking Spaces: _____

TRANSIT SUPPORTIVE LAND USE

Provide a copy of zoning code(s) identifying the following (only attach the relevant sections of the code(s) and see page 14 of Application Booklet for more information)

Relevant Pages and Section Number:
Maximum Allowable Floors_____ Inovative Parking Requirements_____ Mixed-Use Strategies

PROJECT DESCRIPTION

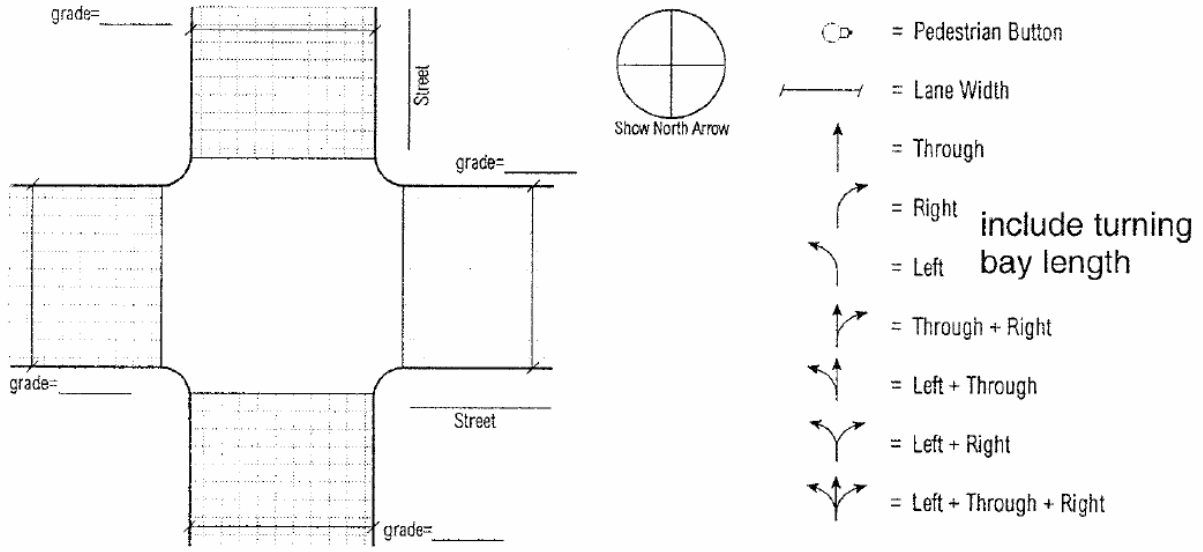
10.2.2 Input Module Work Sheet Chicago Metropolitan Agency for Planning

☐Before Improvement

(Complete one worksheet for before conditions and one worksheet for after conditions ☐After Improvement

General Information	**Site Information**
Analysis Time Period: **PM Peak**	Intersection _____
Analysis Year _____	Area Type ☐ CBD ☐ Other Jurisdiction _____

Intersection Geometry (draw or attach)



Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT[1]	LT	TH	RT[1]	LT	TH	RT[1]	LT	TH	RT[1]
Volume, V (veh/h)												
% heavy vehicles, % HV												
Peak-hour factor, PHF												
Pretimed (P) or actuated (A)												
Start-up lost time, I_1 (s)												
Extension of effective green time, e (s)												
Arrival type, AT												
Approach pedestrian volume,[2] v_{ped} (p/h)												
Approach bicycle volume,[2] v_{bic} (bicycles/h)												
Parking (Y or N)												
Parking maneuvers, N_m, (maneuvers/h)												
Bus Stopping, N_B (buses/h)												
Min. timing for pedestrians,[3] G_p (s)												

Signal Phasing Plan

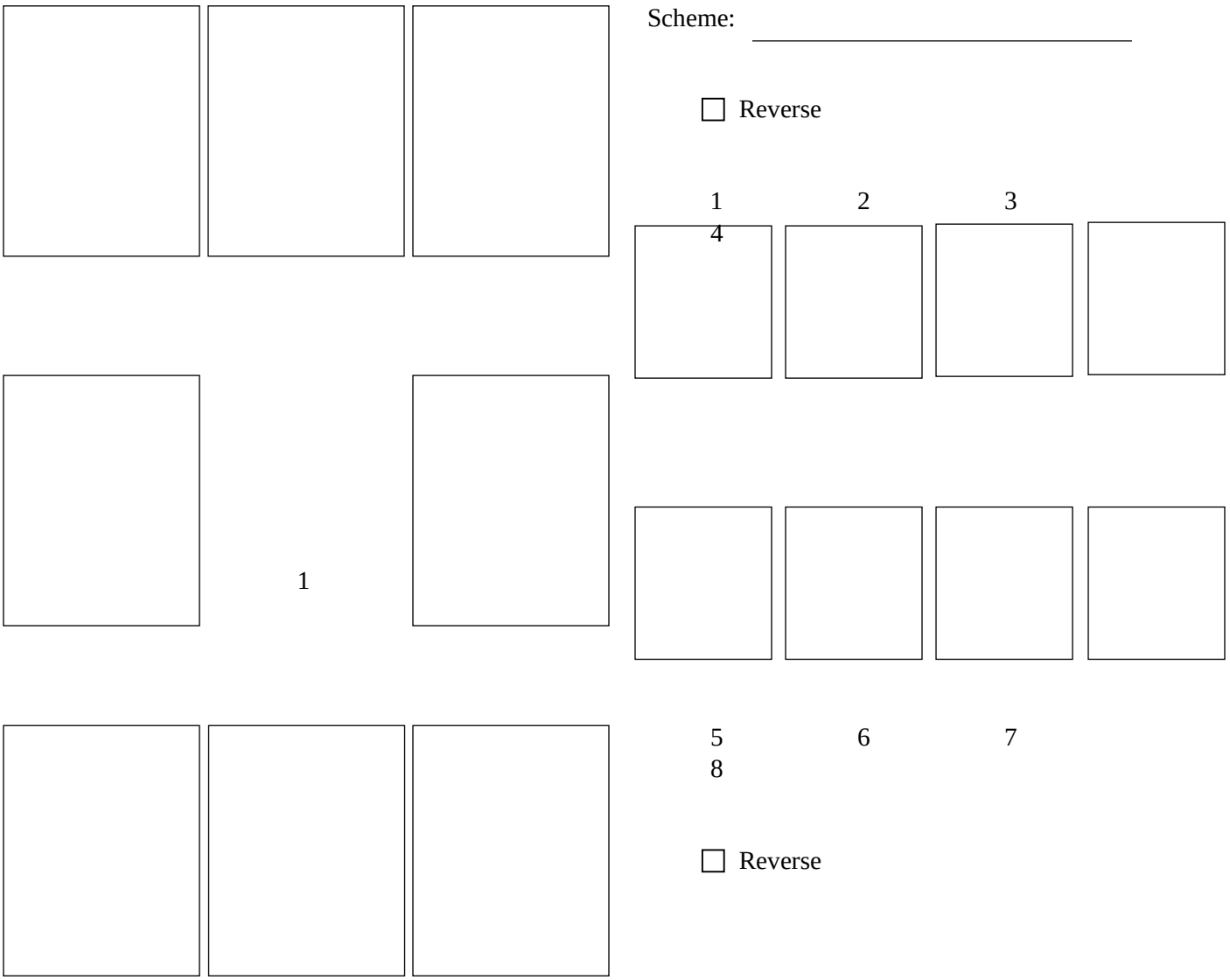
Diagram	01	02	03	04	05	06	07	08
Timing	G= Y=	G= Y=	G= Y=	G= Y=	G= Y=	G= Y=	G= Y=	G= Y=

Protected turns ↷ Permitted turns ⇢ Pedestrian Cycle length, C = _____ s

Notes

1. RT volumes, as shown, exclude ROR
2. Approach pedestrian and bicycle volumes are those that conflict with right turns from the subject approach.
3. Refer to Equation 16-2

ACTUATED CONTROLLER PRPOERTIES



Phase Settings (All times are in seconds)

Phase	1	2	3	4	5	6	7	8
Max Green								
Min Green								
Amber								
All Red								
Veh. Ext.								
Min Recall	☐	☐	☐	☐	☐	☐	☐	☐
Max Recall	☐	☐	☐	☐	☐	☐	☐	☐

ACTUATED CONTROLLER COORDINATION

Use Coordination ☐ Note: All times are in seconds

Phase	1	2	3	4	5	6	7	8
Force-off		0				0		
Phase can terminate before force-off	☐	☐	☐	☐	☐	☐	☐	☐
Permissive 1	☐	☐	☐	☐	☐	☐	☐	☐
Period 2	☐	☐	☐	☐	☐	☐	☐	☐
Flags	☐	☐	☐	☐	☐	☐	☐	☐

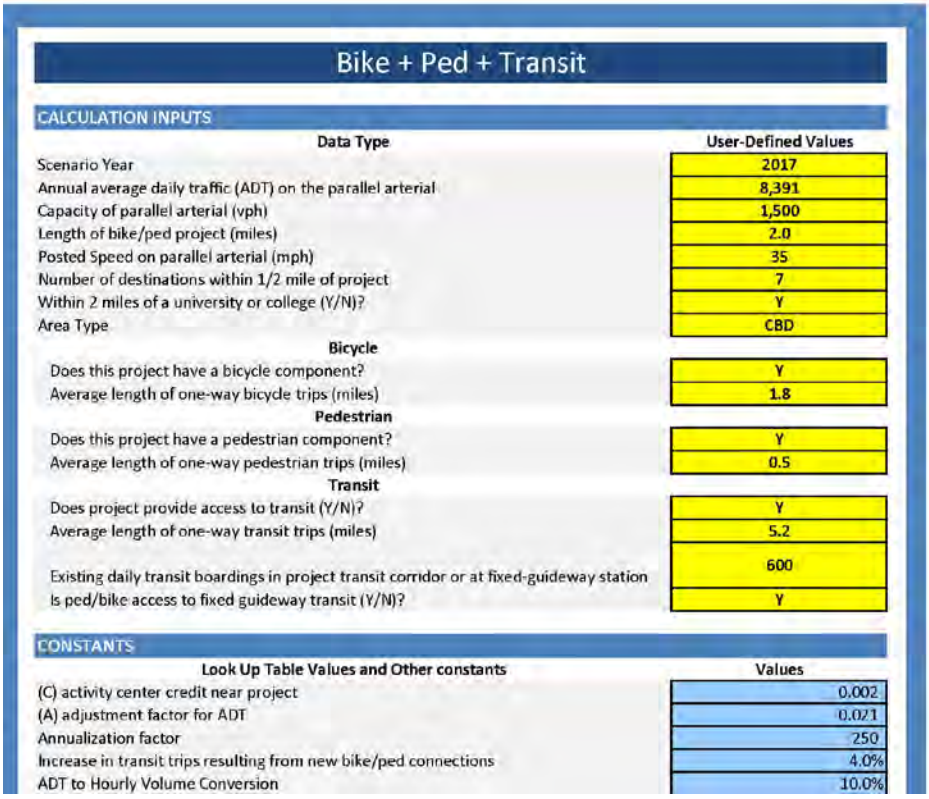
10.2.3 Required Inputs for CMAQ Benefit Calculation New York DOT

Required Inputs for CMAQ Benefit Estimate Calculation

Project Type	Required data
Travel Demand Management/ Rideshare	• Number of vehicles affected by project (BEFORE) • Number of vehicles affected by project (AFTER) • Miles per day per vehicle (BEFORE) • Miles per day per vehicle (AFTER) • Days per year the project is anticipated to have an effect • Average speed of vehicles affected by project (BEFORE) • Average speed of vehicles affected by project (AFTER)
Congestion Reduction and Traffic Flow Improvements	• Number of vehicles affected by project (BEFORE) • Number of vehicles affected by project (AFTER) • Miles per day per vehicle (BEFORE) • Miles per day per vehicle (AFTER) • Days per year the project is anticipated to have an effect • Average speed of vehicles affected by project (BEFORE) • Average speed of vehicles affected by project (AFTER)
Transit Improvements	• Number of passenger vehicles affected by project (BEFORE) • Number of passenger vehicles affected by project (AFTER) • Miles per day per passenger vehicle (BEFORE) • Miles per day per passenger vehicle (AFTER) • Days per year of service operation • Number of additional transit buses (if applicable) • Average speed of additional transit buses (if applicable) • Average daily distance each additional bus will travel (if applicable)
Freight Intermodal Improvements	• Number of on-road freight vehicles affected by project (AFTER) • Type(s) of freight vehicles affected by project (e.g. single unit trucks or combination unit trucks, etc.) • Average speed of vehicles affected by project (BEFORE) • Average speed of vehicles affected by project (AFTER) • Hours of idle reduced per vehicle (if applicable) • Applicant supplied emission factors, if applicable (BEFORE) • Applicant supplied emission factors, if applicable (AFTER)
Pedestrian and Bicycle Facilities	• Number of vehicles affected by project (BEFORE) • Number of vehicles affected by project (AFTER) • Miles per day per vehicle (BEFORE) • Miles per day per vehicle (AFTER) • Days per year the project is anticipated to have an effect • Average speed of vehicles affected by project (BEFORE) • Average speed of vehicles affected by project (AFTER)
Pedestrian and Bicycle Facilities (Alternative Method)	• Segment length of roadway associated with project • Average Annual Daily Traffic Volume on associated roadway • Average speed of vehicles on associated roadway • Days per year bike lane is expected to be used for non- recreational travel • Percent trips in decimals of vehicle trips less than five miles in length in the project area • Bicycle Diversion Factor: Proportion of short trips (in decimals) anticipated to divert to bicycle mode after project is complete.

Clean Vehicle Projects	• Number of vehicles affected by project (BEFORE) • Number of vehicles affected by project (AFTER) • Fuel Type of vehicles affected by project (BEFORE) • Fuel Type of vehicles affected by project (AFTER) • Miles per day per vehicle (BEFORE) • Miles per day per vehicle (AFTER) • Days per year the project is anticipated to have an effect • Average speed of vehicles affected by project (BEFORE) • Average speed of vehicles affected by project (AFTER) • Type(s) of vehicles affected by project (e.g. single unit trucks or combination unit trucks, etc.) • Hours of idle reduced per vehicle (if applicable) • Applicant supplied emission factors, if applicable (BEFORE) • Applicant supplied emission factors, if applicable (AFTER)

10.2.4 Calculation Sheet for Bike/Pedestrian Projects Atlanta Regional Commission



Bike + Ped + Transit

CALCULATION INPUTS

Data Type	User-Defined Values
Scenario Year	2017
Annual average daily traffic (ADT) on the parallel arterial	8,391
Capacity of parallel arterial (vph)	1,500
Length of bike/ped project (miles)	2.0
Posted Speed on parallel arterial (mph)	35
Number of destinations within 1/2 mile of project	7
Within 2 miles of a university or college (Y/N)?	Y
Area Type	CBD
Bicycle	
Does this project have a bicycle component?	Y
Average length of one-way bicycle trips (miles)	1.8
Pedestrian	
Does this project have a pedestrian component?	Y
Average length of one-way pedestrian trips (miles)	0.5
Transit	
Does project provide access to transit (Y/N)?	Y
Average length of one-way transit trips (miles)	5.2
Existing daily transit boardings in project transit corridor or at fixed-guideway station	600
Is ped/bike access to fixed guideway transit (Y/N)?	Y

CONSTANTS

Look Up Table Values and Other constants	Values
(C) activity center credit near project	0.002
(A) adjustment factor for ADT	0.021
Annualization factor	250
Increase in transit trips resulting from new bike/ped connections	4.0%
ADT to Hourly Volume Conversion	10.0%

Volume Density Function/BPR Curve Alpha	0.71
Volume Density Function/BPR Curve Beta	2.10

SCENARIO YEAR OUTPUTS

Data Type	Value
Annual One-Way Auto Trips Reduced (bike)	46,570
Annual One-Way Auto Trips Reduced (walk)	46,570
Annual One-Way Auto Trips Reduced (transit)	6,000
Annual One-Way Auto Trips Reduced - Total	99,140
Daily One-Way Auto Trips Reduced - Total	397
Hourly Volume Reduced due to Improvements	40
Free flow travel time on parallel arterial (minutes)	3.4
V/C Ratio before improvements on parallel arterial	0.56
V/C Ratio after improvements on parallel arterial	0.53
Congested Travel Time before Improvements on parallel arterial (mins)	4.15
Congested Travel Time after Improvements on parallel arterial (mins)	4.08
Congested Speed (mph) before Improvements on parallel arterial	28.93
Congested Speed (mph) after Improvements on parallel arterial	29.43
Emission Factors - Existing	
Light Duty Emission Factor CO2(g/mi)	383.96
Light Duty Emission Factor PM NOx(g/mi)	0.36
Light Duty Emission Factor PM (g/mi)	0.02
Light Duty Emission Factor NOx (g/mi)	0.37
Light Duty Emission Factor VOC (g/mi)	0.15
Emission Factors - Improved	
Light Duty Emission Factor CO2(g/mi)	379.55
Light Duty Emission Factor PM NOx(g/mi)	0.36
Light Duty Emission Factor PM (g/mi)	0.02
Light Duty Emission Factor NOx (g/mi)	0.36
Light Duty Emission Factor VOC (g/mi)	0.15
Emissions - Existing	
Light Duty Emissions CO2(g)	1,610,906,947.54
Light Duty Emissions PM NOx(g)	1,515,838.27
Light Duty Emissions PM (g)	70,625.36
Light Duty Emissions NOx (g)	1,552,348.46
Light Duty Emissions VOC (g)	625,067.32
Emissions - Improved	
Light Duty Emissions CO2(g)	1,539,900,532.22
Light Duty Emissions PM NOx(g)	1,451,571.28
Light Duty Emissions PM (g)	66,977.20
Light Duty Emissions NOx (g)	1,475,158.16
Light Duty Emissions VOC (g)	595,733.46

RESULTS

DELAY/VMT IMPACT

Reduction in Annual Vehicle Hours of Delay	9,167
Annual Auto VMT Reduced	138,311

TOTAL REDUCTION

Total Annual Reductions in GHG emissions (g CO2 /year)	71,006,415
Total Annual Reductions in PM NOx Emissions (g/year)	64,267
Total Annual Reductions in PM Emissions (g/year)	3,648
Total Annual Reductions in NOx Emissions (g/year)	77,190
Total Annual Reductions in VOC Emissions (g/year)	29,334
Total Daily Reductions in GHG emissions (short tons/day)	0.313
Total Daily Reductions in PM NOx Emissions (short tons/day)	0.00028
Total Daily Reductions in PM Emissions (short tons/day)	0.00002
Total Daily Reductions in NOx Emissions (short tons/day)	0.00034
Total Daily Reductions in VOC Emissions (short tons/day)	0.00013

SECTION 2: SPONSORING AGENCY

Project Sponsor:

Project Manager's Name and Title:

Agency and Agency Address:

Telephone Number:

Fax Number:

E-Mail:

If submitting more than one proposal, what is the sponsor's priority of this proposal?

Priority # ____ **of** ____ **proposals**

Is the sponsor certified by NJDOT to be eligible to receive federal funds?

Yes ☐ No ☐

SECTION 3: PROJECT ELIGIBILITY

Each CMAQ project must be a transportation project that causes an emissions reduction in the SJTPO region. Please provide a detailed description of the project, including information on project size, scope, location, and timetable. Attach supplementary information if needed, including conceptual designs if available.

Description of project (please use additional sheets if necessary):

For many project types, a quantitative emissions analysis must be included. Please refer to section VIII.A of the FHWA CMAQ Program Guidance for details on which projects require an emissions analysis. Describe the lifespan of the expected emissions benefit. For qualitative emissions assessments, please provide an explanation on how the project will reduce vehicle miles travelled (VMT), reduce delay, promote alternative modes of transport, or in any other way cause a reduction in emissions and improvement of air quality in the region.

Emissions analysis (please use additional sheets if necessary):

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SECTION 4: IMPLEMENTATION PLAN

Please attach a line item cost estimate, including all phases of the project. For each phase, indicate the cost of the phase and the amount of CMAQ funding requested. Also include a schedule indicating the time frame for each phase. Note that all project phases are eligible for CMAQ funds, and costs are 100% reimbursable.

Total Amount Requested: $ _____

Funding breakdown by phase and fiscal year (if appropriate for project type):

☐ Design:	$		FY:	
☐ Right of Way:	$		FY:	
☐ Construction:	$		FY:	
☐ Construction Inspection:	$		FY:	
Total Requested:	**$**			

How will these funds be used? For example, will contractors be hired, or will funds be used to purchase materials and improvements made with in-house labor resources?

Will the funds requested cover all project costs? If not, please list additional funding sources.

Has the design of the proposed improvement been approved by the sponsoring agency engineer?

Yes ☐ No ☐ Not applicable ☐

Have all necessary permits and approvals to advance this project been obtained from NJDOT or other applicable agency?

Yes ☐ No ☐ Not applicable ☐

Please list below all permits and approvals required for this project. For each permit and approval, please identify whether it has been received or not. For those permits and approvals not received, please identify the date when it is expected be received.

Does this project have any related projects, or projects it is dependent upon, or does this project stand alone? Is this project part of a larger initiative, or series of projects? Please describe below:

Who will be the owner/operator of the completed project?

Same as project sponsor ☐

Different agency ☐ (if different, please provide the details below:)

Owner/Operator Agency:

Contact's Name and Title:

Agency and Agency Address:

Telephone Number:

Fax Number:

E-Mail:

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SECTION 5: ENVIRONMENTAL SCREENING

Please answer Yes or No to the following questions. No field-testing or sampling of any kind is needed in order to answer the following questions.

ADDITIONAL PROJECT INFORMATION	YES	NO
• Is this project one of the activities that qualify for a Programmatic Categorical Exclusion in the NEPA process?	☐	☐
If Yes, Project Type:		
• Will right-of-way be acquired?	☐	☐
Acquisition	☐	☐
Easement	☐	☐
• Will the project result in residential or business displacement?	☐	☐
If yes, approximately how many? ☐ Residential ☐ Business		
• Will public facilities, schools, churches, emergency services, be affected by the project? (If yes list in comment section)	☐	☐
• Will new drainage facilities be installed/extended?	☐	☐
• Will retention/detention basins be constructed?	☐	☐
• Have any environmental studies (Cultural Resource, Hazardous Waste, Air, Noise, Soil borings studies etc.) been undertaken previously within or adjacent to the project area? (If yes list in comment section)	☐	☐
• Is there any potential impact for federal and state rare, threatened, or endangered species or their habitat within the project study area? (If yes list in comment section)	☐	☐

• Describe the land use/ecology of the project site

Urban ☐ Residential ☐ School ☐ Rural ☐

Agricultural ☐ Forested ☐ Grassland/Field ☐ Coastal ☐

Open Waters (lake, stream, river) ☐

• Are any of the following conditions present at the project site?

Wetlands ☐ Floodplains ☐ Sole source Aquifers ☐

Vernal Pools ☐ Wildlife Habitat ☐ Stream crossings ☐

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CULTURAL RESOURCES	YES	NO
• Are there known buildings or structures listed on, or eligible for listing on, the NJ and/or National Registers of Historic Places in the project study area? (If yes list in comments section)	☐	☐
• Are any properties included in a local county/ municipal listing of historic properties? (If yes list in comment section)	☐	☐
• Is the project located in a known or potential Historic District(s)? (If yes list in comments section)	☐	☐
• Are there any 50+ year old buildings in the project area? (If yes list in comments section)	☐	☐
• Will the project impact a 50+ year old bridge or culvert? (If yes list in comment section)	☐	☐
• Will the project impact a 50+ year old railroad line? (If yes list in comment section)	☐	☐

SECTION 4(f) PROPERTIES	YES	NO
• Will there be any use of land from the following (If yes list in comment section)		
Historic Sites	☐	☐
Publicly owned Parkland	☐	☐
Publicly owned recreation areas	☐	☐
Publicly owned wildlife or waterfowl refuges	☐	☐
Federal Lands	☐	☐

HAZARDOUS WASTE	YES	NO
• Are there any known or suspected hazardous waste sites (underground storage tank (UST), landfills, known NJDEP Case, Environment Cleanup Responsibility Act (ECRA Case) within the project study area?	☐	☐
• Are there active or abandoned industries, service stations or repair shops within the project study area?	☐	☐
• Is there evidence of potential contamination (monitoring wells, stained soils, etc.)?	☐	☐
• Are railroads or rail yards located in the project study area?	☐	☐

If you have answered "Yes" to any of the questions in the Environmental Screening checklist, please provide an explanation. If applicable, attach a showing the project location, limits, and all environmental parameters (e.g., wetlands, historic properties) relevant to your project, based on the checklist above.

Environmental screening comments:

INSTRUCTIONS FOR SUBMITTING APPLICATION:

Before submitting, please ensure that you have included all the required and supplementary materials:

- ☐ Completed application
- ☐ Cost estimate
- ☐ Emissions analysis
- ☐ Other supporting materials, as applicable (maps, concept sketches, letters/resolutions of support, etc.)

Submit hard copies to:
South Jersey Transportation Planning Organization
782 South Brewster Road, Unit B6
Vineland, NJ 08361
Attn: Andrew Tracy

Or: Submit an electronic copy of the completed application and supporting materials either on CD, USB drive, or via email to: atracy@sjtpo.org

APPLICATION DEADLINE: JUNE 14, 2017