



## MEMORANDUM

**To:** Project Selection Committee

**From:** CMAP Staff

**Date:** February 6, 2014

**Re:** Recommendations on CMAQ criteria and project ranking process

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As part of its FY 2014 staff work plan, CMAP is reviewing how it carries out the staff functions associated with the Congestion Mitigation and Air Quality Improvement program (CMAQ).<sup>1</sup> As a result of this review, staff recommends enhancing the project selection process by using a point-based ranking system to incorporate criteria drawn from previous work by the CMAQ modal focus groups. The point-based rankings would then be combined with committee deliberation to produce the program of projects for Board and MPO Policy Committee approval. This memo provides a general proposal for how to evaluate CMAQ projects with a point system. Additional work in spring and early summer 2014 will be needed to finalize point values for different criteria and, in some cases, to further develop rating systems. Staff proposes to apply this new process in the next cycle of CMAQ program development (FY 2016 – 20).

### Background and purpose

The staff review is part of an effort initiated by the CMAP Board and MPO Policy Committee. At their October 2012 joint meeting, both governing boards directed staff to use a performance-based approach in programming the funds for which CMAP is responsible. Federal policy is becoming more and more performance-oriented. Staff's current CMAQ project ranking process essentially uses a single measure (the cost-effectiveness of emissions reduction) to score projects, leavened with input from the committees and considerable professional judgment by CMAP staff. This approach has often resulted in good projects rising to the top, but it is less able to capture multiple aspects of project performance in a way that is transparent.

Like planning, programming should try to meet multiple objectives founded on policy choices and technical analysis. Through the GO TO 2040-focused programming approach, the CMAP committees are using additional criteria to assess projects. In many ways, that process has worked well, but the integration of the focus groups' assessments into decision-making remains incomplete. In staff's opinion, the next step in the evolution of the focused programming

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<sup>1</sup> See the [FY 14 work plan](#) under the Performance-Based Programming Core Program.

approach should be to formalize these additional criteria and use them to rank projects. As [previously discussed](#) with the Project Selection Committee, this approach is well in line with typical practice at other MPOs. It has the potential to enhance the committee decision-making process with a systematic way to consider a wider range of project benefits as well as to further clarify the relationship between the CMAQ program and GO TO 2040.

In terms of its transportation impact, CMAQ is a fund source that promotes modernization and enhancement of the system. It cannot fund maintenance or highway expansion and is too small to increase transit capacity significantly. However, it can make existing assets function better, promote innovation, and enhance non-motorized transportation. GO TO 2040 also focuses on modernization and enhancement of the system, and the criteria below are meant to reflect this emphasis.

## Overview of proposed ranking method

The proposed project ranking system would develop a composite project score by combining the current cost-effectiveness measure with evaluation measures relating to transportation impact and regional priorities. The cost-effectiveness of air emissions reduction would continue to be the most important criterion. To help distinguish the additional benefits of projects, a set of transportation impact criteria would be used. These criteria are mostly drawn from the modal focus groups' previous work, and they complement the cost-effectiveness of air emissions reduction criterion. Highway projects, transit projects, etc. would each have their own set of criteria, but they would all count for the same weight. Regional priorities would be drawn from GO TO 2040 or the priorities identified in federal law. A key aspect of the proposed approach is to make the scoring procedures, as well as any data related to programming, available to project sponsors in advance of the call for projects so that they can tailor their project submissions accordingly. The weighting of each category would be as follows:

Category	Max points
Cost-effectiveness of emissions reduction	50
Transportation impact <sup>2</sup>	30
Regional priorities	20
<b>Total</b>	<b>100</b>

Prior to applying these evaluation measures, a set of screening criteria would be used to identify projects that do not meet basic requirements. For instance, projects for which Phase I Engineering is not done or substantially done would not be evaluated further. The proposed screening criteria are discussed later in this memo.

### Cost-Effectiveness of Emissions Reduction

A key aspect of federal law is to select projects that are cost-effective at reducing air emissions. All projects would continue to be scored by their cost-effectiveness. For direct emissions reduction projects, the criterion would be the cost-effectiveness of fine particulate matter (PM

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<sup>2</sup> See exception under "Other Projects" below.

2.5) removal in dollars per kilogram removed. For all other projects, the cost-effectiveness of volatile organic compound (VOC) removal would be used, again in dollars per kilogram removed. Projects that have no air quality benefit would continue to be ineligible. The approach would be a scoring system such as the following:

<b>Cost-effectiveness of VOC or PM 2.5 removal</b>	<b>Points</b>
Very low	10
Low	20
Moderate	30
High	40
Very high	50

### **Transportation Impact Criteria**

Since project characteristics are very different between transportation modes, each would have its own set of criteria, but they would all add up to the same total weight. The initial assumption is that the 30 points available would be distributed equally between these criteria. Each would be rated from very low to very high on a five-category scale, similar to the cost-effectiveness of emissions reduction. Over spring and early summer 2014, the focus groups would be engaged to review the proposed transportation impact criteria, finalize point values, and further develop rating systems, as called for below. Following their initial work on the criteria, they would be asked to review staff’s rankings and provide input on the technical details of proposed projects. Staff would use this feedback to develop the recommended program for the PSC to consider.

#### **Highway Projects**

CMAQ is often used for highway projects that improve traffic flow without expanding the system, such as signal modernization, turn lanes at intersections, and so on. These projects decrease delay and increase speed, helping reduce air emissions per mile traveled. The proposed transportation impact criteria for highway projects build directly on the approach developed by the [Regional Transportation Operations Coalition \(RTOC\) for its FY 2014 – 18 CMAQ evaluations](#). The proposed criteria are:

- **Travel time reliability.** RTOC previously scored reliability using the planning time index (PTI), which indicates the amount of time a traveler needs to set aside to be sure of arriving late on no more than 5% of trips (in other words, the PTI is the 95<sup>th</sup> percentile travel time). Staff proposes to combine this quantitative evaluation of the reliability problem in the corridor with a qualitative evaluation of a project type’s impact on reliability. Staff would seek input from RTOC on a point system to rate the reliability improvement of proposed projects. Reliability improvement would come primarily from deploying Intelligent Transportation Systems (ITS) components as part of a project.
- **Safety.** Although CMAQ is not a safety program, the project development process will wind up addressing safety deficiencies if they exist. Other things being equal, then, it is

more important to fund a project where safety problems are more severe. While RTOC previously used the total crash rate in the project corridor, it is probably more appropriate to rate crashes by severity as well.

- **Location and type of project.**
  - **Congestion Management Process highway system.** The regional Congestion Management Process has identified a set of roadways on which it is particularly critical to minimize congestion. Projects that benefit the National Highway System and the Strategic Regional Arterial system should be awarded additional points.
  - **Innovation.** The CMAQ program can help to support new approaches to congestion management and innovative project designs. RTOC previously listed types of innovative projects that would be treated favorably by the group. This qualitative assessment would be formalized so that promising new designs or operational strategies would be given more points than traditional approaches. Staff would seek input from RTOC to refine the scoring system in advance of the call for projects.

### ***Direct Emissions Reduction Projects***

Direct emissions reduction projects focus on technologies that reduce emissions by repowering engines, using alternative fuels, etc. rather than changing travel behavior or improving transportation system performance. Building on the [approach used by the Direct Emissions Reduction Focus Group \(DER\) in its FY 14-18 CMAQ evaluations](#), the proposed criteria are:

- **Proximity to sensitive populations.** Fine particulate matter emissions can have a highly localized negative impact. This impact may be pronounced in children and older adults, who are especially susceptible to illnesses caused or exacerbated by exposure to fine particulate matter. Minority and poverty status likely influence susceptibility as well. Thus, the sensitive population measure would be assessed through an index accounting for income, minority status, presence of children, and presence of older adults, with direct emissions reduction projects near these populations scoring higher.
- **Improving the condition of public fleets.** Given the funding challenges of public agencies and the condition of public fleets, DER members feel that, as a matter of policy, a project benefitting the public sector should be a higher priority than one benefitting the private sector. Additional points should be given for public sector projects.
- **Innovation.** A key aspect of the CMAQ program is to support the continual deployment of emissions control technologies that are new to the region. The DER used a qualitative assessment of how innovative a proposal is. This qualitative assessment would be formalized so that promising new technologies or strategies would be given more points than traditional approaches. Technologies would still have to be certified by the U.S.

Environmental Protection Agency or the California Air Resources Board. Staff would seek input from the DER to refine the scoring system in advance of the call for projects.

The DER previously used asthma rates in the vicinity of the project as a criterion. Data to evaluate this criterion are not available for the entire region at a disaggregate level; the DER in fact used a judgment-based evaluation of whether projects would impact populations with high asthma rates. Since there is an association between sensitive populations (as defined above) and asthma susceptibility, the sensitive population criterion likely captures asthma rates as well.

Finally, note that federal law requires that 25% of a state's CMAQ funds be obligated for projects that reduce fine particulate matter emissions. When developing the program, the amount of funding directed toward fine particulate matter reduction would be tabulated to ensure the 25% rule is met. Direct emissions reduction projects provide most of the PM 2.5 reduction benefit, but staff intends to count the costs of other project types toward the 25% set-aside if their PM 2.5 benefits are on par with those of direct emissions reduction projects.

### ***Bicycle Facilities***

Bicycle facilities improve air quality by encouraging bicycling rather than automobile use. The following performance measures build upon [the Bicycle and Pedestrian Task Force's evaluations of FY14 – 18 CMAQ projects](#):

- **Safety and attractiveness.** The Bicycle and Pedestrian Task Force has developed a “[safety and attractiveness score](#)” that awards points for the improvement in conditions for walking and biking that result from building a facility. This simple, semi-quantitative technique allows the evaluation of travel benefits between different projects.
- **Transit accessibility.** To help ensure that a bicycle facility provides a realistic alternative to auto use, it is important to evaluate the potential to link bicycling with transit for longer trips. Previously the BPTF used a count of transit boardings/alightings near bike facilities to evaluate this. In coordination with RTA and other stakeholders, CMAP is developing a more comprehensive transit connectivity index that measures the overall level and quality of transit service available at a particular location in the region. For CMAQ assessment, bike projects where transit accessibility is high would be awarded more points. To receive points on this measure, the applicant must show that the facility is designed to integrate with transit service (e.g., a bike facility must lead directly into a transit center).
- **Innovation.** As with highway and direct emissions reduction projects, the CMAQ program can help to support innovative bike facility designs. A qualitative assessment would be formalized so that promising designs that are new to the region, such as those in NACTO's [Urban Bikeway Design Guide](#), would be given more points than conventional designs. Staff would seek input from the Bicycle and Pedestrian Task Force to refine the scoring system in advance of the call for projects.

The BPTF previously ranked projects based on whether they helped to implement the Regional Greenways and Trails Plan. However, the mostly off-street trails in the Regional Greenways and Trails Plan are not as conducive to shifting travelers away from cars as would be on-street facilities, so it is not included as a criterion for bicycle projects funded under CMAQ. Instead, CMAP's new Transportation Alternatives program can more appropriately emphasize the implementation of the Greenways and Trails Plan, as it did in the FY13-14 program.

### ***Transit Projects***

The Transit Focus Group also reviewed and recommended projects in the FY14-18 CMAQ cycle. Based on [the CMAQ application guide](#) (p. 18), the group's intention was to analyze projects based on their increase in ridership, on-time performance (reliability), service speed, and their effect on the state of good repair of the system, but it was not able to make as much progress in quantitative evaluation as the other focus groups. Nevertheless, staff believes the intention was generally sound and therefore recommends the following criteria:

- **Ridership increase.** Increasing ridership is one of the key indicators in GO TO 2040. Ridership also helps to indicate the overall benefits of a transit project. For two transit projects with similar cost-effectiveness for air quality improvement, the one that increases ridership more is the better project, other things being equal.
- **Travel time reliability.** Similar to the approach with highway projects, staff proposes to combine a quantitative evaluation of reliability on the particular route with a qualitative evaluation of the project's impact on reliability. Ideally, operations data from the service boards would be used for the quantitative evaluation of current reliability. Using these data, reliability for bus routes would likely be measured by schedule adherence, while rail delay would likely be measured by the number of delays per year that are over a certain number of minutes. Staff would seek input from the transit agencies on a point system to rate the reliability improvement of proposed projects. Reliability improvement would come primarily from deploying Intelligent Transportation Systems (ITS) components as part of a project. This criterion would only apply to transit service and facilities.
- **Existing asset condition.** Although CMAQ does not fund maintenance projects, modernization involves upgrades to infrastructure and rolling stock. Other things being equal, it is more important to fund a transit facility or purchase new equipment where these assets are in worse condition. The Regional Transportation Authority's asset condition data and capital allocation model would be used to define asset condition. Transit project sponsors or the RTA will be asked to provide asset condition information. Staff would seek input from the transit agencies on the technical aspects of using the asset condition ratings. It is not expected that the improvement in asset condition resulting from the project would be estimated. This criterion would only apply to transit facilities.

## **Other Projects**

Some projects may not fit neatly into any of the categories above, and the CMAQ program at CMAP has an “Other Projects” submission form to accommodate these funding requests. For these projects, no transportation impact criteria would be used. Instead, the cost-effectiveness of emissions reduction would count for 80 points rather than 50. Project sponsors will be encouraged to discuss their proposals with CMAP staff before submission to ensure that they are best handled as “Other Projects.”

## **Regional Priorities**

GO TO 2040 is a long-range plan with priorities that require focused effort and in some cases additional resources to accomplish. As flexible regional funding, CMAQ should be used for this purpose while remaining available for other needs. Practically speaking, the weight assigned to regional priorities should be sufficient to stimulate movement on them, but not so high that other interests are overwhelmed. Thus, a maximum of 20 points is proposed for this category. If a project appears to fulfill more than one priority, still no more than 20 points could be awarded to it.

All of the proposed regional priorities below emerge from GO TO 2040 and are consistent with the basic intent of improving air quality or reducing congestion. Note that many these items have technical and policy details that need additional attention. Staff plans to engage the CMAP committees further to address these. The initially proposed regional priorities would be as follows:

- **Parking management, including parking pricing.** GO TO 2040 emphasizes the need to better manage parking since parking oversupply is costly, encourages automobile use, and can conflict with livability. CMAQ may fund a variety of capital and operational strategies for parking management, with special attention to parking pricing and the infrastructure needed to establish variable pricing for parking (e.g., parking availability sensors, meters, real-time advance parking directional signing, communications, management, etc.). As a travel demand strategy, not only are capital expenses eligible for programming, but up to three years of operating expenses as well, after which a financial plan should demonstrate net revenue generation. Sponsors would submit this project via the “Other Projects” form.
- **Eligible components of GO TO 2040 major capital projects.** CMAQ can be used to fund eligible parts of GO TO 2040 major capital projects, as for example the intersection improvements related to the Elgin-O’Hare Western Access project that were funded in the FY 14-18 cycle. Bus rapid transit components of major capital projects would fit this priority. Another example would be implementation of priced managed lanes. For this strategy, CMAQ could fund such items as roadside congestion-monitoring equipment, fare collection equipment, lane controls, and three years of management and operations, but the actual highway capacity addition could not be funded. Priced managed lanes are expected to become financially self-sustaining and generate net revenue.

- **Transit-supportive land use.** The viability of transit is closely connected to land use and neighborhood design, and so a major priority of GO TO 2040 is to encourage land use patterns that support transit. For CMAQ, additional points would be awarded to transit projects based on a realistic 10-year projection of new riders attributable to changes in land use near the project. This projection would be submitted on a supplementary form and take into account development plans, expected site yields based on zoning, the availability of local economic development subsidies, and so forth. Having transit-supportive zoning by itself could garner priority points as well, although not as much as firm development plans.
- **Geographic targeting of funds.** GO TO 2040 recommends establishing a geographically-targeted infrastructure funding source. CMAP is currently researching options for geographic targeting of infrastructure investment. A working idea is that priority locations could be defined based on a voluntary opt-in program at CMAP for designating urban centers. This approach may not be ready in time for the upcoming FY 16 – 20 CMAQ cycle, but can be thought of as a placeholder.

## Screening Criteria

As mentioned above, project submissions would be screened for meeting basic program requirements before they are evaluated further. These screening criteria are already in use in the CMAQ program either formally or informally.

- **Phase 1 Engineering is substantially complete.** Requiring Engineering 1 to be substantially complete prior to consideration for CMAQ funding helps ensure that accurate cost information is available for the project and that the scope is clear, reducing the need for cost and scope changes later. It also removes one common source of project delay. In order to show the requirement is met, a sponsor will either have to submit a final Project Development Report to IDOT for signatures by a certain date or show that Phase 1 design approval has already been received. CMAP staff then follows up with IDOT to make sure the final PDR was submitted. This screening criterion does not apply to projects that do not require Phase I Engineering.
- **Project is found in an adopted/approved plan.** As far as possible, projects should emerge from a robust planning process concluding with a plan that is approved by a governing board or otherwise formally adopted. Setting priorities in this way helps ensure that there will be local support, and matching funds, for the project. This screening criterion would only be used for bicycle facilities and transit projects. A variety of planning documents would be acceptable, including comprehensive plans, subarea plans, plans by subregional councils, capital improvement or facilities plans, and agency strategic plans.
- **Milestone schedule is realistic and consistent with project accomplishment goals.** Project sponsors submit a form indicating when they expect to meet certain project development milestones. These should be consistent with the ranges given in the [Federal Aid Project Flowchart](#) and they must allow sponsors to meet their



accomplishment goals of completing each project phase within two years of the year the funds are programmed (three years total).

- **Project has an air quality benefit.** Given the centrality of air quality to the CMAQ program, projects that do not provide an air quality benefit will not be ranked on any other criteria.

## **Role of the Focus Groups**

The modal focus groups should continue to be part of the CMAQ program development process. In the next few months (before the next call for projects):

- DER should refine the innovation measure.
- BPTF should refine the innovation measure for bicycle facilities.
- RTOC should develop a point system to evaluate the potential for a highway project to improve reliability and refine the innovation measure.
- All focus groups should provide input on the point values assigned to the transportation impact criteria.

During the evaluation process for the next CMAQ program, the focus groups would be asked for feedback on the projects submitted and on the project rankings developed by staff, including the air quality rankings. The focus groups would be asked for specific input on technical aspects of the projects, particularly whether there are any “fatal flaws,” as well as qualitative information that is not captured in the project rankings. Information from the focus groups would be used to refine the staff-recommended program for the Project Selection Committee to consider.

## **Conclusions and Next Steps**

Staff believes the proposed ranking system has the potential to enhance the committee decision-making process with a systematic way to consider a wider range of project benefits as well as to further clarify the relationship between the CMAQ program and GO TO 2040. Beyond the criteria discussed here, CMAP has identified areas where the technical analysis supporting project rankings needs improvement. Among others, there is a need to improve forecasts of bicycle demand, improve transit ridership estimates, and enhance the analysis used for traffic flow improvements and technology projects. Furthermore, additional planning studies may, over time, shed light on the importance of different criteria or project types, which should be used to make revisions to the CMAQ programming process. Such a continuous improvement approach would help ensure CMAP maximizes the benefit of this regional fund source.

**Action Requested: Discussion**