Developing a Method of Multimodal Priority Setting for Transportation Projects in the San Francisco Bay Area in Response to Opportunities in ISTEA

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The new federal transportation reauthorization, the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), breaks new ground by granting metropolitan regions unprecedented latitude to direct transportation investments toward alternative modes and routes. This combination of funding flexibility and regional decision making will shape transportation investments in the post-Interstate era.

The San Francisco Bay Area’s Metropolitan Transportation Commission (MTC) recently adopted its 1993 Transportation Improvement Program (TIP). The 1993 TIP includes the programming of ISTEA’s new Surface Transportation Program (STP) and Congestion Mitigation and Air Quality (CMAQ) Improvement Program funds for 225 projects that cut across all modes. Notable examples include alternative fuel buses; signal interconnects; bike lanes and bridges; bus-rail transit centers; paving, restriping, and channelizations; park-and-ride lots; a port intermodal container transfer facility and rail bridge; freeway service patrols; rail transit transbay tube rehabilitation; and even a child-care facility at a rail transit station. Table 1 summarizes the adopted program by project type. A list of the individual projects in the adopted MTC program is available from the authors.

The process for programming of STP and CMAQ funds was developed by MTC in cooperation with a wide variety of transportation and air quality interests in the Bay Area. So broad was the base of support for the exercise that when MTC acted to release the STP and CMAQ programming for public comment, the audience broke into spontaneous applause. As one participant commented,

We are very pleased with the results of what I call the “cooperative competition” engendered by ISTEA. While we each compete for our individual projects, the broader we define them, the more everyone benefits. MTC’s process enhanced communication both among countywide modal sponsors, who often had not spoken in the past, as well as between counties. New players were at the table and the results of the program indicate that we were all winners. While refinements to the scoring criteria are still needed, the multifaceted criteria made us grapple with what are truly the most productive sets of solutions at the county and regional level. (Brigid Hynes-Cherin, San Francisco County Transportation Authority)

Although some regions have had experience with alternatives analyses or corridor studies, the type of multimodal programming now being undertaken by metropolitan planning organizations (MPOs) is, for the most part, a new field. Many regions have found that the existing literature is of limited practical value in establishing the new transportation programs or the cooperative processes now required in the ISTEA era.

This paper describes the Bay Area’s experience in developing a program for STP and CMAQ funds for its 1993 TIP and suggests ways that it may be applied to other regions. It is not a research paper but is intended for practitioners.

CONTEXT OF BAY AREA AND ISTEA

The MTC is the metropolitan transportation planning organization for the nine counties of the San Francisco Bay Area. In spring 1992 MTC was in a unique position to become a proving ground for many of the new opportunities that ISTEA presented to regional planning agencies throughout the country. A number of factors combined to allow MTC to test new methodology for multimodal project selection. They can be summarized as follows:

- MTC, in developing an advocacy position for the formation of ISTEA, forged a partnership with other California and Bay...
Area transportation interests, particularly the California Department of Transportation (Caltrans), the nine Bay Area county congestion management agencies (CMAs), the California Transportation Commission, transit operators, and environmental interests. This partnership developed and actively supported a set of principles to be included in ISTEA. These principles included a desire for a level playing field across modes and increased flexibility to make planning and programming decisions at the local level.

- California voters, in passing a gas tax increase in 1990, created county-level CMAs and a category of state funding with some spending flexibility across modes. Highways, local roads, and fixed guideway transit could compete in a flexible congestion relief program category. One programming cycle was completed under these rules before the passage of ISTEA.

- MTC was sued under the Federal Clean Air Act by the Sierra Club and Citizens for a Better Environment. That litigation, over the course of 3 years, significantly modified MTC’s practices for conforming its TIP to meet clean air requirements and brought air quality issues to the forefront of MTC’s transportation planning and programming.

- In February 1992 a state-level agreement was reached that determined that existing programming commitments embodied in the State TIP would be upheld. Furthermore, it was agreed that the regional increment of additional funds provided by ISTEA would be distributed to the regional agencies around the state according to the formulas contained in the ISTEA for the CMAQ Improvement Program and STP. For this distribution to occur, state legislation exempting these two programs from existing state distribution formulas was required. MTC needed to put together a program of projects in time for incorporation into the 1993 TIP in order to lay claim to these funds and seek the passage of state legislation to reconcile state and federal policies.

Before the passage of ISTEA, MTC had limited experience in programming flexible funds. Transit projects were funded primarily through a separate transit capital priority-setting process for FTA Section 3 and Section 9 programs. Local roads projects were funded primarily through county-level federal-aid urban/secondary processes. State highways were funded through a state-wide process. Bicycle and other enhancement projects were funded through small dedicated programs. The 1990 California gas tax increase did provide for some flexibility, as noted earlier, but this flexibility was limited to transit guideways and highways.

ISTEA provided an entirely new opportunity to generate projects to meet the Bay Area’s transportation needs through a variety of modes. With the new flexibility, the possibility of meeting multiple objectives became possible.

DEVELOPING THE PROGRAM

Before MTC could take advantage of the opportunities offered by ISTEA, it was necessary to learn about the landmark law and educate others. Toward this end, MTC, in January and February 1992, sponsored a conference and a series of workshops and produced legislative analysis, policy papers, and a reference handbook of the law. MTC was fortunate to receive the participation of FHWA Administrator Thomas Larson and U.S. Representative Norman Mineta of San Jose, one of the principal authors of the legislation, in these early outreach efforts. The extensive educational effort gave the diverse community of transportation interests the knowledge, understanding, and motivation to begin the process. This introduction was particularly important for some of the newer players, including representatives from the ports, airports, and smaller transit operators.

At the same time, MTC sought to lend a structure to the coalition that had been formed originally to advocate key provisions for inclusion in ISTEA. Mutual cooperation, along with program flexibility, became key aspects of the developing program. The Bay Area Partnership was formed with a program called JUMP Start to focus regional implementation efforts on a number of relatively low-cost, operations-oriented transportation projects that could be delivered in a short time frame. This demonstrated that different agencies working together could quickly deliver projects to improve mobility, ease congestion, and clear the air—all major themes in ISTEA.

To help with the multimodal project selection process for the 1993 TIP, some of MTC’s existing advisory committees, which

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<th>TABLE 1 Summary of Program Areas by Project Type</th>
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were largely mode-specific, were asked to designate representatives to serve on the Ad Hoc Committee on Multimodal Priority Setting. In the beginning, the committee included five transit operators, five CMAs, five city and county representatives, the Bay Area Air Quality Management District and the state Air Resources Board, two ports, two airports, Caltrans, and the Association of Bay Area Governments. This committee later expanded somewhat to include other interested parties. This large group had two major subcommittees: one on equity concerns and one to develop the ranking and evaluation priorities. The subcommittees developed consensus proposals that the larger group considered and endorsed. The larger Ad Hoc Committee then forwarded its proposal to MTC for consideration and adoption. This institutionalized structure worked because of the following reasons:

- There was a recognition early on that each participant had much to gain from a regional process and much to lose if a regional consensus was not reached.
- The face-to-face meeting of the participants allowed for a wide range of opinions to be expressed. It also forced participants to be less parochial, since other interests were at the table as well. This greatly improved the participants' understanding of the process and criteria and resulted in their overwhelming endorsement of the results.
- MTC was willing to allow the subcommittees largely to formulate the proposals. MTC staff provided support, including setting agendas, facilitating discussion, and recording meetings. MTC provided initial proposals to get discussions going and summarized agreements. MTC staff provided a structure and schedule for the discussions, but the subcommittee meetings were chaired by Ad Hoc Committee members from outside agencies and the final proposals were ultimately those produced by the agreement of the participants.
- An agreement was reached early on that 50 percent of STP projects would be selected at the county level by the CMAs. This later became an element of the state implementing legislation, Senate Bill 1435 by Senator Quentin Kopp of San Francisco. The other 50 percent of the STP and all of the CMAQ programming would be determined by MTC using the adopted process and criteria, which were being jointly developed. The 50 percent STP “guarantee” of a level of funding to the counties with assurances built in for a fair process at that level, also consistent with ISTEA principles, served to increase the participants' willingness to develop the criteria for the regional program while the local proposals were formulated. The guarantee amounts to each CMA were fixed at a given dollar amount on the basis of population shares.

The Equity Subcommittee met frequently in the initial phases of program development. It forged the agreement noted earlier regarding the distribution of programming responsibilities in the process. In doing so, the group resolved fundamental issues regarding geographic, functional, and modal equity. After much discussion, geographic equity was addressed through the 50 percent STP programming amount to CMAs. Within the CMA constituency, the program was not suballocated to a jurisdiction or a mode, and the comprehensive regional screening criteria applied to the half of the guaranteed program as well as the rest of the STP and CMAQ program. Functional equity (replacement versus expansion, for example) and modal equity were recommended to be addressed in specific ways in the scoring criteria. The subcommittee also endorsed the concept of allowing some regional projects to be accepted directly from the project sponsors in the first programming cycle.

The Equity Subcommittee also devised a four-step appeal process for those project sponsors who thought that they had been disenfranchised or treated unfairly in the multimodal priority-setting process. The first two levels of recourse were the CMA staff and its policy board; the next two levels of recourse were the MTC staff and the full commission. One transit operator used the appeals process. The program of projects was not changed, but the issue of the treatment of projects of regional significance was highlighted for future discussion.

The early acceptance of the Equity Subcommittee's findings and recommendations provided a context along with a perception of fairness and opportunity. It allowed the Scoring Subcommittee to work on the criteria simultaneously with the county-level project selection and prioritization process during April, May, and June 1992.

The Scoring Subcommittee approached its task as follows:

1. It agreed that every project would have to meet specific, comprehensive screening requirements. These screening criteria would be a threshold. If any project did not pass one screening criterion, that would be a fatal flaw. Projects passing the screening criteria would then be scored. After projects were scored and ranked, a set of programming criteria and principles would then come into play to address STP versus CMAQ eligibility, basic equity concerns, and any programming policy objectives.

2. It was agreed to start with the 15 factors given in ISTEA:

(f) Factors to be considered—in developing transportation plans and programs pursuant to this section, each metropolitan planning organization shall, at minimum, consider the following:

1. Preservation of existing transportation facilities and, where practical, ways to meet transportation needs by using existing transportation facilities more efficiently.
2. The consistency of transportation planning with applicable Federal, State and local energy conservation programs, goals and objectives.
3. The need to relieve congestion and prevent congestion from occurring where it does not yet occur.
4. The likely effect of transportation policy decisions on land use and development and the consistency of transportation plans and programs with the provisions of all applicable short- and long-term land use and development plans.
5. The programming of expenditure on transportation enhancement activities as required in section 133.
6. The effects of all transportation projects to be undertaken in the metropolitan area, without regard to whether such projects are publicly funded.
7. International border crossings and access to ports, airports, intermodal transportation facilities, major freight distribution routes, national parks, recreation areas, monuments and historic sites, and military installations.
8. The need for connectivity of roads within the metropolitan area with roads outside of the metropolitan area.
9. The transportation needs identified through use of the management systems required by section 303 of this title.
10. Preservation of rights-of-way for construction of future transportation projects, including identification of unused rights-of-way which may be needed for future transportation corridors and identification of those corridors for which action is most needed to prevent destruction or loss.
11. Methods to enhance the efficient movement of freight.
12. The use of life-cycle costs in the design and engineering of bridges, tunnels, or pavement.
13. The overall social, economic, energy, and environmental effects of transportation decisions.
Three other factors were added: implementation of the Federal Clean Air Act, implementation of the Americans With Disabilities Act (ADA), and improved system safety. These 18 factors were then categorized as to whether each would be considered as a screening, scoring, or programming criterion.

3. The screening criteria were established on the basis of state and federal law. There was some experience in using screening criteria in previous cycles of mode-specific programs, so this was a straightforward exercise in most respects. One key aspect of the screening criteria was a requirement that county CMAs certify that all projects proposed in their county were developed according to a cooperative process that, in good faith, brought all transportation interests to the table, included public participation, and used the ISTEA mandates and 15 factors to establish local priorities.

4. The various factors were grouped in large categories. After several attempts, four broad groups were identified: Maintain the Metropolitan Transportation System (MTS), Improve the Efficiency and Effectiveness of the MTS, Expand the MTS, and External Impacts. The External Impacts category was a method of taking into account many of the new mandates of the ISTEA, such as considerations of land use in addition to the Clean Air Act, and the ADA.

5. Weights were established for the four categories after considerable debate. For the 1993 TIP, the weights were 30 points for Maintenance (Category 1), 30 for Improved Efficiency (Category 2), 15 for Expansion (Category 3), and 25 for External Impacts (Category 4). This distribution was also influenced by the MTC program emphasis for the 1993 TIP on cost-effective multimodal projects that could be implemented quickly.

6. The specifics of point assignments within the categories were then established. Elizabeth Deakin of the University of California, who was retained as a consultant to advise MTC on this process, suggested four basic principles to guide the scoring efforts. These principles significantly shaped the criteria that were ultimately adopted.

- The first principle was to tie the solution to the problem wherever possible. This directly manifested itself in multiplying factors for the scale of the existing safety and congestion problems, and the expansion demand in those subcategories that sought to quantify the safety, congestion, and merits of the expansion project, respectively. (Specific information on the quantification of these multipliers is available from the authors.)

- The second principle was to use measures that cut across modes, measures that would apply to all modes wherever possible. This was not easy or always possible. However, as a goal, it kept the group focused on the variety of projects to be considered and on measuring the benefits of projects of different modes in a uniform manner. The External Impacts category of point assignments best illustrates this principle in the criteria.

- The third principle was to anticipate the date that will be available in the future from ISTEA-mandated management systems and to incorporate performance-based standards into the criteria. In the Bay Area, this was easiest in the areas of pavement management and congestion management, where the systems already existed. In other areas, this was more difficult.

- The fourth principle was to rely on and strengthen existing plans and programs. This is related to the use of performance-based standards mentioned earlier, but also seeks to better integrate the planning and programming processes. Successful application of this principle can be seen in the air quality points. After much detailed discussion by the Scoring Subcommittee and MTC staff, the final scoring criteria were developed and endorsed by the Ad Hoc Committee. A summary of the final scoring criteria and point assignments is given in Table 2. (A detailed description of the scoring criteria is available from the authors.)

7. The programming principles were developed from STP/CMAQ eligibility and from the prior recommendations by the Equity Subcommittee. The scoring Subcommittee reevaluated the programming principles and supplemented the basic equity concerns with additional guidance, included in the final criteria, as to how increased local contributions, multijurisdictional projects, and cost-effectiveness considerations would influence the final program.

### Table 2 Summary of MTC Scoring Criteria for STP and CMAQ Program

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<th>Points</th>
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<tr>
<td>30</td>
<td>Maintain/Sustain the Metropolitan Transportation System (MTS)</td>
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<tr>
<td>30</td>
<td>Improve the Efficiency and Effectiveness of the MTS</td>
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<td>30</td>
<td>System Expansion</td>
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<tr>
<td>25</td>
<td>External Impacts</td>
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<td>15</td>
<td>Total Points Possible</td>
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Rehabilitations and replacements based on Management Systems are eligible for up to the full 30 points, depending upon the portion of the project that will rehabilitate the system, and the optimization of the proposed improvement with current condition.

Rehabilitations not based on a management system, or for support infrastructure like drainage, can only receive a maximum of 20 points.

Safety and security, congestion relief, cost effectiveness, and freight movement are the three subcategories where points can be assigned, up to a combined maximum of 30 points.

For both the safety and congestion relief criteria, the magnitude of the (safety or congestion) problem addressed by the project is multiplied by the impact that the project will have in eliminating or alleviating the problem. Guidelines for setting the multipliers are included, and impact scores are based on shared empirical experience (e.g. Class 1 bike paths are safer than Class 3).

Cost-effectiveness points measure the ratio of annual benefits in terms of total travel time savings and operating cost savings for the project to annualized total project costs. Cost-effectiveness scores are adjusted to reflect the median of all submitted projects.

Freight movement points are assigned based on the facility type and nature of the proposed project.

System expansion projects are first evaluated as to whether or not they meet current demand through the use of a multiplier based on average daily traffic and existing level-of-service. Again, the impact that the project will have in meeting demand is set based on shared empirical experience (e.g. the addition of HOV lanes has more impact than ramp metering).

Air quality improvement, land use policy support, energy conservation, and implementation of the Americans with Disabilities Act (ADA) are the four subcategories where points can be assigned, up to a combined maximum of 25 points.

Projects with positive air quality impacts are awarded up to the full 25 points if they implement MTC-adopted Transportation Control Measures (TCMs). Projects which are only partially TCMs are awarded proportionately smaller point values, and TCMs are grouped according to their effectiveness in cleaning the air.

A project can also be awarded up to 8 points if it supports land use policies that foster a mode shift away from single occupant vehicle trips on regional facilities. Up to 10 points can be awarded for projects with demonstrable energy conservation or modal shift benefits. Up to 30 points can be awarded for implementation of ADA enhancements.

Planning projects are prioritized according to the nearness and feasibility of the planning project to direct and immediate transportation improvements.
8. MTC staff reviewed the developing criteria in a variety of forums, including MTC’s Minority Citizens and Elderly and Disabled advisory committees and relayed agency and public feedback to the Scoring Subcommittee. The Scoring Subcommittee’s recommendations were endorsed, with some modifications, by the larger Ad Hoc Committee and then adopted by MTC.

9. MTC staff was then able to use the criteria to establish a program of projects based on the submittals from the county-level CMAs and regional project sponsors. The process of evaluating more than 350 projects in 4 weeks using this new criteria involved most of the MTC professional staff, organized into teams on the basis of geographic responsibilities.

Through the application of the criteria, MTC discovered the need to develop consistent guidance on the application of the multipliers by MTC staff, as well as specific criteria modification to better accommodate local roads projects with multimodal features (i.e., signal timing, bike lanes, and bus turnouts). Using the established programming principles and taking the highest-ranked projects to the estimated apportionments to develop the draft STP/CMAQ program, MTC staff circulated a draft TIP for public comment consisting of more than 200 STP- and CMAQ-funded projects. Minor modifications to this program were adopted as the 1993 TIP in September 1992, after the TIP was found to conform to air quality requirements.

The actual formation of the program was a direct application of the adopted process and criteria. Although individual project sponsors questioned and debated specific project scores, the prior overwhelming endorsement of the criteria by the people that developed it made the exercise go fairly smoothly. Comments were focused largely on the application of the criteria in specific instances; neither the criteria nor the overall approach were questioned. Opportunities to clarify or provide additional information were limited to a given period after the draft scores were released.

When the draft scores were released, the CMAs were given a limited opportunity to revise their STP guarantee lists. In these lists, however, no new projects could be added that had not already been part of the competitive process. And if a project that did not make the competitive “cut” was moved by a CMA into its guaranteed local priorities on the basis of preestablished priorities, the project that was moved out of the guarantee list was not eligible for consideration in the competitive scoring process.

Table 1 shows the final 1993 STP and CMAQ program by project type.

IMPLEMENTATION OF REGIONAL PROGRAM AND IMPROVEMENTS FOR NEXT CYCLE

As the 1993 TIP neared adoption, MTC recognized that the imperative for timely program implementation requires considerable effort on the part of the many transportation stakeholders in the Bay Area. MTC found it necessary to aggressively ensure that the institutional arrangements for project implementation were communicated clearly to the project sponsors.

The adoption of the 1993 TIP, including the STP and CMAQ programs, precipitated the need for MTC to forge new working relationships with its partner agencies to implement the regional program. MTC, as the first agency in the state to develop a 1993 TIP, began discussions with Caltrans, FHWA, and FTA on program issues. In August 1992 MTC cosponsored a workshop with Caltrans and FTA to review the steps that a project sponsor needs to take to receive the funds and complete a project. With the increased number of new players and new rules, it was essential that consistent information on field reviews, grant procedures, and sponsor reimbursement be circulated. There was an additional series of meetings between MTC, Caltrans, FHWA, and FTA to forge a clear understanding of institutional responsibilities.

As the 1993 TIP was adopted, meetings began on improving the process and criteria for the next cycle of programming. Surveys were widely distributed by MTC staff, asking for comments on the process and suggestions for future improvements. Response to the survey showed the need for improvement in specific areas.

Survey comments were combined with comments received at public meetings. Issues were categorized into screening, scoring, programming, and application form issues. These were then developed into a work plan, and the issues were put on agendas for the Scoring Subcommittee to address at its biweekly meetings.

Among the issues to be discussed were the definition of, and process for, regional projects in the process; additional criteria for guarantee projects; further refinement of the scoring criteria, such as cost-effectiveness and the potential for negative scores in some categories; ongoing discussions of the nature of the partnership of the CMAs and the transit operators; the modification and use of the criteria for longer-range planning exercises; the long-term structure and relationship of MTC’s advisory committees; and programming schedules. The process and criteria used for the 1993 TIP provide a foundation on which to refine and improve the priority-setting process in the San Francisco Bay Area.

ADVICE TO MPOs EMBARKING ON A MULTIMODAL PRIORITY-SETTING PROCESS

The MTC process may provide certain lessons to other regions that are trying to set transportation programming priorities across modes.

1. Educate policy board members, and the public, on the new mandates of ISTEA. Establish public participation and outreach. Bring the players to the table early and frequently, and actively involve them in establishing the criteria. Time spent up front in establishing the ground rules makes for a smooth adoption process later.

2. Keep it as simple as possible. The San Francisco Bay Area is a complex region, and MTC criteria reflect that complexity. The basic approach of screen, score, and program can be used anywhere. Starting with the mandated 15 factors, add more factors to reflect any local conditions, or priorities. Sort them into categories and decide on weights. Then figure out how to assign points within categories using the best methods and information available.

3. Build on what you have already accomplished. In the Bay Area, MTC’s experience in implementing the state flexible program and the formation of CMAs at the county level allowed it to hit the ground running. An organization may have recently completed a long-range plan that can serve as the starting point for the new process mandated by ISTEA. Whatever has been done that has built consensus, moved a project forward, or formed a partnership can and should be built into multimodal priority-setting efforts.
4. Accept the cyclical and evolving nature of the process. Be prepared to revise the criteria every cycle to reflect changing conditions, improved information, and new regulations. Build into the criteria from the beginning the capacity to incorporate the results of the newly required management systems.

ISTEA gives regional agencies the opportunity to set programming priorities that meet local needs. The flexibility of the STP, in its wide-ranging project eligibility, allows metropolitan areas to use innovative approaches to solving transportation problems. In the San Francisco Bay Area, MTC seized this opportunity and encourages others to do the same.

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