HANDOUT - LS&RWG - 09/12/08: Item 5B

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Memorandum

TO: Local Street and Road (LS&R) Working Group

DATE: September 12, 2008

FR: LS&R Performance Measure Sub-Committee

RE: Performance Sub-Committee Recommended Criteria/Guidelines for Measuring Performance

Background

This memo will outline the recommendations of the Local Street and Road (LS&R) Working Group Performance Measure Sub-Committee—convened to develop a criteria and evaluation method for awarding performance based regional funding for street and road maintenance to Bay Area local jurisdictions. The sub-committee is seeking the full LS&R Working Group's approval of its recommendations in order to provide MTC staff with guidelines for determining and allocating shares of regional funds as they become available.

As a reminder, the LS&R Working Group approved the following formula for the allocation of regional funding for street and road maintenance in future programming rounds:

Weight	Factor
25%	Population
25%	Lane Mileage
25%	Arterial and Collector Shortfall
25%	Preventive Maintenance Performance

While the first three factors in the table above are straightforward, objective and easily measured, the performance factor is more difficult to measure and the definition of preventive maintenance can be subjective. The sub-committee's task was to develop recommendations for several questions surrounding the performance measure:

1.) What should qualify as preventive maintenance for the purposes of scoring performance?
2.) How/where will the benchmark, or "recommended level of preventive maintenance", be set?
3.) What data and what methodology will be used to quantify jurisdictions' performance?
4.) What is the scoring range / scale that will be used to assign shares for performance?

Discussion

Defining Preventive Maintenance

MTC has always defined preventive maintenance as any maintenance treatment applied to a street that has a pavement condition index (PCI) of 70 or above. Research has shown that the life extension value of lower cost maintenance treatments is greatest while the pavement is still in good condition. While it can be generally said that any pavement with a PCI of 70 or above is in "good" condition and will respond well to preventive maintenance, there is a gray area for

some roadways within the 60 to 70 PCI range, as to whether or not they can also garner the same life extension from lower cost treatments as those that are above 70. This is especially true in the case of residential streets and low traffic rural roadways that suffer mainly from "non-load" related distresses. For this reason, the Sub-committee recommends allowing jurisdictions preventive maintenance "credit" for treatments applied to arterial and collector roadways with a PCI of 70 or above, and residential/local roadways with a PCI of 60 and above. However, the jurisdiction should ensure that maintenance applied to a residential/local roadway below a PCI of 70 is appropriate as a preventive maintenance treatment. According to the Caltrans Surface Transportation Program Guidelines, appropriate preventive maintenance treatments include treatments where the "pavement management system has determined the project strategy to be cost effective and have a service life of five years or more."

Setting the Benchmark for Performance

The basic method for measuring preventive maintenance performance is to determine the ratio between the percent of total maintenance budget a jurisdiction *actually* spends on preventive maintenance versus the percent of total budget that is *recommended* to be spent on preventive maintenance via the budget needs models run on the pavement management software. Because the recommended percent of budget comes directly from each jurisdiction's pavement management database, it will vary depending on individual network characteristics. Jurisdictions with very a high network PCI will have a higher percent of budget recommendation for preventive maintenance and those with a very low PCI will have a lower percent of budget recommendation. Since the recommended amount of preventive maintenance is expressed as a percentage, jurisdictions are not rewarded or penalized based on the size of their jurisdictions, the current condition of their pavements or the size of their maintenance budgets.

The recommended percent of budget for preventive maintenance figure is generated by each jurisdiction's pavement management system once an "unconstrained budget needs" (needs are not constrained to available funds) model is run. In the unconstrained budget needs model, the software assumes that all rehab and reconstruction will take place within the first seven years. Therefore, most jurisdictions have a very low preventive maintenance percent of total budget recommendation for the first five years. Conversely, in a 25-year unconstrained budget needs model, the software recommends a very high percentage of preventive maintenance because for years eight through 25, the model assigns preventive treatments to all of the street segments that it assumes have been rehabilitated or reconstructed in the first seven years. The difficulty for setting a benchmark "recommended" figure for the performance measure is in determining the appropriate time frame to use in the unconstrained budget needs model in order to generate it.

After a significant amount of analysis performed on multiple sample databases, the Sub-committee has found that the recommendation generated from a ten-year budget needs model, best approximates the *minimum* percent of total maintenance budget figure that each jurisdiction should be spending on preventive maintenance.

Data Extraction and Methodology

Data on actual preventive maintenance applied will be extracted directly from each jurisdiction's pavement management database. From the databases, typically the most recent two years' worth of maintenance history will be examined to determine what percentage of total maintenance expense was for maintenance on streets with qualifying PCIs (arterials and collectors with a PCI of 70+ and residential/local streets with PCIs of 60+). Because very few jurisdictions input total cost information in their databases, the countywide average unit treatment cost information calculated from the LS&R survey submittals will be used to determine the proportion of total maintenance spent on preventive treatments for each jurisdiction. Since the performance

measure is expressed as a percentage, the real cost data for specific treatments is not as important as the *relative* amount spent on preventive maintenance versus rehab/reconstruction. For this reason, it is appropriate to substitute average cost data for real cost data when calculating the performance metrics.

In order to extract information from the jurisdictions' pavement management databases and measure performance effectively, it is essential that jurisdictions' databases include up-to-date, thorough and accurate data on maintenance treatment history. Because the quality of maintenance history information in the pavement management databases varies across jurisdictions, the Sub-committee favors allowing jurisdictions the option of providing MTC with documentation that clearly shows the jurisdiction's budgeted and/or actual preventive maintenance activity as a proportion of their total street and road capital maintenance budget and/or actual expenditures. Documentation of this nature would include a listing of street/road sections, pavement condition indices (PCIs) and area of treated surface in conjunction with budget/expenditure information. MTC will provide jurisdictions with preventive maintenance information based on information extracted from their database when administering the LS&R Needs and Revenue Survey, which is conducted on a biennial basis. The next survey effort is expected to begin in October or November of 2008. Upon review, jurisdictions may choose to have MTC use the extracted data as the basis for their performance score, or opt to submit supplemental documentation on preventive maintenance activities as described above. Information on preventive maintenance performance provided through documentation would be verified through database extraction during the biennial LS&R survey and reporting period.

This option to provide additional information on preventive maintenance activities in lieu of information extracted from the jurisdiction's pavement management database is only intended to be available for initial rounds of programming where performance measure is used in the allocation of funds. In the future, jurisdictions will be expected to keep their pavement management databases current so that performance can be measured directly from the databases and will not require verification or further documentation.

Scoring Performance

As has been the policy in the past, a jurisdiction's share of performance allocated funds will be weighted according to their share of the other three factors – population, lane mileage and shortfall. The weighting ensures that consideration is given to the size and maintenance needs of the jurisdiction relative to other jurisdictions.

Full credit towards shares of performance allocated funding will be given to jurisdictions whose ratio of actual to recommended preventive maintenance equals one or greater. For jurisdictions with performance ratios below one, shares will be allocated based on a 0 to 100 scale. For example, if a jurisdiction's performance ratio is equal to .8, then the jurisdiction will receive 80% of the share that they would have received if they had gotten full credit.

Recommendation Summary

Recommendations of the LS&R Performance Sub-Committee for allocating the 25% performance share of regional funding for streets and roads are summarized below.

1.) Jurisdictions may get credit for actual preventive maintenance applied to street and roads with a PCI of 70 or above; or on residential/local streets with PCIs of 60 and above – provided the treatment is appropriate.

2.) A ten-year "unconstrained budget needs" model will be run on each jurisdiction's pavement management system database in order to determine the "recommended" percentage of total maintenance budget that should be used for preventive maintenance treatments.

3.) Preventive maintenance performance information will be extracted from each jurisdiction's pavement management database. Jurisdictions will be given the chance to review performance calculations based on the extracted information and will have the option to accept the calculations or provide alternative documentation on budgeted or actual preventive maintenance activities in lieu of the extracted data. This option is only intended to be available for initial rounds of programming and jurisdictions should strive to have all maintenance and rehabilitation data accurate and up-to-date in their pavement management systems.

4.) Jurisdictions' performance will be scored on a scale of 0 to 100 based on each jurisdiction's ratio of actual to recommended percentage of total maintenance budget used for preventive maintenance. In order to provide consideration to jurisdictions in regard to relative size and situation, instead of determining performance funding shares based directly on each jurisdictions straight performance score relative to the total points awarded in the region, scores will be weighted according to each jurisdiction's combined shares of the other three factors in the allocation formula: population, lane mileage and shortfall.