Fresno COG Project Scenario Tool

Fresno COG's scenario development methodology for the 2018 SCS included the definition of transportation funding priorities for each scenario, with the understanding that these priorities would be applied to the transportation project scoring criteria to create a distinct constrained project list for each scenario. To facilitate this process, Fresno COG staff developed a tool that employs the methodology outlined in this appendix.

Objectives

The project scenario tool seeks to meet the following objectives:

1. Maintain the integrity of the project scoring criteria
2. Provide an objective methodology to reflect each scenario's funding priorities
3. Project future funding source amounts and match projects to their appropriate funding source

Overview

The basic methodology can be summarized in the following steps:

Step 1: Match Transportation Funding Priorities to Scoring Criteria

Each funding priority was chosen to correspond to one or more scoring criteria across the five modes of transportation projects. This includes taking into account the total score for each of these modes, which should represent the most significant factor in order to maintain the integrity of the scoring criteria process.

Scoring Factors. Each time a scoring criterion was matched to a funding priority, the score was normalized by dividing the given score by the total possible score, producing a value between 0 and 1. It was then multiplied by a factor to denote its applicability to the funding priority. Three basic factors were applied:

1. **Explicit Factors.** Most funding priorities could be linked to project scoring criteria that addressed the respective priority directly – for example, almost all modes contained a scoring criterion that explicitly addressed safety. These criteria were multiplied by a factor of **5**.
2. **Implicit Factors.** Some funding priorities were implicitly addressed in the modes themselves – for instance, though there is no scoring criteria under transit that specifically addresses safety, transit is a demonstrably safe mode of travel when comparing collision and injury rates to other modes, so it makes sense to apply a transit project's total score in some part to the safety funding priority. The rationale behind the use of these implicit factors was all approved by the scoring criteria subcommittee. These criteria were multiplied by a factor of **3**.
3. **Mode-Specific Factors.** To account for the disparity in the number of scoring criteria that can be linked to funding priorities across the modes, each mode-specific funding priority was multiplied by a factor that gave the submitted projects in each mode an average adjusted score of about

20. This makes the total score for each mode the most significant factor in the total adjusted score, maintaining the integrity of the scoring criteria as a whole.

Funding Priority	Bike & Ped	Capacity Increasing	Maintenance	Operations	Transit
Maintain and repair existing roads	-	-	**Total Score (x K_M)***	-	-
Expand roadway capacity	-	**Total Score (x K_C)***	-	-	-
Enhance and maintain transit service	-	-	-	-	**Total Score (x K_T)***
Enhance and maintain active transportation	**Total Score (x K_B)***	-	-	-	-
Improve public safety	Criterion #5 (x5)	Criterion #5 (x5)	Criterion #3 (x5)	Criterion #4 (x5)	Total Score (x3)
Reduce pollution and GHG	Total Score (x3)	Criterion #3 (x5)	-	Criterion #2 (x5)	Criterion #7 (x5)
Increase operational efficiency and reduce congestion	Total Score (x3)	Criterion #2 (x5)	-	**Total Score (x K_O)***	Criterion #9 (x5)
Serve disadvantaged populations	Criterion #6 (x5)	-	-	-	Criterion #11 (x5)

* $K_B \approx 9.4$, $K_C \approx 15.2$, $K_M \approx 26.6$, $K_O \approx 23.8$, $K_T \approx 24.9$

This methodology provided, for each project, a score for each applicable funding priority.

Step 2: Calculate Adjusted Total Score

Each priority was given a rank of 1 through 5 for each scenario to reflect its weight relative to the other priorities, as shown on the table below:

Funding Priority	Scenario A	Scenario B	Scenario C	Scenario D
Maintain and repair existing roads	5	5	5	5
Expand roadway capacity	1	1	1	3
Enhance and maintain transit service	3	3	4	2
Enhance and maintain active transportation	4	5	4	4
Improve public safety	3	3	2	3
Reduce pollution and GHG	5	5	5	5
Increase operational efficiency and reduce congestion	3	3	2	3
Serve disadvantaged populations	4	3	5	3

For each scenario, each project was given an adjusted total score equal to the sum product of its funding priority scores adjusted by the respective scenario's funding priority rank values.

Step 3: Allocate Mode-Specific Funding

Most funding sources considered in the 2018 RTP/SCS are mode-specific, meaning that they can only be used to fund projects from a particular mode. For each mode, the projected inflation-adjusted total funding amount was determined by grouping together the funds from such mode-specific sources. For each scenario, the projects within each mode were sorted by their total adjusted score (from Step 2 above), and as many of the highest-scoring projects that could be funded were added to the scenario's constrained project list.

Step 4: Allocate Other Restricted Funding

The projects that remain unconstrained after Step 3 are then considered for funding from sources that are restricted in one way or another, but that are not mode-specific per se – for instance, sources like the Highway Safety Improvement Program (HSIP) which is specific to safety-oriented projects, or the Congestion Mitigation and Air Quality improvement program (CMAQ) which is specific to projects that improve air quality. The unconstrained projects from eligible modes and with the appropriate prerequisites are then added to the constrained list – again, funding the highest-scoring projects first.

Step 5: Allocate Remaining Funding

Finally, the remaining unconstrained projects are considered for funding from other sources with fewer restrictions, such as local measure funds and the Surface Transportation Block Grant program (STBG). The highest-scoring projects that remained across all eligible modes were then added to the constrained project lists for each scenario.

Conclusion

Fresno COG is satisfied with the methodology employed by the project scenario tool and believes it meets all the objectives stated above:

1. The tool maintains the integrity of the project scoring criteria by preserving each project's final score and making it the most significant scoring factor.
2. The tool provides an objective methodology to reflect each scenario's funding priorities by separating out priority-specific scores which are then altered to reflect the scenario's values.
3. Finally, the tool matches projects to their appropriate funding source both in the order in which funding sources are considered (i.e. from most restrictive to least restrictive), and in the establishment of relationships between funding restrictions and the scoring criteria.