Information Item

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TO: Technical Advisory Committee

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SUBJECT: 2016 Sensitivity Analysis of Regional Solicitation Measures

This information item presents a sensitivity analysis of the scoring measures used in the 2016 Regional Solicitation. Measures were evaluated on how they impacted application rankings, which ultimately contribute to the final funding decisions. These measures should be reviewed to see whether they are performing as intended. Across most categories, measures with higher point values generally had a larger impact on application rankings. This suggests that these higher point value measures are generally performing as intended. Compared to the analysis that followed the 2014 Regional Solicitation, there are few measures that are clearly under-performing.

Evaluation Method

While each measure is important, some are more significant than others. Criteria were assigned point values relative to their policy importance. This point value reflects how each criterion (some of which are broken into measures) is *intended* to perform.

Tables 1 through 10 present the measures used to evaluate each application category. Each measure is presented with three statistics:

1. Number of applications changing their ranked order if the measure is removed
2. Number of applications that are pushed above or below the TAB-approved funding line if the measure is removed
3. Standard deviation, or a measure of how clustered or spread out application scores are, for that measure

Impact of Rank Order when a Measure is Removed

The primary gauge for evaluating a measure's actual impact in the 2016 Regional Solicitation is how many applications changed their rank positions within an application subcategory if that measure is removed. Measures that have a large impact on how the applications score relative to each other have more potential to affect a funding decision.

Changes in ranked order sometimes cause an application to move above or below the TAB-approved funding line, also indicated in the tables. However, it is important to note that funding line movement tends to be a fairly arbitrary statistic moving forward, as that line is not predictable. Further, it is not a given that the flipping of two applications across that line would have resulted in funding the application that moved up, as point spread, geographic impacts, and federal funding requests could have moved funding to anther category.

Standard Deviation

To further explore the potential for a measure to contribute to an application's funding decision, each measure's standard deviation is calculated. Higher standard deviations usually suggest scores that are widely spaced, though it is possible for outliers to skew standard deviations. Lower standard deviations indicate score clustering. Standard deviation also depends on the number of points allocated to a measure; with higher-value measures expected to have generally higher standard deviations.

Key Findings

Overall

Overall, the measures create differentiation, as intended. Cost Effectiveness was a new measure that divided the total score earned from by rest of the measures by the total project cost. This measure seems to have created separation as it changed the rank order of most applications in any category with more than 10 applicants, except for Transit System Modernization, where an outlier caused all but one score to be very low.

Measures most worthy of examination because of minimal performance in differentiation include:

- Risk Assessment Work Sheet (9 of 10 application categories): This provides little differentiation overall. While differentiation was shown in some applications, little impact was shown in others, including:
    - Roadway System Management (All applications scored over half the points)
    - Bridge (All applications scored over half the points)
    - Multiuse Trails and Bicycle Facilities (All applications scored over half of the points)
    - Pedestrian Facilities (All applications scored at least 116 out of 130)
    - Safe Routes to School (out of 85 points, the three applications scored 85, 85, and 78)
    - Transit Expansion (9 of 10 applications scored 50 out of 50 with the other scoring 41)

  Part of this measure's value is to incentivize applicants to reduce application risk. Therefore, the measure is valuable regardless of its impact on which applications are funded. The work sheet includes many elements, each of which is important to managing project risk, so care should be taken in changing this measure.
- Housing Performance Score (all application categories): Due to cities having similar performance scores, the scores tend to be high. This is particularly true in the Transit categories, for which projects tend to be located in Minneapolis or St. Paul, each of which have perfect housing performance scores.
- Deficiencies and Safety (Multi-Use Trails and Pedestrian): Both measures (A. Barriers/Gaps and B. Deficiencies/Safety) for each category saw very high scores overall, with only one of the four measures (4B, Multiuse Trails) seeing fewer than half of the points for any application.

Perhaps the biggest obstacles to differentiation are outliers. Measures with outliers are cited below the category tables on the following pages. In theory, the presence of outliers is consistent with the purpose of the measures; top-performing applications are rewarded. However, an outlier can have the effect of essentially eliminating the category's ability to differentiate amongst the other applications.

Roadways

In the Roadway Reconstruction/Modernization category, Measure 1D, the new, qualitative, "Freight Elements" Measure had a well-distributed mix of scores and changed the most application rankings when adjusted for maximum point value. Similarly, the Multimodal measure (7), which is also qualitative, was impactful, impacting the rank order of 16 applications in Roadway Expansion and 26 applications in Roadway Reconstruction/Modernization.

While it would be difficult to consider any measure non-impactful in the Expansion and Reconstruction/Modernization categories, 5B (Kg of Emissions Reduced) was among the lower-impact measures in each category, though this makes sense given its low maximum value (50 and 30 points, respectively). The measure had outlier applications that left most applications with very small scores, including a majority of Roadway Reconstruction/Modernization applications scoring zero points.

The Roadway System Management and Bridge categories, with four and eight applications, respectively, provide minimal insight due the small sample size.

Bicycle/Pedestrian

Because the Pedestrian Facilities and Safe Routes to School application categories had few applications, the Multiuse Trails and Bicycle Facilities category provides the most insight. Each measure changed the ranking of at least 21 of the 39 applications. However, total scores were not well-differentiated, particularly near the funding line. Outside of Risk Assessment, the individual measures have fairly wide score distributions. The Gaps/Barriers measure (4A) experienced a bunching of scores, with all applications scoring at least 62 out of 100 points.

Deficiencies Corrected or Safety Problems Addressed (Measure 4B), in the Pedestrian Facilities category, shows very high scores overall. The scoring guidance could be examined, as it forced all applications into a score of at least 120 out of 180 because each application provided crash data. While encouraging provision of crash data is appropriate, a change in the scoring range could be considered. Similarly, Barriers Overcome or Gaps Filled (Measure 4A) saw all seven applications score at least 60 of 120.

Transit/TDM

The two transit categories saw a skewed impact in their 350- and 300-point Usage measures (Measure 2) due to outlier applications rendering most scores quite low. The outlier application in the Transit System Modernization category was also very low-cost, leaving the Cost Effectiveness score of each of the other 12 applications at 16 points and below (including seven applications at 0 or 1). That particular application scored a total of 898 points while the second-place application scored only 513 points. Given static total scores (i.e., not adjusting for removal of the outlier), removal of this application changes the total score standard deviation from 135 to 49. Undoubtedly, without this application serving as an outlier, the other 12 applications would have had a larger spread among the scores.

Measure 1B, Average number of weekday transit trips connected to the project, in Transit Expansion, was minimally impactful and while its 50-point maximum is part of the reason, another factor was that 15 of the 50 points were awarded for an all-or-nothing sub-measure of connecting to a planned transitway; every application scored the 15 points. This essentially reduces the 50-point measure to a 35-point measure based on existing trips.

Strategies for Under-Performing Measures

For lower impact measures or measures that are not distinguishing scores as intended, there are several strategies that can be employed:

- Do nothing
- Change the number of points allocated to the measure
- Change the measure's scoring guidelines or applicant instructions
- Change the measure
- Convert to a required qualification instead of a scored measure
- Remove the measure

Key:	**Rank order changed:** How many applications changed their ranked order by including that measure	**Crossed funding line:** How many applications would have flipped across the TAB-approved funding line by including that measure	**St. dev.** Standard deviation, a measure of how clustered or spread out application scores are

Table 1. Summary of Roadway Expansion Measure Performance (21 applications submitted).

Criteria	#	Measures	Max Points	# of applications: Rank order changed	# of applications: Crossed funding line	St. dev.	Outliers (see below)
Regional Role	1A	Average distance to nearest parallel roadways	80	13	**4**	27	
	1B	Connection to Total Jobs and Manufacturing/Distribution Jobs	30	7	2	10	
	1C	Daily heavy commercial traffic	50	10	0	11	A
	1D	Freight project elements	15	2	0	4	
Usage	2A	Daily person throughput	110	14	2	26	
	2B	Forecast 2040 average daily traffic	65	9	2	18	
Equity / Housing	3A	Connection to disadvantaged populations and project's benefits, impacts, and mitigation	30	3	2	7	
	3B	Housing Performance Score	70	8	0	18	
Infra.	4A	Date of construction	75	10	2	18	
Congestion / Air	5A	Vehicle delay reduced	100	12	**4**	27	
Quality	5B	Kg of emissions reduced	50	3	0	12	B
Safety	6	Crashes reduced	**150**	**16**	2	**32**	C
Multimodal	7	Transit, bicycle, or pedestrian project elements and connections	100	**16**	2	25	
Risk Assess.	8	Risk Assessment Form	75	12	0	12	
Cost Effect.	9	Cost Effectiveness	100	12	2	20	D
TOTAL			**1,100**			**126**	

Comments: Higher-valued measures tended to be impactful. With all but two measures (maximum scores of 30 and 50, respectively) impacting the ranking of at least seven of the 21 applications, it would be difficult to suggest that any measures are under-performing.

Measures with outliers:

A. 1C. Top application scored 50. Others scored from 0 to 23.
B. 5B. Top application scored 50. Second-ranked application scored 23. Others from 0 to 8.
C. 6. Top application scored 150. Other 20 applications scored from 0 to 55.
D. 9. Top application scored 100. Other 20 applications scored from 10-48.

Key differences from 2014: None.

Sort by Max Points

#	Measure	Max Pts	Rank Change	Cross Line	St. Dev
6A	Crashes reduced	**150**	**16**	2	**32**
2A	Throughput	110	14	2	26
7A	Multimodal	100	**16**	2	25
5A	Vehicle Delay	100	12	**4**	27
9A	Cost Effectiveness	100	12	2	20
1A	Distance to Parallel	80	13	**4**	27
4A	Construction date	75	10	2	18
8A	Risk Assessment	75	12	0	12
3B	Housing	70	8	0	18
2B	Forecast ADT	65	9	2	18
5B	Emissions	50	3	0	12
1C	Heavy Commercial	50	10	0	11
1B	Connection to Jobs	30	7	2	10
3A	Equity	30	3	2	7
1D	Freight	15	2	0	4

Table 2. Summary of Roadway Reconstruction / Modernization Measure Performance (34 applications submitted).

Criteria	#	Measures	Max Points	# of applications: Rank order changed	# of applications: Crossed funding line	St. Dev.	Outliers (see below)
Regional Role	1A	Average distance to nearest parallel roadways	80	26	0*	24	
	1B	Connection to Total Jobs and Manufacturing/Distribution Jobs	30	15	0	7	
	1C	Daily heavy commercial traffic	50	22	2	12	
	1D	Freight project elements	15	13	0	4	
Usage	2A	Daily person throughput	110	18	2	24	
	2B	Forecast 2040 average daily traffic	65	11	2	11	A
Equity / Housing	3A	Connection to disadvantaged populations and project's benefits, impacts, and mitigation	30	16	2	7	
	3B	Housing Performance Score	70	20	0	21	
Infrastructure Age	4A	Date of construction	50	27	2	12	
	4B	Geometric, structural, or infrastructure deficiencies	100	**28**	**4**	17	
Congestion / Air Quality	5A	Vehicle delay reduced	45	22	0	10	
	5B	Kg of emissions reduced	30	5	0	6	B
Safety	6	Crashes reduced	**150**	**28**	**4**	**44**	
Multimodal	7	Transit, bicycle, or pedestrian project elements and connections	100	26	**4**	26	
Risk Assess.	8	Risk Assessment Form	75	22	0	11	
Cost Effect.	9	Cost Effectiveness	100	24	**4**	22	
TOTAL			**1,100**			**106**	

* No change to which A-Minor Arterial Connector would have been funded would have occurred upon removal of any measure, with the exception of Measure 1A, which would have changed which Connector was funded.

Comments: Each measure impacted the rank order of at least 10 of the 34 applications with the exception of Measure 5B, which was only worth 30 points. It is worth noting that this year's Roadway Reconstruction/Modernization category includes a list of seven un-funded applications separated by only 10 points.

Measures with outliers:

A. 2B. Top application scored 65. Others scored from 4 to 31.
B. 5B. Top application scored 30. Second-ranked application scored 18. Others scored from 0 to 2.

Key differences from 2014: 1B impacts 15 of 34 applications, up from 4 of 23. This is likely in part because the maximum value increased from 20 to 30 and in 2014 only three values (0, 12, and 20) were possible.

Sort by Max Points

#	Measure	Max Pts	Rank Change	Cross Line	St. Dev
6A	Crashes	**150**	**28**	**4**	**44**
2A	Throughput	110	18	2	24
9A	Cost Effect.	100	24	**4**	22
4B	Deficiencies	100	**28**	**4**	17
7A	Multimodal	100	26	**4**	26
1A	Parallel Road	80	26	0*	24
8A	Risk	75	22	0	11
3B	Housing	70	20	0	21

#	Measure	Max Pts	Rank Change	Cross Line	St. Dev
2B	Forecast ADT	65	11	2	11
1C	Heavy Comm.	50	22	2	12
4A	Construction Date	50	27	2	12
5A	Delay reduced	45	22	0	10
1B	Jobs	30	15	0	7
5B	Emissions	30	5	0	6
3A	Equity	30	16	2	7
1D	Freight	15	13	0	4

Table 3. Summary of Roadway System Management Measure Performance (4 applications submitted).

Criteria	#	Measures	Max Points	# of applications: Rank order changed	# of applications: Crossed funding line	St. Dev.	Outliers (see below)
Regional Role	1A	Average distance to nearest parallel roadways	55	0	0	23	
	1B	Connection to Total Jobs and Manufacturing/Distribution Jobs	30	0	0	12	
	1C	Daily heavy commercial traffic	30	0	0	12	A
	1D	Freight project elements	10	0	0	3	
Usage	2A	Daily person throughput	85	0	0	23	
	2B	Forecast 2040 average daily traffic	40	0	0	5	
Equity / Housing	3A	Connection to disadvantaged populations and project's benefits, impacts, and mitigation	30	0	0	10	
	3B	Housing Performance Score	70	0	0	7	
Infra Age	4	Date of construction	75	0	0	37	
Congestion / Air Quality	5A	Vehicle delay reduced	150	0	0	69	B
	5B	Kg of emissions reduced	50	0	0	22	C
Safety	6	Crashes reduced	**200**	**2**	0	**95**	
Multimodal	7	Transit, bicycle, or pedestrian project elements and connections	100	**2**	0	28	
Risk	8	Risk Assessment Form	75	0	0	14	
Cost Effect	9	Cost Effectiveness	100	0	0	21	
TOTAL			**1,100**			**191**	

Comments: Given the low number of applications (4), the lack of rank-order impact of the measures is of no surprise and should not be a concern. Similarly, the standard deviations are not useful. For example, Measure 4 has a standard deviation of 37 but removing one application that did not answer the question, changes the standard deviation to 3.

Measures with outliers:

A. 1C. Top application scored 30. Others scored 19, 5, and 6.
B. 5A. Top application scored 150. Others scored 28, 15, and 0.
C. 5B. Top application scored 200. Others scored 88, 0 and 0.

Key differences from 2014: No key differences are evident, given they minimal number of applications.

Sort by Max Points #	Measure	Max Pts	Rank Change	Cross Line	St. Dev
6A	Crashes reduced	**200**	**2**	0	**95**
5A	Vehicle delay reduced	150	0	0	69
7A	Multimodal	100	**2**	0	28
9A	Cost Effectiveness	100	0	0	21
2A	Throughput	85	0	0	23
4	Construction Date	75	0	0	37
8A	Risk Assessment	75	0	0	14
3B	Housing	70	0	0	7
1A	Distance to Parallel	55	0	0	23
5B	Emissions	50	0	0	22
2B	Forecast ADT	40	0	0	5
1B	Connection to Jobs	30	0	0	12
1C	Heavy Commercial	30	0	0	12
3A	Equity	30	0	0	10
1D	Freight	10	0	0	3

Table 4. Summary of Bridges Measure Performance (8 applications submitted).

Criteria	#	Measures	Max Points	# of applications: Rank order changed	# of applications: Crossed funding line	St. Dev.	Outliers (see below)
Regional Role	1A	Average distance to nearest parallel bridges	115	0	0	37	
	1B	Connection to Total Jobs and Manufacturing/Distribution Jobs	30	0	0	13	A
	1C	Daily heavy commercial traffic	35	4	0	12	
	1D	Freight project elements	15	0	0	6	
Usage	2A	Daily person throughput	100	**6**	0	26	
	2B	Forecast 2040 average daily traffic	30	2	0	7	
Equity / Housing	3A	Connection to disadvantaged populations and project's benefits, impacts, and mitigation	30	0	0	10	
	3B	Housing Performance Score	70	2	0	24	
Infrastructure Condition	4A	Bridge sufficiency rating	**300**	4	0	**56**	
	4B	Load-posting	100	5	**2**	52	
Multimodal	5	Transit, bicycle, or pedestrian project elements and connections	100	2	0	14	
Risk Assessment	6	Risk Assessment Form	75	4	0	12	
Cost Effectiveness	7	Cost Effectiveness	100	5	0	34	
TOTAL			**1,100**			**143**	

Comments: With only eight applications submitted, conclusions are difficult to draw. Note that Measure 4B changed the order of five applications in part because it is an "all-or-none" score. Note also that Measure 1A, worth 115 points, changed no rank orders.

Measures with outliers:

A. 1B. Top two applications scored 30. Others scored from 0 to 8.

Key differences from 2014: Criterion 4, Infrastructure Condition was adjusted after 2014 when all applications scored at least 90 out of 100 on "Geometric, Structural, or Infrastructure Deficiencies." The two measures impacted four and five applications, respectively, out of eight in 2016, versus four and zero out of six in 2014. Similarly, the 2016 standard deviations of 56 and 52 were significant increases from 24 and 4.

Sort by Max Points #	Measure	Max Pts	Rank Change	Cross Line	St. Dev
4A	Sufficiency rating	**300**	4	0	**56**
1A	Distance to Parallel	115	0	0	37
4B	Load-posting	100	5	**2**	52
7	Cost Effectiveness	100	5	0	34
2A	Throughput	100	**6**	0	26
5	Multimodal	100	2	0	14
6	Risk Assessment	75	4	0	12
3B	Housing	70	2	0	24
1C	Heavy Commercial	35	4	0	12
2B	Forecast ADT	30	2	0	7
1B	Connection to Jobs	30	0	0	13
3A	Equity	30	0	0	10
1D	Freight	15	0	0	6

Table 5. Summary of Multiuse Trails and Bicycle Facilities Measure Performance (39 applications submitted).

Criteria	#	Measures	Max Points	# of applications: Rank order changed	# of applications: Crossed funding line	St. Dev.	Outliers (none)
Regional Role	1	Identify location of project relative to RBTN	**200**	34	**4**	**52**	
Potential Usage	2	Existing population and employment within 1 mile	**200**	31	**4**	51	
Equity / Housing	3A	Connection to disadvantaged populations and project's benefits, impacts, and mitigation	50	23	2	12	
	3B	Housing Performance Score	70	25	2	19	
Deficiencies and Safety	4A	Gaps closed, barriers removed, and / or improved connectivity between jurisdictions	100	21	0	9	
	4B	Deficiencies corrected or safety problems addressed	150	**36**	**4**	28	
Multimodal	5	Transit or pedestrian elements and connections	100	31	**4**	27	
Risk / Public Engagement	6	Risk Assessment Form	130	26	2	13	
Cost Effectiveness	7	Cost Effectiveness	100	31	**4**	26	
TOTAL			**1,100**			**128**	

Comments: For the second consecutive cycle, this category has had significant "bunching" of scores near the funding line. In the 2014 Solicitation, the category saw a spread of 12 points over eight applications ranked 9 to 16. This cycle was not quite as tightly packed, with a spread of 20 points over seven applications ranked 10 to 16. However, the funding line is surrounded by applications scoring 774, 770, 770, and 769. This trend may be due in some part to the category receiving the most applications during each cycle. Measure 4A, a qualitative measure, has a very low standard deviation, at 9, as do Measure 6 at 13 and Measure 3A at 12. However, all categories changed the rank order of over 20 applications and no clear cause of the "bunching" problem, aside from volume, is evident.

Key differences from 2014: Measure 4B was minimally impactful in 2014, changing 17 applications out of 31, but with a standard deviation of only eight and all applications scoring at least 120 out of 150. The standard deviation has more than tripled with a funding range from 55 to 150. This was accomplished primarily by capping applications that did not include crash data at 100 points.

Sort by Max Points

#	Measure	Max Pts	Rank Change	Cross Line	St. Dev
1	RBTN	**200**	34	**4**	**52**
2	Pop/Employment	**200**	31	**4**	51
4B	Deficiencies	150	**36**	**4**	28
6	Risk Assessment	130	26	2	13
4A	Gaps/Barriers	100	21	0	9
5	Multimodal	100	31	**4**	27
7	Cost Effectiveness	100	31	**4**	26
3B	Housing	70	25	2	19
3A	Equity	50	23	2	12

Table 6. Summary of Pedestrian Facilities Measure Performance (7 applications submitted).

Criteria	#	Measures	Max Points	# of applications: Rank order changed	# of applications: Crossed funding line	St. Dev.
Regional Role	1	Connection to Jobs and Educational Institutions	150	**6**	0	48
Potential Usage	2	Existing population within ½ mile	150	0	0	39
Equity / Housing	3A	Connection to disadvantaged populations and project's benefits, impacts, and mitigation	50	2	0	12
	3B	Housing Performance Score	70	0	0	22
Deficiencies and Safety	4A	Barriers overcome or gaps filled	120	0	0	20
	4B	Deficiencies corrected or safety problems addressed	**180**	0	0	18
Multimodal	5	Transit or bicycle elements and connections	150	**6**	0	**51**
Risk Assessment	6	Risk Assessment Form	130	0	0	5
Cost Effectiveness	7	Cost Effectiveness	100	2	0	31
TOTAL			**1,100**			**125**

Comments: The most noteworthy measures in this category, Measures 1 and 5, changed the rank order of six of the seven applications and had the largest standard deviations at 48 and 51, respectively. The lone unfunded application has the lowest score regardless of which measure is removed.

While it can be difficult to draw conclusions from only seven applications, measures 4A and 4B, the two qualitative "Deficiencies and Safety" measures, did not change any rankings and yielded very low standard deviations considering their high point values. Measure 4A resulted in scores between 60 and 120, a potentially impactful spread. Measure 4B had a slightly smaller spread, with scores ranging from 130 to 180. Consideration could be given to trying to broadening the scoring range of this measure.

Key differences from 2014: None.

Sort by Max Points

#	Measure	Max Pts	Rank Change	Cross Line	St. Dev
4B	Deficiencies/Safety	**180**	0	0	18
1	Jobs/Edu	150	**6**	0	48
2	Population	150	0	0	39
5	Multimodal	150	**6**	0	**51**
6	Risk Assessment	130	0	0	5
4A	Gaps/Barriers	120	0	0	20
7	Cost Effectiveness	100	2	0	31
3B	Housing	70	0	0	22
3A	Equity	50	2	0	12

Table 7. Summary of Safe Routes to School Measure Performance (3 applications submitted).

Criteria	#	Measures	Max Points	# of applications: Rank order changed	# of applications: Crossed funding line	St. Dev.	Outliers (see below)
SRST Elements	1	Describe how the project addresses 5 E's* of SRST Program	**250**	**2**	0	67	
Usage	2A	Average share of student population that bikes or walks	170	0	0	**76**	A
	2B	Student population within school's walkshed	80	**2**	0	27	
Equity / Housing	3A	Connection to disadvantaged populations and project's benefits, impacts, and mitigation	50	**2**	0	12	
	3B	Housing Performance Score	70	**2**	0	24	
Deficiencies / Safety	4A	Barriers overcome or gaps filled	100	0	0	24	
	4B	Deficiencies corrected or safety or security addressed	150	0	0	27	
Public Engagement / Risk Assessment	5A	Public engagement process	45	0	0	10	
	5B	Risk Assessment Form	85	0	0	4	
Cost Effectiveness	6	Cost Effectiveness	100	**2**	0	36	B
	TOTAL		**1,100**			**146**	

**The 5 Es of Safe Routes to School include Evaluation, Engineering, Education, Encouragement, and Enforcement.*

Comments: With only three applications, it is difficult to draw meaningful conclusions.

Measures with outliers:

A. 2A. Top application scored 170. Others scored from 31 to 46.
B. 6. Top application scored 100. Others scored 32 to 47.

Key differences from 2014: None. Only three applications were made in this category each year.

Sort by Max Points

#	Measure	Max Pts	Rank Change	Cross Line	St. Dev
1	5 E's	**250**	**2**	0	67
2A	Students that walk/bike	170	0	0	**76**
4B	Deficiences/Safety	150	0	0	27
4A	Gaps/Barriers	100	0	0	24
6	Cost Effectiveness	100	**2**	0	36
5B	Risk Assessment	85	0	0	4
2B	Students in walkshed	80	**2**	0	27
3B	Housing	70	**2**	0	24
3A	Equity	50	**2**	0	12
5A	Public engagement	45	0	0	10

Table 8. Summary of Transit Expansion Measure Performance (10 applications submitted).

Criteria	#	Measures	Max Points	# of applications: Rank order changed	# of applications: Crossed funding line	St. Dev.	Outliers (see below)
Regional Role	1A	Connection to Jobs and Educational Institutions	50	2	0	17	
	1B	Average number of weekday transit trips connected to the project	50	0	0	12	
Usage	2	New Annual Riders	**350**	2	0	**115**	A
Equity / Housing	3A	Connection to disadvantaged populations and project's benefits, impacts, and mitigation	130	5	0	32	
	3B	Housing Performance Score	70	2	0	8	
Emissions Reduction	4	Total emissions reduced	200	**8**	**2**	71	
Multimodal	5	Bicycle and pedestrian elements and connections	100	2	**2**	31	
Risk Assessment	6	Risk Assessment Form	50	0	0	3	
Cost Effectiveness	7	Cost Effectiveness	100	4	**2**	29	B
TOTAL			**1,100**			**176**	

Comments: Measure 4 proved to be a key differentiator, as eight of 10 applications changed rank with its removal. The large standard deviation showing for 350-point Measure 2 is deceiving as one outlier application pushed eight of the other nine applications below 80 points. Removal of that outlier brings the standard deviation from 115 to 73 (still the highest). Removal of the top two applications brings the standard deviation to 21. As discussed in the summary, Measure 1B was minimally impactful, likely partly due to the fact that all applications received 15 out of 15 possible points (in a 50-point measure) for an all-or-none sub-measure of connecting to a planned transitway

Measures with outliers:

A. 2. Top application scored 350. Second application scored 247. Others scored from 10 to 76.
B. 7. Top application scored 100. Others scored from 4 to 16.

Key differences from 2014: In 2014, Measure 1A was an “all or none” category, leading all applications to score the maximum points. Some impact is shown in 2016, as the measure now scores applications proportionate to the top-scoring application.

Sort by Max Points

#	Measure	Max Pts	Rank Change	Cross Line	St. Dev
2	New Riders	**350**	2	0	**115**
4	Emissions	200	**8**	**2**	71
3A	Equity	130	5	0	32
5	Multimodal	100	2	**2**	31
7	Cost Effect.	100	4	**2**	29
3B	Housing	70	2	0	8
1A	Jobs/Edu	50	2	0	17
1B	Trips	50	0	0	12
6	Risk Assessment	50	0	0	3

Table 9. Summary of Transit System Modernization Measure Performance (13 applications submitted).

Criteria	#	Measures	Max Points	# of applications: Rank order changed	# of applications: Crossed funding line	St. Dev.	Outliers (see below)
Regional Role	1A	Connection to Jobs and Educational Institutions	50	6	0	14	
	1B	Average number of weekday transit trips connected to the project	50	2	0	9	
Usage	2	Total existing annual riders	**300**	**12**	**2**	**81**	A
Equity / Housing	3A	Connection to disadvantaged populations and project's benefits, impacts, and mitigation	130	8	**2**	19	
	3B	Housing Performance Score	70	2	0	4	
Emissions Reduction	4	Description of emissions reduced	100	7	**2**	16	
Service and Customer Improvements	5A	Percent reduction in passenger travel time	75	10	**2**	25	
	5B	Percent reduction in operating & maintenance costs	38	5	0	10	
	5C	Project improvements for users	37	7	0	12	
Multimodal	6	Bicycle and pedestrian elements and connections	100	10	**2**	31	
Risk	7	Risk Assessment Form	100	10	0	24	B
Cost Effect.	8	Cost Effectiveness	100	4	0	27	
TOTAL			**1,100**			**135**	

Comments: Consistent with expectations, Measure 2 is the most impactful measure both in terms of changing rank order and standard deviation. However, the standard deviation is impacted by one outlier application scoring 300 while none of the others score even 100. Removal of that outlier brings the standard deviation from 81 to 33 (still the highest). As with Transit Expansion, Measure 1B included universal award of 15 out of 50 points for connection to a planning transitway.

Measures with outliers:

A. 2. Top application scored 300. Others scored from 1 to 96.
B. 7. Top application scored 100. Others scored from 0 to 16.

Key differences from 2014: N/A. Only one application was submitted for this category in 2014 so no analysis was completed.

Sort by Max Points

#	Measure	Max Pts	Rank Change	Cross Line	St. Dev
2	Existing Riders	**300**	**12**	**2**	**81**
3A	Equity	130	8	**2**	19
4	Emissions	100	7	**2**	16
6	Multimodal	100	10	**2**	31
7	Risk Assessment	100	10	0	24
8	Cost Effectiveness	100	4	0	27
5A	Travel Time	75	10	**2**	25
3B	Housing	70	2	0	4
1A	Jobs/Edu	50	6	0	14
1B	Trips	50	2	0	9
5B	O/M Cost	38	5	0	10
5C	User Improvements	37	7	0	12

Table 10. Summary of Travel Demand Management Measure Performance (6 applications submitted).

Criteria	#	Measures	Max Points	# of applications: Rank order changed	# of applications: Crossed funding line	St. Dev.	Outliers (see below)
Regional Role	1	Ability to capitalize on existing regional transportation facilities and resources	100	2	0	29	
Usage	2	Users	100	2	0	37	A
Equity / Housing	3A	Connection to disadvantaged populations and project's benefits, impacts, and mitigation	80	0	0	13	
	3B	Housing Performance Score	70	0	0	16	
Congestion Reduction / Air Quality	4A	Congested roadways	**200**	2	0	67	
	4B	VMT reduced	**200**	2	0	**86**	
Innovation	5	Project innovations and geographic expansion	**200**	**4**	0	54	
Risk Assessment	6A	Technical capacity of organization	25	0	0	3	
	6B	Continuation of project after initial federal funds are expended	25	0	0	11	
Cost Effectiveness	7	Cost Effectiveness	100	2	0	27	
TOTAL			**1,100**			**164**	

Comments: Measure 5 was the most impactful measure, due in part to the 200 and 100-point maximums for new programs and expansion of programs, respectively, along with a minimum gap of 25 points between each application. All other measures with point maximums of 100 or more changed rank orders, while those below 100 did not.

Measures with outliers:

A. 2. Top application scored 100. Others scored from 6 to 23.

Key differences from 2015: Measure 1 had been two measures, though no obvious impact is shown. 3A, removed the geographic component for 2016 and was significantly less impactful, having impacted the rank order of six out of 11 projects in 2015. The Risk Assessment criterion was split into three measures in 2015, the third being "Risk Assessment Form." They were worth 15, 20, and 15 points, respectively. 6A, which had minimal deviation in 2016 had no deviation in 2015, with all 11 projects scoring the full 15 points.

Sort by max points

#	Measure	Max Pts	Rank Change	Cross Line	St. Dev
4B	VMT reduced	**200**	2	0	**86**
5	Innovation/Expansion	**200**	**4**	0	54
4A	Congestion	**200**	2	0	67
7	Cost Effectiveness	100	2	0	27
1	Facilities/Resources	100	2	0	29
2	Users	100	2	0	37
3A	Equity	80	0	0	13
3B	Housing	70	0	0	16
6A	Technical Capacity	25	0	0	3
6B	Project continuation	25	0	0	11

FEEDBACK ON 2016 REGIONAL SOLICITIATON

Based on survey responses, scoring committee feedback, and comments heard at the committee meetings, staff has compiled the following key questions to help guide potential changes for the 2018 Regional Solicitation.

Application Categories:

1. Should interchange projects have their own application category?
2. Should the use of two transit application categories (Transit Expansion and Transit Modernization) be continued?
3. If so, how can more clarity be provided to applicants about what types of projects should be applied for in Transit Expansion versus Transit System Modernization?

Qualifying Criteria and Rules:

4. Should the $5.5M maximum federal award in the Multiuse Trails and Bicycle Facilities category be reduced?
5. Should applicants be required/allowed to attach a one-page project overview pdf of their project?
6. Should TAB continue to fund at least one project from each of the five-eligible roadway functional classifications?
7. Should projects on the same transit route be allowed to apply in both transit categories in consecutive Regional Solicitation cycles?

Scoring Criteria:

8. Should the point distribution, criteria, and measures for the Roadway System Management application category be revamped to better-reflect the types of projects applying to it and to allow bundling of projects?
9. Should any measures for the Travel Demand Management projects be revamped to better-reflect the types of projects applying in the category?
10. Should more points be given to the freight benefits of roadway projects? Should the approach to the measure be changed?
11. Should the “infrastructure age” criterion be removed from Roadway Expansion and Roadway System Management since many of these projects include new elements compared to the Roadway Reconstruction application category?
12. Is using total project cost for Cost Effectiveness the best way to measure this criterion?

Scoring and Project Selection Practices:

13. Should the scoring committees have the flexibility to consider an alternative to prorating scores when high-scoring outlier projects diminish the separation given to most projects?
14. Do scoring measures that auto-calculate need to be scored by outside scorers or can it be done by Council staff?
15. Should the methodology to distribute funds within a mode be tied back to priorities in the Transportation Policy Plan?
16. Is regional balance a concern? If so, how should it be defined?

Measures:

17. How should the results of recently completed and ongoing studies (e.g., Principal Arterial Intersection Conversion Study, Regional Truck Highway Corridor Study, and Bicycle Barriers Study) be incorporated into the scoring?
18. Should the “average distance to other arterials” measure be removed from Roadway Expansion, Roadway Reconstruction, and Roadway System Management due to the difficulty in accurately comparing projects?
19. Should private-sector contributions such as right-of-way dedication be considered in the cost effectiveness measure or another measure?
20. Should the 70 points for “housing performance score” be reduced?
21. Should the “equity” measure be modified to better-incorporate the potential negative impacts of projects of various populations? If so, how?