CAMBRIDGE SYSTEMATICS

Think Forward

# Application of Prioritization to Funding Scenarios

***presented to***

*Transit Service Delivery Advisory Committee (TSDAC)*

***presented by***

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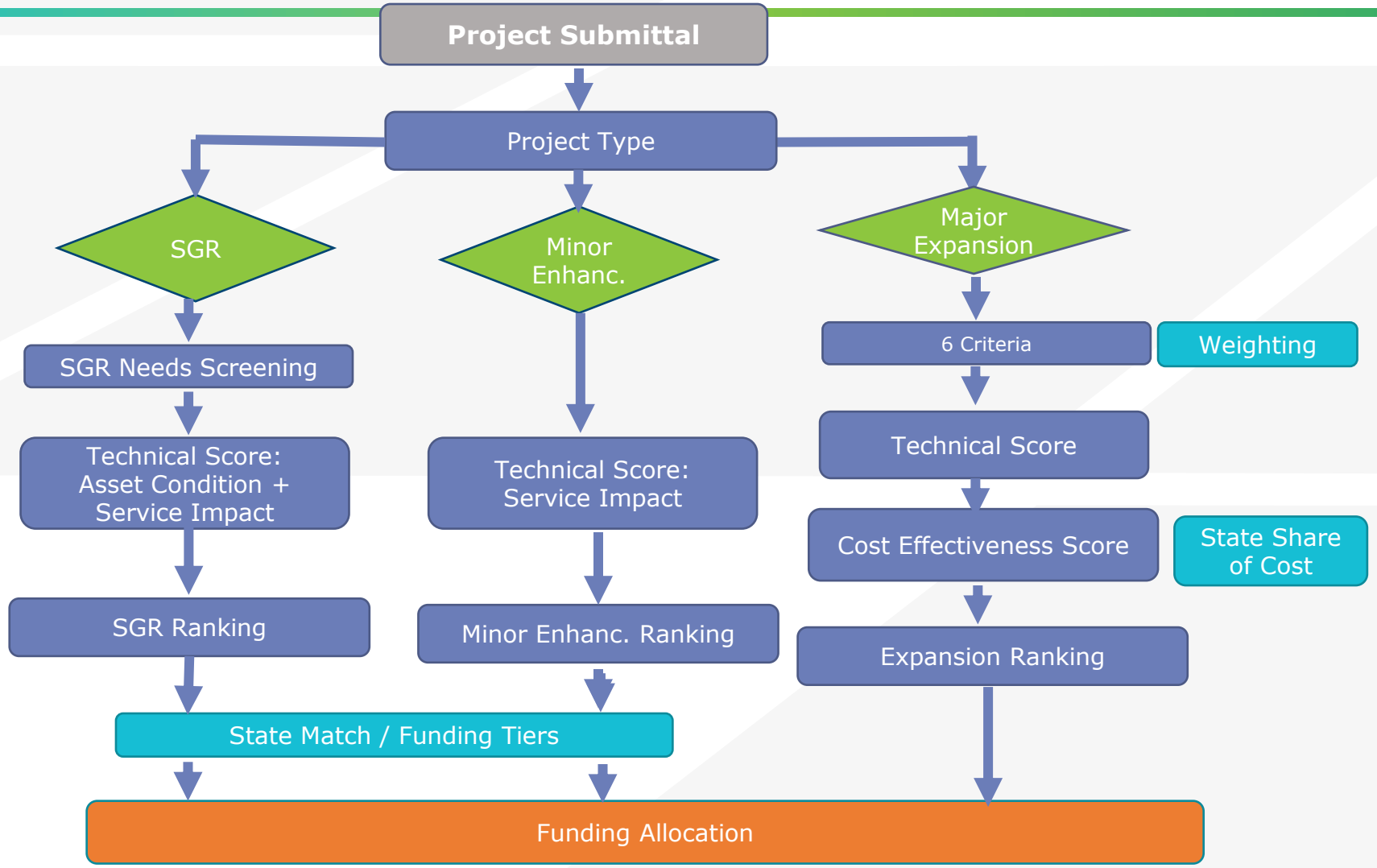
# Revised Structure for Capital Program Prioritization



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# Project Types

- **State-of-Good Repair (SGR):** Projects/programs to replace or rehabilitate an existing asset
- **Minor Enhancement**: Projects/programs to add capacity, new technology, or a customer enhancement meeting the following:
  - Project costs less than $2 million, OR
  - Expansion vehicles: less than 5 vehicles or less than 5% of fleet
- **Major Expansion:** New projects/programs that add, expand, or improve service (greater than $2M)

# Scenarios for Evaluation

- Prioritization scoring tested using average scores from example projects
- Ranking of example projects used to indicate types of projects likely to be funded under different funding scenarios

SGR – Example projects ranked:

1. Revenue vehicle replacement
2. Replacement of technology for operations

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Minor Enhancement – Example projects ranked:

1. Minor revenue vehicle expansion
2. New technology for operations

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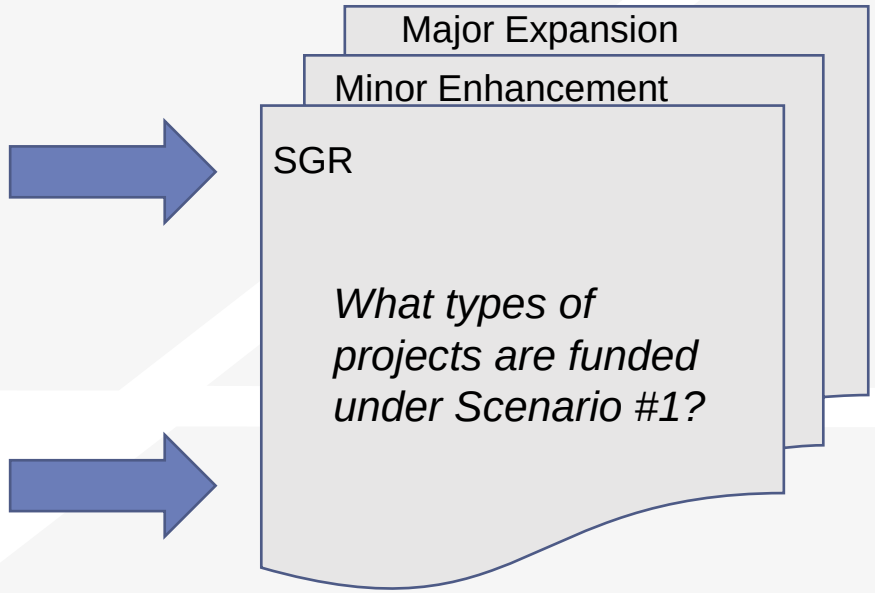


**Six-Year Improvement Program**

# SGR Methodology

- Sample of 17 projects from SYIP
- Project info from FY17 funding applications
- Condition rating - based on available data on asset age and useful life and/or application description
- Service Impact rating – applied by project subtype

| Subtype | Sample Size | Asset Age Available? | Avg. Asset Condition Score |
|---|---|---|---|
| Vehicle – Revenue | 5 | Y | 48 |
| Tech – Operations | 0 | N/A | N/A |
| Admin/Maint Facilities | 5 | Y | 38 |
| Bus Shelters/ Customer Facilities | 2 | N | 30 |
| Maint Equip & Parts | 3 | N | 30 |
| Vehicles – Support | 0 | N/A | N/A |
| Tech – Admin | 2 | Partial | 45 |
| Other | 0 | N/A | N/A |

# Minor Enhancement

- Sample of 17 projects from SYIP
- Project info from FY17 funding applications
- Service Impact rating – applied by project subtype

| Subtype | Sample size |
|---|---|
| Vehicle – Revenue Vehicles | 2 |
| Technology – Operations | 6 |
| Admin/Maintenance Facilities | 0 |
| Bus Shelters/Customer Facilities | 7 |
| Maintenance Equipment & Parts | 1 |
| Vehicle – Support Vehicles | 0 |
| Technology – Administrative | 1 |
| Other | 0 |

# Major Expansion

- Sample of 26 transit projects
  - » Smart Scale applications, Rounds 1 and 2
- Scores within each criterion normalized relative to transit projects only
- Applied Smart Scale weighting factors by criterion

| Subtype | Sample size |
|---|---|
| Corridor High Capacity Transit | 3 |
| Customer Facilities | 13 |
| Fleet Expansion | 6 |
| Maintenance Facilities | 2 |
| Technology/Systems | 2 |

# Limitations to Testing of Prioritization Process

- Schedule and resources only allowed for application of prioritization process to set of example projects, not the entire SYIP
- Application of average scores from example projects illustrates that under limited funding scenarios, some projects will be funded and others will not
- In practice, prioritization scores will be assigned to *individual projects*, not to *project subtypes*
- The rank ordering of project sub-types based on average score should not be viewed as predicting the ultimate ordering of individual projects

# State-of-Good Repair: Average Scores by Project Type

| Project SubType | Asset Condition* | Service – Reliability | Service – Oper. Efficiency | Service – Customer / Access | Service – Safety/ Security | Project Score |
|---|---|---|---|---|---|---|
| Vehicle - Revenue Vehicles | 45 | 10 | 10 | 10 | 5 | **80** |
| Technology - Operations | 45 | 5 | 10 | 5 | 5 | **70** |
| Admin/Maintenance Facilities | 45 | 5 | 10 | 1 | 5 | **66** |
| Bus Shelters/Customer Facilities | 45 | 1 | 1 | 10 | 5 | **62** |
| Maintenance equipment & parts | 45 | 5 | 5 | 1 | 5 | **61** |
| Vehicle - Support Vehicles | 45 | 1 | 5 | 1 | 5 | **57** |
| Technology - Administrative | 45 | 1 | 5 | 1 | 1 | **53** |
| Other | 45 | 1 | 1 | 1 | 1 | **49** |

* Asset Condition: Given unknowns about future asset ages, applied an average score of 45 in funding scenarios

# Minor Enhancement Projects: Average Scores by Project Type

| Project SubType | Service – Reliability | Service – Oper. Efficiency | Service – Customer/ Access | Service – Safety/ Security | Project Score |
|---|---|---|---|---|---|
| Vehicle - Revenue Vehicles | 10 | 5 | 10 | 5 | **30** |
| Technology - Operations | 5 | 10 | 5 | 5 | **25** |
| Admin/Maintenance Facilities | 5 | 10 | 1 | 5 | **21** |
| Bus Shelters/Customer Facilities | 1 | 1 | 10 | 5 | **17** |
| Maintenance equipment & parts | 5 | 5 | 1 | 5 | **16** |
| Vehicle - Support Vehicles | 1 | 5 | 1 | 5 | **12** |
| Technology - Administrative | 1 | 5 | 1 | 1 | **8** |
| Other | 1 | 1 | 1 | 1 | **4** |

# Major Expansion Projects: Average Scores by Project Type

| Project SubType | Congestion/ Ridership | Safety | Accessib | Enviro | Econ. Develop. | Land Use | Project Benefit |
|---|---|---|---|---|---|---|---|
| Vehicle - Revenue vehicles | 1.6 | 0.6 | 2.4 | 0.3 | 0.0 | 2.0 | **6.8** |
| Admin/ Maintenance Facilities | 12.6 | 0.9 | 3.6 | 1.8 | 0.0 | 0.0 | **18.9** |
| Customer Facilities | 3.0 | 0.4 | 1.9 | 1.1 | 0.8 | 3.2 | **10.5** |
| Corridor High Capacity Transit | 13.5 | 1.7 | 4.4 | 3.9 | 2.8 | 4.0 | **30.3** |
| Technology - Operations | 0.4 | 0.0 | 0.1 | 0.1 | 0.0 | 0.2 | **0.9** |
| ALL | 4.6 | 0.6 | 2.3 | 1.3 | 0.7 | 3.0 | **12.5** |

**Notes:**

- Based on analysis of 26 SMART Scale transit or TDM projects from FY17 and FY18 rounds
- Factors weighted using current Smart Scale weights.
- Average scores do not include top-rated project receiving a score of 100 (combination of customer facilities and technology).

# Major Expansion Projects: Average Scores by Project Type

| Project SubType | Project Benefit | Avg. Score (Divided by Cost) | Max Score | Min Score |
|---|---|---|---|---|
| Vehicle - Revenue vehicles | 6.8 | **13.2** | 31.6 | 5.0 |
| Admin/Maintenance Facilities | 18.9 | **10.9** | 20.0 | 1.9 |
| Customer Facilities | 10.5 | **7.8** | 24.9 | 1.1 |
| Corridor High Capacity Transit | 30.3 | **7.2** | 16.3 | 0.8 |
| Technology - Operations | 0.9 | **3.4** | 3.4 | 3.4 |
| Other | n/a | **3.0** | n/a | n/a |
| ALL | 12.5 | **12.6** | 100.0 | 0.8 |

# Next Steps

- Document the detailed prioritization methodology for scoring future capital projects
- Review methodology with TSDAC and identify areas for further development and refinement during implementation