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Think Forward

Prioritization Process

presented to

Transit Service Delivery Advisory Committee (TSDAC)
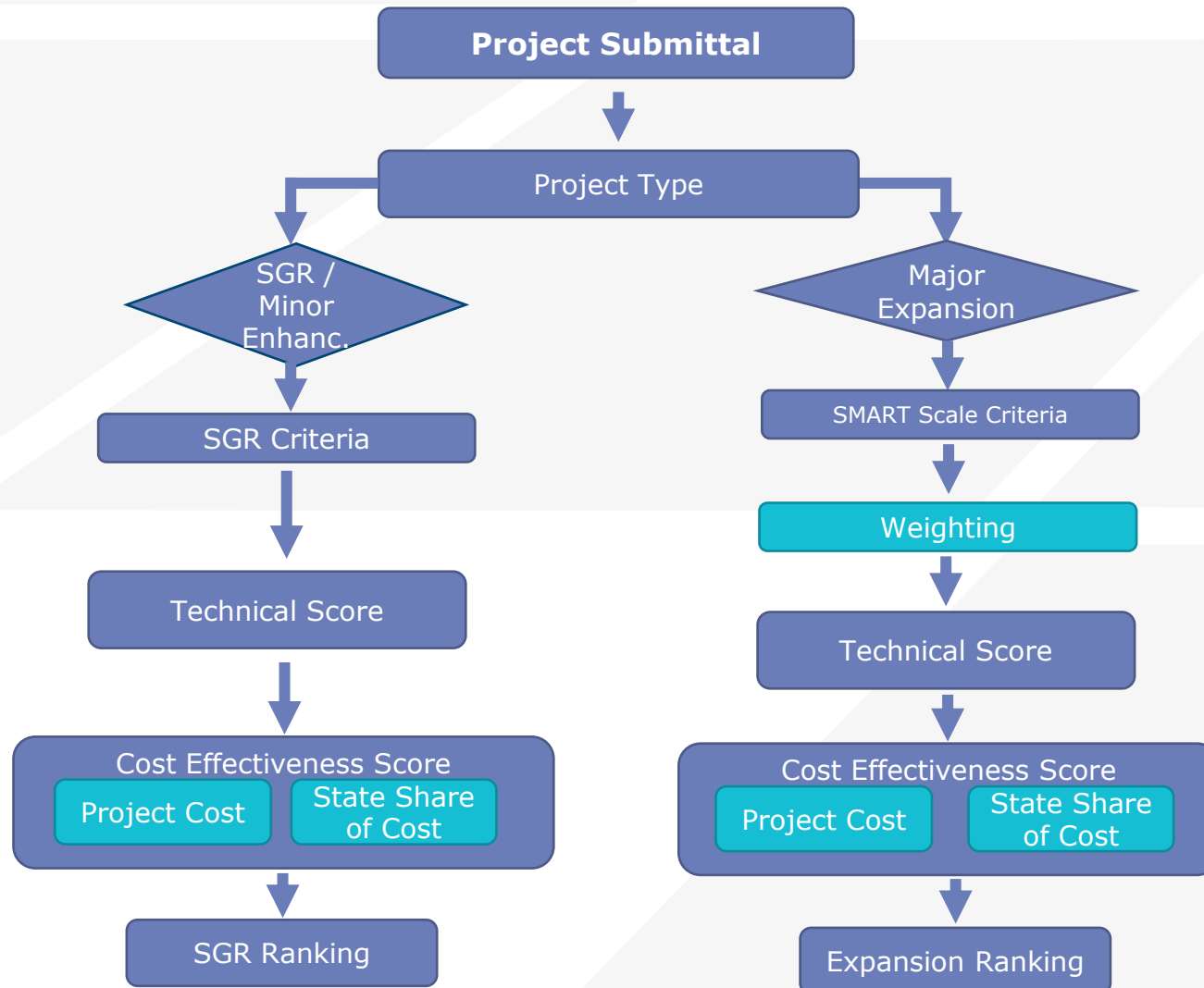
presented by

Cambridge Systematics, Inc.

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Agenda

- SGR/Minor Expansion Prioritization Methodology
  - » Asset condition
  - » Service quality
  - » Scoring and ranking SGR projects
- Major Expansion Prioritization Methodology
  - » Smart Scale transit project results
  - » Modified Smart Scale measures
  - » Scoring and ranking expansion projects
- Next Steps

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Process Framework

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                      ┌─────────────────────────┐
                      │   Project Submittal     │
                      └────────────┬────────────┘
                                   │
                                   ▼
              ┌──────────────┌───────────────┐──────────────┐
              │              │ Project Type  │              │
              ▼              └───────────────┘              ▼
        ◇ SGR /                                       ◇ Major
          Minor                                         Expansion ◇
          Enhanc. ◇
              │                                            │
              ▼                                            ▼
      ┌──────────────┐                          ┌────────────────────┐
      │ SGR Criteria │                          │ SMART Scale Criteria│
      └──────┬───────┘                          └─────────┬──────────┘
             │                                            ▼
             │                                    ┌──────────────┐
             │                                    │  Weighting   │
             ▼                                    └──────┬───────┘
      ┌──────────────┐                                   ▼
      │Technical Score│                          ┌──────────────┐
      └──────┬───────┘                           │Technical Score│
             ▼                                    └──────┬───────┘
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Project Submittal

Project Type

SGR / Minor Enhanc.

Major Expansion

SGR Criteria

SMART Scale Criteria

Weighting

Technical Score

Technical Score

Cost Effectiveness Score
- Project Cost
- State Share of Cost

Cost Effectiveness Score
- Project Cost
- State Share of Cost

SGR Ranking

Expansion Ranking

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SGR/Minor Expansion Projects

SGR/Minor Expansion Projects - Definitions

➤ **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, <u>OR</u>

» Expansion vehicles: less than 5 vehicles or less than 5% of fleet

Note – Expansion buses will be evaluated separately from replacement buses, even if part of the same procurement

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State-of-Good Repair - Criteria

Asset Condition 60%

+

Service Quality 40%

- Asset age and/or mileage
- Asset condition rating

- Asset impact on service quality and rider experience

➤ For SGR replacement-type projects, potential benefit score of up to 100 points

➤ For enhancement-only projects, total score of up to 40 points.

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FTA Condition Rating Scale

Condition	FTA Rating	Description
Excellent	5	• New asset • No visible defects
Good	4	• Asset showing minimal signs of wear • Some (slightly) defective or deteriorated components(s)
Adequate	3	• Asset has reached mid-life (3.5) • Some defective or deteriorated components(s)
Marginal	2	• Asset reaching or just past the end of useful life (2.75 to 2.5) • Increasing number of defective or deteriorated component(s) and increasing maintenance needs
Worn	1	• Asset is past useful life and is in need of immediate repair or replacement • May have critically damaged components

Asset Condition Scoring

Step 1: Screen for eligible SGR/ME projects

- Assets that have not reached the useful service life (condition rating > 2) will be screened out and will not be eligible for replacement that year

- DRPT may adjust the quantity of vehicles/assets to be replaced based on confirmed age/need

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Asset Condition Scoring

➤ Step 2: If need exists, assign Asset Condition Score (0 to 60 points) – based on FTA condition rating scale

» FTA condition of 1 (Worn) and/or past useful life = 60 points

» FTA condition of 2 (Marginal) and/or reaching useful life = 30 points

» FTA condition of 3 or higher (Good or Excellent) = 0 points

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Asset Condition Scoring - Considerations

➤ Applicants will provide age (mileage where appropriate) and/or asset condition rating (1 to 5 scale) of assets being replaced

» DRPT will use TransAM inventory to verify application data

➤ For technology projects, an equivalent asset condition rating will be assigned based on functionality/obsolescence:

» 5 is new technology/full-functioning

» 1 is outdated/obsolete technology

➤ For funding requests for multiple assets, calculate the average condition rating for each asset and average score for the project

Service Quality Ratings (40 pts)

Criteria	High (10)	Medium (5)	Low (1)	No Impact (0)
Service Frequency, Travel Time and/or Reliability (10 pts)	Speeds up transit routes or allows for increased frequency. Significant impact on reliability either through preventing breakdowns or removing vehicles from mixed traffic	Moderate positive improvement	Marginal or low improvement	No (or negative) impact
Service Operating Efficiency (10 pts)	Provides for significantly more cost-effective provision of service	Moderate positive improvement	Marginal or low improvement	No (or negative) impact
Service Accessibility and/or Customer Experience (10 pts)	Significant improvement in a customer's ability to access the system or a significant improvement in the ease of use of the system.	Moderate positive improvement	Marginal or low improvement	No (or negative) impact
Safety and Security (10 pts)	Provides a significant improvement in safety or security	Moderate positive improvement	Marginal or low improvement	No (or negative) impact

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Service Quality- Example Project Types

Criteria	High	Medium	Low/No Impact
Service Frequency, Travel Time and/or Reliability	Replacement buses, Minor Expansion - Buses	Bus Garage Facility Repairs, Purchase shop equipment	Capital cost of contracting, Bike racks
Service Operating Efficiency	Maintenance Facilities, fare collection equipment	Fuel-efficient vehicles, Transfer center	Bus shelters, bus cameras
Service Accessibility and/or Customer Experience	Bus stop accessibility improvements, bike racks, parking garage, transfer center, elevator/escalator rehab	Bus stop amenities, parking garage rehab	Purchase shop equipment, admin building construction
Safety and Security	Surveillance/Security Equipment, Police Emergency Management Equipment, Bus Camera Installation, Bus stop lighting	Elevator/escalator replacement	New fare payment system, digital bus stop signage

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Ranking by Cost-Effectiveness

➤ Proposal – Use ranking of SGR by benefit only, do not calculate cost-effectiveness for SGR

➤ Issues:
- » Requires scaling project scores – to avoid bias towards small projects
  - ▪ Ex. Ridership potential, Person Capacity added
- » Challenge in assigning ridership impact to assets that have indirect service impact (ex. Maintenance equipment)
- » TSDAC preference to not prioritize based on ridership levels

Technical Score

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Cost Effectiveness Score
Project Cost   State Share of Cost

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SGR Ranking

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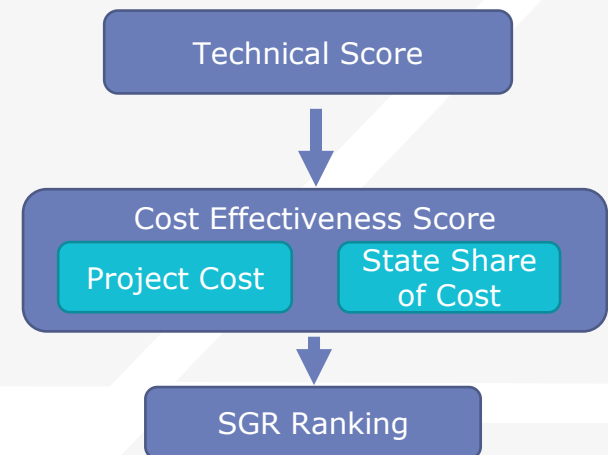
Major Expansion

SMART Scale Criteria and Measures

Congestion Mitigation	• **Person Throughput** • **Person Hours of Delay**
Economic Development	• **Project Support for Economic Development** • **Intermodal Access and Efficiency** • **Travel Time Reliability**
Accessibility	• **Access to Jobs** • **Access to Jobs by Disadvantaged Persons** • **Access to Multimodal Choices**
Safety	• **Number of Fatal and Injury Crashes** • **Rate of Fatal and Injury Crashes**
Environmental Quality	• **Air Quality and Environmental Effect** • **Impact to Natural and Cultural Resources**
Land Use	• **Transportation-Efficient Land Use**

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FY 2017 Smart Scale Review

➤ Intent is to identify the most critical measures that impact transit project scores

» Benefit score and score shares by factor

» Normalization and ranking

» Cost

➤ Determine where to closely follow Smart Scale versus where optional (simplified) approaches make sense

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FY 2017 Smart Scale Projects

Project	Area Type	Cong.	Safety	Access	Enviro.	Econ. Dev.	Land Use	Benefit Score
Ballston Metrorail Station West Entrance	A	0.3	0.0	0.4	0.1	0.3	20.0	**21.1**
ART Service Restructuring and Expansion	A	0.2	0.4	0.1	0.0	0.0	9.7	**10.4**
Peninsula Regional Park and Ride	A	0.2	0.1	0.1	0.0	0.0	2.5	**2.9**
Regional Commuter Express Bus	A	0.2	0.4	0.1	0.0	0.0	0.0	**0.7**
Brooke and Leeland Station Improvements	A	0.2	0.0	0.0	0.0	0.0	0.5	**0.8**
Petersburg Station Park and Ride Lot	C	0.2	0.5	0.1	0.0	1.4	-	**2.3**
Central Business District Circulator	C	0.0	0.1	0.1	0.0	0.0	-	**0.2**
Leatherwood Lane	D	0.0	0.0	0.0	1.5	0.4	-	**1.8**
Average All Projects		0.8	0.7	0.1	0.3	0.6	1.2	**3.0**
Average All Non-Transit		0.8	0.7	0.1	0.3	0.6	1.0	**2.9**
Average All Transit		0.1	0.2	0.1	0.2	0.2	5.6	**6.4**
Average Funded Transit		0.1	0.2	0.1	0.2	0.3	6.6	**5.1**

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Review of Smart Scale Factors

➤ **Accessibility** – Compared to non-transit projects, accessibility is the highest contributing factor to transit project scores.

➤ **Land Use** – This factor on average contributes the largest share of transit project scores.

➤ **Congestion** – Compared to non-transit projects, congestion is the least contributing factor to transit project scores. All projects in area type A score well below the 45% weight for congestion.

➤ **Safety** – Transit projects on average score lower for safety than non-transit projects, however the difference is less than congestion, and in terms of share of the total score, transit projects are close to non-transit.

➤ **Environmental Quality** – Both measures should work well for transit projects, but the scaling approach reduces transit project competitiveness, with average results similar to non-transit projects.

➤ **Economic Development** – Five projects did not score on measure ED1 and ED2 and ED3 are not relevant for transit. Note this factor is weighted by only 5% in area type A.

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Expansion Projects
Draft Methodology

Factor	Recommendation
Congestion Mitigation	Simplify and merge into a single measure based on peak period ridership.
Economic Development	Remove intermodal access and reliability measures, and simplify project support for development measure by using a high-level estimate of development s.f.
Accessibility	Simplify to focus on total jobs and disadvantaged persons within corridor buffer (GIS analysis) and enhance multimodal measure to focus on unique project features enhancing access.
Safety	Assign points based on direct safety benefit, remove Smart Scale indirect benefits estimate.
Environmental Quality	Focus only on air quality effect scaled by new ridership.
Land Use	No change.

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Expansion Projects
Key Data Needs

- ➤ **Ridership**
  - » Daily and peak-period total
  - » New daily ridership (additional riders)

- ➤ **Development Square Footage**
  - » General estimate of potential new and redevelopment impact adjacent to project

- ➤ **Project Concept Details**
  - » Inform accessibility and direct safety benefit points

- ➤ **Land Use**
  - » Future (planned) density, for scaling

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Expansion Projects
Scoring and Ranking

➤ Scaling and Normalizing
» All points are scaled by a factor representative of project size – ridership or density

➤ Weighting Options
» No weighting by factor
» SMART Scale
» Urban (A & B) vs. Town/Non-Urban (C & D)

➤ Benefit Score / Cost – total weighted benefit score is divided by project cost (both the total and the state share only)

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Expansion Projects
SMART Scale Weighting of Factors

Factor	Congestion Mitigation	Economic Development	Accessibility	Safety	Environmental Quality	Land Use
Category A	45%	5%	15%	5%	10%	20%
Category B	15%	20%	25%	20%	10%	10%
Category C	15%	25%	25%	25%	10%	
Category D	10%	35%	15%	30%	10%	

Legend

- VDOT District Boundaries
- MPO/PDC Boundaries
- Counties and Cities

DRAFT HB2 Weighting Typologies

- Category A
- Category B
- Category C
- Category D

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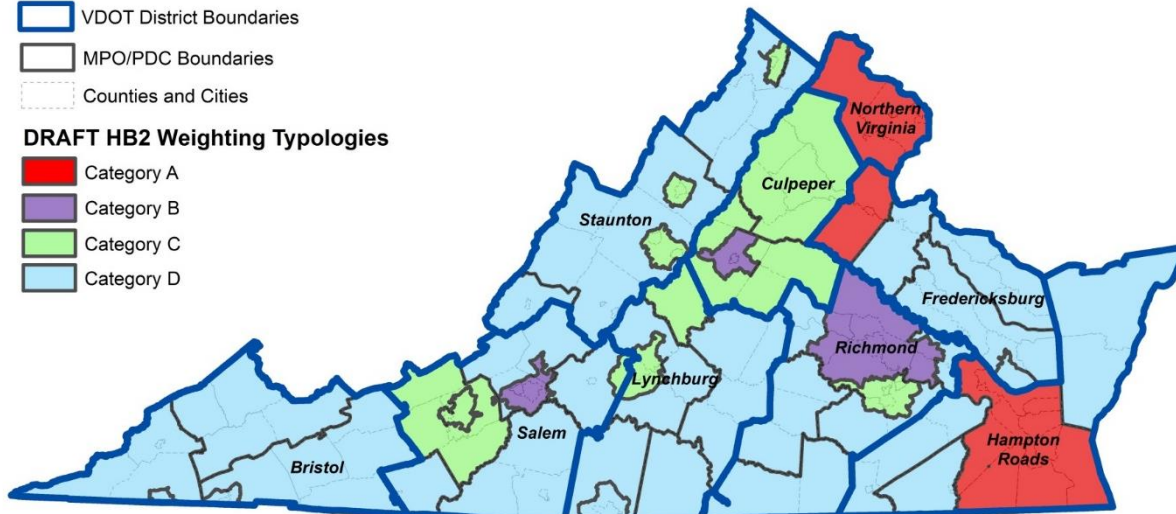
Transit-Only Project Rankings
With and Without Weighting

Project	Area Type	No Weighting		SMART Scale Weighting	
		Score/Cost	Rank	Score/Cost	Rank
Ballston Metrorail Station West Entrance	A	52.94	**4**	61.05	**5**
ART Service Restructuring and Expansion	A	83.95	**3**	92.98	**2**
Peninsula Regional Park and Ride	A	43.70	**5**	64.84	**4**
Regional Commuter Express Bus	A	85.33	**2**	90.47	**3**
Brooke and Leeland Station Improvements	A	8.99	**8**	13.55	**7**
Petersburg Station Park and Ride Lot	C	29.86	**6**	27.28	**6**
Central Business District Circulator	C	355.30	**1**	267.63	**1**
Leatherwood Lane	D	12.88	**7**	10.61	**8**

➤ Use of factor weighting had a minor impact on transit project ranking

➤ Recommend no weighting – use same approach for all transit projects

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Next Steps

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Next Steps

- Revise and finalize prioritization methodology

- Funding rules
  - » Split of funding between SGR/ME projects and Major Expansion projects
  - » Priority rules – ex. All assets having a condition rating of 1 will be replaced before funding expansion projects
  - » Application of state match percentage (such as the funding tiers)

- Implications of prioritization under funding scenarios

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