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Think Forward

Major Expansion Project Prioritization

presented to

Transit Service Delivery Advisory Committee (TSDAC)

presented by

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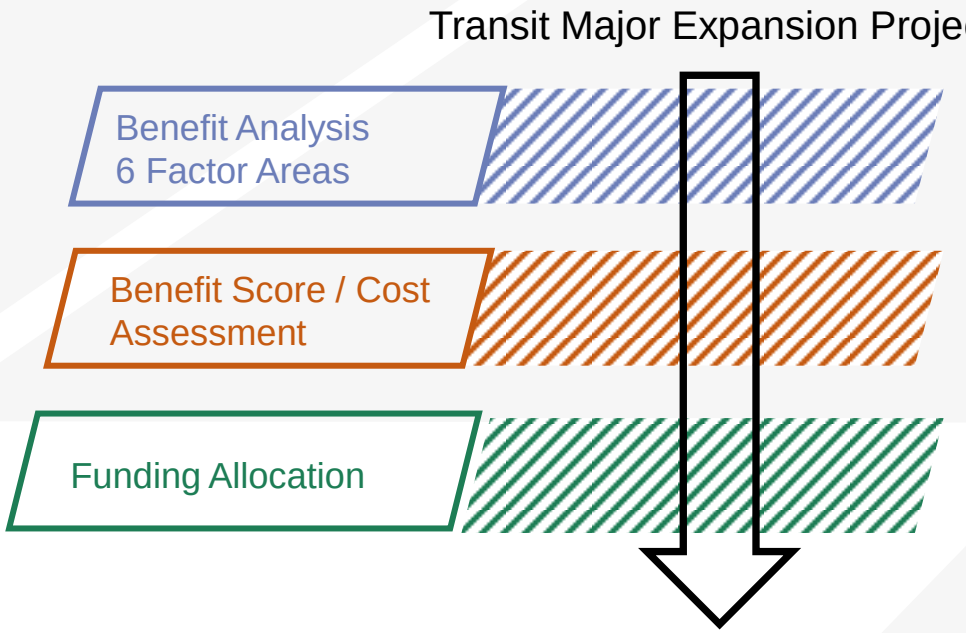
Major Expansion – Prioritization Approach



Proposed transit major expansion projects evaluated using 6 criteria (similar to Smart Scale)

Prioritization Score = Project Benefit / Transit Capital share of Cost

Apply funding rules to allocate available funding between SGR, MIN, and MAJ projects.

Major Expansion Project Prioritization Issues to Resolve

- Confirmed at June 7th meeting:
  - SMART Scale weighting will be default, but MPOs will have option to review
  - Benefit Score / Cost – benefits will be relative to the state transit capital funding requested
- Issues to discuss at this meeting:
  - Selection of evaluation measures – similar to SMART SCALE but with measures appropriate for transit-only application pool
  - Review scaling and normalizing of measure scores
  - Expected results based on SMART SCALE prioritization of transit projects

Proposed Measures

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Factor Areas Specified in HB 1539

Congestion mitigation

Economic development

Accessibility

Safety

Environmental quality

Land use

Congestion Mitigation

Proposed Measure	Person Throughput
Objective	Assess the potential benefit of the project in increasing the number of transit users served, providing an alternative to SOV travel
Definition	Change in transit system ridership attributed to the project
Methodology	Fixed-guideway projects (and where available): Project daily ridership forecast Non-fixed guideway project (fleet expansion, maintenance facilities): Expected daily ridership potential = peak transit ridership capacity added * existing system efficiency (pass/rev. hour) * peak-daily factor

Economic Development

Proposed Measure	Project Support for Economic Development
Objective	Assess if the project is supporting future economic development and the progress made toward development in the project corridor at the local level
Definition	Project consistency with regional and local economic development plans and policies and support for local development activity
Methodology	Qualitative Rating Criteria (examples): • Transportation project referenced in local Comprehensive Plan, local Economic Development Strategy or Regional Economic Development Strategy • Transportation project located in an area of economic distress Scaled by change in forecasted jobs (future year – existing) within walk distance of project

Accessibility

Proposed Measure	Access to Jobs
Objective	Measure change in access to employment opportunities due to the project
Definition	Project improvement in transit travel time to jobs
Methodology	GIS analysis calculating total jobs within corridor buffer adjusted by the expected travel time benefits of the project

Proposed Measure	Access to Disadvantaged Communities
Objective	Measure change in transit accessibility for disadvantaged populations
Definition	Disadvantaged population (low-income, minority, or limited-English proficiency) within walk distance of project
Methodology	GIS analysis calculating disadvantaged persons that can access transit within corridor buffer adjusted by the expected travel time benefits of the project

Safety

Proposed Measure	Expected Safety Benefit
Objective	Evaluate the project's contribution to improving safety and security and reducing the risk of fatalities or injuries
Definition	Assign points based on direct safety benefit
Methodology	Qualitative Rating Criteria (examples): • Asset-condition related (new major facilities or fleet expansion bringing down fleet age) improvements • Technology-related (cameras, crash-avoidance systems) • Customer-facility improvements (waiting areas with lighting, pedestrian access) Scaled by daily transit person miles traveled served

Environmental Quality

Proposed Measure	Air quality and energy impacts
Objective	Potential of project to improve air quality and reduce energy use
Definition	Expected VMT reduction
Methodology	Fixed-guideway projects (and where available): Project expected VMT reduction from travel forecasts Non-fixed guideway project (fleet expansion, maintenance facilities): new transit trips expected * average trip length * avg. auto occupancy • Use of energy efficient fleet (Hybrid, CNG) or infrastructure – factor the VMT reduction by an additional 25%

Land Use

Proposed Measure	Transit-Supportive Land Use
Objective	Evaluate the transit-supportive land use that will be served by the transit improvement
Definition	Future density plus the change in density expected in the project corridor
Methodology	Activity Density = Future Density ((Future Jobs + Future Population)/Area in sq. mileage) + Growth in Density (Future Density – Existing Density)

Scaling and Normalizing Scores

- Scaling - All qualitative measures (points) are scaled by a factor representative of project size – ridership or density
- Normalizing – All measure scores are adjusted to a 0-100 scale so they can be compared/combined. Maximum scores will be set – not just based on the projects in year 1 of prioritization.

SMART SCALE Results

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Review of Smart Scale Transit Projects

Round	App Id	Area Type	District	Major Expansion Sub-Type	Title	Project Benefit Score	Benefit Score Rank	Smart Scale Score (Divided by Cost)	Smart Scale Score Rank
2	1415	A	NOVA	Technology/Systems & Customer Facil	Columbia Pike Smart Corridor	23.89	16	217.40	3
2	1301	B	Salem	Fleet Expansion	Smart Way Vehicle Expansion Project	6.33	93	102.45	4
1	722	A	NOVA	Fleet Expansion	ART Service Restructuring and Expansion	11.38	11	25.28	16
2	1416	A	NOVA	Customer Facilities	Rosslyn-Ballston corridor multimodal connections	25.35	12	44.83	16
2	1014	B	Richmond	Corridor HCT	E Smart Cities: Centralized Transit SP / EV Preemption	3.98	133	20.85	36
2	1220	A	NOVA	Fleet Expansion/Main Facil	DASH Bus Service and Facility Expansion	21.16	20	19.01	41
2	1215	A	NOVA	Customer Facilities	West End Transitway - Southern Towers Transit Facilities	15.06	29	15.06	46
2	1305	B	Salem	Fleet Expansion	Valley Metro's Route 91/92 Vehicle Expansion Project	2.46	180	14.49	49
2	1394	C	Salem	Fleet Expansion	Expansion Bus Purchase (2 60' Articulated)	2.32	194	12.04	53
1	699	A	Hampton Roads	Customer Facilities	Peninsula Regional Park and Ride Enhancement	2.79	101	7.97	65
2	1244	A	NOVA	Fleet Expansion	Acquisition of Transit Buses	5.89	99	8.17	78
1	638	A	Hampton Roads	Fleet Expansion	Regional Commuter Express Bus	0.86	222	3.02	97
2	1104	A	Fredericksburg	Customer Facilities	107714: Improve Brooke and Leeland VRE Station	32.96	8	5.51	108
1	674	A	NOVA	Customer Facilities	Ballston-MU Metrorail Station West Entrance	21.13	4	2.35	113
2	1556	B	Salem	Technology/Systems/Communicat	GRTC's Automatic Vehicle Locator/Real-Time Project	0.97	276	5.10	114
1	748	C	Richmond	Customer Facilities	Petersburg Station Park and Ride Structured Lot	3.02	87	1.79	128
2	1414	A	NOVA	Corridor HCT	VRE Fredericksburg Line Capacity Expansion	64.25	1	2.97	162
2	1338	B	Salem	Maintenance Facilities	Valley Metro's Maintenance Expansion Facility Project	0.39	347	1.66	227
2	1007	A	NOVA	Corridor HCT	Richmond Highway-Bus Rapid Transit	14.86	31	0.46	335

Note: Applications 1338 and 1007 were not funded in Round 2 of SMART SCALE

SMART SCALE Evaluation Measures

Factor Areas	ID	Measures
Safety	S.1	Number of Fatal and Severe Injury Crashes (50%)
	S.2	Rate of Fatal and Severe Injury Crashes (50%)
Congestion Mitigation	C.1	Person Throughput (50%)
	C.2	Person Hours of Delay (50%)
Accessibility	A.1	Access to Jobs (60%)
	A.2	Access to Jobs for Disadvantaged Persons (20%)
	A.3	Access to Multimodal Choices (20%)
Environmental Quality	E.1	Air Quality and Environmental Effect (50%)
	E.2	Impact to Natural and Cultural Resources (50%)
Economic Development	ED.1	Project Support for Economic Development (60%)
	ED.2	Intermodal Access and Efficiency (20%)
	ED.3	Travel Time Reliability (20%)
Land Use	L.1	Future Transportation Efficient Land Use (70%)
	L.2	Increase in Transportation Efficient Land Use (30%)

Smart Scale Transit Project Scoring

- **Congestion** – Compared to non-transit projects, congestion (delay and throughput) has a much smaller contribution to transit project scores.
- **Safety** – Transit projects scored slightly higher, on average, for safety than non-transit projects. However, safety had less impact on the overall score for transit projects. Crash rate not calculated for transit.
- **Accessibility** – Compared to non-transit projects, accessibility is the greatest contributing factor to transit project scores. This is mainly due to the multimodal accessibility measure.
- **Environmental Quality** – Transit projects scored well on both of the environmental measures.
- **Economic Development** – ED Support (ED.1) is lower for transit than non-transit, but Intermodal Access (ED.2) measure is much higher for transit projects.
- **Land Use** – This factor on average contributes the largest share of transit project scores.

SMART SCALE Transit Projects Compared Relative to Transit Only

Project SubType	Congestion/ Ridership	Safety	Access	Envt.	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).

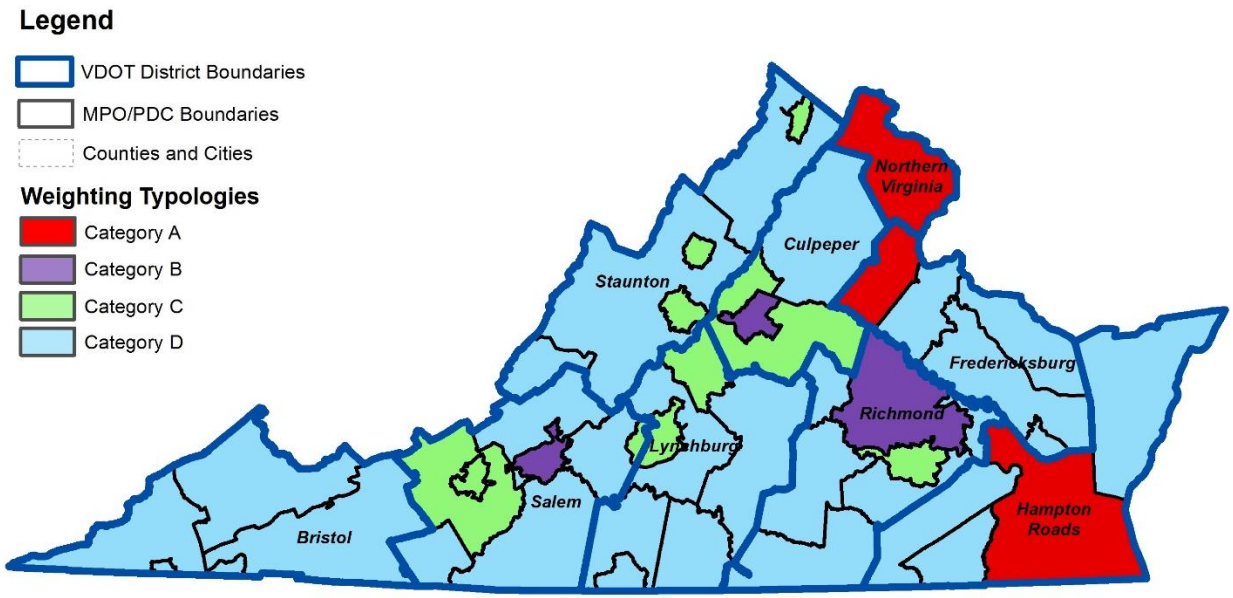
SMART SCALE Transit Projects Compared Relative to Transit Only

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

Transit vehicle projects scored lower on benefit score than other project types, but were the highest scoring when benefits are compared relative to cost.

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%	



Transit-Only Project Rankings

Use of factor weighting has a minor impact on transit project ranking

		No Weighting		SMART Scale Weighting	
Project	Area Type	Score/Cost	Rank	Score/Cost	Rank
Columbia Pike Smart Corridor	A	**141.65**	**1**	**167.39**	**1**
ART Service Restructuring and Expansion	A	**52.96**	**2**	**52.88**	**2**
Rosslyn-Ballston corridor multimodal connections	A	**46.02**	**3**	**41.69**	**3**
DASH Bus Service and Facility Expansion	A	**25.99**	**7**	**33.50**	**4**
Ballston-MU Metrorail Station West Entrance	A	**27.90**	**5**	**31.26**	**5**
Smart Way Vehicle Expansion Project	B	**37.14**	**4**	**29.59**	**6**
E Smart Cities: Centralized Transit SP / EV Preemption	B	**27.32**	**6**	**27.23**	**7**
Regional Commuter Express Bus	A	**19.33**	**8**	**17.28**	**8**
Peninsula Regional Park and Ride Enhancement	A	**12.41**	**10**	**16.16**	**9**
Expansion Bus Purchase (2 60’ Articulated)	C	**12.87**	**9**	**14.56**	**10**
West End Transitway - Southern Towers Transit Facilities	A	**8.29**	**14**	**9.82**	**11**
Valley Metro's Route 91/92 Vehicle Expansion Project	B	**12.14**	**11**	**9.47**	**12**
107714: Improve Brooke and Leeland VRE Sta, Const PS VRE Sta	A	**11.23**	**12**	**9.19**	**13**
Petersburg Station Park and Ride Structured Lot	C	**6.61**	**16**	**8.59**	**14**
Acquisition of Transit Buses	A	**4.72**	**17**	**8.35**	**15**
VRE Fredericksburg Line Capacity Expansion	A	**8.55**	**13**	**7.80**	**16**
GRTC's Automatic Vehicle Locator/Real-Time Project	B	**7.23**	**15**	**5.65**	**17**
Valley Metro's Maintenance Expansion Facility Project	B	**3.66**	**18**	**3.13**	**18**
Richmond Highway-Bus Rapid Transit	A	**1.23**	**19**	**1.33**	**19**

Next Steps

- Confirm selection of evaluation measures
- Present summary of prioritization policy to CTB
- DRPT to develop detailed scoring methodology prior to December