



SMART SCALE Analysis and Observations

*Historical Analysis of SMART SCALE
Rounds 1 through 4 in the RVTPO Service Area
August 2021*



Executive Summary

The SMART SCALE program was established in 2014 as a transparent and objective method of funding transportation projects in Virginia. The program accepts applications from localities, MPOs, PDCs, and transit agencies, which are scored and prioritized based on goals of the statewide long-term transportation plan, VTrans. There have been four rounds of SMART SCALE scoring and funding. The purpose of this analysis is to examine trends in the first four rounds within the state, within the Roanoke Valley Transportation Planning Organization's service area, and within VDOT's Salem Construction District in order to identify the characteristics of project applications that determine success. This analysis also considers how project applications could be approached in future rounds to increase the probability of success.

SMART SCALE funds are divided into two programs:

- The District Grant Program (DGP) funds are apportioned to each VDOT Construction District and only projects within that district compete. These are projects of regional significance.
- The High-Priority Projects Program (HPPP) scores applications statewide. HPPP projects are those of statewide significance.

The Salem District receives about the average amount of DGP funding when factoring its population (as the fourth most populous district in the state), while much of the HPPP funding has historically gone to Northern Virginia and Hampton Roads.

This analysis suggests that the most effective approach to ensuring SMART SCALE success is to minimize the requested amount of funding. Projects most likely to be approved based on past trends are: a) lower-cost projects, b) projects that have a high benefit score, and c) projects with ample leverage funds. To increase the chances of success for the RVTPO area's applications in the future, projects will need to continue to minimize the funding requests made through SMART SCALE. This can be done by choosing lower-cost projects, by scaling down projects to reduce the overall cost (while avoiding a negative impact on the project benefit), or by increasing the leverage funds on higher-cost and/or lower-benefit projects.

With limited leverage funds available, a strategy is needed. This analysis shows that the most effective option is to utilize leverage for the area's most prized high-cost or low-benefit projects. The results of the strategy used in the RVTPO service area in Round 4 suggest that, in future rounds, allocating leverage (via local funds, revenue sharing, STBG, TA, etc.) to the region's higher-cost and/or lower benefit projects is the best method to increase chances of success for all projects while preserving a high return on investment. Consideration of which projects are submitted as eligible for HPPP only or both HPPP and DGP is also important and yield different results for the same project application.

Summary of SMART SCALE Round 4 in the RVTPO service area

DGP funds available in Virginia.....	\$861,341,039	
DGP funds available in Salem Construction District.....	\$103,311,186	(12% of statewide DGP)
DGP funds awarded to projects in the RVTPO area.....	\$66,479,333	
HPPP funds available to projects in Virginia.....	\$489,961,275	
HPPP funds awarded to projects in the RVTPO area.....	\$9,090,977	(1.9% of HPPP awarded)

Organizations in the RVTPO service area submitted 19 projects with a combined total cost of \$178,063,216. Through the provision of leverage funds, the SMART SCALE request was \$158,174,939. Funding was awarded to 15 of those projects, allocating \$75,570,309.

Organization	# of projects submitted	Funding requested	# of projects funded	Funding awarded	% of request fulfilled
Botetourt County	2	\$19,035,828	1	\$7,623,347	40.0%
Roanoke County	4	\$43,294,893	3	\$24,042,769	55.5%
Roanoke City	4	\$15,724,159	4	\$15,724,159	100.0%
Salem City	4	\$11,689,276	4	\$11,689,276	100.0%
Vinton Town	1	\$7,399,781	1	\$7,399,781	100.0%
RVARC	1	\$28,225,261	0	\$0	0.0%
RVTPO	3	\$32,805,740	2	\$9,090,976	27.7%
TOTAL	19	\$158,174,939	15	\$75,570,309	47.7%

Four projects were not funded. Those projects had a combined total cost of \$88,149,490 and provided a total of \$5,544,860 in leverage. This analysis finds that refining the leverage strategy or applicant to be the most effective method to success in future SMART SCALE rounds.

Applicant	Project	Total project cost	Leverage provided	Min. leverage needed
RVTPO	Orange Ave Improvements	\$23,714,763	0	\$4,867,844
Roanoke County	Rt 460 / Alt Rt 220 Intersection Improvements	\$21,796,984	\$2,544,860	\$13,589,176
RVARC	I-581 Exit 2 Interchange Improvements	\$28,225,261	0	\$20,289,777
Botetourt County	Rt 220 Superstreet Improvements	\$14,412,482	\$3,000,000	\$10,163,397

Determining the leverage strategy is important because the four projects above were unfunded, in part, due to lack of leverage funds. However, all of the funded projects in the RVTPO service area that used STBG funds as leverage would have been successful in Round 4 without that leverage (totaling \$13.8 million). In future rounds, careful consideration will be needed on assumptions regarding available SMART SCALE funding and the use of leverage on SMART SCALE applications.

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1. Introduction

Following the third round of SMART SCALE, the Roanoke Valley Transportation Planning Organization's (RVTPO) Policy Board directed staff to perform an analysis of the SMART SCALE program, its impacts on transportation in the region, and measures to take to increase the probability of successful applications in future rounds. The analysis of the first three rounds was presented to the Board on February 28, 2019. In that analysis, staff highlighted five characteristics of successful projects, establishing a roadmap for implementation in future applications.

This report updates that analysis to include Round 4 in order to identify short-term changes to the program and to recognize long-term trends as SMART SCALE continues. This update addresses:

- The changes in levels of funding in SMART SCALE Rounds 1 through 4;
- The SMART SCALE screening and scoring processes;
- The performance of the RVTPO service area in comparison to the rest of Virginia;
- The impacts of leverage funds;
- The pattern in successful SMART SCALE applications in the RVTPO service area; and
- The strategy considerations for future rounds.

2. Summary of statewide performance in Rounds 1 - 4

Table 1 compares number of applications scored to the number of projects funded in each round. This comparison shows that Round 4 had the most applications ever funded through SMART SCALE. That is due to the combination of total SMART SCALE funding increasing 63% between Rounds 3 and 4 and lowest total funding requested of any round.

Table 1: Statewide SMART SCALE performance

Rnd	Applications scored	Total cost of submitted projects	Total funding requested	Applications funded	Total cost of funded projects	Total funding awarded
1	287	\$13.4 billion	\$7.4 billion	163	\$3.2 billion	\$1.7 billion
2	404	\$10.9 billion	\$8.6 billion	151	\$2.3 billion	\$1.0 billion
3	433	\$12.3 billion	\$7.4 billion	141	\$5.1 billion	\$859.4 million
4	397	\$7.5 billion	\$6.3 billion	167	\$1.9 billion	\$1.4 billion

3. Overview and results of DGP and HPPP

In 2015, the Virginia General Assembly adopted legislation, enacted as Code of Virginia § 33.2-370 and 33.2-371, which funds the High-Priority Projects Program (HPPP) and the Construction District Grants Program (DGP). Since July 1, 2020, state transportation funds that were not allocated to other highway purposes were allocated as follows:

- 27.5% to HPPP
- 27.5% to DGP
- 45% to state of good repair (deficient pavement conditions and structurally deficient bridges)

Projects eligible for HPPP funding are those identified by the Commonwealth Transportation Board (CTB) to have “regional or statewide significance, such as projects that reduce congestion or increase safety, accessibility, environmental quality, or economic development.”ⁱⁱ In this region of Virginia, that refers to the I-81, I-581, US-11, US-11 Alternate, US-220, US-220 Alternate, and US-460 corridors. HPPP applications compete with candidate projects statewide.

DGP funding is allocated to local governments and agencies for “projects and strategies that address a need in the Statewide Transportation Plan.”ⁱⁱⁱ Project applications are screened, scored, and approved or rejected by the CTB. DGP candidates compete only with projects in the same VDOT construction district. Table 3 outlines how DGP allocations are determined and distributed to construction districts.ⁱⁱⁱ

Table 2: SMART SCALE project eligibility

Project type	Program eligibility		Applying entity eligibility		
	HPPP	DGP*	MPO or PDC	Localities	Public transit agencies
Addresses need on corridor(s) of statewide significance	Yes	Yes	Yes	Yes, with a resolution of support from MPO or PDC	Yes, with a resolution of support from MPO or PDC [†]
Addresses need on regional network(s)	Yes	Yes	Yes	Yes, with a resolution of support from MPO [†]	Yes, with a resolution of support from MPO or PDC [†]
Improvement to support urban development area(s)	No	Yes	No	Yes, with a resolution of support from MPO [†]	No
Addresses identified safety need	No	Yes	No	Yes, with a resolution of support from MPO [†]	No

**Only projects submitted by localities*

[†] Projects within the RVTPO service area that aren't in the Roanoke Valley Transportation Plan must include a resolution of support from the RVTPO policy board.

3.1 District Grant Program funds

DGP funding is distributed to each VDOT construction district based on the criteria in Table 3. While population is not the lone determining factor in DGP allocations, the population criteria (#1 and #3) comprise 54% of the funding determination. When considering travel and transportation development patterns across the state and nation, population also influences #2 and #4 (another 38% of funding determination).

Table 3: Criteria for District Grant Program determination

Criteria	Percentage of determination
1 The ratio of the population of the eligible cities and towns eligible within a highway construction district to the total population of the eligible cities and towns within the state	30%
2 The ratio of vehicle miles traveled (VMT) on primary highways within the highway construction district to the total VMT on primary highways in the state	28%
3 The ratio of the population of counties within a highway construction district to the total population of the state	24%
4 The ratio of the number of primary lane-miles in the highway construction district to the total number of primary lane-miles within the state	10%
5 The ratio of the land area of counties within the highway construction district to the total land area of counties within the state	6%
6 A primary need factor based on addressing the largest under-allocation to highway construction districts relative to primary needs	2%

Population data used in these determinations come from the Weldon Cooper Center for Public Service at the University of Virginia. Table 4 shows the population estimates for each VDOT construction district as of July 1, 2020.^{iv}

Table 4: VDOT district population estimates as of July 1, 2020

VDOT District	Population
Northern Virginia	2,532,330
Hampton Roads	1,767,837
Richmond	1,335,488
Salem	696,436
Staunton	564,569
Fredericksburg	492,166
Culpeper	424,966
Lynchburg	397,366
Bristol	342,913
Virginia	8,554,071

Population weighs heavily in the DGP allocation, but other factors such as VMT and primary lane-miles have an impact. In the past, the four most populous districts indeed received the most funding. That changed in Round 4. Northern Virginia (almost one-third of the state’s population) was allocated less DGP funding than Lynchburg and Culpeper, much smaller districts.

This increase in funding was due to a regional fuel tax was signed into law on April 22, 2020. This taxed non-diesel fuels \$0.076 per gallon and funded the “Special Fund Account for the Highway Construction District Grant Program.” This made an additional \$392.8 million available statewide, and the Salem District received \$63.8 million in Round 4 of SMART SCALE, increasing its DGP allocation from about \$38 million to over \$103 million. The supplement of regional fuel tax to DGP have been programmed in SMART SCALE in fiscal years 2021 through 2024 as shown in Table 5.

Table 5: Future supplemental DGP funding

	FY 2021	FY 2022	FY 2023	FY 2024	TOTAL
Supplemental DGP Funding from Regional Fuel Tax Revenue	\$84.1 M	\$100.1 M	\$103.4 M	\$105.2 M	\$392.8 M

Typically, less populated districts are awarded more DGP dollars per capita (as seen in Table 6). Through this lens, the Salem district slightly benefits despite not having the populations of Richmond, Hampton Roads, and Northern Virginia. The Salem District has 8.1% of the state’s total population but received 12% of the state’s total DGP dollars in Round 4. In contrast, Northern Virginia has 1.8 million more people but received just \$3 million more in DGP funding. Meanwhile, the Lynchburg and Culpeper districts (4.6% and 5.0% of the state’s population, respectively) each received about 13% of the total DGP funds (more than Northern Virginia) in Round 4. While this varies slightly year to year, less populated districts generally receive more DGP dollars per capita through the first four rounds of SMART SCALE.

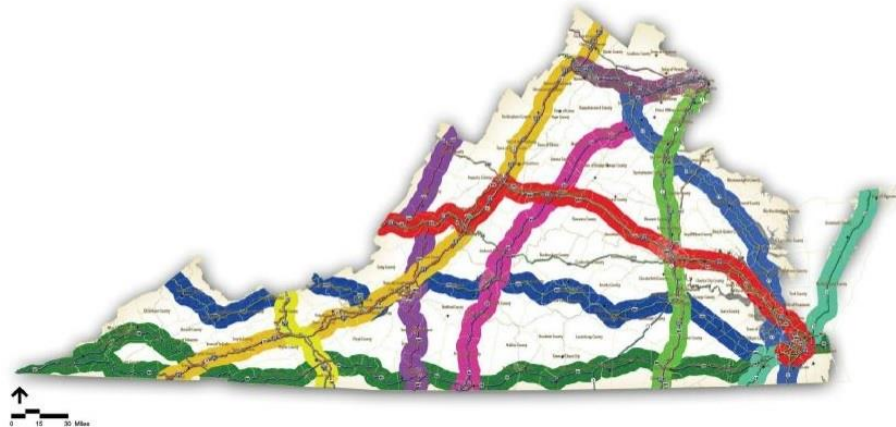
Table 6: Distribution of DGP funds in Round 4 (FY 22)

VDOT District	DGP Funding Allocated	% of total DGP funds	% of state population	DGP \$ per capita
Richmond	\$118,716,865	13.8%	15.6%	\$88.89
Hampton Roads	\$115,601,411	13.4%	20.7%	\$65.39
Culpeper	\$112,856,880	13.1%	5.0%	\$265.57
Lynchburg	\$111,952,581	13.0%	4.6%	\$281.74
Northern Virginia	\$106,355,895	12.3%	29.6%	\$42.00
Salem	\$103,311,186	12.0%	8.1%	\$148.34
Bristol	\$71,371,134	8.3%	4.0%	\$208.13
Fredericksburg	\$68,183,300	7.9%	5.8%	\$138.54
Staunton	\$52,991,786	6.2%	6.6%	\$93.86
Total	\$861,341,039	100%	100%	

3.2 High-Priority Project Program funding

The distribution of HPPP funding is quite different. Competition for funding is statewide, and HPPP projects must serve “corridors of statewide significance” or address “capacity need on regional networks.”^v VDOT has identified 12 such corridors. Geographically, these corridors (shown in Figure 1) are evenly disbursed throughout the state. The RVTPO service area contains portions of three corridors: North Carolina to West Virginia Corridor (US-220), Heartland Corridor (US-460), and Crescent Corridor (I-81 and I-581).

Figure 1: Corridors of statewide significance



In Round 1 of SMART SCALE, total HPPP awards were over \$800 million. The total awards dropped an average of \$200 million in each of the next two rounds. In Round 4, the HPPP allocation rose slightly, but remained under \$500 million.

Tables 7 and 8 show the DGP and HPPP funding allocated to each VDOT district in Rounds 1 through 4. The districts are listed by population, highest to lowest. This demonstrates the impact of the regional fuel tax on the allocation of DGP funds throughout the state. Table 8 also separates the RVTPO service area from the rest of the Salem district.

Table 7: Available DGP funds in Rounds 1 through 4

District	Round 1 (FY 17)		Round 2 (FY 18)		Round 3 (FY 20)		Round 4 (FY 22)	
	DGP Available	% of total	DGP Available	% of total	DGP Available	% of total	DGP Available	% of total
Northern Virginia	\$183,055,970	20.7%	\$89,403,058	23.4%	\$98,064,652	23.1%	\$106,355,895	12.3%
Hampton Roads	\$178,033,507	20.2%	\$86,791,093	22.7%	\$93,829,044	19.4%	\$115,601,411	13.4%
Richmond	\$127,411,522	14.4%	\$56,176,746	14.7%	\$67,368,537	15.9%	\$118,716,865	13.8%
Salem	\$84,868,412	9.6%	\$32,633,500	8.5%	\$37,988,254	9.0%	\$103,311,186	12.0%
Staunton	\$68,917,727	7.8%	\$24,270,367	6.4%	\$29,688,863	7.0%	\$52,991,786	6.2%
Fredericksburg	\$60,504,406	6.9%	\$26,409,641	6.9%	\$32,074,604	7.6%	\$68,183,300	7.9%
Culpeper	\$54,872,548	6.2%	\$19,910,405	5.2%	\$24,574,905	5.8%	\$112,856,880	13.1%
Lynchburg	\$63,096,980	7.1%	\$25,297,175	6.6%	\$27,083,771	6.4%	\$111,952,581	13.0%
Bristol	\$62,239,019	7.0%	\$21,210,894	5.6%	\$25,199,298	5.9%	\$71,371,134	8.3%
TOTAL	\$883,000,000	100.0%	\$382,102,879	100.0%	\$435,760,928	100.0%	\$861,341,039	100%

Table 8: Awards of HPPP funds in Rounds 1 through 4

District	Round 1 (FY 17)		Round 2 (FY 18)		Round 3 (FY 20)		Round 4 (FY 22)	
	HPPP Awarded	% of total	HPPP Awarded	% of total	HPPP Awarded	% of total	HPPP Awarded	% of total
Northern Virginia	\$339,798,423	40.8%	\$287,625,771	43.7%	\$107,099,719	24.6%	\$113,921,809	23.3%
Hampton Roads	\$154,384,282	18.5%	\$150,334,113	22.8%	\$229,669,466	52.8%	\$50,935,147	10.4%
Richmond	\$72,351,951	8.7%	\$90,390,348	13.7%	\$24,850,543	5.7%	\$62,768,311	12.8%
RVTPO area	\$18,310,387	2.2%	\$38,338,799	5.8%	\$10,142,915	2.3%	\$9,090,977	1.9%
Rest of Salem	\$10,262,390	1.2%	\$0	--	\$2,979,888	0.7%	\$29,240,493	6.0%
Staunton	\$36,855,128	4.4%	\$16,434,253	2.5%	\$14,006,257	3.2%	\$27,092,335	5.5%
Fredericksburg	\$144,115,767	17.3%	\$23,528,870	3.6%	\$21,450,744	4.9%	\$40,128,406	8.2%
Culpeper	\$25,559,585	3.1%	\$36,670,555	5.6%	\$7,007,394	1.6%	\$51,307,790	10.5%
Lynchburg	\$22,668,708	2.7%	\$12,630,159	1.9%	\$8,149,545	1.9%	\$38,659,408	7.9%
Bristol	\$8,925,584	1.1%	\$2,817,806	0.4%	\$9,779,759	2.2%	\$16,816,599	3.4%
Multi	--	--	--	--	--	--	\$50,000,000	10.2%
TOTAL	\$833,232,205	100%	\$658,770,674	100%	\$435,136,230	100%	\$489,961,275	100%

4. VTrans needs screening and SMART SCALE project scoring

Through four rounds, the SMART SCALE process has been refined and streamlined. The SMART SCALE Round 4 screening and scoring process is outlined below.

4.1 Needs Screening

First, applications are screened to ensure projects will advance a VTrans 2040 need within one (or more) of four categories:

- Corridors of statewide significance,
- Regional networks,
- Urban development areas, and
- Statewide safety.

Projects that are deemed to be outside of one of these four categories are not scored. Projects are also screened out if they haven't been sufficiently developed to the point of readiness, if they address the same needs as previously funded projects, or if they haven't met the basic eligibility requirements (i.e. no resolution of support from the MPO).

4.2 Scoring and weighting

Projects are then evaluated on the VTrans 2040 factors of:

- Safety,
- Congestion mitigation,
- Accessibility,
- Land use¹,
- Economic development, and
- Environmental quality.

Due to varying transportation needs, the state is separated into four categories. Each category has a weighting framework to best address the needs within that region. This system is used to address the differences in needs and considerations of high-population regions, like Hampton Roads, and rural areas covering most of the state. In Round 4 of SMART SCALE, the RVTPO service area was in category B with the Charlottesville area and the corridor between Richmond and Northern Virginia (Figure 2).

¹ Land use coordination is required only for MPOs covering over 200,000 people. This applies to the RVTPO.

Figure 2: Virginia weighting typologies

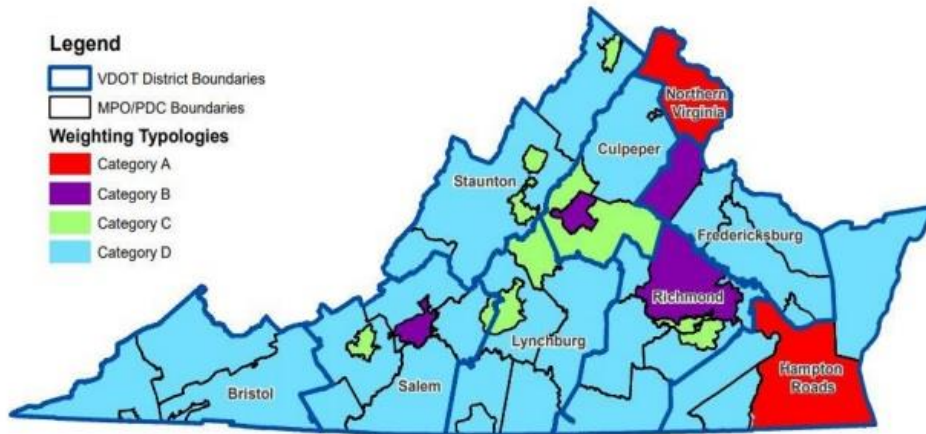


Table 9: SMART SCALE factor weights by category

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

4.3 Scoring process

The SMART SCALE scoring process analyzes the project benefits by weighting each measure by VTrans priorities and location in the state.

- Within each of the six factors of Table 9, there are two or three measures (see Table 10).
- Each measure is converted into a score of 0 to 100.
- This score is then weighted based on the percentage of that measure.
- The sum of the weighted scores provides the “factor value.”
- The factor value is then weighted based on the percentage in Table 9, providing the “weighted factor value” for each of the six SMART SCALE factors.
- The sum of these is the “project benefit.”
- The SMART SCALE score is calculated by dividing the project benefit score by the SMART SCALE project cost (in units of \$10 million).

$$\text{SMART SCALE score} = \frac{\text{Benefit Score}}{\left(\frac{\text{SMART SCALE request}}{\$10,000,000} \right)}$$

- Example in Table 10: 1.3 = 3.7 / (28,225,261 / 10,000,000)

Table 10: SMART SCALE scorecard example (I-581 at Exit 2 Interchange Improvements)

SMART SCALE Area Type B														
Factor	Congestion Mitigation		Safety		Accessibility			Economic Development			Environment		Land Use	
Measure	Increase in Peak Period Person Throughput	Reduction in Peak Period Delay	Reduction in Fatal and Injury Crashes	Reduction in Fatal and Injury Crash Rate	Increase in Access to Jobs	Increase in Access to Jobs for Disadvantaged Populations	Increase in Access to Multimodal Travel Choices	Square Feet of Commercial/Industrial Development Supported	Tons of Goods Impacted	Improvement to Travel Time Reliability	Potential to Improve Air Quality	Impact to Natural and Cultural Resources	Support of Transportation-Efficient Land Development	Support of Transportation-Efficient Land Development
Measure Value	44.4 persons	0.0 person hrs.	0.0 EPDO	0.0 EPDO / 100M VMT	17.8 jobs per resident	25.2 jobs per resident	222.2 adjusted users	2,151,681.8 adj sq. ft.	0.0 daily tons	26,686,141.8 adj. buffer time index	0.0 adjusted points	1.0 impacted acres	16.6 access * pop/emp density, ft	15.3 access * pop/emp density change.
Normalized Measure Value (0-100)	2.4	0.0	0.0	0.0	1.0	1.3	9.1	3.5	0.0	0.2	0.0	0.1	25.1	23.3
Measure Weight (% of Factor)	50%	50%	70%	30%	60%	20%	20%	60%	20%	20%	100%	*	50%	50%
Factor Value	1.2		0.0		2.7			2.1			0.0		24.2	
Factor Weight (% of Project Score)	15%		20%		25%			20%			10%	5 (max point reduction)	10%	
Weighted Factor Value	0.2		0.0		0.7			0.4			0.0	0.0	2.4	
Project Benefit	3.7													
SMART SCALE Cost	\$28,225,261													
SMART SCALE Score (Project Benefit per \$10M SMART SCALE Cost)	1.3													

4.4 Scoring methodologies

4.4.1 Round 1 scoring methodology

In the first Round of SMART SCALE, there was a four-step scoring methodology. In each Round, DGP funds and HPPP funds were each allocated 50% of the total SMART SCALE allocation.

Step 1: Fund top scoring projects within each district eligible for DGP funds using DGP funds until remaining funds are insufficient to fund the next highest scoring project, excluding any project originally included solely because it does not have an environmental impact.

Table 11: Projects funded after Round 1, Step 1 by VDOT district

District	# of Projects	DGP Available	DGP Allocated	DGP Remaining
Bristol	9	\$62,239,019	\$49,964,603	\$12,274,416
Culpeper	10	\$54,872,548	\$54,432,133	\$440,415
Fredericksburg	13	\$60,504,406	\$50,371,617	\$10,132,789
Hampton Roads	17	\$178,033,507	\$161,131,186	\$16,902,321
Lynchburg	19	\$63,096,890	\$61,457,336	\$1,639,554
Northern Virginia	17	\$183,055,970	\$180,524,715	\$2,531,255
Richmond	16	\$127,411,522	\$121,266,122	\$6,145,400
Salem	14	\$84,868,412	\$68,032,666	\$16,835,746
Staunton	13	\$68,917,727	\$63,318,226	\$5,599,501
TOTAL	128	\$883,000,000	\$810,498,604	\$72,501,396

Step 2: Fund top scoring projects using HPPP funds within each district that would have otherwise been funded with DGP funds but were not because they are only eligible for HPPP (as long as their SMART SCALE cost is less than total DGP funds available).

Table 12: Projects funded after Round 1, Step 2 by VDOT district

District	# of Projects	HPPP Available	HPPP Allocated	HPPP Remaining
Bristol	-	-	\$0	-
Culpeper	-	-	\$0	-
Fredericksburg	4	-	\$27,243,596	-
Hampton Roads	2	-	\$6,358,850	-
Lynchburg	3	-	\$7,106,097	-
Northern Virginia	-	-	\$0	-
Richmond	5	-	\$18,586,963	-
Salem	5	-	\$15,577,806	-
Staunton	4	-	\$13,319,751	-
TOTAL	23	\$833,000,000	\$88,193,063	\$744,806,937

Step 3: In any district where unallocated DGP funds are available, co-mingle remaining DGP funds with HPPP funds to fund the next highest scoring project eligible for both programs.

Table 13: Projects funded after Round 1, Step 3 by VDOT district

District	# of Projects	HPPP Available	HPPP Allocated	HPPP Remaining
Bristol	1	-	\$8,925,584	-
Culpeper	1	-	\$25,559,585	-
Fredericksburg	1	-	\$1,372,171	-
Hampton Roads	1	-	\$3,097,679	-
Lynchburg	1	-	\$15,562,611	-
Northern Virginia	1	-	\$39,798,423	-
Richmond	1	-	\$53,764,988	-
Salem	1	-	\$12,994,970	-
Staunton	1	-	\$23,535,377	-
TOTAL	9	\$833,000,000	\$184,611,389	\$560,195,548

Step 4: Fund projects with a SMART SCALE score over 1.0 based on the highest project benefit until funds are insufficient to fund the unfunded project with the highest project benefit.

Table 14: Projects funded after Round 1, Step 4 by VDOT district

District	# of Projects	HPPP Available	HPPP Allocated	HPPP Remaining
Bristol	-	-	-	-
Culpeper	-	-	-	-
Fredericksburg	1	-	\$115,500,000	-
Hampton Roads	1	-	\$144,927,753	-
Lynchburg	-	-	-	-
Northern Virginia	1	-	\$300,000,000	-
Richmond	-	-	-	-
Salem	-	-	-	-
Staunton	-	-	-	-
TOTAL	3	\$833,000,000	\$560,427,753	(\$232,205)

Table 15: SMART SCALE Round 1 totals

District	# Projects	DGP Allocated	HPPP Allocated	Total Funding
Bristol	10	\$62,239,019	\$8,925,584	\$71,164,603
Culpeper	11	\$54,872,548	\$25,559,585	\$80,432,133
Fredericksburg	19	\$60,504,406	\$144,115,767	\$204,620,173
Hampton Roads	21	\$178,033,507	\$154,384,282	\$332,417,789
Lynchburg	23	\$63,096,890	\$22,668,708	\$85,765,598
Northern Virginia	18	\$183,055,970	\$39,798,423	\$222,854,393
Richmond	22	\$127,411,522	\$72,351,951	\$199,763,473
Salem	20	\$84,868,412	\$28,572,777	\$113,441,188
Staunton	18	\$68,917,727	\$36,855,128	\$105,772,855
TOTAL	163	\$883,000,000	\$833,232,205	\$1,716,232,205

Rounds 2 and 3 implemented a three-step scoring methodology. The co-mingling of DGP and HPPP funds (Step 3 above) was removed.

4.4.2 Round 2 scoring methodology

Step 1: Fund the highest-scoring projects within each district eligible for DGP using DGP funds until the remaining money is insufficient to fund the next highest scoring project.

Table 16: Projects funded after Round 2, Step 1 by VDOT district

District	# of Projects	DGP Available	DGP Allocated	DGP Remaining
Bristol	9	\$21,210,894	\$21,210,894	\$0
Culpeper	5	\$19,910,405	\$19,461,690	\$448,715
Fredericksburg	7	\$26,409,641	\$24,335,655	\$2,073,986
Hampton Roads	22	\$86,791,093	\$80,181,698	\$6,609,395
Lynchburg	8	\$25,297,175	\$24,554,251	\$742,924
Northern Virginia	12	\$89,403,058	\$79,666,955	\$9,736,103
Richmond	19	\$56,176,746	\$61,726,746	-\$5,550,000
Salem	14	\$32,633,500	\$32,633,500	-
Staunton	14	\$24,270,367	\$24,270,367	-
TOTAL	110	\$382,102,879	\$368,041,756	\$14,061,123

Step 2: Fund top scoring projects within each district that would have otherwise been funded with available DGP funds but were not because they are only eligible for HPPP funds, using HPPP funds, as long as their SMART SCALE cost does not exceed the total amount of DGP funds available to be programmed based on their rank.

Table 17: Projects funded after Round 2, Step 2 by VDOT district

District	# of Projects	HPPP Available	HPPP Allocated	HPPP Remaining
Bristol	0	-	-	\$2,817,806
Culpeper	0	-	-	\$36,670,555
Fredericksburg	1	-	\$1,481,550	\$22,047,320
Hampton Roads	1	-	\$334,058	\$150,000,055
Lynchburg	1	-	\$1,083,903	\$11,546,256
Northern Virginia	0	-	-	\$287,625,771
Richmond	1	-	\$7,199,224	\$83,191,124
Salem	2	-	\$2,318,000	\$36,020,799
Staunton	4	-	\$7,275,298	\$9,158,955
TOTAL	10	\$658,770,674	\$19,692,033	\$639,078,641

Step 3: Fund projects with a benefit relative to SMART SCALE score greater than an established threshold based on the highest project benefit using HPP funds until funds are insufficient to fund the next unfunded project with the highest project benefit.

Table 18: Projects funded after Round 2, Step 3 by VDOT district

District	# of Projects	HPPP Available	HPPP Allocated	HPPP Remaining
Bristol	1	-	\$2,817,806	-
Culpeper	6	-	\$36,670,555	-
Fredericksburg	1	-	\$22,047,320	-
Hampton Roads	2	-	\$150,000,055	-
Lynchburg	1	-	\$11,546,256	-
Northern Virginia	9	-	\$287,625,771	-
Richmond	6	-	\$83,191,124	-
Salem	3	-	\$36,020,799	-
Staunton	2	-	\$9,158,955	-
TOTAL	31	\$658,770,674	\$639,078,641	\$0

Table 19: SMART SCALE Round 2 totals

District	# of Projects	DGP Allocated	HPPP Allocated	Total Funding
Bristol	10	\$21,210,894	\$2,817,806	\$24,028,700
Culpeper	11	\$19,461,690	\$36,670,555	\$56,132,245
Fredericksburg	9	\$24,335,655	\$23,528,870	\$47,864,525
Hampton Roads	25	\$80,181,698	\$150,334,113	\$230,515,811
Lynchburg	10	\$24,554,251	\$12,630,159	\$37,184,410
Northern Virginia	21	\$79,666,955	\$287,625,771	\$367,292,726
Richmond	26	\$61,726,746	\$90,390,348	\$152,117,094
Salem	19	\$32,633,500	\$38,338,799	\$70,972,299
Staunton	20	\$24,270,367	\$16,434,253	\$40,704,620
TOTAL	151	\$368,041,756	\$658,770,674	\$1,026,812,430

Round 3 and 4 application limits

Following Round 2 (FY 18), the SMART SCALE program established a limit to the number of applications allowed per applicant based on population thresholds.

Table 20: SMART SCALE application limits

Tier	Locality population	MPO/PDC/transit agency area population	Maximum # of applications
1	Less than 200,000	Less than 500,000	4
2	Greater than 200,000	Greater than 500,000	10

4.4.3 Round 3 scoring methodology

Step 1: Fund top scoring projects within each district eligible for DGP funds using DGP funds until remaining funds are insufficient to fund the next highest scoring project.

Table 21: Projects funded after Round 3, Step 1 by VDOT district

District	# of Projects	DGP Available	DGP Allocated	DGP Remaining
Bristol	3	\$22,133,329	\$20,061,316	\$2,072,013
Culpeper	4	\$21,690,287	\$20,809,265	\$881,022
Fredericksburg	7	\$28,881,094	\$28,178,826	\$702,268
Hampton Roads	23	\$84,691,901	\$83,643,978	\$1,047,923
Lynchburg	7	\$23,842,255	\$21,204,905	\$2,637,350
Northern Virginia	7	\$88,472,690	\$88,204,371	\$268,319
Richmond	12	\$60,605,741	\$60,407,418	\$198,323
Salem	6	\$33,503,596	\$31,376,924	\$2,126,672
Staunton	15	\$26,100,559	\$25,335,299	\$765,260
TOTAL	84	\$389,921,453	\$379,222,302	\$10,699,151

Step 2: Fund top scoring projects within each district that would have otherwise been funded with available DGP funds, but were not because they are only eligible for HPPP funds, using HPPP funds, as long as their SMART SCALE cost does not exceed the total amount of DGP funds available to be programmed based on their rank

Table 22: Projects funded after Round 3, Step 2 by VDOT district

District	# of Projects	HPPP Available	HPPP Allocated	HPPP Remaining
Bristol	0	-	-	-
Culpeper	0	-	-	-
Fredericksburg	3	-	\$11,647,639	-
Hampton Roads	2	-	\$1,455,000	-
Lynchburg	0	-	-	-
Northern Virginia	3	-	\$61,621,694	-
Richmond	2	-	\$3,669,000	-
Salem	0	-	-	-
Staunton	1	-	\$3,209,056	-
TOTAL	11	\$389,921,453	\$81,602,389	\$308,319,064

Step 3: Fund projects with a benefit relative to SMART SCALE score greater than an established threshold based on the highest project benefit using HPPP funds until funds are insufficient to fund the next unfunded project with the highest project benefit.

Table 23: Projects funded after Round 3, Step 3 by VDOT district

District	# of Projects	HPPP Allocated	HPPP Remaining
Bristol	0	-	-
Culpeper	0	-	-
Fredericksburg	0	-	-
Hampton Roads	1	\$200,000,000	-
Lynchburg	1	\$30,931,704	-
Northern Virginia	1	\$50,000,000	-
Richmond	0	-	-
Salem	0	-	-
Staunton	0	-	-
TOTAL	3	\$280,931,704	\$27,387,360

Table 24: SMART SCALE Round 3 totals

District	# of Projects	DGP Allocated	HPPP Allocated	Total Funding
Bristol	3	\$20,061,316	\$0	\$20,061,316
Culpeper	4	\$20,809,265	\$0	\$20,809,265
Fredericksburg	10	\$28,178,826	\$11,647,639	\$39,826,465
Hampton Roads	26	\$83,643,978	\$201,455,000	\$285,098,978
Lynchburg	8	\$21,204,905	\$30,931,704	\$52,136,609
Northern Virginia	11	\$88,204,371	\$111,621,694	\$199,826,065
Richmond	14	\$60,407,418	\$3,669,000	\$64,076,418
Salem	6	\$31,376,924	\$0	\$31,376,924
Staunton	16	\$25,335,299	\$3,209,056	\$28,544,355
TOTAL	98	\$379,222,302	\$362,534,093	\$741,756,395

4.4.4 Round 4 scoring methodology

Step 1: Fund top scoring projects within each district eligible for DGP funds using DGP funds until remaining funds are insufficient to fund the next highest scoring project.

Table 25: Projects funded after Round 4, Step 1 by VDOT district

District	# of Projects	DGP Available	DGP Allocated	DGP Remaining
Bristol	15	\$71,371,134	\$59,778,024	
Culpeper	12	\$112,856,880	\$108,832,672	
Fredericksburg	6	\$68,183,300	\$55,765,285	
Hampton Roads	15	\$115,601,411	\$74,968,096	
Lynchburg	8	\$111,952,581	\$102,350,118	
Northern Virginia	7	\$106,355,895	\$70,166,581	
Richmond	11	\$118,716,865	\$80,744,999	
Salem	23	\$103,311,186	\$104,432,275	
Staunton	12	\$52,991,786	\$46,529,136	
Multi	0		\$0	
TOTAL	109	\$861,341,039	703,567,186	

Step 2: Fund top scoring projects within each district that would have otherwise been funded with available DGP funds but were not because they are only eligible for HPPP funds, using

HPPP funds, as long as their SMART SCALE cost does not exceed the total amount of DGP funds available to be programmed based on rank, including other Step 2 projects ranked higher.

Table 26: Projects funded after Round 4, Step 2 by VDOT district

District	# of Projects	HPPP Available	HPPP Allocated	HPPP Remaining
Bristol	1		\$16,816,599	
Culpeper	6		\$43,758,643	
Fredericksburg	3		\$30,365,852	
Hampton Roads	2		\$1,229,498	
Lynchburg	1		\$38,659,408	
Northern Virginia	0		\$0	
Richmond	3		\$45,599,353	
Salem	6		\$38,331,470	
Staunton	8		\$27,092,335	
TOTAL	30	\$472,406,224	\$241,853,158	

Step 3: Fund remaining top scoring projects statewide eligible for HPP funds using HPP funds until remaining funds are insufficient to fund the next highest scoring project.

Table 27: Projects funded after Round 4, Step 3 by VDOT district

District	# of Projects	HPPP Allocated	HPPP Remaining
Bristol	0	\$0	
Culpeper	1	\$7,549,147	
Fredericksburg	1	\$9,762,553	
Hampton Roads	2	\$49,705,649	
Lynchburg	0	\$0	
Northern Virginia	3	\$113,921,809	
Richmond	1	\$17,168,958	
Salem	0	\$0	
Staunton	0	\$0	
Multi	1	\$50,000,000	
TOTAL	9	\$248,108,116	

Step 4: Consensus: CTB member actions

Table 28: Projects funded after Round 4, Step 4 by VDOT district

District	# of Projects	DGP Allocated
Bristol	1	\$13,616,787
Culpeper	2	\$4,071,371
Fredericksburg	2	\$17,421,385
Hampton Roads	5	\$42,488,607
Lynchburg	2	\$13,452,210
Northern Virginia	1	\$54,292,419
Richmond	4	\$43,144,414
Salem	0	\$0
Staunton	2	\$5,446,627
Multi	0	\$0
TOTAL	19	\$193,933,820

Table 29: SMART SCALE Round 4 totals

District	# of Projects	DGP funded	HPPP funded	Total funded*
Bristol	17	\$73,394,811	\$16,816,599	90,211,410
Culpeper	21	\$112,904,043	\$51,307,790	164,211,833
Fredericksburg	12	\$73,186,670	\$40,128,406	113,315,076
Hampton Roads	24	\$117,456,703	\$50,935,147	168,391,850
Lynchburg	11	\$115,802,328	\$38,659,408	154,461,736
Northern Virginia	11	\$124,459,000	\$113,921,809	238,380,809
Richmond	19	\$123,889,413	\$62,768,311	186,657,724
Salem	29	\$104,432,275	\$38,331,470	142,763,745
Staunton	22	\$51,975,763	\$27,092,335	79,068,098
Multi	1	\$0	\$50,000,000	50,000,000
TOTAL	167	\$897,501,006	\$489,961,274	1,387,462,280

*Total Funding exceeds total available due to use of unprogrammed amounts from previous rounds.

5. Comparing Round 4 performance throughout Virginia

The localities in the RVTPO service area were relatively successful in SMART SCALE Round 4. Some of the success is due to a dramatic increase in available DGP funds in the Salem District. However, the applications from this region received almost 48% of the requested funds, compared to just 19% throughout the state.

Tables 30 and 31 show the four projects not selected in this area made up over half of the requested funds. This demonstrates the advantage low-cost projects and projects with substantial leverage have in the SMART SCALE process. A deeper analysis of this can be found in Section 7 (p. 27).

Table 30: Performance of VDOT districts in Round 4 (FY 22)

District	# of projects submitted	# of projects funded	Total project costs of submitted apps	Amount funded	% funded of total request	% of total \$ allocated
RVTPO area	19	15	\$158,174,939	\$75,570,309	47.8%	5.4%
Virginia	405	167	\$7,296,384,412	\$1,387,462,277	19.0%	100%
Salem	60	29	\$628,876,611	\$142,763,745	22.7%	10.3%
Bristol	34	17	\$212,172,128	\$90,211,409	42.5%	6.5%
Culpeper	38	21	\$374,425,459	\$164,211,832	43.9%	11.8%
Fredericksburg	36	12	\$561,778,592	\$113,315,075	20.2%	8.2%
Hampton Roads	53	24	\$1,221,258,893	\$168,391,850	13.8%	12.1%
Lynchburg	30	11	\$488,510,686	\$154,461,736	31.6%	11.1%
Northern Virginia	31	11	\$2,621,283,673	\$238,380,808	9.1%	17.2%
Richmond	78	19	\$956,451,633	\$186,657,723	19.5%	13.5%
Staunton	45	22	\$231,626,737	\$79,068,098	34.1%	5.7%
Multi	1	1	\$50,000,000	\$50,000,000	100.0%	3.6%

Table 31: Performance of RVTPO localities in SMART SCALE Round 4 (FY 22) *

Organization	# of projects submitted	Funding requested	# of projects funded	Total funding allocated	% of request fulfilled
Botetourt County	2	\$19,035,828	1	\$7,623,347	40.0%
Roanoke County	4	\$43,294,893	3	\$24,042,769	55.5%
Roanoke City	4	\$15,724,159	4	\$15,724,159	100.0%
Salem City	4	\$11,689,276	4	\$11,689,276	100.0%
Vinton Town	1	\$7,399,781	1	\$7,399,781	100.0%
Valley Metro	0	\$0	0	\$0	---
RVARC [†]	1	\$28,225,261	0	\$0	0.0%
RVTPO	3	\$32,805,740	2	\$9,090,976	27.7%
TOTAL	19	\$158,174,939	15	\$75,570,309	47.7%

*Bedford County and Montgomery County applied for SMART SCALE funding in this round. While the RVTPO serves portions of these jurisdictions, these projects were outside the RVTPO service area and are not included in this table.

[†] The RVARC submitted two applications. One was a project outside of the RVTPO service area and is not included in this table.

6. Historical performance throughout Virginia Rounds 1-4

This section compares the performance of VDOT districts and the RVTPO service area in each round.

6.1 SMART SCALE funding by VDOT district in Rounds 1 - 4

Tables 32 through 35 compare the RVTPO service area and VDOT's Salem District to the entire state and the other VDOT districts. In Rounds 1 and 2, the RVTPO area had a higher percentage of projects funded than the Salem District and the state percentage. In Round 3, the RVTPO area received fewer funding allocations, following a statewide trend. The overall number of projects funded and the funding allocated to approved projects decreased from Round 1 to Round 2 and again from Round 2 to Round 3, while the number of applications submitted grew each round.

Table 32: Performance of VDOT districts in Round 1 (FY 17)

District	# of projects submitted	# of projects funded	Total project costs of submitted apps	Total SS request of submitted apps	Total amount funded (GDP & HPPP)	% funded of total request	% of total \$ allocated
RVTPO area	18	11	\$438,234,629	\$376,124,107	\$62,020,076	16.50%	4.40%
Virginia	287	163	\$13,395,937,469	\$7,385,409,505	\$1,416,232,205	19.20%	100%
Salem	37	20	\$803,645,735	\$709,225,480	\$113,441,188	16.00%	8.00%
Bristol	22	10	\$225,104,726	\$214,816,429	\$71,164,603	33.10%	5.00%
Culpeper	17	11	\$362,067,769	\$353,476,755	\$80,432,133	22.80%	5.70%
Fredericksburg	22	19	\$464,402,996	\$371,789,273	\$204,620,173	55.00%	14.40%
Hampton Roads	40	21	\$6,363,475,994	\$2,006,965,689	\$332,417,789	16.60%	23.50%
Lynchburg	36	23	\$216,776,915	\$188,331,256	\$85,765,598	45.50%	6.10%
NOVA	45	19	\$3,823,893,094	\$2,527,650,042	\$222,854,393	8.80%	15.70%
Richmond	39	22	\$691,066,951	\$605,706,175	\$199,763,473	33.00%	14.10%
Staunton	29	18	\$445,503,289	\$407,448,406	\$105,772,855	26.00%	7.50%

Table 33: Performance of VDOT districts in Round 2 (FY 18)

District	# of projects submitted	# of projects funded	Total project costs of submitted apps	Total SS request of submitted apps	Total amount funded	% funded of total request	% of total \$ allocated
RVTPO area	23	10	\$258,791,516	\$216,745,989	\$49,200,906	22.70%	4.80%
Virginia	404	151	\$10,886,155,180	\$8,566,240,501	\$1,026,812,430	12.00%	100%
Salem	50	19	767,718,858	\$714,423,044	\$70,972,299	9.90%	6.90%
Bristol	42	10	\$1,035,720,460	\$1,030,904,768	\$24,028,700	2.30%	2.30%
Culpeper	35	11	\$344,541,026	\$318,707,245	\$56,132,245	17.60%	5.50%
Fredericksburg	25	9	\$472,873,320	\$424,895,227	\$47,864,525	11.30%	4.70%
Hampton Roads	52	25	\$2,470,096,467	\$1,542,645,106	\$230,515,811	14.90%	22.40%
Lynchburg	28	10	\$240,270,795	\$217,999,726	\$37,184,410	17.10%	3.60%
NOVA	58	21	\$3,666,653,210	\$2,612,407,487	\$367,292,726	14.10%	35.80%
Richmond	72	26	\$1,279,344,535	\$1,141,901,542	\$152,117,094	13.30%	14.80%
Staunton	42	20	\$608,954,509	\$562,376,356	\$40,704,620	7.20%	4.00%

Table 34: Performance of VDOT districts in Round 3 (FY 20)

District	# of projects submitted	# of projects funded	Total project costs of submitted apps	Total SS request of submitted apps	Total amount funded	% funded of total request	% of total \$ allocated
RVTPO area	17	4	\$239,977,487	\$203,133,111	\$25,486,924	12.50%	3.00%
Virginia	433	141	\$12,266,781,503	\$7,355,892,214	\$859,437,159	11.70%	100%
Salem	45	10	\$587,083,487	\$548,939,659	\$51,000,057	9.30%	5.90%
Bristol	44	10	\$800,485,490	\$787,928,936	\$34,979,057	4.40%	4.10%
Culpeper	42	6	\$767,229,699	\$715,427,347	\$31,582,299	4.40%	3.70%
Fredericksburg	32	18	\$423,041,000	\$397,476,026	\$53,525,348	13.50%	6.20%
Hampton Roads	54	34	\$4,357,360,964	\$821,030,650	\$312,011,511	38.00%	36.30%
Lynchburg	28	8	\$264,065,588	\$239,704,066	\$35,260,316	14.70%	4.10%
NOVA	39	14	\$3,128,642,761	\$2,046,026,993	\$205,164,371	10.00%	23.90%
Richmond	79	20	\$1,378,041,623	\$1,313,895,674	\$92,219,080	7.00%	10.70%
Staunton	70	21	\$560,830,891	\$485,462,863	\$43,695,120	9.00%	5.10%

More projects were approved in Round 4 than any of the previous rounds, and the funding allocated to those projects increased over \$500 million from Round 3. For the first time, SMART SCALE awarded a multi-district organization, the CTB, \$50,000,000 for the intercity rail service expansion along the US-29 and I-81 corridors.

Table 35: Performance of VDOT districts in Round 4 (FY 22)

District	# of projects submitted	# of projects funded	Total project costs of submitted apps	Total SS request of submitted apps	Total amount funded (DGP & HPPP)	% funded of total request	% of total \$ allocated
RVTPO area	19	15	\$178,063,216	\$158,174,939	\$75,570,309	47.8%	5.4%
Virginia	397	167	\$7,545,143,214	\$6,252,316,460	\$1,387,462,277	22.2%	100%
Salem	59	29	\$534,064,918	\$514,176,641	\$142,763,745	27.8%	10.3%
Bristol	34	17	\$223,408,513	\$216,802,367	\$90,211,409	41.6%	6.5%
Culpeper	36	21	\$371,409,864	\$342,979,831	\$164,211,832	47.9%	11.8%
Fredericksburg	35	12	\$535,297,998	\$399,446,243	\$113,315,075	28.4%	8.2%
Hampton Roads	53	24	\$830,464,586	\$762,388,168	\$168,391,850	22.1%	12.1%
Lynchburg	29	11	\$487,987,790	\$448,904,030	\$154,461,736	34.4%	11.1%
NOVA	30	11	\$3,207,995,749	\$2,189,370,922	\$238,380,808	10.9%	17.2%
Richmond	75	19	\$1,117,694,555	\$1,086,491,139	\$186,657,723	17.2%	13.5%
Staunton	45	22	\$236,819,242	\$235,150,974	\$79,068,098	33.6%	5.7%
Multi	1	1	\$253,700,000	\$50,000,000	\$50,000,000	100%	3.6%

6.2 SMART SCALE funding by organization in the RVTPO service area in Rounds 1 - 4

Through the first four rounds of SMART SCALE, the RVTPO service area has done well. As shown below in Table 36, localities and agencies in this region have requested almost \$1 billion in SMART SCALE funding for a variety of projects aimed to improve mobility, accessibility, and quality of life in the counties, cities, and towns that make up the urbanized area of the Roanoke Valley. Through four rounds, between fiscal years 2017 and 2022, SMART SCALE has awarded these projects \$188,235,445.

Table 36: RVTPO service area cumulative SMART SCALE performance (Rounds 1-4)*

Organization	Number of projects submitted	Total funding requested	Number of projects funded	Total allocated funding
Botetourt County [†]	7	\$74,591,447	2	\$11,874,347
Roanoke County	17	\$114,934,171	11	\$29,815,423
Roanoke City	17	\$283,869,807	8	\$37,091,355
Salem City	10	\$37,603,099	8	\$21,727,320
Vinton Town	3	\$17,041,609	1	\$7,399,781
Valley Metro	5	\$6,150,371	4	\$4,272,811
RVARC [†]	1	\$28,225,261	0	\$0
RVTPO	17	\$403,478,140	6	\$76,054,408
TOTAL	77	\$965,893,905	40	\$188,235,445

*Bedford County and Montgomery County applied for SMART SCALE funding. While the RVTPO serves portions of these jurisdictions, these projects were outside the RVTPO service area and are not included in this table.

[†] Botetourt County and the RVARC have applied for more projects outside of the RVTPO service area. Those projects are not included in this table.

The following tables (37-40) show the funding requested and received in this region in each round of the SMART SCALE program.

Table 37: Performance of RVTPO localities in SMART SCALE Round 1 (FY 17)*

Organization	# of projects submitted	Funding requested	# of projects funded	Total funding allocated	% of requested \$ fulfilled
Botetourt County	1	\$35,151,285	0	\$0	0.0%
Roanoke County	4	\$21,026,380	3	\$8,079,834	38.4%
Roanoke City	5	\$160,265,213	2	\$14,996,245	9.4%
Salem City	2	\$3,797,865	2	\$3,797,865	100.0%
Vinton Town	0	\$0	0	\$0	---
Valley Metro	1	\$350,811	1	\$350,811	100.0%
RVTPO	5	\$155,532,553	3	\$34,795,321	22.4%
TOTAL	18	\$376,124,107	11	\$62,020,076	16.5%

*Bedford County, Montgomery County, and the RVARC applied for SMART SCALE funding in this round. While the RVTPO serves portions of these jurisdictions, these projects were outside the RVTPO service area and are not included in this table.

Table 38: Performance of RVTPO localities in SMART SCALE Round 2 (FY 18)*

Organization	# of projects submitted	Funding requested	# of projects funded	Total funding allocated	% of request fulfilled
Botetourt County [†]	1	\$7,731,930	0	\$0	0.0%
Roanoke County	5	\$20,903,013	3	\$3,318,369	15.9%
Roanoke City	4	\$76,029,858	1	\$3,552,247	4.7%
Salem City	3	\$17,749,958	2	\$6,240,179	35.2%
Vinton Town	1	\$2,796,828	0	\$0	0.0%
Valley Metro	4	\$5,027,555	3	\$3,922,000	78.0%
RVTPO	5	\$86,506,847	1	\$32,168,111	37.2%
TOTAL	23	\$216,745,989	10	\$49,200,906	22.7%

**Bedford County, Montgomery County, and the RVARC applied for SMART SCALE funding in this round. While the RVTPO serves portions of these jurisdictions, these projects were outside the RVTPO service area and are not included in this table.*

[†] Botetourt County submitted three applications. Two were projects outside of the RVTPO service area and are not included in this table.

Table 39: Performance of RVTPO localities in SMART SCALE Round 3 (FY 20) *

Organization	# of projects submitted	Funding requested	# of projects funded	Total funding allocated	% of request fulfilled
Botetourt County [†]	3	\$12,672,404	1	\$4,251,000	33.4%
Roanoke County	4	\$30,976,220	2	\$18,417,220	59.5%
Roanoke City	4	\$19,640,487	1	\$2,818,704	14.4%
Salem City	1	\$4,366,000	0	\$0	0.0%
Vinton Town	1	\$6,845,000	0	\$0	0.0%
Valley Metro	0	\$0	0	\$0	---
RVTPO	4	\$128,633,000	0	\$0	0.0%
TOTAL	17	\$203,133,111	4	\$25,486,924	12.5%

**Bedford County, Montgomery County, and the RVARC applied for SMART SCALE funding in this round. While the RVTPO serves portions of these jurisdictions, these projects were outside the RVTPO service area and are not included in this table.*

[†] Botetourt County submitted four applications. One was a project outside of the RVTPO service area and is not included in this table.

Table 40: Performance of RVTPO localities in SMART SCALE Round 4 (FY 22) *

Organization	# of projects submitted	Funding requested	# of projects funded	Total funding allocated	% of request fulfilled
Botetourt County	2	\$19,035,828	1	\$7,623,347	40.0%
Roanoke County	4	\$43,294,893	3	\$24,042,769	55.5%
Roanoke City	4	\$15,724,159	4	\$15,724,159	100.0%
Salem City	4	\$11,689,276	4	\$11,689,276	100.0%
Vinton Town	1	\$7,399,781	1	\$7,399,781	100.0%
Valley Metro	0	\$0	0	\$0	---
RVARC [†]	1	\$28,225,261	0	\$0	0.0%
RVTPO	3	\$32,805,740	2	\$9,090,976	27.7%
TOTAL	19	\$158,174,939	15	\$75,570,309	47.7%

*Bedford County and Montgomery County applied for SMART SCALE funding in this round. While the RVTPO serves portions of these jurisdictions, these projects were outside the RVTPO service area and are not included in this table.

[†] The RVARC submitted two applications. One was a project outside of the RVTPO service area and is not included in this table.

A brief, possible explanation for this success is that the SMART SCALE program funded a record number of projects overall in Round 4 (with an accompanying 63% increase in funding allocated). Many smaller projects were submitted in Round 4. Between Rounds 3 and 4, the average request in the RVTPO service area dropped by \$3.6 million, and the average approved allocation dropped by \$1.3 million. These potential reasons are discussed in deeper detail in the following sections.

7. Application and results of leverage funds

The SMART SCALE formula, which divides the project benefit score by the amount of funding requested (in units of \$10 million), rewards projects with low costs and projects with ample leverage funds. There is a more pronounced correlation between low project cost and SMART SCALE approval than the percentage of leverage funds an applicant brings to the project. However, high-cost projects are more likely to receive SMART SCALE funding when applications include more leverage funds (therefore, requesting less from SMART SCALE).

As a small sample, in Round 4, the top 20 ranked projects in the state averaged a total project cost of around \$5 million. Only four of the top 20 had a total cost over \$6 million. Of those four, the average SMART SCALE request was just 63% of the total cost. One project ranked in the top 10 had a total cost \$24 million but requested only \$5.7 million. Leverage funds covered about 76% of the project's total.

While changes to unsuccessful projects could result in a higher project benefit score, the most effective means of improving an application's chances of funding is to lower the requested amount by adjusting projects to decrease the total cost or increasing the leverage brought to the project.

Table 41 shows the unsuccessful Round 4 projects in the RVTPO service area and the hypothetical leverage that would have increased the SMART SCALE score enough to be funded. The Orange Avenue Improvements project proves that a higher project benefit score doesn't necessarily translate to success in the SMART SCALE formula. This project had the highest benefit score in the RVTPO service area and the second-highest score in the Salem District. However, it is also the second-most-expensive project in the RVTPO service area. Submitted without leverage funds, the project's SMART SCALE score dropped to the 23rd project in the Salem District.

The Orange Avenue Improvements also competed for statewide HPPP funds. The project had a benefit score higher than 23 HPPP projects that were funded. The average SMART SCALE funding request of those 23 projects was \$5 million. The \$24 million request of the Orange Avenue Improvements negatively impacted its final ranking. Only seven HPPP applications requesting more than \$20 million were funded (omitting the CTB-sponsored intercity rail expansion). Those projects had a project benefit score 17.8 points higher on average. In its most highly scored categories – land use efficiency and increase in land use efficiency– the Orange Avenue Improvements project ranked third of six projects (one omitted due its location in a district without land use requirements). However, land use is only 10% of the weighting in the RVTPO area. The next highest scored category, access to multimodal choices, was ranked fifth of seven projects. In most categories, the project scored well under the average of the seven funded projects. The Orange Avenue Improvements, a project aimed to decrease congestion, scored 22.39 points below other funded HPPP projects requesting more than \$20 million in both scored congestion categories.²

Of the 23 funded projects with a lower project benefit score, only five put up any leverage funds with their applications. However, the lower average request, led to higher overall SMART SCALE scores. RVTPO projects like the Orange Avenue Improvements, that competed solely for HPPP funding, needed to find a way to boost the project benefit score substantially or prepare to decrease the SMART SCALE request, via leverage funds, to compete or consider having the City of Roanoke resubmit to qualify for DGP funds. The Orange Avenue Improvements project scored well enough to have been funded via DGP had it been submitted by an applicant eligible for DGP but would have resulted in other lower scoring projects to not be funded in the Salem District.

HPPP applications generally require more leverage funds. That can be seen by the two projects in Table 41 that were eligible for DGP and HPPP funding: the Route 220 Superstreet Improvement and the Route 460 & Alt. Route 460 Intersection Improvements projects. Table 41 shows the leverage required to secure DGP funds, which was lower than if competing for HPPP funds.

While the two DGP-eligible projects scored around five points in reduction of fatal and injury crashes (well above the average of 1.43), it wasn't enough to pull up the low scores in all other

² This applies to the I-581 at Exit 2 Interchange Improvements as well. This project requested \$28.2 million but received low scores in every category.

categories. Without project adjustments to increase the score or to lower the request, these projects would have to add substantial leverage to compete in Round 4.

It's important to note that the hypothetical situation of Tables 41 through 44 demonstrate the additional leverage needed for each project in a vacuum. The increase in leverage shown in this table is the lowest increase to be approved for funding in Round 4 if all other projects remained as they were. If all four projects in Table 41 added the leverage funds shown, they would compete with each other and the needed leverage funds for all four to be approved would also increase. Also, future SMART SCALE rounds, with new competitors, will be judged relative those competitors' scores and funding requests.

If Round 4 DGP funding levels had not increased substantially, these four DGP applications would have needed even more leverage to be competitive (Table 42). Both would have needed around 87% of the project cost to be covered by leverage and requested the remaining 13% from SMART SCALE. While HPPP funds increased between Rounds 3 and 4, it was not a dramatic increase like DPG funds. Therefore, the HPPP projects in the RVTPO service area would have needed the same funding to have been competitive.

Table 41: SMART SCALE Round 4 hypothetical leverage calculations for unsuccessful projects

Applicant	Project	Benefit score	Total project cost (\$)	SMART SCALE request (\$)	Provided leverage (\$)	SS score	Hypothetical				
							Maximum request (\$)	Minimum leverage needed (\$)	Min. leverage - provided (\$)	New SS score	Funding program
RVTPO	Orange Ave Improvements	9.48	23,714,763	23,714,763	0	4.00	18,846,919	4,867,844	4,867,844	5.03	HPPP
Roanoke County	Rt 460 / Alt Rt 220 Intersection Improvements	2.67	21,796,984	19,252,124	2,544,860	1.39	8,207,808	13,589,176	11,044,316	3.25	DGP
RVARC	I-581 Exit 2 Interchange Improvements	3.69	28,225,261	28,225,261	0	1.31	7,935,484	20,289,777	20,289,777	4.65	HPPP
Botetourt County	Rt 220 Superstreet Improvements	1.16	14,412,482	11,412,482	3,000,000	1.01	4,249,085	10,163,397	7,163,397	2.73	DGP

Table 42: SMART SCALE Round 4 hypothetical leverage calculations for unsuccessful projects with Round 3 funding

Applicant	Project	Benefit score	Total project cost (\$)	SMART SCALE request (\$)	Provided leverage (\$)	SS score	Hypothetical				
							Maximum request (\$)	Minimum leverage needed (\$)	Min. leverage - provided (\$)	New SS score	Funding program
RVTPO	Orange Ave Improvements	9.48	23,714,763	23,714,763	0	4.00	18,846,919	4,867,844	4,867,844	5.03	HPPP
Roanoke County	Rt 460 / Alt Rt 220 Intersection Improvements	2.67	21,796,984	19,252,124	2,544,860	1.39	2,949,299	18,847,685	16,302,825	9.05	DGP
RVARC	I-581 Exit 2 Interchange Improvements	3.69	28,225,261	28,225,261	0	1.31	7,935,484	20,289,777	20,289,777	4.65	HPPP
Botetourt County	Rt 220 Superstreet Improvements	1.16	14,412,482	11,412,482	3,000,000	1.01	1,831,531	12,580,951	9,580,951	6.33	DGP

In Round 4, eight projects in the RVTPO service area used Surface Transportation Block Grants (STBG) as leverage to receive SMART SCALE awards. As Table 43 shows, all eight would have been approved in Round 4 without the additional leverage.

At first, this finding seems at odds with the outcomes above, that leverage is the most important factor in determining SMART SCALE success. It's important to keep in mind that leverage strategies for Round 4 were decided under the assumption of levels of funding would be similar to Round 3. With Round 3 levels of funding, all six DGP projects that provided STBG leverage would have needed some amount leverage for approval. Therefore, adding leverage to these applications was not a poor decision. In fact, two of the projects (highlighted in Table 44) would have been rejected in Round 4 had the DGP funding not almost tripled. As such, these are the two projects that would have needed even more leverage to compete if funding remained at Round 3 levels.

Once again, Table 44 demonstrates leverage funding necessary for individual projects if all else remained the same. For example, Roanoke County's Route 419 Streetscape Improvements Phase 2 would not have been selected at Round 3 levels without increased leverage. However, had that application been submitted with the increased leverage and been selected, it would have moved Roanoke County's Valleypointe Parkway Realignment out of the list of approved projects, which would in turn require more leverage funds to be competitive. A scenario in which all six DGP projects were selected simultaneously would require higher leverage amounts than demonstrated in Table 44.

In Table 43, all projects would have been approved without the leverage funds that were applied. One concern is that, without the leverage funds, these projects would have used up the available DGP allocation quicker and fewer projects in the Salem District would have been funded. While that is true, those projects would have been outside of the RVTPO service area (Pulaski and Patrick Counties).

It is also important to note that applications in each round of SMART SCALE compete with new applications and those applications' leverage strategies. Therefore, Tables 41 through 44 don't guarantee that the leverage shown here will still result in successful SMART SCALE funding in future rounds. These hypothetical scenarios only serve to inform strategies for Round 5.

Table 43: SMART SCALE Round 4 hypothetical leverage calculations for successful projects

Applicant	Project	Benefit Score	Total project cost	SS funding request	STBG request	Leverage amount	SS score	Hypothetical				
								Maximum SS request	Minimum required leverage	Min. leverage minus provided	New SS score	Funding Program
RVTPO	Route 460 Intersections (Carson Rd. to Huntridge Rd.)	2.6	\$2,766,831	\$2,339,028	\$427,803 leverage	\$427,803	11.12	\$2,766,831	\$0	(\$427,803)	9.4	HPPP
RVTPO	Route 460 at W. Ruritan Rd Improvements	3.77	\$7,537,497	\$6,751,948	\$785,549 leverage	\$785,549	5.59	\$7,537,497	\$0	(\$785,549)	5.00	HPPP
Roanoke County	Route 419 Streetscape Improvements, Phase 2	7.65	\$18,469,482	\$14,122,332	\$1,505,438 leverage	\$4,347,150	5.42	\$18,469,482	\$0	(\$4,347,150)	4.09	DGP
Roanoke County	Valleypointe Parkway Realignment	6.64	\$9,837,072	\$7,337,072	\$5,352,108 fully fund	\$2,500,000	9.05	\$9,837,072	\$0	(\$2,500,000)	6.75	DGP
Roanoke County	Starkey Rd / Buck Mtn Rd Intersection Improvements	2.56	\$5,841,480	\$2,582,365	\$2,098,115 to supplement \$1.2 M revenue sharing, together fully funding project	\$3,258,115	9.91	\$5,841,480	\$0	(\$3,258,115)	4.38	DGP
Roanoke City	Route 460 Improvements near Blue Hills Drive	4.57	\$5,580,213	\$4,903,493	\$676,720 leverage	\$676,720	9.32	\$5,580,213	\$0	(\$676,720)	8.19	DGP
Roanoke City	Route 460 Improvements at King Street	3.56	\$5,005,724	\$4,455,444	\$550,280 leverage	\$550,280	7.99	\$5,005,724	\$0	(\$550,280)	7.11	DGP
Roanoke City	Valley View / Aviation Pedestrian Improvements	5.86	\$7,178,491	\$5,928,491	\$2,513,437 to fully fund	\$1,250,000	9.88	\$7,178,491	\$0	(\$1,250,000)	8.16	DGP
Total		--	\$62,216,790	\$48,420,173		\$13,795,617	--	\$62,216,790	\$0	(\$13,795,452)	--	--

As noted previously, given the large increase in available DGP funding in Round 4, all of the projects in Table 43 would have been funded without matching leverage funding. Projects that would be impacted negatively by this scenario are outside of the RVTPO service area.

Table 44: Round 4 approved projects hypothetical leverage calculations with Round 3 funding

Applicant	Project	Benefit Score	Total project cost	SS funding request	Original STBG request	Leverage amount	SS Score	Hypothetical				
								Maximum SS request	Minimum required leverage	Min. leverage minus provided	New SS score	Funding Program
RVTPPO	Route 460 Intersections (Carson Rd. to Huntridge Rd.)	2.6	\$2,766,831	\$2,339,028	\$427,803 leverage	\$427,803	11.12	\$2,766,831	\$0	(\$427,803)	9.40	HPPP
RVTPPO	Route 460 at W. Ruritan Rd Improvements	3.77	\$7,537,497	\$6,751,948	\$785,549 leverage	\$785,549	5.59	\$7,537,497	\$0	(\$785,549)	5.00	HPPP
Roanoke County	Route 419 Streetscape Improvements, Phase 2	7.65	\$18,469,482	\$14,122,332	\$1,505,438 leverage	\$4,347,150	5.42	\$10,479,452	\$7,990,030	\$3,642,880	7.30	HPPP
Roanoke County	Valleypointe Parkway Realignment	6.64	\$9,837,072	\$7,337,072	\$5,352,108 to fully fund	\$2,500,000	9.05	\$8,300,000	\$1,537,072	(\$962,928)	7.99	DGP
Roanoke County	Starkey Rd / Buck Mtn Rd Intersection Improvements	2.56	\$5,841,480	\$2,582,365	\$2,098,115 to supplement \$1.2 M revenue sharing, together fully funding project	\$3,258,115	9.91	\$2,825,608	\$3,015,872	(\$242,243)	9.06	DGP
Roanoke City	Route 460 Improvements near Blue Hills Drive	4.57	\$5,580,213	\$4,903,493	\$676,720 leverage	\$676,720	9.32	\$5,044,150	\$536,063	(\$140,657)	9.06	DGP
Roanoke City	Route 460 Improvements at King Street	3.56	\$5,005,724	\$4,455,444	\$550,280 leverage	\$550,280	7.99	\$4,876,712	\$129,012	(\$421,268)	7.30	HPPP
Roanoke City	Valley View / Aviation Pedestrian Improvements	5.86	\$7,178,491	\$5,928,491	\$2,513,437 to fully fund	\$1,250,000	9.88	\$6,467,992	\$710,499	(\$539,501)	9.06	DGP
Total		--	\$62,216,790	\$48,420,173		\$13,795,617	--	\$35,010,819	\$16,901,643	\$3,106,026	--	--

In Table 44, the Route 419 Streetscape Improvements, Phase 2, would not have been successful at Round 3 funding levels without more leverage than was provided. The Route 460 Improvements at King Street project would have been funded with less leverage, but under HPPP rather than DGP. The remaining four DGP projects would have been funded with less leverage; however, unlike in Table 43, some leverage would have been needed. The HPPP-only projects were unaffected as the statewide HPPP funding levels did not change as dramatically between Rounds 3 and 4.

8. Patterns in SMART SCALE success in the RVTPO service area

After four rounds of SMART SCALE, patterns have emerged that suggest a trends in approval and rejection of projects applications.

8.1 Rounds 1 – 3

Success in Rounds 1 through 3 of the SMART SCALE program have been attributed to timely elements of projects. Examples include:

- Previously performed VDOT studies on I-81 suggesting specific improvements (Exit 141-143 NB and SB auxiliary lane projects);
- Identification of crucial Corridor of Statewide Significance, Regional Network, Urban Development Areas, and Safety needs which were captured in VTrans 2040 (all funded projects);
- Previously committed Six-Year Improvement Program, STBG, or Transportation Alternatives funds used as leverage on lower cost projects (U.S. 220 / International Parkway Intersection Improvements, Williamson Road Sidewalk Improvements);
- Significant points gained in more than one SMART SCALE factor, leading to a competitive benefit score (many of the funded projects); and
- Relatively inexpensive locality projects seeking DGP funding (Lila Drive / Route 115 Intersection Safety Improvements, Route 311 / 419 Intersection Safety & Congestion Improvements).

Post-funding analysis reveals trends when funds have been denied, such as:

- Low benefit in proportion to the project's size and scope;
- Low scores in the Accessibility and Economic Development factors which each had the highest factor weighting of 20% each in those rounds;
- No previously committed or leveraged funding to projects which had scores nearing the cutoff line for funding; and
- No significant change in scope to several projects reapplying for SMART SCALE whose score was very low when first applied.

8.2 Round 4

In Round 4, there are general patterns that appeared to determine an application's success in SMART SCALE. It's important to keep in mind that projects are also ranked relative to the projects scored in an individual round. Therefore, a project could score the same in consecutive rounds with different results.

8.2.1 Reasons for approval in Round 4:

- The average request for approved projects in the RVTPO service area was \$5 million while unsuccessful projects requested an average of \$20 million. A smaller request gave lower-scoring projects a boost.
- Considering the average weighted scoring, approved projects within the RVTPO service area only outscored unsuccessful projects in economic development (20% of weighted scoring in the Salem District) and land use (10% of weighted scoring). While small

samples sizes can skew assessment, historically, projects scoring highly in economic development are successful.

- Specifically, approved applications scored much higher in “project support for economic development.” This category is 60% of the economic development weighting. This rewards projects with detailed site plans that support non-residential (or mixed-use) development / redevelopment, measured by square footage.
- While land use is only 10% of the weighted score in the Salem District, approved projects had noticeably higher scores for “increase in transportation efficient land use.” This category evaluates the change in population and employment located in areas with high non-work accessibility between now and 2030, and it is 50% of the land use weighting. This rewards projects with higher number of non-work destinations within walking distance in an area with increasing population and employment density.

8.2.2 Reasons for rejection in Round 4:

- The biggest factor is the amount of SMART SCALE funding requested in an application. Generally, projects requesting more SMART SCALE money score lower. The formula (p. 13) favors low-cost projects or projects with more leveraged funds.
 - In the Salem District, only three of the 20 projects with the highest total cost were chosen for funding.
 - Only two of the 20 projects with the highest SMART SCALE requests were chosen for funding.
 - In the state, the top two most expensive approved HPPP projects requested just 20% and 28% of the full project cost.
 - Overall, seven HPPP projects requesting more than \$28 million were approved. The average benefit score of those projects was 34.49. Two projects in the RVTPO service area requested more than \$20 million, but the project benefits score was much lower. Neither was approved and neither had leverage.
 - Orange Avenue Improvements – requested \$23,714,763 (benefit score: 9.48)
 - I-581 at Exit 2 Interchange Improvements – request \$28,225,261 (benefit score: 3.69)
- Many projects don’t score highly in the targeted factors based on the metrics SMART SCALE measures.
 - For example, the I-581 Exit 2 Interchange Improvements projects scored poorly in congestion management and safety (including scoring 0 points in reduction of crash rate and crash frequency).
 - Generally, projects focused on congestion mitigation don’t score highly in this region.

9. Strategy considerations for SMART SCALE Round 5

In order to improve a project's SMART SCALE score and rank higher among competitors, applicants have two choices: increase the benefit score or decrease the SMART SCALE funding request. As shown in Table 45 (p. 38), the SMART SCALE score improves exponentially as the requested amount decreases. This is more evident as requests move under about \$7 million. Higher-cost projects score higher boosting the benefit score than by adding a few million dollars in leverage, however; increasing the benefit score enough can be difficult and, perhaps, not possible given a project's purpose and scope.

Reducing the project's SMART SCALE request can be done in two ways: lower the total cost of the project and/or add leverage funding. Once again, lowering the total cost of the project isn't easy and may have negative impacts. While scaling back the scope of a project to reduce its overall cost, some valuable aspects of a project may be eliminated and could negatively impact the benefit score.

The results Round 4 reveal the need to consider strategies that take advantage of the DGP's availability of funds relative to the number of applicants pursuing that funding. The competition is lower and lower SMART SCALE scores can be successful (as seen in Table 41 on p. 30). Assuming Round 4 levels of funding (that is DGP around \$100 million for the Salem district and \$490 million for HPPP) and mix of projects, there two strategies to consider.

Strategy 1: Localities apply for small DGP projects without (or with less) leverage while projects eligible only under HPPP receive substantial leverage.

When considering the project benefit score, DGP projects in the RVTPO service area were competitive. The average project benefit score for all DGP eligible projects in the Salem District was 1.91. In the RVTPO area, the average was 3.88. The lowest-scoring project in the RVTPO area scored 0.28 but was awarded DGP funds due to the request of less than \$500,000, which boosted it to the 13th-ranked DGP project in the district. This shows that Round 4 projects were more likely to be approved in the DGP program, even with less leverage. This strategy frees up limited leverage funds in the region to be available for larger HPPP applications.

Only four projects statewide eligible for both DGP and HPPP were funded through HPPP. All four had a total project cost ranging from \$29 to \$51 million. Three of the four applied no leverage. The Route 1 Widening in the Town of Dumfries was \$181,269,734 and requested \$50,000,000. The average project benefit score of these four projects was 30.13, but because of the high requests, the average SMART SCALE score was 7.50. This shows that a lower scoring project could compete with the right amount of leverage.

Strategy 2: Localities apply for larger projects, with leverage as needed, under DGP as there were more funds relative to number of applications. Smaller projects are applied for under HPPP where the competition is higher.

This strategy allows lower-scoring HPPP projects to compete statewide because of the lower request. In Round 4, 35 projects that were only eligible for HPPP were awarded SMART

SCALE funds. The median total project cost was \$6.4 million. This was echoed in the RVTPO service area. There were five projects eligible only for HPPP funds. Of those, three were successful. The average SMART SCALE request of those three projects was \$5 million. The average of the two unsuccessful projects was \$26 million.

One of those unsuccessful HPPP projects was the Orange Avenue Improvements project. As seen in Table 41 (p. 30), this project would have been funded with \$4.8 million of leverage. Had the Orange Avenue Improvements be submitted as a DGP-eligible project, it would have been funded without the addition of leverage. However, it would have meant that five projects in the Salem district would not have been funded, including the Botetourt County US460/Laymantown Road Intersection Improvement.

Refining the leverage strategy is the best method for improving the chances of SMART SCALE success, though consideration of the best applicant is also important. The many variables that go into a project's success, including an applicant's desire to get the best return on its leverage investment, make this task challenging. Because the competition for funds changes with each round, the likelihood of finding the exact amount of needed leverage to secure SMART SCALE funding is improbable. A project that needs leverage funds to secure a SMART SCALE award will always spend more than necessary. Because the mix of projects, the available SMART SCALE funding, and the amount of (if any) leverage funds needed are uncertain from one round to the next, applicants will need to make assumptions and consider the risk of using leverage for any project submission.

Table 45: Benefit score vs SMART SCALE request (dollars in millions)

	\$28	\$27	\$26	\$25	\$24	\$23	\$22	\$21	\$20	\$19	\$18	\$17	\$16	\$15	\$14	\$13	\$12	\$11	\$10	\$9	\$8	\$7	\$6	\$5	\$4	\$3	\$2	\$1
1.0	0.36	0.37	0.38	0.40	0.42	0.43	0.45	0.48	0.50	0.53	0.56	0.59	0.63	0.67	0.71	0.77	0.83	0.91	1.00	1.11	1.25	1.43	1.67	2.00	2.50	3.33	5.00	10.00
1.5	0.54	0.56	0.58	0.60	0.63	0.65	0.68	0.71	0.75	0.79	0.83	0.88	0.94	1.00	1.07	1.15	1.25	1.36	1.50	1.67	1.88	2.14	2.50	3.00	3.75	5.00	7.50	15.00
2.0	0.71	0.74	0.77	0.80	0.83	0.87	0.91	0.95	1.00	1.05	1.11	1.18	1.25	1.33	1.43	1.54	1.67	1.82	2.00	2.22	2.50	2.86	3.33	4.00	5.00	6.67	10.00	20.00
2.5	0.89	0.93	0.96	1.00	1.04	1.09	1.14	1.19	1.25	1.32	1.39	1.47	1.56	1.67	1.79	1.92	2.08	2.27	2.50	2.78	3.13	3.57	4.17	5.00	6.25	8.33	12.50	25.00
3.0	1.07	1.11	1.15	1.20	1.25	1.30	1.36	1.43	1.50	1.58	1.67	1.76	1.88	2.00	2.14	2.31	2.50	2.73	3.00	3.33	3.75	4.29	5.00	6.00	7.50	10.00	15.00	30.00
3.5	1.25	1.30	1.35	1.40	1.46	1.52	1.59	1.67	1.75	1.84	1.94	2.06	2.19	2.33	2.50	2.69	2.92	3.18	3.50	3.89	4.38	5.00	5.83	7.00	8.75	11.67	17.50	35.00
4.0	1.43	1.48	1.54	1.60	1.67	1.74	1.82	1.90	2.00	2.11	2.22	2.35	2.50	2.67	2.86	3.08	3.33	3.64	4.00	4.44	5.00	5.71	6.67	8.00	10.00	13.33	20.00	40.00
4.5	1.61	1.67	1.73	1.80	1.88	1.96	2.05	2.14	2.25	2.37	2.50	2.65	2.81	3.00	3.21	3.46	3.75	4.09	4.50	5.00	5.63	6.43	7.50	9.00	11.25	15.00	22.50	45.00
5.0	1.79	1.85	1.92	2.00	2.08	2.17	2.27	2.38	2.50	2.63	2.78	2.94	3.13	3.33	3.57	3.85	4.17	4.55	5.00	5.56	6.25	7.14	8.33	10.00	12.50	16.67	25.00	50.00
5.5	1.96	2.04	2.12	2.20	2.29	2.39	2.50	2.62	2.75	2.89	3.06	3.24	3.44	3.67	3.93	4.23	4.58	5.00	4.58	6.11	6.88	7.86	9.17	11.00	13.75	18.33	27.50	55.00
6.0	2.14	2.22	2.31	2.40	2.50	2.61	2.73	2.86	3.00	3.16	3.33	3.53	3.75	4.00	4.29	4.62	5.00	5.45	6.00	6.67	7.50	8.57	10.00	12.00	15.00	20.00	30.00	60.00
6.5	2.32	2.41	2.50	2.60	2.71	2.83	2.95	3.10	3.25	3.42	3.61	3.82	4.06	4.33	4.64	5.00	5.42	5.91	6.50	7.22	8.13	9.29	10.83	13.00	16.25	21.67	32.50	65.00
7.0	2.50	2.59	2.69	2.80	2.92	3.04	3.18	3.33	3.50	3.68	3.89	4.12	4.38	4.67	5.00	5.38	5.83	6.36	7.00	7.78	8.75	10.00	11.67	14.00	17.50	23.33	35.00	70.00
7.5	2.68	2.78	2.88	3.00	3.13	3.26	3.41	3.57	3.75	3.95	4.17	4.41	4.69	5.00	5.36	5.77	6.25	6.82	7.50	8.33	9.38	10.71	12.50	15.00	18.75	25.00	37.50	75.00
8.0	2.86	2.96	3.08	3.20	3.33	3.48	3.64	3.81	4.00	4.21	4.44	4.71	5.00	5.33	5.71	6.15	6.67	7.27	8.00	8.89	10.00	11.43	13.33	16.00	20.00	26.67	40.00	80.00
8.5	3.04	3.15	3.27	3.40	3.54	3.70	3.86	4.05	4.25	4.47	4.72	5.00	5.31	5.67	6.07	6.54	7.08	7.73	7.08	9.44	10.63	12.14	14.17	17.00	21.25	28.33	42.50	85.00
9.0	3.21	3.33	3.46	3.60	3.75	3.91	4.09	4.29	4.50	4.74	5.00	5.29	5.63	6.00	6.43	6.92	7.50	8.18	9.00	10.00	11.25	12.86	15.00	18.00	22.50	30.00	45.00	90.00
9.5	3.39	3.52	3.65	3.80	3.96	4.13	4.32	4.52	4.75	5.00	5.28	5.59	5.94	6.33	6.79	7.31	7.92	8.64	9.50	10.56	11.88	13.57	15.83	19.00	23.75	31.67	47.50	95.00
10.0	3.57	3.70	3.85	4.00	4.17	4.35	4.55	4.76	5.00	5.26	5.56	5.88	6.25	6.67	7.14	7.69	8.33	9.09	10.00	11.11	12.50	14.29	16.67	20.00	25.00	33.33	50.00	100.00
10.5	3.75	3.89	4.04	4.20	4.38	4.57	4.77	5.00	5.25	5.53	5.83	6.18	6.56	7.00	7.50	8.08	8.75	9.55	10.50	11.67	13.13	15.00	17.50	21.00	26.25	35.00	52.50	105.00
11.0	3.93	4.07	4.23	4.40	4.58	4.78	5.00	5.24	5.50	5.79	6.11	6.47	6.88	7.33	7.86	8.46	9.17	10.00	11.00	12.22	13.75	15.71	18.33	22.00	27.50	36.67	55.00	110.00
11.5	4.11	4.26	4.42	4.60	4.79	5.00	5.23	5.48	5.75	6.05	6.39	6.76	7.19	7.67	8.21	8.85	9.58	10.45	9.58	12.78	14.38	16.43	19.17	23.00	28.75	38.33	57.50	115.00
12.0	4.29	4.44	4.62	4.80	5.00	5.22	5.45	5.71	6.00	6.32	6.67	7.06	7.50	8.00	8.57	9.23	10.00	10.91	12.00	13.33	15.00	17.14	20.00	24.00	30.00	40.00	60.00	120.00
12.5	4.46	4.63	4.81	5.00	5.21	5.43	5.68	5.95	6.25	6.58	6.94	7.35	7.81	8.33	8.93	9.62	10.42	11.36	12.50	13.89	15.63	17.86	20.83	25.00	31.25	41.67	62.50	125.00
13.0	4.64	4.81	5.00	5.20	5.42	5.65	5.91	6.19	6.50	6.84	7.22	7.65	8.13	8.67	9.29	10.00	10.83	11.82	13.00	14.44	16.25	18.57	21.67	26.00	32.50	43.33	65.00	130.00
13.5	4.82	5.00	5.19	5.40	5.63	5.87	6.14	6.43	6.75	7.11	7.50	7.94	8.44	9.00	9.64	10.38	11.25	12.27	13.50	15.00	16.88	19.29	22.50	27.00	33.75	45.00	67.50	135.00
14.0	5.00	5.19	5.38	5.60	5.83	6.09	6.36	6.67	7.00	7.37	7.78	8.24	8.75	9.33	10.00	10.77	11.67	12.73	14.00	15.56	17.50	20.00	23.33	28.00	35.00	46.67	70.00	140.00

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- i Va. Code § 33.2-370. High-priority projects program. (2015).
 - ii Va. Code § 33.2-371. Highway construction district grant programs. (2015).
 - iii Va. Code § 33.2-371. Highway construction district grant programs. (2015).
 - iv University of Virginia Weldon Cooper Center, Demographics Research Group. (2020). Virginia Population Estimates. Retrieved from <https://demographics.coopercenter.org/virginia-population-estimates>.
 - v VDOT. (2021). SMART SCALE. Retrieved from <http://www.smartscale.org/about/default.asp>.