

Virginia Department of Rail &
Public Transportation

Transit Resource Allocation Plan – Scenario Analysis

*Transit Service Delivery
Advisory Committee
March 31, 2017*



PRESENTATION OVERVIEW

- **Objectives**
- **Methodology**
- **Assumptions**
- **Scenario Descriptions**
- **Illustrative Scenario**
- **Outcomes by Scenario**
- **Conclusions & Next Steps**

STUDY OBJECTIVES

- **Test proposed capital prioritization and allocation methods**
- **Illustrate funding outcomes of proposed capital prioritization and allocation methods**
- **Present financial outcomes of proposed capital prioritization and allocation methods for the Transit Capital Assistance Program**

OBJECTIVE OF ANALYSIS

→ **Simulate what types of projects would be funded under different scenarios based on 3 variables:**

- Amount of Available State Revenue
- Funding Split between State of Good Repair (SGR), Minor Enhancements, and Major Expansion
- State Participation Rate

METHODOLOGY

DATA

- **Actual SYIP and WMATA CIP project data**
- **Projected data beyond SYIP/CIP, similar to Transit Resources Allocation Plan Capital Projection presented in October**
- **Apply projected data to estimate spending by subtype**
 - Not all projects have information to be scored and ranked
 - Hence, simulation uses project subtypes to approximate expected results
 - Project subtypes were given an average score and ranking

FUNDING DECISIONS

- **Funding outcomes show project subtypes funded on an annual basis**
- **Subtypes funded in rank order by score, until funding exhausted by project type (SGR, Minor Enhancement, Major Expansion)**
- **Hence, subtypes may be:**
 - Fully funded
 - Partially funded (when subtype needs exceed leftover for a given type)
 - Not funded

STATE REVENUE

→ 2 State Revenue cases:

- **Base case:**

- Transit bonds final year in FY19
- PRIIA final year in FY20

- **Additional revenue case:**

- Sunset funds backfilled (equivalent revenues to transit bonds and PRIIA through FY27)
- 15% additional revenue from new revenue sources (\$20m annually)

FUNDING SPLIT

→ **2 cases:**

- **All project types funded:**
 - 90% SGR and Minor Enhancements (SGR: 95%; Minor Enhancement: 5%)
 - 10% Major Expansion
 - Excess funds for Minor Enhancement and/or Major Expansion flow to SGR

- **SGR only:**
 - 100% SGR

STATE PARTICIPATION

→ **State participation (or share) measured as percent of total project costs**

→ **2 cases:**

- 80% fixed for all projects and tiers
- Adjusted rates to fund all projects, set separately for:
 - SGR and Minor Enhancement
 - Major Expansion

SCENARIO DESCRIPTIONS

SCENARIOS

Funding Split		1	2
		90% SGR 10% Minor	100% SGR
A	80% Fixed State Share	Scenario 1a	Scenario 2a
	State Share adjusted to fund all projects	Scenario 1b	Scenario 2b

Analyze 2 state revenue cases:

- Base Case: PRIIA and Transit Capital Bonds sunset as scheduled
- Additional Revenue: Sunset funds backfilled + 15% additional revenue (\$20m)

LIST OF SCENARIOS

1 **Funding Split: 90% → SGR and Minor Enhancements (95%/5%) 10% → Major Expansions**

- 1a: 80% State Share
- 1b: State Share adjusted to fund all projects

2 **SGR Only (100%)**

- 2a: 80% State Share
- 2b: State Share adjusted to fund all projects

Analyze 2 state revenue cases:

- Base Case: PRIIA and Transit Capital Bonds sunset as scheduled
- Additional Revenue: Sunset funds backfilled + 15% additional revenue (\$20m annually)

ILLUSTRATIVE SCENARIO: 1A

ILLUSTRATIVE SCENARIO – 1A

→ Revenue

- Base Case:
 - Transit bonds last year is FY19
 - PRIIA last year is FY20

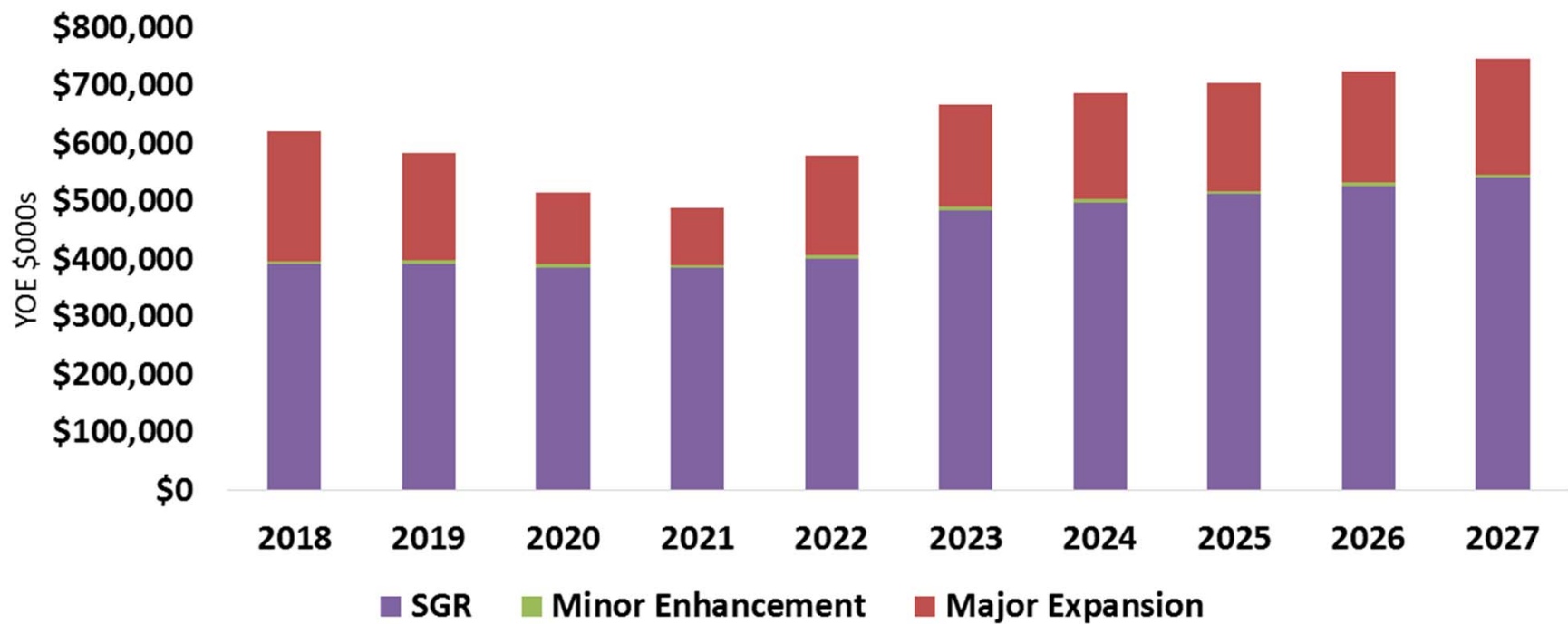
→ Funding Split

- 90% SGR and Minor Enhancement
- 10% Major Expansion

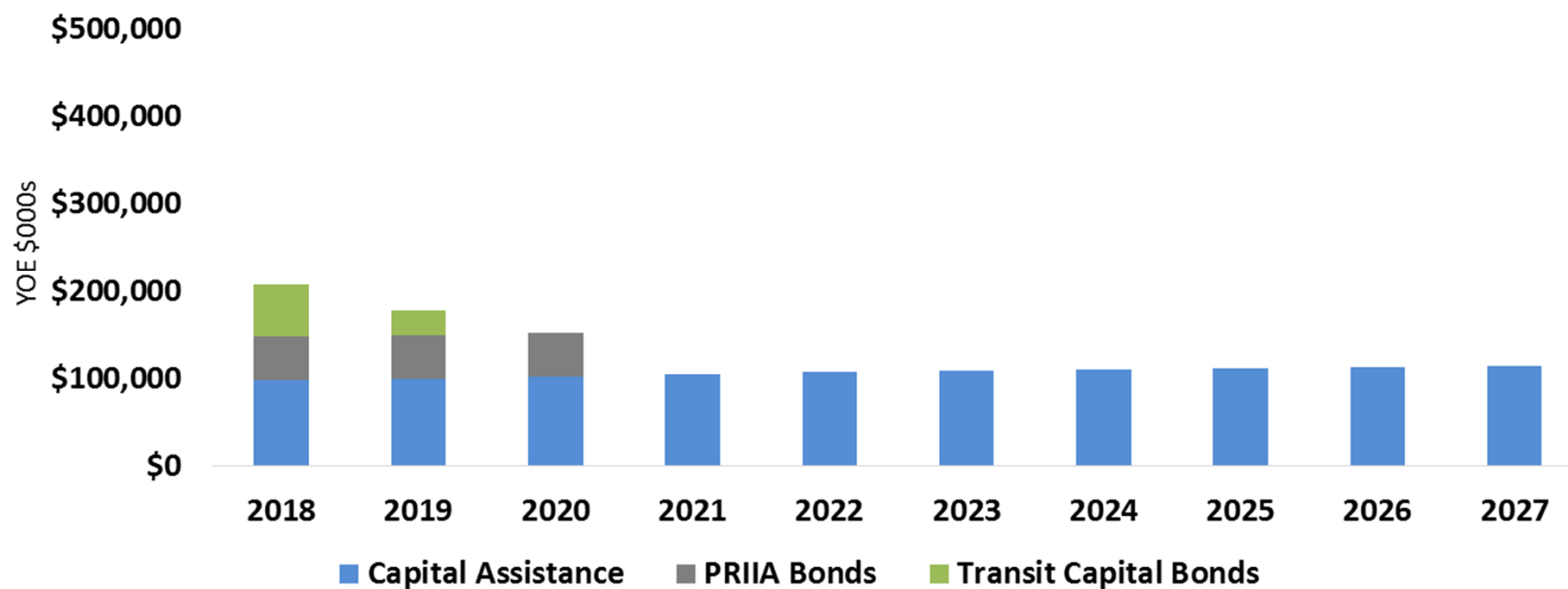
→ State Share

- 80% Fixed for all tiers

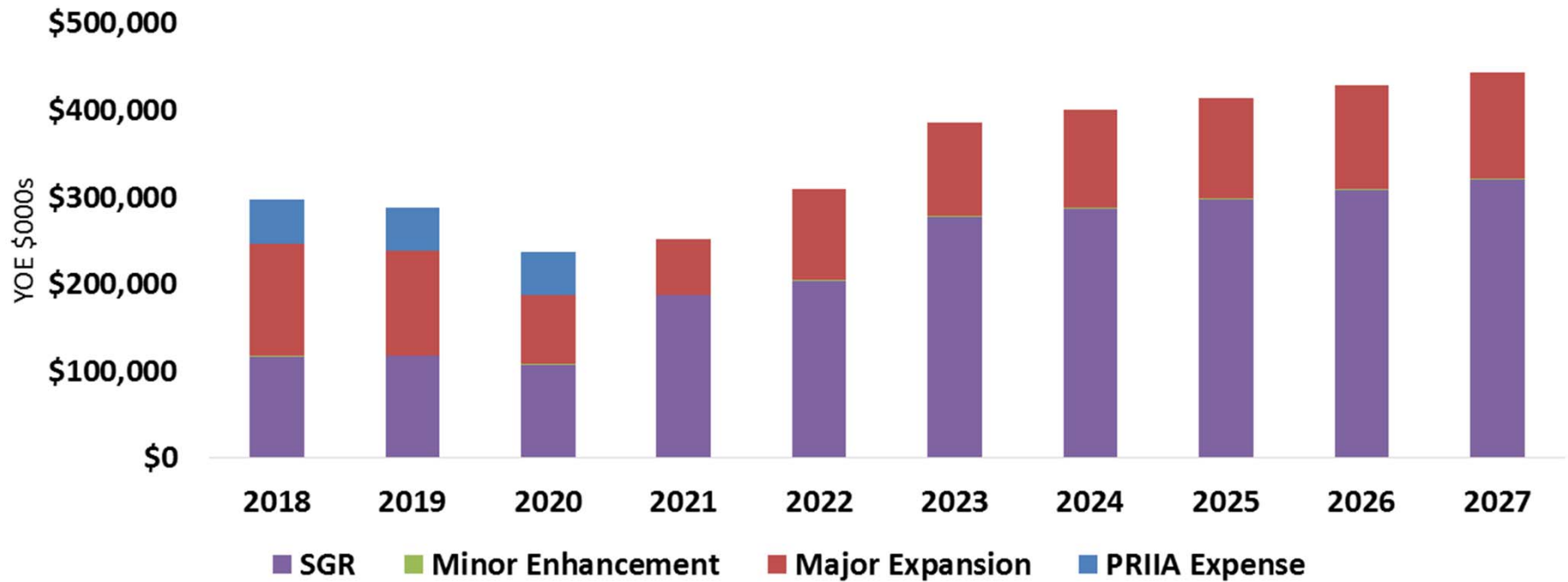
\$6.3B PROJECTED TRANSIT CAPITAL INVESTMENTS BY VIRGINIA TRANSIT AGENCIES (FY18-27)



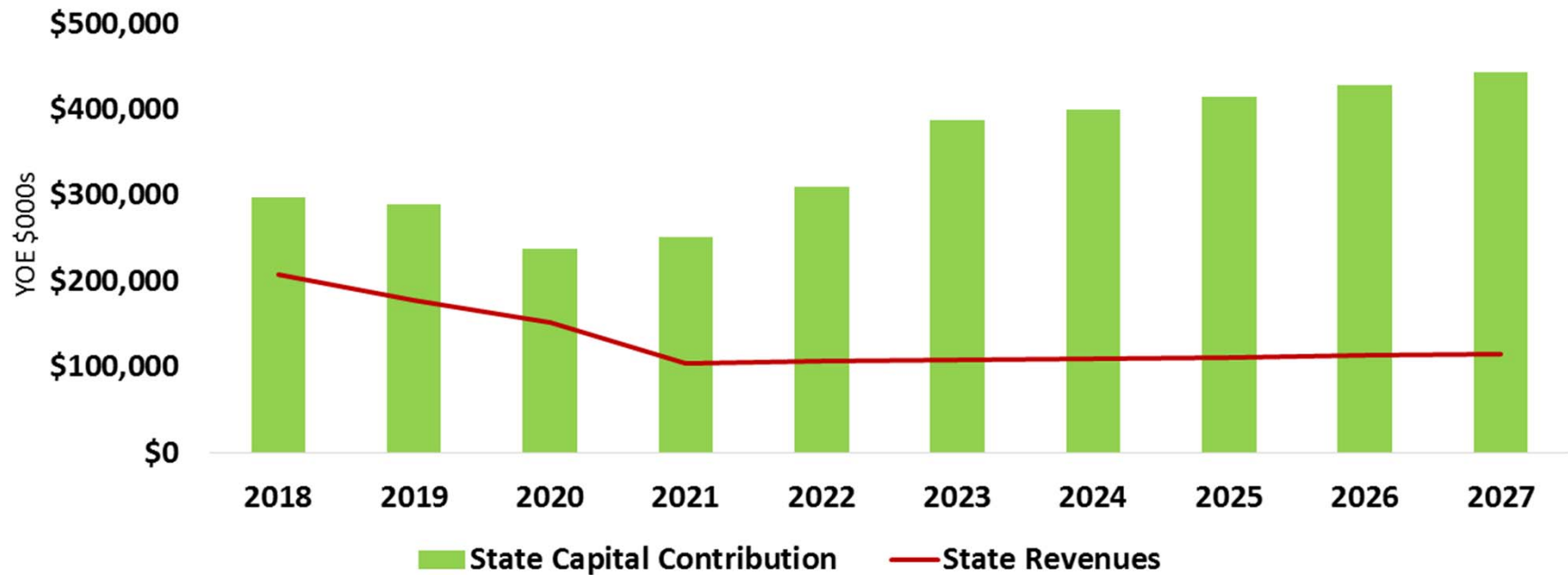
\$1.3B PROJECTED STATE TRANSIT CAPITAL REVENUES (FY18-27)



\$3.3B STATE TRANSIT CAPITAL FUNDING NEEDS (FY18-27)



STATE TRANSIT CAPITAL FUNDING NEEDS AND PROJECTED REVENUES (FY18-27)



RANKING SUBTYPES TO SIMULATE FUNDING DECISIONS

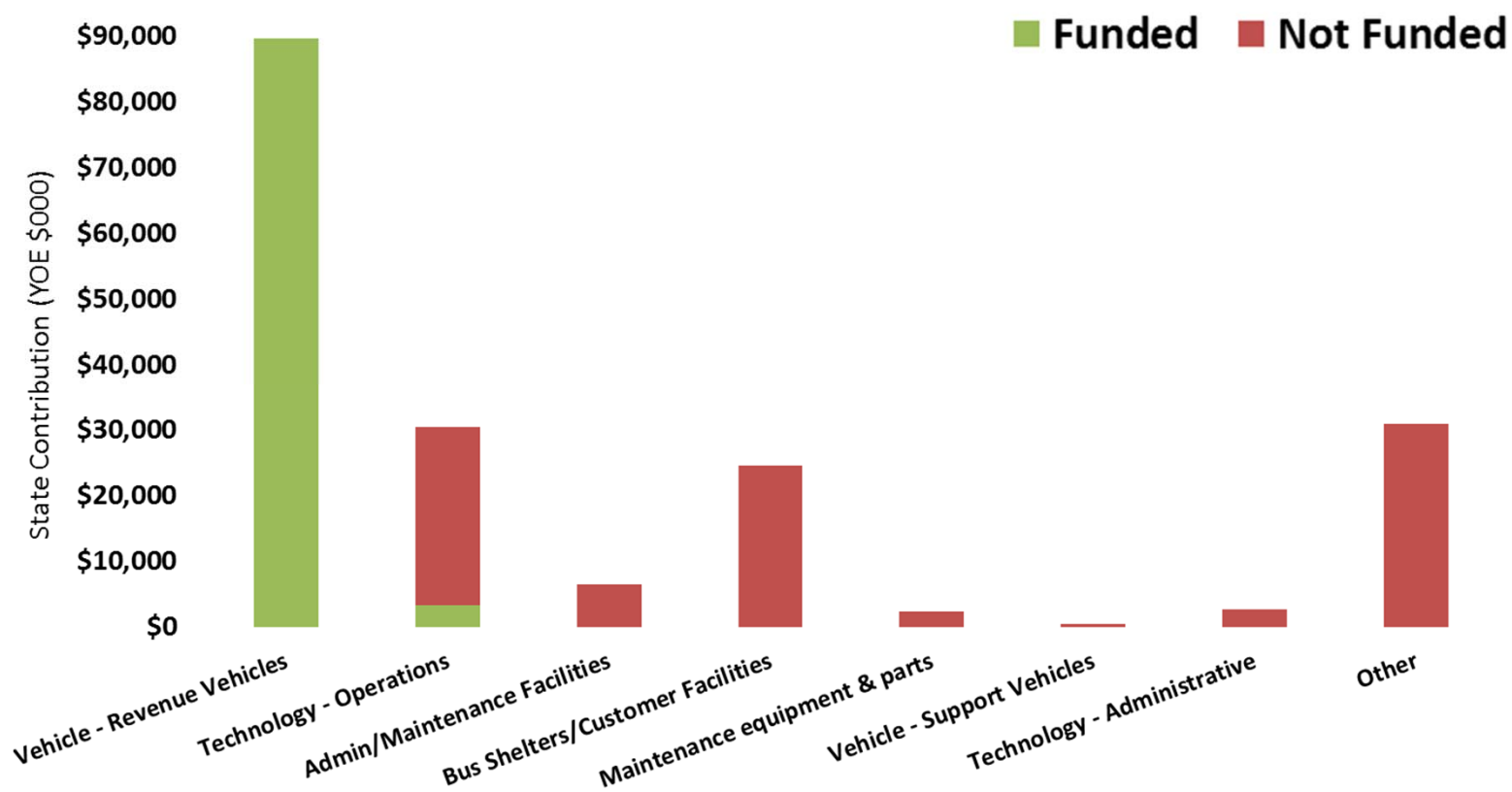
- Each project is attributed to one subtype
- Each subtype is attributed an average score
- Subtypes are ranked based on their score
- If revenue is available, subtypes are funded in order of their rank
- Outcome:
 - Some subtypes are funded
 - Some subtypes are not funded
 - Some subtypes are partially funded

ILLUSTRATIVE: SUBTYPES FUNDED IN FY21 – SGR (YOE \$000)

Revenue Available for SGR		\$92,922		
State Share of SGR Costs		\$187,259		
Funded	Subtype	Funded	Percent Funded	Not Funded
	Vehicle - Revenue vehicles	\$89,579	100%	-
Not Funded	Technology – Operations	\$3,343	11%	\$27,117
	Admin/Maintenance Facilities	-	-	\$6,507
	Bus Shelters/Customer Facilities	-	-	\$24,484
	Maintenance equipment & parts	-	-	\$2,349
	Vehicle - Support vehicles	-	-	\$396
	Technology – Administrative	-	-	\$2,650
	Other	-	-	\$30,834

Note: Revenue includes surplus from Minor Enhancement

ILLUSTRATIVE: SUBTYPES FUNDED IN FY21 – SGR (YOE \$000)



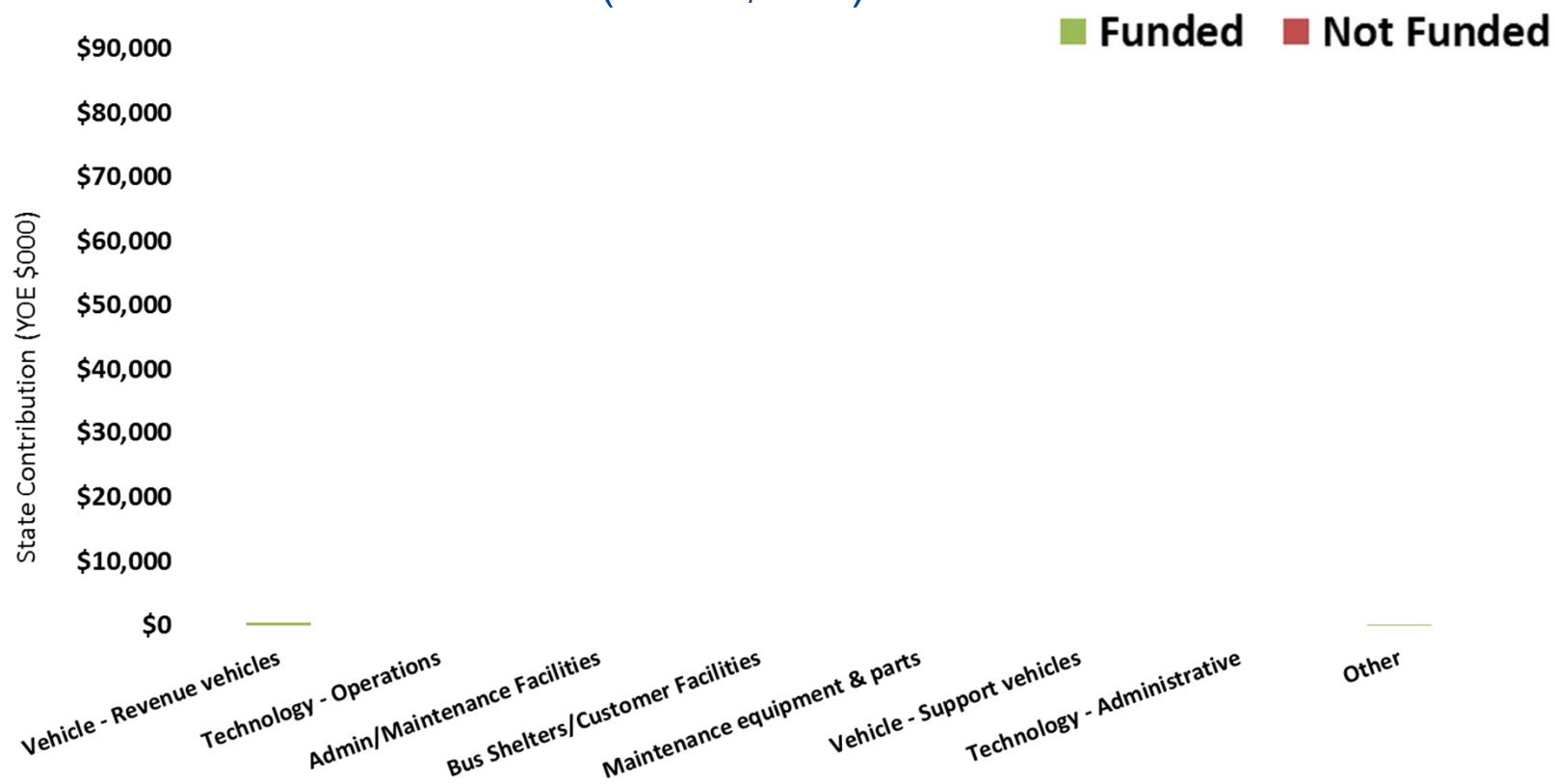
ILLUSTRATIVE: SUBTYPES FUNDED IN FY21 – MINOR ENHANCEMENTS (YOE \$000)

Revenue Available for Minor Enhancements	\$4,667
State Share of Minor Enhancements Costs	\$424

Funded	Subtype	Funded	Percent Funded	Not Funded
	Vehicle - Revenue vehicles	\$418	100%	-
	Technology – Operations	-	N/A	-
	Admin/Maintenance Facilities	-	N/A	-
	Bus Shelters/Customer Facilities	-	N/A	-
	Maintenance equipment & parts	-	N/A	-
	Vehicle - Support vehicles	-	N/A	-
	Technology – Administrative	-	N/A	-
	Other	\$6	100%	-

Note: Surplus goes to SGR

ILLUSTRATIVE: SUBTYPES FUNDED IN FY21 – MINOR ENHANCEMENTS (YOE \$000)

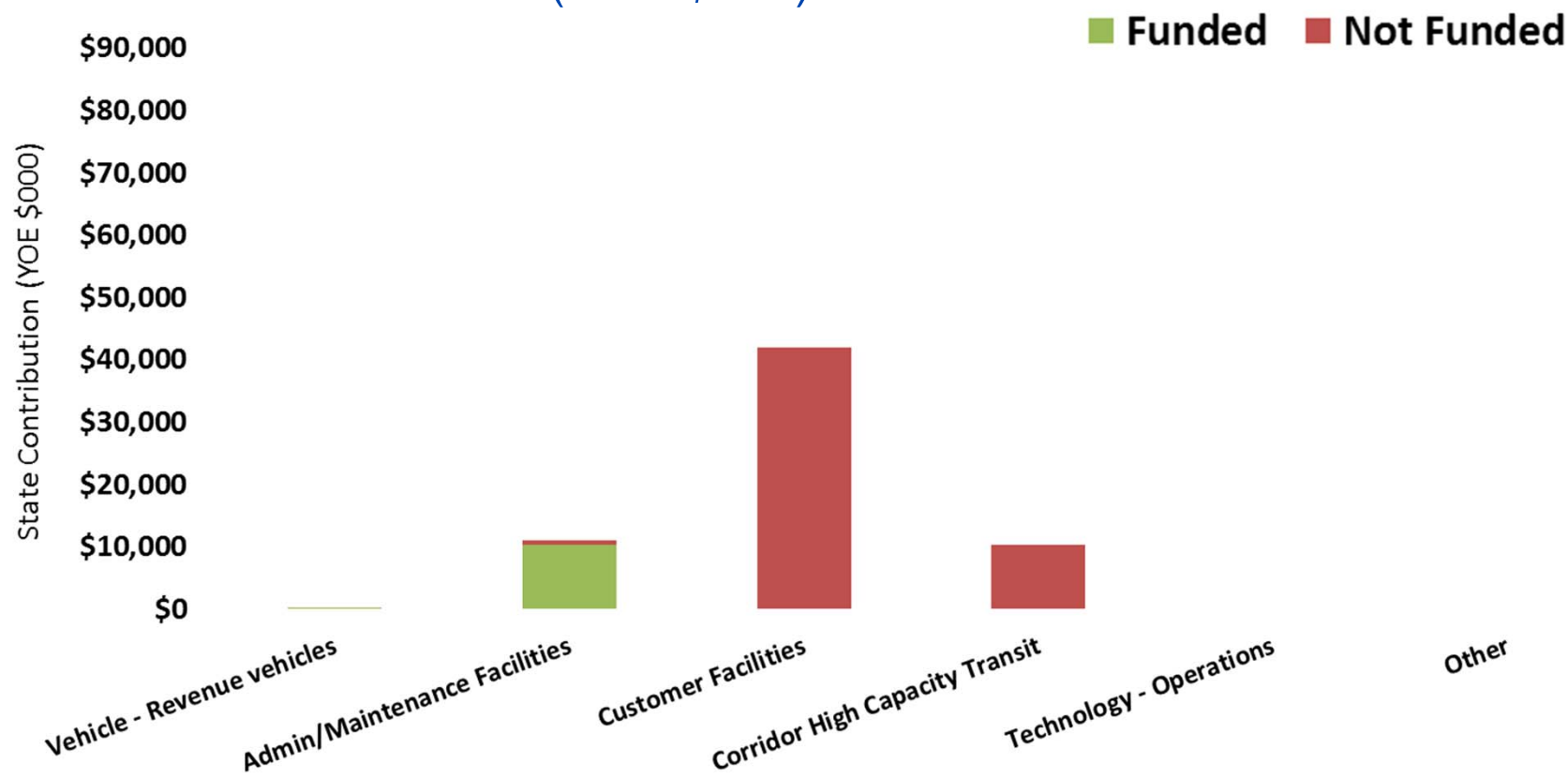


ILLUSTRATIVE: SUBTYPES FUNDED IN FY21 – MAJOR EXPANSIONS (YOY \$000)

Revenue Available for Major Expansions	\$10,372
State Share of Major Expansions Costs	\$63,366

	Subtype	Funded	Percent Funded	Not Funded
Funded	Vehicle – Revenue Vehicles	\$54	100%	-
	Admin/Maintenance Facilities	\$10,318	94%	\$656
Not Funded	Customer Facilities	-	-	\$42,001
	Corridor High Capacity Transit	-	-	\$10,337
	Technology – Operations	-	N/A	-
	Other	-	N/A	-

ILLUSTRATIVE: SUBTYPES FUNDED IN FY21 – MAJOR EXPANSIONS (YOE \$000)



ILLUSTRATIVE: SUBTYPES FUNDED FY18-27 – SCENARIO 1A – SGR (YOE \$000)

Revenue Available for SGR		\$1,024,589		
State Share of SGR Costs		\$2,220,164		
Subtype		Funded	Percent Funded	Not Funded
Funded	Vehicle - Revenue vehicles	\$856,109	80.3%	\$209,837
	Technology – Operations	\$52,228	14.6%	\$305,851
	Admin/Maintenance Facilities	\$9,399	9.4%	\$90,250
	Bus Shelters/Customer Facilities	\$49,798	15.2%	\$277,222
	Maintenance equipment & parts	\$4,033	17.0%	\$19,757
	Vehicle - Support vehicles	\$779	14.1%	\$4,760
	Technology – Administrative	\$4,464	16.3%	\$22,989
	Other	\$23,463	7.5%	\$289,226

Note: Revenue includes surplus from Minor Enhancement

ILLUSTRATIVE: SUBTYPES FUNDED FY18-27 – SCENARIO 1A – MINOR ENHANCEMENTS (YOY \$000)

Revenue Available for Minor Enhancements	\$51,772
State Share of Minor Enhancements Costs	\$10,843

Funded	Subtype	Funded	Percent Funded	Not Funded
	Vehicle - Revenue vehicles	\$6,449	100%	-
	Technology – Operations	\$962	100%	-
	Admin/Maintenance Facilities	\$2,109	100%	-
	Bus Shelters/Customer Facilities	\$1,259	100%	-
	Maintenance equipment & parts	-	N/A	-
	Vehicle - Support vehicles	-	N/A	-
	Technology – Administrative	-	N/A	-
	Other	\$63	100%	-

Note: Surplus goes to SGR

ILLUSTRATIVE: SUBTYPES FUNDED FY18-27 – SCENARIO 1A – MAJOR EXPANSIONS (YOY \$000)

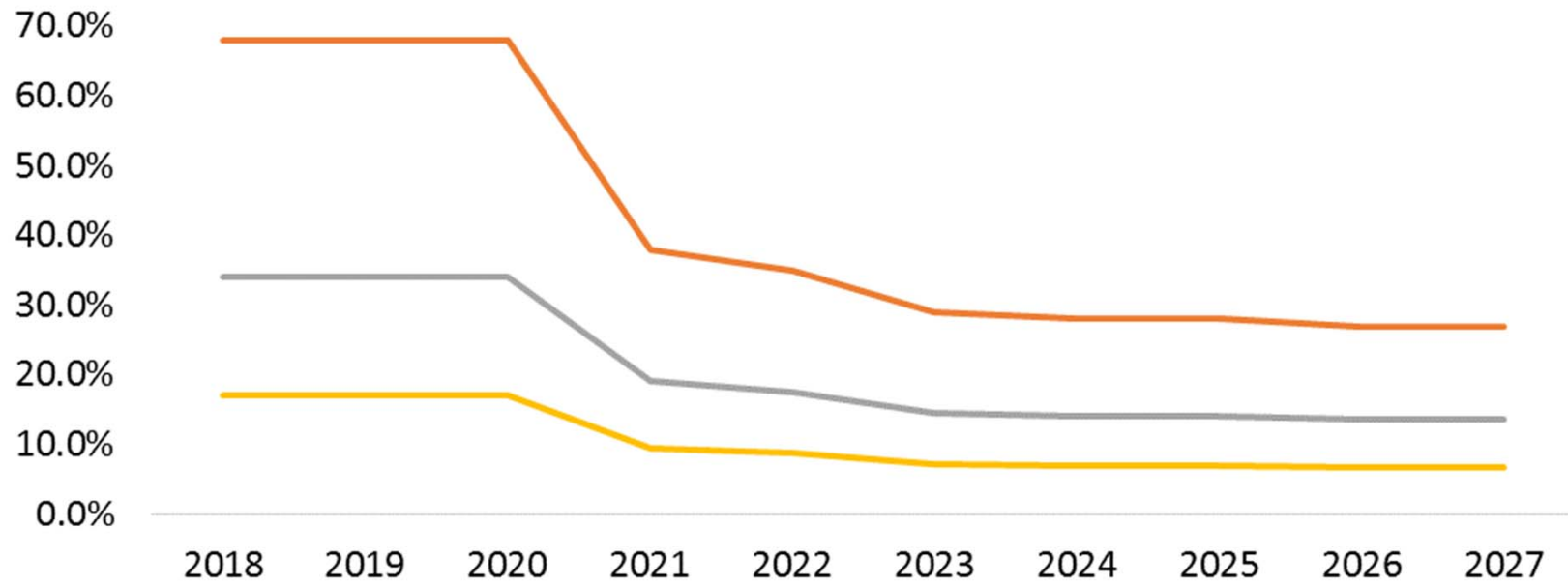
Revenue Available for Major Expansions		\$115,048		
State Share of Major Expansions Costs		\$1,072,927		
Funded	Subtype	Funded	Percent Funded	Not Funded
	Vehicle – Revenue Vehicles	\$84,051	92.2%	\$7,088
	Admin/Maintenance Facilities	\$30,997	17.4%	\$146,935
Not Funded	Customer Facilities	-	-	\$583,660
	Corridor High Capacity Transit	-	-	\$188,502
	Technology – Operations	-	-	\$22,868
	Other	-	-	\$8,826

OUTCOMES BY SCENARIO

SCENARIO 1 – FUNDING OUTCOMES (FY18-27) - BASE REVENUE CASE – (YOY \$MILLIONS)

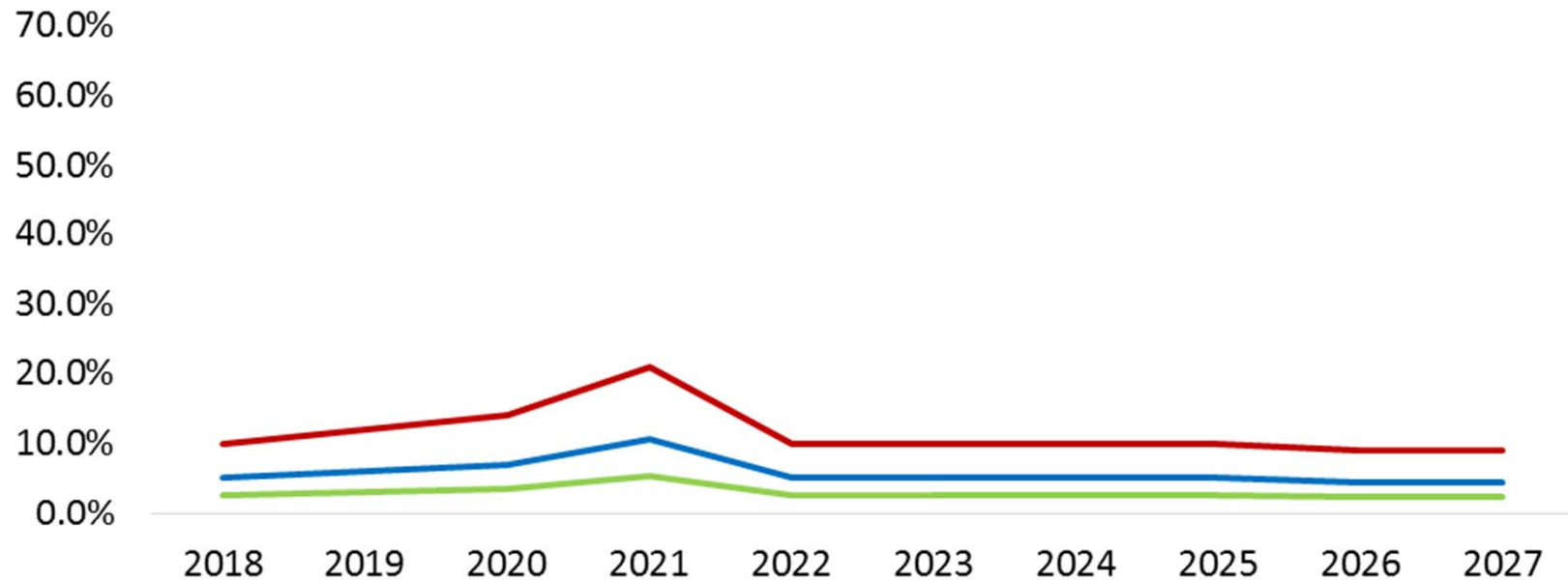
Scenario 1: SGR/Major 90%/10%	SGR 85.5% of Funding	Minor Enhancement 4.5% of Funding	Major Expansion 10% of Funding
1 a – 80% Match Rate	45% of project value funded	100%	11%
	Funding: \$1,000M	\$11M	\$115M
1 b – Adjusted Match Rates (All Projects Funded)	See Graphs for State Match Rate		See Graphs for State Match Rate
	Funding: \$979M	\$8M	\$110M

SCENARIO 1B – BASE REVENUE CASE - STATE MATCH RATES (FY18-27) – SGR AND MINOR ENHANCEMENT



	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Tier 1	68.0%	68.0%	68.0%	38.0%	35.0%	29.0%	28.0%	28.0%	27.0%	27.0%
Tier 2	34.0%	34.0%	34.0%	19.0%	17.5%	14.5%	14.0%	14.0%	13.5%	13.5%
Tier 3	17.0%	17.0%	17.0%	9.5%	8.8%	7.3%	7.0%	7.0%	6.8%	6.8%

SCENARIO 1B – BASE REVENUE CASE - STATE MATCH RATES (FY18-27) – MAJOR EXPANSION

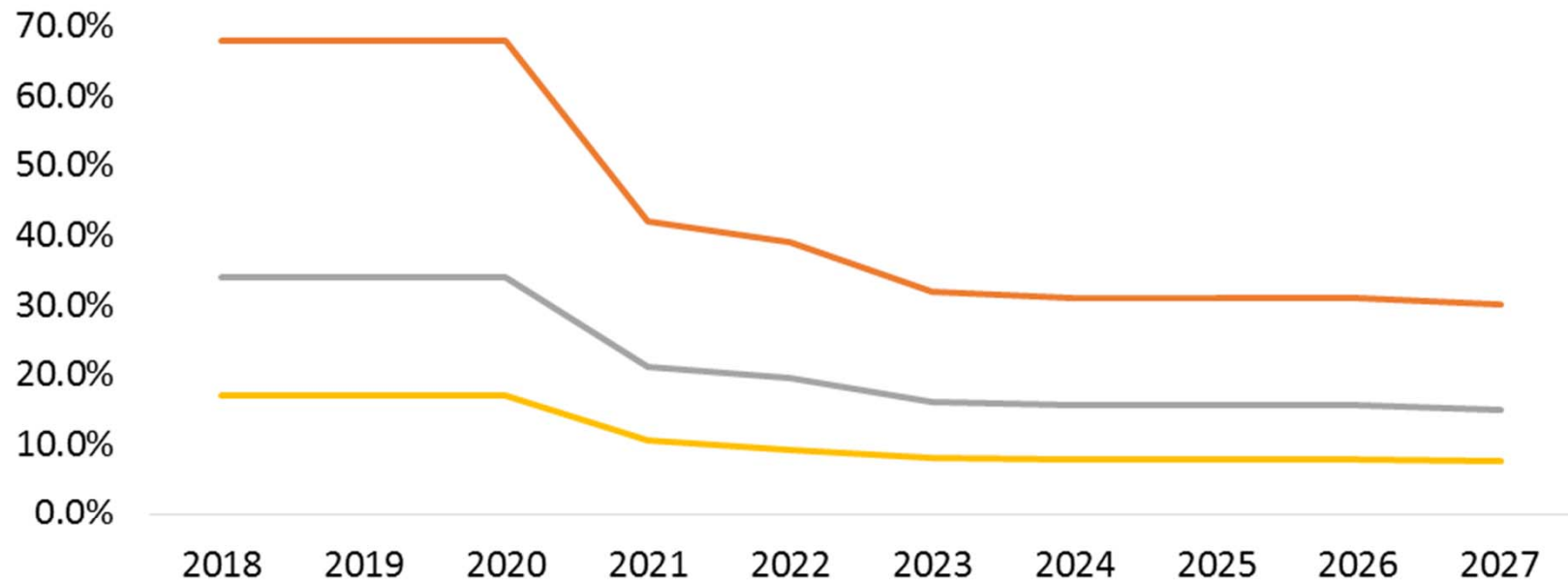


	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Tier 1	10.0%	12.0%	14.0%	21.0%	10.0%	10.0%	10.0%	10.0%	9.0%	9.0%
Tier 2	5.0%	6.0%	7.0%	10.5%	5.0%	5.0%	5.0%	5.0%	4.5%	4.5%
Tier 3	2.5%	3.0%	3.5%	5.3%	2.5%	2.5%	2.5%	2.5%	2.3%	2.3%

SCENARIO 2 – FUNDING OUTCOMES (FY18-27) - BASE REVENUE CASE – (YOE \$MILLIONS)

Scenario 2: SGR Only		SGR 100% of Funding
2 a – 80% Match Rate		50% of project value funded
		Funding: \$1,099M
2 b – Adjusted Match Rates (All Projects Funded)		Graphs for State Match Rate in next slides
		Funding: \$1,050M

SCENARIO 2B – BASE REVENUE CASE - STATE MATCH RATES (FY18-27) – SGR

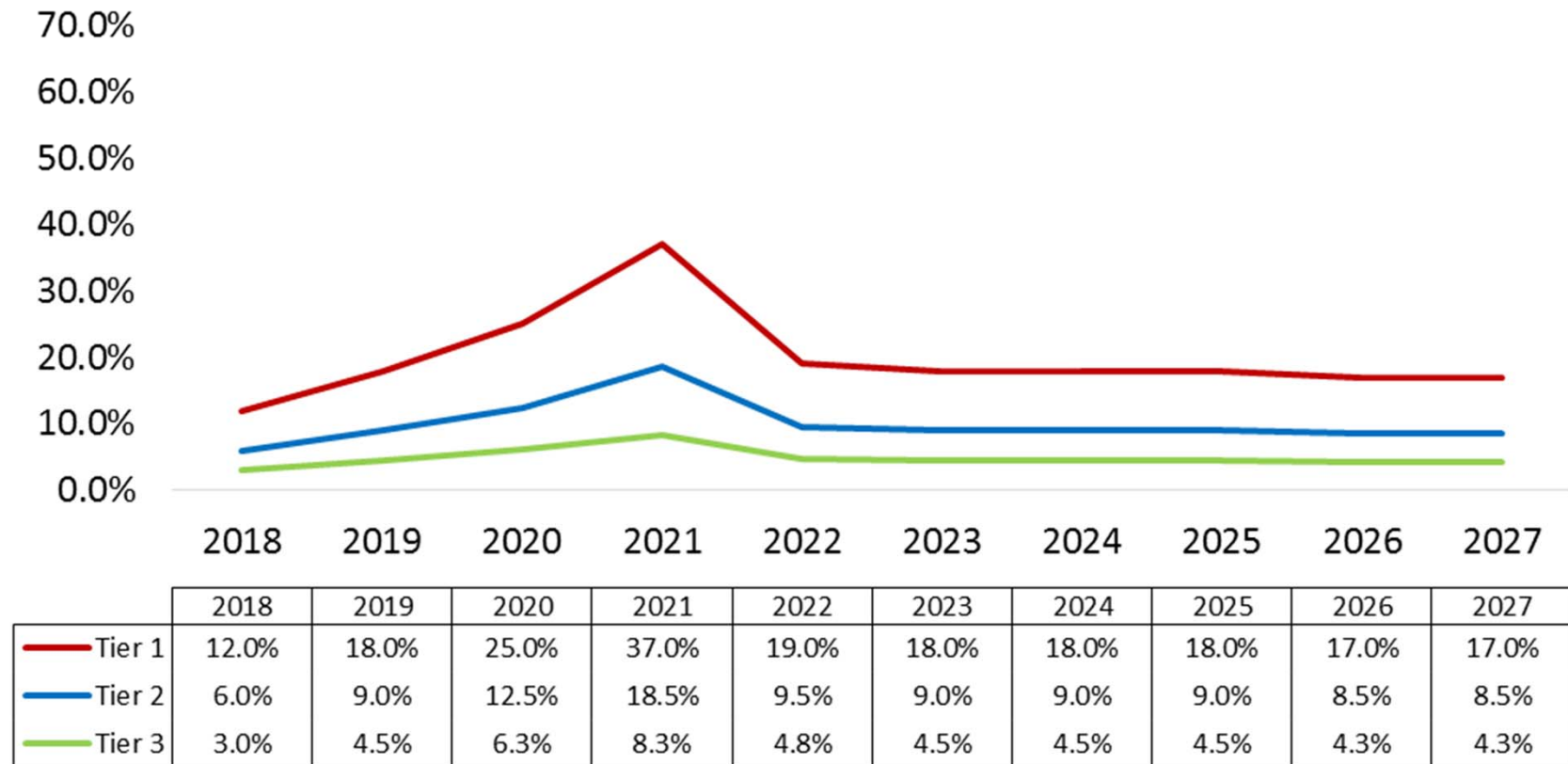


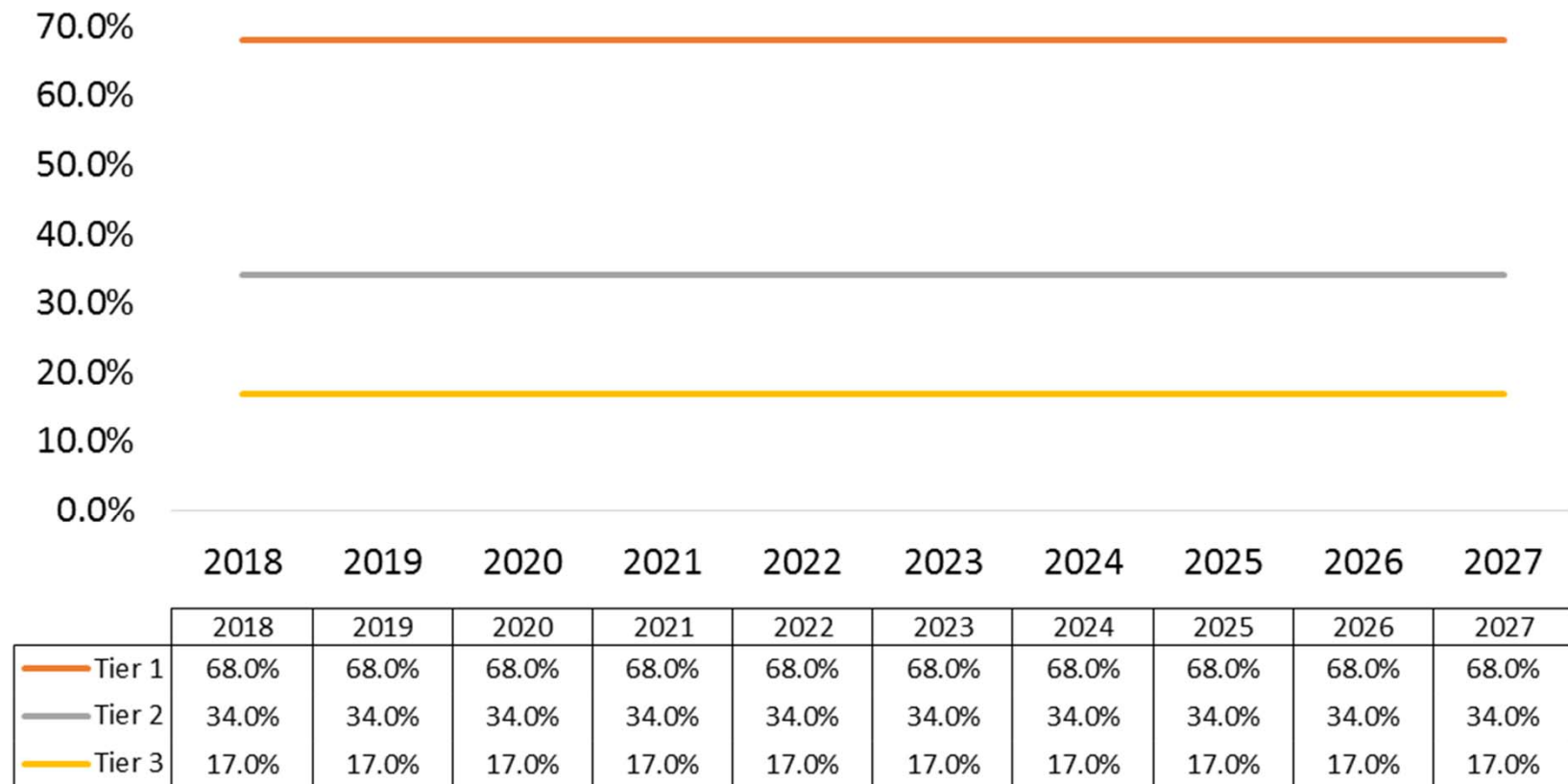
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Tier 1	68.0%	68.0%	68.0%	42.0%	39.0%	32.0%	31.0%	31.0%	31.0%	30.0%
Tier 2	34.0%	34.0%	34.0%	21.0%	19.5%	16.0%	15.5%	15.5%	15.5%	15.0%
Tier 3	17.0%	17.0%	17.0%	10.5%	9.3%	8.0%	7.8%	7.8%	7.8%	7.5%

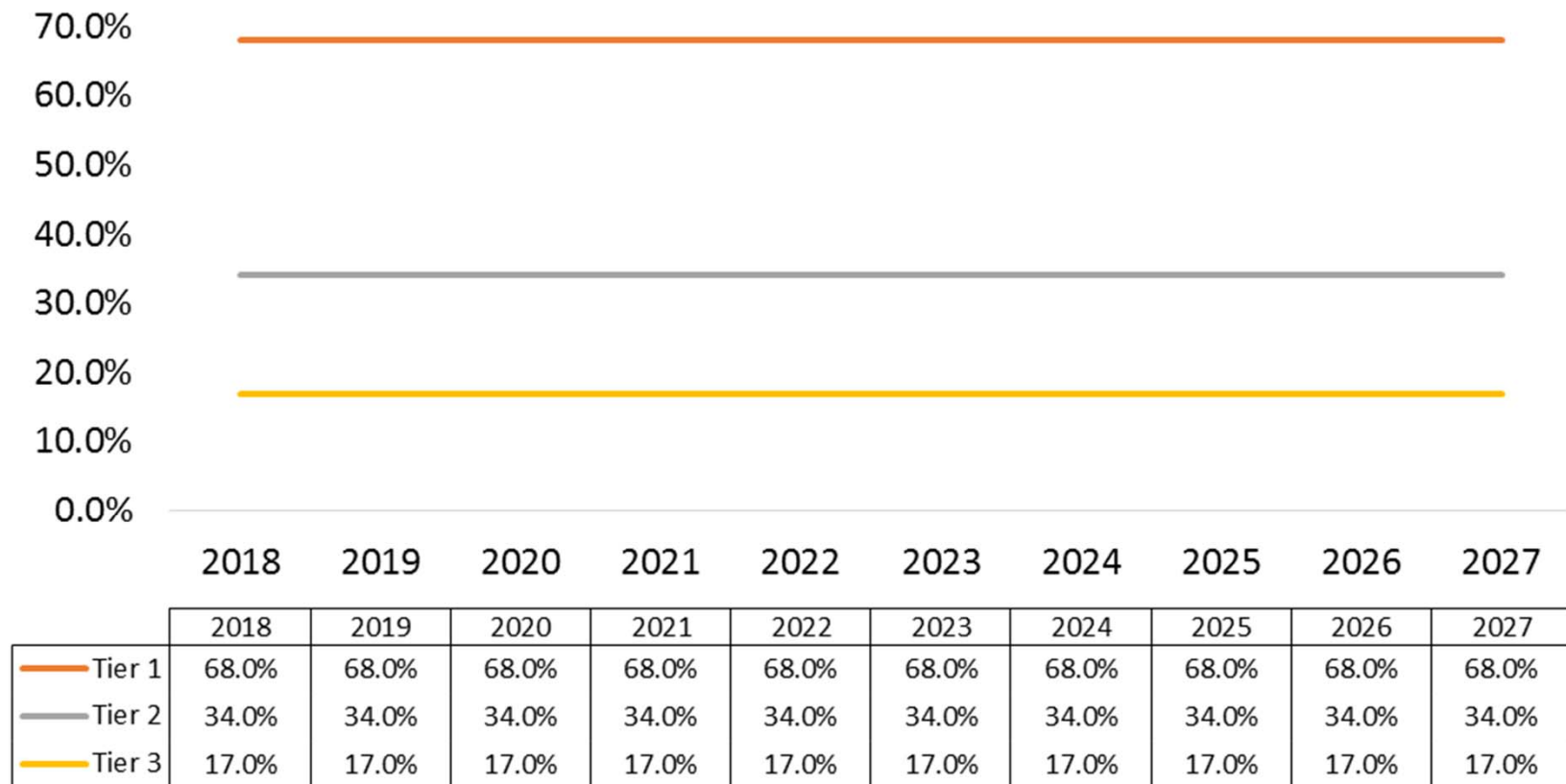
ALL SCENARIO OUTCOMES – ADDITIONAL REVENUE CASE – FY18-27

Scenario	SGR	Minor Enhancement	Major Expansion
1 a – 80% Match Rate	87% of project value funded	100%	17%
	Funding: \$1,414M	\$11M	\$186M
b – Adjusted Match Rates (All Projects Funded)	100% Graph for State Match Rates in next slides		
	Funding: \$1,264M	\$9M	\$182M
2 a – 80% Match Rate	93% of project value funded	-	-
	Funding: \$1,514M	-	-
b – Adjusted Match Rates (All Projects Funded)	100% Graph for State Match Rates in next slides	-	-
	Funding: \$1,264M	-	-

SCENARIO 1B – ADDITIONAL REVENUE CASE - STATE MATCH RATES (FY18-27) – MAJOR EXPANSION







CONCLUSIONS AND NEXT STEPS

FINDINGS

- Scenarios apply project data distilled from the SYIP and WMATA CIP at the subtype level of detail
 - Applying composite scores by subtype does not reflect higher and lower ranks for some projects
- Analysis demonstrates that this approach leads to expected results
- Higher scored project subtypes include:
 - SGR and Minor Enhancements:
 - Revenue Vehicles
 - Maintenance Facilities
 - Technology-Operations
 - Major Expansions:
 - Revenue Vehicles
 - Maintenance Facilities
- Project subtypes receiving the most funding include:
 - For SGR: Revenue Vehicles, Technology-Operations and Customer Facilities
 - For Major Expansions: Funding sufficient only for Revenue Vehicles in most years
- No “fatal flaws” have emerged in this process

NEXT STEPS

→ Key decision items for TSDAC:

- **Funding split:**

- 90% SGR / 10% Expansion – *or* –
- 100% SGR

- **State match rates:**

- Some projects will not be funded if a high state match rate is chosen (even with funding dedicated to SGR)
- Only low state match rates spread funding to all projects

→ Link this scenario analysis to the revenue estimation effort

APPENDIX

ACRONYMS

- **CIP – Capital Improvement Plan**
- **FY – Fiscal Year**
- **PRIIA – Passenger Rail Investment Imp**
- **SGR – State of Good Repair**
- **SYIP – Six Year Improvement Plan**
- **WMATA – Washington Metropolitan Area Transit Authority**

PROJECT DATA

→ **Simulation reuses assumptions and methods from Transit Resources Allocation Plan Capital Projection to the extent possible:**

- **WMATA Expenditures**

- FY18-22 based on WMATA FY17-22 CIP
- Projected expenditures FY23-27 based on average annual WMATA CIP costs

- **All Other Agencies' Expenditures**

- FY18-21 based on FY17 SYIP, due to drop in expenditures last years of SYIP
- Projected expenditures FY22-27 based on average annual SYIP costs FY18-21
- FY22-27 escalated by historical growth in RS Means Construction Cost Index

- **Federal Participation**

- FY18-21 based on FY2017 SYIP estimates by major agency/district by tier
- FY22-27 based on average of FY18-FY21

APPENDIX – 1B SCENARIO

ILLUSTRATIVE SCENARIO – 1B

→ Revenue

- Base Case:
 - Transit bonds last year in FY19
 - PRIIA last year in FY20

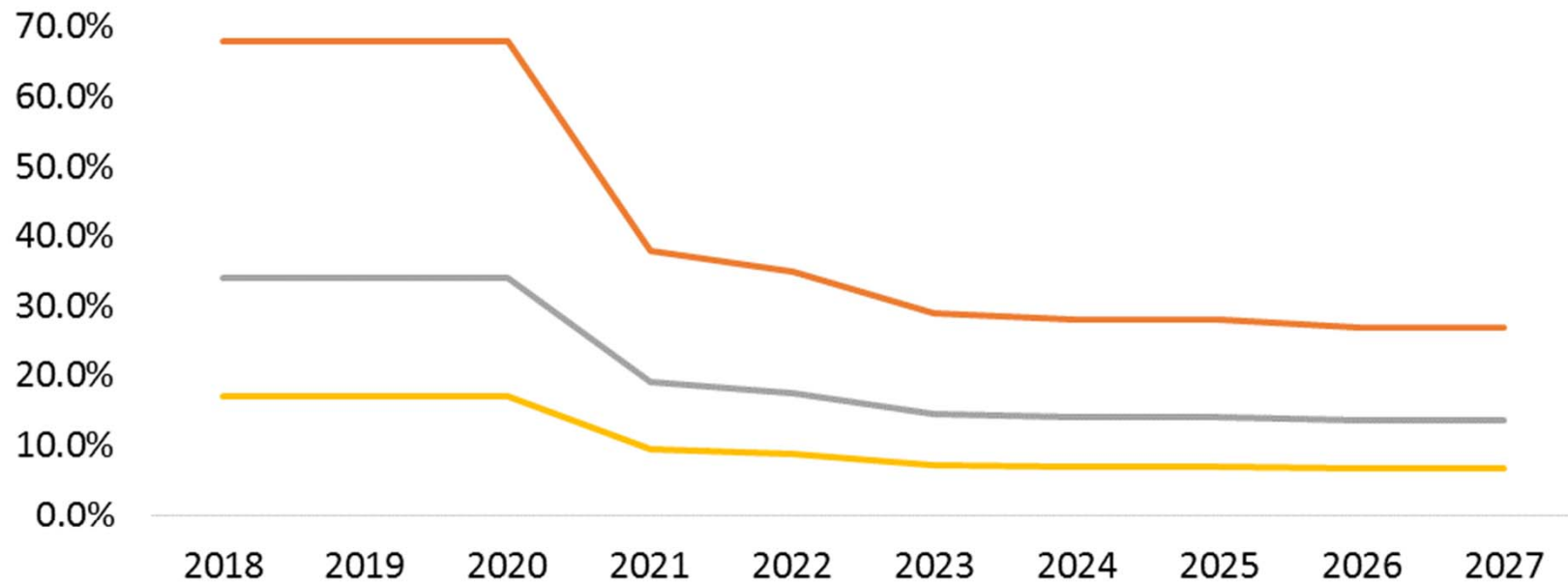
→ Funding Split

- 90% SGR and Minor Enhancement
- 10% Major Expansion

→ State Share

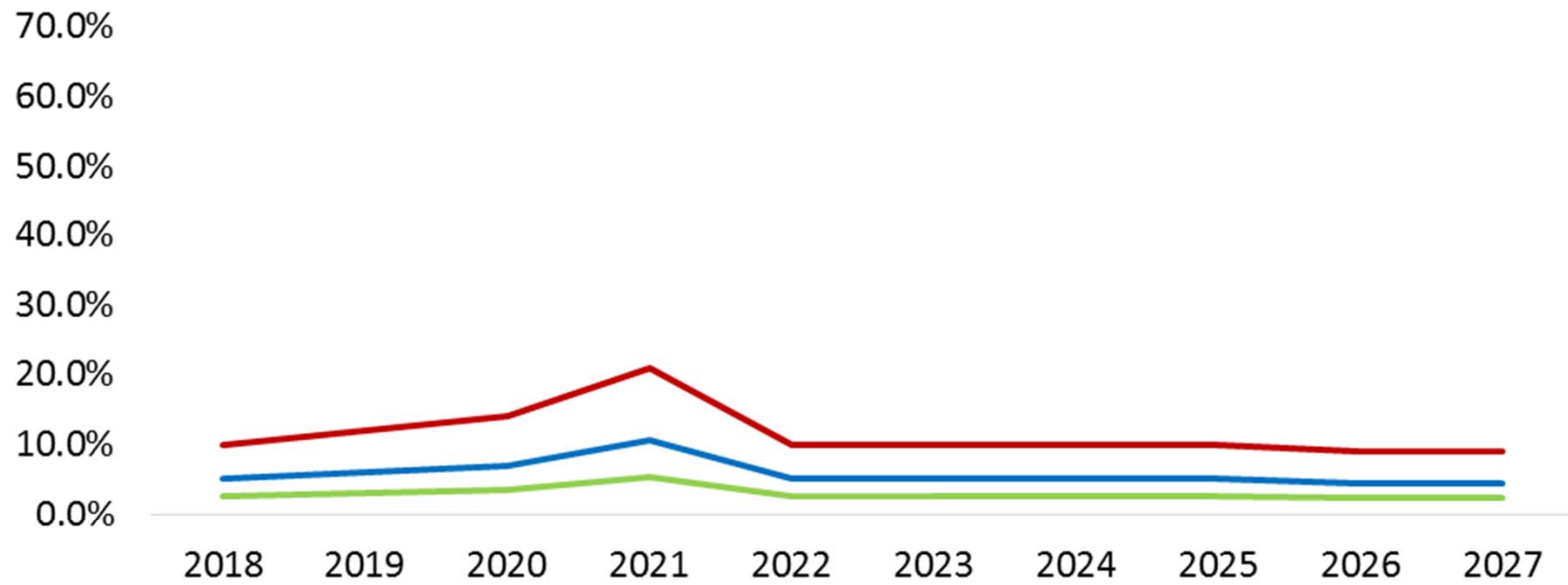
- Adjusted rates to fund all projects, set separately for:
 - SGR and Minor Enhancement
 - Major Expansion

SCENARIO 1B – STATE MATCH RATES (FY18-27) – SGR AND MINOR ENHANCEMENT



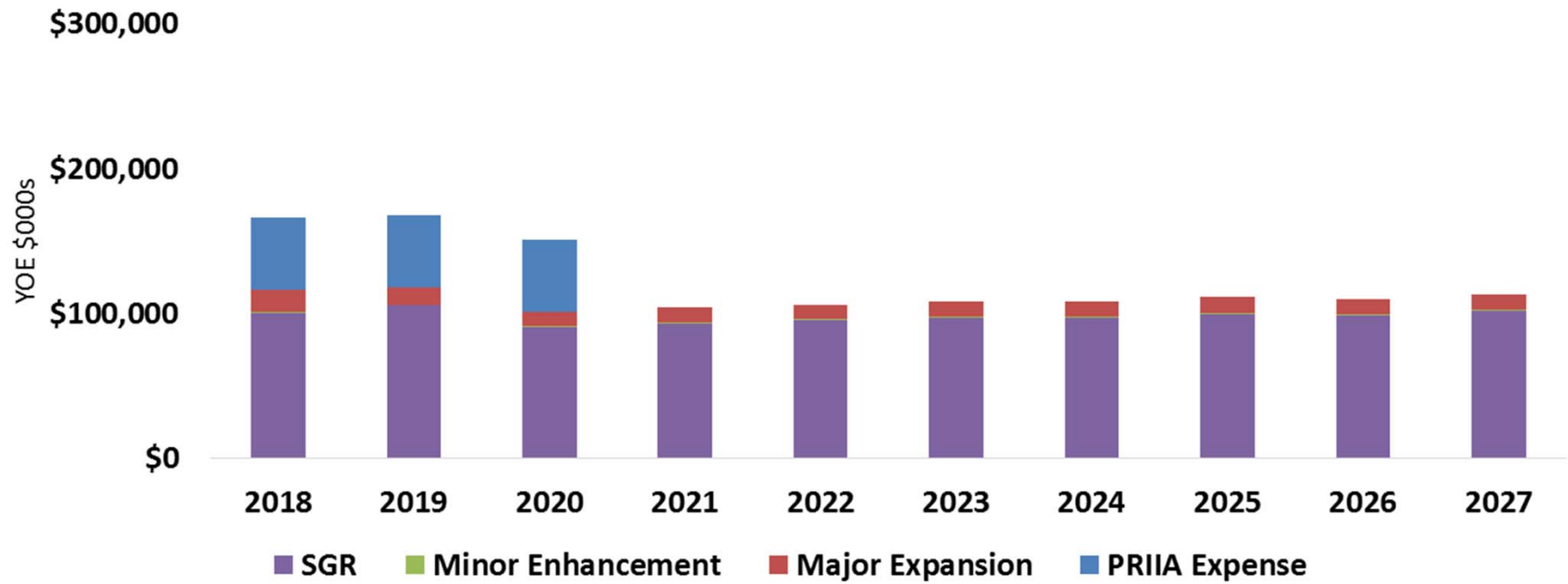
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Tier 1	68.0%	68.0%	68.0%	38.0%	35.0%	29.0%	28.0%	28.0%	27.0%	27.0%
Tier 2	34.0%	34.0%	34.0%	19.0%	17.5%	14.5%	14.0%	14.0%	13.5%	13.5%
Tier 3	17.0%	17.0%	17.0%	9.5%	8.8%	7.3%	7.0%	7.0%	6.8%	6.8%

SCENARIO 1B – STATE MATCH RATES (FY18-27) – MAJOR EXPANSION

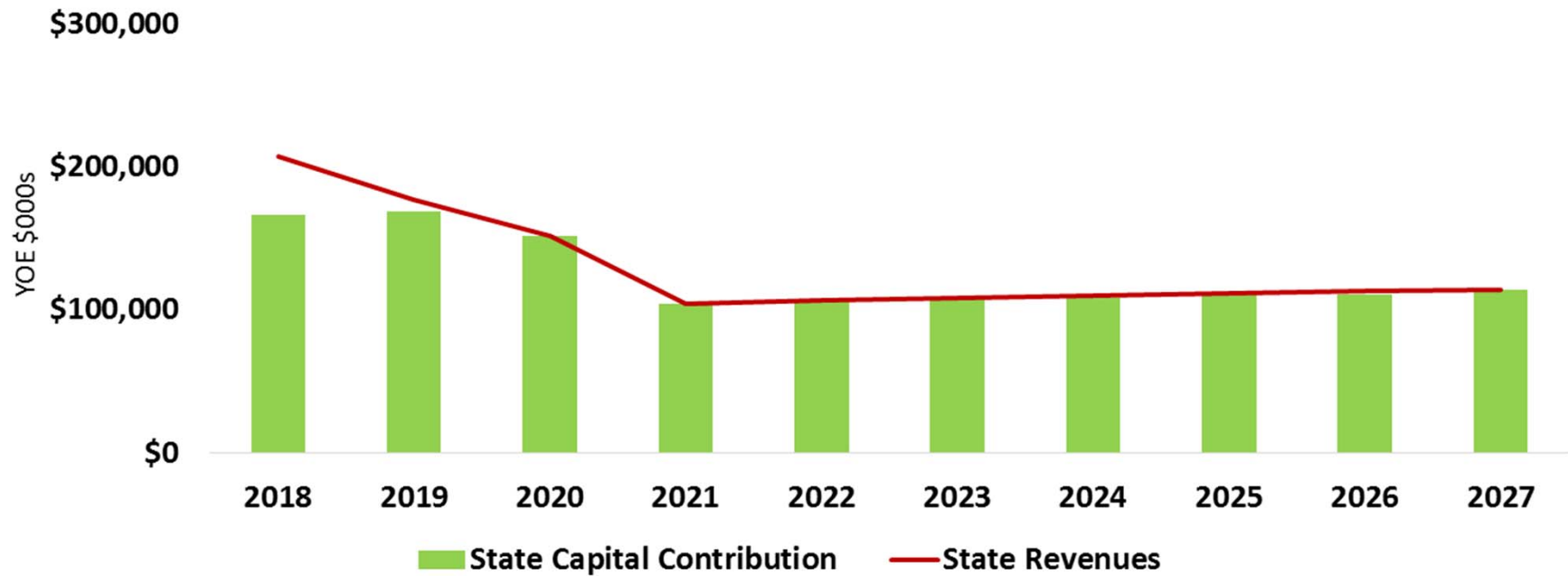


	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Tier 1	10.0%	12.0%	14.0%	21.0%	10.0%	10.0%	10.0%	10.0%	9.0%	9.0%
Tier 2	5.0%	6.0%	7.0%	10.5%	5.0%	5.0%	5.0%	5.0%	4.5%	4.5%
Tier 3	2.5%	3.0%	3.5%	5.3%	2.5%	2.5%	2.5%	2.5%	2.3%	2.3%

\$1B STATE TRANSIT CAPITAL FUNDING NEEDS (FY18-27)



STATE TRANSIT CAPITAL FUNDING NEEDS AND PROJECTED REVENUES (FY18-27)



RANKING SUBTYPES TO SIMULATE FUNDING DECISIONS

- Each project is attributed one subtype
- Each subtype is attributed an average score
- Subtypes are ranked based on their score
- If revenue is available, subtypes are funded in order of their rank
- Outcome:
 - Some subtypes are funded
 - Some subtypes are not funded
 - Some subtypes are partially funded

ILLUSTRATIVE: SUBTYPES FUNDED IN FY21 – SGR (YOE \$000)

Revenue Available for SGR¹	\$93,527
State Share of SGR Costs	\$93,527

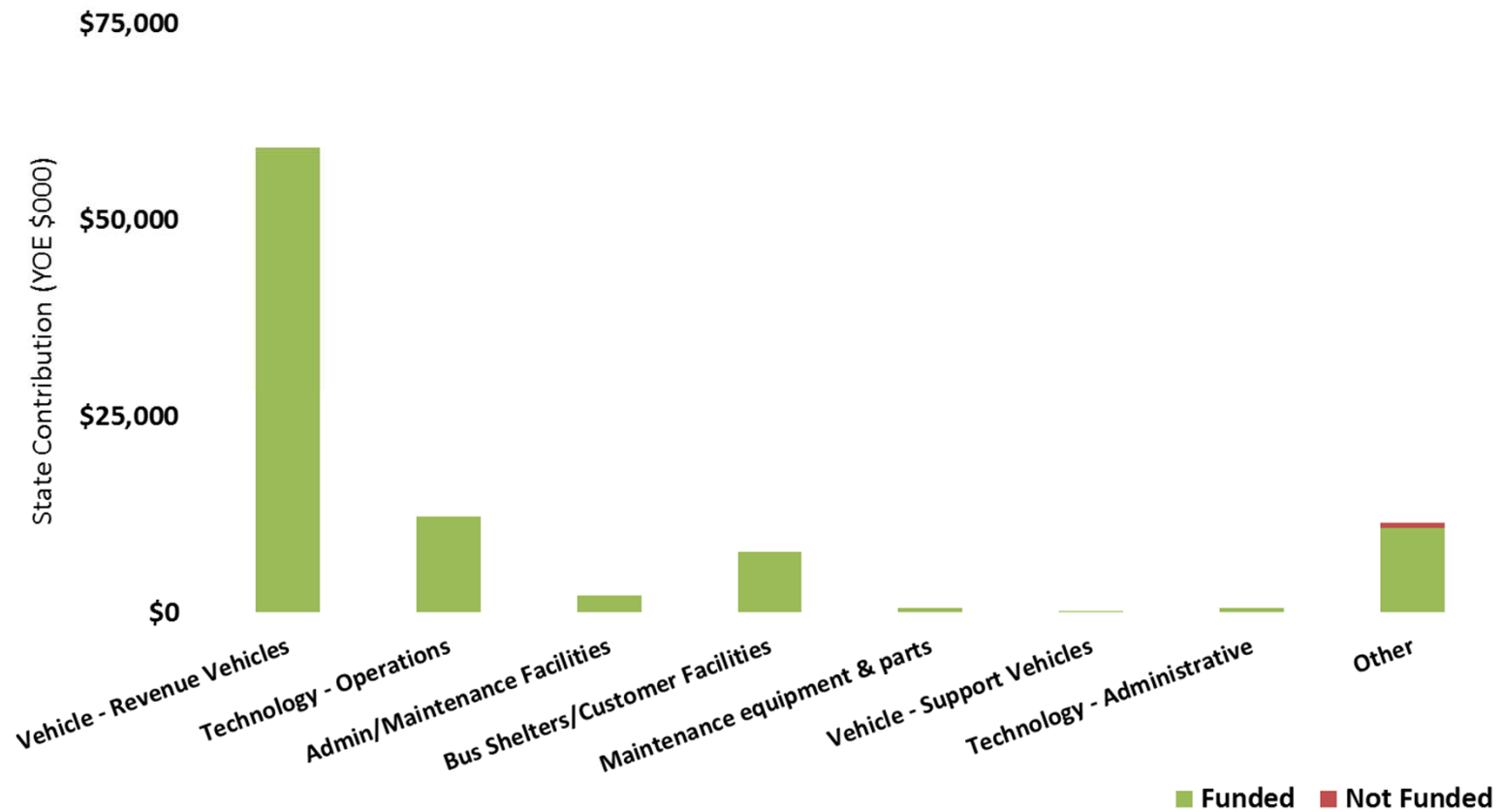
State Match Rates: 38%/19%/9.5%

Funded

Subtype	Funded	Percent Funded	Not Funded
Vehicle - Revenue vehicles	\$59,184	-	-
Technology – Operations	\$12,137	-	-
Admin/Maintenance Facilities	\$2,139	-	-
Bus Shelters/Customer Facilities	\$7,635	-	-
Maintenance equipment & parts	\$531	-	-
Vehicle - Support vehicles	\$87	-	-
Technology – Administrative	\$504	-	-
Other	\$11,310	-	-

1: Includes surplus from Minor Enhancements excess fund

ILLUSTRATIVE: SUBTYPES FUNDED IN FY21 – SGR (YOE \$000)



ILLUSTRATIVE: SUBTYPES FUNDED IN FY21 – MINOR ENHANCEMENTS (YOE \$000)

Revenue Available for Minor Enhancements	\$4,667
State Share of Minor Enhancements Costs	\$424

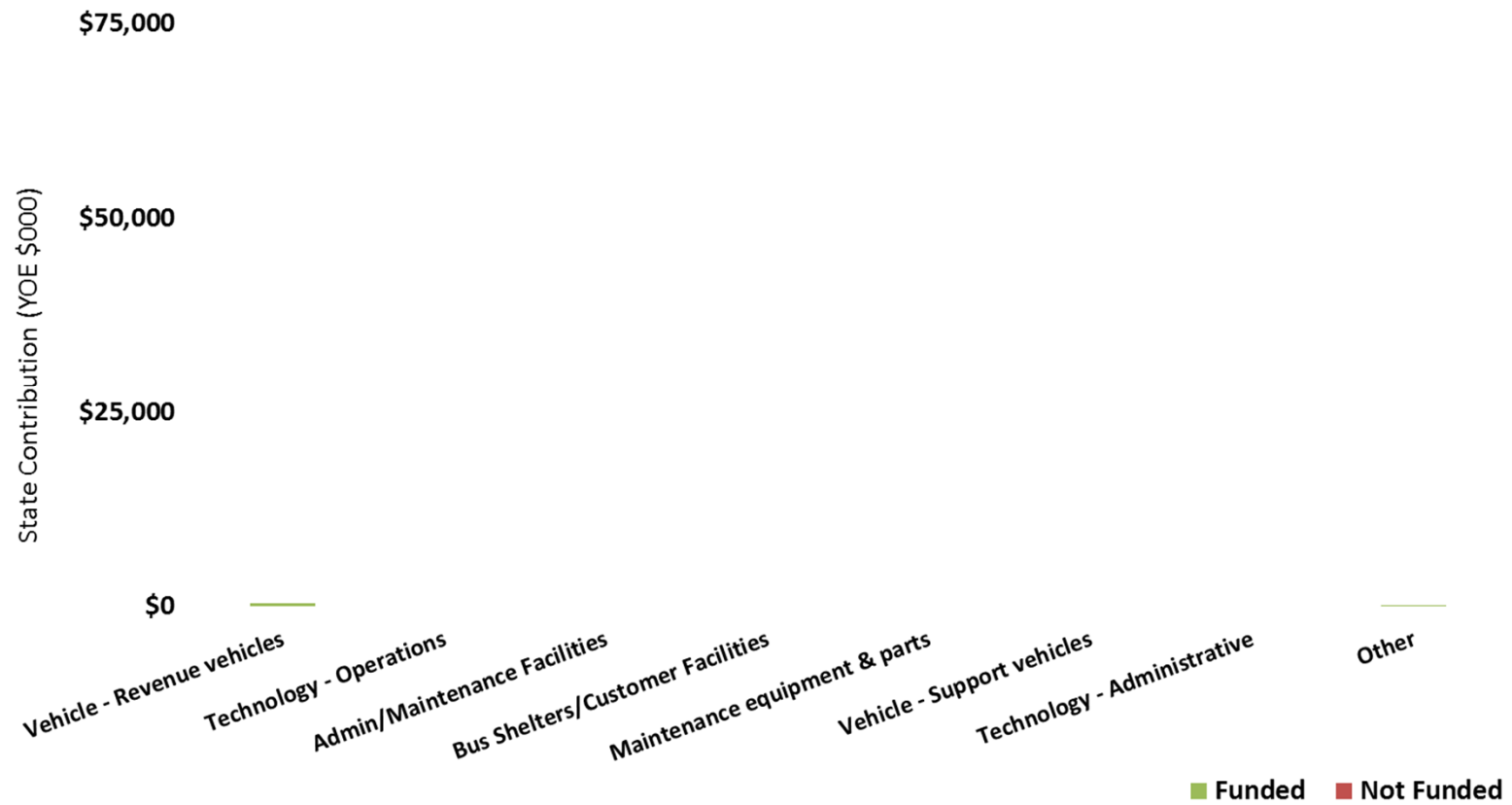
State Match Rates: 38%/19%/9.5%

Funded

Subtype	Funded	Percent Funded	Not Funded
Vehicle - Revenue vehicles	\$418	100%	-
Technology – Operations	-	N/A	-
Admin/Maintenance Facilities	-	N/A	-
Bus Shelters/Customer Facilities	-	N/A	-
Maintenance equipment & parts	-	N/A	-
Vehicle - Support vehicles	-	N/A	-
Technology – Administrative	-	N/A	-
Other	\$6	100%	-

Note: Surplus goes to SGR

ILLUSTRATIVE: SUBTYPES FUNDED IN FY21 – MINOR ENHANCEMENTS (YOE \$000)



ILLUSTRATIVE: SUBTYPES FUNDED IN FY21 – MAJOR EXPANSIONS (YOE \$000)

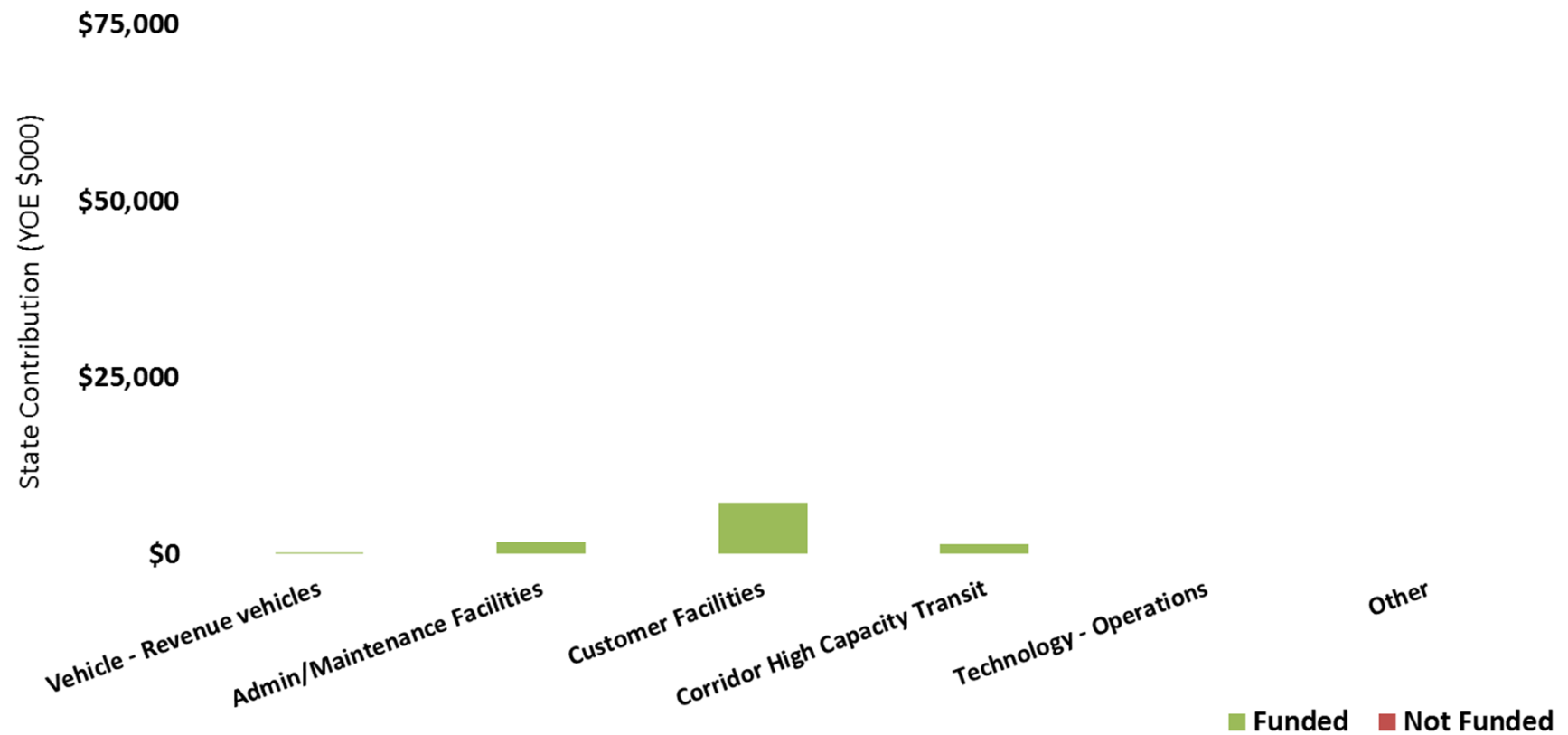
Revenue Available for Major Expansions	\$10,372
State Share of Major Expansions Costs	\$10,273

State Match Rates for Major
Expansions: 21%/10.5%/5.25%

Funded

Subtype	Funded	Percent Funded	Not Funded
Vehicle – Revenue Vehicles	\$54	100%	-
Admin/Maintenance Facilities	\$1,621	100%	-
Customer Facilities	\$7,238	100%	-
Corridor High Capacity Transit	\$1,360	100%	-
Technology – Operations	-	N/A	-
Other	-	N/A	-

ILLUSTRATIVE: SUBTYPES FUNDED IN FY21 – MAJOR EXPANSIONS (YOE \$000)



ILLUSTRATIVE: SUBTYPES FUNDED IN FY18-27 – SCENARIO 1B – SGR (YOE \$000)

Revenue Available for SGR	\$1,027,667
State Share of SGR Costs	\$979,408

Funded

Subtype	Funded	Percent Funded	Not Funded
Vehicle - Revenue vehicles	\$592,801	100%	-
Technology – Operations	\$139,207	100%	-
Admin/Maintenance Facilities	\$28,788	100%	-
Bus Shelters/Customer Facilities	\$91,528	100%	-
Maintenance equipment & parts	\$5,408	100%	-
Vehicle - Support vehicles	\$1,247	100%	-
Technology – Administrative	\$5,822	100%	-
Other	\$114,607	100%	-

ILLUSTRATIVE: SUBTYPES FUNDED IN FY18-27 – SCENARIO 1B – MINOR ENHANCEMENTS (YOY \$000)

Revenue Available for Minor Enhancements	\$51,772
State Share of Minor Enhancements Costs	\$7,764

Funded	Subtype	Funded	Percent Funded	Not Funded
	Vehicle - Revenue vehicles	\$6,449	100%	-
	Technology – Operations	\$331	100%	-
	Admin/Maintenance Facilities	\$575	100%	-
	Bus Shelters/Customer Facilities	\$351	100%	-
	Maintenance equipment & parts	-	N/A	-
	Vehicle - Support vehicles	-	N/A	-
	Technology – Administrative	-	N/A	-
	Other	\$59	100%	-

Note: Surplus goes to SGR

**ILLUSTRATIVE: SUBTYPES FUNDED IN FY18-27 –
SCENARIO 1B – MAJOR EXPANSIONS (YOE \$000)**

Revenue Available for Major Expansions	\$115,048
State Share of Major Expansions Costs	\$110,210

Funded

Subtype	Funded	Percent Funded	Not Funded
Vehicle – Revenue Vehicles	\$17,226	100%	-
Admin/Maintenance Facilities	\$15,715	100%	-
Customer Facilities	\$53,078	100%	-
Corridor High Capacity Transit	\$20,732	100%	-
Technology – Operations	\$2,909	100%	-
Other	\$550	100%	-