

# Using Decision Support Tools for Transit Asset Management

February 3, 2022



**TRANSIT  
ASSET  
MANAGEMENT**

**David Juba**, Susquehanna Regional Transportation  
Authority

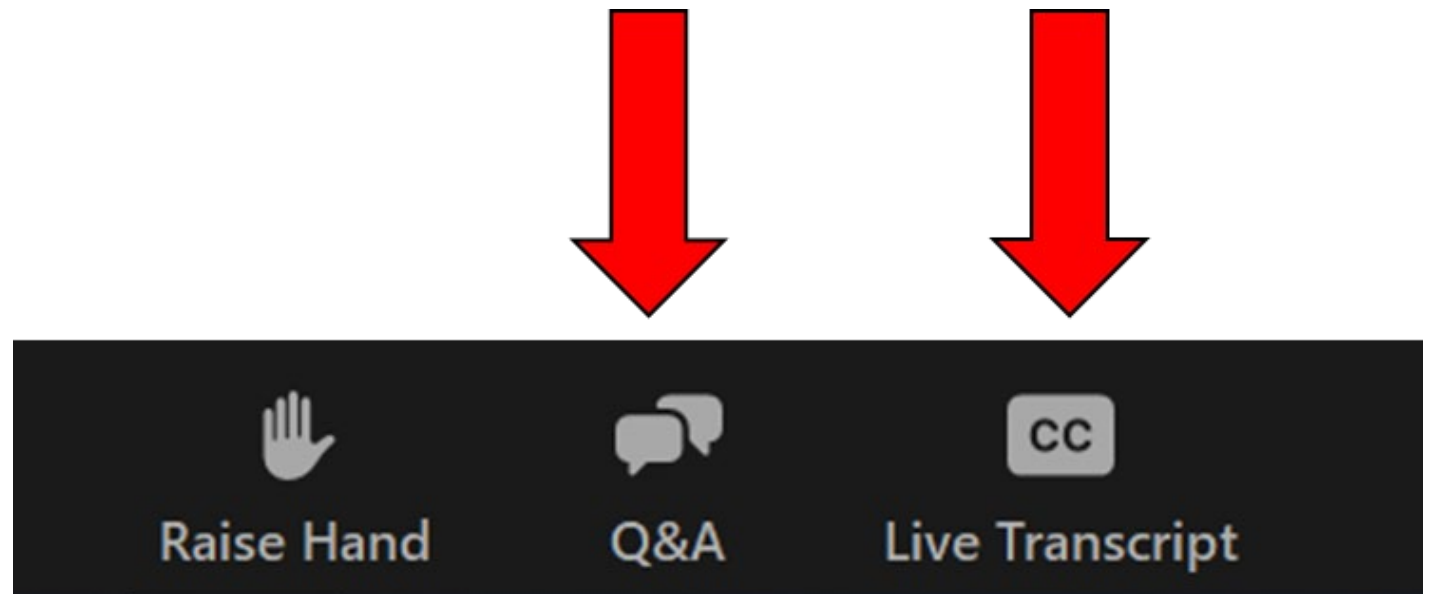
**Darin Stavish**, Pierce Transit



# Presentation Materials and Zoom Functionality

[www.transit.dot.gov/TAM](http://www.transit.dot.gov/TAM)

Select "TAM Events" in the sidebar and navigate to "Webinar Materials"



# TAM Updates

- First required TAM Plan update is due October 1, 2022
- [2022 FTA Transit Asset Management \(TAM\) Virtual Roundtable](#)



TRANSIT  
ASSET  
MANAGEMENT

**Save the date - July 19, 2022**

FTA will host the thirteenth TAM Roundtable as an online event on Tuesday, July 19.

# APTA TAM Resources



## [APTA TAM Resource Page](#)

- APTA Recommended Practices
  - [Using Performance Targets to Drive a Transit Asset Management Program](#)
    - » Describes a strategy for setting short-, mid- and long-term condition measures and how to use performance targets to drive an agency's TAM program.
  - [Using Asset Criticality to Make More Informed Decisions in a Transit Agency](#)
    - » Introduces key concepts in asset criticality, provides worked examples for determining asset criticality using three different methods, and presents a framework for preparing for and performing a criticality assessment.
- TAM Plan examples

# NTI Training Course



## Enhancing Your Transit Asset Management Program with Lifecycle Management

Monday, February 14, 2022—Thursday, February 17, 2022  
1:00pm – 3:30pm ET

Monday, March 14, 2022—Thursday, March 17, 2022  
1:00pm – 3:30pm ET

Sign up today!

[www.ntionline.com/tam-201-enhancing-your-transit-asset-management-program-with-lifecycle-management/](http://www.ntionline.com/tam-201-enhancing-your-transit-asset-management-program-with-lifecycle-management/)



# Speakers



**David Juba**  
Planning Manager  
Susquehanna Regional Transportation  
Authority (SRTA)



**Darin Stavish**  
Principal Planner  
Pierce Transit

# Engaging the Utility of Decision Support Tools

A large, stylized red graphic element on the right side of the slide, resembling a bird or a wing, with several curved lines extending from the top left towards the center.

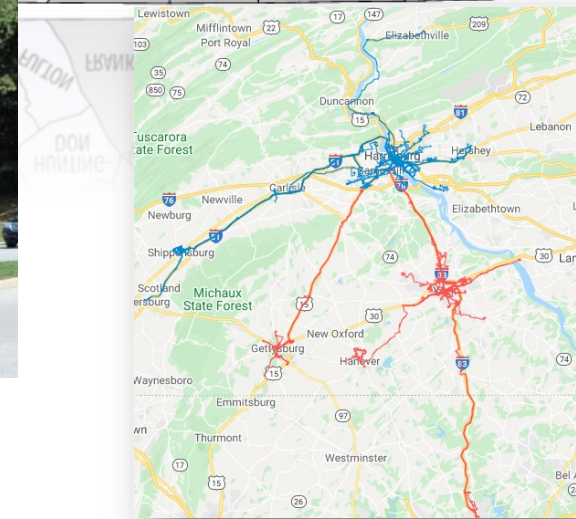
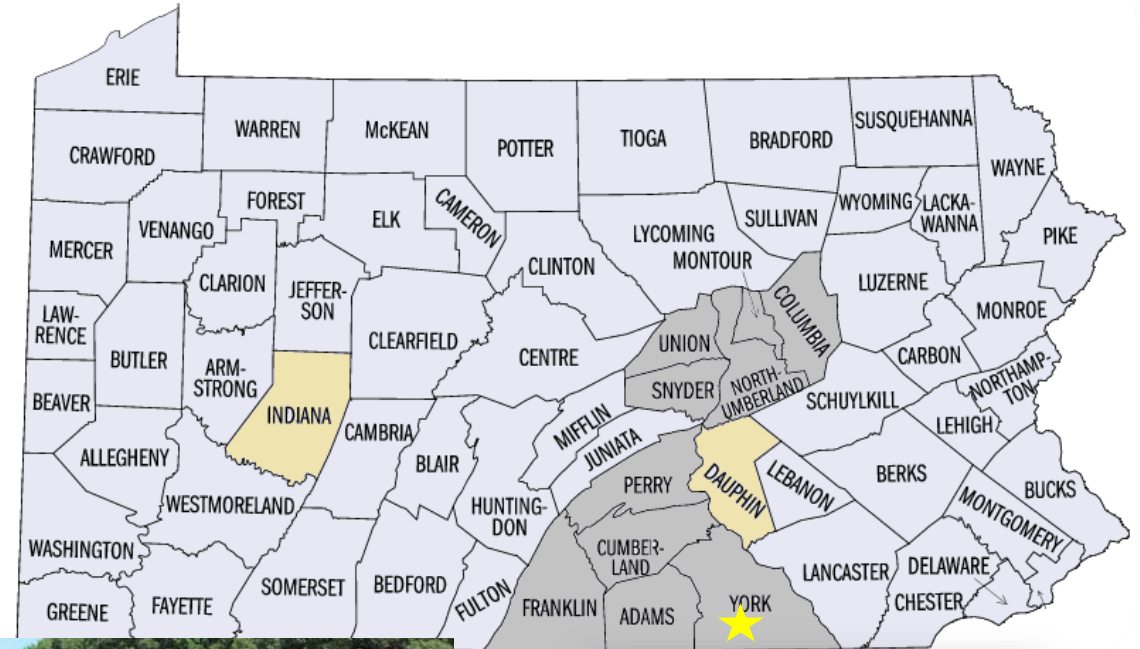
Presented by:

David Juba, Planning Manager

Susquehanna Regional Transportation Authority (SRTA)

# SRTA Overview

- Recent merger of two systems – Central Pennsylvania Transportation Authority (York, PA) and Capital Area Transit (Harrisburg, PA).
- Fixed Route/Commuter Bus - 59 routes across 4 counties.
- Demand Response - Operate services across 11 counties in South Central PA.
- Approximately 442 rolling stock, 37 non-revenue vehicles, and 12 facilities maintained across large geographic area.
- CPTA had a Tier 1 Plan based on  $\geq 101$  vehicles in non-fixed mode.





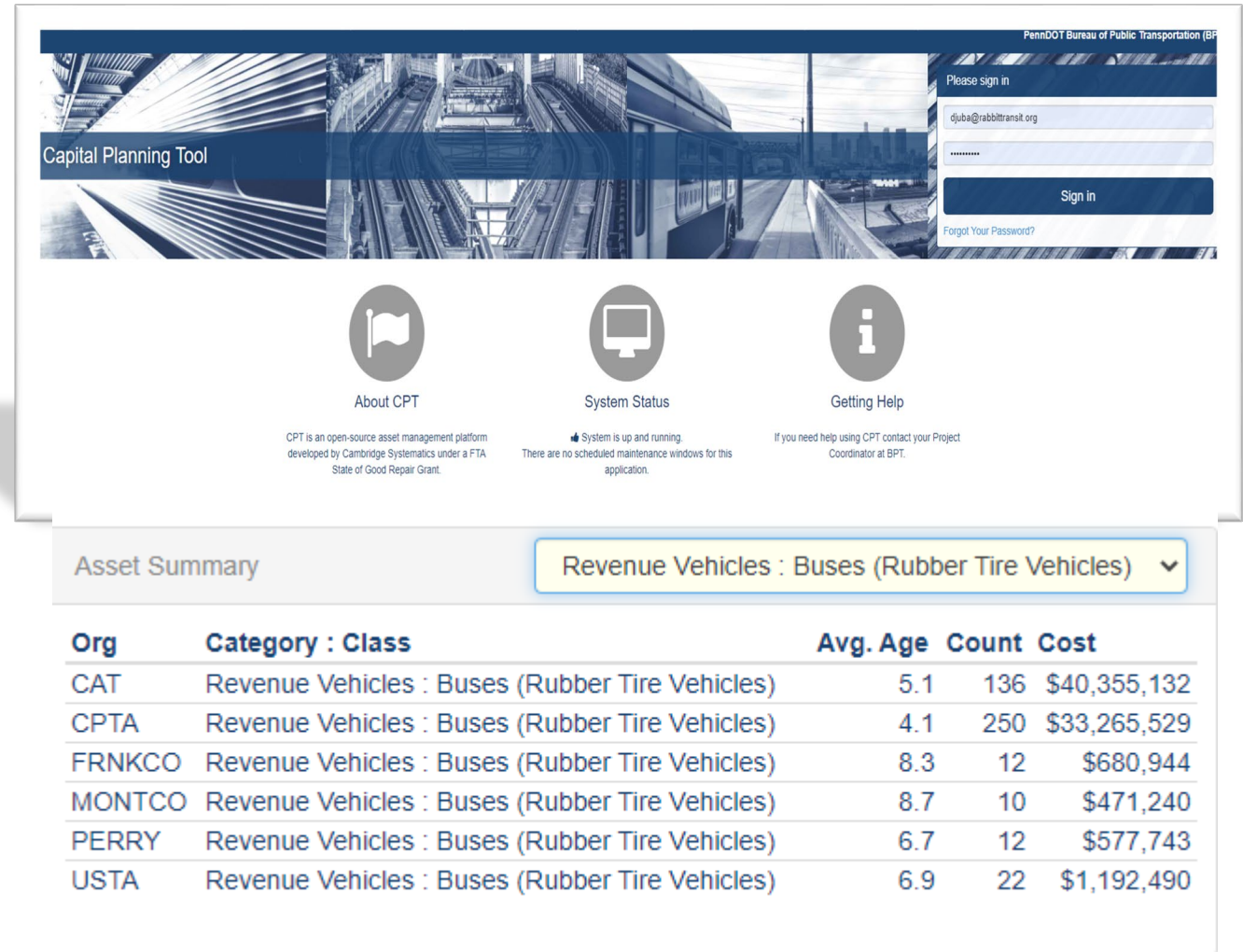
# Introduction to Transit Asset Management

- PTASP and TAM requirements viewed as opportunity to improve performance-based planning.
- We had a framework of individual procedures and SOPs, but not any cohesive plan or lead.
- TAM Plan Framework:
  - Create a compliant, functional, and “living” program.
  - Connect TAM to mission objectives.
    - Safety, Service, and Stewardship.
  - Recognize/improve on weaknesses in the current process.
    - Lack of internal champion.
    - Inconsistency in practice internally and among peers.
    - Lack of Decision Support Tools.
  - Coordinate, Implement, and Monitor.



# The Capital Planning Tool (CPT)

- Primary decision support tool of SRTA's TAM Plan.
- Based on TransAM, an open-source asset management platform.
- Designed to support PA Bureau of Public Transportation (BPT) and transit agencies.
- The CPT improved or expanded the agencies capabilities in the following categories:
  - Weaknesses Resolution.
  - Transparency and Reduction of Silos.
  - Capital Planning Process.
  - Data, Analytics, and Reporting.



PennDOT Bureau of Public Transportation (BPT)

Please sign in

djuba@rabbittransit.org

.....

Sign in

Forgot Your Password?

Capital Planning Tool

About CPT

System Status

Getting Help

CPT is an open-source asset management platform developed by Cambridge Systematics under a FTA State of Good Repair Grant.

System is up and running. There are no scheduled maintenance windows for this application.

If you need help using CPT contact your Project Coordinator at BPT.

Asset Summary

Revenue Vehicles : Buses (Rubber Tire Vehicles) ▾

Org	Category : Class	Avg. Age	Count	Cost
CAT	Revenue Vehicles : Buses (Rubber Tire Vehicles)	5.1	136	\$40,355,132
CPTA	Revenue Vehicles : Buses (Rubber Tire Vehicles)	4.1	250	\$33,265,529
FRNKCO	Revenue Vehicles : Buses (Rubber Tire Vehicles)	8.3	12	\$680,944
MONTCO	Revenue Vehicles : Buses (Rubber Tire Vehicles)	8.7	10	\$471,240
PERRY	Revenue Vehicles : Buses (Rubber Tire Vehicles)	6.7	12	\$577,743
USTA	Revenue Vehicles : Buses (Rubber Tire Vehicles)	6.9	22	\$1,192,490

# Resolved Weaknesses & Removal of Silos

- Resolved Weaknesses
  - TAM Champion became CPT Manager.
  - Significantly improved comparability of assets and record keeping.
  - Provided a one-stop-shop for agencies across the state and made best practice discussion possible.
- Transparency and Silos
  - Everyone in agency with a role in this process has access and permissions in CPT.
  - CPT Manager retained responsibility to update and edit.
  - Improved regular capital meetings due to everyone starting on a similar understanding.



# Capital Planning Process

- Significant improvement to capital planning process.
  - Provided a means of tracking annual project needs, lifecycles, funding sources and availability, shadow vehicle planning, etc.
  - Assets were tracked as part of unconstrained plan funding request and carried through the capital process for the State.
  - Assets replaced or disposed in the system could still be identified in the system along with their capital information.

The screenshot shows a 'Capital Projects' table with columns for Name, FY, Num. ALIs, and Cost. A dropdown menu is set to '22-23'. Below the table, a blue box displays '23-24' and '\$2,078,181'. The project detail view for 'YCTA 23-24 #5476' shows a total cost of \$42,968, type 'Replacement', SOGR 'Yes', and details for 'Acquisition Support Vehicles GA-Gasoline assets' including a date of 11.42.11, 2 assets, and a cost of \$42,968 (e).

Name	FY	Num. ALIs	Cost
CAT 22-23 #4268	22-23	6	\$11,566,774
CAT 22-23 #4285	22-23	2	\$883,494
CAT 22-23 #4299	22-23	3	\$801,246
CAT 22-23 #8122	22-23	1	\$10,417
FRNKCO 22-23 #7397	22-23	1	\$202,494
MONTCO 22-23 #7399	22-23	2	\$172,205
PERRY 22-23 #7401	22-23	2	\$117,874
USTA 22-23 #7403	22-23	4	\$287,231
YCTA 22-23 #5455	22-23	1	\$5,460,615
YCTA 22-23 #5465	22-23	4	\$272,850
CPTA 22-23 #8155	22-23	4	\$224,950

**23-24**  
**\$2,078,181**

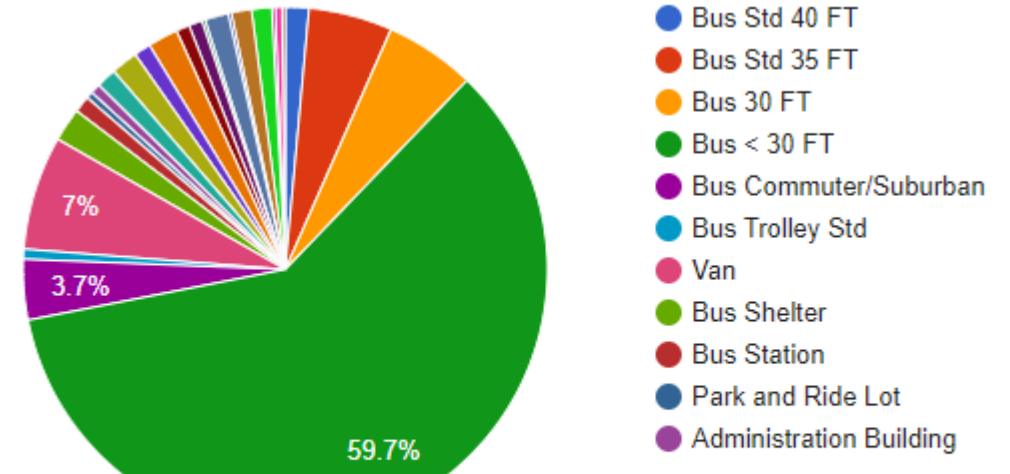
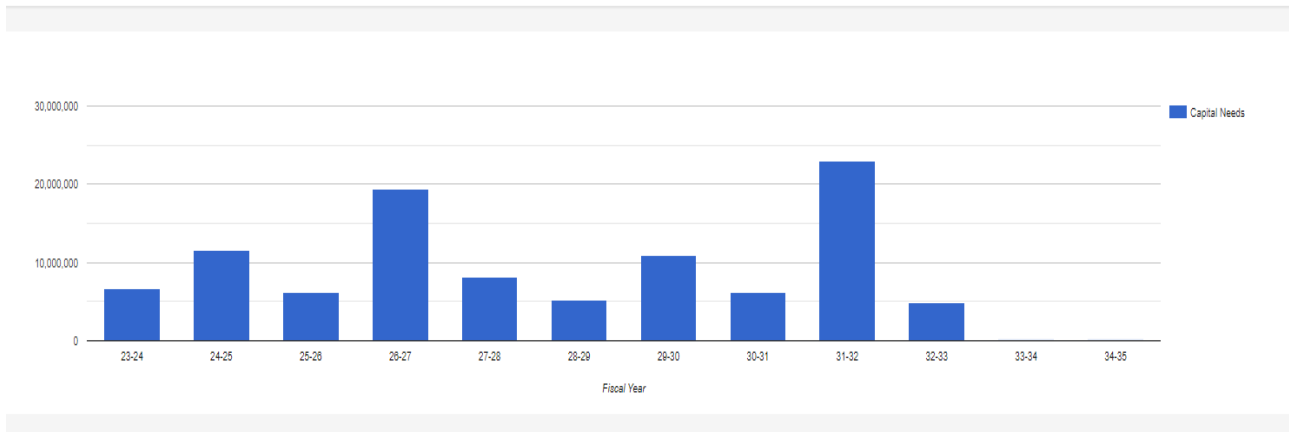
**Project**  
YCTA 23-24 #5476  
Total Cost \$42,968  
Type Replacement  
SOGR Yes

[Edit](#)

**Acquisition Support Vehicles GA-Gasoline assets**  
11.42.11  
2 assets  
\$42,968 (e)

# Data and Reporting

- Access to quick visualizations, charts, and reports.
- Advanced query and filtering capabilities.
- Ability to update and modify vehicle records.
- Historic record and cookie crumb trail.
- Annual auditing by external partners.



Buses (Rubber Tire Vehicles) Profile

CPTA : 15GGD3011D1181728 : 318 : GIL - Gillig Corporation : LOW FLOOR BRT : 2013

### Highlights

History **70** Tasks **0** Comments **0** Documents **0** Photos **0** Charts Asset Values

Event	Event Activity
Mileage Update	Mileage recorded as 416344 miles on 07/07/2021
Mileage Update	Mileage recorded as 398836 miles on 02/15/2021
Condition	Condition recorded as 2.00 (Marginal) on 02/15/2021
Service Status Update	Service status changed to In Service on 02/15/2021

### Asset Summary

#### Profile

Owner CPTA  
 Description GIL LOW FLOOR BRT  
 Asset Tag 318  
 External ID  
 Manufacturer GIL  
 Class Revenue Vehicles  
 Type Bus Std 40 FT  
 Status In Service  
 Location ZARFOSS

### Profile

Identification & Classification Characteristics Funding Pr

#### Identification & Classification

##### \* Vehicle Identification Number (VIN)

15GGD3011D1181728

##### \* Asset ID

318

##### External ID

NTD ID

# CPT Impact on TAM

- Improved incorporation of the EUL vs. ULB windows.
- More holistic vision of capital planning beyond rolling stock.
- Increased specificity of asset groupings and fleet configuration needs across the system.
- Helped identify fleet group cost comparability and “red-flags” for future builds.
- Expanded our condition assessment from age, to age and mileage, to age and mileage “plus” using detailed physical condition assessments.
- Promoted understanding of agency needs in upgrading maintenance software.
- Improved transition of CPTA and CAT to SRTA through data comparability.



The screenshot shows a software interface with a top navigation bar containing icons for a bus, a line graph, and a dollar sign. Below the navigation bar are menu items: Revenue Vehicles, Equipment, Facilities, Infrastructure, Groups, and a Query search bar.

The main content area displays a 'TAM PLAN: Vehicle Condition' report for a specific vehicle. The report includes the following details:

Inspector(s) Name:	
Inspection Date:	
Vehicle Number:	602
Vehicle Identification Number (VIN):	15GGD211271078329
Vehicle Type:	Express Bus
Vehicle Year:	2007
Vehicle Make & Model:	Gillig BRT
Operating Division:	Adams Express

Below the report is a table titled 'Revenue and Non-Revenue Vehicle Condition Inspection Assessment'.

ID	Main Component	Sub-Component	Condition Rating Score
A.			<b>34</b>
A.1.	Engine	Compression Test	NA
A.2.		Oil Usage/Levels	4
A.3.		Noises	3
A.4.		Coolant Level (leaks)	4
A.5.		Radiator (leaks)	4
A.6.		Air Filter	3
A.7.		Engine Mounts/Brackets/Hardware (Condition)	3
A.8.		Belts and Pulleys	3
A.9.		Starter (Connections/Mounts)	4
A.10.		Hoses, Tubes, Lines (leaks)	3
A.11.		Cat/Exhaust System (Pipes/Clamps)	3

# TAM 2022 Update Considerations

- Updating SOPs
  - Needs to remain clear as processes change or migrate along with updates to CPT functionality.
  - Incorporate differences between CAT and CPTA.
- Investment Prioritization
  - While the CPT provides better tracking, it is still limited in capabilities to tie prioritization or importance to different capital needs. This process is still done manually.



# Thank you!

## Contact Information:

David Juba, SRTA Planning Manager

Email: [djuba@rabbittransit.org](mailto:djuba@rabbittransit.org)

Phone: 717-849-0722





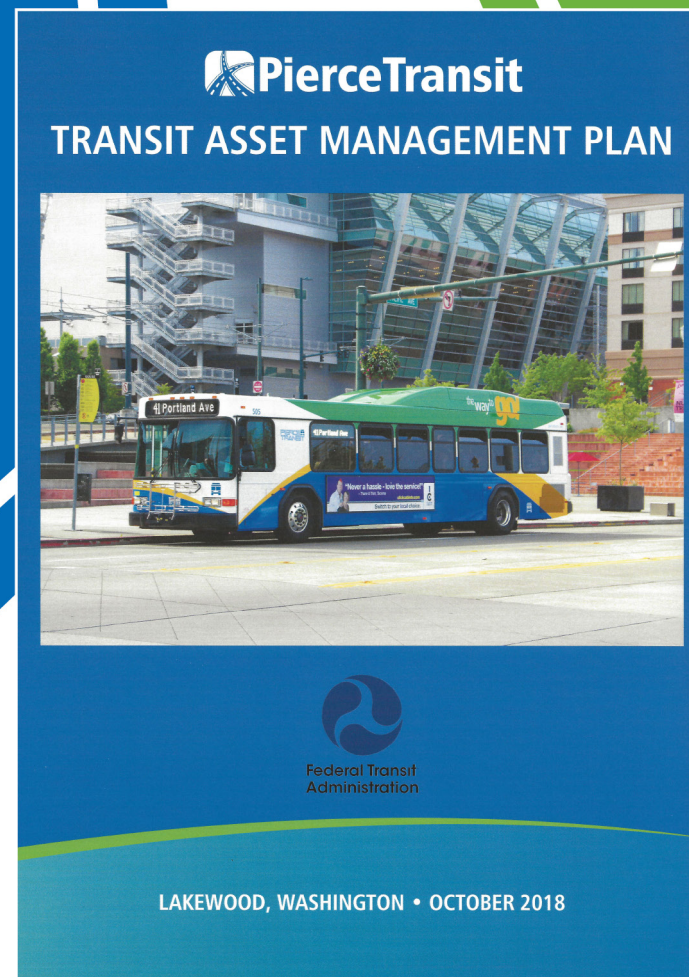
# Poll 1





# FTA Decision Support Tools

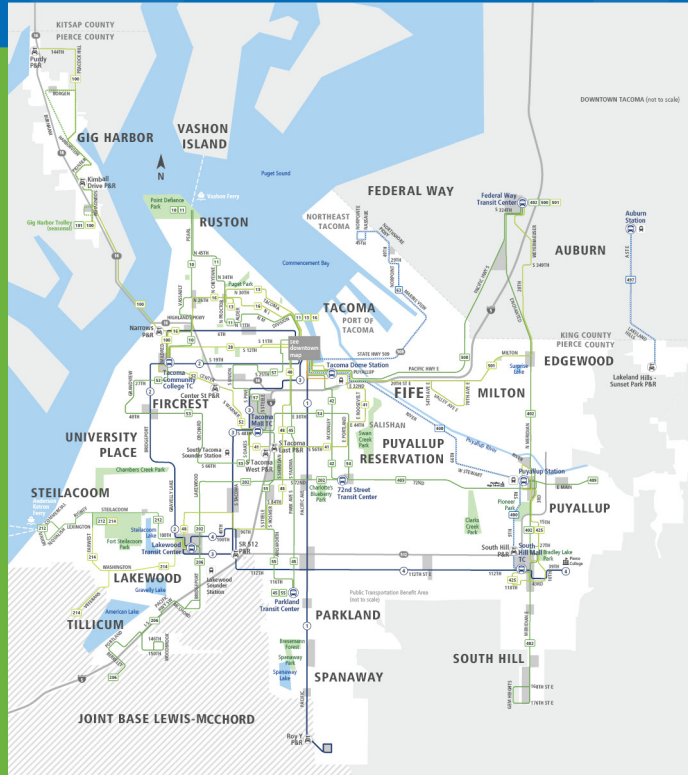
February 3, 2022



# A Bit of Information on Pierce Transit

292

Square Miles of Service Area



13

Cities, Towns, JBLM, and Unincorporated Areas



70%

of Pierce County's population served



# Modes Offered



**322**  
Vanpool  
Vehicles

**163**  
Fixed Route  
Buses

**101**  
SHUTTLE  
Paratransit  
Vehicles

**4**  
Runner  
Microtransit  
Zones



**116**  
Non-Revenue  
Vehicles

# Public-Facing Facilities

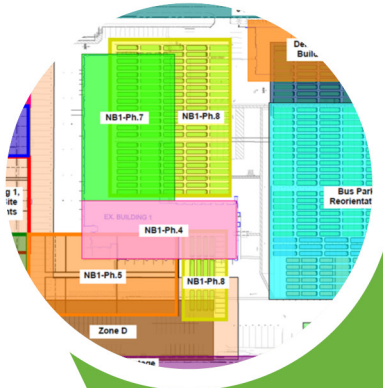


**12**  
Transit Centers,  
Stations and  
Park & Rides

**2,171**  
Bus Stops

**553**  
Bus Stops  
with Shelters

# Our Three Largest Capital Objectives



- 1 MOBI**  
Lakewood  
Base Renovation



- 2 STREAM**  
All-New  
Bus Rapid Transit

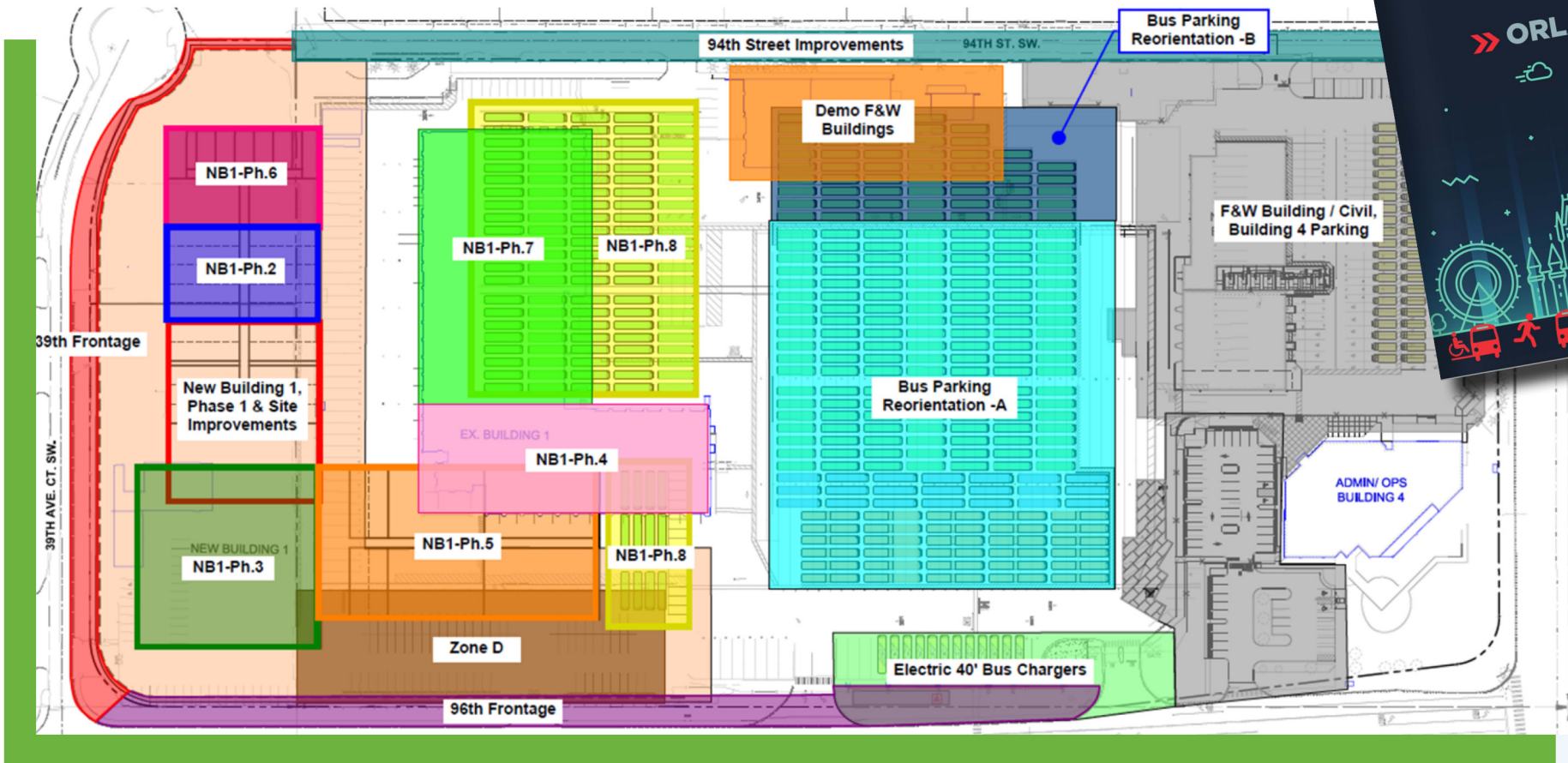


- 3 ELECTRIC**  
Powered, Zero  
Emissions Buses

1

# MOBI

## Maintenance & Operations Base Improvements



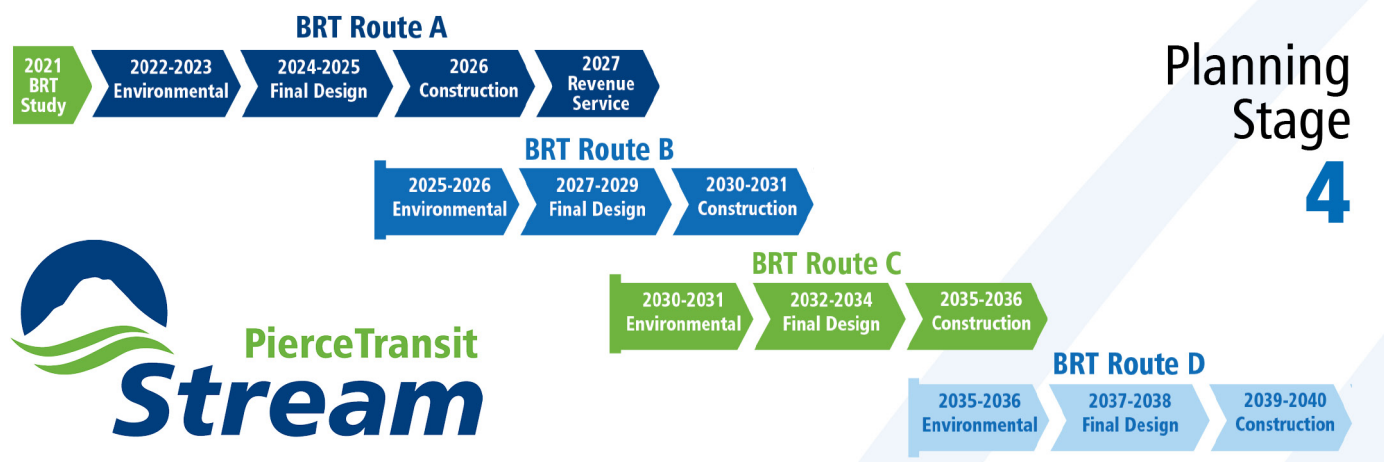
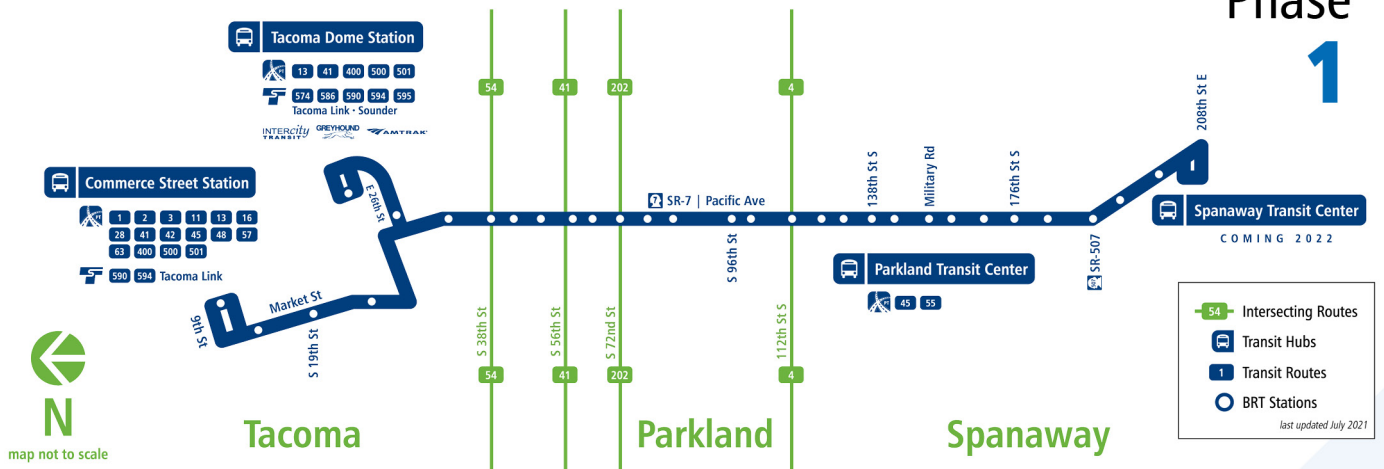
**\$185M**  
MOBI Projects  
Cost Estimate

# 2

# Stream BRT

## Bus Rapid Transit

Design Phase 1



Planning Stage 4



3

# Electric Buses

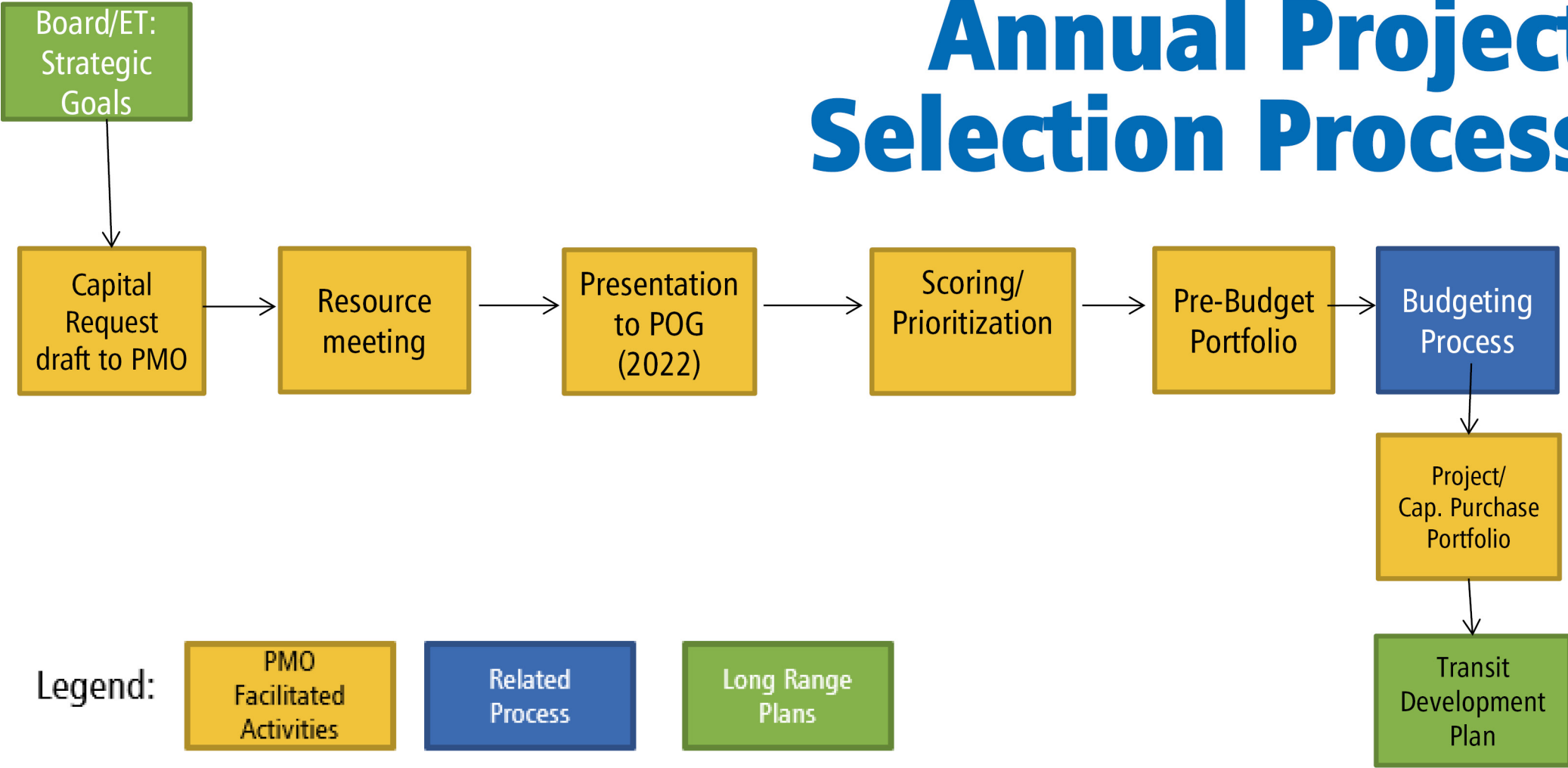
Battery-Powered • Zero Emissions

9

Currently  
in Fleet



# Annual Project Selection Process



Legend:

PMO Facilitated Activities

Related Process

Long Range Plans

Transit Development Plan



## 2021-2026 Business Case

<b>Project Number:</b>	571
<b>Project Title:</b>	South Hill Mall TC Renewal
<b>Proposer:</b>	Monica Adams
<b>Sponsor:</b>	Frank Castro
<b>Project Manager:</b>	Monica Adams
<b>Desired Starting Year:</b>	2021
<b>Has the request been proposed before? If so, what year and title?</b>	Yes 2020 same name
<b>Board Approved Project Budget:</b>	\$960,000

**Type of Request:** Replacement/State of Good Repair (SOGR)  
Identified in Facilities Conditions database (EAM)

**Description:**

**Life Expectancy:** 15 years

Strategic Goal:	Applies Because:
Customer Focused - Provide transportation services that meet our current and potential customers' needs.	customers will benefit from better lighting, improved pedestrian pathways and a smoother ride at the transit center. Operators will benefit from restroom enhancements. And our utility bill will decrease based on more energy efficient lighting.

### Problem/Opportunity and Anticipated Results

Please describe the project in 500 words or less, what opportunity will it provide?

The concrete bus way is significantly cracked. The shelter and restroom building roofs need repair and painting. The restrooms need updating and the lighting needs upgrading. Pedestrian pathway and ADA upgrades are also needed.

## Estimate of Project Costs

Deliverable(s)	Capital Costs Incl. tax (rate depends on location)	Capital Contingency (incl. 5% annual inflation)	Capital Costs with Tax and Contingency	Operating Costs Incl. tax (rate depends on location)	Operating Contingency	Operating Costs with Tax and Contingency	Total Project Amount	Request ed Funding Year
bus way repairs, restroom and lighting upgrades, shelter and building paint, glass replacement	\$872,500	\$87,250	\$960,000	\$		\$	\$960,000	2021
<b>Totals:</b>	<b>\$872,500</b>	<b>\$87,250</b>	<b>\$960,000</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$ 0</b>	<b>\$960,000</b>	

**Total Project Cost Estimate:** \$960,000

**Cost Assumptions:** based on Stemper's cost estimate

Must Do	Should Do	Could Do	Won't Do
<b>Bus Fleet Replacement 2021</b> Budget: \$6,209,100 Score: 775 Rank: 1	<b>Support Replacement 2021</b> Budget: \$292,462 Score: 461 Rank: 3	<b>6th Avenue Passenger Amenities - Design</b> Budget: \$742,836 Score: 169 Rank: 10	<b>Bus Rapid Transit System Expansion Study and Conceptual Design</b> Budget: \$837,303 Score: 78 Rank: 12
<b>Network Infrastructure Replacement 2021</b> Budget: \$760,000 Score: 509 Rank: 2	<b>South Hill Mall TC Renewal - additional scope (increase SHM TC budget)</b> Budget: \$960,000 Score: 338 Rank: 5	<b>Vanpool Replacement 2021</b> Budget: \$814,118 Score: 381 Rank: 4	<b>IT Area Remodel Phase 2</b> Budget: \$102,920 Score: 47 Rank: 13
<b>Call Center Software Replacement</b> Budget: \$55,000 Score: 319 Rank: 6	<b>Spanaway Transit Center &amp; Park-and-Ride - Phase II Design</b> Budget: \$1,000,000 Score: 299 Rank: 7		

## Capital Project Request (CPR)

(Auto-Saved 01.24.2022 8:32 AM)

Instructions

### Start Process

Print Copy Check Spelling Show Workflow Submit Save Draft Delete Draft Cancel

Project:	*Capital Project Selection
Project Number:	ZZZ
Process:	Capital Project Request
* Subject:	<input type="text"/>

Details Attached Documents (0) Attached Processes (0) Attached Forms (0)

### Proposed Project Details

* Project Name:	<input type="text"/>	* Start Year:	-- Please select an option --
* Proposer:	<input type="text"/>	* Estimated Project Start Date:	<input type="text"/>
* Project Sponsor:	-- Please select an option --	* Estimated Project End Date:	<input type="text"/>
* Business case discussed with Executive Director:	<input type="radio"/> Yes	* Has the request been proposed before?:	<input type="radio"/> Yes <input type="radio"/> No
* Project Manager:	<input type="text"/>	If yes, what year and title?:	<input type="text"/>

### Project Overview

* Type of Request:	-- Please select an option --
State of Good Repair Choices:	
Description:	<input type="text"/>
* Life Expectancy:	<input type="text"/>
* Strategic Goal:	-- Please select an option --
* Goal Alignment:	How does this project align with the strategic goal selected above? <input type="text"/>
* Purpose/Problem/Opportunity and Anticipated Results:	Please describe the project in 500 words or less, what opportunity it will provide? <input type="text"/>

## 1. Executive Summary

### 1.1. Property Information and General Physical Condition

The property information is summarized in the table below. More detailed descriptions may be found in the various sections of the report and in the Appendices.

Property Information	
Main Address:	601 Puyallup Avenue, Tacoma, Washington 98421
Primary Mode Served at Facility	Fixed Route Bus
Passenger or Parking Facility Type	Parking Structure
Site Developed:	1997 Renovated 2016
Current Occupants:	Pierce Transit Greyhound Bus Lines
Percent Utilization:	100%
Management Point of Contact:	Duane Waken
Number of Buildings:	Two structures– assessed as one site

Assessment Information	
Dates of Visit:	October 11, 2021 and November 2, 2021
On-Site Point of Contact (POC):	Larry McCarty
Assessment and Report Prepared by:	Richard Henke Matthew Anderson Program Manager
Reviewed by:	Matt.Anderson@bureauveritas.com 800.733.0660 x7613

### 1.2. Poor and Marginal Condition Assets

Immediate Repairs			
Location	Description	Condition	Cost
Throughout	Elevators: East Elevator #2 is Out of Order	Poor	\$154,000
East Garage	Water Heater, Electric	Poor	\$800
		<b>Total</b>	<b>\$154,800</b>

### 1.3. Facility Condition Rating

One of the major goals of the FCA is to calculate the Facility Condition as defined by the Federal Transportation Administration (FTA). The Facility Condition is determined by using the Condition Assessment Calculation as provided in the FTA Transit Facility Performance Measure Reporting Guidebook (FTA Guidance), published in April 2017. A facility is deemed to be in good repair if it has a condition rating of 3, 4, or 5 on the FTA Transit Economic Requirement Model (TERM) Condition Rating scale. Additional information on the calculation methodology is provided in Section 2 of this report.

The table below shows the calculation of the Facility Condition Rating for this facility by using the FTA Weighted Average Condition of the Primary Levels. For the purposes of this report the condition of the site surrounding this building is included in a separate site report prepared by BV.

Generally, the Facility appears to have been constructed within industry standards in force at the time of construction. Based on the FTA TERM Condition Rating Scale, the Facility is in Adequate overall condition. Appendix D of this report contains the full calculations that are summarized in the below table.

Tacoma Dome Station East and West Garage				
Building Area = 733,100 SF				
FTA Primary Level	Cost / SF	FTA Primary Level Replacement Cost	TERM Scale Condition Rating	Replacement Cost x TERM Scale Condition
Substructure	\$20.54	\$15,059,285	4.00	\$60,237,138
Shell	\$74.54	\$54,643,496	3.91	\$213,832,171
Interiors	\$0.19	\$137,592	3.22	\$442,767
Conveyance	\$1.16	\$847,351	2.39	\$2,025,939
Plumbing	\$0.00	\$965,659	3.00	\$2,896,014
HVAC	\$0.30	\$217,230	3.06	\$663,887
Fire Protection	\$0.07	\$48,658	2.82	\$136,988
Electrical	\$5.48	\$4,016,777	3.15	\$12,657,863
Equipment	\$0.00	\$706	3.00	\$2,118
Site	\$1.66	\$1,215,483	3.36	\$4,078,930
<b>Total</b>	<b>\$103.92</b>	<b>\$77,152,237</b>	<b>Subtotal</b>	<b>\$296,973,815</b>
<b>Building Weighted Average Condition</b>			<b>3.85</b>	
Building Weighted Average Condition equals the Sum of the individual Primary Level Replacement Cost x TERM Scale Condition Ratings divided by the Sum of the Primary Level Replacement Costs.				

The FTA Primary Level Replacement Costs are calculated by totaling the Secondary Level Costs for each Primary Level. The Secondary Level TERM Scale Condition Ratings and cost calculations are included in Appendix D.

### 1.4. Follow-Up Recommendations

No additional study is required.

# In Development

1

## Capital Improvement Plan

Goal to have in place  
by Summer 2022

2

## Enterprise Asset Management System

Goal to have in place  
by Fall 2022

# Utilizing FTA Resources

## TERM Lite

- Updating Vehicles, Systems, and Facilities Inventories
- Model Outputs - Planning Scenarios and Funding Requirements
- Using Prioritization Criteria Settings and Weights
- Identifying Current SGR Backlogs

## TERM Lite Challenges

- Customizable Asset Inventory Publisher Matrix
- Standardized Reports Formatting/Orientation
- Age of Software Program (v2.3): 2015



# Utilizing FTA Resources (cont.)

## TAMPLATE

- Adding Updated PMs & Targets: 2022-2025
- Aligning Capital Asset Inventory Tables with NTD
- Developing or Refining TAM Vision, Goals, and Objectives
- Documenting SGR Policy and Continuous Improvement Approach

## TAMPLATE Suggestions

- Include a mock transit agency's output report
- Option to align capital inventories with TERM Lite too
- Provide a "Save and Review Draft" option (i.e., progress to date)



TAMPLATE

Transit Asset  
Management PLanning  
Assistance Template





# Thank You for Your Time

Any Questions?

**Email**

[dstavish@piercetransit.org](mailto:dstavish@piercetransit.org)

**Office**

253.983.3329

# Poll 2



# Q&A





[TRANSIT.DOT.GOV](https://www.transit.dot.gov)