

Transit Asset Management Plan Update



Federal Transit Administration

This page intentionally left blank.

Table of Contents

Section 1 – Introduction to Pierce Transit (Lakewood, Washington).....	4
Section 2 – Capital Asset Inventories.....	14
Section 3 – Existing Conditions Assessments.....	30
Section 4 – Decision Support Tools: In Place and Under Consideration.....	36
Section 5 – Investment Prioritization.....	44
Section 6 – Implementation Strategy.....	56
Section 7 – Key Activities: Current and Future.....	60
Section 8 – Evaluation Plan.....	72
Section 9 – Looking Ahead to 2026 and Beyond.....	82

Appendices

- A. Revised and Updated TAMP Performance Measures & Targets: 2022-2025 – Adopted September 30, 2021
- B. Complete Facility Condition Summary Report as prepared by Bureau Veritas – May 4, 2022
- C. Information from Trapeze on a Capital Facilities-specific Enterprise Asset Management (EAM) Software Program – April 19, 2022
- D. Prioritized List of Capital Project Requests: 2023 (aka Pre-Budget Portfolio)
- E. Adopted 2022 Capital Budget Excerpt
- F. Excerpt from Passenger Transport magazine for APTA's TRANSform Conference & Expo, November 8, 2021 edition
- G. MOBI Projects & Cost Projections: 2021-2030 – May 6, 2022
- H. Executive Order No. 1 - Amended June 24, 2022

The Nine Required TAM Plan Elements for Tier I Transit Agencies

Element	Brief Description
1. An inventory of assets	A register of capital assets and information about these assets.
2. A condition assessment of inventoried assets	A rating of the asset's physical state; to be completed for assets an agency has direct capital responsibility for; should be at a level of detail sufficient to monitor and predict performance of inventoried assets.
3. Description of a decision support tool	An analytic process or tool that (1) assists in capital asset investment prioritization and/or (2) estimates capital needs over time (but) does not necessarily mean software.
4. A prioritized list of investments	A prioritized list of projects or programs to manage or improve the State of Good Repair (SGR) of capital assets.
5. TAM and SGR policy	A TAM policy is the executive-level direction regarding expectations for transit asset management; a TAM strategy consists of the actions that support the implementation of the TAM policy.
6. Implementation strategy	The operational actions that a transit provider decides to conduct, in order to achieve its TAM goals and policies.
7. List of key annual activities	The actions needed to implement a TAM plan for each year of the plan's horizon.
8. Identification of resources	A summary or list of the resources, including personnel, that a provider needs to develop and carry out the TAM plan.
9. Evaluation plan	An outline of how a provider will monitor update, and evaluate, as needed, its TAM plan and related business practices, to ensure the continuous improvement.

SECTION

01

**Introduction to
Pierce Transit
(Lakewood, Washington)**

This page intentionally left blank.

A Brief History of the Agency

In May 1978, Pierce County officials decided to determine whether the area served by public transportation should be enlarged. They held public forums and asked questions. And an overwhelming majority of people in the community supported improved and expanded public transportation. Tacoma Transit staff met with consultants and prepared a draft transportation plan. This plan included timed-transfer centers, elderly and disabled door-to-door van service, ridesharing, and connections with Seattle (now King County) Metro. To gain citizen participation in planning bus routes for the expanded district, surveys were distributed and community workshops were held. Over three thousand people responded. In addition, 16 public hearings were held to determine where bus routes should be placed and scheduled; expanding the 20 former Tacoma Transit routes to 36 inaugural Pierce Transit routes. It also required increasing the bus fleet by 55, from 170 to 225. At the time, 24 of the existing buses that Pierce Transit inherited were Faegol-Twin Coaches dating back to 1948, operating well past their useful life.

During the eighteen months from May 1978 to November 1979, fifteen communities agreed to ask their residents to approve a 0.3% sales tax levy to fund a new Public Transportation Benefit Area Authority. In November 1979, voters said "Yes," and Pierce Transit was born. In January 1980, Pierce Transit assumed full operation of Tacoma Transit and four private suburban transit lines.

By 1985, it was obvious that Pierce Transit had outgrown its original maintenance and operations facility base in central Tacoma and began planning a new facility on a 20-acre site fronting S. Tacoma Way between 94th and 96th Streets SW in Lakewood, its current location since 1987. The initial cost estimate was a mere \$17 million, including real estate acquisition, development, and construction, of which 80 percent was anticipated to be federally funded.

Current State of the Agency: September 2022

Today's Pierce Transit serves urbanized Pierce County, Washington's second largest county with 917,000 residents, part of the Seattle-Tacoma-Bellevue SMSA. With a population of just over 4 million, it is the 15th largest MSA in the nation. The Pierce Transit service area population is 597,000 and encompasses nearly 300 square miles including Tacoma, the third largest city in the state, 12 smaller cities, and part of unincorporated Pierce County.

Pierce Transit directly operates 31 local fixed routes with 170 coaches and provides regional express bus service under contract to Sound Transit, the regional bus and rail transit provider. The inaugural Stream Bus Rapid Transit (BRT) route begins operation in 2027. Pierce Transit both operates and contracts with First Transit for complementary paratransit services using 32 ADA-compliant SHUTTLE coaches. The Agency also offers an extensive Vanpool (Commute Trip Reduction) program using 271 vans.

As local travel patterns change and Smartphones are increasingly utilized as a real-time portal to transit options, the Agency is working to adapt to these changes by offering new Runner on demand and point-to-point micro-transit options. In 2021, the Agency launched two new micro-transit zones: in the Tacoma Tideflats/Port of Tacoma area in a new commuter-oriented employment zone, and along Ruston Way (a popular tourist destination) plus areas between Point Ruston and downtown Tacoma where large, fixed route buses cannot travel, due to narrow, curvilinear streets and steep grades. These on-demand zones are designed to provide more public transportation options to residents with currently limited fixed route bus services. New for 2022, the JBLM Runner is specific to military personnel, their families, and employees needing transportation services to and from the Joint Base Lewis-McChord (JBLM) military installation. The new (August 2022) Spanaway Runner operates in three zones of the service area to the east and south that do not provide enough residential and employment densities to justify fixed routes, including the communities of Midland and Parkland. All micro-transit services are operated using special, wheelchair accessible vans equipped with a ramp so mobility devices can easily board and alight. Each Runner vehicle can accommodate one mobility device or a bicycle. This contracted service is currently operated exclusively by Medstar Transportation.

Pierce Transit was an early leader in adopting a low emissions revenue services fleet; the Agency converted two GM New Look buses to run on a combination of Compressed Natural Gas (CNG) and diesel in 1986. Its fleet focuses historically on CNG with a more recent conversion to diesel-electric hybrid and battery electric powered coaches. Three 40-foot Proterra Catalyst battery electric buses (BEBs) were introduced to the fixed route fleet in 2018 and six GILLIGs were added in 2021. Today, the fixed route bus fleet operates 80 percent CNG, 13 percent hybrid-electric, 5 percent BEBs, and just 2 percent still use diesel. In addition, Pierce Transit has been recognized by the USDOE's Clean Cities program for commitment to the use of cleaner, alternative fuels.

Transit Asset Management and State of Good Repair Policy: A Message from the Accountable Executive

Much has happened to change Pierce Transit's direction in the early 2020s. In fact, mid-2022 finds Pierce Transit in a unique but challenging situation as it positions itself for growth in fixed route and Runner microtransit services. As we gradually emerge from the two-year, worldwide COVID-19 pandemic, an opportunity to reintroduce Commute Trip Reduction or Vanpool as people transition back to in-person or in-office work is also apparent. Finally, the Agency recognizes its essential role in continuously providing the safest, easily accessible, and most reliable paratransit services to our community.

However, Pierce Transit recognizes and appreciates that mass transit agencies must now, more than ever, continue to operate like a private sector, for-profit business as it competes for new passengers while honoring the needs of its existing customer base, many of whom rely on its services as their only mobility option. It also faces challenges in hiring and retaining enough operators and mechanics or maintenance specialists to not only meet existing service objectives but position itself for future growth in fixed route, Stream Bus Rapid Transit corridors, and Runner microtransit zones.

As the new Chief Executive Officer, I have tasked the Agency with two goals for the 2020s as a precursor to eventually pursuing an increase in operating revenues through a ballot measure to collect the additional 0.3% - or full 0.9% - sales tax we are allowed as the Pierce County Public Transportation Benefit Area Corporation (PTBA), created in 1979.

The goals are:

- 1. To continue designing, funding, and building the various projects identified under the Maintenance & Operations Base Improvements plan (known internally as MOBI).*
- 2. To complete the inaugural Stream BRT project in the 14.4-mile section of the existing Route 1 from downtown Tacoma to Spanaway.*

Pierce Transit has also begun analyzing four additional high performing fixed routes as viable candidates for a possible expansion of the Stream BRT network over the next 20-year planning horizon.

In addition to completing major projects already in motion, sustainability will remain at the forefront of the Agency's priorities. In 2018, an ambitious goal was set to commit the Agency, to the maximum extent viable, to 20 percent electrification of the revenue vehicle fleet by 2030. To solidify the plan for transitioning our fleet to zero emissions, an outside firm has been selected to create a Zero Emissions Bus Study. Their analysis on how to proceed is expected by the end of 2022 and will consider all forms of zero emission vehicles, including battery electric and hydrogen fuel cell electric propulsion systems. Financial and operational resources will be key considerations as we finalize the transition plan.



And finally, but certainly of utmost importance, is recognizing our employees as our greatest asset by hiring, retaining, and investing in the public transportation industry's top talent through ongoing training and career development. We learned during the worldwide Coronavirus pandemic that a dedication to our workforce's health and safety is what kept us operating and continuously serving those who most rely on Pierce Transit, many as their sole transportation option.

I trust that this document will verify that Pierce Transit's primary commitment to the Pierce County, Washington service area, our patrons, and employees is keeping our entire inventory of vehicle or rolling stock, facility, and equipment assets in a consistent State of Good Repair.

Mike Griffus, Chief Executive Officer

Five TAM Plan Update Initiatives for 2022:

1. Create and have CEO adopt new Performance Measures and Targets covering CYs 2022-2025 for Capital Facilities, IT Equipment, and Rolling Stock.
2. Consistent, correct, and easily accessible data; not only for internal stakeholders but for our planning partners and the public we serve.
3. An integrated system of record (e.g., Facilities Conditions Assessment, EAM, TERM Lite, Power BI).
4. Investment prioritization and capital requirements through 2030; likely fiscally constrained in CYs 2022-2025 and unconstrained/unfunded in CYs 2026-2030.
5. A new TAM Plan document that brings value to each division within Pierce Transit and is regularly referenced or utilized. But not only because it's required by the FTA but because we want to create a comprehensive "living" TAM Plan Update that helps guide Agency planning and major capital investment decisions over the next 4-8 years.

The Agency's revised and updated TAMP Performance Measures & Targets: 2022-2025 (as adopted September 30, 2021) are provided as Appendix A.

Transit Asset Management Plan Update Vision

Pierce Transit's updated TAM Plan will serve to look back on the previous four-year reporting cycle and determine whether the State of Good Repair (SGR) performance measures and targets were met. It will also provide a near-term forecast of asset needs and long-term financial requirements.

Two very high priority capital projects requiring exceptionally large investments will occur during the current and subsequent TAM reporting periods. They are the new Maintenance & Operations ("MOBI") Building 1, Phases 1 through 8 (estimated at \$170 million in today's dollars) and the inaugural Stream BRT 1 project (estimated at \$241 million in today's dollars).

On the rolling stock side, Pierce Transit is committed to continuously investing in zero emission vehicles for both revenue and non-revenue purposes. The Agency's recently completed Phase 1 BEB Fleet Transition Plan¹ cites an ambitious goal of converting 20 percent of its existing CNG-powered buses to BEBs by 2030, along with non-revenue Service & Support vehicles. The initial cost estimate for vehicles is \$42 million plus associated charging infrastructure at \$38 million.

Sustainability and environmental stewardship continue to be at the forefront of all procurement or buying decisions made by the Agency.

¹A Path Towards Achieving a Comprehensive and Equitable Rollout of a Clean Transit Fleet and Infrastructure (May 2022)

The Agency is determined to offer its customers a variety of public transportation options that are clean, comfortable, safe, dependable, and viable. It will achieve this Vision by introducing Stream BRT in five corridors over the next 20 years. It also plans to expand Runner microtransit options in the short-term to new areas where on-demand service makes more sense contextually than fixed route bus. In addition, Pierce Transit will continue to substantially invest in its capital assets and equipment as building standards and transit-supportive technologies evolve through 2030 and beyond, as demonstrated by the individual MOBI project phases.

Transit Asset Management Plan Update Goals

1. Revise and update the Agency's inventories of capital assets, including facilities, rolling stock, and equipment.
2. Revise and update the current conditions of the Agency's inventory of capital assets, including facilities (using Bureau Veritas' FCA report), rolling stock, and equipment.
3. Document the scheduled replacement or upgrades of capital assets, including facilities, rolling stock, and equipment.
4. Revise and update all information from 2018 in the TERM Lite database (i.e., takes Goal #2 above a step further).
5. Create a Capital Improvements Program (CIP) template covering FYs 2022-2025 (constrained) and 2026-2029 (unconstrained).

Transit Asset Management Plan Update Objectives

1. To be used as part of the TAM Plan 2022 Update, revising and updating the TERM Lite database, and the annual Transit Asset inventory report due to WSDOT in February 2022.
2. Will determine the Remaining Useful Life (where applicable) of the Agency's facilities, rolling stock, and equipment.
3. Will be used for identifying projects and related funding needs, especially as it provides supporting documentation for use when applying for discretionary grants or other opportunities.
4. Using the TERM Lite database's planning modules, determine the Agency's State of Good Repair (SGR) financial outlook and any projected funding gaps through 2030.
6. The new CIP will directly serve Objective #3 above as well. (But likely will be a recommendation or "next steps" deliverable, to be developed in October and November and finalized in December 2022, so not specifically planned for inclusion in or part of this TAM Plan Update.)

Agency-wide State of Good Repair Policy and Strategies

Pierce Transit will closely monitor its fixed assets and rolling stock conditions with the intent of continuously offering our passengers the safest and most reliable public transportation options possible. The Agency also highly values its employees and is committed to investing in all areas of its Lakewood, Washington headquarters base, to provide modern workspaces, equipped with the latest in technology or tools, where each team member has the opportunity to succeed in their own public transportation area of expertise.

Employees as Assets: A Look at the Existing Workforce

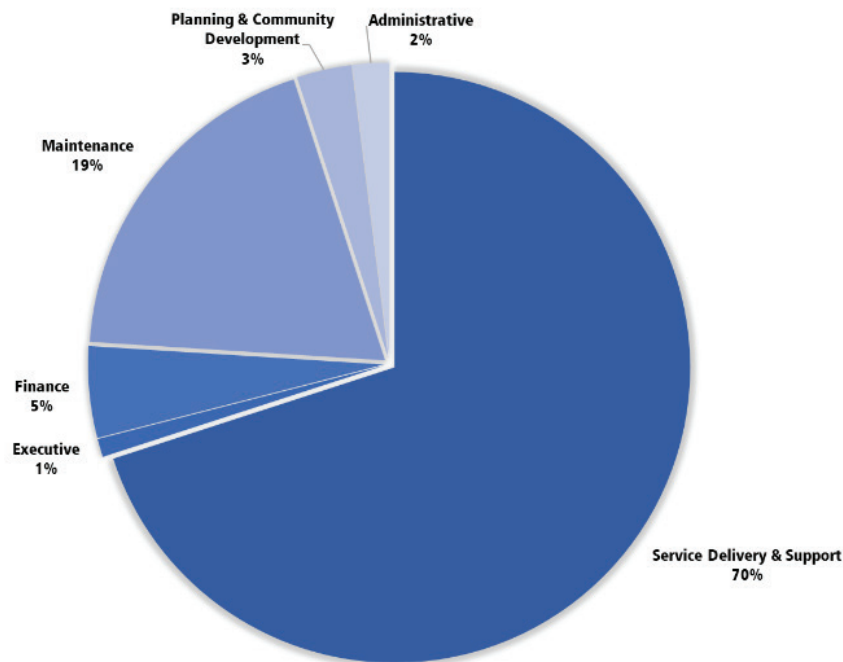
The 2022 Pierce Transit Budget includes 981 positions and 960 full-time equivalents (FTEs). This is a net increase of 21 positions from the 2021 Budget. The net increase in positions include: one Employee Services Analyst, a new Battery Electric Bus Coordinator, 15 Transit Operators (Fixed Route), 12 Relief Transit Operators, and two Communication Technicians.

Like most public transportation providers nationwide, Pierce Transit dedicates much of its budget on training staff to operate and maintain its bus fleet. For example, in 2022 the Agency dedicated 19 percent of its budget on Maintenance while 70 percent was dedicated to Service Delivery & Support. This means that 89 percent of Pierce Transit's budget is dedicated to either moving or maintaining buses every day.

Pierce Transit will continue to prioritize its budget by hiring and supporting operators and maintenance staff. Currently there are 131 budgeted positions (2022) in the Maintenance Division, of which 31 are rolling stock mechanics or technicians.

As the Agency transitions to more zero emission buses, it will require simultaneously assessing how staff intend to operate and maintain the new bus propulsion technologies. The overarching objective is to maintain or add to the current level of Lead and Journey Level Mechanics as the fleet increases over time. Currently 31 mechanics are assigned to maintain a fleet of 161 buses, 28 of which are expert with internal combustion engines, while only three are expert in

Pierce Transit 2022 Budgeted Positions (981 Total)



BEB propulsion systems. As the Pierce Transit prioritizes more battery electric buses (BEBs), the Agency will need to work with the appropriate Original Equipment Manufacturers (OEMs) to ensure training courses directly tie to the operation and maintenance of a changing fleet. The OEMs can help assess the staffing impacts of BEB propulsion systems now that all-electric vehicles offer more maintenance-free motors, eliminating downtime and costs. Pierce Transit has estimated \$22,000 in training costs for each bus mechanic to become proficient with the new fleet technologies. Methods and approaches need to include recertification and retraining as new fleets are purchased and as technologies continue to advance over time as well. The Agency will need to work with local trades and educational institutions to ensure qualified mechanics have a baseline knowledge of how to charge, fuel, and fix powertrains for zero emissions hydrogen fuel cell electric buses. Currently, all bus operators at Pierce Transit receive additional training to drive comfortably and safely any of the Agency's BEB fleet of nine Proterras or GILLIGs.

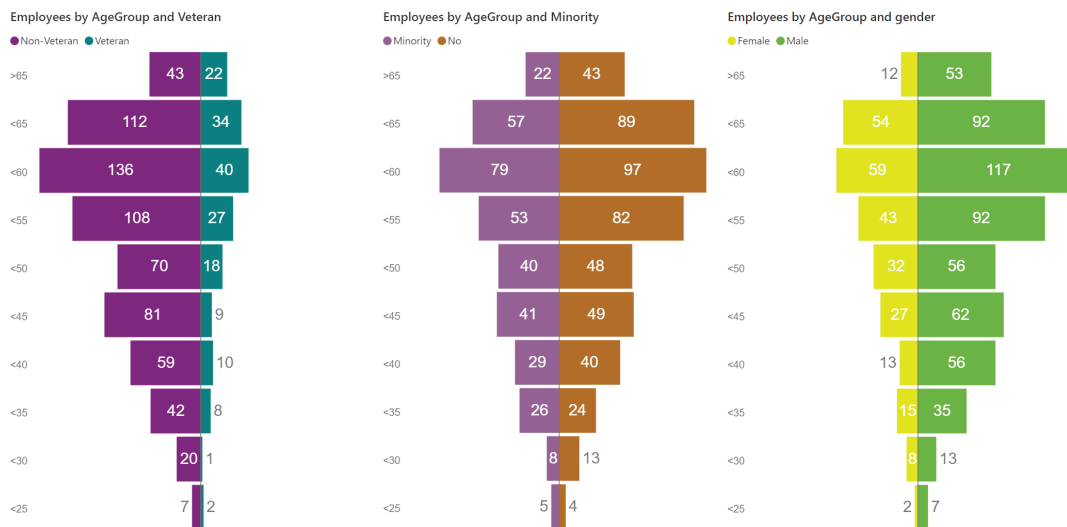
The shape of a population pyramid effectively conveys information about the age-sex structure of a specific population or, in this case, Pierce Transit's workforce. A broad-base pyramid indicates that employment rates are high and there is a high concentration of labor in the lower age groups or cohorts. This would convey a healthy indication that employment retention rates will remain high as a younger workforce can shift to new positions or higher paid positions in the future. By contrast, an inverted or an upside-down pyramid reveals that there is an imbalance with older employees who are, or who could soon be, retiring. This imbalance means there are less employees in the younger age cohorts able to support retirement benefits such as 401(k)s or pension programs. Pierce Transit's staffing composition leans heavily on a male dominant workforce as well as older personnel. Females have a larger presence as officials and administrators,

paraprofessionals, and general administrative roles within the Agency, while males are more prominent in service and maintenance, technical, and policing or protective positions. There is a recognized need to recruit more women, veterans, minorities, and younger laborers across all categories to sustain the Agency’s variety of transit service options well into the future.

Gender and Veteran Status Position Composition: 2022



Employee Population Pyramid by Age Group (Cohort), Veteran Status, Minority, and Gender: 2022



New Employee Recruiting, Hiring, and Retention Challenges

If anything has shown how valuable transit agency employees are it is the worldwide Coronavirus pandemic that was declared in March 2020. As a result, the Agency chose to cease Transit Operator hiring processes throughout most of 2020 and is yet to fully recover from that decision.

The new norm in the recruitment world is a shortage of qualified applicants. Pierce Transit sees this in experienced trade positions such as Journey Level Mechanics, in professional jobs such as Planners, and in entry-level jobs throughout the Agency. To address this, many peer transit agencies have incentivized their jobs with signing bonuses. Pierce Transit chose instead to incentive their existing employees with a referral incentive of \$1,000 for each successful applicant they

refer to Human Resources for Transit Operator, Journey Level Mechanic, and Public Safety Officer. As often as possible, the Agency recognizes its existing talent - including institutional knowledge - as valuable and appreciated. The complete list of 12 new and innovative recruitment efforts is provided below.

In a world where service is the mission, it is critical for Pierce Transit to take care of its valuable employee assets who provide that service to the public.

Personally Identifiable Information (PII) Redacting – Pierce Transit was one of only 50 public sector agencies across the nation, that use NEOGOV for recruitment functions, to activate the PII redacting option when it became available in December of 2020. This feature removes the ability for the hiring manager to see personal information while screening resumes and applications for possible interview.

Trained and Diverse Interview Panels – The Agency has provided training on interviewing to panel members and has interwoven members of the Diversity Equity and Inclusion Committee to regularly participate on hiring panels.

Equivalency language for education – Many jobs contain equivalency language so that a degree is not required to be eligible for consideration for hire or advancement. Classification specifications were reviewed to ensure that where degrees are required there is an actual degree requirement to successfully perform the job.

Tuition Assistance – For those employees seeking higher education or certification, the tuition program was expanded to include the option of direct payment to the educational/training institution rather than just a reimbursement option. Employees now have the option to choose and do not have to be out of pocket for the tuition expenses and wait until they have passed the class to be reimbursed.

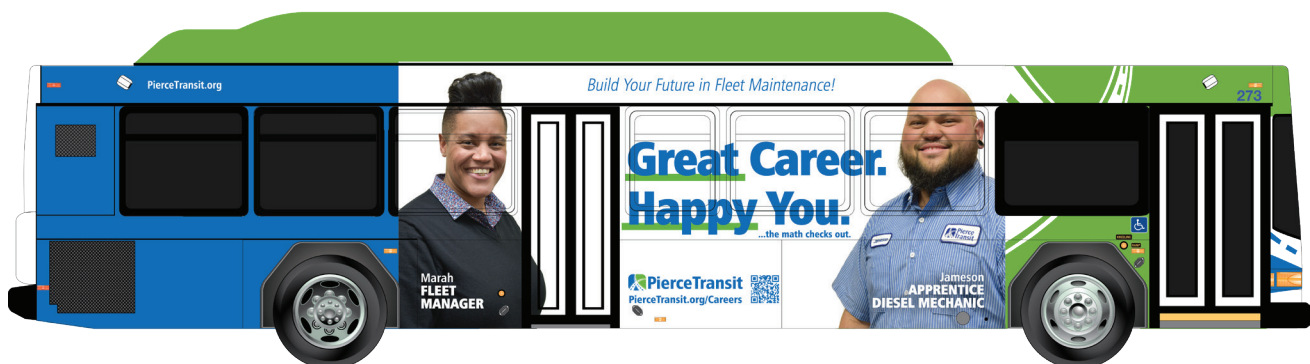
Validated Testing – Selected three separate vendors through a competitive process to provide a wide variety of validated skill and assessment testing. Test validation safeguards against adverse/disparate impact to applicants in underrepresented groups.

Background Policy – Revised the background policy to clearly define the background screening process. Clear criteria ensure uniform and consistent application of screening criteria in background processes.

EEO Report – An external vendor is used to compile and analyze our EEO data from hiring, promotions and separations. This report is compiled annually to identify jobs where EEO goals may need to be established.

Marketing Materials – Many new marketing tools have been designed with intention on inclusion. Our brochures, posters, and advertisements reflect the diversity of the talent which currently exists at Pierce Transit.

Recruiting Efforts – Increased advertising and outreach has been expanded to continue to increase applicant diversity. Some of these efforts include websites such as DiversityJobs.Com, Women in IT and Women in Trades, as well as participating in several veteran and JBLM events.



Policy Updates – Teleworking and flexible work schedules, where possible, expand the Agency’s ability to hire and keep talent.

Online or Phone Interviews – More convenient and accessible options for interviewing for applicants have been put into place.

Virtual Tour (In development) – New employees may be introduced to Pierce Transit through a virtual tour of our campus. Providing a more accessible way to see our buildings and where all the action takes place!

New Workforce Development Center

Another valuable resource for employees at Lakewood headquarters is a new Workforce Development team and dedicated center in Administration Building 4. This inaugural group’s Mission Statement is “Engage with Pierce Transit staff and leadership to promote collaborative problem-solving, address barriers to success, facilitate organizational development, and provide administrative support.” A list of the many services they provide employees is shown below.

- Cover Letter and Résumé Building
- Job Shadow Program
- Work Anniversary Recognition
- Quarterly Awards and Recognition
- Specialized Skill Training
- Technical Tutoring for Beginners
- Tuition Assistance (for those who qualify)
- Career Coaching and Development (through one-on-one or team sessions)
- NEOGOV Training²
- Team Building Workshops
- Presentation Assistance
- Employee Engagement Events
- A Professional or Career-focused Library

Employee Highlight

42
YEARS



Patricia Holman
Specialized Transportation
Dispatcher

“My longevity is primarily based on three factors: I appreciate my co-workers, the clientele we serve, and great pay & benefits.”

In fact, Ms. Holman is an original Pierce Transit employee, who began her career operating the Faegol Twin coaches that were inherited from Tacoma Transit.

 **Pierce Transit**
Workforce Development



²NEOGOVS is the Agency’s online, direct access portal for continuous training on key, job-related issues, along with where employee performance reviews, goals, and objectives are accessed and maintained.

SECTION

02

**Capital Asset
Inventories**

This page intentionally left blank.

Rolling Stock: Revenue Vehicles (541)

- Fixed Route Buses: 167 (including 9 BEBs)
- Gig Harbor Trolleys (Special Seasonal Vehicles): 3
- SHUTTLE Paratransit (Body-on-Chassis/Cutaway): 100
- Vanpool (Commute Trip Reduction): 271

“Rightsizing” Vanpool Vehicles Initiative

By the end of 2021, it became apparent to the Agency that the Coronavirus pandemic’s negative effect on ridesharing and Commute Trip Reduction programs was likely to continue well into 2022 and even beyond. Once many employers switched from in-person office work to a remote, from home, or telecommuting option during the pandemic, the need for Vanpool vehicles decreased considerably in tandem. Pierce Transit therefore determined that it did not make sense to continue maintaining and servicing such a large fleet of 12- or 15-passenger vehicles that were not being used and decided to “right size” the inventory to better align with current and future, projected Vanpool demand.³ Based on age, 83 vehicles (out of the 2020 apex of 361) were sold at auction or to private parties. The vehicles had already met or exceeded their ULB as the model years ranged from 2007-2015. The average resale value per Vanpool vehicle was \$15,770 – with recovery exceeding 50 percent of the original purchase price for some vehicles - for a total of \$1.29 million.

New Revenue Vehicles Planned: 2022-2027

The new revenue vehicles budgeted for procurement during the current four-year TAM reporting period and beyond are provided in the table below.

Revenue Vehicle Type	New Vehicles Budgeted: 2022-2025 (Current TAM Cycle)	New Vehicles Budgeted: 2026-2027 (Next TAM Cycle)	Replacement or Expansion?
Fixed Route Bus (40-foot)	26	15	Replacement
Articulated Stream BRT Bus (60-foot)	19	0	Expansion
SHUTTLE (Paratransit)	71	31	Replacement
Vanpool	183	57	Replacement

³With the State of Washington’s new vanpool requirement of just three passengers, Pierce Transit will continue purchasing smaller seating capacity vans in the future. In fact, 92 of the 272 vehicles in the current fleet or one-third are the smaller, 7-passenger vans. This coincides with the State of Washington’s Substitute House Bill 1514 which took effect on September 1, 2021. In Section 2, the 67th Legislature changed the definition of “ride sharing” from a minimum of five persons to three persons, while not exceeding fifteen persons, including the driver (i.e., no change to the maximum number in the definition). To better accommodate the new three-passenger minimum, smaller vehicles will be purchased, including introducing 7-passenger hybrid SUVs to the Vanpool fleet.

Pierce Transit Rolling Stock



Fixed Route Bus

- "Bus Plus" (Cutaway) Vehicles: 9
- Vintage Trolley (Replica) Vehicles: 3
- 30-foot CNG Coaches: 3
- 40-foot CNG Coaches: 122
- 40-foot Diesel-Electric Hybrid Coaches: 21
- 40-foot Battery Electric Buses: 9

Fleet Total

167



At/Over ULB

7



SHUTTLE (Paratransit)

- Body-on-Chassis (Cutaway) Vehicles Operated by Pierce Transit: 32
- Body-on-Chassis (Cutaway) Vehicles Operated by First Transit (Contracted): 68

Fleet Total

100



At/Over ULB

41

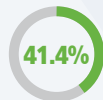


Vanpool

- 7-passenger Vehicles: 92
- 12-passenger Vehicles: 111
- 15-passenger Vehicles: 67

Fleet Total

271



At/Over ULB

0



Non-Revenue (Service & Support)

- Facilities Vehicles: 21
- Maintenance Vehicles: 8
- Public Safety Vehicles: 8
- Operator Relief Vehicles: 31
- Service Supervisor Vehicles: 23
- Administrative/Marketing/Other Assigned Vehicles: 15

Fleet Total

106



At/Over ULB

16



Equipment

- Special Purpose Equipment (Not licensed and only used on base): 6
- Special Purpose Facilities Vehicles: 4

Fleet Total

10



At/Over ULB

1



Capital Facilities:

Lakewood, Washington Headquarters Base

Building 1 – Vehicle Maintenance & Operations

Maintenance & Operations Building 1 was originally completed in 1987 (Phase 1) with a total program area of 83,700 square feet, including a 3,398 square foot parts storage mezzanine and a 667 square foot tire shop mezzanine. Additional spaces within the building provide a combination of administrative staff and management offices, parts storage, service bays, a lunchroom with supporting restrooms, and mechanical or other utility spaces. A four-service bay addition was completed in 2002 (Phase 2). This building will be replaced in phases over the next eight years; the existing facility will be demolished once the new Maintenance & Operations building is completed by 2030. Additional information on the existing Building 1 and its new replacement structure, currently in design, are available in the section of this TAM Plan dedicated to the Maintenance & Operations Base Improvements (MOBI) project.

Building 2 – Bus Wash & Facilities Maintenance

The Bus Wash building was originally constructed in 1987 (Phase 1) with a total program area of 6,600 square feet, which also includes a facilities shop, storage, and office space. Additional information on the existing Building 2 and its new replacement structure, currently under construction, are available in the section of this TAM Plan dedicated to the Maintenance & Operations Base Improvements (MOBI) project. The new Building 2 will include Fuel, Bus Wash, and money counting facilities which were previously housed in Buildings 2 and 3. It is scheduled for completion in first quarter 2023.

Building 3 – Fuel House & Island

The Fuel House building was originally completed in 1987 with a total program area of 4,505 square feet, which also includes a Natural Gas compressor, fuel storage tank, office space restrooms, mechanical room, and money (cash fares) counting room. The fuel island offers CNG, diesel fuel, and unleaded gasoline. Significant upgrades to the CNG fueling equipment were completed in 2012. Additional information on the existing Building 2 and its new replacement structure, currently being planned, are available in the section of this TAM Plan dedicated to the Maintenance & Operations Base Improvements (MOBI) project. The existing Buildings 2 and 3 are scheduled for demolition in 2023 and the area will be converted to additional fleet vehicle parking.

Building 4 – Administrative Offices and Operators' Lobby

Pierce Transit's Administrative Offices and Operators' Lobby, including a lounge, "quiet room," fitness center, and fixed route Operators Dispatch area are all housed in Building 4. The two-story building was also completed in 1987 and has a total program area of 36,987 square feet. The second floor includes executive and administrative offices, two meeting rooms, the mail room, a kitchen and dining area, and secure Information Technologies workspace. In 2018, the carpeting was replaced throughout the building. In 2019, the original single-car elevator was replaced. In 2020-2021, multiple Variable Air Volume units were replaced, along with ductwork being rerouted and rebalanced throughout the building to match various remodeling projects over the years. The new HVAC project included new drop ceilings throughout the building. While not part of the larger HVAC system project, Facilities Maintenance technicians replaced the compressors in Heat Pump #6, which controls the Operators' Lobby and north side of the building to Planning & Scheduling office on first floor. A total renovation and modernization of the visitor-facing lobby and front desk area was completed in 2022. Information on recent exterior renovations to Building 4 are available in the section of this TAM Plan dedicated to the Maintenance & Operations Base Improvements (MOBI) project.

The entire parcel where headquarters Buildings 1 thru 4 are located spans 19.38 acres or 844,193 square feet. It is located on the northwest corner of S. Tacoma Way and 96th Street SW in Lakewood (98499), Pierce County, Washington.

Building 5 – Safety & Training Facility

In 2005, Pierce Transit constructed a new, two-story Safety & Training Center (for transit operators) building at 3720 96th Street SW, just across the street from the original headquarters campus. The building includes two large conference rooms on the first floor with a moveable partition wall, restrooms (on both floors), and a kitchen/break room, along with secure offices. The third conference room is used for training, configured in a classroom setting with PCs at each desk. The conference room also doubles as the Agency’s Emergency Operations Center (EOC).

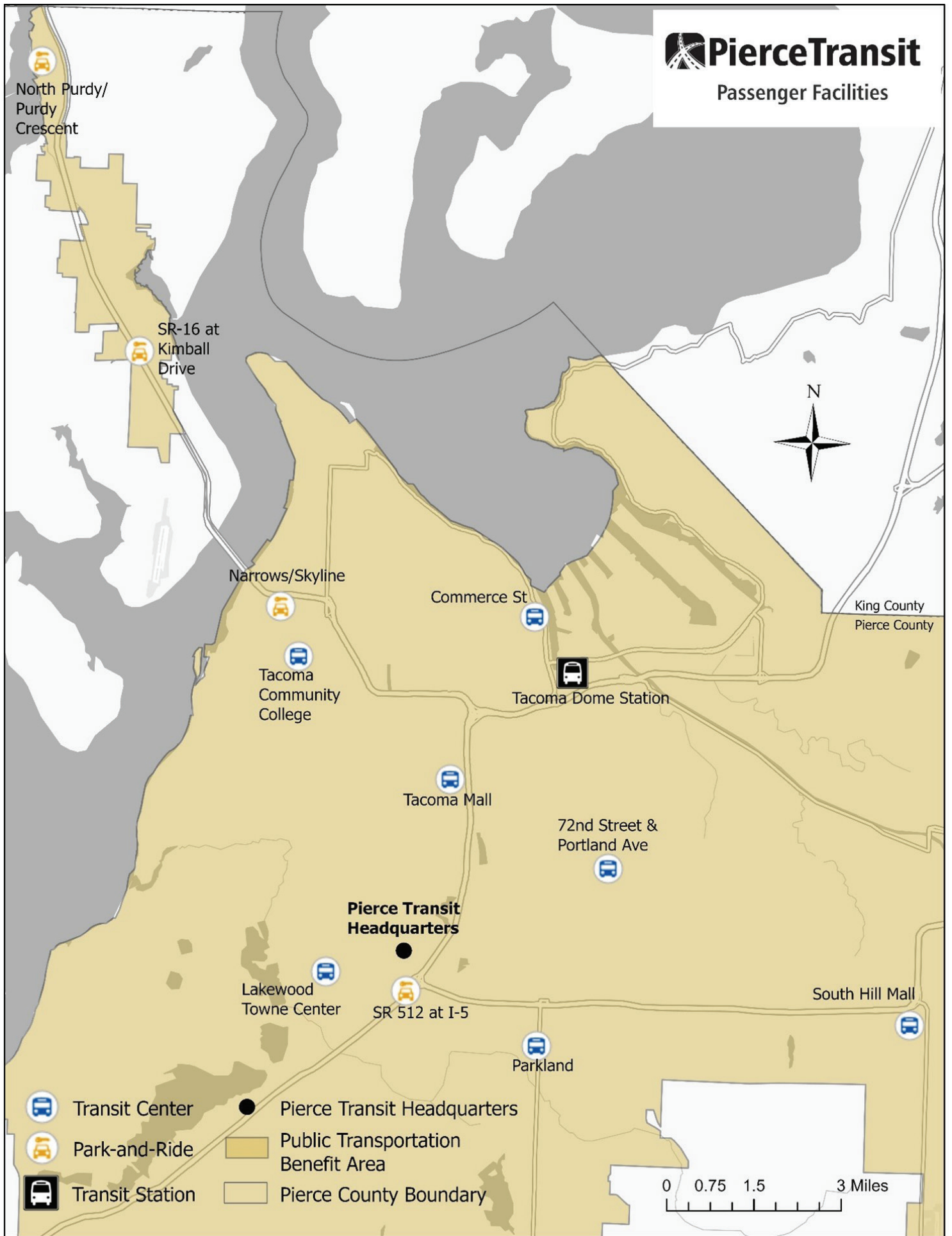
The second floor is home to the Customer Service call center, SHUTTLE (paratransit), and Marketing departments, among others. As in Building 4, it includes a single-car elevator. The total building area is 26,500 square feet and includes a fully enclosed and gated (secure) employee parking behind it to the south with 408 unassigned spaces, 31 reserved spaces, 12 EV charging station access spaces, and 28 designated motorcycle parking stalls. Up to 55 Vanpool vehicles are stored there too when not out in revenue service. In addition, an open visitors’ parking lot on the east side of the building offers 22 unassigned and 10 reserved spaces.

Building 6 – Vanpool

The latest addition to the Lakewood headquarters campus was Building 6, which was the home to the Vanpool program’s administrative offices from January 2019 thru June 2022, include a secure (i.e., fully enclosed and gated) parking lot for vehicles. It was originally constructed in 1978 as a light industrial manufacturing facility with a total building area of 26,500 square feet. The address is 9622 40th Avenue SW and is approximately 0.3 miles west/southwest of Building 5.

Building 7 – West Base: Radio & Service Supervisors

This building was listed in the 2018 TAM Plan but was demolished in 2022 under the MOBI program. The whole area will be covered with fill to raise it to the grade of the existing base lot and the building will not be replaced at another location. The previous 7,624 square foot building was constructed in 1980 and was originally owned by Pierce County.



Capital Facilities: Customer-facing Transit Centers and Stations (8)

72nd Street & Portland Avenue (Tacoma)

This transit center is located on the northwest corner of E. 72nd Street and Portland Avenue E. It was constructed in 1995 includes a 68-stall Park-and-Ride lot.

The facility consists of a 400 square foot building, including a mechanical room/custodial closet and two restrooms for operators and staff. There are four passenger shelters.

Renovations to the facility in 2018 consisted of refurbishing the passenger shelters, including replacement of damaged rafters, and repainting the structure. All exterior pole lighting was upgraded to LED under this project too.

Phase 1 SGR expenditures: \$470,000 (2018)⁴

In 2021-2022, additional renovations were completed, including painting the exterior of the utility building, painting the restrooms' interiors, replacing the building's exterior wall lighting with LED, and repairing damaged concrete sidewalks.

Phase 2 SGR expenditures: \$548,000 (2022)

Commerce Street Station⁵ (Tacoma)

Located along Commerce Street between S. 9th and S. 13th Streets in the central business district downtown, the area outside includes seven passenger boarding zones, accessed from the east and west sides of Commerce Street. Constructed in 1992, the cut and cover tunnel (restricted to employee access only) includes a bus layover tunnel and operators' lobby or lounge. The roof of the tunnel is a large public plaza, accessible via Broadway as well as a ramp from Commerce Street below.

Major renovations to this one-of-a-kind transit facility began in 2020 and were completed in 2021. They are listed below.

- **Façade:** The "waterwall" feature was decommissioned and converted into a public art installation, including a combination of filling the basins with blue glass beads and planter beds.
- **Roof:** Within the public plaza area, all turf and planter wells (previously filled with Rhododendrons) were removed, a waterproof membrane installed, and new concrete poured to create an open space area. Repairs were made to the irrigation system to provide water to the perimeter planters as well as the planters below.
- **Accessibility:** Upgraded pedestrian crossings (ADA curb ramps) on Broadway next to the plaza.
- **Interiors:** The operators' lobby was remodeled; the tunnel walls and lid were painted white for better visibility.
- **Bird netting** was installed to discourage pigeons from roosting and nesting inside the tunnel.
- **All HVAC equipment** was replaced.

⁴Any cost information provided from calendar year 2018 is for projects that were either started or completed between October and December 2018, meaning after the Agency's inaugural Transit Asset Management Plan was finalized on September 30 of that year.

⁵This asset may also be referred to as a "bus transfer facility" or "bus layover tunnel" in other sections of this TAM Plan Update but they are all one and the same location.

- Electrical: Replaced one lighting panel plus all interior lighting with LEDs; added a custom lighting system for new waterwall art installation on Commerce Street, and upgrades pedestrian lighting along Commerce Street.
- The Fire system was renovated (i.e., nitrogen injection system installed in dry pipe system).

Total SGR expenditures \$3.6 million (2020-2022)

Lakewood Towne Center

This bus transfer facility, constructed in 1992, is in the northern peripheral area of the Lakewood Towne Center, a large outdoor retail shopping center, which includes a Safeway supermarket, both fast food and full-service restaurants, and Lakewood’s City Hall (civic center).

The facility consists of a 400 square foot utility building, including a mechanical room/custodial closet and two restrooms for operators and staff. There are four passenger shelters but no designated bus passenger parking spaces.

A major renovation of the facility took place in 2018-2019. It included refurbishing the four passenger shelters and roofs, sealing concrete panels, repairing the pavement, replacing damaged sidewalks, and new crosswalk markings.

Phase 1 SGR expenditures: \$626,000 (2019)

In 2021, the facility’s overgrown landscaping was trimmed back for improved aesthetics. In addition, new security cameras and related monitoring infrastructure were added. Minor repairs to the operators’ restrooms were also included (e.g., new flooring, replacing damaged fixtures, interior painting, new signage).

Phase 2 SGR expenditures: \$26,000 (2021)

Parkland (Tacoma)

This facility is located on the northwest corner of Pacific Avenue S and 121st Street S, just east of the Pacific Lutheran University campus. It was constructed in 1984 (the Agency’s second transit center) and includes a 62-stall Park-and-Ride lot. The facility consists of a 500 square foot building, including a mechanical room/custodial closet and two restrooms for operators and staff. There is one large multi-seat passenger shelter and two separate, smaller shelters. A unique feature of this facility is the World War II monument located at the entrance to the site.

A substantial reinvestment in the facility is underway and will be completed in fall 2022. The project includes upgrades to the utility/restrooms building, such as roof replacement, interior painting, painting the passenger shelters, upgrading lighting to LED, concrete pavement repairs, sealcoating and restriping, landscaping, and repairing the irrigation system.

The SGR project budget is \$361,000.

South Hill Mall (Puyallup)

This facility is located on the northwest corner of 5th Street SE and 112th Street E, at the south end of the South Hill Mall and was constructed in 1998. The facility includes a 600 square foot building, including a mechanical room/custodial closet and two restrooms for operators and staff. There are four separate passenger shelters. However, there are no designated bus passenger parking stalls.

A major renewal project of the facility was completed in July 2022. It included repairs to the restrooms/utility room’s roof, including a new gutter and downspouts, repainting, upgrading the existing lighting to LEDs, repairing cracked and damaged concrete surfaces, improving regulatory signage, and improving ADA ramps and pedestrian access (i.e., lifted sidewalk panels) as required by the City of Puyallup.

Total SGR expenditures: \$1.7 million (2022)

New Spanaway Transit Center

The latest addition to Pierce Transit’s customer-facing asset portfolio is the Spanaway Transit Center at 20702 Mountain Highway E (98387). This brand-new facility, at the southern terminus of the current Route 1 and future Stream BRT corridor on Pacific Avenue/SR 7, will include a bus turnaround area and operators’ comfort station for layovers. Phase I, opening in late 2023, includes 38 Park-and-Ride stalls plus “kiss-and-ride” drop-off area for passengers. Phase II, planned for opening in 2027 to coincide with the Stream BRT, will greatly expand the parking to 250 stalls and build a permanent ingress/egress, likely signalized. **The total budget for Phase I is \$8.7 million and for Phase II is \$7.5 million.**

Tacoma Community College

Located at the northeast corner of S. 19th and Mildred Streets, the facility was constructed in 1984 (the Agency’s first transit center). It is owed by the community college but maintained by Pierce Transit. It includes 95 parking spaces in a lot adjacent to the bus loading and unloading zones. The facility includes a 400 square foot utility building, providing a mechanical room/custodial closet and two restrooms for operators and staff. There are two separate passenger shelters. The last major repairs and renewals project was completed in October 2018 and included:

- Upgraded LED lighting for enhanced visibility and safety.
- Shelter renovations, including new roofs, new paint and enhanced lighting.
- New seats, with additional seating added for customer comfort.
- Updated curb ramps and sidewalks.
- Newly numbered parking stalls, making it easier for people to find their cars at the end of the day.
- New, brightly painted parking stall striping, which will help people better see stall outlines and avoid two-spot parking.

Total SGR expenditures: \$1.5 million (2018)

Tacoma Dome Station (East & West Garages)

This facility, by far the largest and most valuable in Pierce Transit’s passenger-facing inventory, is located two blocks north of the Tacoma Dome on Puyallup Avenue between East E and East G Streets. It consists of a 2,337-space parking garage over six levels plus the roof, of which 37 spaces are reserved for short-term parking. The “East Garage” (Phase I) was originally constructed in 1997 with a “West Garage” (Phase II) added in 2001. The East Garage is connected to a covered waiting area for local and regional express bus routes. The garage includes a secure and enclosed bicycle parking area that was added in 2019.

“TDS” is also the Tacoma’s hub for Sounder Commuter Rail, Sound Transit Link Light Rail, and Greyhound Bus. Taxicabs and Transportation Network Companies (e.g., Uber, Lyft) also have designated pick-up and drop-off areas. In November 2021, Amtrak moved into their new, ultramodern, 10,000-square foot passenger rail station within the historic Freighthouse Square building, directly across E. 25th Street to the south. This true multi-modal hub will add Stream Bus Rapid Transit (i.e., Pierce Transit’s inaugural BRT line) to the mix of High Capacity Transit options in 2027. Sound Transit’s Tacoma Dome Link light rail extension project from Sea-Tac International Airport via Federal Way is scheduled for completion by 2032.

The five elevators within TDS are well past their usable life, due to operational issues and parts obsolescence. Two elevators are location in each garage, plus one that directly serves the bus island. The project issued a Notice to Proceed in June 2022 and is scheduled to be substantially complete in November 2024. **The SGR project budget is \$3.45 million.**

Tacoma Mall

This facility is located directly south of the Tacoma Mall and west of Interstate 5 and Tacoma Mall Boulevard at S.47th and 48th Streets. It was first constructed in 1985 (the Agency's third transit center) and is operated under a long-term lease agreement with Simon Property Group, who also owns shopping malls in Kennewick and Seattle, Washington. The facility includes a 500 square foot utility building, including a mechanical room/custodial closet and two restrooms for operators and staff. There are two separate passenger shelters on opposite corners of the property but no parking stalls (i.e., access is restricted to Pierce Transit vehicles only).

A major upgrade to the property was completed in 2019 which included new LED lighting, new FRP wainscoting in the restrooms, replacement of the rafters and glass panels in the passenger shelters, new seating, additional seating adjacent to the roadway, new concrete panels in the busway plus concrete repairs to the center island, and new curb ramps. To improve pedestrian access, the original settled, or uneven pavers were removed and replaced with a continuous concrete sidewalk. In 2021, an overhaul of the landscaping was completed.

Total SGR expenditures: \$1.2 million (2019-2021)

Capital Facilities: Customer-facing Park-and-Ride Lots (4)

Narrows/Skyline (Tacoma)

Constructed in 1986, this 195-stall Park-and-Ride lot is owned by the City of Tacoma but maintained by Pierce Transit. It is located at 7201 6th Avenue, just east of S. Jackson Avenue. However, unlike the transit center properties, it does not include a utility building, operator restrooms, or other restricted access structures.

This year, the Agency replaced the 40-year-old light fixtures with new LED fixtures, greatly improving nighttime visibility for transit users. **Total SGR expenditure: \$20,000 (2022)**

The facility is scheduled for a renovation in 2023. The project plan includes replacing asphalt paving, new pavement markings, and repairing concrete curbs.

The SGR project cost estimate is \$1.0 million (2023).

North Purdy/Purdy Crescent (Gig Harbor)

Constructed in 1991, this 200-stall Park-and-Ride lot is owned by WSDOT but maintained by Pierce Transit. It is located at 14301 Purdy Drive NW, on the northwest corner of 144th Street NW. It offers a covered passenger shelter and bench. However, unlike the transit center properties, it does not include a utility building or operator restrooms.

A minor renovation project is scheduled for completion in fall 2022. It includes asphalt repairs, seal coating and restriping the parking lot, converting exterior lighting to LEDs, and thinning or clearing of overgrown landscaping.

The SGR project budget is \$260,000.

Washington State Route 16 at Kimball Drive (Gig Harbor)

Constructed in 1997, this 306-stall Park-and-Ride lot is owned and maintained by Pierce Transit. It is located at 6808 Kimball Drive. Similar to the transit centers, it includes a 500 square foot utility building with a mechanical room/custodial closet and two restrooms for operators and staff. In addition, the facility offers two passenger shelter areas at 450 square feet apiece.

A major renovation project is scheduled for completion in fall 2022. It includes asphalt repairs, seal coating and restriping the parking lot, refurbishing the passenger shelters, new concrete panels on the bus island, converting exterior lighting to LEDs, and thinning or clearing of overgrown landscaping.

The SGR project budget is \$377,000.

Washington State Route 512 at Interstate 5 (Lakewood)

Constructed in 1988, this Park-and-Ride lot is owned by WSDOT but maintained by Pierce Transit. It is located at 10617 S. Tacoma Way, less than a mile south of Pierce Transit headquarters. At eight acres and offering 505 parking stalls, it is the largest Park-and-Ride facility served by the Agency. Similar to the transit centers, it includes a 400 square foot utility building with a mechanical room/custodial closet and two restrooms for operators and staff. It also offers two large passenger shelters that can accommodate up to 50 persons.

A major renovation and resurfacing project was completed in October 2018. It included:

- Upgrades to LED lighting for enhanced visibility and safety.
- Additional lighting poles for better visibility throughout the facility.
- Shelter renovations, including new roofs, new paint, brighter lights and new glass.
- New, bolted-down benches for improved seating, plus a doubling of seats available.
- Updated curb ramps and accessible parking.
- Newly numbered parking stalls, making it easier for people to find their cars at the end of the day.
- New, brightly painted parking stall striping, which will help people better see stall outlines and avoid two-spot parking.
- Curbing and concrete repair, including a complete replacement of the transit center surface from asphalt to concrete to better accommodate the weight of buses.
- New greenery in the transit center in a formerly unused driveway off S. Tacoma Way.

Total SGR expenditures: \$2.25 million (2018)

Headquarters Facilities



Lakewood Headquarters

Number of Buildings

5

TERM Rating Average

3.2

Number Meeting SGR Target

2



Passenger Facilities



Transit Centers

Number of Facilities

7

TERM Rating Average

3.6

Number Meeting SGR Target

6



Transit Station

Number of Facilities

1

TERM Rating Average

3.5

Number Meeting SGR Target

1



Park-and-Ride Lots

Number of Facilities

4

TERM Rating Average

3.2

Number Meeting SGR Target

2



Real-Time Bus Arrival & Departure Times Information Monitors

Another passenger convenience that the Agency has continuously received requests for through the years is adding real-time (dynamic) bus arrival and departure information at the most heavily patronized transit centers and stations. To display this information, two SunBrite all-weather LCD TV monitors (Model SB-3211) were installed at Tacoma Community College, Tacoma Dome Station, Tacoma Mall, 72nd Street & Portland Avenue (Tacoma), Lakewood Towne Center, South Hill Mall (Puyallup), and Commerce Street (downtown Tacoma) bus facilities. The total cost of the project was \$260,000 (2019).

Fixed Route Bus Stop Shelters Inventory

There are currently 529 shelters throughout Pierce Transit's system, valued at approximately \$5.2 million. Pierce Transit is without a shelter contract currently but is in the process of obtaining quotes from multiple vendors. There are no plans at this time to install new shelters, unless funded by adjacent land use development or to replace damaged shelters. Due to staffing shortages, it is a continuous challenge to maintain the existing bus stop amenities. However, the Agency is working towards installing a bench at every stop, except in locations where right-of-way is limited, or where the terrain would not accommodate bus stop improvements. Benches are one of the most frequently requested amenities by Pierce Transit's riders and they are a relatively low-cost addition that requires minimal maintenance. However, supply chain issues and staffing issues may slow this project down considerably. This project is currently budgeted at \$300,000 with installations scheduled over a 5-year period.

Bus Stop Balancing Initiative: 2021-2022

In an effort to make the fixed route bus system safer and more efficient, a thorough analysis of the entire transit system occurred in 2021. In addition to performing onsite evaluations for each of the 2,115 bus stops throughout the system, Pierce Transit reviewed accident history, ridership, and spacing between stops. The onsite assessors also looked at proximity to crosswalks, topography, and visibility from a transit bus operator's perspective. Based on those considerations, recommendations for bus stop removals were submitted to the Bus Stop Balancing Committee. The Committee organized an outreach campaign to gather feedback from Pierce Transit operators as well as transit riders, which ultimately resulted in the removal of 198 (just over 9 percent) of underutilized bus stops in March 2022. The bus stop removals included 11 passenger shelters and 27 benches which will be redistributed throughout the system, with the exception of benches and shelters that had surpassed their useful life, so not reused or reinstalled at another location.

Computer Aided Dispatch/Automatic Vehicle Location (CAD/AVL) System Replacement

The current Computer Aided Dispatch/Automated Vehicle Location (CAD/AVL) system was first installed in 2009 and no longer meets the Agency's needs. The software and hardware are proprietary with costs that are excessively high and do not meet current transit industry standards that will be necessary to work with the NextGen ORCA card.⁶

At completion of this project, all onboard equipment installed on Pierce Transit vehicles and the Sound Transit express bus fleet will provide reliable voice communication between the Communication Center, operators, and service supervisors. It will also streamline and integrate incident logging with the CAD system, improve data and reporting capabilities, and

⁶Launched in 2009, the ORCA card united seven transit agencies – Community Transit, Everett Transit, King County Metro, Kitsap Transit, Pierce Transit, Sound Transit and Washington State Ferries – with one common payment system. ORCA made transferring between services easier and enabled online payments and account management. It also expanded the availability of affordable public transit through reduced fare and employer benefit programs. Information on the new regional transit fare media card, introduced in May 2022, is available at www.myorca.com

provide an automated process for alerts to customers and Pierce Transit staff. The project implementation timeline is February 2020 through May 2023 with onboard information depicted in the image at the bottom of this page.

Clever Devices was selected as the vendor to deliver:

- Computer Aided Dispatch/Automated Vehicle Location (CAD/AVL) system solution for fixed-route and paratransit with all equipment, software, components, and licenses necessary to deliver functionality in the Technical Requirements
- Fixed-Route Onboard Systems to support the CAD/AVL system
- Non-Revenue Vehicle Onboard Systems
- Voice over IP (VoIP) and Data Communications solution that integrates with the existing Mobile Access Router (MAR) including central and onboard equipment, primary and fallback systems
- Provide GTFS and GTFS-RT feeds to support external customer information (such as real time bus arrival information) and planning applications (e.g., HASTUS)
- Provide initial inventory of spare parts for post systems acceptance operations

Benefits expected from the new CAD/AVL implementation include:

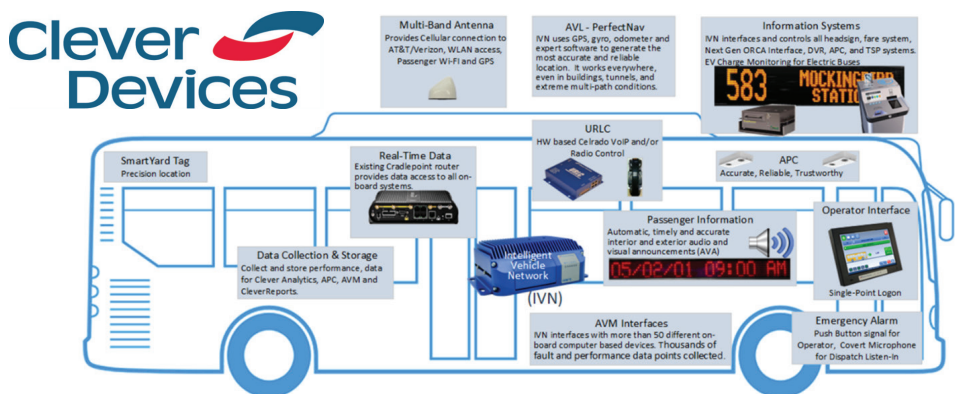
- Improved service monitoring and delivery using enhanced features for tracking location and stat of vehicles and personnel in a timely fashion
- Provide riders with effective, understandable, and reliable onboard information
- Simplify operator login process
- Improve service travel times by enhancing the effectiveness of the transit signal priority system, proactive respond to service issues, and provide accurate route statistics
- Enhance schedule adherence information, performance reporting, and communication with personnel in the field
- Reduce bus fleet operation costs
- Improve operator and passenger safety
- Improve service quality
- Provide important delivery of transit information to the public
- Improve operational efficiencies

All 100 available SHUTTLE paratransit vehicles and 306 fixed route buses will be converted to the new system by the end of project completion. All the paratransit vehicles are currently in use and the Agency expects to get more fixed route buses in revenue service once installations of the new equipment have been completed for each. Installation on Service Supervisor vehicles began in August 2022, and Service Supervisor training is scheduled for September 2022. The Communication Center team completed training in August 2022 and are ramping up for the full rollout of fixed route vehicles which began on September 6, 2022. Pierce Transit anticipates installing the system on about three vehicles per day, with work scheduled to wrap up in spring 2023. Additional trainings on various parts of the system are scheduled throughout September 2022.

For more information on the company and this product, please visit: cleverdevices.com/products/clevercad/

Information on the Celrado VoIP communication system is available at: cleverdevices.com/products/celrado/

The total budget for purchase and installation of this new equipment is \$9.8 million



Public Safety & Security Projects

Pierce Transit is working on a substantial, system-wide, and state-of-the-art security update. This work involves three primary components:

1. Adding audio/video Early Warning System (EWS) buttons in various locations around the Lakewood headquarters. When pushed, it will immediately contact the Comm Center, allowing them to communicate with the person having the issue and even lock down specific locations or the entire campus in real time. This project is scheduled for completion in November 2022.
2. Migrating the current security software's key card reader and Closed-Circuit TV software system plus integrating the entire system on one user-friendly platform called Genetec. This project achieved substantial completion in 3rd quarter 2022.
3. To replace, reconfigure, or add 177 cameras at all properties to provide improved images and increase surveillance coverage. This contract will also involve replacing outdated door security hardware and, in some cases, replacing the worn-out doors themselves. This project is underway and is expected to wrap up in summer 2023.

The technology supporting these systems will also be placed on an IT lifecycle replacement schedule that automatically replaces equipment at the end of its useful life. **The total cost, including design, permitting and construction, for these three related projects is approximately \$2.8 million.**

Electric Vehicle (EV) Charging Stations (Employee Parking Lot)

In 2020, six additional EV charging stations were added to the parking lot behind headquarters Building 5 (aka South Base). The Agency selected ChargePoint Level 2 model CT4021, a dual-port bollard charging station with 18' charging cables. The charges are the first ENERGY STAR certified in the industry as they charge efficiently and conserve power when not charging by using significantly less energy in standby mode. More information on the new BEBs and EVs equipment is available at www.chargepoint.com. **Total Equipment & Installation Charge: \$129,000**

Six Additional Battery Electric Bus (BEB) Charging Stations (Bus Lot)

In 2021, Pierce Transit continued its commitment to converting to zero emissions Battery Electric Buses (BEBs) by purchasing and installing six additional ChargePoint Express 250 Smart DC fast charging stations (aka electric vehicle supply equipment). Upon completion of the project in 2021, this brought the Agency's current BEB charging stations inventory up to nine. **Total Equipment & Installation Charge: \$383,342**

Battery Electric Bus (BEB) Charging Stations (Commerce Street Tunnel)

A new project is currently in design to install three BEB charging stations inside the downtown Tacoma bus layover tunnel in 2023. The scope of work includes reconfiguring the parallel bus and parking lanes in the tunnel, then installing the required electrical infrastructure for three BEB chargers (i.e., the first three off-base). **The cost estimate is \$2.015 million**, of which \$585,200 was provided through WSDOT's Green Transportation discretionary grant program in 2021.

Employee Highlight

33
YEARS



Lisa Jackson-Carroll

Transit Bus Operator

"I really love what I do, enjoy interacting with my passengers, and meeting new ones every day."

Ms. Jackson-Carroll is known for her outstanding and personalized customer service.

SECTION

03

**Existing
Conditions
Assessments**

This page intentionally left blank.

In August 2021, Pierce Transit hired the international firm Bureau Veritas⁷ to conduct a comprehensive Facilities Condition Assessment (FCA) report as the first step in this four-year TAM Plan Update.

The Scope of Work and subsequent tasks under the contract are documented below.

The Consultant shall conduct a Facilities Condition Assessment of all Headquarters Buildings plus all customer-facing properties owned and operated by Pierce Transit (e.g., Transit Centers, Transit Stations, and Park-n-Ride Lots). The Consultant will provide detailed inspections and assessment of all facilities specified herein and produce an accurate analysis that identifies visible and discernable (through non-destructive means) components and elements requiring maintenance, repair, replacement, upgrade, or other planned action. The purpose of this Assessment is to report the overall condition (using a single numeric value) of administrative, maintenance, and passenger facilities to the National Transit Database (NTD) in accordance with federal requirements. The Consultant will assess the condition of major facility components, and then aggregate the component level data to obtain the overall condition rating using the FTA's TERM Lite Rating Scale. The Scope of work may include, but not necessarily be limited to the following:

Task 1: Project Management & Quality Control

Task 2: Document and Plan/Drawing Review

Task 3: Site Visit/Field Assessment

Task 4: Condition Assessment Document

Assessment will be made for the four (4) on-base facilities at Pierce Transit's Headquarters and the twelve (12) passenger facilities, which include:

Pierce Transit Headquarters

- Building 1 – Fleet Maintenance
- Building 4 – Administrative Offices
- Building 5 – Safety & Training Facility
- Building 6 – Vanpool/Warehouse

Transit Centers & Stations

- 72nd Street Transit Center
- Commerce Street Bus Tunnel
- Lakewood Transit Center
- Parkland Transit Center and Park-n-Ride
- Tacoma Community College Transit Center
- Tacoma Dome Station
- Tacoma Mall Transit Center

Park-and-Rides

- Kimball Drive Park-n-Ride
- Narrows/Skyline Park-n-Ride
- North Purdy (Purdy Crescent) Park-n-Ride
- State Route 512 at I-5 Park-n-Ride

⁷Information on the firm's background and experience under this specialized contract is available online:
<https://www.bvna.com/needs/facility-condition-assessments-fca>

Not all facilities will require a fully detailed “white glove” assessment due to scheduled or planned building demolition, refurbishment, upgrading, or updating in 2021 or 2022, prior to our TAM Plan update, scheduled for completion in October 2022. In these instances, the Consultant shall produce a qualitative approach for maintaining secondary facilities and equipment in a State of Good Repair. The qualitative assessment should identify interim or minimum repairs and replacements, whether for safety or functionality, that will allow practicable occupancy through the end of the current calendar year (2021) along with the next four-year TAM Plan cycle (Calendar Years 2022 thru 2025).

Limited assessments will be done for the following Lakewood headquarters buildings and/or Transit Centers, as Pierce Transit will provide a demolition or refurbishment schedule to be referenced in the final report:

- *Building 2 - Bus Wash & Facilities Maintenance*
- *Buildings 3 - Fuel House*
- *Building 7 - West Base/Radio and Service Supervisors*
- *South Hill Mall Transit Center*

The on-site inspections began on September 21 and concluded on November 5, 2021. The complete Facility Condition Summary report is provided as Appendix B. A summary of Bureau Veritas’ findings, replacement costs, and recommended deficiency repairs is provided as Figures 3.1 on page 34 and 3.2 on page 35.

Employee Highlight

35
YEARS



Cindy Markena

Paratransit Operator

“I am a people person in general. When you love what you do, it actually doesn’t feel like work!”

Ms. Markena’s daily and early morning exercise regimen, including weight training, helps her more easily assist her paratransit customers with boarding and alighting.

Figure 3.1: Facilities Conditions Assessment Summary Tables – Lakewood Headquarters

Lakewood Headquarters Building No.	Name	Area (Square Feet)	TERM Rating	Replacement Cost Estimate (Initial)	Adjusted for Inflation (8.5%)	Deficiency Repairs Cost Estimate (Unescalated)	Deficiency Repairs Cost Estimate (Escalated at 3.0% Inflation, Compounded Annually)
1	Vehicle Maintenance & Operations	79,040	2.9	\$16,136,447	\$17,508,045	\$10,266,812	\$13,511,361
3	Fuel House & Island	79,040	3.1	\$7,025,186	\$7,622,327	\$3,415,135	\$4,617,717
4	Administration Offices & Operators Lobby	36,987	3.6	\$11,193,236	\$12,144,661	\$5,287,545	\$6,979,565
5	Safety & Training Facility	26,500	3.5	\$8,572,934	\$9,301,633	\$3,889,561	\$5,463,528
6	Vanpool	11,421	3.1	\$2,055,390	\$2,230,098	\$1,265,362	\$1,514,638
			Totals	\$44,983,193	\$48,806,764	\$24,124,415	\$32,086,809
2	Bus Wash & Facilities Maintenance	6,600	3.5	\$1,948,532	\$2,114,157	\$1,405,842	\$2,074,236
7	West Base: Radio & Service Supervisors	7,624	3.3	\$2,097,409	\$2,275,689	\$1,658,067	\$1,989,210

Figure 3.2: Facilities Conditions Assessment Summary Tables – Passenger-facing (Offsite) Facilities

Fixed Location Type	Name - Location	Area (Square Feet)	TERM Rating	Replacement Cost Estimate (Initial)	Adjusted for Inflation (8.5%)	Deficiency Repairs Cost Estimate (Unescalated)	Deficiency Repairs Cost Estimate (Escalated at 3.0% Inflation, Compounded Annually)
Transit Center	72nd Street & Portland Avenue - Tacoma	2,700	3.7	\$1,942,314	\$2,107,411	\$638,094	\$956,524
Transit Center	Commerce Street Transfer Facility - Tacoma	32,650	3.6	\$8,457,929	\$9,176,853	\$4,333,648	\$6,817,072
Transit Center	Lakewood Town Center - Lakewood	56,188	3.2	\$1,327,317	\$1,440,139	\$1,336,375	\$2,108,771
Transit Center	Parkland - Tacoma	7,624	3.9	\$329,127	\$357,103	\$758,776	\$1,022,947
Transit Center	South Hill Mall - Puyallup	55,634	3.9	\$1,101,287	\$1,194,896	\$427,052	\$624,263
Transit Center	Tacoma Community College - Tacoma	2,376	3.6	\$2,089,569	\$2,267,182	\$1,697,136	\$2,542,947
Transit Station	Tacoma Dome Station (East & West Garages)	733,100	3.9	\$77,152,237	\$83,710,177	\$9,921,371	\$14,229,893
Transit Center	Tacoma Mall - Tacoma	1,200	3.5	\$2,545,284	\$2,761,633	\$1,600,785	\$2,191,424
Park-and-Ride	SR 16 at Kimball Drive - Gig Harbor	1,400	3.7	\$1,812,025	\$1,966,047	\$1,432,819	\$2,004,501
Park-and-Ride	Narrows/Skyline - Tacoma	94,525	2.3	\$736,709	\$799,329	\$905,998	\$1,011,582
Park-and-Ride	North Purdy/Purdy Crescent - Gig Harbor	103,889	3.0	\$468,000	\$507,780	\$546,718	\$669,953
Park-and-Ride	SR 512 at Interstate 5 - Lakewood	1,400	4.0	\$1,965,188	\$2,132,229	\$1,562,726	\$2,389,556
	Totals			\$99,926,986	\$108,420,780	\$25,161,498	\$36,569,433

SECTION

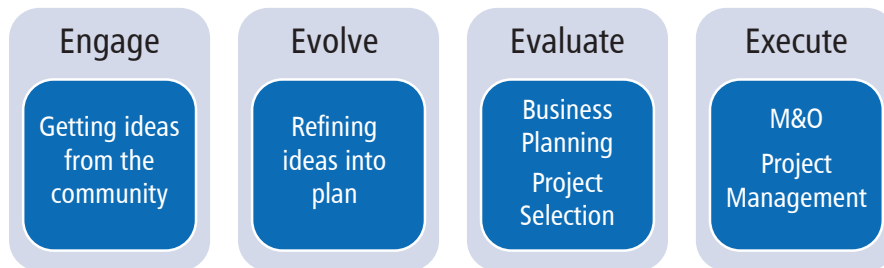
04

**Decision Support Tools:
In Place and Under
Consideration**

This page intentionally left blank.

I. Introduction to the Internal Project Selection Process

As a public agency, Pierce Transit constantly looks for ways to improve its services to both external customers and employees. To accomplish this, they constantly *Engage, Evolve, Evaluate* and *Execute* strategically aligned plans.



As ideas become projects and move into the *Evaluate and Execute* stages, there are two areas of focus: Maintenance and Operations (M&O) and Capital Projects. The Agency's *Project Management Office* (PMO) focuses on Capital Projects, and the Project Management Handbook serves as an overview of how capital projects are selected and managed at Pierce Transit.

The PMO at Pierce Transit has been tasked with ensuring the use of standard Project Management practices and methodology. The PMO also provides coaching and tools to the Agency's Project Managers. The Mission is to, "Ensure the right projects are done the right way for Pierce Transit."

The PMO's role is:

- A resource to better utilize existing resources
- A source for best practices
- A source of tools, templates, training, and support for Project Managers

The goals of the PMO include:

- **Clear, concise communication** - Communication and deliverables produced by the PMO are clear and easy to read.
- **Provide tools and guidance** - Resources created to support learning. Each tool implemented has a proven, positive impact on the way we manage projects.
- **Change Management and Project Controls** - As a public agency, we need to manage our projects responsibly by setting baselines and tracking changes and variances.
- **A strong emphasis on customer satisfaction** - To continuously improve, the PMO collects feedback to improve the way projects are managed.

Pierce Transit's Project Oversight Group (POG) oversees all capital projects. It is a select committee which consists of representatives from each of the six internal divisions.⁸ The PMO Manager facilitates the committee. The committee

⁸Those are: Administration, Executive, Finance, Maintenance, Planning & Community Development, and Service Delivery & Support.

is responsible for decisions related to funding of projects off-cycle, deferring, or stopping a project, as well as recommendations on project budget changes.

Once a year (usually in the spring), the committee performs Capital Project Selection, a four-to-six-month process, to develop the Six-Year Capital Improvement plan. Capital Project Selection is a process during which capital projects are proposed from throughout the Agency, and the POG determines which projects, and order of priority, to recommend to the Executive Team for funding. Resources such as the Project Manager and Sponsor are assigned to projects after the annual budget has been adopted by the Board of Commissioners.

Capital Project Selection

Capital projects support the strategic priorities of Pierce Transit. This is the first step in the project cycle. Through this process, the POG prioritizes and recommends funding of projects according to the alignment to the Agency's strategic goals and other selection criteria, keeping in mind resource availability, and realizing the impact of approving and prioritizing one project over another.

What is a project?

- Has a defined start and end (schedule)
- Provides a benefit to the Agency (cost or efficiency) by supporting strategic goals
- Has defined deliverables (scope of work, quality expectations, etc.)
- Results in a change. Something new is created or something existing is improved (system, process, asset, etc.)
- Will have resources (money, time, and/or people) assigned, has more than one Stakeholder involved
- Is not routine work

Benefits to the Individual (i.e., those proposing capital projects)

- Each idea gets equal consideration
- Resources are considered up front
- Known path for getting authorization and support

Benefits to the Group or Agency as a Whole

- Ensures projects are aligned with strategy
- See the effect on other projects of approving a project
- Creates a comprehensive portfolio for funding opportunities

Proposing Projects

Divisions and departments identify goals and priorities annually, based on the strategic priorities of the Agency. If a capital project is needed to support these goals, a Capital Project Request is submitted via a process in e-Builder.⁹

Scoring and Prioritizing Capital Project Requests

The Capital Project Request contains preliminary information about the project. Once a year (prior to the budget process), and monthly as needed, the POG reviews, validates, scores and prioritizes each Capital Project Request and determines if the project should be recommended for funding in the Capital Budget.

⁹e-Builder Enterprise™ is a cloud-based, construction Program Management Information Solution (PMIS) for capital projects that delivers trusted insight into performance across the entire project lifecycle, reducing risk, and improving performance. For more information, please visit: <https://e-builder.net/product/>

Project Selection Tools

Various tools are provided by the PMO to standardize Pierce Transit’s Project Selection methodology. During selection, all projects go through the same process.

- Capital Project Request: The Capital Project Request documents the purpose and reason why a project should be completed. It is used to rank proposed projects. The Capital Project Request process resides in e-Builder and is maintained by the PMO Manager.
- Scoring Matrix: The Scoring Matrix captures important ranking elements to determine if the Agency should prioritize one project over another. The PMO Manager updates the Scoring Matrix with help from the POG.
- Project Ranking Worksheet: The Project Ranking Worksheet contains fields used to rank projects according to their alignment with the Agency’s strategic priorities and other evaluation criteria. It is used during the Project Ranking process.
- Pre-budget Portfolio: Prioritized list of Capital Project Requests that is moved forward to the Agency’s annual Budget process.

Funding Projects and Allocating Resources

For projects that the POG has recommended, and the Executive Team and Board of Commissioners have approved, budget is allocated, and a Sponsor and a project manager are assigned. A project team is identified as needed.

Managing the Project Portfolio

The PMO Manager is responsible for maintaining and updating the project portfolio for the Agency. The purpose of the portfolio is to maintain a prioritized list of projects to evaluate project effectiveness and status at an agency-wide level. A project enters the portfolio after it is approved in the budget. It exits the portfolio after the Closing phase is complete, and project documentation is archived and retained per Agency records retention policies.

II. A Proposal to Fund and Select a Capital Facilities based EAM

While Pierce Transit has an EAM in place for rolling stock, we currently use many disparate and non-aligned methods for tracking the condition of our huge capital facilities assets portfolio. In fact, we often strictly rely on site visits and in-person spot inspections to determine asset conditions with values in the many millions of dollars. However, a Tier I transit agency of our size should have an EAM system in place that could produce a real-time evaluation of or report on facilities’ asset conditions, Remaining Useful Life Benchmarks, TERM scale ratings, replacement values (for insurance purposes), lifecycles, and other key variables at both the Primary and Secondary levels, per FTA guidance and compliance. (One vendor markets it as a “single source of truth.”) Our policy on this endeavor should be to promote a culture that supports asset management at all levels of the organization, to employ effective asset management business practices and tools, to ensure optimal asset performance and useful life, and to use timely, quality data to support transparent and cost-effective decision making for resource allocation and asset preservation.

This information is requested of Pierce Transit on a regular basis by outside agencies, such as the Washington State Department of Transportation (WSDOT), the Puget Sound Regional Council MPO, and the Washington State Transit Insurance Pool (WSTIP). However, we often are forced to use outdated information or totally subjective and on-the-spot self-assessments of our extensive inventory of high-cost capital assets. Ideally, this system would have utilized the timely and detailed assets’ conditions information, as provided by the recently completed (January 2022) Facilities Conditions Assessment through the firm Bureau Veritas as the first step in our four-year TAM Plan Update requirement

for the FTA. However, this information will eventually no longer be valid and age out since everything from general maintenance or minor repairs to complete reconstruction work are continuously being made throughout our inventory of base/headquarters buildings and off-site passenger-facing properties. In addition, with the large amount invested in our customer-facing assets over the past few years (as part of the former CEO's "refurbish and refresh" initiative), this would be the perfect time to populate and begin utilizing an EAM system database such as this one, focusing on continuously maintaining a State of Good Repair, as we do for our fleet vehicles (rolling stock).

If purchased and implemented, this new EAM software program would serve to replace the VFA facility program that the Agency stopped using in April 2019, once it was no longer supported by the new parent company (Accruent). The Agency currently has an EAM for tracking both revenue and non-revenue (Service & Support) vehicles, as described in the next section. But no such system is in use today for monitoring and reporting on the condition of capital facilities at either our Lakewood headquarters (seven buildings on base) or our customer- or passenger-focused transit centers, transit stations, and Park-and-Ride lots (12 properties).

By finally implementing a capital facilities EAM system where none exists today, it would allow Pierce Transit to make better and more objective decisions regarding reinvesting in, repairing, or refreshing our entire capital asset portfolio (currently valued at over \$515 million), based on hard data and pinpoint accurate information provided by a comprehensive EAM system. This new EAM system would meet the "Customer Focused" strategic goal too as asset conditions are likely to be improved at lower investment or repair costs through pro-active asset management. Information from Trapeze on a capital facilities-specific Enterprise Asset Management (EAM) software program is provided as **Appendix C**.

III. Utilizing a Vehicles or Rolling Stock based EAM

A conversation with Chris Valenzuela, Enterprise Asset Management Coordinator – Fleet Maintenance Administration

Can you describe the Trapeze EAM and how it's utilized at the agency?

We use multiple different modules in EAM from the Work Order module to Parts module to Preventative Maintenance (PM) module. With Trapeze EAM we maintain the different vehicle classes (buses, vans, shuttles, etc.) on a preventative maintenance schedule that helps minimize breakdowns and ensures we get the most use out of the vehicles we buy. We use the system to keep track of which vehicles are currently being used and which ones we have in reserve during service changes. The fuel usage is also tracked for each vehicle, which allows detailed data to be taken out in regard to fuel cost and how we can save money. Facilities uses the same system in a different way, instead of rolling stock most of their items are fixed assets (buildings, bus stops, building support equipment, etc.). It's used in a similar way to plan PMs on a schedule basis and to help address issues that come up from everyday use. There is a service request module for both fleet and facilities that allows users to make requests based on assets and have those issues addressed. The warranty module is used to track vehicle and parts warranties and helps the Maintenance department get parts replaced and vehicles serviced under warranty. As mentioned above, there is a warehouse module that helps the parts team maintain spare parts inventory and track stock that needs to be reordered to prevent extra down time. There are many other functions within the system. However, most of the work done in the system is related to PMs, work orders, and parts.

Has it helped with any policy decisions or streamlined any processes you couldn't have done without it?

I've only been with Pierce for two years and this program has been online since about 2014. However, like most computerized systems, they do save a lot of time and money and help shape policy decisions and streamline processes. Most recently would be when Zonar came online it streamlined the process for Operators to submit issues/service requests into EAM through the program. Previously the operators would need to note the issue, remember it, find a computer in the lounge open, log into EAM, put everything they remember onto a service request and submit it. With the direct Zonar-to-EAM interface they just need to note the problem on their pre-/post-trip inspection and the system automatically (based on the severity) will submit a service request or work order for critical repairs.

Has it ever identified a vehicle's (or group of similar vehicles') potential mechanical failure or help you avoid some other in service-related incident?

Yes. The system has helped Lead Mechanics to identify reoccurring issues on vehicles and address the root cause. It has also helped identify failures on new vehicles with certain parts that allowed us to negotiate with the supplier to correct the problem without costing the agency extra money.

It's okay to admit anything what you may not like or would change about the EAM system you're currently using too. Anything you'd care to add?

The only issue I have with Trapeze EAM is that it is so customizable that it is not very user-friendly. Along with that there are no standard best practices that they can give us and we have to develop the process ourselves.

Finally, it would help to describe your job title and responsibilities as our sole Enterprise Asset Management Coordinator as the work you do couldn't be more TAMP-related.

- Research, evaluate, model, develop, and implement process improvement solutions focused on gaining efficiency and maximizing effectiveness of the EAM system and associated processes and procedures.
- Identify issues and gaps within current business processes and/or current use of EAM system and provides solutions to implement corrective action as needed.
- Serve as liaison and change agent between IT and Maintenance.
- Analyze, test, debug, and implement changes to system configuration and data as needed to improve productivity. Performs quality assurance and governance of data stored in the EAM system.
- Create reports and dashboards for various KPIs and metrics.
- Create ad hoc reports as needed
- Provide technical support, assists with troubleshooting, documents issues related to system usage, and escalates as required.
- Identify opportunities to improve processes and/or offer training to eliminate and reduce future problems.

Employee Highlight

34
YEARS



Leo Randolph
Transit Bus Operator

"I enjoy working with people, especially driving for Pierce Transit."

In fact, Mr. Randolph is also an Olympic Gold medal winner.

This page intentionally left blank.

SECTION

05

**Investment
Prioritization**

This page intentionally left blank.

As in the 2018 TAM Plan, this section’s objective is to once again demonstrate that the Agency’s priorities going forward are objective and based on good data and observations or merit and not just a simple “worst first” prioritization. The investment prioritization herein includes a list of the proposed projects and programs that Pierce Transit estimates would achieve and maintain its State of Good Repair goals. It includes a ranking of the projects and programs based on priority through a 20-year horizon year (i.e., 2042); both budgeted (programmed) and unfunded (“vision”). And finally, output from the TERM Lite database on various estimate investment levels to achieve and maintain a continuous State of Good repair for both existing and expansion asset categories.

The data and information are based on three primary sources:

1. Adopted 2022 Capital Budget excerpt (pp. 44-45), included as Appendix E.
2. Prioritized List of Capital Project Requests: 2023-2028, included as Appendix D.
3. Revised and updated TERM Lite database output and future funding scenarios: 2022-2042

Adopted 2022 Capital Budget

On December 13, 2022, the Pierce Transit Board of Commissioners formally adopted the 2022 Capital Budget. The document is fiscally constrained and includes:

- One Base (headquarters) Facilities project valued at \$60.75 million.
- Seven Passenger-facing Facilities projects totaling \$7.50 million.
- Seven Vehicle Replacement projects totaling \$18.34 million.
- 17 Information Technology projects totaling \$23.64 million
- 13 “Other (assorted category) Projects” totaling \$174.89 million. This “Other Projects” category includes \$165.98 million for the Stream BRT 1 corridor construction or 94.9 percent of the total. As mentioned, this project’s fixed guideway segments and BRT stations will be listed under the separate Infrastructure assets category in future TAM Plans, beginning in 2026.

Prioritized List of Capital Project Requests: 2023 (aka Pre-Budget Portfolio)

This list, covering the next six years, is not fiscally constrained and includes numerous projects or categories that, if funded, would qualify for inclusion in the next TAM Plan. They include three Facilities projects totaling \$203.77 million; four Vehicles (rolling stock) projects totaling \$87.46 million; three IT and/or Equipment projects valued at \$5.59 million, and the inaugural Stream BRT project valued at \$211.50 million for a combined total of \$508.34 million. This “pre-budget portfolio” spreadsheet (**Appendix D**) was created in June 2022 and includes 28 new capital projects proposed for Fiscal Year 2023, as well as additional budget requested on carry-over projects. The agency’s executive leaders are currently in the process of finishing the overall budget for Fiscal Year 2023. This process includes determining how much to budget for capital, operating, insurance, and other expenditures. Then, based on expected income, such as sales tax, fare revenues, and discretionary grants, the Agency comes up with a final, annual balanced budget, for ultimate approval by the Board of Commissioners every December.

Transit Development Plan “Vision” Projects

Another Agency document where unfunded/unprogrammed capital projects are listed is in Appendix A (pp. 60-67) of the 2022-2027 Transit Development Plan, produced every year. The TDP, as it is known, is required of all transit agencies by the Washington State Department of Transportation (WSDOT) and identified in the Revised Code of Washington (RCW) 35.58.2795. The TDP is formally adopted by Pierce Transit’s Board of Commissioners in late summer and submitted to the Puget Sound Regional Council Metropolitan Planning Organization (located in Seattle) for reference. It should be noted that these projects are often conceptual or illustrative only and are not fully vetted with the POG nor with upper management, meaning initial cost estimates and schedules are sometimes unknown. However, it often serves as the place where new capital projects and service improvements are first identified by the Planning department.

The latest TDP document is available at <https://www.piercetransit.org/documents/>

TERM Lite Scenarios and Funding Requirements

As in 2018, the FTA's TERM Lite database was again utilized as part of this TAM Plan Update process.

The current active TERM Lite inventory – completely revised and updated for 2022 - includes 211 “records” or separate assets. Although a single record can include indefinite quantities of the exact same asset, such as *Motorbus – 40-foot – CNG powered – 2015 GILLIG Model G27D102N4*, of which Pierce Transit has ten in its fleet but is listed as a single line item in the database.

Then, as in 2018, Pierce Transit ran the model multiple times using the same three discrete funding scenarios through a 20-year planning horizon (2023 – 2042), as cited in the NTI's training manual and recommended by TERM Lite instructors:

1. **Unconstrained** - Meaning “money is no object,” to see how quickly the assets not currently in a State of Good Repair (i.e., the current backlog) could be repaired, renewed, replaced, or at least maintained.
2. **Constrained Funding and Maintaining Current Spending Levels** - For the outer years 2029 thru 2052, a conservative \$40.0 million per year¹⁰ was used in the beginning, then calculated at a 5.0% growth rate per year over the next 23 years (i.e., a projected annual capital replacement and rehabilitation rate). Values for 2023 through 2028 were provided by the Agency's Budget Office, based on funding shown in the new Six-Year Plan. Fiscally constrained run scenarios allow transit agencies to assess the impacts of alternative funding levels on a future backlog and conditions.
3. **Constrained Funding and Maintaining SGR Backlog (Using the Backlog Target Seek Function)** - Based on the same annual funding amounts for capital projects as in Scenario 2, this third scenario affords the agency ten years to achieve its State of Good Repair. In other words, to learn what level of investment will reduce the current size of the backlog by half (50 percent) within ten years – by 2032 - and then maintaining it through 2042. This scenario is also referred to as “Improve and Maintain by a Target Year.”

Prioritization Criteria Options Setting

Along with expenditure constraints and the Backlog Target Seek function mentioned above, one of TERM Lite's optimization functions is the Prioritization Criteria Settings tab. This input form allows the user to establish weighting for all five criteria. As in the original TAM Plan output of 2018, Pierce Transit did not divert from the default settings in its various model runs and scenarios output for this exercise, in keeping consistent with peer transit agencies nationwide. In the future, the Agency may want to consider adding and assigning weights to Environmental Stewardship or Sustainability and Equity (i.e., two additional “user defined” criteria).

¹⁰By comparison, the 2018 TERM Lite scenarios used a continuous but flat \$73.51 million in capital expenditures per year, based what funding was available in the Six-Year Plan of the time (i.e., a historical annual reinvestment rate). The logic behind essentially cutting this amount by half in the base year (2029) is the fact the Agency has invested heavily over the past four years in both its headquarters and passenger-facing capital facilities assets, such as under the MOBI project and numerous offsite renewals projects detailed within. This high level of reinvestment continues throughout the 2020s, as shown in the Adopted 2022 Capital Budget and Prioritized List of Capital Project Requests: 2023. Regarding revenue vehicles, only the paratransit fleet shows a substantial percentage at or above the ULB. But those vehicles are already scheduled for replacement within the current four-year TAM cycle.

Figure 5.1: Default Priority Criteria Settings and Weights in TERM Lite Database	
Asset Condition	65%
Safety & Security	10%
Reliability	20%
Operations & Maintenance Cost Impact	5%
User Defined	0%

A Note on Using Inflation Factors in TERM Lite Analysis

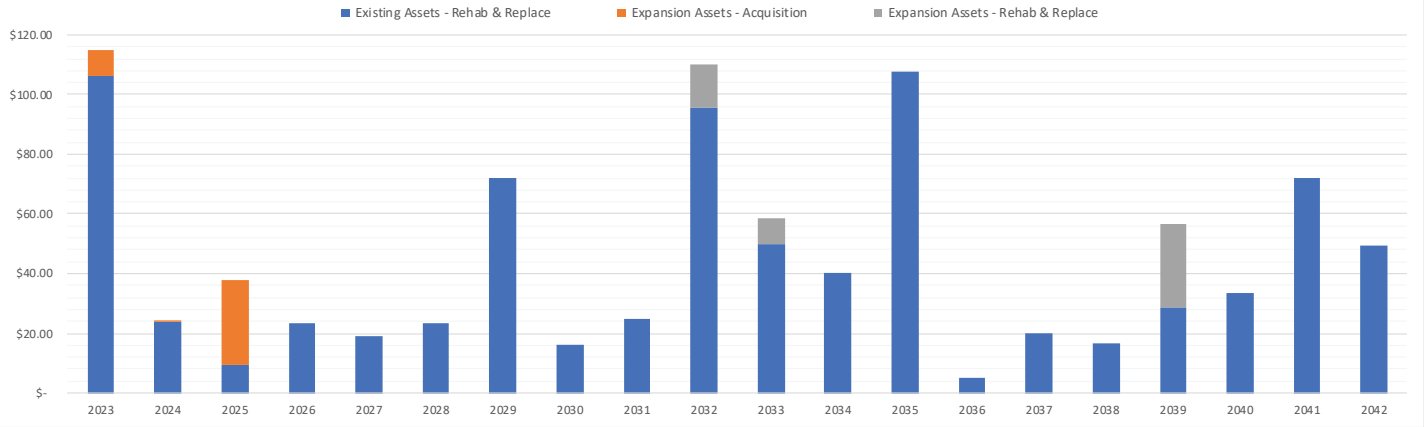
For this analysis, the inflation factor was not used (i.e., left at the zero percent [0%] default setting) and all scenarios are presented in constant dollars. Given the exorbitantly high rate of inflation worldwide in 2022, along with uncertainties regarding local construction cost conditions, the Consumer Price Index, and supply chain issues, it was recommended to be consistent with the 2018 model outputs by not attempting to adjust for inflation. This way, when we see an increase in backlog from one year to the next, we know that our backlog is increasing and not just appearing to grow because of inflation.

Investment Expenditures by Existing Versus Expansion Assets

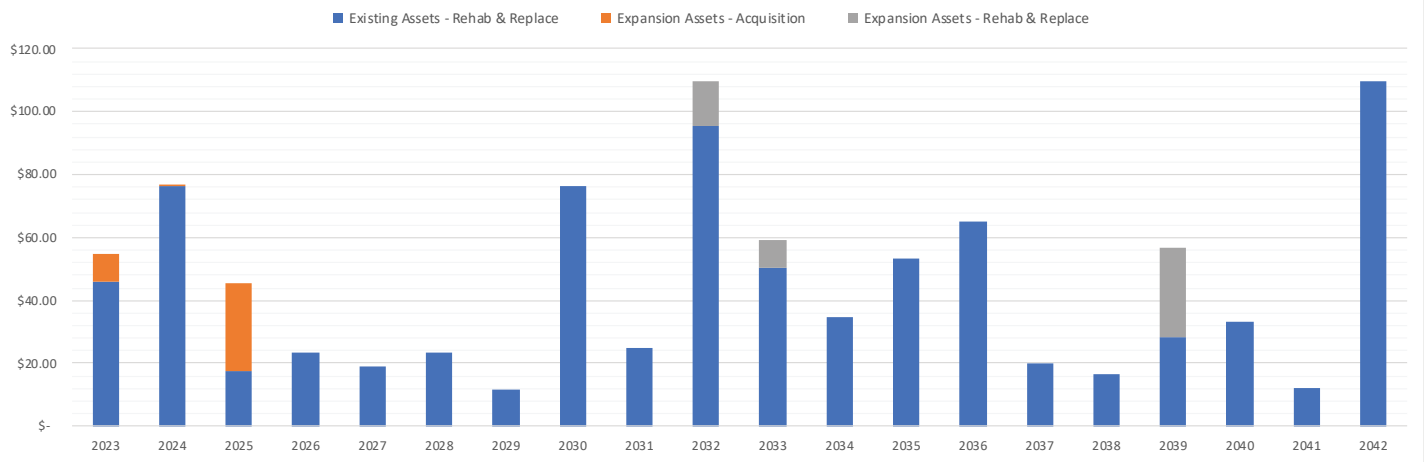
The first three comparative charts depict Investment Expenditures by Existing Versus Expansion Assets for all three funding scenarios mentioned previously over a 20-year planning horizon. All funding is shown in millions of dollars. Expansion assets include new 60-foot Stream Bus Rapid Transit vehicles and stations, but no fixed guideway or on-street (Infrastructure) elements yet. Specific large-scale project recommendations and cost estimates under the MOBI project are forthcoming, albeit listed in the TERM Lite inventory as Expansion assets: the New Fuel & Bus Wash - Building 2 only, at a cost of \$24 million.¹¹ Total funding requirements – both at the 10-year SGR backlog target and full 20 -year planning horizon - are provided in Table 5.2 on page 50 for existing and expansion assets for comparison.

¹¹It was recommended by a peer transit agency (King County Metro) to not list the new Maintenance & Operations Building 1, Phase 1, in the database until substantial construction is completed in 3rd quarter 2024 and final costs are known. This milestone, at the halfway point to the next TAM Plan Update, would be a perfect opportunity to add the new headquarters building asset and rerun the model in TERM Lite, to include additional or updated project expenditures for MOBI along with Stream BRT 1, where applicable.

Scenario 1: Unconstrained Funding - Investment Expenditures by Existing versus Expansion Assets (Millions)



Scenario 2: Constrained Funding and Maintaining Current Spending Levels - Investment Expenditures by Existing versus Expansion Assets



Scenario 3: Constrained Funding and Maintaining SGR Backlog - Investment Expenditures by Existing versus Expansion Assets (Millions)

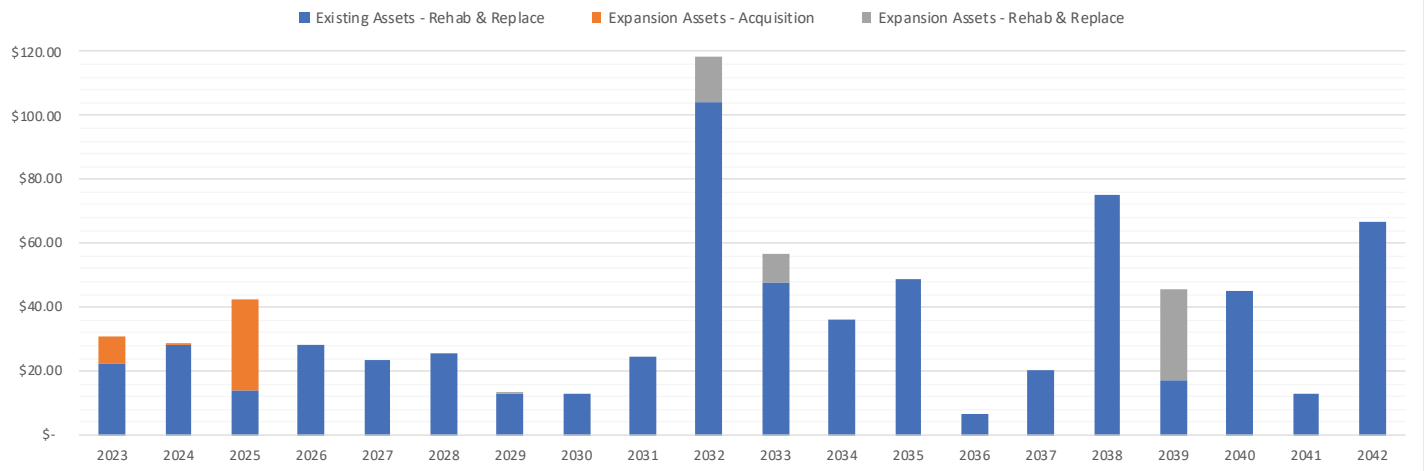


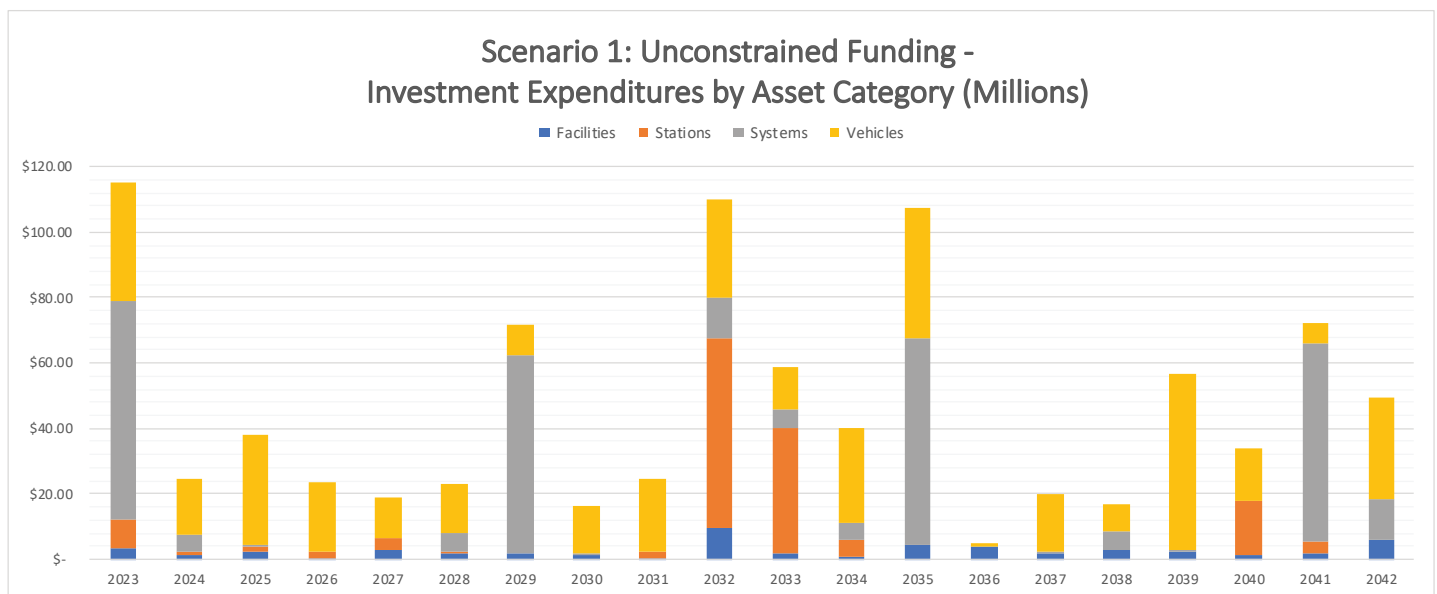
Table 5.2: Comparison of Investment Expenditures under Various Funding Scenarios – Current versus Projected (Millions)

	Scenario 1		Scenario 2		Scenario 3	
Asset Type	Current Needs	2032 Needs (10-year)	Current Needs	2032 Needs (10-year)	Current Needs	2032 Needs (10-year)
Existing – Rehabilitate & Replace	\$106.12	\$95.86	\$45.89	\$95.58	\$22.27	\$104.29
Expansion – Acquisition	\$8.80	\$0	\$8.80	\$0	\$8.80	\$0
Expansion – Rehabilitate & Replace	\$0	\$14.11	\$0	\$14.11	\$0	\$14.11
Grand Totals	\$114.92	\$109.97	\$54.69	\$109.69	\$31.07	\$118.40

Under the two fiscally constrained scenarios (2 and 3) in Table 5.2 above, the data show that \$118.4 million is recommended to commit to achieving a State of Good Repair (SGR) within ten years under both existing and expansion asset categories (where $\Delta = \$8.71M$). Based on the 211 assets¹² in the TERM Lite database, the current SGR Backlog was determined to be:

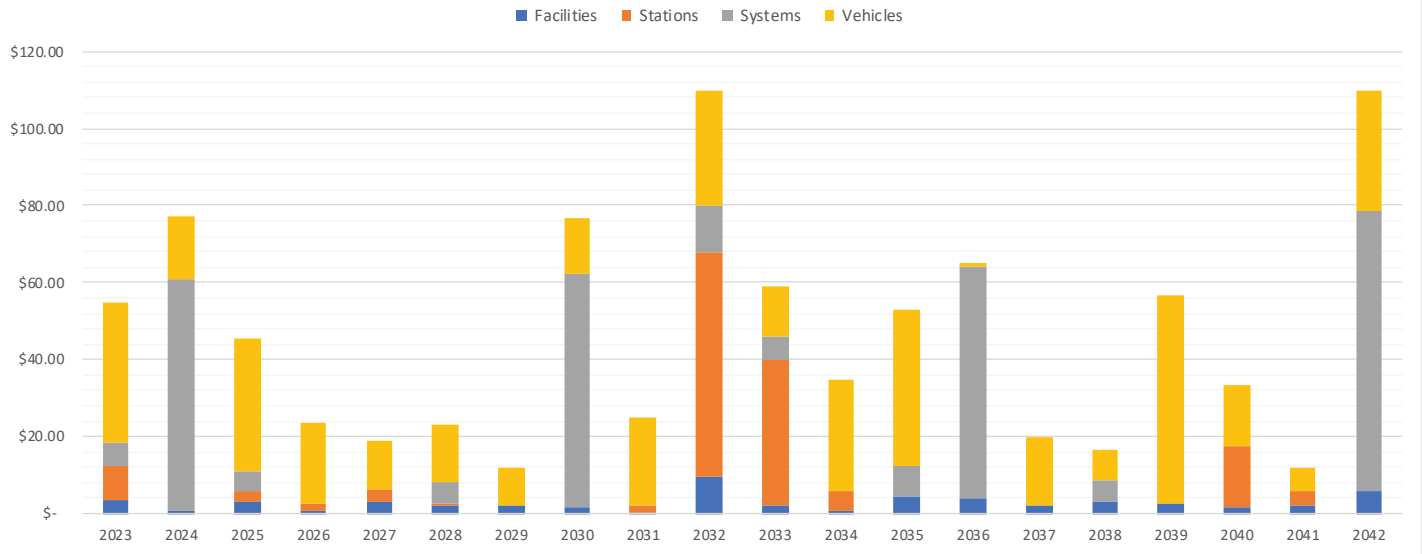
- Vehicles: \$18.59 million + Facilities: \$3.31 million + Systems: \$66.36 million = **\$88.26 million**

The second set of comparative charts depict *Investment Expenditures (Needs) by Asset Category* under all three funding scenarios mentioned previously over a 20-year planning horizon. All funding is shown in millions of dollars. Table 5.3 on page 45 provides a comparison of investment needs for all four asset categories (i.e., Facilities, Stations, Systems, Vehicles) in both 10- and 20-year planning horizons under all three identical funding scenarios (i.e., an unconstrained and two constrained).



¹² By comparison, the 2018 TERM Lite database included 193 different assets.

Scenario 2: Constrained Funding and Maintaining Current Spending Levels - Investment Expenditures by Asset Category (Millions)



Scenario 3: Constrained Funding and Maintaining SGR Backlog - Investment Expenditures by Asset Category (Millions)

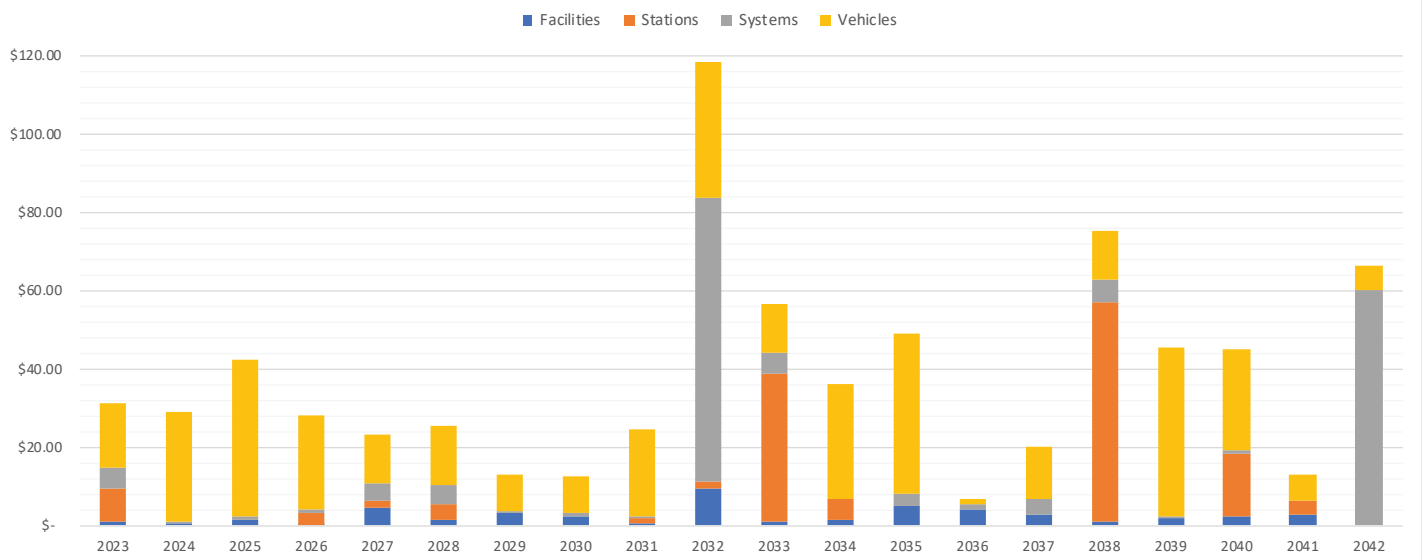


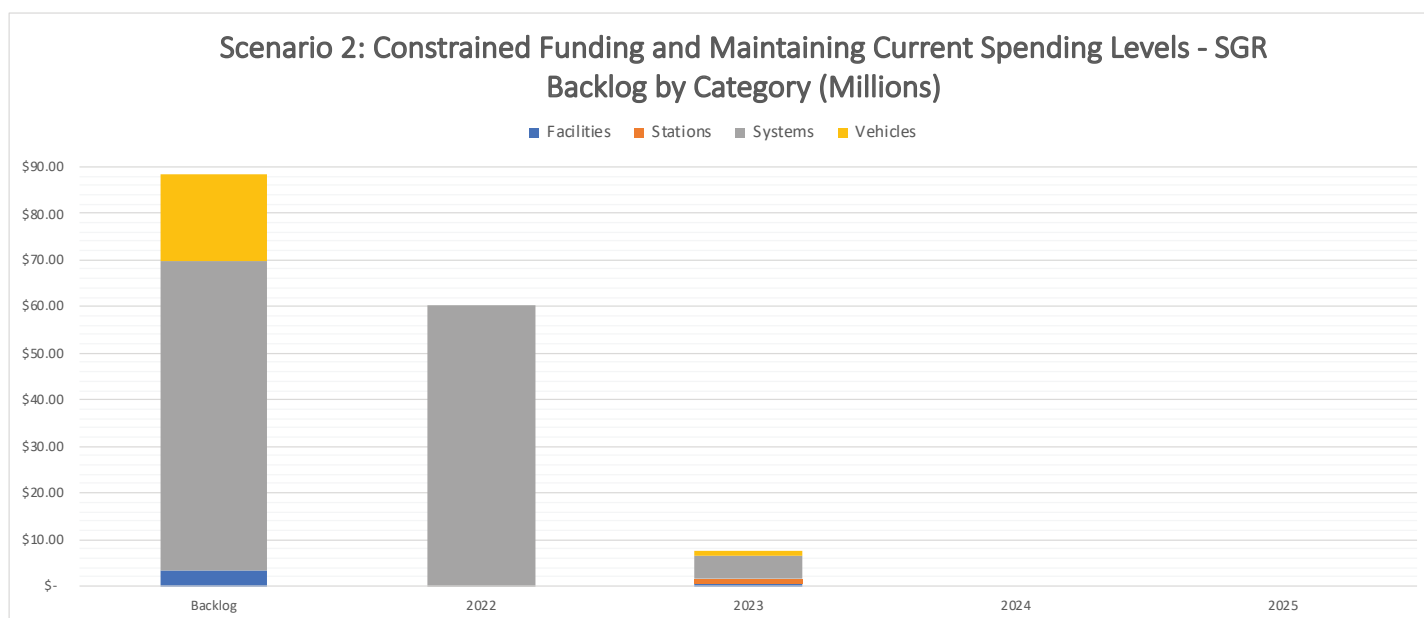
Table 5.3: Comparison of Investment Expenditures (Needs) under Various Funding Scenarios (Millions)

	Scenario 1		Scenario 2		Scenario 3	
Asset Category	Current Needs	2042 Needs (20-year)	Current Needs	2042 Needs (20-year)	Current Needs	2042 Needs (20-year)
Facilities	\$3.55	\$6.03	\$3.55	\$6.03	\$0.88	\$0
Stations	\$8.80	\$0	\$8.80	\$0	\$8.80	\$0
Systems	\$66.36	\$12.22	\$6.14	\$72.45	\$5.03	\$60.22
Vehicles	\$36.21	\$31.24	\$36.21	\$31.24	\$16.35	\$6.26
Grand Totals	\$114.92	\$49.89	\$54.70	\$109.72	\$31.06	\$66.48

It is interesting to note that the funding need from Scenarios 1 and 2 are almost identical at the SGR mid-point (\$109.97 versus \$109.69 in 2032), although a \$60.23 million difference over the full 20-year planning horizon (to 2042) is projected. Maintaining the entire SGR backlog at 50 percent from Year 11 (2033) onward under Scenario 3 decreases the reinvestment amount needed in 2042 by \$43.24 million when compared to Scenario 2.¹³

State of Good Repair (SGR) Backlogs

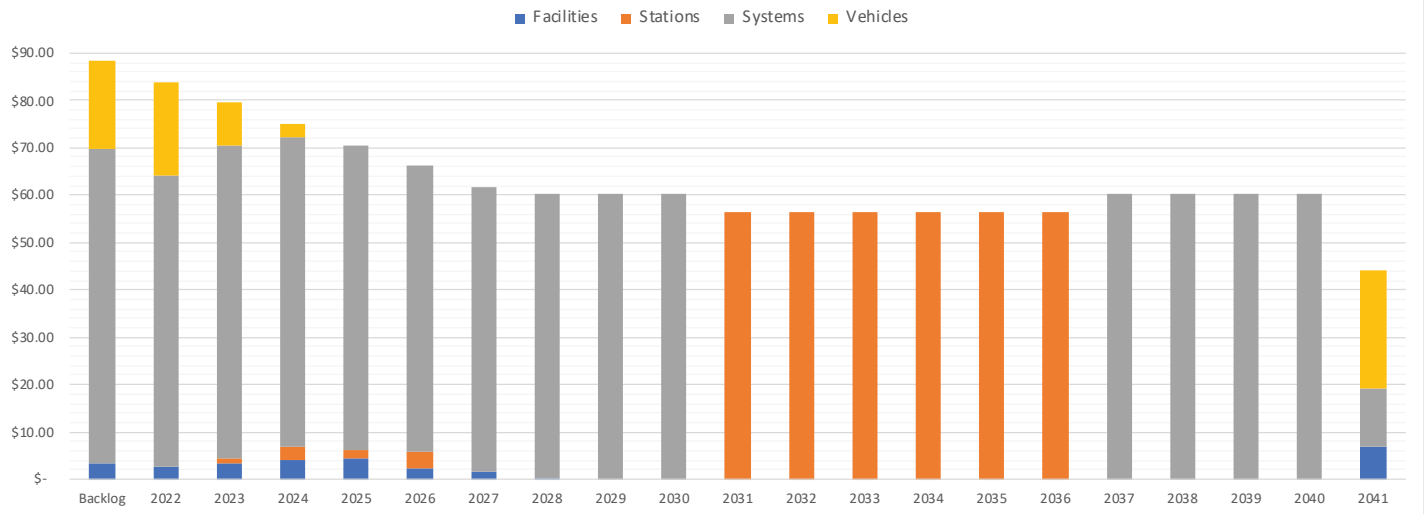
Funding requirements to address the SGR backlog – both today and in the future - are depicted in the two charts below. Scenario 1 is not shown since unconstrained or unlimited funding would be used to immediately eliminate the current and entire \$88.26 million backlog.¹⁴ In fact, note that the entire backlog is quickly eliminated in 2023 under Scenario 2 if all Capital funding in the current Agency budget were dedicated to an SGR reduction alone.



¹³The full Expenditures Forecast Summary Report by Asset Category: 2022-2042 for all three funding scenarios are available but were not provided in the appendices.

¹⁴The full SGR Backlog Summary Report by Asset Category: 2022-2042 for the two fiscally constrained funding scenarios (2 and 3) are available but were not provided in the appendices.

Scenario 3: Constrained Funding and Maintaining SGR Backlog - SGR Backlog by Category (Millions)



Funding Recommendations to Address and Maintain State of Good Repair Backlog

Based on estimated funding for capital projects over the short term (i.e., 2022 thru 2027), it appears the agency’s current State of Good Repair backlog¹⁵, as determined by TERM Lite, can begin to be eradicated beginning in 2023 or within the current TAM horizon period. Under Scenario 2, the recommended and high-cost reinvestment under the Systems category pertain to Base Radio Stations, and other communications (e.g., telephone system) or safety and security equipment (e.g., facilities buildings’ intrusion detection systems, CCTV) that appear to have reached the end of their useful life. Under Scenario 3, looking ahead a decade, the model identified Tacoma Dome Station as the largest Facilities asset that will reach its 40-year Useful Life milestone and should be ready for another major rehabilitation and renewal project.

Assuming the 2023 projects are fully funded when the new budget is adopted in December 2022, capital projects funding increases in 2025 and 2026, based on current projections. That information is presented graphically on page 44. Assuming the majority of the funding is already dedicated to or earmarked for the Stream BRT 1 Construction phase and MOBI Building 1, Phase 2 construction using SGR as a primary metric for capital project selection in the current TAM Plan funding cycle is highly recommended, if discretionary or surplus funding were to become available. Ideally, the Agency would begin using the new capital facilities based EAM system to rank and score project proposals based on achieving and maintaining SGR above all other selection criteria, at least in the short-term. Ideally, the new system would use costs, not conditions, as the primary drivers of reinvestment decisions.¹⁶

¹⁵Defined as unmet capital needs but not expenditures.

¹⁶Source: FTA – Forecasting Asset Conditions with Decay Curves, Keith Gates, P.E. – Presented April 16, 2012

Employee Highlight

42 YEARS



Frances Rankos

Travel Trainier, ADA

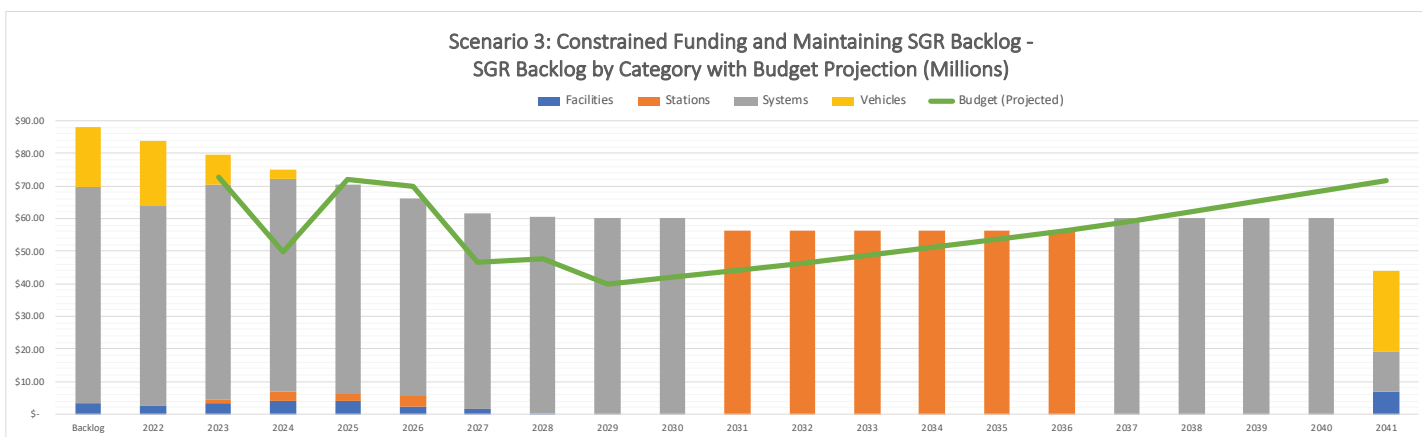
“Individuals with disabilities have challenges using public transportation without some specialized training. What I do at Pierce Transit gives them that support and confidence. In fact, I still see people riding the bus that I personally trained decades ago!”

Ms. Rankos began her distinguished career with Tacoma Transit originally.

These include:

- Cost of maintenance
- Safety priority
- Cost of in-service failures
- Cost of customers' time
- Cost of money (financing)

Although, as mentioned previously, the various asset management software programs available on the market today allow transit agencies to customize project prioritization criteria using weighted averages to closely align them to the needs of the business (e.g., operating environment and service characteristics, geography and topography, climate, usage by facility or vehicle type, and many other agency-specific factors). This assures that the project selection process is thorough, proactive, and objective, in lieu of relying on a simple “worst first” process, based on subjectivity and perceived wants over actual needs. Still, the Agency’s two largest capital project priorities over the next 4 to 6 years are clearly identified and must be fully funded before fair and objective consideration can be given to any others.



This page intentionally left blank.

SECTION

06

**Implementation
Strategy**

This page intentionally left blank.

Defined as, "The operational actions that a transit provider decides to conduct, in order to achieve its TAM goals and policies."

Maintenance Strategy

The vehicle maintenance program is a dynamic and changing system based on manufacturer and original equipment manufacturer (OEM) recommendation, mechanic and technician evaluation, and statistical evaluation. As issues are identified they are systemically evaluated to develop new processes, utilize technological improvements, and implement training to increase employee efficiency. The basic preventative maintenance structure is comprised of the following checklist:

- Daily Pre- and Post- Trip Inspections. Performed by vehicle operators prior to departure and after returning to the Lakewood base.
- B thru F Coach Inspection performed at 6,000-mile intervals.
- Air Conditioning Inspection (HVAC)
- Amerex Fire Detection/Suppression Inspection
- Compressed Natural Gas (CNG) Tank Inspection
- Cooling System (COOLSY) Inspection
- Engine Tune-up
- Wheelchair Inspections
- Emissions

Overhaul Strategy

Pierce Transit's major component lifecycle overhaul plan looks at factory guidelines and how the vehicle is being used in service. The target is "midlife" or at the 8-year mark of the planned 16-year expected bus life. Major focus area components are the engine, transmission, differential, planetary gear sets, radiator, and charge air cooler. Engines and transmissions are rebuilt in-house by Maintenance staff according to manufacturers guidelines.

Although midlife overhaul planning is based on the 8-year mark (buses) or 400,000 odometer miles for CNG engines and at 600,000 odometer miles for Diesel engines. When a fleet reaches the mileage or years of service midlife status, Maintenance does not have the option or capability of overhauling an entire fleet in a six-month or even one-year timeline. To sustain the fleet, including all sub fleets, through these demand spikes, it is necessary to incorporate several countermeasures to allow the demand to peak slowly over a longer time period. This simply means starting the overhaul process earlier and finishing up much later than what would be the agency's preference with unlimited resources. It is also based on supply chain issues, longer lead times, and availability of personnel.

Overhaul planning strategy must be flexible enough to accommodate limitations in labor, existing facilities, and parts availability. To work within these limitations, it is necessary to incorporate the following maintenance elements considered as a part of that strategy. Elements are oil sample data, oil usage, mileage, engine hours, service history and reliability along with KPI statistics, and longevity trends for each fleet.

By contrast, the automotive, SHUTTLE (paratransit), non-revenue Service and Support, and Vanpool (rideshare) fleets are a simpler equation due to their shorter life span of 8 years for both automotive and paratransit vehicles. In these categories, the Agency operates and maintains these vehicles without a midlife overhaul before decommissioning at their end of service life.

Disposal Strategy

The fleet Maintenance disposal strategy is based on set lifecycle expectancies for the various fleet types:

- Fixed Route Bus - 16 years or 640,000 miles
- Paratransit - 8 years or 120,000 miles
- Vanpool - 8 years or 120,000 miles
- Seasonal Trolley - 14 years or 280,000 miles

Once a vehicle reaches the end of its useful and Fleet Maintenance has a suitable replacement ready to replace it, then decommissioning of that vehicle is performed. Decommissioning includes de-branding and removing the paint interior and exterior markings, along with removing it from maintenance support planning and repair processes in their software systems (e.g., Trapeze EAM). After decommissioning is completed, the vehicle can be surplused or sold. Since the Coronavirus pandemic was declared in March 2020, Pierce Transit uses online, virtual auctions to sell its surplus vehicles.

Acquisition and Renewal Strategy

To develop an effective vision for the Pierce Transit fleet, the fleet acquisition and renewal strategy must include collaboration with the Planning and Operations departments' strategic priorities to determine what vehicles to purchase and when.

Once the decisions are made to purchase vehicles, dates must be coordinated with decommission dates, then factored into the required timeline to purchase either new replacement or expansion vehicles. It is common to require an 18-month lead time to purchase some fleet vehicles while up to 24 months for 60-foot articulated BRT coaches or BEBs. This lead time, which can greatly fluctuate, is in addition to the purchasing process and regulatory steps required by Pierce Transit. The successful strategy includes synchronizing both decommissioning old vehicle actions and timeline along with the new vehicle acquisition processes and timeline.

Pierce Transit Maintenance uses the Washington State Department of Enterprise Services (DES), master contract for vehicle purchases. Using the State DES contract increases the number of vehicles and options by prequalifying transit-specific vendors. The benefit includes receiving the lowest possible price per vehicle by leveraging statewide purchasing power, while at the same time shortening the procurement to delivery timeframe by eliminating the Request for Proposals and vendor bid processes entirely.

Employee Highlight

42
YEARS



Mark Veach

Bus Safety & Training
Instructor

"I appreciate the stability and have enjoyed working with the same great people for many years; we're like family."

Mr. Veach's career includes 20 as an operator – where passengers often asked for him by name – and over 20 as a trainer.

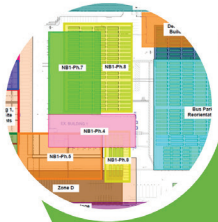
SECTION

07

**Key Activities:
Current and
Future**

This page intentionally left blank.

Our Three Largest Capital Objectives



1 **MOBI**
Lakewood
Base Renovation



2 **STREAM**
All-New
Bus Rapid Transit



3 **ELECTRIC**
Powered, Zero
Emissions Buses

1. Maintenance and Operations Base Improvements (MOBI) Projects Background

Pierce Transit's headquarters facility opened for service in 1987, initially designed to serve a fleet of 200 revenue vehicles. Today it supports a fleet of 300 fixed route buses plus additional revenue and support vehicles. The facility maintains both Pierce Transit and Sound Transit vehicles, but it is now functioning beyond its design capacity and no longer meets transit industry standards. Buses have gotten both longer and wider as fleet styles have changed dramatically in the past 35 years. In addition, the makeup of the fleet maintained on the base has changed to include 60-foot articulated buses, new and technologically advanced Battery Electric Buses (BEB), and double decker commuter buses in the very near future. This is challenging for the current maintenance and operations workforce, who are doing their best in less-than-optimal conditions.

Since construction of Pierce Transit's only base facility, the Agency has purchased adjacent properties to expand the footprint of the campus but had not moved forward with developing the parcels until a comprehensive Base Master Plan Update was completed in 2018. These additional parcels and greatly expanded footprint now provide the room needed to complete the MOBI project, modernizing the Lakewood base and providing a safer and more efficient working environment. In 2020, the MOBI project team evaluated the costs and benefits of constructing a completely new Maintenance & Operations facility (i.e., the original Building 1) versus modernizing a 35-year-old structure.¹⁷

¹⁷Source: Maintenance & Operations Building 1 New-In-Lieu Comparison report, July 2020. The MOBI project was featured in a special edition of Passenger Transport magazine for APTA's TRANSform Conference & Expo, dated November 8, 2021, and is provided as Appendix F.

- Due to age and code requirements, modernizing the existing site was estimated to cost \$1.5M more than constructing a new building. Additionally, updating the existing site would still not achieve most current industry standards for maintaining a transit fleet.
- A major difference between the “New-In-Lieu” building option and modernization of the current site is flexibility for phasing. The selected approach, New-In-Lieu, provides opportunities to phase the construction of the building to better match the funding flow over eight discrete Architecture/Engineering and Construction phases by 2030. It also allows ongoing operations while a new facility is constructed, similar to completely remodeling a house while the occupants are still living there the entire time.

These critical MOBI projects will rebuild or reconfigure the base to match the long-range service plans of the Agency, address the need to maintain and repair articulated buses (for BRT and express routes) and double-decker buses, plus sets the stage to accommodate a Zero Emission Bus (ZEB) fleet. While already operating and testing BEB technology, Pierce Transit is learning from the industry as propulsion technology evolves. As this TAM Plan update has mentioned, the Agency is initiating a Zero Emission Bus Implementation Strategy, Phase 2, effort that includes evaluating both BEB and hydrogen technology to identify the most appropriate propulsion technology for our long term needs and to continue planning for the implementation of our ZEB fleet. The outcome of this additional 2022 planning effort will further guide expansion of ZEB technology on our base and influence our future Low-No applications. Order of magnitude estimates for the ZEB implementation are \$38 million for design and construction of charging infrastructure.

Through foresight on the part of the project management team, MOBI already provides the infrastructure to accommodate charging capacity for up to 12 BEBs and can be easily expanded to 15. The MOBI program also provides space for future ZEB implementation identified in the Agency’s 2022 Zero Emission Bus Implementation Strategy, Phase 2, planning efforts underway.

Pierce Transit’s challenge is fully funding the large scale MOBI projects. Today, the Agency has committed \$84.5 million in local funds toward the projects. But the need is much greater, an additional \$207 million is estimated to complete the MOBI project by 2030. As additional ZEB and EV projects are developed in tandem, they will be added to the Agency’s capital projects portfolio to continue the transition to a zero emissions fleet of both revenue and non-revenue (Service & Support) vehicles.

Maintenance and Operations Base Improvements (MOBI) Projects Lookahead to 2026

Completion of the MOBI projects is critical to support the Stream Bus Rapid Transit (BRT) buildout in the future. Unfortunately, current headquarters facilities are not capable of servicing additional articulated and BEBs needed for Stream BRT routes, hence the need to immediately address transit supportive infrastructure challenges.

Pierce Transit is committed to financing the construction of its first building identified in the comprehensive base modernization program, necessary to support BRT and energy conversion plans. Pierce Transit’s Destination 2040 Long Range Plan (LRP) identifies improved service quality, shorter headways, accessibility to school, work, and regional transit connections. The LRP includes directly serving specific neighborhoods who have borne disproportionate impacts from transportation noise, poor air quality, and community separation from interstate highway construction. The Pierce Transit service area exceeds Justice40 targets and includes the highest concentrations of environmental justice populations who have been adversely impacted. Pierce Transit’s 20-year Stream BRT initiative of four interconnected corridors places premium service within a half-mile mile walkshed of the most affected neighborhoods. But this plan can only be realized through the construction of the new Maintenance & Operations (M&O) Building 1, the focus of the first phase of the MOBI base improvements package.

The project constructs the first phase of the new Maintenance and Operations (M&O) base building necessary to realize BRT and contract service, and energy conversion plans. The existing M&O 89,000 square foot Building 1, with 23 bus bays, will be replaced by a 141,500-square foot building with 47 bus bays. The project is currently in design to meet the program requirements of a 2029 target completion year. The design team carefully integrated long-term base planning for efficiency, reuse, and reduced climate impacts. Architecture and engineering design started in 2020 with local funds. **The construction phase is scheduled start in spring 2023 and is estimated at \$37.6 million.**

Unfortunately, the MOBI Building 1, Phase 1 project was submitted for an FTA Buses and Bus Facilities grant in Fiscal Years 2021 and 2022 (at \$9.4 million in both applications) but was not successful, likely due to the extremely competitive nature of this discretionary funding program. Pierce Transit’s grants team has sought FTA feedback on previous applications and is developing new ways to tell the story of this legacy project, as featured in a special edition of Passenger Transport magazine (Please see **Appendix F**).

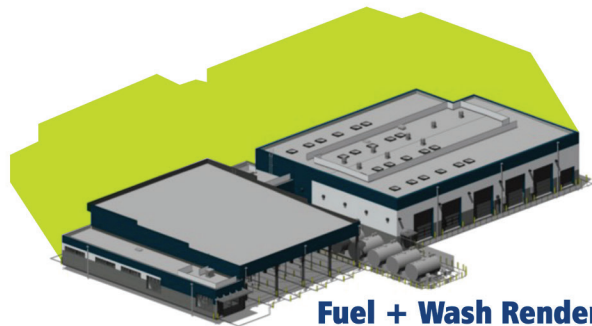
New Fuel & Bus Wash - Building 2

The new Fuel and Bus Wash building will increase the ability to fuel and add critical fluids for vehicles at a faster rate and for a greater variety of vehicles. The new facility includes additional fueling lanes, fueling dispensers, CNG dispensers, and a distribution system of key vehicle fluids that can be added during the refueling process. The wash facility will increase Pierce Transit’s ability to a handle of number of different bus sizes and configurations, including double-decker express and articulated buses that will serve the future Stream Bus Rapid Transit routes. **The project construction cost is estimated at \$24 million and is anticipated to be completed by April 2023.**

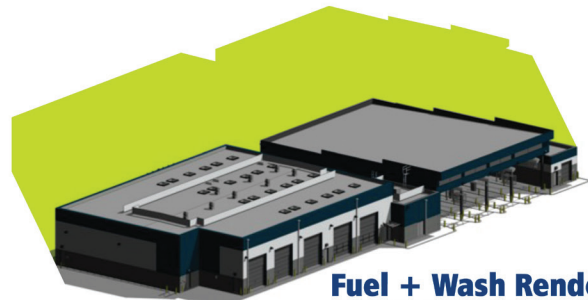


COMING SOON

Fuel and Wash Building



Fuel + Wash Rendering
SOUTHEAST SIDE OF BUILDING



Fuel + Wash Rendering
NORTHWEST SIDE OF BUILDING

Opening in early 2023, the new Fuel and Wash Building will include:
4 Fuel Lanes, 2 Bus Washes, a Chassis Wash, and a Detail Cleaning Bay



FULL BUILD IN 2030

New Maintenance Facility (additional details to come)

New Entryway and Parking Lots – Building 4

The parking lot reconfiguration in front of and on the west side of the main/Administration building on 96th Street SW provided a new and wider entryway, greater visitor parking capacity, and secured parking for Pierce Transit employees with Washington State Certified Disabled Person credentials. This new gated parking lot was added to reduce the walking distance between the employee parking facility behind Building 5 and the entrance to Building 4.

Additional work included demolishing the existing parking lot to the north of Building 4, that had previously been used for employees and Service & Support vehicles. It also included installing the required infrastructure and drive surface to park paratransit vehicles plus allow bus operations through the new Fuel and Wash facility. **The final cost estimate is projected to be \$7.27 million and substantial completion was in May 2021.**

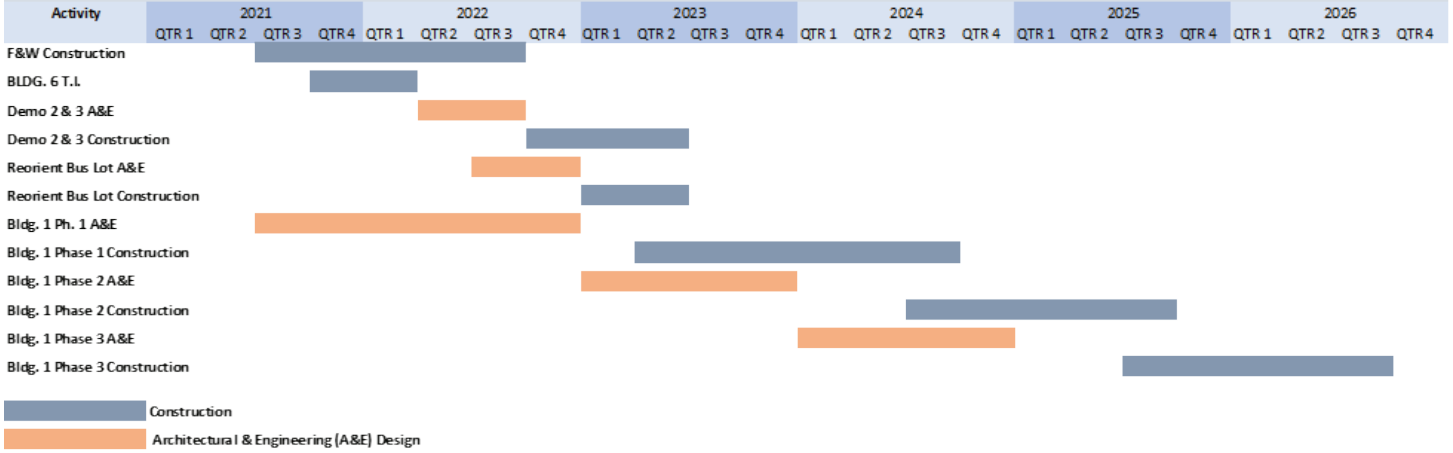
MOBI Implementation Schedule

The new Maintenance & Operations (M&O) Building 1 is the primary maintenance and diagnostics location for existing and planned revenue and non-revenue fleets. Building 1 coordinates well with future base modernization plans while offering independent utility from future phases. It provides for maintenance of the planned fleet that will not fit in the existing facility, including new articulated buses to support both the Stream BRT service and Sound Transit regional express, as well as the potential for double-decker buses already used in the region to and from downtown Seattle.

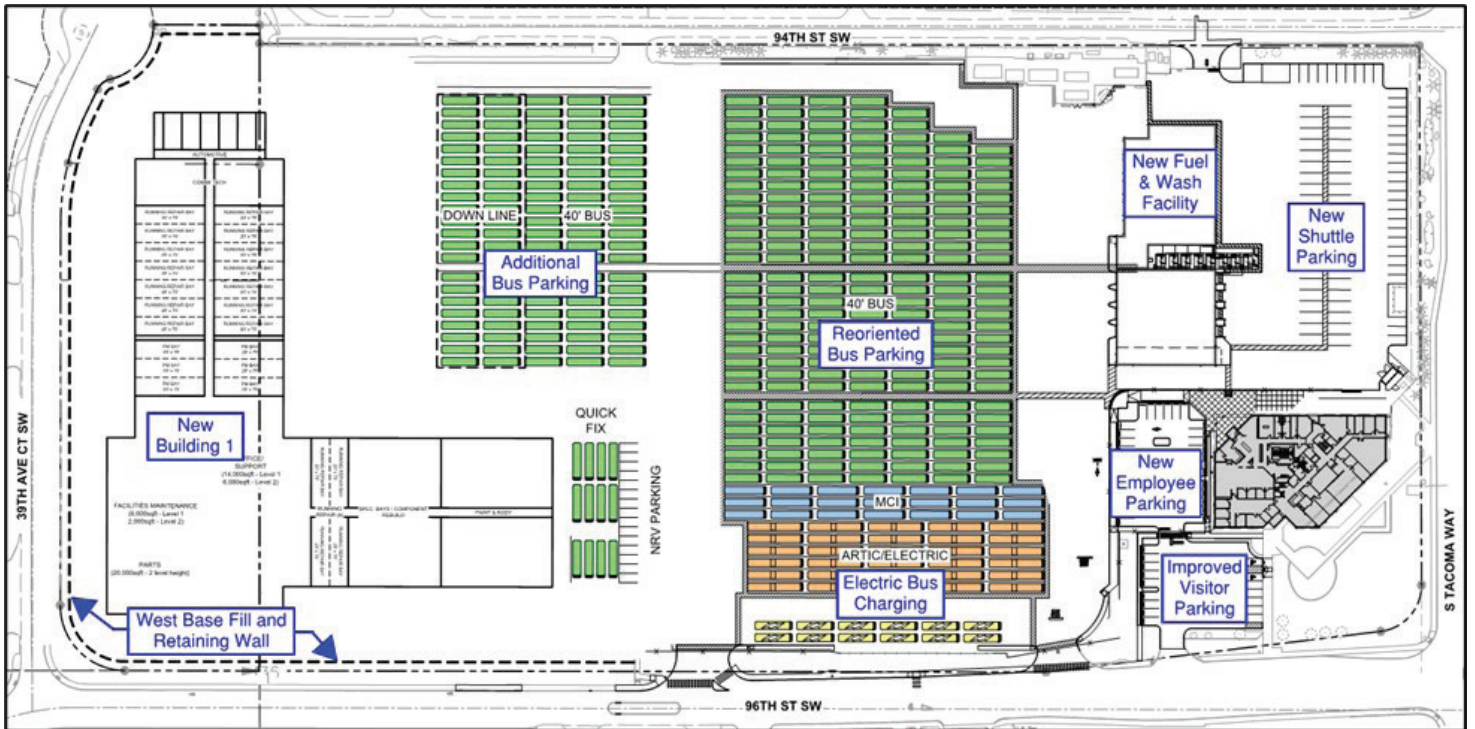
The inaugural Stream BRT corridor, Pacific Avenue/SR 7 from downtown Tacoma to Spanaway, a Small Starts project recommended in the USDOT Fiscal Year 2022 budget, will expand the fleet with 17 sixty-foot articulated coaches that literally do not fit into existing base facilities (e.g., in the current configuration of the M&O Building 1, a 60-foot articulated coach will only fit in one preventative maintenance bay). Up to 62 zero-emissions, high occupancy articulated coaches could be added as the Stream BRT network expands to five interconnected routes in the future.

This building, the largest on the Lakewood headquarters campus, directly impacts the revenue vehicles maintenance capacity of the overall base and includes the following functions: motorbus repair bays, van and support vehicle repair bays, body repair and paint, components rebuild, parts storeroom, chassis wash, tire shop and storage, maintenance offices, mechanics' amenities (including a large training room, wellness center, and restroom/locker/showers), and a chassis dynamometer. The configuration of service bays and warehouse size directly impact the operational efficiency and capacity of the base. As such, improvements within the new M&O Building 1 are required for planned capacity increases, safety, and employee retention. Bringing a 1980s-era M&O building up to current industry standards is a core need for Pierce Transit in the long-term. The short term (four-year) project schedule and an illustration of the final buildout are provided on the following page. **The current Building 1, Phase 1 cost estimate is \$37.61 million.** Additional cost estimates for the future Building 1, Phases 2 thru 8, are provided as **Appendix G**.

ROUGH LOOK AHEAD BY QUARTER



Update Ref: 2022-10-26



2. Stream BRT Corridor 1: Pacific Avenue/ SR 7 - Tacoma to Spanaway

The Pacific Avenue/SR 7 BRT corridor improves the current Route 1 with high quality BRT service from the Spanaway area north to downtown Tacoma (14.4 miles). Transit riders will benefit from a variety of BRT elements including 56 new stations. Unlike the current Route 1 shelters that only offer minimal seating and weather protection, the proposed investment in BRT stations offers a high level of passenger amenities that are most common at light rail stations. They include better lighting for enhanced safety and security, landscaping, real-time arrival information (“Next bus in ___ minutes”), off-board fare collection (ORCA readers, ticket vending machines), pedestrian access improvements leading to level boarding platforms, waste receptacles, and expanded waiting areas for both sitting and standing or leaning. The number of Stream BRT stations by size and cost, including new articulated coaches, is provided in the table below. Both new asset categories (i.e., BRT stations and Stream branded articulated coaches) will be reflected in the 2026 TAM Plan.

Where many fixed bus stops offer nothing more than a flagpole in the ground, Stream BRT stations can offer a sense of permanence and pride; ideally a place where transit patrons can wait in comfort and with dignity. It will be easier to board the BRT vehicle using a wheelchair or with a bicycle due to the level boarding area. In addition, each vehicle will include on-board bicycle racks. Additional benefits from the inaugural BRT project include expanded service hours and trip frequency, as well as bigger and more efficient, clean fuels 60-foot articulated BRT coaches. This project reduces transit travel time, improves trip reliability, and provides increased service frequency. This premium, high-capacity service is shown to increase transit ridership due to its comfort, ease of access and use, travel time competitiveness (with automobiles), and reliability.

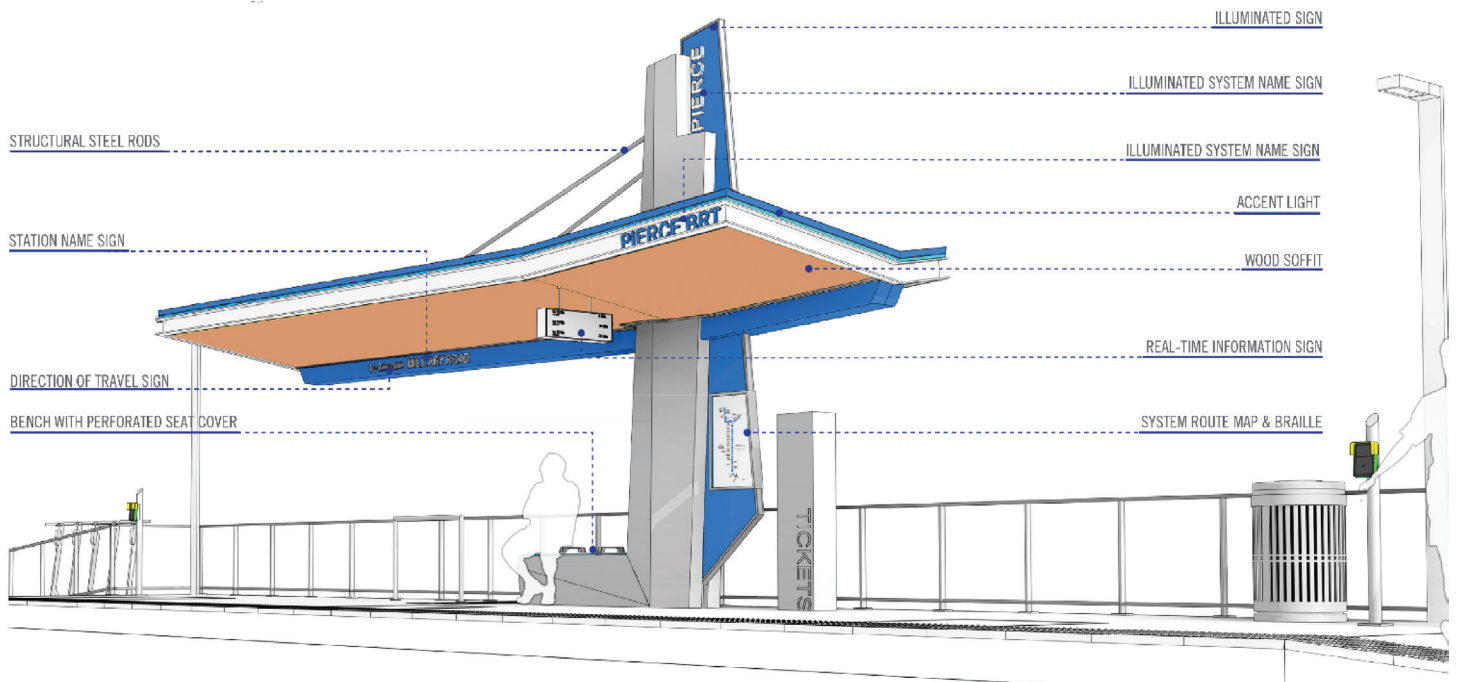


Figure 5.1: Default Priority Criteria Settings and Weights in TERM Lite Database

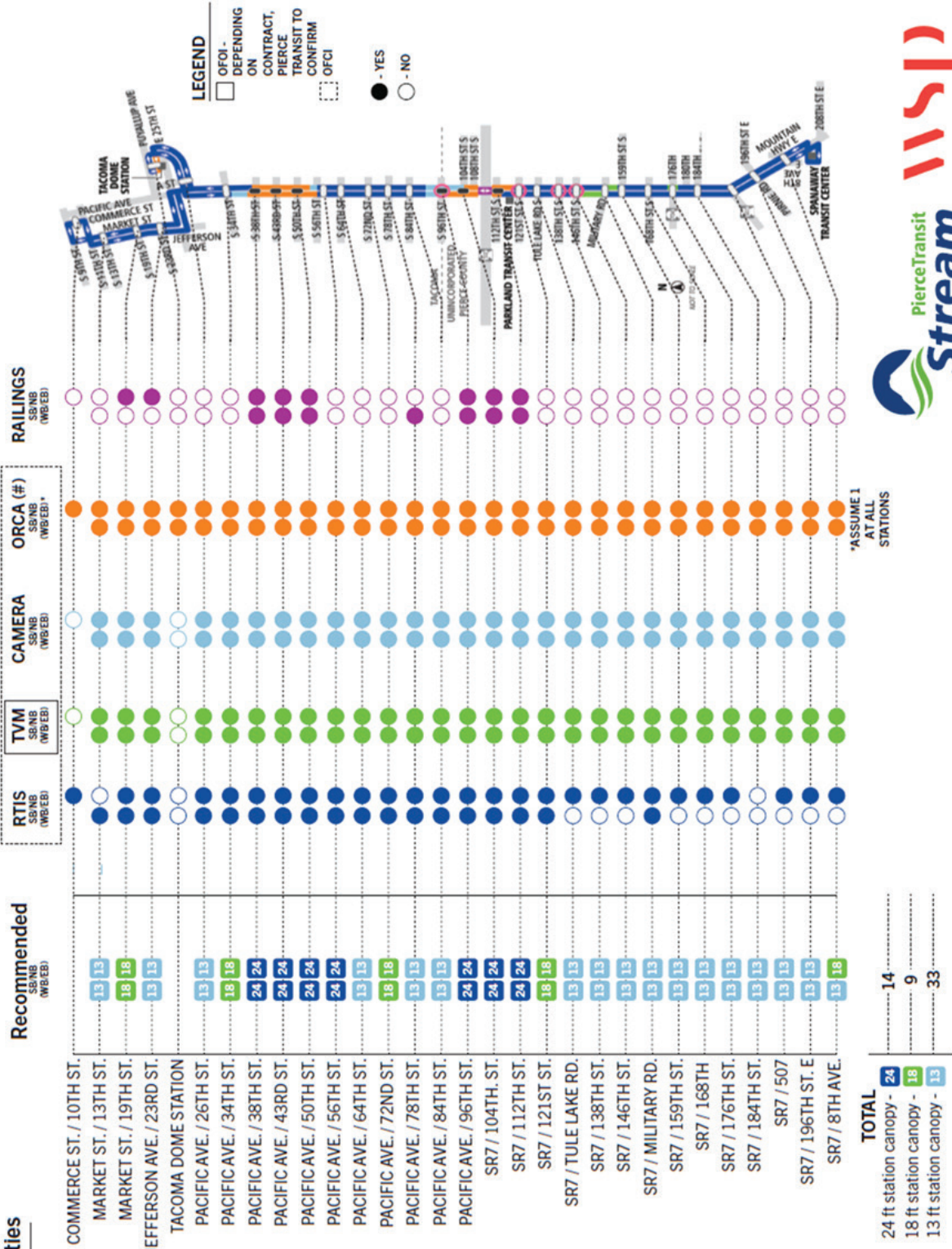
Configuration/Size (Width)	Number of Stations Planned by Size	Cost Each (Kit of Parts + Installation escalated to 2026)	Investments in New "Infrastructure" Reporting Category
Large Stream Station (24')	14	\$277,00	\$3,878,00
Small Stream Station (18')	9	\$242,000	\$2,178,000
Extra Small Stream Station (13')	33	\$227,000	\$7,491,000
Totals	56		\$13,547,000
New BRT Vehicles	Fleet Required	Cost Each	Total Cost
Articulated 60-foot CNG-powered Stream BRT Coaches	19 (Including spares)	\$1,350,000	\$25,650,000

The various amenities recommended for each Stream BRT 1 station by type, size, and location as shown in the Project Timeline on page 70.

Pierce Transit’s inaugural Stream BRT 1 corridor project will continue to move forward within the current four-year TAM Plan reporting period (2022-2026), as shown in the Project Timeline. Revenue service is planned for opening in 2027. **The current grand total cost estimate, including the first group of 60-foot, CNG-powered articulated vehicles, is \$241.4 million.**

SR 7 BRT Shelter Sizing and Amenities

09.15.2021



TOTAL	24	18	13
24 ft station canopy -	14		
18 ft station canopy -	9		
13 ft station canopy -		33	



Project Timeline

2017-2019		2020-2021	2022	2023	2024-2026
Assess corridor conditions	Conduct additional traffic analysis	30% Design	TIA update continues	60% Design	Finalize Design
Develop project purpose & need	Begin initial environmental review	Finalize NEPA environmental review	TIA Concurrence	Begin property acquisition	Continue property acquisition
Mode selection	Begin design	Partners agree to TIA Rerun	Downtown Tacoma Traffic Analysis	NEPA Reevaluation	BRT Vehicle Procurement
Develop alternatives	Launch BRT Community Committee	Utilities Coordination	Identify addition project funding	SEPA Checklist Issued	Begin construction
Select locally preferred alternative				Utility & Critical Agreements	Open to service
Begin FTA Small Starts application				Advance Utility Relocation	

3. Battery Electric Bus/Zero Emissions Fleet Transition

The story of introducing a cleaner burning, lower emissions fixed route fleet began in 1986 when two General Motors New Look buses were converted to run on a combination of CNG and diesel. The overall success of this initial attempt led to a decision the following year to purchase dedicated (i.e., single fuel) CNG buses. But no original equipment manufacturer (OEM) bid on the offer to help develop this type of bus engine. The commitment to CNG continued in 1988 when 19 28-foot bi-fuel (CNG and gasoline) coaches were ordered from the El Dorado Bus Company. The Agency then contracted to have CNG conversion kits installed in the Ford 460 electronic-fuel-injection engines at \$15,000 per coach.¹⁷ In 1989, Pierce Transit finally found its OEM in Cummins Engine Company and ordered 15 buses, equipped with Cummins L-10 240G CNG engines. By 1998, the Agency had added another 57 CNG-powered coaches for a total of 72 (37 percent of the total fleet of 193 buses). Fast forward 24 years: 128 of 170 (75 percent) in the current fixed route bus fleet are propelled exclusively by CNG.

In 2017, Pierce Transit began the initiative to achieve a comprehensive but incremental rollout of an even “cleaner” transit fleet, along with identifying the needed infrastructure to service and support it. The existing zero emissions (BEB) coaches and charging stations plus EV charging stations, previously referenced in this TAM Plan Update (p. 29), are summarized on the following page.

¹⁷Source: In 1991, these conversion kits were replaced with a MOGAS system to solve hard starting, backfiring, and hesitation system problems. “MOGAS” is a term used by aviators for common, commercially available motor gasoline, used by ground vehicles. The term is used to distinguish it from Avgas for aircraft.

Table 7.2: Existing Battery Electric Buses & Charging Equipment (BEB/EV) Inventory

Asset Type	Manufacturer/Model	Units (Model or Installation Year)	Total Cost
40-ft. Fixed Route Bus	Proterra Catalyst E2	3 (2018)	\$2,945,250
40-ft. Fixed Route Bus	GILLIG	6 (2021)	\$5,929,200
Fast Charging Stations (Conductive/Plug In)	ChargePoint Express 200 Smart DC	3 (2018)	\$637,211
Fast Charging Stations (Conductive/Plug In)	ChargePoint Express 250 Smart DC	6 (2021)	\$383,342
EV Charging Stations	ChargePoint Level 2 model CT4021	4 (2021)	\$129,000
Total			\$10,024,003

As the Federal Transit Administration (FTA) encourages a continuous transition to Battery Electric Buses (BEBs) or other zero emissions transit vehicles nationwide, Pierce Transit is deepening its commitment with the help of a team of consultants and specialists in this ever-changing technological arena. *Phase I Battery Electric Bus Fleet Transition Plan: A Path Towards Achieving a Comprehensive and Equitable Rollout of a Clean Transit Fleet and Infrastructure* (May 2022) documents this process and provides various fleet propulsion system scenarios for the Agency through horizon year 2042. Based on the 2030 target, the Agency will plan for another 25 for a total of 34 forty-foot zero emissions coaches.

The minimum recommended requirement for the Lakewood base facility is 11 depot chargers (150 kW each). However, Pierce Transit may want to install more than 11 chargers for operational reasons. As a rule of thumb, many transit agencies install one charger for three buses so that each bus is connected to one dispenser (each charger has three dispensers). This would allow the Maintenance & Operations team to charge each bus without the need to move buses around throughout the night. If the plan is to install one charger for every three buses, a total of 44 chargers would be needed at final build-out (i.e., by 2042). Therefore, the Agency will need to decide if we want to minimize the number of depot chargers, or if we want to maximize operational efficiency, or something in between. A more likely scenario would be where we achieve opportunity charging (i.e., at shorter intervals throughout the day, while in route and at intermediate stops), but not across all the recommended transit centers.

Employee Highlight

37
YEARS



Krista Sheehy
Bus Safety & Training
Instructor

"I was born and raised in Tacoma and my peers at the agency are now like family."

Ms. Sheehy's seniority allows her to take her pack horses on lengthy and guided equestrian camping trips throughout the Cascades every summer.

SECTION

08

Evaluation Plan

This page intentionally left blank.

A conversation with:

- Larry McCarty, (Capital) Facilities Manager
- Arun Kalavakolanu, Information Systems Manager/Chief Technology Officer
- Marah Harris, Fleet Manager¹⁹

Including continuous improvement approach practices by department from their interviews.

What is your department's continuous improvement approach?

Capital Facilities will use an outsourced FCA every three years which sets the baseline and prioritizes the work from there. As most of our assets have a 50-year or longer lifespan, there is latitude as to how to prioritize the work. For example, a roof would have a higher priority due to potential secondary damages, versus cracked asphalt pavement that may look bad but is still perfectly functional. Life safety systems, security, and code compliance take the following priority: 1) fire systems; 2) security (building enclosures); 3) a potential safety hazard (e.g., displaced concrete sidewalk panels). Asset preservation would be priority four (e.g., sealcoating a parking lot, painting a building).

Information Technology: Our approach is to always use hardware and software that is supported by the manufacturer and stay current with industry standard technology to the greatest extent possible. So, as equipment or software approaches their manufacturer specified end of life, we upgrade to the then available current version of equipment or software. Additionally, to ensure optimal performance and system security, our approach is to stay current on software by applying patches and other manufacturer recommended updates on a continuous basis. For example, we apply patches to our Windows laptop computers, workstations, and servers each month or when mandated by Microsoft, though the underlying software may be supported for years to come.

Fleet Vehicles: We regularly revisit and reassess our process and procedures to ensure standards are maintained and best practices are up to speed. Within the last few years, one process change that stands out is the discontinuation of emissions inspections due to changes in vehicle regulations per the Washington State Legislature. Additionally, we have commissioned nine Battery Electric Buses (BEB) which have required we make adjustments to our inspection schedules as the propulsion system differs from our standard fleet (e.g., CNG, diesel-battery hybrids). Instead, the BEBs have their own specific inspection requirements per the manufacturer. Given these challenges, we are in a constant state of learning as we continue our Zero Emissions journey.

Does your asset category specialty area have one? If so, please describe it.

Capital Facilities: Yes, the above-mentioned conditions assessment process plus interim field work to identify failing conditions or other things needing immediate repair. A continuous Preventative Maintenance program is designed to proactively reduce downtime and failure. The goal is 70% or greater preventative maintenance and 30% or less reactive maintenance or immediate repairs.

Information Technology: Only that there are ongoing and major IT infrastructure upgrade projects that align with our philosophy on continuous improvement: "Stay current with industry standard technology to the extent possible." A prime example is the Computer Aided Dispatch/Automatic Vehicle Location (CAD/AVL) System Replacement project (with detailed information provided on pp. 27-28).

¹⁹Ms. Harris also provided the following information within this section: Maintenance Strategy, Overhaul Strategy, Disposal Strategy, Acquisition and Renewal Strategy.

Fleet Vehicles: We regularly conduct trend analysis across our various sub-fleets regarding specific mechanical failures (i.e., route cause analysis for failing components). Upon identifying any trends, we will initiate a repair campaign for all applicable vehicles in the fleet as a proactive maintenance measure.

Was there a particular incident or an asset failure that triggered this change in process?

Capital Facilities: No, we continue to follow industry best practices. Still, implementation of the first TAMP process in 2018 raised the visibility of the need to maintain assets at a higher level, especially among the Agency's Executive Management team.

Regarding the MOBI, it was largely based on vehicle capacity and type constraints, plus the facilities' Maintenance & Operations infrastructure had aged out and no longer fit the Agency's operating model. In addition, much of the infrastructure and equipment within was old or outdated and well beyond its useful life. To use the new Bus Fuel & Wash Building as an example, we were operating well under capacity, meaning what we needed for fueling and washing compared to size of the bus fleet we are operating for both Pierce Transit and Sound Transit, along with 60-foot articulated coaches (in usage now) and Sound Transit Express double-deckers (coming soon). The new facility will include the latest equipment, to current codes and transit industry or environmental standards, essentially "resetting the clock."

Information Technology: No, as this question wouldn't be applicable to our department.

Fleet Vehicles: No, as it's actually an industry-wide recommended best practice, helping to diminish road failures, which mostly impacts the fixed route fleet, due to the extensive daily usage of buses.

If no continuous improvement approach is in place, is there anything you may be doing differently over the past four years, specifically since 2018? It could be as simple as more frequent replacement of assets, monitoring asset conditions differently or more closely than before, or another improvement worth mentioning in the TAM Plan Update.

Capital Facilities: Nothing beyond a greater recognition of current asset conditions, plus more detailed information, as a result of the inaugural TAM Plan of 2018, specifically the comprehensive Facilities Conditions Assessment report that was finalized by Parametrix in January 2018.

Information Technology: Nothing comes to mind as the replacement cycle or schedule of IT equipment is based on functionality, along with the needs of the end user, and not based on TAM Plan guidelines.

Fleet Vehicles: Nothing besides keeping up with frequent changes or upgrades in technology – BEBs are a good example - through training opportunities; in-person (classroom or seminars), webinars, and bulletins or memos that we receive from vendors or manufacturers.

And finally, did you notice a significant slowdown in asset conditions' decay or reduction in routine maintenance requirements over the past two years, specifically beginning with the COVID-19 pandemic in March 2020?

Capital Facilities: No. In our facilities, the only noticeable reductions were in administrative office (Building 4) staffing. However, even if only one person were in the building, all systems were fully operational (e.g., HVAC, lighting, mechanical, plumbing) and being maintained. However, field work did not go down at all; it actually increased as the amount of trash left in bus shelters plus recurrent vandalism has been much more prevalent since the start of the pandemic.

Information Technology: No, quite the contrary. There has been no change of IT asset lifecycle decay as a result of the pandemic. Working from a home office doesn't cause the asset to decay any faster or slower. But there was a switch to more laptops and tablets than desktop computers. The team also noticed more battery issues versus uninterruptable power supply (i.e., battery back-up) issues. Nonetheless, the mix or type of devices has changed or flipped, such as utilizing more laptops than workstations. We also changed monitor standards to better accommodate at-home office usage (i.e., teleworking).

Fleet Vehicles: That can be a bit of challenging question! So much vehicle maintenance is directly linked to odometer mileage intervals; accumulating fewer miles means that maintenance occurs less frequently. However, we do exercise our vehicles, meaning start and drive them periodically over short, non-revenue trips. But that doesn't accumulate anywhere near the same mileage as an in-revenue route. We found that even following a timed interval preventative maintenance schedule (e.g., 30-day, 45-day), the interval still comes around and we could have a scheduled component change due that wasn't yet needed. There is also the unknown of when revenue service could fully restore to pre-pandemic numbers and subsequently those vehicles are needed. This led us to having conversations on whether to make adjustments to the timed service intervals within our Preventative Maintenance (PM) program. For example, since the vehicle's not being utilized, should we conduct a varying PM at 45 or even 60 days instead of 30? Ultimately, the majority of our challenges are still with heavy duty fixed route coaches since their preventative processes take much more time and are more involved.

For our Vanpool fleet, we have been working through mileage equalization and adequate balanced usage as this reduces deterioration to any one vehicle type, significantly. Once the pandemic hit in March 2020, the majority of office workers or Vanpool customers began working from home, subsequently no longer commuting. And Pierce Transit took that opportunity to begin "right sizing" the Vanpool fleet from 360 down to 280 with some additional fluctuation still in the works.

How do you monitor your TAM approach to incorporate lessons learned?²⁰

For Pierce Transit, the ongoing monitoring process can be summarized in a few key words that coincidentally all start with the letter R and seem to work in tandem or pairs: review and reevaluate, rebuild and refresh, relearn and retool.

- **Review** means carefully looking at the Agency's short-term strategic goals, objectives, and needs over the current four-year TAM Plan cycle and into the next, ideally covering a six-to-eight-year capital planning horizon. More information on this is provided in Section 9.
- **Reevaluate** means looking at and carefully documenting what actions have worked or did not work in the past – ideally over the previous four-year TAM Plan cycle – and admitting what did not work (albeit without laying blame) so that those actions are not repeated.
- **Rebuild** means conducting a cost-benefit analysis to determine if it would be more fiscally prudent to replace a capital asset entirely, in lieu of repairing or refurbishing it to further extend its life.
- **Refresh** is often used to denote lower cost but highly visible cosmetic or esthetic improvements to a property to augment the user's experience. (The term was often used by former CEO Sue Dreier.)
- **Relearn** is recognizing the ever-changing nature of transit system operations. And keeping staff members up to date through continuous training, such as webinars, classroom instruction, conferences, seminars, or other interactive teaching methods tailored to the student's preferred method of learning and retaining new job-related information.
- **Retool** is the tangible side of relearning in that it can also require new equipment to serve specific technological advances. Or it can simply mean the process of revising and reorganizing to comply with the latest transit industry trends or best practices.

²⁰Answers on pages 76-77 were provided by Principal Planner Darin Stavish, the primary author of this 2022 TAM Plan Update.

What is the threshold “trigger” to amend your TAM Plan?

As mentioned previously, any substantial change to a capital asset, including newly acquired assets, should trigger an amendment to the TAM Plan. But to simplify the process, this is where keeping an updated inventory in a capital facilities-based EAM would likely supersede the need for periodic TAM Plan amendments. Any major repairs, renovations, or upgrades to existing infrastructure would be recorded in the EAM with new infrastructure documented in the four-year TAM Plan update. However, reaching a critical milestone on a substantial capital project, such as completing the inaugural 14.4-mile Stream BRT corridor (i.e., Pacific Avenue/SR 7) or any new building under MOBI, might merit a TAM Plan amendment. Another likely trigger would be a substantial cost increase to any capital asset or project already in progress, especially if the additional funding would need to be deducted from another capital asset scheduled for renovation or replacement. Finally, as suggested by the FTA, “...a transit provider may choose to amend its TAM Plan to reflect (unexpected) changes to investment priorities, targets, or other unforeseen occurrences (like a natural disaster) that impact the relevance of the TAM Plan.”

What is the threshold “trigger” to update it?

As a Tier I agency, Pierce Transit is continuing to strictly follow FTA guidelines by completing its first compliant TAM Plan in October 2018 with this comprehensive four-year update scheduled for October 2022.

Property Insurance Coverage and Risk Assessment

Pierce Transit obtains property insurance coverage through the Washington State Transit Insurance Pool (aka WSTIP). The Pool is not an insurance company but is an entity created pursuant to RCW 48.62. It is controlled and governed by applicable State statutes and regulations, the Interlocal Agreement through which the Pool was formed, and its own bylaws and resolutions. The State statutes and regulations which apply to insurance companies do not apply to the Pool. The Pool is not regulated by the State Insurance Commissioner.

The Pool provides All-Risk property coverage to its members. The All-Risk policy protects Pierce Transit from direct physical loss or damage, all fixtures, structures, and personal property. The Pool pays on a Replacement Cost basis. Pierce Transit also has Flood and Earthquake coverage.

The policy provides \$500,000,000 in coverage on a per Occurrence basis, for all Perils, Coverages (subject to policy exclusions). The policy does contain a sub-limit of \$50,000,000 for Flood, per Occurrence and in the Annual Aggregate. For Flood Zones A & V there is a \$10,000,000 Per Occurrence and in the Annual Aggregate limit. Lastly, the Agency has \$25,000,000 in coverage for Earthquake Shock - Per Occurrence and in the Annual Aggregate (for those Named Insured[s]) that purchase this optional dedicated coverage.

The Statement of Values report that is submitted for property insurance coverage is \$156,610,111 for the 2023 renewal. Risk Management suspects the values though may be undervalued. To test the validity of the number, a property appraisal was completed for the Tacoma Dome Station and the Lakewood headquarters’ Administrative Building 4. The appraisal was completed in July 2022 and the report is forthcoming.

Furthermore, Pierce Transit’s deductible for vehicles and property is \$25,000 per occurrence and the flood deductible is \$250,000 for a flood peril within the WSTIP coverage layer. Should the Agency experience a larger loss, and coverage is triggered in the excess layers, they would incur an additional \$250,000 deductible to fully satisfy the All-Zones Flood Deductible of \$500,000. The Earthquake deductible is 5% per unit, subject to \$500,000 minimum.

It is important to note there are exclusions within the WSTIP property program. A significant exclusion is terrorism, or terrorist activities. Terrorist activity means activities against persons, organizations, or property of any nature that involve the use or threat of force or violence; a commission or threat of a dangerous act; or a commission or threat of an act that interferes with or disrupts an electronic communication, information, or mechanical system; and when one or both of the following applies whereby the effect is to intimidate or coerce a government or the civilian population or any segment thereof, or to disrupt any segment of the economy, or that it appears that the intent is to intimidate or coerce a government, or to further political ideological, religious, social, or economic objectives or to express (or express opposition to) a philosophy or ideology.

In 2023 Pierce Transit will also procure Pollution Liability Coverage. Historically, Pierce Transit has purchased limited pollution coverage. Coverage is required to meet financial obligations as owners of 17 underground storage tanks (e.g., diesel, unleaded gasoline, engine and gear oils, antifreeze) on base. However, the new Franchise Agreement with the City of Tacoma, for use of their Public Right-of-Way, requires comprehensive pollution coverage. The cost for coverage is currently unknown. The premium could be upwards of \$50,000 annually.

In the near term, staff foresees potential financial challenges in this reporting cycle (2022-2025) when adhering to the latest Facilities Conditions Assessment report. Due to funding challenges, some routine maintenance or asset preservation projects, such as exterior repairs and painting, may be delayed.

Safety-Related Risks

The FTA-required *Public Transportation Agency Safety Plan for Pierce Transit: 2020-2021* was last revised and updated in June 2021. The Mission and Policy Statement provided below is taken from the Safety Management Policy in Section 2, pages 13-14.

Pierce Transit plans, builds and operates a transit system that provides services to improve mobility for Pierce County with regional connections. Safety is first and foremost in the delivery of services that are dependable and cost effective, thereby enhancing the quality of life in our community. Managing risk and safety is one of our core business functions. Pierce Transit is committed to developing, implementing, maintaining and continuously improving processes to ensure the delivery of our transit services takes place under a balanced allocation of organizational resources aimed at achieving the industry's best, safe work practices and meeting established standards. The Pierce Transit Safety and Risk departments are directed to plan, implement and administer a comprehensive and coordinated Safety Management System (SMS) with a safety plan that identifies activities to prevent, eliminate, control and/or reduce hazards that may occur during the design, construction, procurement and or operational stages of the Agency's transportation modes (bus, paratransit, and van pool). It is the policy of Pierce Transit to fully support a proactive Safety Program that uses preventative concepts to identify and resolve hazards. However, the success of the safety program depends on the sincere and cooperative efforts and active participation of all employees. It is therefore the responsibility of each Pierce Transit employee to actively participate in the safety process, provide requested information, aid in investigations, and actively prevent hazards. All levels of Pierce Transit management, employees, contractors, and partner agencies are responsible for upholding the best safety performance, with final responsibility resting with the Chief Executive Officer (CEO) as the Accountable Executive. The Chief Operating Officer, as the Agency's designated Chief Safety Officer (CSO), has the oversight authority and responsibility for implementation of the Agency's Safety Management System (SMS) and reports directly to the CEO. The CSO is responsible for providing resources, executive-level safety advocacy, and direction to the Safety Manager and the Safety Department for managing day-to-day implementation and operation of the Agency's SMS. Pierce Transit commits to:

- Support the risk and safety management program by providing appropriate resources and visible top-level commitment to safety.
- Foster a positive safety culture and embed best practices among all managers and employees.
- Clearly define to all managers and other employees their responsibilities for the delivery of the organization’s safety performance and the performance of our Safety Management System.
- Establish a systematic and comprehensive approach to identify, analyze, evaluate, and mitigate safety risks to ensure the Agency meets or exceeds the acceptable level of safety performance.
- Integrate the Safety Management System into all departmental levels.
- Ensure there are no repercussions when employees report unsafe work practices and hazards. As an Agency, we encourage participation and contribution of all employees in the management of safety. We ensure that no action will be taken against any employee who discloses a safety concern unless such a disclosure indicates, beyond any reasonable doubt, an illegal act, gross negligence, or a deliberate or willful disregard of regulations or procedures.
- Provide adequate and appropriate safety-related information and job-specific safety training for our employees and ensure that they are competent in safe work performance.
- Ensure that sufficient skilled and trained human resources are available to implement safety management processes.
- Establish and measure our safety performance with realistic and data-driven safety performance indicators and safety performance targets.
- Comply with and exceed wherever possible, legislative and regulatory requirements and standards.
- Continuously improve our safety performance through management processes that ensure the Agency is taking appropriate and effective safety management actions.
- Ensure that systems and services supplied from outside the Agency are delivered in timely manner that meets our safety performance standards.
- Ensure that Pierce Transit’s Board of Commissioners is kept apprised of Agency safety management initiatives.

The four Safety goals outlined in the plan are:

1. Using a Safety Management System Framework to Reduce Casualties/ Occurrences
2. Using a Safety Management System to Foster a Robust Safety Culture
3. Systems and Equipment (through regular inspections, scheduled maintenance, and service as needed)
4. Formally Submitting the NTD Goals to the Puget Sound Regional Council Metropolitan Plan Organization (located in Seattle, Washington)

Supplemental Objectives and Outcomes, Metrics and Key Performance Indicators, Baselines, and Targets for facilities, equipment, and revenue vehicles are provided in the matrix on the following page.

Employee Highlight

32 YEARS



Sherry Tate

Transit Bus Operator

“This has been a great opportunity to grow in my career and serve the community. I like the variety of passengers I meet along the route that I come in contact with every day. And I love helping people!”

FACILITY AND SYSTEM SAFETY INSPECTIONS			
OBJECTIVE/OUTCOME	METRICS (KPIs)	BASELINES	TARGETS
Increase the assessment and analysis of physical system facilities, equipment and procedures to identify and mitigate any potential safety risks.	Number of facility safety audits, inspections, completed quarterly per year.	1 per quarter 2020 = 3 quarterly inspections	Complete one full facility safety inspection per quarter and ensure all Pierce Transit-operated facilities are inspected at least twice per year.
REVENUE VEHICLE PRE-TRIP INSPECTIONS (QUALITY)			
OBJECTIVE/OUTCOME	METRICS (KPIs)	BASELINES	TARGETS
Increase quality of operators reporting vehicle safety related issues through verifiable daily pre-trip inspection process.	Install Zonar (fleet management solutions) on all revenue vehicles, train operators, feed through EAM system. Move from exception-based reporting.	Reporting is all exception based.	Bild baseline using Zonar Ground Traffic Control. (Goals and targets to be determined after first quarter of Zonar operation.)

Source: Public Transportation Agency Safety Plan for Pierce Transit, Section 20, Appendix O, Safety Goals, Objectives, and Performance Targets, pp. 94-95 (Revised March 26, 2021)

This page intentionally left blank.

SECTION

09

**Looking Ahead to
2026 and Beyond**

This page intentionally left blank.

Putting the Updated TAM Plan in Motion

Pierce Transit is currently in an ideal timepoint in its history regarding its vast inventories of building assets and rolling stock. After 42 years in business and two years since the start of the Coronavirus pandemic that caused a nationwide reevaluation on what transit services will look like over the next 4-6 years, the Agency has repositioned itself by achieving a State of Good Repair overall, while preparing for growth in local and regional express bus options. In addition, introducing Stream BRT requires careful and fully integrated long-term planning among all departments. This same timepoint is a perfect place to monitor all asset conditions even more closely going forward, especially since so many have been replaced, renovated, or rebuilt over the past four years (i.e., October 2018, when the inaugural TAM Plan was completed, through September 2022). As demonstrated in Tables 9.1 and 9.2, the Agency has invested over \$17.3 million in customer-facing facilities assets, and \$60.3 million in new rolling stock or equipment since the 2018 TAM Plan was finalized.

Table 9.1 – Customer-facing Transit Facility Reinvestments: 2018-2022

Customer-facing Fixed Asset Facility	Calendar Year(s)	Total SGR Reinvestment
72nd Street & Portland Avenue Transit Center (Tacoma)	2018, 2022	\$1,018,000
Commerce Street Station (Tacoma)	2020-2022	\$3,600,000
Lakewood Towne Center Transit Center	2019, 2021	\$652,000
Parkland Transit Center (Tacoma)	2022	\$361,000
South Hill Mall Transit Center (Puyallup)	2022	\$1,700,000
Tacoma Community College Transit Center	2018	\$1,500,000
Tacoma Dome Station - East & West Garages	2022-2024	\$3,450,000
Tacoma Mall Transit Center	2019-2021	\$1,200,000
Narrows/Skyline Park-and-Ride (Tacoma)	2022-2023	\$1,020,000
North Purdy/Purdy Crescent Park-and-Ride (Gig Harbor)	2022	\$260,000
Washington State Route 16 at Kimball Drive Park-and-Ride (Gig Harbor)	2022	\$377,000
Washington State Route 512 at Interstate 5 Park-and-Ride (Lakewood)	2018	\$2,250,000
	Total Expenditures	\$17,388,000

Table 9.2 – New Rolling Stock & Equipment Investments: 2018-2021

Revenue Vehicle Type	2018 Units/Cost	2019 Units/Cost	2020 Units/Cost	2021 Units/Cost	Four-Year Total Units/Cost
Fixed Route Bus (40 ft.) ²¹	26 \$17.6M	23 \$12.7M	–	33 \$17.3M	82 \$54.6M
SHUTTLE (Paratransit)	–	28 \$1.8M	–	–	28 \$1.8M
Vanpool	–	64 \$2.1M	–	–	64 \$2.1M
Seasonal Trolley	–	3 \$986K	–	–	3 \$986K
Non-Revenue Vehicles	–	11 \$484K	4 \$112K	4 \$158K	19 \$754K
Grand Total \$60.32M					
Equipment	–	2 \$80K	–	–	2 \$80K

Note: The new revenue vehicles listed on page 13 and scheduled for arrival in late 2022 through early 2023 had not yet been received as of September 30, 2022, when this TAM Plan Update was finalized. They will consist of nine fixed route buses, 19 SHUTTLE (paratransit), and 47 Vanpool vehicles. Non-revenue (Service & Support) vehicles on order for delivery in late 2022 through early 2023 include four Ford Interceptors (for Service Supervisors), one battery-electric Ford F-150 truck, and 12 Relief vehicles; a mix of Ford Escape compact SUV hybrids and Chrysler Pacifica minivans.

New Capital Improvement Program (CIP): 2022-2027

As the Pierce Transit TAM Plan was updated for 2002, another opportunity presented itself. The Agency currently list projects and future funding needs in various disparate or disconnected planning documents, such as the annual, final Budget (adopted every December by the Board of Commissioners), six-year Transit Development Plan (a WSDOT requirement of all transit agencies statewide), *the Destination 2040 Long Range Plan* (adopted in 2016 and updated in 2020), and four-year TAM Plans.

²¹Costs shown for all fixed route buses do not include \$75,000 for commissioning per vehicle. Upon delivery, this 90-day process includes the coach being outfitted with Agency-specific equipment, such as radio communications, IT, DriveCam, Zonar, and other electronics. Marketing decals and final branding are added too at approximately \$260 per 40-foot fixed route bus.

The agency sees the new CIP as the perfect place to account for the discrete MOBI projects' funding – both budgeted and needed – as well as BEBs or ZEVs transition funding requirements. It would also serve to document the multiple and various funding sources, amounts, and fiscal years for the inaugural Stream BRT corridor project. The formatting proposal is one page dedicated to each capital project for ease of reference, including descriptions and architectural drawings or other visual aids. This is the first of two “missing links” or decision support tools Pierce Transit plans to create to track multi-year projects, related expenditures, and funding commitments or shortfalls.

Looking forward, additional budgeted capital project expenditures are shown in **Appendix E - 2022 Budget through 2027**. However, there still seems to be a disconnect in continuously receiving or learning of this key information on a timely basis, if at all. In fairness, two full years of TAM Plan Update-assigned staff working remotely due to the pandemic (in 2020 and 2021), then just partially back in person in 2022, only exacerbated the issue by making it difficult to coordinate with the various project managers on a regular basis, especially face-to-face. Then, to make matters more challenging, a shortage of Planning staff members (i.e., continuously unfilled positions) required creativity in multitasking and assuming other time-sensitive responsibilities, such as Stream BRT system expansion planning, grant writing, and preparing for this TAM Plan Update. Unfortunately, even though Pierce Transit is a Tier I agency, they do not have the funding to justify a full-time equivalent (FTE) position dedicated to continuously monitoring and reporting on fixed facilities or building assets, as they do for rolling stock. This is not to imply that the information is not readily available if one knows where to find it. There are bi-weekly Project Oversight Group (POG) meetings and monthly Board of Commissioners meetings where all capital projects over \$50,000 are reviewed, selected, and ultimately approved for funding. Planning staff must therefore commit to keeping fully apprised of these projects over the remainder of the current TAM Plan reporting cycle (i.e., CYs 2022-2026) and beyond. This assignment will become even more imperative when the new Stream BRT 1 assets under the *Fixed Guideway Infrastructure* category are added to the portfolio, beginning in 2025. Examples include BRT stations and dedicated, transit-only runningway segments. As stated previously, there is still an opportunity to explore adding a capital facilities based EAM system that would ideally serve as a single source database or portal for a large portion of the information compiled and required for this TAM Plan Update, especially since the FTA is no longer supporting TERM Lite nor introducing new versions of the software program; the latest dating back to 2015. It would undoubtedly help even further as the next four-year TAM Plan is revised in 2026 as well. If approved in 2023, it would be the second of two “missing links” or decision support tools.

Sustainability and Environmental Stewardship Commitments

Beginning with an organizational values Policy adopted by the Board of Commissioners in 2008, the Agency has maintained a commitment to “green” technologies and strategies that respond to climate change and recognizing the need for energy independence. As mentioned, this history stretches back to 1986 when the first CNG fixed route buses were tested.

In June 2022, Executive Order No.1 of 2018 was amended to document this commitment and related strategies in energy efficiency, water conservation, toxic pollutants reduction, minimizing waste through stepped up re-use and recycling, and other best business practices in planning, design, construction, operations, and procurement. Two new focus areas within the amendment are identifying and better serving transit supportive land uses and using an equity framework in all decision making agencywide.

Employee Highlight

35 YEARS



Cara Mejia

Transit Bus Operator

“It was a great ‘mom job’ when I first started as I could work varied shifts to accommodate my children’s schedules. Plus they liked my funny bus operating stories! I work with good people and like my regular passengers too.”

In fact, Ms. Mejia ran a part-time food truck business for 10 years that catered specifically to fairs and festivals.

The amendment further describes the Agency's goal of converting at least 20 percent of the revenue fleet to zero emissions by 2030. The complete Executive Order No. 1 is provided as **Appendix H**.

Reducing greenhouse gases in the atmosphere – such as through mass transit - is one of the most widely recognized methods for slowing down climate change. It is therefore recommended that these commitments be integrated in any new TAM related decision support tools.

Acknowledgements

The author and editor would like to sincerely thank the following people for their advice, assistance, cooperation, expertise, and partnership throughout the year this TAM Plan Update was developed.

Pierce Transit

Monica Adams, Senior Project Manager
Andrew Arnes, Community Development Administrator
Kailee Berry, Administrative Specialist – Workforce Development
Kendra Brockman, Senior Human Resources Analyst
Usame Dahir, Senior Project Manager
Adam Davis, Executive Director of Maintenance
Ashley DeGraffenreid, Project Management Coordinator
Mark Eldridge, Senior Planner
Scott Gaines, Transportation Assistant Manager
Hope Gibson, Senior Construction Project Manager
Mike Griffus, Chief Executive Officer
Christian Handsaker, IT Supervisor – Network & Security
Marah Harris, Fleet Manager
Venus Harrison, Division Assistant – Maintenance Fleet Administration
Jason Hovde, Safety Administrator
Docc Howard, Transportation Assistant Manager
Tyler Humphries, Planner Analyst
Barb Hunter, Grants Administrator, FTA Region X Liaison
Rebecca Japhet, Communications Manager
Arun Kalavakolanu, Information Systems Manager/CTO

Brenda Lacey, Warranty Coordinator
Tina Lee, Planning Manager
Ron Mackenzie, Transportation Assistant Manager
Brian Matthews, Senior Project Manager
Larry McCarty, Facilities Manager
Heidi Peterson, Division Assistant – Warehousing
Stephanie Prine, Warehouse Manager
Reggie Reese, Chief Safety Officer
Brent Riffel, Maintenance Training Coordinator
Sean Robertson, Senior Construction Project Manager
Jenifer Schmidt, Division Assistant – Maintenance Fleet Administration
Bill Serenbetz, Fleet Assistant Manager
Heidi Soule, PMO Manager
Amber Stanley, Senior Planner
Karen Thesing, Risk Manager
Sam Timbers, Senior Systems Analyst
Chris Valenzuela, Enterprise Asset Management Coordinator
Tina Vaslet, Planner - Bus Stop Program
W. Duane Wakan, Senior Planner
Ryan Wheaton, Executive Director of Planning & Community Development

And to those individuals from outside our agency, Pierce Transit is especially grateful for your sage advice, collaboration, and contributions.

Federal Transit Administration (FTA)

Tamalynn Kennedy, TAM Program Analyst (TBP-32)
James (Steve) Saxton, General Engineer - Region X

Kimley-Horn & Associates, Inc.

Yonel Grant

King County Metro Transit

Nicolas Richter, Senior Program Manager
Ling (Jessie) Wang, Director of Asset Management

Kitsap Transit

Steffani Lilly, Service & Capital Development Director

Jacobs – Strategic Consulting – Transit Asset Management

Rick Laver

Puget Sound Regional Council MPO

Gary Simonson, Senior Planner

City of Seattle – Department of Transportation

Emily Burns, Asset Management Strategic Advisor

Sound Transit

Zahid Khan, Deputy Director - Enterprise Asset Management

Volpe National Transportation Systems Center (USDOT)

Anna Biton, Community Planner
Emily Lawless, Technology Policy Analyst

Washington State Department of Transportation (WSDOT)

Hiep Tran, Transit Asset Management Specialist

And finally, a very special, “Thanks a million!” to Marketing Specialist and Graphic Designer Peter Rebik at Pierce Transit for conceptualizing the layout, then formatting and finalizing this entire document on the agency’s behalf, along with a related presentation for the FTA on February 3, 2022.

This page intentionally left blank.

This page intentionally left blank.

MISSION

Pierce Transit improves people's quality of life by providing safe, reliable, innovative and useful services that are locally based and regionally connected.

VISION

Your preferred transportation choice for today and tomorrow.



253.581.8000 | TTY: 711 | PierceTransit.org

