

2021

CITYWIDE ASSETS REPORT

City of Portland, Oregon



ACKNOWLEDGEMENTS

City Asset Managers Group (CAMG) and contributors to this report:

Crystal Castruita, *Office of Management and Finance*

Shannon Fairchild, *City Budget Office*

Karl Lisle, *Office of Management and Finance, Spectator Venues*

Kay Little, *Prosper Portland*

Mert Muftugil, *Portland Water Bureau*

Nishant Parulekar, *Bureau of Environmental Services - Chair*

Shannon Reynolds, *Bureau of Environmental Services*

Katie Root, *Portland Bureau of Transportation*

Maty Sauter, *Office of Management and Finance, Division of Asset Management*

Chris Silkie, *Portland Parks & Recreation*

Kezia Wanner, *Portland Fire & Rescue*

Executive Sponsor - Carmen Merlo, Deputy Chief Administrative Officer

Graphic Design by Julie Rea Design

CONTENTS

I.	Introduction	1
II.	Citywide Asset Management Overview	1
	A. Infrastructure for a Resilient City	
	B. Asset Management, Equity, and Resiliency	
III.	Citywide State of the Infrastructure	3
	A. Replacement Value by Condition of the Asset	
	B. Annual Funding Gap	
	C. Challenges	
IV.	2021 Accomplishments	6
	A. Citywide Asset Management Policy	
	B. Infrastructure Tour	
V.	2022 Citywide Asset Management Group Work Plan	7
VI.	State of the Infrastructure Bureau Profiles	7
	A. Bureau of Environmental Services	8
	B. Portland Bureau of Transportation	10
	C. Office of Management and Finance Bureau of Technology Services	13
	D. Office of Management and Finance Division of Asset Management	15
	E. Office of Management and Finance Spectator Venues	17
	F. Portland Fire and Rescue	18
	G. Portland Parks and Recreation	20
	H. Prosper Portland	23
	I. Portland Water Bureau	24
VII.	Appendix	32
	A. Citywide Asset Management Policy	33
	B. Annual Funding Gap Comparison	41

I. INTRODUCTION

This annual report provides information about the City of Portland's diverse portfolio of assets which include parks and community centers, water, sewer and stormwater systems, civic buildings, bridges, roads, sidewalks, emergency response equipment, vehicles, communications and information technology. The report assembles key data and provides a summary of the City's asset inventory, replacement value, condition, and unmet funding needs. It also includes high-level details as to how the City approaches its responsibility of managing Portland's infrastructure.

As outlined in the City's Comprehensive Financial Management Policies, the City employs asset management best practices based on a life-cycle approach to managing City assets and that supports a balanced approach to decision-making that considers service levels, cost of service, risk mitigation, and community expectations.

This report is produced by the City Asset Managers Group (CAMG), which is comprised of asset managers from the Bureau of Environmental Services, the Bureau of Transportation, the Office of Management and Finance, Portland Parks and Recreation, Portland Fire & Rescue, Portland Water Bureau, as well as members from Prosper Portland, the City Budget Office and the Bureau of Emergency Management. The CAMG is sponsored by the Deputy Chief Administrative Officer. Among the duties of the CAMG is to review findings of the annual assets report and make recommendations to City Council during the budget process and in support of major policy decisions affecting assets.

II. CITYWIDE ASSET MANAGEMENT OVERVIEW

Asset management for infrastructure is a tool that allows us to maintain, operate, expand, and improve infrastructure to help achieve equitable outcomes, both in terms of access to quality services by Portlanders today and the availability of these services for future generations. Asset management is a forward-looking practice of continual process improvement that enables communities to make sound, prudent and informed decisions.

Infrastructure for a Resilient City

Infrastructure provides the core services that contribute to daily quality of life: the roads, sidewalks and bridges people take to get to work, school and play; parks to recreate; essential water and sewer services and fiber to connect communities and residents. Aging infrastructure, climate change, seismic risk and other hazards present risks to the City's ability to maintain core services. Sound asset management plays a significant role in achieving resilient infrastructure that is equitable, reliable, and affordable:

- Services that are distributed equitably in communities, that support inclusive and sustainable growth so that economic opportunity is distributed fairly across communities and address historical inequities that have short-changed various communities from capital investments.
- Reliable and redundant infrastructure that can withstand stresses from increased demand and service levels and significant disruptions from climate change, seismic events and other hazards.
- Infrastructure investment practices that don't pass on the deferred maintenance costs to future generations and that are able to meet community needs in a cost-effective manner.

CAPABILITIES THAT SUPPORT ASSET MANAGEMENT

The graphic below summarizes the asset management best practice stages. Each stage of this cycle is vital to make informed decisions, help us stay accountable in delivering equitable services, and guide long-term capital and operating funding needs.



All of these core capabilities contribute to best practices in infrastructure management.

ASSET INFORMATION: Having current and reliable data about our assets is fundamental to sound infrastructure management. Information systems with high quality data can identify: What and where are our assets? What is their age and condition? Which of our assets are most critical? Where do we have gaps in service? Where is our system constrained or still growing?

RISK ASSESSMENT: Risk is the combination of the likelihood of asset failure and the consequence of asset failure. The likelihood of failure is primarily based on asset condition. Active risk management enables asset managers to minimize service interruptions in the near term as well as to address the potential impacts of high consequence asset failures over a longer time horizon.

PORTFOLIO PLANNING: With good information on assets and risk, the City can better determine where to proactively focus its resources and what approaches will be most beneficial. Long-range planning also enables us to conduct meaningful public engagement on civic priorities, incorporate the core values we want to promote, and develop performance targets for the infrastructure system and spending.

SOLUTIONS DEVELOPMENT: Short-term project and program plans guide which solutions will generate maximum value and the resources needed to deliver on the proposed solution. This is where lifecycle costs, resource needs, and benefit cost analysis come together to make the business case for strategic investments. Solutions development gives us an opportunity to ensure the community gets lasting value for their investment.

PROJECT & PROGRAM IMPLEMENTATION: Successful capital project and program delivery is essential for all infrastructure-owning organizations. A robust backbone of implementation resources (funding, staff, contracts, permits, equipment, technology) and accountability measures (governance, monitoring, reporting) must be in place for capital projects and programs to be “shovel ready,” and to hit capital delivery scope, schedule, and budget targets.

MAINTENANCE: The last (and longest) stage of infrastructure management is maintenance. After an asset is put into service, proactive maintenance helps guarantee a good user experience, such as a smooth road without potholes, or a park with working play equipment. Proactive maintenance also extends the life of assets so that they don't need to be replaced as often. While the goal is always to ensure that assets deliver the highest possible performance for the lowest lifecycle cost, proactive maintenance also allows us to know when it's time to replace an asset versus continuing to maintain and repair it – beginning the infrastructure management cycle all over again.

III. CITYWIDE STATE OF THE INFRASTRUCTURE

Together, the major infrastructure bureaus own over \$61 billion worth of infrastructure.

Environmental Services



Transportation



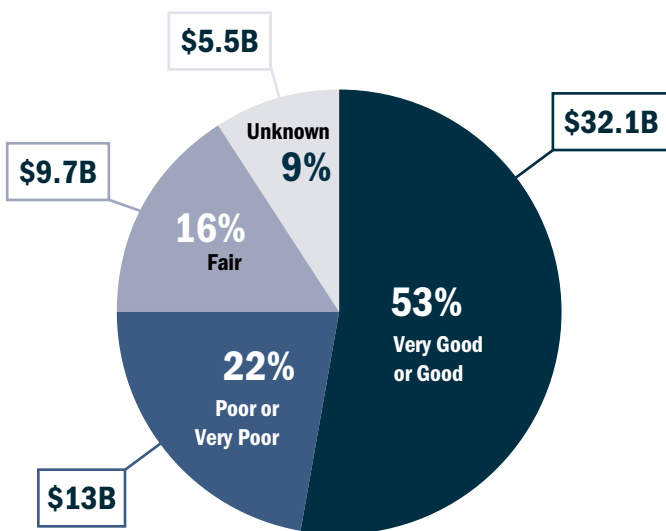
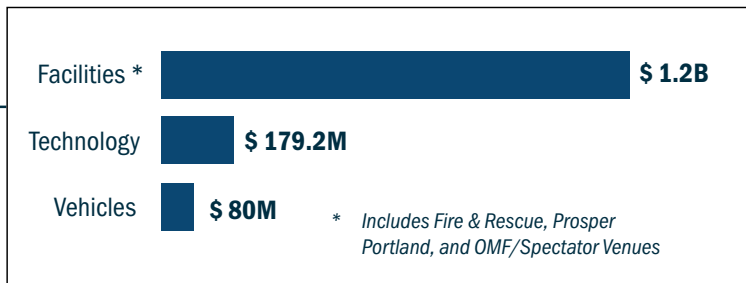
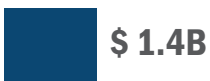
Water



Parks & Recreation



Civic



Replacement Value by Asset Condition

The pie chart on the left provides a summary of replacement value by asset condition.

The City collectively owns approximately \$32.1B worth of assets in Very Good or Good condition, meaning a little over half of our system value is in good shape.

About 22% of the City’s system value, or over \$13B, is in Poor or Very Poor shape. This does not mean we need to take immediate action on these \$13B of assets, as some assets can be intentionally left to fail with minimal risk to life safety, health, or the environment. It does, however, mean that appropriate “reactive” asset replacement strategies and funding must exist to address these assets when they do expire. Likewise, strategies and resources for the 16% of assets in Fair condition at the City.

Approximately 9% of the City’s system lacks condition data.

Annual Funding Gap

The City Budget Office has consistently noted unfunded major maintenance among the City's most urgent, long-term liabilities. The City's funding gap for infrastructure is quantified by looking at the overall asset need less the City's actual investment in infrastructure repair, rehabilitation, and replacement. Each year the City underinvests in maintaining its assets, the cost of repair grows due to increased deterioration. The consequence of continuing to underinvest in infrastructure is not only a growing financial obligation, it also presents increased legal liability and risk to the City, declining service levels, and mounting costs to future Portlanders to take care of infrastructure neglected by Portland today.

There is a wide range of confidence in annual funding gap estimates, both by bureau and by asset class. This is because each bureau has differing asset management maturities and availability of asset information. Some of these annual gap numbers could be higher, depending on the methodology used. Its also worth noting that maintenance funding is needed for assets in good condition as well as bad; the City has to maintain good assets to keep them in good condition.

There are many reasons why bureaus may not approach funding gap estimates in the same manner. One reason is that assets are managed differently in large part due to the availability of funding sources. Some bureaus can build in the costs

for asset maintenance into their rates whereas other bureaus compete for scarce General Fund resources. Fundamentally, the asset maturity of a bureau drives the level of confidence in valuation and funding gap estimates. If a bureau is not resourced to invest in condition assessment, data management systems, cost estimation methodologies, etc., then it is less likely to have the capacity to use a standardized methodology for valuations and it's more likely it will remain in a reactive, triage mode with an accumulating backlog of high need investments. There are also some common gaps in methodologies across many (but not all) bureaus such as absence of operations and maintenance accounting in lifecycle estimates and not accounting for aspirational or innovative infrastructure that is designed for climate and seismic resilience. A summary table of how bureaus approach funding gap assessments is included as Appendix B for further reference.

CAMG has discussed these issues with Council and is embarking on an asset management maturity assessment in 2022 to complement the one done in 2014 and to identify core competencies and capabilities that need improvement within specific bureaus and across all bureaus. While CAMG members acknowledge there is capacity to improve and become more consistent we also recognize that bureau service design and funding status will mean it is unlikely bureaus will use the exact same methodology.





Challenges

There are several challenges to advancing citywide asset management. One area CAMG focuses on is recommending discussions to define sustainable levels of service that can balance reinvestment in assets with the service levels the City provides. The current trend of increasing service levels over time with relatively flat reinvestment in our assets will result in lower levels of service for future generations. Thus, the financial health and resilience of the City is dependent on balancing our delivery of services with long-term reinvestment in our assets.

Additional challenges that contribute to the growing funding gap include:

- **AGING ASSETS:** As assets age, their condition gets worse and the cost to repair or replace them grows. And, as already noted, that condition of capital assets varies by bureau and asset type.
- **ASSET MANAGEMENT PROGRAM MATURITY:** Another reason the funding gap can change each year is that as bureaus improve their ability to collect information and refine their methodologies, the bureau may discover more risk in the system they need to urgently address. But even absent other improvements, refreshing cost estimation methodologies with updated construction cost data alone can cause significant changes in the funding gap estimates.
- **RESOURCE MIX:** A bureau's resource mix has a significant impact on its ability to address infrastructure repair and rehabilitation at the optimal point before failure

For example, BES & PBOT with an asset base similar in replacement value to Water, have more assets in poor/very poor condition, primarily due to inadequate and declining general transportation revenues. Additionally, Parks and Civic assets (with smaller asset bases) are faced with a similar lack of funding and have many assets in poor/very poor condition.

IV. 2021 ACCOMPLISHMENTS

Citywide Asset Management Policy

In fall 2021, the City of Portland adopted the first Citywide Asset Management Policy, which uses the systematic tools of asset management to promote the City's Anti-Racism, Equity, Transparency, Communication, Collaboration, and Fiscal Responsibility core values. The policy requires all bureaus (defined as any City bureau, agency, office, project or program) that manage capital assets, to employ comprehensive asset management practices. These practices are based on a lifecycle approach to managing City assets that support a balanced approach to decision-making, considering level of service, cost of service, risk mitigation, and community expectations. Proactive, authentic, and structured stakeholder outreach, especially to historically underrepresented communities, is necessary to understand and guide the inherent tradeoffs.

By recognizing the role asset management plays in providing equitable service, resilient infrastructure and better capital and operational financial planning, Council adopted a way for CAMG to bring more bureaus to the Asset Management table so that we can all improve our practice.

Key Principles

Key principles of the policy include:

- Using asset management as a tool to advance the City's racial equity goals.
- Using key asset information to inform equitable capital investment decisions.
- Developing long term financial projections for capital and operating programs.
- Recommending expenditures and investments that reduce the City's risk profile and advance equity.

Readiness to Implement AM Policy

The seven infrastructure owning bureaus completed brief self-assessments on their readiness to implement the City's asset management policy in summer 2021.

Key take-aways from an analysis of the self-assessments:

- Asset management best practices are similar for every infrastructure-owning bureau, and every bureau needs some level of developmental support.
- Gaps in asset management maturity come at a real cost to the public and the City, and hinder the City's achievement of its social and economic goals.
- Council plays a central role in ensuring the public's infrastructure needs are met by enabling maturity, asking informed questions, and supporting good work.

Citywide Infrastructure Tour

At the end of 2021, CAMG engaged with a number of Council members and staff on our current infrastructure management practices and how our respective strengths and weaknesses in asset management are impacting social and economic outcomes in the City. One of the key parts of the discussion was connecting how asset management plays a role in providing necessary information to City leadership so they can make the best decision given the limited resources available. The discussion also covered how asset management is key to equitable resilient service delivery.

The tour included stops at the following City assets and a discussion of asset management best practices gaps and the impact of these gaps. Assets toured included:

- OMF Facilities: Kerby Garage
- PP&R: Columbia Park and Pool
- BES: Columbia Boulevard Wastewater Treatment Plant
- PBOT: NE 42nd Avenue Bridge
- Water Bureau: Groundwater Pumping Station
- BTS: Fiber, Radio Towers

V. 2022 CITY ASSET MANAGEMENT WORK PLAN

With the adoption of the Citywide Asset Management Policy CAMG has been working to put together a work plan to start implementing the policy and continue engaging Council on our progress.

We've successfully passed the policy. With the infrastructure tours of last year, and some additional tours scheduled in the near future, we feel we've made good progress in engaging Council on the role of asset management and the benefits of maturing its practice.

The next step is enabling bureau program maturity. CAMG plans on following up with Council in the 4th quarter of 2022 to provide an update on asset management maturity assessments, which is like a report card for how bureaus are doing with respect to a number of competencies related to the asset management cycle and should paint a picture of the organizational investment priorities for the bureaus that need program development support. CAMG also plans to conduct financial assessments of the major infrastructure bureaus to illustrate the challenges and flexibility each bureau has in delivering on resilient infrastructure and its maintenance given its funding situation. Included will be recommendations to Council and leadership on how to continue supporting collaboration and coordination on asset management which may include a preview to some strategic asks that would help continue implementing the AM Policy.

For 2022, CAMG intends to complete the following engagement goals with City Council:

Support Council in its desire to learn more about infrastructure bureau funding:

- Identify the sources and stability of capital and maintenance funding for each infrastructure bureau.
- Outline the processes to vet and promote capital projects in each bureau and Citywide.

Ensure that all City infrastructure bureaus are able to implement the City's 2021 Asset Management Policy:

- Identify the organizational development needs of each infrastructure bureau in relation to the policy.
- Identify funding to close the maturity gaps/fund organizational development needs starting in FY 2023-24.

Formally support collaboration and coordination between City bureaus that work on infrastructure issues:

- Identify an enduring staff resource for CAMG.
- Leverage this resource to promote cohesive, collaborative infrastructure management at the City.

VI. STATE OF THE INFRASTRUCTURE BUREAU PROFILES

This section includes profiles on each bureau's mission, summary estimates of the current asset value, condition, and funding gap, the bureau's current maturity story and what is needed to advance asset management maturity levels.

- Bureau of Environmental Services
- Portland Bureau of Transportation
- Office of Management and Finance, Bureau of Technology Services
- Office of Management and Finance, Division of Asset Management
- Office of Management and Finance, Spectator Venues
- Portland Fire and Rescue
- Portland Parks and Recreation
- Prosper Portland
- Portland Water Bureau

Bureau of Environmental Services



Profile

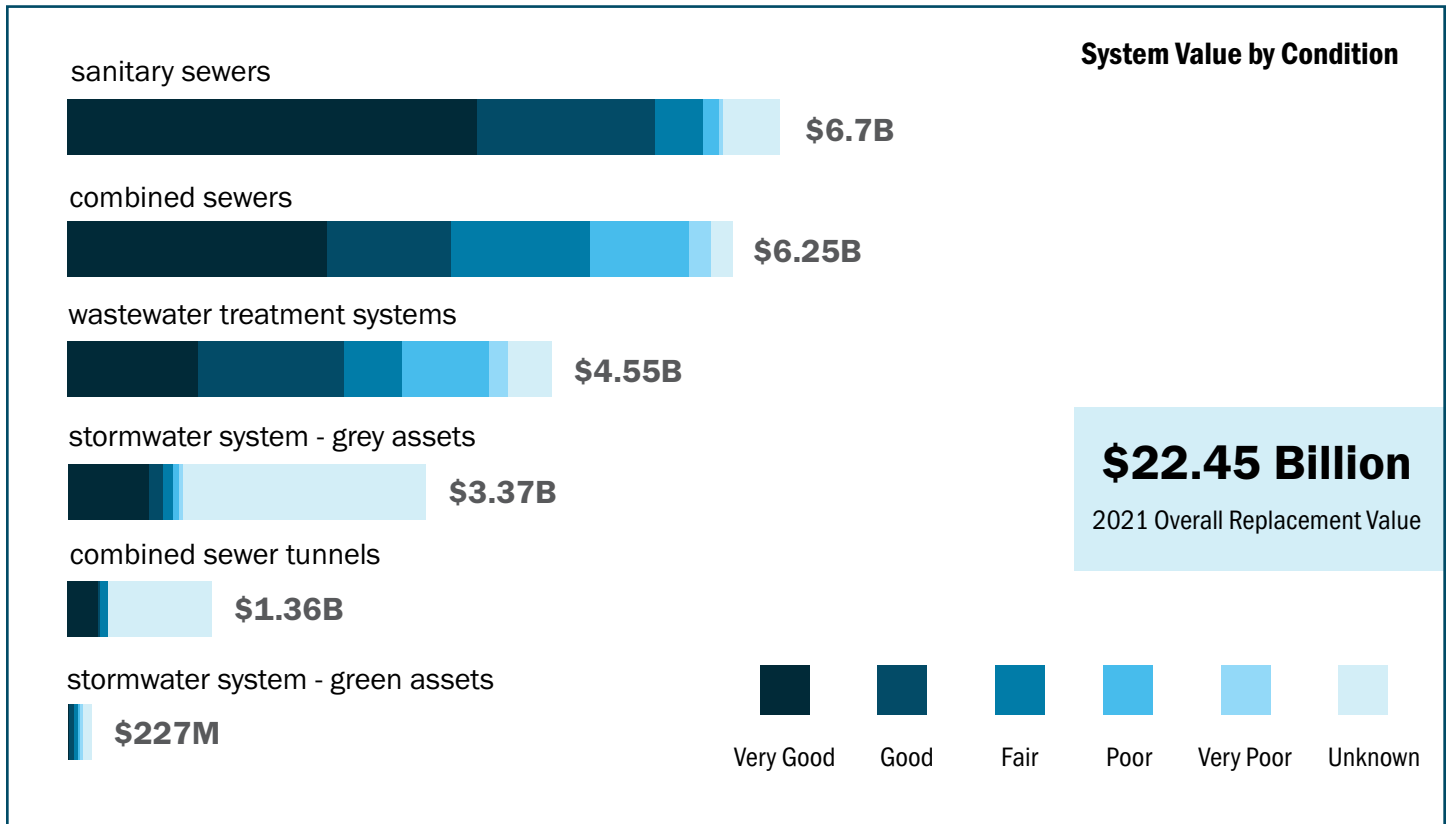
The Bureau of Environmental Services (BES) protects public health, water quality, and the environment by providing sewage and stormwater collection and treatment services to accommodate Portland's current and future needs. BES protects the quality of surface and ground waters and conducts activities that plan and promote healthy ecosystems in Portland's watersheds. BES provides these services through the ownership and management of more than 2,300 miles of combined, sanitary, and stormwater pipeline, 730 miles of sewer laterals, 51,000 access structures, 2,400 green streets, and numerous treatment wetlands, ponds, bioswales and stormwater treatment facilities. The largest and most complex centralized asset for BES is the Columbia Boulevard Wastewater Treatment Plant (CBWWTP) which opened in 1952 and continues to expand in treatment capability through the time of this publication. CBWWTP provides high quality wastewater treatment for up

to 450 million-gallons-per-day wet weather treatment. Finally, almost 100 pump stations, owned and/or managed by BES, help to convey wastewater to CBWWTP.

Current Asset Value, Condition, and Service Levels

The overall replacement value of BES assets is estimated at \$22.45 billion in 2021. The 2021 overall replacement value estimate represents a 47% difference (\$7.2 billion increase) from the 2019 estimate largely due to significant updates to cost estimating procedures, improvements on valuation of the pump stations and force main network, and updates to the CBWWTP estimates.

Note: Pump stations and force mains are included as part of the Wastewater Treatment System category.



Annual Funding Gap

Combined and sanitary pipeline portfolios are generally meeting levels of service targets related to public health and safety. For the CBWWTP Resource Recovery and Pump Station Facilities, we are not meeting service targets related to adequate maintenance and repair which is impacting our ability to maintain service levels related to regulatory compliance.

BES has estimated a total capital need of \$5.45B which is annualized on a 10-year basis to \$545M per year to bring service levels up to a point of sustainability. The average annual CIP funding for the next 5 years is \$190.5M. The difference between the need and available funding is approximately \$354.5M. The current annual CIP funding is less than 1% of the value of the asset base (\$22.45B). Best practices indicate that at least 2-3% annual reinvestment is required to adequately maintain a system. This report's annual funding gap has increased significantly from that reported in previous years. Beginning in 2020, BES transitioned to a portfolio management system to better align infrastructure and operational investment with strategic objectives, risk management based on levels of service, and improved long term capital and maintenance resource planning. BES has also created a new position to help implement asset management practices throughout the bureau. These two changes, along with continued investment in asset management maturity, has resulted in the identification of much more critical infrastructure risk in poor and very poor condition than was previously known. A significant portion of that newly identified capital need concerns the CBWWTP which has historically been underfunded for risk assessment, planning work, and for solutions development that impact our capital and maintenance delivery teams. Additional capital need was also identified for the pump station system, including miles of pressurized force main. Once capital needs are determined, BES will need to fund and enable operational resources to deliver on that scale of infrastructure need.

What is needed this year for infrastructure

No capital asks for this year.

Current Maturity Story

- **Developing AM Policy and SAMP:** New roles in the Strategy Group created to support asset management implementation are forming an asset management policy and revising a Strategic Asset Management Plan (SAMP).
- **Enterprise Asset Management:** BES is partnering with PWB to implement an enterprise asset management system (Infor) to better track asset data including maintenance records, condition of the system, etc.
- **Portfolio Management:** A Portfolio Management team has been created to better align investments with strategic priorities and system risk. The team is working closely with financial planning staff to plan for both capital investment and enabling operational resource needs (i.e., long-term planning and maintenance needs).
- **Asymmetric Asset Maturity:** Each portfolio has a different level of asset maturity, as noted above. However, the goal of equitable, resilient, and affordable infrastructure and service delivery is foundational to all portfolios and the infrastructure planning process.

What is needed to advance maturity level

Moving forward, BES needs to increase investment in these AM best practice stages:

- **Maintenance:** Condition assessment of neglected assets and/or portfolios (i.e., stormwater, treatment plant, pump stations, natural systems).
- **Risk Assessment, Planning and Solutions Development:** Firm up strategic drivers and levels of service; account for climate and seismic risks in capital and operational planning; improve on lifecycle cost estimates for solutions to better account for long-term maintenance needs; increase resources to develop risk assessments for critical portfolios that do not have them (e.g., treatment plants and natural systems) and mature existing risk assessments.

BES has estimated a total capital need of \$5.45B which is annualized on a 10-year basis to \$545M per year to bring service levels up to a point of sustainability. The (annual) difference between the need and available funding is approximately \$354.5M.

Portland Bureau of Transportation

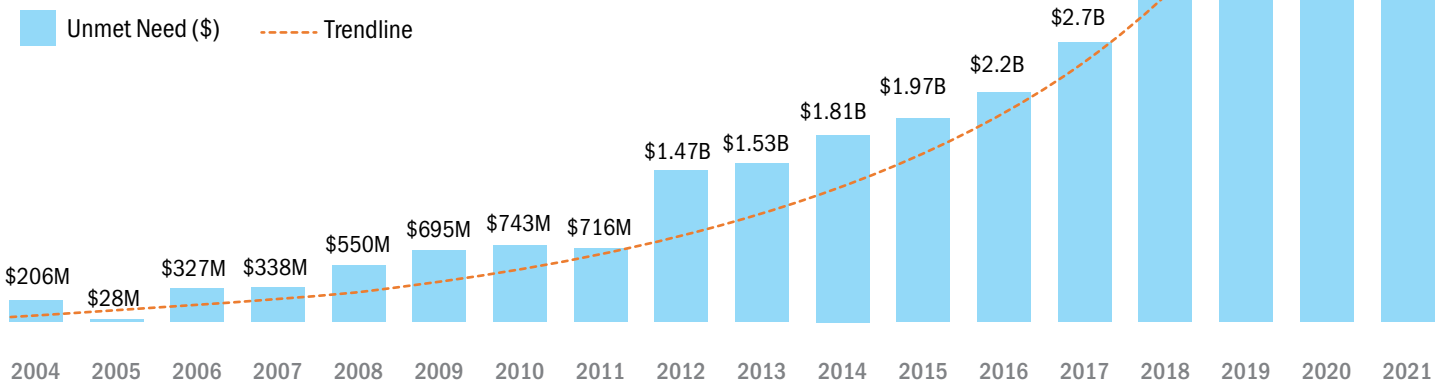
Profile

Through data-driven management of Portland's assets, PBOT maintains an effective and safe transportation system that provides people and businesses access and mobility and keeps Portland moving. As part of these efforts, PBOT created and adopted a new [asset management policy](#) in 2021 for the bureau, applying anti-racist practices and climate considerations in major infrastructure decision-making. Additionally, PBOT recently adopted refined performance measures that better align with our strategic goals and support performance-based budgeting. Along with tracking performance, we continue to assess and redefine asset service levels to ensure that Portlanders, particularly the historically-underserved, are having their infrastructure expectations met.

Current Asset Value, Condition, and Service Levels

The Portland Bureau of Transportation (PBOT) manages transportation assets with a replacement value of \$18.8 billion. The assets that make up the transportation environment—including Portland's 4,863 lane miles of pavement, over 9 million square yards of sidewalks, 155 bridges, 938 signalized intersections, and 59,813 streetlights—account for 92% (\$17.4 billion) of the total replacement value. Our other assets that support safety and the operation of the transportation environment—including traffic-calming devices, guardrails, traffic signal controllers, signs, parking meters, parking garages, pavement markings, bikeways, retaining walls, the Harbor Wall, stairways, the streetcar, and aerial tram—have a replacement value of nearly \$1.4B.

Asset Unmet Need



Annual Funding Gap

PBOT does have a significant funding gap for its unmet need of \$4.4B. Of the \$4.4B, the largest unfunded portion of our deficit is mainly between three major asset classes of paving (\$3.36B), bridges (\$244M), and signals and streetlights (\$82M). PBOT is fortunate to have a skilled maintenance team who keep these aging assets in functional condition, which allows for Portland to keep moving. Below is a summary of our unmet need. Due to our pavement preservation efforts, discussed in more detail on page 12, our unmet need is growing at a slower rate than previous years.

Figure 1. PBOT's infrastructure unmet need has grown exponentially over the past decades, but we are seeing a recent divergence from the trend line.

Unmet Need by Asset Class (June 30, 2021)

Asset Class	Unmet Needs Total	Unmet Needs Annually over 10 years
Pavement – Busy Streets	\$1,530 M	\$153 M
Pavement – Local Streets	\$1,830 M	\$183 M
Curb Ramps	\$531 M	\$53 M
Bridges	\$244 M	\$24 M
Retaining Walls	\$36 M	\$4 M
Stairways	\$1 M	\$0.1 M
Guardrails	\$1 M	\$0.1 M
Traffic Signals - hardware, controllers, and ITS	\$10 M	\$1 M
Street Lights – lights and poles	\$72 M	\$7 M
Streetcar	TBD	TBD
Aerial Tram	\$0	\$0
Traffic Controls - signs and markings	\$36 M	\$4 M
Parking facilities - meters and garages	\$0	\$0
PBOT facilities	\$17 M	\$2
TOTALS	\$4.4 B	\$440 M

As mentioned above, we are experiencing a stabilization with our pavement program, which is largely attributed to the funding we've received through Fixing Our Streets (FOS). During the initial funding (2016-2020), PBOT addressed \$16M for pavement repair. As a result, PBOT avoided an estimated \$35M of future costs by addressing pavement needs before they failed. The renewed FOS is now funding \$25M more pavement preservation, which is expected to save PBOT approximately \$55M in future spending because of these on-time investments.

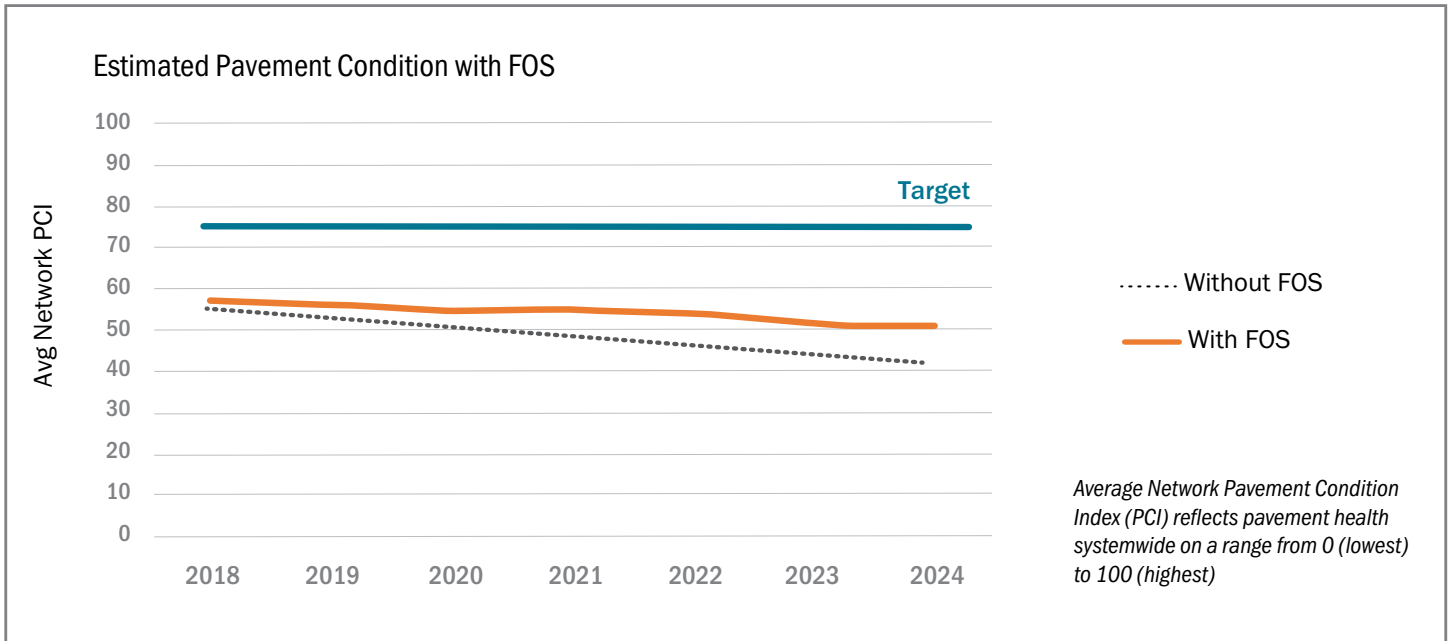


Figure 2. Pavement condition forecast assuming \$4M/year of funding from Fixing Our Streets (2018 model)

What is needed this year for infrastructure

While Fixing Our Streets (FOS) and General Fund allocations (from both Build Portland and Capital Set-Aside) have helped the bureau make progress in its annual funding gap, none are sufficient to maintain transportation infrastructure in its current condition nor to improve it to target conditions, as is our goal. Absent additional funding, PBOT moves further from its goal of asset preservation. In February 2022, PBOT leadership provided an overview to Council of our current funding shortfalls, discussed the challenges, and provided our short and long-term revenue strategies. While the short-term strategies will provide some relief for PBOT programs, we need to continue to develop other revenue strategies that target our largest needs.

Additionally, PBOT proposed several projects this year for the capital set-aside funding. The projects we selected are emblematic of our major needs. These projects included replacing near failing & failing assets, providing funding for budget shortfalls due to inflation and supply chain costs, meeting our ADA compliance goals, and making structures more resilient to natural disasters.

What is needed to advance maturity level

PBOT has spent time and resources to have both a detailed asset inventory, as well as a work management system. Both provide us with detailed information on each asset, its condition, and recommended maintenance. Our struggle is with having the resources to address our prioritized maintenance backlog by risk, as well as a funding strategy to address our asset replacement and rehabilitation needs. By doing so, PBOT can continue to meet Portlanders’ service level expectations and manage routine maintenance so that we can maximize the life of our assets and minimize service disruptions.

Office of Management and Finance Bureau of Technology Services

Profile

The Bureau of Technology Services (BTS) has a wide variety of assets including infrastructure (radio towers, the fiber network, data centers), equipment (laptops, phones, wireless access points, etc.), and intangible assets (software subscriptions, licenses, space in several Cloud services, including private and hosted). Each asset class has very different investment and management challenges as well as levels of asset management maturity. BTS's assets are interconnected with and highly dependent on the health and viability of other bureaus' assets. Many BTS assets need the existence of other BTS assets to operate. For example, the intangible asset of the Office 365 software for sending and receiving emails would not be useful without the equipment assets of laptops and desktops, network connections to transmit information, technology security to prevent potential threats to the systems, and data centers and servers to store the data sent in the email.

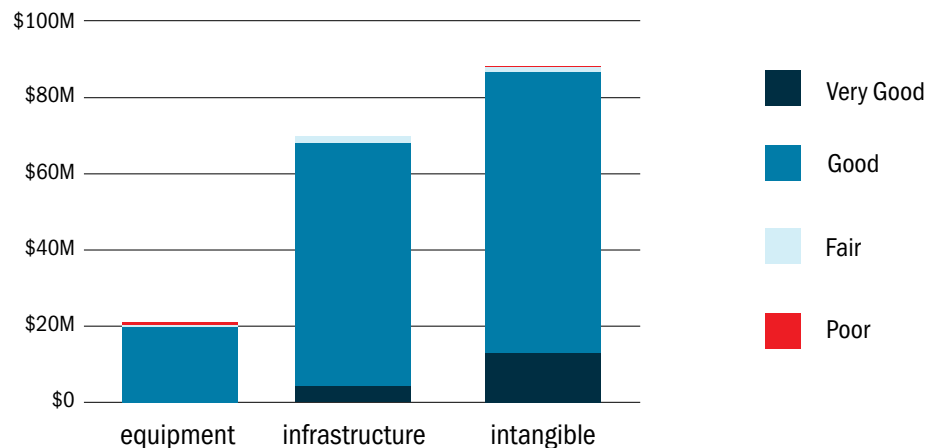
The overall replacement value of BTS assets is estimated at \$179 million in 2021 with moderate confidence in condition assessment.

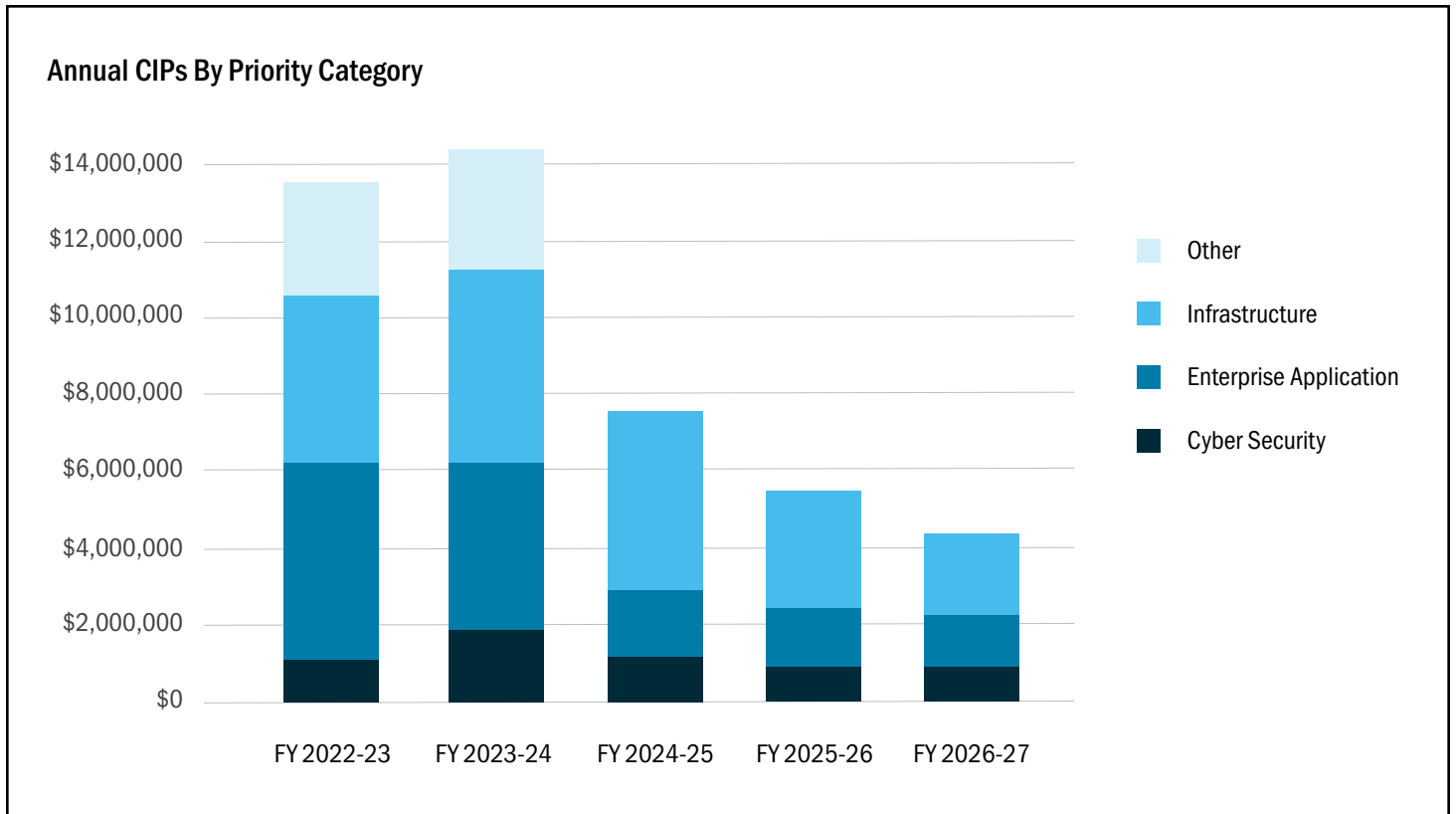
Current Asset Value, Condition, and Service Levels

The overall replacement value of BTS assets is estimated at \$179 million in 2021 with moderate confidence in condition assessment. In 2021, the majority of BTS assets are above fair condition. The larger infrastructure assets are frequently "hidden" (behind walls, in closets, underground, in offsite data centers). This makes BTS highly dependent on other asset owners - maintenance and construction of buildings, right of ways, streets, bridges, etc. All can potentially impact BTS infrastructure because BTS assets "ride along" with these other assets. For example, having poor climate control in a building can cause technology equipment to overheat and fail. Additionally, the importance of interconnectivity plays a large role in technology asset health. For example, taking into consideration all the assets needed to have email work properly, if one of the assets has an issue, it will potentially affect other BTS assets (i.e., a phishing link is clicked and compromises the desktop/laptop being used, or allows access to the City's network).

The assets in poor condition include the Altiris Client Management Software, and some Printing and Distribution equipment.

ASSET GROUP BY CONDITION





Annual Funding Gap

BTS’s annual funding gap is roughly \$9.5 million in 2021. This estimate is based on the replacement amount over the lifecycle of the assets minus the amounts collected through rates for some of the assets. In general, technology assets have a much shorter lifecycle than those of larger infrastructure, frequently with a 10 year or less lifecycle. Assets for which BTS collects part or all replacement costs include the IRNE network equipment, radio replacement, Storage Area Network and virtual servers, the SAP system, video systems, non-radio electronic equipment, and PCs, laptops, and tablets.

What is needed this year for infrastructure

BTS’ has three capital investment priorities.

- **Cyber Security** – investments to continue improving/evolving our tools and practices to secure City data and systems.
- **Infrastructure for Connectivity and Resilience** – deploying a long term, resilient fiber backbone with multiple connection points; Monitor evolving solutions such as satellite Wi-Fi; continue investing in reliability and redundancy of key technology assets for continuity of operations.

- **Update/replace aging enterprise applications with modern cloud based, secured solutions** – Explore options to consolidate disparate systems; broaden mobility and accessibility.

The above graph is the BTS FY 2022-23 requested budget 5-year CIP by priority category. The major infrastructure projects planned for FY 22-23 and the near-term horizon are the IRNE Fiber expansion and DWDM (Dense wavelength division multiplexing) System Lifecycle Replacement projects, which will create a stronger fiber backbone, expand bandwidth capacity, resilient network, and make it easier to track data volume and type moving along the network.

Current Maturity Story /

What is needed to advance maturity level

BTS is at different asset maturity levels for each asset group. The dependence on other assets makes the data collection and planning pieces of the maturity model difficult. Additionally, BTS has historically been able to find funding for most of its project implementation/delivery needs. Where BTS is lacking is in the ongoing run, maintain, and support resources (FTE) especially as BTS is asked to add new assets to its asset base and not just replace and maintain the current level of assets.

Office of Management and Finance

Division of Asset Management

Profile

The Division of Asset Management (DAM) oversees two asset-owning organizations at the City: OMF Facilities Services and CityFleet. OMF Facilities Services manages 1.5 million square feet of City-owned facility assets, including the City's highest-profile civic facilities. The organization provides facility operations and maintenance services, capital project development and management services, and property management and leasing services for City bureaus. The organization is also in the process of developing a long-range facility, real estate, and capital planning department. CityFleet is responsible for acquiring, maintaining, repairing, and fueling the City's 4,100 vehicles and pieces of specialized equipment, excepting Portland Fire & Rescue's fire apparatus and Parks' golf equipment. CityFleet also holds responsibility for developing and effectuating the City's "green fleet" transition plan, including the development and administration of all electric vehicle charging infrastructure and the City's compressed natural gas fueling infrastructure. CityFleet also owns nine traditional fueling stations.

Current Asset Value, Condition, and Service Levels

OMF Facilities owns 17 facilities that have an estimated value of \$800 million to \$1.8 billion, depending on how the valuation is calculated. Facilities is in the process of developing its first long-range planning department, comprised of key asset management positions that have long been needed. Specifically, Facilities aims to dedicate 1.0 FTE to capital planning – a position that will help Facilities hone its asset valuation; 1.0 FTE to service level assessments – which will help Facilities identify where bureau growth is occurring (programmatically and geographically) and thus where new facility needs exist; and 1.0 FTE to facility condition assessments – which will help Facilities understand the risks in its existing asset base and develop a real estate disposition/acquisition strategy and plan.

While these capabilities have not yet been fully developed, high-level assessments of OMF's portfolio in 2021 generated the following value and condition breakdown as seen below:

OMF Facilities: Asset Count, Square Footage, Value, and Condition by Asset Class

Asset Class	Count	Square Footage	Value in Millions	Very Good	Good	Fair	Poor	Very Poor
Office Facilities	4	681,053	\$371.49	64%	24%	13%	0%	0%
Police Facilities	8	576,077	\$300.09	0%	27%	32%	30%	11%
Other Facilities	5	229,322	\$129.46	0%	23%	23%	12%	41%
Total	17	1,486,452	\$801.04	30%	25%	21%	13%	11%

As can be seen, the quality of Facilities' office space is very good, reflecting recent investments in this asset class (Portland Building, Vanport). However, substantial concerns exist about other facility asset classes. Police have several facilities that are in poor condition, and CityFleet's Kerby Garage (in "Other Facilities") is in very poor condition. A key goal of Facilities' new planning department is to sharpen its condition and risk assessment capabilities, and to work across bureaus to identify where public safety and operations and maintenance facility risks could be addressed in a holistic, collaborative fashion.

CityFleet's assets have a different nature than OMF Facilities' assets, in that they are primarily short-lifecycle equipment assets versus long-lifecycle infrastructure assets (the Kerby Garage is technically owned by OMF Facilities). However, CityFleet does own fuel stations, and is now developing a program to own all City electric vehicle and compressed natural gas fueling infrastructure. Once built, these long-lifecycle assets will need to be managed under an asset management paradigm akin to that of facilities.

CityFleet has had for years a robust vehicle replacement funding program in place. Thus, the value and condition of its asset base is much healthier than that of OMF Facilities. See below for the breakdown.

CityFleet: Asset Value and Condition by Asset Class

Asset Class	Count	Value (in millions)	Very Good	Good	Fair	Poor	Very Poor
Vehicles/Equipment	~4,100	\$151.0	0%	100%	0%	0%	0%
Traditional Fueling Stations	9	\$ 7.8	0%	100%	0%	0%	0%
EV/CNG Infrastructure	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTAL	N/A	\$158.8	0%	100%	0%	0%	0%

Annual Funding Gap

DAM recalculated its annual funding gap this year, adding investment needs that were not historically calculated or reported. They include Facilities' cumulative backlog of major maintenance projects, which were included under the "R/R/R" column, and its capacity needs, which include major facility recapitalizations and/or relocations to support Police and City Fleet. New capital needs, such as electric vehicle infrastructure and facility security system investments, were also added to the gap assessment, included under the "Capacity" column. These needs are summarized by asset class, below.

OMF - DAM Annual Funding Gap


Asset Class	R/R/R (in millions)	Mandate (in millions)	Capacity (in millions)	Total Gap (in millions)
OMF Facilities				
Office Facilities	\$7.50	\$0.00	\$10.80	\$18.30
Police Facilities	\$9.80	\$0.00	\$26.40	\$36.20
Other Facilities	\$3.40	\$0.00	\$12.00	\$16.00
CityFleet				
Vehicles and Equipment	\$0.00	\$0.00	\$1.00	\$1.00
Traditional Fueling Stations	\$0.00	\$0.00	\$1.00	\$1.00
EV/CNG Infrastructure (Green Fleet)	\$0.00	\$0.00	\$1.00	\$1.00
TOTAL	\$20.70	\$0.00	\$52.20	\$73.50

What is needed this year for infrastructure

Top priority capital needs for DAM this year include \$9.9 million in major maintenance work at Police facilities and City Hall. Nearly \$490 million in recapitalization and/or relocation funding is also needed to recapitalize the Justice Center (or move Police's Central Precinct to a new location); to redevelop the Kelly Building property to house several public safety bureaus; to relocate CityFleet; and to reprogram and rehabilitate City Hall. An estimated \$10 million in electric vehicle infrastructure is also anticipated to be needed over the next ten years to support green fleet transition goals.

Current maturity story / What is needed to advance maturity level

OMF Facilities is getting its first modern asset management information system in Fall/Winter 2022. The creation of a long-range planning department is also in flight to support appropriate asset management. One FTE is needed to complete the planning group should its scope remain isolated to OMF Facilities. Should OMF strive to serve the facility needs of bureaus beyond OMF's portfolio, the group will need to increase in size. Over time, additional capital funding will be needed to support OMF facility investments. The facility, real estate, and capital strategy will help optimize how that funding is sourced and distributed, presuming the City embraces a cross-bureau approach to investment.



Office of Management and Finance Spectator Venues

Profile

The Spectator Venues and Visitor Activities Program oversees City-owned spectator and performing arts venues including the Veterans Memorial Coliseum (VMC), Providence Park, the Portland's 5 Centers for the Performing Arts (P'5), and the Rose Quarter Plaza and Parking Garages. The program oversees the Spectator Venues & Visitor Activities Fund (SVVAF), which is a self-sustaining enterprise fund that accounts for resources and requirements for program activities. The SVVAF is responsible for City-obligated expenses at the facilities and debt service payments on certain obligations. Historically, the program has relied on the Rose Quarter venues (including the privately-owned Moda Center) for much of the revenues required for expenditures. The program maintains a minimum operating reserve – enough to meet annual expense obligations in the event of a NBA labor strike or event that would result in an unforeseen closure of the facilities. During the prolonged COVID-19 related closure, the program relied on these reserves. Strong financial performance at the Rose Quarter in the years prior to the pandemic increased reserves and allowed strategic investments to be made in several capital projects at the venues to better serve the community and improve their long-term viability. With dramatically reduced revenues in FY 2020-21 and FY 2021-22 due to COVID-19's impact on spectator events, the program continues to draw from reserves to meet funding obligations. FY 2022-23 is anticipated to more closely reflect pre-pandemic operations and revenues and should allow the fund to rebuild reserves.

Facilities owned by the City include:

- Providence Park Stadium
- Veterans Memorial Coliseum
- Rose Quarter Plaza and E/W Garages
- Arlene Schnitzer Concert Hall
- Keller Auditorium
- Antoinette Hatfield Hall

Current Asset Value, Condition, and Service Levels

The Spectator Venues Program has direct responsibility for:

- Providence Park, Veterans Memorial Coliseum, RQ Plaza and E/W Parking Garages: 2020 replacement value estimated at \$530M

In addition, the Program provides administrative oversight for:

- The Portland's 5 Centers for the Arts theaters (Arlene Schnitzer Concert Hall, Antoinette Hatfield Hall, and Keller Auditorium: 2020 replacement value estimated at \$210M

Confidence in the values is medium-low.

Current General Fund Requests

\$1.45M + recapitalization

- Ground water infiltration remediation at Providence Park (\$750k) - Emergency Construction in April-May (requested in FY2021-22 Spring BMP)
- Sewer connection at Arlene Schnitzer (\$700k) - to be built Summer 2022 (requested in FY2022-23 Special Appropriations)
- Major renovations to certain facilities are needed in the future and are wholly or partially unfunded

What is needed to advance maturity level

- Assessment and Planning functions
- Funding strategy/plan for deliver (long-term capital need unknown) - Involves philanthropy and operating partners, City is not expected to be the sole funder.

Annual Funding Gap

N/A

Portland Fire & Rescue

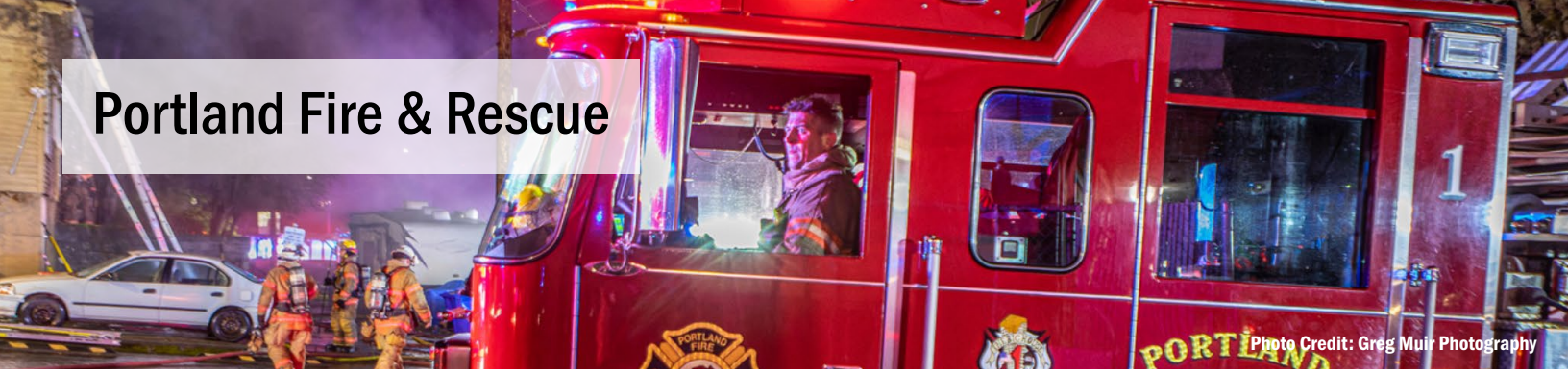


Photo Credit: Greg Muir Photography

Profile

Portland Fire & Rescue keeps all communities protected through a combination of prevention, community health programs, and all-hazard response to fire, medical, natural disaster, and other emergencies. Portland Fire & Rescue (PF&R) is the largest fire and emergency services provider in the State of Oregon, serving the City of Portland and the regional metropolitan area.

PF&R is responsible for ensuring sufficient maintenance and replacement for our large portfolio of facilities, apparatus, equipment tools and Personal Protective Equipment (including SCBAs, turnouts, and ballistic vests). Most of these assets require ongoing maintenance and management within resources allocated to the bureau including replacing reserve apparatus, purchasing end of life equipment, implementing efficiencies and improvements, meeting new mandates such as ADA standards, and repairing/replacing building systems that have reached the end of their useful life.

Current Asset Value, Condition, and Service Levels

Portland Fire & Rescue (PF&R) manages five categories of assets to support the bureau's mission of protecting life, property, and the environment:

- **Facilities:** PF&R operates and maintains 31 fire stations, a training center, Fire Marshal's Office and Prevention Division facility, a logistics facility for apparatus and facility maintenance, and administrative offices.
- **Apparatus:** PF&R operates and maintains about 80 apparatus including engines, trucks, fire and rescue boats, brush units, water tenders, and other specialized vehicles.
- **Personnel Protective Equipment:** Firefighters wear personal protective equipment to maintain safety while entering hazardous conditions. Examples of personal protective equipment include self-contained breathing apparatus, turnouts, helmets, boots, and gloves.
- **Firefighting Equipment:** the tools carried on engines and trucks to support firefighting, medical responses, and technical responses such as car crashes or trench rescue. The largest assets in this category are rescue tool sets, thermal imaging cameras, and defibrillators.
- **Technology:** PF&R is responsible for hardware and software systems that support operations such as the Fire Information System, Interra, Imagetrend, Asstworks, and CivicGov.

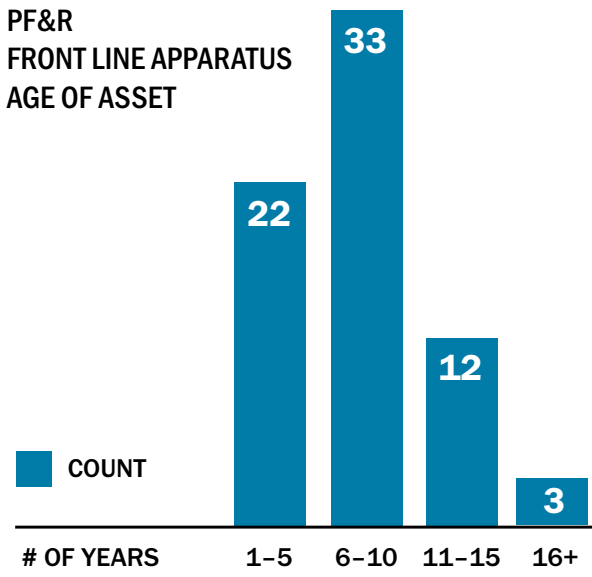
The Fire Bureau's 5-year CIP outlay forecast totals roughly \$115 million. The funding sources for the projects included in PF&R's 5-year CIP are a combination of PF&R's existing General Fund appropriation, Capital Set-Aside funds, grant funding, and potential future facilities GO Bond. PF&R's existing budget is insufficient for all annual replacement needs, which necessitates PF&R to rely on the Capital Set-Aside, grants, and GO Bonds for larger-scale projects such as large facilities projects and facilities replacement.

Our methodology for calculating the annual apparatus maintenance/replacement is based on factors of years in service, engine hours, road miles, maintenance history, parts availability, and cost to repair.

Our methodology for calculating the annual maintenance/replacement is based on factors of age of building and systems, condition of building and systems, current repair work orders, previous repair history and condition assessment based on internal or external evaluations. PF&R does perform preventative maintenance annually for facilities systems.

One item of note, PF&R had fire station roof replacements completed as part of the 2000 GO bond seismic upgrades. Most of these roofs were not done correctly and since have experienced leak issues. We are completing 2-3 roof replacements annually, each costing around \$300k. Once completed, the roofs will be on a 30 to 35 year replacement schedule.

PF&R
FRONT LINE APPARATUS
AGE OF ASSET



Annual Funding Gap

PF&R is prioritizing asset management in planning for capital expenditures in future years. This will help promote intergenerational equity by distributing the costs of these purchases so future generations of Portlanders do not have to fund a disproportionate share of the asset management lifecycle cost burden. PF&R created the Fire Capital Fund in FY 2019-20 to aid in this effort. The fund establishes three reserves for PF&R's major asset categories: apparatus, equipment, and facilities. There currently is insufficient annual funding available to build this reserve. For context, annual replacement costs for PF&R's apparatus are estimated at \$2.3 million, but this does not include major facilities renovation or replacement projects, or capital equipment replacement.

Specifically, annual apparatus replacement costs exceed the bureau's General Fund appropriation. The Fire Apparatus Reserve can supplement this deficit in the short-term; however, in updated projections, PF&R estimates that the ongoing funding gap will deplete the apparatus reserve within approximately 7-8 years. The balance of the Fire Apparatus Reserve is currently about \$7.7 million.

PF&R deferred \$2.4 million in capital projects in FY 2020-21 as part of a Citywide effort to limit non-essential spending. Deferred capital projects included \$2.2 million in apparatus replacement, \$100,000 in firefighting tools, facility major maintenance projects including roof replacements, \$30,000 in fitness equipment, and a \$75,000 transfer to PF&R's SCBA reserve. The deferment exacerbated PF&R's ongoing funding gap for apparatus, facility, and equipment replacement.

What is needed this year for infrastructure

Some of PF&R's most immediate needs include:

- Roof Replacements – replace failing roof coverings that are causing water damage to fire stations.
- Security – install security cameras and fencing to enhance fire station security.
- ADA Compliance – update fire stations to comply with ADA requirements to make these facilities accessible to the public.
- Paving – deteriorating asphalt at the Fire Training Facility is in need of resurfacing.
- Fire Station Extension – Fire Station 3 is in need of their apparatus bay to be extended to accommodate their replacement fire truck.

Current maturity story

Some strategies that PF&R is implementing currently related to asset management include the following:

- Implementing asset management system.
- Preventative maintenance schedules.
- Maintenance reporting.

What is needed to advance maturity level

PF&R will adopt new strategies and approaches in developing our asset management program, as resources allow. The intention is to obtain and integrate the following components:

- Portfolio management with conditions assessment.
- Independent surveys from consultants and engineers.
- Data reporting.
- Funding for systems and staffing to support the program.

Portland Parks & Recreation



Profile

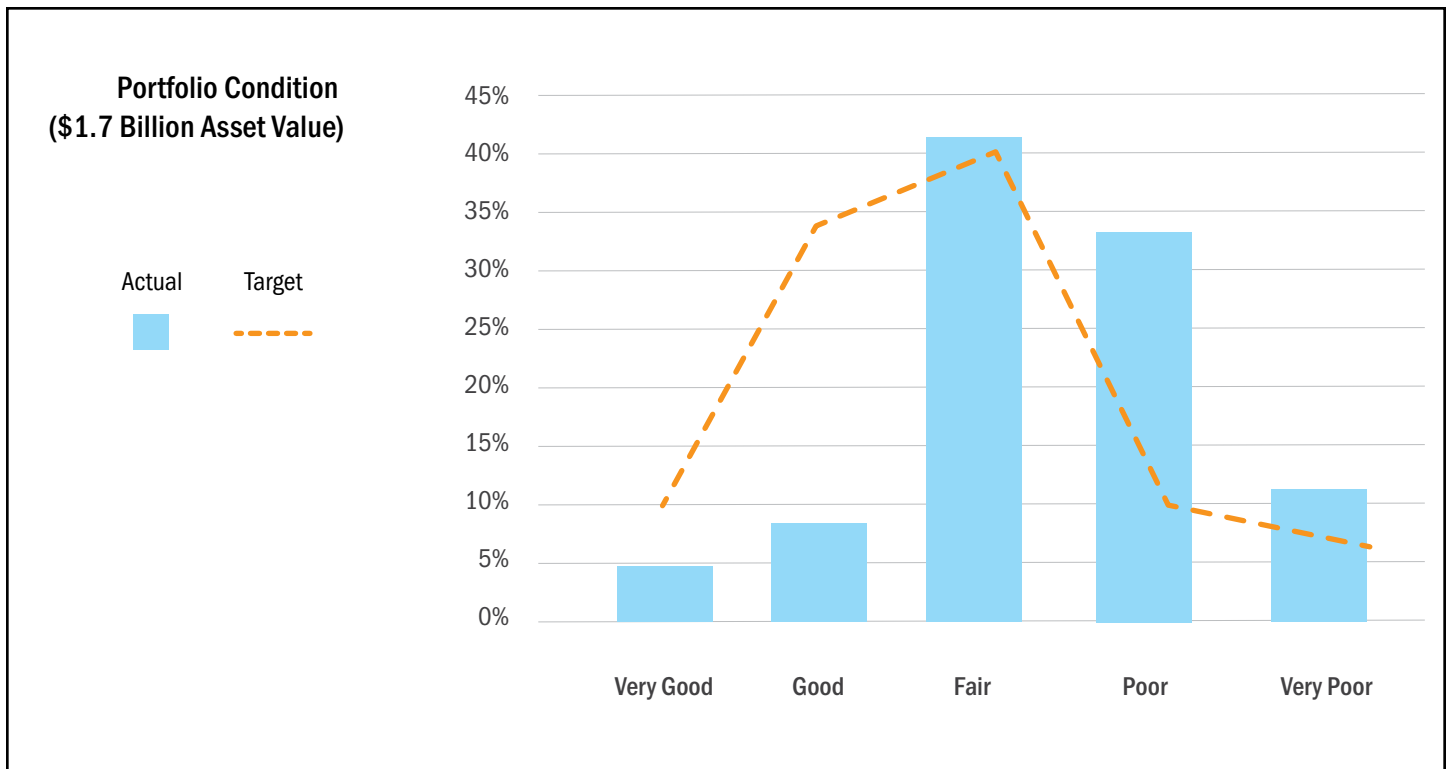
Portland Parks & Recreation (PP&R) helps Portlanders play —providing the safe places, facilities, and programs that promote physical, mental, and social activity. We get people, especially kids, outside, active, and connected to the community. As we do this, wellness of our residents and the livability of our city increases. PP&R is the steward of a diverse portfolio of parks, natural areas, urban forest and recreation facilities used extensively by the city’s residents and visitors. The total parkland managed by the bureau is 11,712 acres, including 8,000 acres of natural areas, and represents about 14% of the geographic area within the City of Portland. Additionally, PP&R staff care for 238,000 street trees. The bureau operates 13 swimming pools, 11 community centers, three music/dance centers, five golf courses, one motor raceway, approximately 500 buildings of various sizes and functions, and over 650 miles of underground assets.

Current Asset Value, Condition, and Service Levels

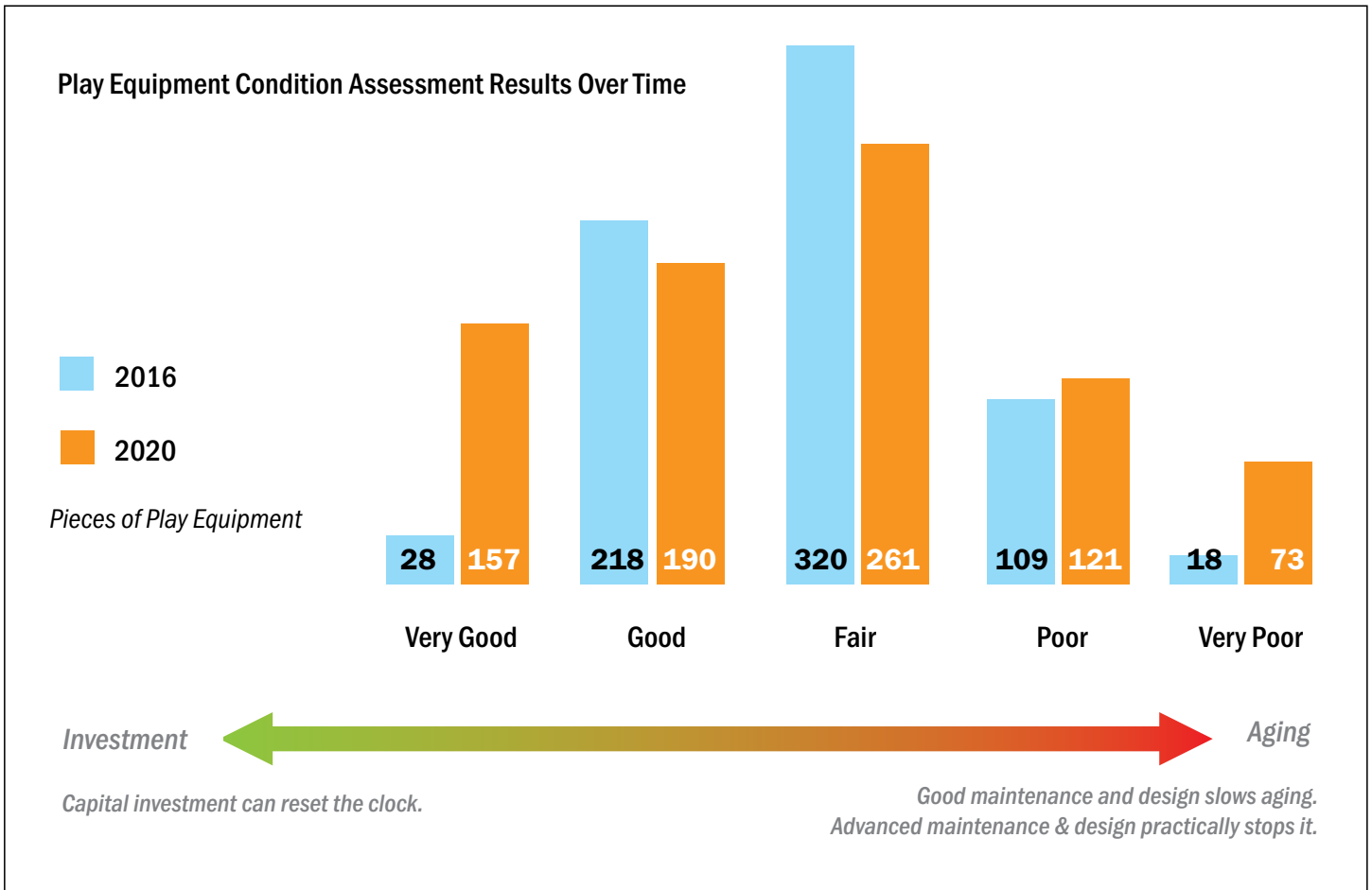
The overall replacement value of PPR assets is estimated at \$1.7 billion in 2021. The 2021 overall replacement value estimate represents a 13% difference (\$200 million) from the 2019 estimate stemming from escalation, new parks and assets coming online (especially at Leach Botanical Gardens, Gateway Green, and Forest Park), and improved inventory as our ongoing condition assessment program matures and finds previously unaccounted-for assets.

The following chart summarizes our known portfolio condition:

In this chart, the blue bars represent percent of known assets rated at each condition description, following the IPWEA Practice Note 10.1 reference standard. Note the skew to the right or toward the poor/very poor condition rating. The orange line represents a what a healthier portfolio would look like: skewed toward good/very good condition. This data represents over 11,000 segments/assets which have a valid condition rating in the last five years.



To further illustrate the backlog of deferred maintenance, funding gap, and impact over time, the below chart shows how the Play Equipment Portfolio Condition deteriorated in-between two assessment rounds (2016 in blue to 2020 in orange). Note the increase in number in very poor condition from 2016 to 2020:



This decline in average condition occurred despite millions of dollars invested from major maintenance, the 2014 Parks Replacement Bond, and new park playgrounds (to close service gaps) coming online during that time period.

PP&R tracks multiple service levels on the City Budget Office’s Performance Dashboard, including the percent of households within ½ mile of a park or natural area. The current target is 81% with last reported performance of 79%. Other service levels pertain to tree canopy, community centers, and quality of experience perceived by parks visitors. Readers should note that PP&R is in the process of updating provisioning levels of service for developed parks and natural areas.

Annual Funding Gap

PP&R reports with high-confidence a growing capital maintenance backlog exceeding \$500 million. Sources of backlog growth include: better understanding of our portfolio and needs through an ongoing condition assessment program, normal wear and tear, and cost escalation. The Report includes documented annualized future ten-year needs of:

- \$71.9 million per year for Repair/Renovation/Recapitalization (R/R/R).
- \$11.5 million per year for Mandated projects such as the ADA Transition Plan.
- \$50.9 million per year for unmet service need (based on prior levels of service gaps and estimates).



What is needed this year for infrastructure

The Parks Levy is making investments in asset management capability and operational level maintenance. However, the capital maintenance gap remains with an ongoing general fund allocation at well less than 1% of Replacement Value per year, when the benchmark investment rate is 3%. As such, in the FY22-23 Requested Budget, PP&R requests:

- Pier Park ADA Transition Plan - \$5 million Capital Set-Aside.
- Energy Savings Performance Contract - \$2.5 million Capital Set-Aside.
- Major Maintenance - \$500 thousand – ongoing, per budget note directing PP&R to request this every year.

Current Maturity Story

PP&R's program includes efforts in the following areas, enshrined in the PP&R Asset Management Program Charter:

- Sustainable Service Levels – through the Sustainable Futures direction and funding alignment initiative
- Investment Decision Support - including quantitative risk-based project prioritization and business cases
- Asset Lifecycle Management - including documenting and updating ongoing maintenance
- Information Management – including deployment of mobile work orders and GIS based dashboards
- Culture and Communications - including Leadership Team asset management training and quarterly natural asset management collaborations amongst key stakeholders in this emerging field.

What is needed to advance maturity level

PP&R's near-term efforts center on revising protocols and collecting natural area data and increasing major maintenance investments for an aging infrastructure. Advanced asset management techniques become exceedingly challenging to implement at full value at current capital maintenance funding levels. For example: a thorough business case analysis may show that the best long-term public value investment for an asset is full recapitalization effort, but budget constraints only allow triage/short-term repairs, and higher risk.



Profile

Prosper Portland owns several properties, most having been purchased with a plan for future disposition for redevelopment. Prosper does own a few commercially leasable properties such as Lents Commons and commercial condominium space at the Nick Fish building. On these properties, Prosper Portland makes property improvements on an as needed repair basis and depending on the lease agreement(s) with the commercial tenants. The primary properties that fit within this analysis are Union Station and assorted park like remnants.

Union Station: Prosper sought federal funding in partnership with ODOT knowing the condition of the property and the need for a full and multi-scope property assessment.

Parks like remnants: Prosper does not have a methodology for assessing capital needs on the parks like remnants. Some of these assets are identified in early documents for transfer to PPR and some are currently operated and maintained by PPR. Given their open space and recreation purpose, Prosper is in discussion with PPR about potential transfer of these assets to PPR.

Current Asset Value, Condition, and Service Levels

The estimated value of Union Station is \$64M and the property is in poor condition. The value of the remnants has not been determined.

Annual Funding Gap

The annual funding gap for Union Station is \$17M; Prosper does not have a methodology for assessing capital needs on the parks like remnants so the annual funding gap is unknown. Some of these assets are identified in early documents for transfer to PPR and some are currently operated and maintained by PPR. Given their open space and recreation purpose, Prosper is in discussion with PPR about potential transfer of these assets to PPR.

What is needed this year for infrastructure

Unknown at this time.

Current Maturity Story

- Property assessment completed for Union Station; in process of determining Federal and State funding sources to perform significant and costly rehabilitation to building.
- In discussion with PPR to transfer park property
- Prosper is in early stage of creating a formal capital reserve policy for commercially leasable properties

What is needed to advance maturity level

- Capital reserve strategy and methodology to regularly assess condition of properties.

Portland Water Bureau

Profile

The Portland Water Bureau (bureau) delivers clean, safe, and reliable drinking water to almost one million people in the region, or one-quarter of the people in Oregon. About 56% of the water delivered serves retail customers in the city; the remaining 44% is provided on a wholesale contract basis to 19 cities, special districts, and private water company customers surrounding Portland. The Water Bureau's major assets include two water sources (Bull Run dams and Columbia Southshore Wellfield associated assets), 36 pump stations, 52 standpipes, tanks, and reservoirs, nearly 2,300 miles of pipe, more than 14,000 hydrants, 127 drinking fountains, and more than 186,000 customer service pipes, as well as facilities, vehicles, and equipment.

Current Asset Value, Condition, and Service Levels

The Water Bureau manages assets valued at \$16.3 billion, with mostly moderate levels of confidence in the condition assessments. The 2021 overall replacement value estimate represents an increase of almost 9% (\$1.4 billion) from the 2020 estimate of \$14.9 billion. The net increase in replacement value was primarily due to an atypically high construction cost inflation and the Washington Park Reservoir coming online and reintroduced to the asset inventory.

In addition, 2019 replacement value was reported as \$11.5 billion. Significant change between the 2019 and 2020 valuation

was due to an increase in the replacement cost valuation for the distribution mains after review of construction bids and inclusion of earthquake resistant pipe into the design.

Potable water pipes are difficult and costly to inspect directly because the majority are buried underground, operated full of water and under pressure, and require sanitary inspection equipment. The Water Bureau assesses the distribution system pipes condition by checking for leaks on a seven-year recurring cycle (covering approximately 15% annually) and performs more in-depth inspections on critical assets when economically justified. For pipes that do not have a strong business case to inspect, condition is estimated using parameters such as pipe age and material, leak or break history of the actual pipe or similar pipes, and environmental conditions. Condition assessment for other assets— such as tanks, pump stations, and electronic equipment—are conducted as part of scheduled maintenance.

The summarized 2021 asset valuation and condition distribution is shown in Table 1 below. Over 70% of the Water Bureau assets by replacement value are in very good to good condition. About 9% of the assets are in poor or very poor condition. A more detailed breakdown is explained in the accompanying spreadsheet to this report. The main asset types contributing to the poor or very poor rating are the services (connections between the water mains and the customers) and a small portion of the distribution mains.

Replacement Value (\$ Million)

Asset Group	Total Value	Very Good	Good	Fair	Poor	Very Poor
TOTAL ALL PWB ASSETS	\$16,292.1	\$4,626.8	\$7,367.7	\$2,899.5	\$904.3	\$493.8
1. Supply	\$1,728.0	\$347.4	\$687.0	\$482.6	\$189.7	\$21.4
2. Transmission	\$1,994.7	\$94.2	\$859.8	\$821.1	\$204.9	\$14.7
3. Terminal Storage	\$765.6	\$541.0	\$165.7	\$0.0	\$14.1	\$44.8
4. Distribution	\$11,543.8	\$3,465.4	\$5,601.4	\$1,576.9	\$490.3	\$409.9
5. Support Facilities	\$260.0	\$178.9	\$53.8	\$19.0	\$5.3	\$3.0

Table 1: Summary of asset grouping replacement value and condition distribution of Water Bureau

The Water Bureau tracks outcome, output, efficiency, and workload measures as reported in the City Budget Office's Performance Dashboard. More specific information on targets and actuals for FY20-21 can be found in the Water Bureaus FY22-23 Requested Budget document. Out of over 25 performance measures tracked, Water Bureau has met or exceeded the targets in vast majority of the measures. There has not been any regulatory violations.

Annual Funding Gap

The estimated current funding gap for the Water Bureau is \$47 million. Major contributors to the gap are:

- Renewing cathodic protection for the conduits (\$14.1 million).
- Allocation for pipe relocations to support regional transportation projects (\$10.7 million).
- High consequence of failure transmission main replacements (\$7.7 million).
- Water storage tank valve renewals (\$4.4 million).

Assuming it will take ten years to implement these projects, consistent with the methodology used in previous reports, the average annual estimate is \$4.7 million per year over the next ten years.

What is needed this year for infrastructure

The Portland Water Bureau has submitted its FY22-23 requested budget with a capital request of \$153.2 million for the FY22-23 budget. The projected estimate for capital expenditure over the next ten years total \$2.3 billion. The 5-year CIP major projects are the investments for the filtration plant and the associated pipelines.

The majority of the increase is primarily due to inflationary increases that includes cost-of-living adjustment, merit and salary step increases for non-represented and represented employees, a full year of operating cost for the new Improved Corrosion Control Treatment facility, increase of chemical costs above inflation, increase in staffing positions and resources to focus on addressing affordability, assist to implement and maintain the new Water Asset Management System, increase funding to help with customer side plumbing impacted by capital projects, and support implementation of the Strategic and Equity Plans.

Current Maturity Story

Water Bureau has been practicing asset management since mid-2000s. Currently, the Asset Management Branch of the Water Bureau has six staff positions (5 filled, 1 open).

The Water Bureau has prepared 23 asset management plans (AMPs) primarily around asset types, totaling over \$16 billion.

The AMPs are updated periodically with a goal to update around every five years. In addition, the Water Bureau Asset Management Branch prepares an annual Statistical Report and an Inventory and Condition Report. While the Statistical Report and the Inventory and Condition Report provide the current status for the year they are developed, the AMPs aim to include future funding needs estimates for capital and base budgets. The strategies and the investments recommended in the AMPs are in part based on the business risk exposure ratings.

Last year, the Water Bureau finished implementing a future fundings needs software called AIMS, which stands for Asset Information Management System. This tool will be used to develop future funding needs with higher confidence.

In 2016, the Water Bureau participated in the Water Services Association of Australia (WSAA) asset management benchmarking exercise. At the time, the bureau scored near the average globally and slightly above the average among the utilities who participated from North America. The Water Bureau is in the process of planning to participate in a similar benchmarking exercise in 2022.

What is needed to advance maturity level

As noted above, the Water Bureau is planning to undertake a WSAA maturity assessment for asset management in 2022. One of the outputs of this assessment will be a set of recommended improvement initiatives to advance asset management.

The staff availability (in terms of positions filled) will dictate how much maturity progress can be made in the coming year. However, areas of interest for the Water Bureau Asset Management Branch include the following:

- Continue supporting the new computerized maintenance management system (CMMS) implementation.
- Level of service targets and customer and stakeholder consultations.
- Asset management plan recommended strategy implementations.
- Improvements to the existing reliability centered maintenance practices.
- Continued improvements to the forecasting infrastructure replacement needs and funding requirements to support a whole of asset lifecycle approach better.
- Documentation of business process workflows and supporting technology systems.
- Improving bureau-wide understanding of asset management principles.

The table below shows the total asset replacement value distribution across condition profiles and major asset types.

Replacement Value (\$ million)

Asset Group	Total Value	Very Good	Good	Fair	Poor	Very Poor
TOTAL ALL PWB ASSETS	\$16,292.1	\$4,626.8	\$7,367.7	\$2,899.5	\$904.3	\$493.8
1. Supply	\$1,728.0	\$347.4	\$687.0	\$482.6	\$189.7	\$21.4
1.1 Bull Run Roads	\$620.8	\$65.3	\$108.6	\$304.4	\$130.4	\$12.1
Roads, arterial	\$56.9	\$26.1	\$6.2	\$15.9	\$8.7	–
Roads, collector	\$155.5	\$20.2	\$5.9	\$74.8	\$54.6	–
Roads, local	\$175.4	\$1.6	\$27.5	\$97.8	\$44.7	\$3.8
Roads, gravel	\$62.2	–	\$31.1	\$31.1	–	–
Culverts	\$157.1	\$7.0	\$34.6	\$84.8	\$22.4	\$8.3
Bridges	\$13.7	\$10.4	\$3.3	–	–	–
1.2 Bull Run Lake	\$30.4	\$0.0	\$25.4	\$3.4	\$1.6	\$0.0
Access Road	\$3.6	–	\$1.8	\$1.8	–	–
Dam and Dike	\$20.0	–	\$20.0	–	–	–
Discharge Facility	\$5.2	–	\$2.6	\$1.3	\$1.3	–
Other assets	\$1.6	–	\$1.0	\$0.3	\$0.3	–
1.3 Dam 1 Facilities	\$320.2	\$26.8	\$228.3	\$61.7	\$0.2	\$3.2
Concrete dam	\$239.6	\$24.0	\$179.7	\$35.9	–	–
Spillway	\$22.4	–	\$16.8	\$5.6	–	–
South Outlet Works	\$53.0	–	\$30.2	\$19.6	–	\$3.2
Fixed cone valves	\$2.5	\$2.5	–	–	–	–
Other assets	\$2.7	\$0.3	\$1.6	\$0.6	\$0.2	–
1.4 Dam 2 Facilities	\$368.9	\$60.9	\$219.0	\$71.2	\$17.1	\$0.7
Earth dam	\$210.8	–	\$168.6	\$42.2	–	–
Plunge Pool	\$22.4	\$2.2	\$4.5	\$12.6	\$3.1	–
Spillway	\$12.7	–	\$9.4	\$3.3	–	–
North Intake Tower	\$68.8	\$58.5	\$10.3	–	–	–
South Intake Tower	\$47.3	–	\$23.7	\$11.8	\$11.8	–
Howell Bunger Valves	\$2.7	–	–	–	\$2.0	\$0.7
Other Assets	\$4.2	\$0.2	\$2.5	\$1.3	\$0.2	–
1.5 Headworks & Lusted Hill Facilities	\$89.7	\$10.9	\$52.2	\$24.1	\$2.0	\$0.6
Headworks Facilities:						
Diversion Pool & Dam	\$11.8	\$3.0	\$3.0	\$5.9	–	–
Buildings	\$18.2	–	\$12.7	\$5.5	–	–
Pressure Regulating Valves	\$2.0	\$1.0	\$0.9	–	–	–
Headgates	\$3.6	–	\$2.5	\$0.7	\$0.4	–
Piping to Screen House #3	\$2.4	–	\$1.2	\$1.2	–	–

Replacement Value (\$ million)

Asset Group	Total Value	Very Good	Good	Fair	Poor	Very Poor
Intakes and Screen House #4	\$9.5	–	\$9.5	–	–	–
Screen House #3	\$5.4	–	\$0.5	\$3.2	\$1.6	–
Treatment Equipment	\$9.0	–	\$6.3	\$2.7	–	–
Flow Meters	\$3.5	\$3.5	–	–	–	–
Communication System	\$2.7	–	\$2.7	–	–	–
Misc. Watershed Assets	\$3.5	–	\$2.4	\$0.5	–	\$0.6
Headworks Facilities	\$71.6	\$7.5	\$41.8	\$19.7	\$2.0	\$0.6
Lusted Hill Treatment Facility	\$14.7	–	\$10.4	\$4.4	–	–
Filtration Pilot Plant	\$3.4	\$3.4	–	–	–	–
1.6 Groundwater Well Sites	\$89.6	\$31.2	\$14.0	\$11.0	\$29.0	\$4.4
Production Wells	\$26.0	\$26.0	–	–	–	–
Pumps & Motors	\$9.8	\$0.9	\$2.9	\$5.5	\$0.4	\$0.1
Electrical	\$11.1	\$0.7	\$1.0	\$3.7	\$2.3	\$3.4
Civil / Structure	\$35.4	\$1.0	\$8.8	–	\$24.9	\$0.7
Monitoring Wells	\$7.3	\$2.6	\$1.3	\$1.8	\$1.4	\$0.2
1.7 Groundwater Pump Station & Treatment Facility	\$63.5	\$9.9	\$38.9	\$5.0	\$9.3	\$0.4
Storage Tank	\$6.9	–	\$6.9	–	–	–
Site and Building Structure	\$11.0	\$2.2	\$7.7	\$1.1	–	–
Pumps and Motors	\$11.1	\$5.5	\$3.2	\$1.7	\$0.3	\$0.4
Electrical System	\$10.8	\$2.2	–	–	\$8.6	–
Mechanical	\$7.2	–	\$5.7	\$1.1	\$0.4	–
Treatment	\$11.0	–	\$9.9	\$1.1	–	–
Security Improvements	\$2.2	–	\$2.2	–	–	–
Solar Improvements	\$3.3	–	\$3.3	–	–	–
1.8 Groundwater Collection System	\$144.9	\$142.4	\$0.6	\$1.8	\$0.1	\$0.0
Collection Mains	\$142.9	\$142.4	\$0.2	\$0.2	\$0.1	–
CP System on Collection Mains	\$2.0	–	\$0.4	\$1.6	–	–
2. Transmission	\$1,994.7	\$94.2	\$859.8	\$821.1	\$204.9	\$14.7
2.1 Bull Run Transmission	\$919.6	\$67.0	\$291.4	\$429.0	\$119.9	\$12.4
Conduit 2	\$216.2	–	–	\$194.6	\$21.6	–
Conduit 3	\$242.3	–	–	\$193.9	\$36.4	\$12.1
Conduit 4	\$281.5	–	\$253.4	\$14.1	\$14.1	–
Direct Services & Vaults	\$3.1	–	\$1.0	\$1.0	\$1.0	–
Lusted Road Distribution Main	\$6.3	–	\$6.3	–	–	–
Air Valves and Blow-offs	\$22.5	–	\$7.4	\$7.4	\$7.6	–

Replacement Value (\$ million)

Asset Group	Total Value	Very Good	Good	Fair	Poor	Very Poor
Conduit Misc. Appurtenances	\$17.4	–	\$10.4	\$7.0	–	–
Intertie: Larson's	\$14.9	\$14.2	\$0.7	–	–	–
Intertie: Hudson	\$11.2	\$11.2	–	–	–	–
Interties: other	\$2.3	–	\$2.3	–	–	–
Headworks Bridge	\$5.8	–	\$5.8	–	–	–
Larson's Bridge	\$5.8	–	–	\$5.8	–	–
Bowman's Bridge	\$5.8	–	–	–	\$5.8	–
Camp Namanu Bridge (C3 Sandy River Crossing)	\$29.0	–	–	–	\$29.0	–
Conduit Cathodic Protection	\$3.0	\$0.3	\$0.3	\$1.5	\$0.6	\$0.3
Conduit Trestles	\$11.1	–	\$3.7	\$3.7	\$3.7	–
Sandy River Tunnel	\$41.3	\$41.3	–	–	–	–
2.2 Transmission Mains	\$1,075.1	\$27.2	\$568.4	\$392.1	\$85.1	\$2.3
Groundwater Pump Station Supply	\$36.9	–	\$30.1	\$6.8	–	–
Conduit Interties	\$22.8	\$5.3	\$5.3	\$10.4	\$1.8	–
Powell Butte Inlet/Outlet	\$39.9	–	\$35.9	\$4.0	–	–
C2-162nd and Division to Tabor	\$46.1	–	–	\$39.2	\$4.6	\$2.3
C3-162nd and Powell to Tabor	\$54.6	–	–	\$46.4	\$8.2	–
C4-162nd and Stephens to Tabor	\$54.8	–	\$49.3	\$2.7	\$2.7	–
Mt. Tabor to Willamette River	\$105.6	\$6.9	\$21.8	\$76.9	–	–
Kelly Butte Supply Pipe	\$2.7	–	–	\$2.7	–	–
Willamette River Crossings	\$451.6	–	\$225.8	\$158.1	\$67.7	–
Washington County Supply Line	\$181.1	–	\$163.0	\$18.1	–	–
West Side Header to Washington Park	\$50.1	\$9.7	\$24.5	\$15.9	–	–
Supply to Sam Jackson	\$13.1	\$4.6	–	\$8.5	–	–
Supply to Mayfair	\$16.0	\$0.8	\$12.8	\$2.4	–	–
3. Terminal Storage	\$765.6	\$541.0	\$165.7	\$0.0	\$14.1	\$44.8
3.1 Terminal Storage Facilities	\$765.6	\$541.0	\$165.7	\$0.0	\$14.1	\$44.8
Powell Butte 1	\$189.0	–	\$151.2	–	–	\$37.8
Powell Butte 2	\$189.0	\$189.0	–	–	–	–
Mt. Tabor Reservoir 1	N/A	–	–	–	–	–
Mt. Tabor Reservoir 5	N/A	–	–	–	–	–
Mt. Tabor Reservoir 6	N/A	–	–	–	–	–
Washington Park Reservoir 3	\$225.0	\$225.0	–	–	–	–
Washington Park Reservoir 4	N/A	–	–	–	–	–
Kelly Butte	\$127.0	\$127.0	–	–	–	–

Replacement Value (\$ million)

Asset Group	Total Value	Very Good	Good	Fair	Poor	Very Poor
Mayfair	\$21.1	–	–	–	\$14.1	\$7.0
Sam Jackson No. 2	\$10.0	–	\$10.0	–	–	–
Terminal Storage Treatment	\$4.5	–	\$4.5	–	–	–
4. Distribution	\$11,543.8	\$3,465.4	\$5,601.4	\$1,576.9	\$490.3	\$409.9
4.1 Distribution-Transport and Distribution Mains	\$8,558.5	\$2,687.5	\$4,812.5	\$817.9	\$154.7	\$85.9
Cast Iron ≤ 6"	\$1,096.1	\$4.1	\$587.6	\$376.9	\$105.3	\$22.2
Cast Iron 8" - 14"	\$2,903.3	\$119.0	\$2,419.5	\$336.3	\$17.8	\$10.7
Cast Iron ≥ 16"	\$1,120.5	\$254.0	\$833.1	\$31.5	–	\$1.9
Ductile Iron ≤ 6"	\$777.3	\$484.8	\$283.3	\$8.4	\$0.7	\$0.1
Ductile Iron 8" - 14"	\$1,132.0	\$920.1	\$206.4	\$4.7	\$0.5	\$0.3
Ductile Iron ≥ 16"	\$985.4	\$788.6	\$193.0	\$0.1	\$0.1	\$3.6
Steel ≤ 6"	\$16.0	\$2.0	\$4.5	\$4.8	\$2.7	\$2.0
Steel 8" - 14"	\$34.5	\$5.5	\$25.4	\$1.1	\$1.5	\$1.0
Steel ≥ 16"	\$296.2	\$89.7	\$197.8	\$6.0	–	\$2.7
Galvanized Steel All sizes	\$36.0	–	\$0.1	\$1.8	\$13.3	\$20.8
Concrete Cylinder Pipe	\$82.8	\$10.7	\$53.0	\$19.1	–	–
Other/Unknown ≤ 6"	\$26.4	\$7.6	\$3.6	\$4.6	\$4.9	\$5.7
Other/Unknown 8" - 14"	\$24.7	\$0.6	\$1.3	\$13.9	\$3.2	\$5.7
Other/Unknown ≥ 16"	\$27.3	\$0.8	\$3.9	\$8.7	\$4.7	\$9.2
4.2 Services	\$1,549.7	\$396.5	\$240.8	\$442.7	\$251.7	\$218.0
Small (≤1")	\$1,317.0	\$263.7	\$213.7	\$425.0	\$237.1	\$177.5
Medium (1.25"-2.5")	\$76.3	\$43.5	\$10.1	\$3.7	\$3.0	\$16.0
Large (3"-4")	\$44.2	\$27.6	\$3.9	\$2.7	\$3.4	\$6.6
Extra Large (>4")	\$14.2	\$7.3	\$2.0	\$1.9	\$1.6	\$1.4
Split Services	\$18.9	\$6.4	\$2.1	\$2.3	\$1.5	\$6.6
Fire Services (≤4")	\$26.0	\$17.5	\$2.5	\$0.8	\$1.4	\$3.8
Fire Services (>4")	\$44.2	\$29.5	\$5.7	\$2.7	\$3.6	\$2.7
Unknown Size	\$8.9	\$1.0	\$0.8	\$3.6	\$0.1	\$3.4
4.3 Valves	\$268.9	\$84.7	\$68.1	\$36.0	\$21.7	\$58.4
System Valves, Small (≤8 inch)	\$128.2	\$33.4	\$25.6	\$15.4	\$14.1	\$39.7
System Valves, Medium (≥10 inch and ≤16 inch)	\$78.7	\$24.4	\$23.6	\$13.4	\$6.3	\$11.0
System Valves, Large (≥18 inch and <24-inches)	\$3.9	\$2.1	\$1.0	\$0.5	\$0.1	\$0.2
System Valves, Very Large (≥24-inches)	\$41.3	\$23.1	\$10.3	\$5.4	\$0.8	\$1.7

Replacement Value (\$ million)

Asset Group	Total Value	Very Good	Good	Fair	Poor	Very Poor
Misc. Valves - Air Valves	\$5.0	\$0.6	\$2.2	\$0.4	\$0.1	\$1.7
Misc. Valves - Blow-offs	\$10.3	\$0.9	\$4.7	\$0.8	\$0.3	\$3.6
Other Misc. Valves (combo, vacuum)	\$1.5	\$0.2	\$0.7	\$0.1	\$0.0	\$0.5
4.4 Meters	\$171.6	\$121.0	\$11.4	\$1.6	\$0.8	\$36.8
Small Meters	\$71.7	\$44.8	\$2.4	\$1.0	\$0.5	\$23.0
1.5" - 2" Meters	\$28.8	\$18.6	\$0.7	\$0.4	\$0.3	\$8.8
3" - 4" Meters	\$8.4	\$4.9	\$0.2	\$0.1	–	\$3.2
6" Meters	\$3.2	\$2.4	\$0.1	–	–	\$0.7
8" Meters	\$0.8	\$0.6	–	–	–	\$0.2
10" Meters	\$1.1	\$0.7	–	\$0.1	–	\$0.3
> 10" Meters	\$0.2	\$0.2	–	–	–	–
Fire Meters	\$57.4	\$48.8	\$8.0	–	–	\$0.6
4.5 Hydrants	\$232.8	\$38.8	\$159.9	\$9.0	\$22.7	\$2.4
Screw Type	\$7.0	\$0.1	\$2.9	\$1.0	\$2.7	\$0.3
Corey Style	\$53.6	\$0.7	\$30.6	\$5.4	\$15.8	\$1.1
Compression Style	\$172.2	\$38.0	\$126.5	\$2.6	\$4.2	\$0.9
4.6 Regulators	\$46.1	\$11.6	\$0.4	\$17.6	\$10.8	\$5.7
Total	\$46.1	\$11.6	\$0.4	\$17.6	\$10.8	\$5.7
4.7 Fountains	\$28.1	\$3.0	\$14.4	\$5.0	\$4.5	\$1.3
Drinking Fountains	\$2.2	\$0.1	\$1.5	\$0.6	\$0.1	–
Decorative Fountains	\$25.9	\$2.8	\$13.0	\$4.4	\$4.4	\$1.3
4.8 Pump Stations	\$355.9	\$93.4	\$148.8	\$104.9	\$7.4	\$1.4
All Pump Stations	\$355.9	\$93.4	\$148.8	\$104.9	\$7.4	\$1.4
4.9 Tanks	\$332.2	\$28.9	\$145.1	\$142.3	\$15.9	\$0.0
Concrete	\$206.4	\$12.6	\$118.6	\$67.3	\$7.9	\$0.0
Steel, elevated	\$43.9	\$0.0	\$6.3	\$37.6	\$0.0	\$0.0
Steel, ground level	\$81.9	\$16.4	\$20.1	\$37.4	\$8.0	\$0.0
5. Support Facilities	\$260.0	\$178.9	\$53.8	\$19.0	\$5.3	\$3.0
5.1 Interstate Facilities	\$107.0	\$95.3	\$11.7	\$0.0	\$0.0	\$0.0
Interstate Maintenance Building	\$32.5	\$32.5	–	–	–	–
Interstate Shops-Stores Warehouse	\$21.0	\$21.0	–	–	–	–
Interstate Operations Building	\$32.0	\$28.8	\$3.2	–	–	–
Meter Shop Building	\$17.0	\$8.5	\$8.5	–	–	–
Heated Vehicle Storage	\$4.5	\$4.5	–	–	–	–
5.2 Other Bureau Facilities	\$153.0	\$83.6	\$42.1	\$19.0	\$5.3	\$3.0
Annexed Water District Facilities	\$4.0	–	\$0.8	\$2.0	\$1.2	–

Replacement Value (\$ million)

Asset Group	Total Value	Very Good	Good	Fair	Poor	Very Poor
Bear Creek Houses	\$1.8	–	\$0.9	–	–	\$0.9
Bull Run Lake Cabins	\$1.0	–	\$0.3	–	–	\$0.7
Burlingame House	\$0.8	–	–	–	\$0.8	–
Canoe Launches	\$1.4	\$0.7	\$0.7	–	–	–
Capitol Highway Office	\$1.0	–	–	\$0.5	\$0.5	–
Cars/Vans/Trucks	\$10.0	\$4.4	\$4.6	\$1.0	–	–
Computer/Office Equipment	\$4.2	\$1	\$1	\$1	\$1	\$0
Construction Tools	\$1.8	\$0.2	\$0.2	\$0.3	\$0.3	\$0.8
Coordination Center	\$9.5	\$9.5	–	–	–	–
Dodge Park Facilities	\$2.7	\$0.7	\$2.0	–	–	–
Generators	\$0.6	\$0.1	\$0.2	\$0.3	–	–
Heavy Equipment	\$19.1	\$3.5	\$10.2	\$5.0	\$0.4	–
HydroParks	\$0.6	\$0.6	–	–	–	–
Lab Equipment	\$2.1	\$1.0	\$0.5	\$0.2	\$0.4	–
Mowers	\$0.2	\$0.0	\$0.1	\$0.1	–	–
Mt. Tabor Historic Structures	\$3.3	–	\$2.3	\$1.0	–	–
Pittock Pump Station	\$0.2	–	\$0.2	–	–	–
Portable Instruments/ Monitoring Equipment	\$2.1	\$0.4	\$0.3	\$0.9	\$0.3	\$0.2
Portable Pumping	\$0.4	\$0.3	\$0.0	\$0.1	–	–
Portland Building, Water Bureau share	\$39.7	\$31.8	\$7.1	\$0.8	–	–
Powell Butte Caretaker's House	\$1.2	\$1.2	–	–	–	–
Powell Butte Interpretive Center	\$1.7	\$1.7	–	–	–	–
Powell Butte Maintenance Building	\$3.4	\$3.4	–	–	–	–
Ranger Station and Security Gates	\$0.6	\$0.2	\$0.2	\$0.2	–	–
Sandy River Station Offices	\$5.2	–	\$2.6	\$1.9	\$0.7	–
Sandy River Garage & Barn/ Grader Shed	\$2.1	–	\$0.3	\$1.7	\$0.1	–
SCADA Central	\$7.0	\$7.0	–	–	–	–
SCADA RTUs	\$13.9	\$10.0	\$3.9	–	–	–
Service Trucks	\$4.4	\$1.9	\$1.5	\$1.0	–	–
Solar Panels	\$3.6	\$3.6	–	–	–	–
Warehouse Equipment	\$0.3	–	\$0.2	–	\$0.1	–
Washington Park Historic Structures	\$3.1	–	\$2.2	\$0.9	–	–
TOTAL ALL PWB ASSETS	\$16,292.1	\$4,626.8	\$7,367.7	\$2,899.5	\$904.3	\$493.8

VII. APPENDIX

- A. Citywide Asset Management Policy
- B. Annual Funding Gap Comparison

FIN 2.19 Asset Management

Policy

The systematic tools of asset management promote the City's Anti-Racism, Equity, Transparency, Communication, Collaboration, and Fiscal Responsibility Core Values. Asset management shall be required of all bureaus (defined as any City bureau, agency, office, project or program) that manage capital assets as defined in [FIN 6.11 Capital Assets](#).

The City shall employ comprehensive asset management practices based on a life-cycle approach to managing City assets and that support a balanced approach to decision-making, considering level of service, cost of service, risk mitigation, and community expectations. Proactive, authentic, and structured stakeholder outreach, especially to historically underrepresented communities, is necessary to understand and guide the inherent tradeoffs.

This policy expands on principles detailed in [FIN 2.03 Financial Planning](#); sets minimum requirements; and recommends Citywide asset management roles, responsibilities, and direction.

Principles

Asset management is an embedded framework guiding all asset investment decisions; it is not a stand-alone program, project, or initiative, nor is it an outcome to evaluate against other strategic objectives, but rather a comprehensive approach to making the best decisions in managing large portfolios of capital and natural assets. The goal of asset management is to obtain the best financial return for the public while delivering required service levels, at the least life cycle cost, and at an acceptable level of risk.

Each City bureau that manages capital assets as defined in [FIN 6.11 Capital Assets](#) shall:

- **Use asset management as a tool to advance the City's racial equity goals.**
- **Strive for continuous improvement through routine, structured processes; including benchmarking against best-in-class organizations.**
- **Consider "full costs" in asset investment decisions, including related internal services costs, and indirect costs, impacts related to racial equity and benefits arising from social and environmental impacts.**
- **Commit to asset management as shown through governance and enforcement of principles, policies and best practices that enable asset management.**

- Identify the assets they manage in an asset hierarchy at a level of detail sufficient to guide the repair, rehabilitation, replacement, and other investment decisions.
- Document the condition, performance, utilization, and costs (including historical purchase, installation, or construction cost; life cycle operations and maintenance costs; and current replacement costs) of its assets.
- Use this information to inform equitable capital investment decisions.
- Have ready access to appropriate asset data and knowledge through corporate information systems.
- Understand the relationship between different levels of service and the respective lifecycle costs, with a performance management process that routinely supports striving for the optimum balance between capital expenditures (CAPEX), and operating expenditures (OPEX), risk management, and level of service.
- Develop long term financial projections for capital and operating programs.
- Document current and future level of service metrics (quantity and quality) and ensure they are well understood and accepted by all levels of our organization and by stakeholders.
- Identify, prioritize and monitor assets that are critical to meeting service levels and makes every reasonable effort to avoid their failure.
- Recommend expenditures and investments that reduce the City's risk profile and advance equity.
- Only recommend capital projects with the resources to operate, maintain and replace the resulting assets over the assets projected life-cycle.
- Document and communicate asset management roles and responsibilities throughout the bureau, across the City, and in other directly relevant organizations.
- Include asset management training and skill development programs, including methods to diversify the profession and practice of asset management.
- Report comprehensively and transparently on asset performance and costs at least annually and seek input on performance from stakeholders, including on key individual projects and programs.
- Produce asset management plans to manage the asset portfolio over the longest life-cycle of the assets within the asset portfolio.
- Structure its organization to enable effective asset management as defined by ability to meet all the above principles.

Governance and Accountability

City Council

City Council shall approve strategic service level targets, and through the annual budget process, shall allocate resources/trade-offs to ensure equity, service delivery, livability, economic development, and environmental goals are met.

Bureau Directors

Each bureau director shall support a robust asset management program, including assigning asset management responsibilities and completing annual budgets and long-term workplans that include relevant performance objectives.

In keeping with the principle that asset management is an overarching approach and not a stand-alone program, assignments should not be limited to designated asset management staff but instead permeate the whole organization's decision-making structure, including frontline staff. Essential responsibilities, performed by various roles within an organization, include but are not limited to:

- Overseeing asset management maturation.
- Implementing asset management training and professional development.
- Determining service levels and associated resource requirements.
- Establishing maintenance and inclusive design standards, as well as variance authority.
- Managing an asset inventory and condition information in a computerized database.
- Articulating and approving risk tradeoffs within and across asset categories.
- Developing capital budgets and determining project prioritization.
- Developing technical and financial alternatives and lifecycle cost analyses for all capital projects.
- Developing and implementing Asset Management Plans, as defined by the [International Infrastructure Management Manual](#).

Citywide Asset Managers Group

All capital-asset owning bureaus shall participate in the Citywide Asset Managers Group (CAMG) or appropriate sub-group to share relevant best practices, address issues of citywide concern, coordinate issuance of citywide asset management reports, and peer-review bureau programs. Bureaus with relatively smaller asset portfolios may designate a proxy to the CAMG. The CAMG will adopt an asset management framework and maturity model that will be used for training purposes and benchmarking bureau asset management program maturity.

The CAMG shall standardize and annually report bureau-specific and citywide information to the City Council, including:

- Progress implementing the asset management principles, listed above.
- Current service level goals and attainment.
- Portfolio condition, risks, future renewal liabilities (expressed in life-cycle cost terms) and estimated current replacement cost.
- Future funding requirements and projections.
- Estimated costs to close service level gaps.
- Anticipated resource gaps: funding, FTEs, other.
- Asset management contribution to City Racial Equity Goals

Additional Bureaus

- *Office of Management and Finance* – Deputy Chief Administrative Officer serves as the Executive Sponsor for the CAMG and related Citywide work. Sponsors asset management policies and supports citywide strategies to close resource gaps.
- *City Budget Office* – Holds bureaus accountable for compliance with asset management policies and procedures through budget and supplemental analyses.
- *Bureau of Planning and Sustainability* – Provides bureaus with information about policy goals, long term future trends and issues, and growth management. Maintains the 20-year Citywide System Plan (aka “Public Facilities Plan”) and the Urban Services Boundary as a state-required element of the City’s Comprehensive Plan, and ensures it reflects bureau capital plans and asset management practices.
- *Bureau of Technology Services* – Partners with bureaus on implementation of technology roadmaps for asset management. Bureau owner for certain Citywide technologies
- *OMF Business Operations* – Partners with bureaus to identify all related internal service costs for asset management activities.
- *Bureau of Human Resources* – Updates relevant classification specifications with asset management knowledge, skills, and abilities. If warranted, create new asset management classifications. Coordinate the implementation of a citywide asset management training program (content developed and delivered by CAMG members). Provides guidance to City Council on evaluating bureau director performance for asset management, as appropriate.

- *Procurement Services* – Incorporates asset management considerations, such as lifecycle cost and risk management considerations, into procurement approaches, tools, and decisions.
- *Office of Equity and Human Rights* – Reviews and approves proposed approaches to incorporate an equity lens in citywide asset management processes such as annual reporting and capital set-aside project prioritization.
- *Portland Bureau of Emergency Management* – Partners with bureaus to build resilience into asset management practices and operations.

By working together, these structures for asset management will continue to blossom citywide capacity to deliver the high-quality and sustainable infrastructure on which Portlanders depend.

Framework

The following components comprise a complete asset management framework for a City bureau.

Asset Inventory

Each bureau inventories the assets it owns, including all those for which it has legal responsibility, and maintains an accurate computerized register developed around a hierarchy that supports timely and comprehensive asset management functions. Assets are to be recorded in the City’s Enterprise Resource Planning system and reported in the City’s Comprehensive Annual Financial Report in accordance with [FIN 6.11 Capital Assets](#).

Condition Assessment

Each bureau gathers, records, and analyzes condition assessment data, on an approved periodic basis. Industry best practices may dictate more frequent assessments. Data is stored using computerized systems and maintained to realize a high confidence level in the data and results. Each bureau shall also establish and maintain a quality assurance and quality control (QA/QC) program to assure data integrity. These assessments help ensure city-wide consideration of service-gaps along with benefitting demographics, rather than relying on anecdote or advocacy.

Maintenance

Each bureau has a detailed maintenance policy, procedures and schedule for all assets and manages them in a Computerized Maintenance Management System (CMMS) or Enterprise Asset Management System (EAMS) to ensure they meet the intended service level and achieve their full expected service life and promote a more equitable intergenerational investment and consumption of infrastructure.

Capital Improvement Planning

Each bureau plans its infrastructure investments to meet current and future levels of service given the expected lives of its assets, and requests adequate resources in the budget process for rehabilitating existing assets and constructing new assets with an understanding and commitment to the operations and maintenance, modernization, capital repair and replacement funding necessary to cover assets' intended lifecycles.

Levels of Service

Levels of service define what assets are required to do and determine if they are in-fact doing it. Each bureau defines equitable service levels and requests commensurate budget resources to achieve sustainable service delivery. Bureaus coordinate to ensure defined levels of service are stated within the City's Citywide System Plan, the Transportation System Plan, and the Comprehensive Plan, as required by state comprehensive planning statutes and administrative rules. Each bureau understands and records its current levels of service and reports its performance in meeting these in their asset management plans. These plans include service level options, including non-asset solutions, and costs. Each bureau assesses the impact of asset non-performance in terms of the social, environmental, legal and financial consequences of not meeting community expectations.

Financial Planning

Each bureau understands the value and costs of its assets and the financial resources needed to sustain them over the short- and long-term. Each bureau considers total life cycle costs and has appropriate funding strategies that match its business needs for current and future levels of service. Each bureau measures and reports the full economic cost and value of its activities.

Risk Management

Each bureau monitors, understands, and manages risks to service delivery stemming from its asset portfolio and makes appropriate trade-off decisions to ensure continued service delivery. Business risk assessment is exercised on several levels: strategic, operational, and tactical. Each bureau ensures that its policies, processes and practices reflect the City's commitment to asset risk management. Bureaus shall employ a conservative approach to public and employee safety, erring on the side of caution. Bureau's shall consider historical inequities when considering who bears the risks.

Asset Management Reporting

Each bureau reports and communicates its overall performance in environmental, social, financial, and technical terms in periodic asset management plans and plan updates. Included in these plans are information on the asset portfolio, current and future level of service targets, risk profile and risk management plan, and a current and future financial needs analysis for the entire asset portfolio. Asset management plans are intended to inform stakeholders about the true needs of the infrastructure portfolio and inform budget decisions for each bureau.

Innovation

Asset management is a process of continuous improvement. Each bureau shall work to identify innovative technology, financing options, improved business practices, information management tools and partnerships to accelerate the maturation of their asset management delivery.

Equity

Asset management is a tool to help achieve equitable outcomes. Data-driven analysis can highlight inequitable provisioning or quality of service. Intergenerational equity regarding capital assets occurs when the current users of the assets or service are paying the full costs. Asset management techniques such as comprehensive condition assessment, lifecycle budgeting, contextual prioritization, and balancing the use of debt to help advance the City's racial equity goals.

Information Management

Equitable service and Asset management depend on having widespread access to accurate, timely, and sufficient information to make well-informed lifecycle decisions. This therefore requires bureaus to design and operate information management systems in a manner that efficiently and effectively integrates analytics and decision-making. Asset information is a combination of data about assets and their use, required to inform decisions about how they are managed, both for short-term operational purposes and for long-term strategic planning. It enables strategic planning across the asset portfolio and encourages the informed use of resources.

Asset-owning bureaus shall work with BTS to identify and procure information management systems that will meet the needs of the asset portfolio they are managing. Simultaneously, asset-owning bureaus have an obligation to consider, in the procurement of information management systems, goals of the City related to technology alignment and the prudent use of public resources.

Linkage to Budget and Performance

Bureaus shall consider available resources and conduct alternative analyses prior to submitting budget requests that optimally deliver on service level targets. Additionally, the impacts of resource limitations on a bureau's optimized asset management plan and budget will be made explicit by the bureau when budget requests are submitted – including but not limited to the

bureau’s ability to meet service level targets, increased risk acceptance, and a transfer of asset liabilities and costs to future generations. All such considerations shall be documented, in accordance with [FIN 2.04 Budget](#), and presented to Council. Service level targets shall be refined based on approved budgets.

ANNUAL FUNDING GAP COMPARISON

Bureau	R/R/R <i>(Repair, Rehabilitate, Replace)</i>	Capacity	Mandate	Notes
Environmental Services	<p>Costs associated with addressing poor and very poor condition assets.</p> <p>Some costs are based on valuation and for some cases, where valuation estimates have low confidence, subject matter experts have provided an estimate approaching a more realistic expectation.</p>	<p>These are projects where we need to expand service – typically to replace septic tank neighborhoods or develop new infrastructure for new developments.</p>	<p>Typically, regulatory-driven projects like EPA’s Secondary Treatment Plan Expansion Project.</p>	<p>We sum the RRR, Capacity, and Mandate costs, annualize over 10-year distribution, and subtract the average annual 5-year CIP funding to report the annualized funding gap. 10 years is not realistic for how BES would actually address the gap, it’s used for reporting purposes only.</p> <p>Because of improved assessment and investigation, we are seeing the funding gap much higher than amounts in previous reports.</p> <p>If assumed 2% reinvestment rate, different gap assumption.</p>
Transportation	<p>Unbudgeted, 10-year annualized construction cost to reach target.</p> <p>Assets that fail to meet State of Good Repair standard or are in Poor / Very Poor Condition.</p> <p>Unmet need from previous year + inflation.</p>	<p>Examples like unpaved streets (?).</p>	<p>Examples like ADA requirements.</p>	<p>Valuation a combination of unit costs and square footage application based on different sources.</p> <p>Unmet needs vary by asset type(?) – installation costs, engineering / overhead costs, etc.</p> <p>Building infrastructure point-of-contact provided estimates, all buildings in fair to poor condition and need seismic rehab as well.</p>
OMF— Technology Services	---	---	---	---
OMF— Div. of Asset Management	<p>Incl. short term capital needs (major maint.) facility component parts only.</p> <p>Incl. gap between what should be withheld via rent and what is actually withheld.</p> <p>Incl. backlog of critical projects built up due to under-withholding.</p>	<p>Historically, nothing here. Now, combined “capacity” & “innovation.”</p> <p>Capacity: Used Avg. \$/sq.ft. for facilities beyond end-of-life (divided by 10)</p> <p>Innovation: Took list of projects w/o funding but w/ estimates and summed.</p>	<p>Nothing this year; may revisit if major maint. on condo properties should be included due to legal docs requiring maint. investments.</p>	<p>Summed costs for each category and divided by 10 for annualized amount.</p>

ANNUAL FUNDING GAP COMPARISON

Bureau	R/R/R <i>(Repair, Rehabilitate, Replace)</i>	Capacity	Mandate	Notes
OMF— Spectator Venues	---	---	---	---
Fire & Rescue	---	---	---	---
Parks & Recreation	<p>Escalated from legacy but also derived and consistent w/ backlog magnitude.</p> <p>> \$500M backlog based on parametric estimate using condition data and non-assessment needs.</p>	<p>Escalated from prior report based on ½ mile LoS</p> <p>In process of updating capacity gap.</p>	<p>Escalated from legacy, ADA Transition Plan.</p> <p>Likely have gaps related to enviro. Compliance and non-conforming upgrades.</p>	<p>Uncertainty from: Incomplete inventory; Parameters; Insufficient accounting of modernization needs; Natural asset valuation still emerging.</p> <p>Annual gap assumes full gap divided by 10 years.</p>
Prosper Portland	<p>Union Station: Prosper sought federal funding in partnership with ODOT knowing the condition of the property and the need for a full and multi-scope property assessment. Estimate of \$171M R/R/R</p> <p>Parks like remnants: Prosper does not have a methodology for assessing capital needs on the parks like remnants. Some of these assets are identified in early documents for transfer to PPR and some are currently operated and maintained by PPR. Given their open space and recreation purpose, Prosper is in discussion with PPR about potential transfer of these assets to PPR.</p>		<p>Likely have gaps related to ADA and enviro.</p>	<p>On commercially leasable properties, Prosper makes property improvements on an as needed repair basis and depending on the lease agreement(s) we have with our commercial tenants.</p> <p>Recognize need for development and adoption of formal methodology.</p>
Water Bureau	<p>Existing assets that are in poor condition and require RRR but not included in the 10-year rate model.</p>	<p>Identified capacity failures (for existing and new assets), not included in the 10-year rate model.</p>	<p>Mandated projects not included in the 10-year rate model (e.g., regulatory upgrades or ADA improvements).</p>	<p>Funding gap does not include funding requirements beyond 10 years of projects included in 10-year rate plan (seismic upgrades incl. in 10-year rate model but funding will take 30 years to implement).</p> <p>Have not been including asset upgrades for improved service level that are listed in our Service Levels, unless mandated.</p>