



SÄZÄN



PORTLAND PUBLIC SCHOOLS

Facility Maintenance Plan Final Report

October 2022



October 31, 2022

Brian Taylor
Director of Maintenance
Portland Public Schools
501 N Dixon Street
Portland, OR 97227

Re: Portland Public Schools
Facility Maintenance Plan

Dear Brian,

Transmitted herewith is an electronic copy of the Final Facility Maintenance Plan for the Portland Public Schools for your records and distribution to the project team.

Thank you for your assistance in supporting and coordinating the Facility Maintenance Plan. Should you have any questions please telephone me at [REDACTED].

Sincerely,
Säzän

A handwritten signature in blue ink, appearing to read "Dan Tedrow".

Dan Tedrow, PE, PMP
Principal





Säzän would like to acknowledge the following individuals for their contribution during the development of the Facility Maintenance Plan.

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Seattle Public Schools
Tacoma Public Schools



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- a) Service Levels
- b) Preventive Maintenance
- c) Maintenance Staffing
- d) Maintenance Budget
- e) Asset/Equipment Inventories
- f) Facility Condition Assessment Analysis
- g) Work Management System Use
- h) Energy Management
- i) Recommendations List
- j) Recommendation Workbooks
- k) Background Documents

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Lexicon

Term	Definition
APPA	Association of Physical Plant Administrators, a U.S. based organization focused on excellence in facility management of educational facilities.
Biogas	Methane produced from the decomposition of organic materials.
Bond Funding	Voter approved funding mechanism to obtain capital funding for construction activities and capital renewal.
Building Automation System Technicians (BAS Techs)	Technicians trained to install, repair, and maintain building automation systems that control and monitor a building's mechanical and electrical systems.
Capital Improvement Plan (CIP)	Plan to identify capital projects and equipment purchases, provide planning schedules and identify options for plan financing.
Commissioning (Cx)	Quality assurance process to verify that selected Mechanical, Electrical, and Plumbing (MEP) systems are installed correctly during construction projects.
Computerized Maintenance Management System (CMMS)	Software that helps manage assets, schedule maintenance, and track work orders.
Constructability Review (CR)	A third-party quality assurance process to review project documents and ensure the documents are complete, buildable, and biddable by contractors.
COVID-19 (COVID)	An infectious disease caused by the SARS-CoV-2 virus.
Dedicated Outside Air System (DOAS)	An air handling system supplying cooled, dehumidified outside air to the building in summer and heated outside air in the winter.
Direct Digital Controls (DDC)	Technology allowing automated control of a building's conditions such as HVAC and energy management systems.
Facility Condition Assessment (FCA)	Process to help optimize and maintain the physical building conditions and value of assets, develop capital budgets, and prioritize resources.
Facility Condition Index (FCI)	The facility condition index (FCI) is used in facilities management to provide a benchmark to compare the relative condition of a group of facilities.



Term	Definition
Facility Maintenance Plan (FMP)	A comprehensive overview of the process and procedures that govern facilities.
Facility Operations Manager (FOM)	Authority that ensures day-to-day functions follow the strategies of the chief executive officer in advancing the goals of the organization.
Full Time Employee (FTE)	An employee who is employed, within a calendar month, for at least 30 hours of service per week, or 130 hours of service per month.
General Fund	Allocation of money utilized to fund maintenance items.
Gross Replacement Value (GRV)	Current value in dollars of all PPS properties and facilities if the infrastructure were to be rebuilt as new in today's market.
International Facility Management Association (IFMA)	Founded in 1980, IFMA is the world's largest and most widely recognized association for facility management professionals. Aiming to advance collective knowledge, value, and growth for Facility Management professionals to perform at the highest level.
Operations and Maintenance (O&M)	The day-to-day activities and processes necessary for maintaining PPS's facilities and operations so the schools can function as intended.
Outside Air (OSA)	Outside air from a source that is 10 feet away from any potential contaminating air source, such as bathroom exhaust.
Persistent Energy Savings	Energy savings that last with minimal degradation over time.
Project Management Institute (PMI)	Professional organization advocating for standards for the practice of project management.
Portland Public Schools (PPS) (The District)	Administration governing the public schools contained within the Portland school district boundaries.
PPS Stakeholders	Individuals impacted or affected by this report.
Preventive Maintenance (PM)	The regular and routine maintenance and inspection of equipment and assets to keep them operational and avoid performance degradation.
Proactive Maintenance	Proactive maintenance strategy that maintains equipment and performs inspections to reduce unplanned downtime, equipment failure, and risks associated with degradation of equipment.
Racial Equity and Social	Equity is the quality of being fair and impartial. Social equity is



Term	Definition
Justice (RESJ)	impartiality, fairness, and justice for all people in social policy.
Reactive Maintenance	Process of repairing assets to standard operating conditions after poor performance or breakdown is observed.
Renewable Natural Gas (RNG)	Processed methane generated from the breakdown of organic materials (biogas) that has been compressed and inserted into the natural gas distribution infrastructure.
Return on Investment (ROI)	A performance measure used to evaluate the efficiency of an investment or compare the efficiency of several investments.
Standard Operating Procedures (SOPs)	A set of step-by-step instructions compiled by an organization to help workers carry out routine operations.
Value Analysis (VA)	A problem-solving approach championed by the SAVE International organization to achieve an optimum balance between function, performance, quality, safety, and cost.
Value Planning (VP)	Process of engaging stakeholders and technical experts to optimize system value in the early stages, or planning phase, of a project.
Variable Refrigerant Flow (VRF)	Heat pump heating and cooling system that consist of one or more outdoor units connected to multiple indoor units via refrigerant piping to provide cooling and heating to spaces.

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Executive Summary

Facilities play a vital role in Portland Public Schools (PPS) mission to educate all children to their highest potential to be productive, respectful, self-reliant, and responsible citizens who value the richness of diversity. Facility quality is an important predictor of teacher retention and student learning. The physical and emotional health of students and teachers depend on the quality of the physical location, which makes establishing safe, healthy buildings essential.

PPS has developed this Facility Maintenance Plan (FMP) to provide a tool to improve maintenance planning that will result in better facility stewardship and educational environments for PPS stakeholders. This can only be accomplished through efficient, timely, and economical maintenance of facilities. The FMP provides recommendations to help PPS increase its facility stewardship. The recommendations contained in this document require substantial resources for implementation and should be further evaluated on a case-by-case basis. It is not expected that PPS can implement all the recommendations, however each recommendation should be considered by PPS for future implementation. A prioritization and ranking structure have been developed to assist the PPS team in this task.

The Facility Maintenance Plan is intended to be a “living document” that will be updated over time as changes and improvements occur with PPS maintenance activities. Continually updating the FMP will allow PPS to:

- monitor the effectiveness of the plan;
- make appropriate adjustments to reach PPS goals and objectives;
- reduce the likelihood of equipment failure; and
- make decisions based on current information.

FACILITY MAINTENANCE PLAN OBJECTIVES

Proper planning and data driven decision making will facilitate suitable investments to maintain facilities and aid the district in delivering their educational mission. This FMP provides an overview of the current state of PPS maintenance; recommendations for O&M improvements; and a roadmap to achieve desired outcomes.

PPS has identified areas for improvement based on the current maintenance program, industry benchmarks, and best practices. Through the establishment of a formal FMP implementation program, PPS can immediately begin implementing the recommended measures.

Three benefits of the FMP are as follows:

Enhanced Facility Stewardship

PPS is the second largest public school district in the Pacific Northwest and currently maintains 81 schools totaling over 9 million square feet of educational and administrative space, with an approximate current replacement value of \$4.2 billion. Though many of the facilities have undergone extensive modernizations, PPS is maintaining an aging portfolio with an average facility age of 65 years, with 80% of buildings in “Fair” or “Poor” condition. Improving facility maintenance planning results in higher quality facilities and more effective resource allocation.



Improved Educational Outcomes

This plan is established to help identify, improve, and develop an FMP Implementation plan for PPS. For students to be successful, instruction delivery must be within educational facilities that provide a warm, safe, and dry environment. The FMP establishes procedures that facilitate maintaining PPS's building portfolio throughout its life span.

Reduced Cost of Facility Ownership

Taking a preventive approach increases the life of facility systems and equipment, lowering overall operating costs, and providing maximum responsiveness. The implementation of the FMP recommendations is integral to the success of PPS's ongoing operations. If PPS stays on the current course, the cost of inaction will be untenable to the organization, as operating until failure costs significantly more than planned repairs and replacement.



1.0 Introduction

The PPS Facilities Department is responsible for the maintenance, repair, and safe operation of PPS facilities. The department oversees approximately nine million square feet of building space with approximately 100 sites throughout Portland. This Facility Maintenance Plan (FMP) provides the data-driven analysis and planning tools to help PPS facilitate a suitable investment in resources (time, people, and money) to maintain facilities and effectively deliver the educational mission. One key objective of the FMP is to identify areas for O&M improvements and provide an implementation roadmap for PPS to get there. By implementing the FMP recommendations, PPS will enhance its facility stewardship, improve educational outcomes, and reduce the total cost of facility ownership.

1.01 PPS FMP Objectives

This Facility Maintenance Plan (FMP) provides the data-driven analysis and planning tools to help PPS facilitate a suitable investment in resources (time, people, and money) to maintain facilities and effectively deliver the educational mission. The goal of the project is to fulfill the below objectives.

- Key Objective 1 – Identify what PPS is doing well.
- Key Objective 2 - Identify areas for O&M improvements.
- Key Objective 3 - Outline a roadmap to achieve desired outcomes.
- Key Objective 4 - Reach desired level of maintenance.

These primary project objectives are supplemented by PPS’s input on its “metrics of success,” developed during the kick-off meeting. From PPS’s feedback the FMP should achieve the following functionality.

Check	Item	PPS Secondary Metric of Success
<input checked="" type="checkbox"/>	1	Be easy to understand and adoptable.
<input checked="" type="checkbox"/>	2	Aid in making informed decisions.
<input checked="" type="checkbox"/>	3	Identify areas for O&M improvements.
<input checked="" type="checkbox"/>	4	Aid in reaching desired level of maintenance.
<input checked="" type="checkbox"/>	5	FMP to be accompanied with the roadmap for implementation.
<input checked="" type="checkbox"/>	6	Support O&M personnel and highlight the strengths of the departments to the end users.
<input checked="" type="checkbox"/>	7	Help acknowledge the role maintenance and operations play in the culture of the school.
<input checked="" type="checkbox"/>	8	Provide information that will convince outsiders to make changes to help benefit the district.
<input checked="" type="checkbox"/>	9	Create a proactive maintenance plan.
<input checked="" type="checkbox"/>	10	Align Facility Condition Assessment (FCA), Capital Improvement Plan (CIP), and Student Success with FMP.



1.02 Project Approach

During Phase 1, Organization and Discovery, the Sätzän team coordinated with PPS to determine key stakeholders through the creation of an approved project charter and development of a project schedule and execution plan. The team clarified the metrics of success during the kick-off meeting and performed an in-depth investigation and review of over 60 documents related to facilities maintenance and capital planning at PPS. From this investigative effort several observations were developed. These were further vetted and turned into recommendations as a part of Phase 2 of the project.



Figure 1 - Sätzän team contextual understanding statistics during FMP creation

During Phase 2, Preparation and Collaboration, the Sätzän team collaborated with PPS to assist in prioritizing overall issues to address, performed numerous site visits to validate observations and spoke with operations staff directly, and discussed desired levels of services. This collected information was benchmarked against best practices. The observations were refined and turned into recommendations during the value planning working sessions. The recommendations were refined, prioritized, and assigned to teammates for development of the proposed FMP recommendations. These recommendations can be viewed in Supplemental Information J, and once implemented will enable PPS to achieve the desired level of service. To assist in comparing PPS’s facilities department, several K-12 entities were engaged to provide benchmarking data.

At Phase 3, Deliverable Development, the Sätzän team developed the project deliverables. This included the development of this report, the Supplemental Information items, and a complete preventive maintenance schedule. By following the recommendations in the FMP, PPS can achieve its desired service level and enhance the educational mission.

References

To benchmark PPS performance, the Sätzän team engaged industry leading organizations that focus on studying, measuring, and reporting the facility maintenance industry trends and practices. Each association listed below offers different perspectives and data that provides applicable benchmarks we used to develop the FMP. In addition, the Sätzän team engaged comparable educational institutions. These institutions had available facilities data and, in many cases, have similar urban schools with aged facilities. We combined the resulting data with our engineering judgement and expertise to make the informed recommendations contained in this plan.



Association of Physical Plant Administrators (APPA)

APPA is the gathering place for educational facilities professionals, dedicated to the ongoing evolution of the profession. APPA continues to cultivate community and collaboration that drive results. The organization aligns with the principles and values of integrity, honesty, respect, fairness, patience, nurturance, encouragement, growth & development, service, quality, and collaboration.



International Facility Management Association (IFMA)

Founded in 1980, IFMA is the world's largest and most widely recognized association for facility management professionals. IFMA aims to lead the future of the built environment to make the world a better place. By advancing the members' collective knowledge, value, and growth, Facility Management professionals can perform at the highest level.



CBRE CostLab

CostLab is the most comprehensive online tool for facility benchmarking, budgeting, and capital planning.



Tacoma Public Schools (TPS)

Tacoma Public Schools (TPS) is one of the largest districts in Washington State serving approximately 30,000 children in preschool through grade 12. The district has 35 elementary schools, 11 middle schools, 10 high schools and 4 early learning centers. Nineteen schools are designated as innovative. TPS has nearly 5,000 employees and is one of the largest employers in Tacoma.



The School District of Philadelphia (PSD)

The eighth largest school district in the nation, located in a historic and culturally rich setting. They are a community of 19,000 caring employees working together with parents, families, volunteers, and community members to support the limitless potential of more than 203,000 young scholars.



San Diego Unified School District

Since its inauguration on July 1, 1854, the district has grown from a small, rented school building with one teacher to its current state: more than 200 educational facilities with 14,500 full-time equivalent positions, representing more than 15,800 employees.



Seattle Public Schools (SPS)

Seattle Public Schools, the largest K-12 school system in Washington state, has a deep commitment to every student's journey—to ensure that each student will graduate ready for college, career, and life.



Boulder Valley School District (BVSD)

Located in the foothills of the Rocky Mountains, Boulder Valley School District (BVSD) stretches from the peaks of the Continental Divide to the suburbs of Denver.

**Säzän Group, Inc**

A local engineering design and consulting services firm experienced with all aspects of the built environment.

1.03 Roadmap to using the Facility Maintenance Plan

This FMP is broken into sections to guide the reader and provide an understandable narrative accompanied by detailed calculations and recommendations in the Supplemental Information. The report is arranged in the following sections:

- **Facilities Maintenance Plan** (This document) – The main body of the FMP is intended to tell the story and provide guidance of how PPS can achieve the desired levels of service regarding facilities performance.
- **The Supplemental Information Documents** - The Supplemental Information provides the detailed calculations, analysis, and recommendations that support the implementation of the Facilities Maintenance Plan. The following Supplemental Information items are included in the FMP:
 - A. Service Levels – Discussion of current and future levels of services.
 - B. Preventive Maintenance – Complete preventive maintenance plan of all PPS’s assets.
 - C. Maintenance Staffing – Detailed analysis of recommended staffing.
 - D. Maintenance Budget – Detailed analysis of the maintenance budget.
 - E. Asset/Equipment Inventories – Review of PPS asset inventory.
 - F. Facility Condition Assessment Analysis – Review of PPS FCA.
 - G. Work Management System Use – Review of PPS’s CMMS.
 - H. Energy Management – Review of PPS’s energy management.
 - I. Recommendations List – List of developed recommendations to support the FMP.
 - J. Recommendation Workbooks – Detailed analysis of FMP recommendations.
 - K. Background Documents - Outlines the documentation utilized during Discovery Phase of FMP.

2.0 PPS Portfolio Overview

Portland Public Schools, founded in 1851, is a PK-12 urban school district in Portland, Oregon. With more than 49,000 students in 81 schools, it is one of the largest school districts in the Pacific Northwest.

PPS manages approximately 9 million square feet spread out across 177 buildings (including modular) across 700 acres of real estate. The facilities in the district’s portfolio range widely in age, from 2 to 120 years old.

Many facilities have received a partial reconstruction since their initial construction date. Nearly one-half of district buildings were constructed before World War II. These facilities have varying maintenance needs and most have systems that are at or are approaching the end of their useful life. Many of these buildings have antiquated, but robust, steam and architectural systems and finishes that require minimal upkeep and maintenance to continue adequate service levels. The robustness of these systems is a key reason that—despite limited funding and maintenance resources—allows PPS to maintain its Warm, Safe, and Dry operating principles.



Figure 2 – Classroom ceiling in Cleveland High School.



Figure 3 – Steam boiler at George Middle School.



Figure 4 – Theater in Jefferson High School.



Figure 5 – Courtyard at Kelly Elementary School.

In addition to permanent structures, the district operates 71 modular buildings, totaling 131 classrooms and more than 200,000 net instructional square footage of floor space. Like the permanent building portfolio, these modular buildings are aged. The average installation date of district modular buildings is 1980. The current replacement value of PPS's portfolio is approximately \$4.2B (Capital Improvement Plan draft dated March 2022).

Major capital repairs and new construction are funded through bonds, whereas the maintenance program (non-replacement, non-refurbishment) is funded through the general fund. All programs including academic, instruction, testing, support, technology, and food services compete for finite general fund resources. For numerous reasons, instruction and student needs have outweighed and out-prioritized facility maintenance for budget appropriations. As with many public agencies, the maintenance program is generally deprioritized in favor of core mission programs. Typical in industries with limited resources, facility costs are reduced through a reduction of service levels and an increase in deferred maintenance of systems. During the interview process, PPS staff indicated that the reduction in operations and maintenance staff were a result of budget cuts in the year 2000. As a result of the staffing reduction, PPS's ability to perform preventive maintenance was eliminated.



3.0 State of Facilities Maintenance

3.01 People

PPS Facilities Maintenance has 74 approved maintenance-specific positions (including foreman) according to the June 2022 Maintenance Budget. The maintenance department is broken into three distinct shops: mechanical shop, multi-craft shop, and electrical shop. Each shop has dedicated maintenance staff and foremen to perform and oversee the work.

During the discovery period of the study PPS had the following shop positions. The mechanical shop consisted of 31 approved FTEs, inclusive of foremen. The shop’s approved positions consisted of a foreman, an assistant foreman, a building automation specialist, 10 steam fitters, 11 plumbers, 5 machinists, and 2 sheet metal workers. During the initial development of the FMP, there were only 2 steam fitter positions staffed out of the 10 available FTE positions. The electrical shop has 23 approved FTEs, inclusive of foreman. The shop’s approved positions include one foreman, one assistant foreman, 9 electricians, 10 electronic technicians, and 2 motor winder positions.

Approved vs. Actual FTE (per June 2022 Org Chart)

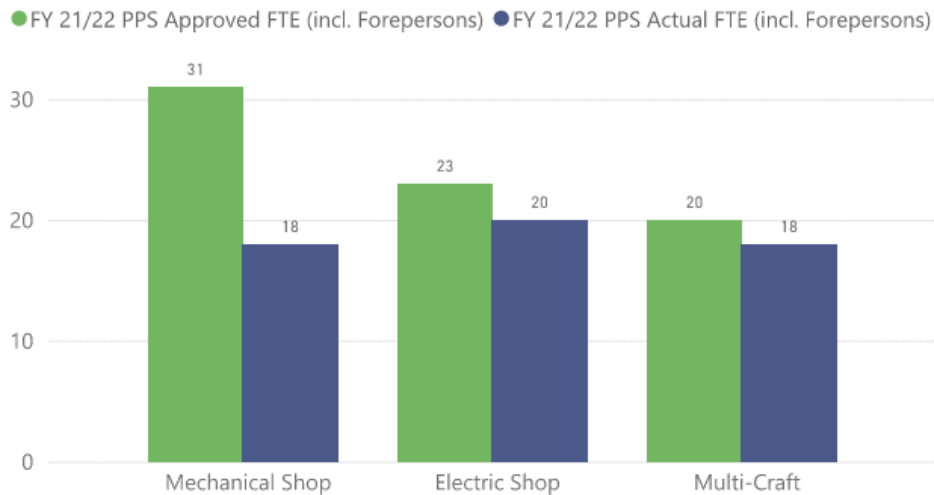


Figure 6 - 2022 Approved vs staffed O&M positions. Note the vacancies in the mechanical shop.

3.02 Recommended Staffing Levels

The team evaluated PPS staffing levels using multiple data sources to ensure alignment with industry standards and best practices. This included a review of PPS staffing levels against similar K-12 school districts for contextual understanding and calculations to forecast staffing levels utilizing 2019 APPA standards and the 2022 IFMA data. From these evaluations, staffing levels were determined based on portfolio gross square footage. Recommendations were then cross referenced against calculated staffing needs using actual PPS maintenance tasks and the asset inventory data. It was found that the recommendations align, providing a



high level of confidence in the below recommendations.

Compared to peer K-12 entities, **PPS maintenance department represents the lowest staffing levels of all districts surveyed.** As such, PPS’s maintenance staff maintain the most building area per individual against surveyed schools. Compared to APPA, it was found that each **PPS maintenance person maintains 42,000 square feet more building area than is recommended by 2019 APPA Standards.**

Gross Square Footage Maintained per Approved Maintenance FTE

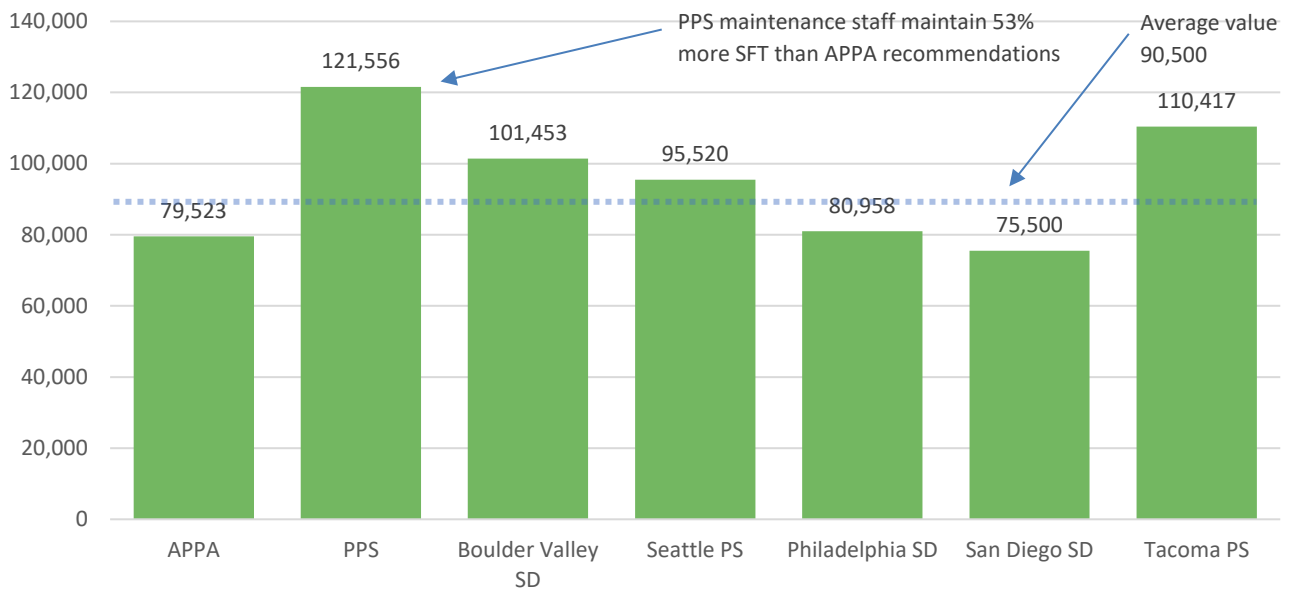


Figure 7 – PPS maintenance staff maintain the highest amount of square footage among all peer agencies investigated. PPS maintenance staff must maintain 42,000 square feet more than is recommended by APPA. This is the equivalent of adding the maintenance of one elementary school onto each maintenance technician’s workload.

Based on the performed analysis, **PPS requires 113 maintenance FTEs**, not including foreman or supervisors, to bring the district into alignment with the desired Levels of Service. These staff members can be hired directly or outsourced to third party maintenance vendors depending on market conditions and the district’s needs. A breakout of the total recommended staffing levels and recommended individuals by shop is outlined below showing APPA and IFMA recommendations. The representative staffing totals are shown against APPA for reference below.



Figure 8 - FMP recommended staffing levels using the June 2022 Maintenance Organizational Chart.

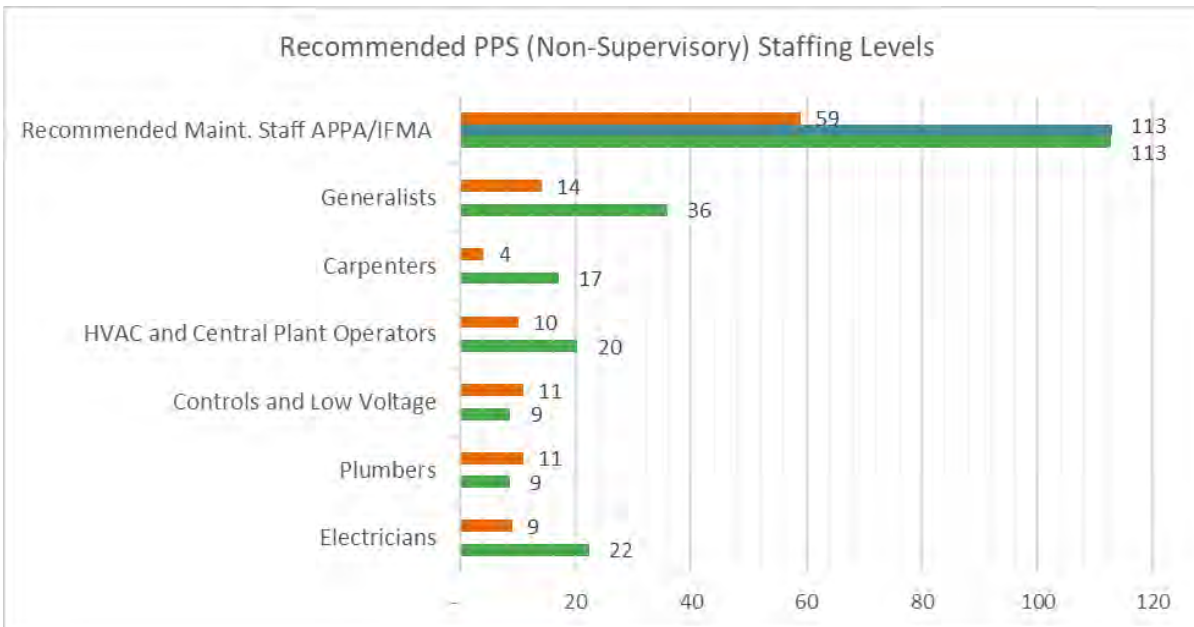


Figure 9 – PPS requires a total of 113 maintenance staff, not including supervisors or foremen. The IFMA recommended values per discipline are shown in green, with the APPA recommended total staffing level shown in blue for reference. PPS’s existing staffing levels are shown in orange. Note that APPA does not provide recommendations by maintenance classification.

As a further check, the project team calculated the number of recommended maintenance staff based on the calculated maintenance needs across PPS’s Portfolio. Since a complete maintenance schedule with task durations did not exist in the CMMS during the study period, the Sázän team developed a preventive maintenance schedule based on the asset inventory collected during the most recent FCA. This maintenance schedule, which can be viewed in Supplemental Information B, provides the upper and lower-level bounds for staffing based on the estimated maintenance tasks, frequency, and duration of maintenance activities across PPS’s building portfolio. **These calculations validate the 2019 APPA and 2022 IFMA recommended staffing levels of 113 full time maintenance employees.** Based on the analysis, the project team is confident in the recommended maintenance FTEs for PPS.



3.03 Performance

Based on the team’s analysis, The PPS maintenance team are performing at an APPA Level 4 Reactive Management level. This level of service reduces initial costs, but due to reduced preventive maintenance increases long term facility costs.

APPA Level of Service	1	2	3	4	5
Description	Showpiece Facility	Comprehensive Stewardship	Managed Care	Reactive Management	Crisis Response
Customer Service and Response Time				✓	
Customer Satisfaction			✓		
Preventive vs. Corrective Maintenance					✓
Maintenance Mix				✓	
Aesthetics, Interior					✓
Aesthetics, Exterior					✓
Aesthetics, Lighting			✓		
Service Efficiency			✓		
Building Systems' Reliability			✓		
Facility Maintenance Operating Budget as % of CRV					✓
Campus Average FCI				✓	
Average Score		Desired Condition		Current Position	

Figure 10 – Current PPS APPA Level of Service Assessment based on observed conditions.

The Mechanical Department is responsible for maintaining and servicing HVAC systems, old and new. These include older steam systems, constant volume air handlers, pneumatic controls, and the newer HVAC systems. As systems have been replaced, an HVAC skill set gap has developed among staff. This is predominant with new heat pump systems that require a greater expertise with controls and electro-mechanical systems. Maintenance staff who understand traditional steam systems do not understand how to work on the newer HVAC systems as buildings are upgraded or replaced. PPS struggles to recruit and retain qualified and efficient mechanical shop staff. To compensate for the lack of personnel, third-party HVAC contractors are utilized to maintain operations.

The Electrical Shop’s skill set meets the required needs. Staff respond to reactive work orders and complete their assigned Preventive Maintenance tasks.

The multi-craft shop team meets the required PPS skill set; however, the shop is understaffed compared to industry benchmarks. This shop operates on a corrective work order and reactionary basis to resolve facility issues as they arise. The team prioritizes safety and security in line with the PPS Warm, Safe, and Dry core principals through corrective action work orders assigned by the CMMS system. Due to staffing levels, this



reduces the time available to perform preventive maintenance.

3.04 Budget

Based on available data, in FY 21/22 PPS will have invested approximately \$84 million into facility maintenance. This includes refurbishment and replacement through maintenance, bond, and capital programs. The District’s Current Replacement Value (CRV) of the facilities portfolio is approximately \$4.2 billion. The 2019 APPA benchmark for annual investment into maintenance and refurbishment is 3% of CRV. This results in a \$126 million per year investment to meet the 2019 APPA Facility Maintenance Investment benchmark. Compared against 2019 APPA recommended funding levels, PPS has a funding gap of \$42 million per year.

3%
CRV Annually

APPA Facility
Maintenance
Investment
Benchmark

For maintenance specific funding, the PPS annual Facility Maintenance FY 21/22 budget is approximately \$12 million, including personnel and supplies (excluding Custodial, Grounds, Planning & Real Estate, Utilities, and Project Management & Construction). On a dollar per square foot-maintained basis, it was found that PPS’s budget is 28% or \$0.54/SF below the 2019 APPA recommended maintenance funding level. It is recommended that PPS increase the maintenance budget by \$0.54/SF to be in line with APPA standards. This would be a budget increase of \$4.8 million per year.

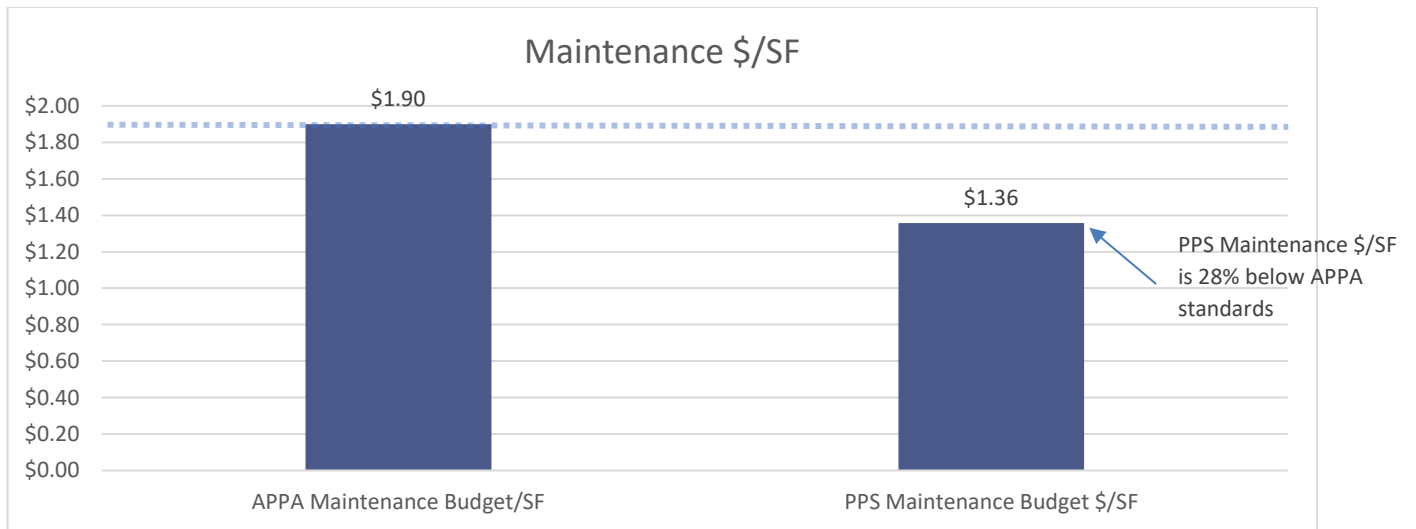


Figure 11 – PPS FY 21/22 budget compared to 2019 APPA recommended maintenance budget dollars per square foot. The 2019 APPA recommended budget dollars above has a location factor applied based on RS Means.

Performing preventive maintenance is critical to minimizing asset life cycle costs and extending asset life span. To illustrate the concept, below is relative life cycle cost information from the 2020 National Administration of State Facility Administrators (NASFA) study.

Figure 12 indicates the cost of maintaining the asset (red line), the yearly deferred maintenance cost if maintenance is not performed (the green line), and the escalating replacement cost (blue line). Where the deferred maintenance and replacement cost meet is the point where the investment required to operate the



asset costs more than it does to replace the asset. This occurs at 15 years if maintenance is not performed, reducing the typical asset lifespan. While the figure uses representative asset costs, it illustrates the concept of performing maintenance to avoid increasing yearly deferred maintenance costs.

This is important to note, as the current PPS maintenance investment has resulted in a deferred maintenance backlog increasing lifecycle costs. This is reflected in the repair projects identified in the PPS Capital Improvement Plan. If the current funding level is maintained, PPS’s building portfolio will degrade over time, and the deferred maintenance backlog will increase. The impact is substantial for new facilities, as illustrated. If maintenance is not performed, new assets will have a useful economic life of 15 years before they should be replaced.

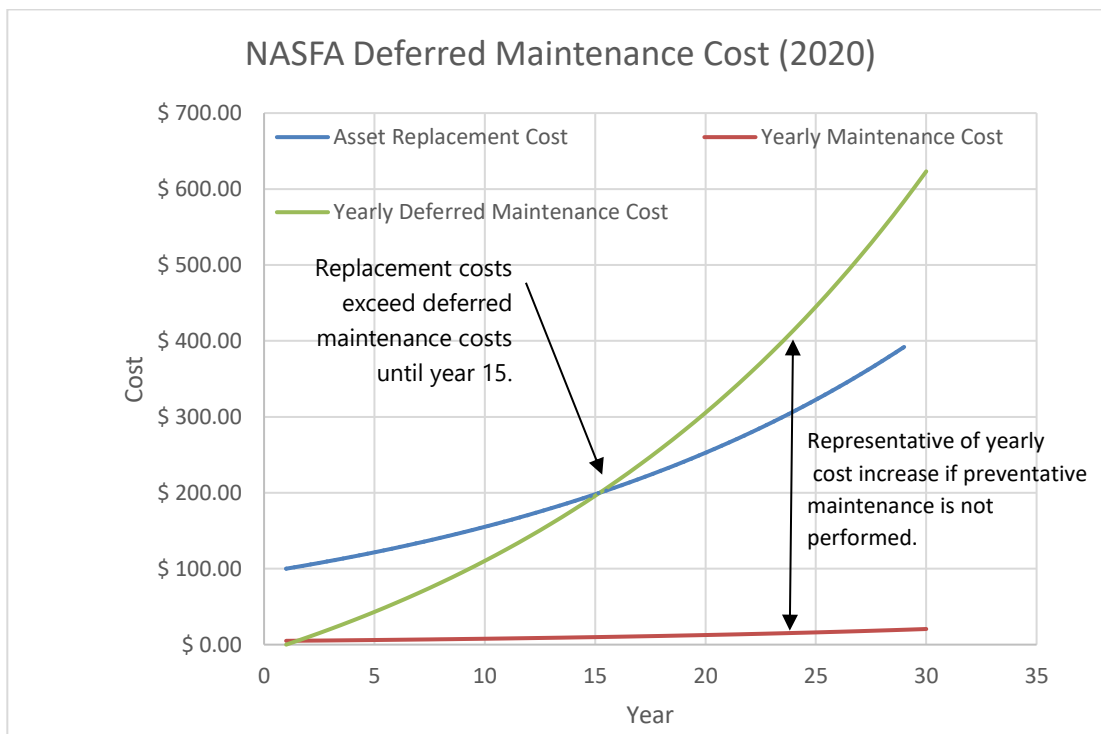


Figure 12 - Deferred maintenance cost impact data from NASFA 2020 Study. Note the increase in yearly deferred maintenance cost that occurs if maintenance is not performed on an asset. Note that at year 15, the cost of replacement equals the yearly cost of asset upkeep to maintain performance.

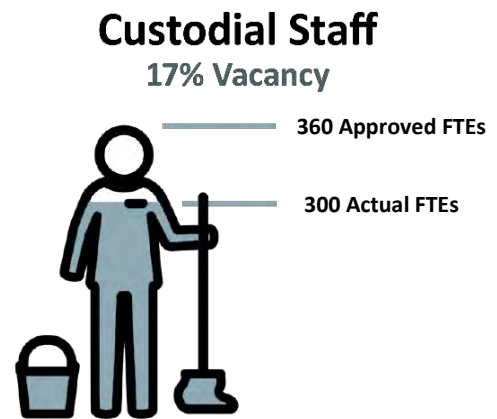


4.0 State of Custodial

4.01 People

As of calendar year Q2 2022, PPS employs **300 out of 360** approved custodial positions (including Facility Operations Managers (FOMs)). The custodial department is comprised of 5 FOMs, 2 facilities operations supervisors, and 293 custodians.

There have been recruitment challenges with obtaining qualified custodial staff with a 35% annual turnover rate. This increases training costs and reduces performance. Absenteeism is a challenge and based on 2009-2019 data custodial absenteeism averaged 12.4%. No data is available for absenteeism during COVID, but on the day of the interview, the department was scheduling coverage for 40 absences (scheduled and unscheduled absences - totaling 13.3% of their staff). Custodial is working to measure and manage absenteeism, and has succeeded in tracking absenteeism since 2009, and recently implemented a self-assessment cleaning checklist (using Fieldmaps and Survey123 programs). This checklist is being continually improved through increased staff adoption and utilization to yield more specific data.



4.02 Recommended Staffing Levels

To evaluate the approved FTE custodial staffing levels the Sazan team evaluated staffing against other school districts.

Staffing levels from similar K-12 school districts were reviewed as a custodial benchmark. Compared to school districts with a similar portfolio of older buildings, it was found that PPS’s GSF per custodian is within 3% of the average. This data set includes school districts such as Seattle Public Schools, Philadelphia SD, and Tacoma SD that have a similar portfolio of older school buildings in an urban setting.

Based on the comparison to peer schools, it is recommended that PPS retain the currently approved 360 custodial positions.



Figure 2 - Benchmark of square footage per custodian FTE. Note that PPS is within 3% of the average of peer districts that have a similar building portfolio. Districts with a more modern building portfolio such as North Clackamas or Gresham have reduced custodial staffing.

Why We are Not Benchmarking to APPA

While the 2019 APPA standards are an excellent benchmark for maintenance of facility systems, it is not an appropriate benchmark for custodial services for K-12 educational facilities. This is due to the 2019 APPA data being a compilation of survey data, exclusively of higher education organizations including universities and colleges. While these facilities have similar maintenance requirements, they have reduced custodial requirements due to the facilities serving a more mature age group. As such, the benchmark 2019 APPA data is not recommended for custodial benchmarking for PPS. However, it is recommended that an APPA audit be completed to develop a comprehensive staffing recommendation for the PPS Custodial Department.

APPA Custodial Standards

Levels of Cleaning



Level 1: Orderly Tidiness

This level establishes cleaning at the highest level. It was spotlessness developed for the corporate suite, the donated building, or the historical focal point. This is show-quality cleaning for that prime facility.

- Floors and base moldings shine and/or are bright and clean; colors are fresh. There is no buildup in corners or along walls.
- All vertical and horizontal surfaces have a freshly cleaned or polished appearance and have no accumulation of dust, dirt, marks, streaks, smudges, nor fingerprints.



- Washroom and shower tile and fixtures gleam and are odor free. Supplies are adequate.
- Trash containers and pencil sharpeners are empty, clean, and odor-free.

2

Level 2: Ordinary Tidiness

This level is the base upon which this study is established. Tidiness is the level at which cleaning should be maintained. Lower levels for washrooms, changing/locker rooms, and similar facilities are not acceptable.

- Floors and base moldings shine and/or are bright and clean. There is no buildup in corners or along walls, but there can be up to two days' worth of dirt, dust, stains, or streaks.
- All vertical and horizontal surfaces are clean, but marks, dust, smudges, and fingerprints may be noticeable with close observation.
- Washroom and shower tile and fixtures gleam and are odor-free. Supplies are adequate.
- Trash containers and pencil sharpeners are empty, clean, and odor-free.

Note: This is the recommended service level for the majority of PPS's facilities.

3

Level 3: Casual Inattention

This level reflects the first budget cut, or some other staffing- related inattention problem. It is a lowering of normal expectations. While not totally acceptable, it has yet to reach an unacceptable level of cleanliness.

- Floors are swept clean, but upon observation dust, dirt and stains, as well as a buildup of dirt, dust and/or floor finish in corners and along walls, can be seen.
- There are dull spots and/or matted carpet in walking lanes and streaks and splashes on base molding.
- All vertical and horizontal surfaces have obvious dust, dirt, marks, smudges, and fingerprints.
- Lamps all work and all fixtures are clean.
- Trash containers and pencil sharpeners are empty, clean, and odor-free.

4

Level 4: Moderate Dinginess

This level reflects the second budget cut, or some other significant staffing-related problem. Areas are becoming unacceptable. People begin to accept an environment lacking normal cleanliness. In fact, the facility constantly begins to look like it requires a good "spring cleaning."



- Floors are swept clean but are dull. Colors are dingy and there is an obvious buildup of dust, dirt and/or floor finish in corners and along walls. Molding is dull and contains streaks and splashes.
- All vertical and horizontal surfaces have conspicuous dust, dirt, smudges, fingerprints, and marks that will be difficult to remove.
- Less than 5 percent of lamps are burned out and fixtures are dingy.
- Trash containers and pencil sharpeners have old trash and shavings. They are stained and marked. Trash cans smell sour.



Level 5: Unkempt Neglect

This is the final and lowest level. The trucking industry would call this “just-in-time cleaning.” The facility is always dirty, with cleaning accomplished at an unacceptable level.

- Floors and carpets are dirty and have visible wear and/or pitting. Colors are faded and dingy and there is a conspicuous buildup of dirt, dust and/or floor finish in corners and along walls. Base molding is dirty, stained and streaked. Gum, stains, dirt dust balls and trash are broadcast.
- All vertical and horizontal surfaces have major accumulations of dust, dirt, smudges, and fingerprints, as well as damage. It is evident that no maintenance or cleaning is done on these surfaces.
- More than 5 percent of lamps are burned out and fixtures are dirty with dust balls and flies.
- Trash containers and pencil sharpeners overflow. They are stained and marked. Trash containers smell sour.

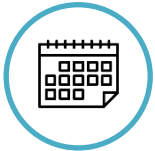
4.03 Performance

PPS custodians are dedicated to serving the PPS educational mission and providing value to the students. PPS’s custodial department has been working to collect data through the custodial inspection survey. The custodial inspection survey is a work in progress and PPS is working to collect information for 1 year to develop a baseline cleaning score. Figure 13 outlines the cadence of work completed by the PPS Custodial Department through Daily, Weekly, Quarterly, and Annual tasks.



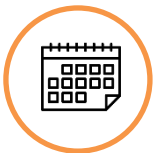
PPS has a goal of meeting APPA's Custodial Cleanliness level score of Level 2 – Ordinary Tidiness

Custodial Cleaning Frequency



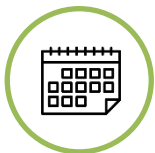
Daily

1. Waste/recycling containers empty
2. Touch points disinfected and wiped down
3. Cleaned write/marks/gum/ink on walls, window ledges and doors
4. Sinks and/or drinking foundations are cleaned
5. Dust mopped/vacuumed (Red Zones)
6. Spot mop (full mop weekly at a minimum)
7. Door and windows are secured
8. Refill all dispensers as needed
9. Mop spills
10. Auto-scrub halls daily (weekly at a minimum)
11. Check exit lights
12. Cafeteria & Kitchens
 - a. Sweep and mop
 - b. Remove garbage
 - c. Clean floor mats
 - d. Remove food debris from cafe floors



Weekly

1. Replaced burnt out light in ceiling, landing, or wall
2. Cleaned black marks, gum and/or ink marks on floor
3. Door glass and room entrances are clean
4. Doors, ledges, vents, and windowsill surfaces are dusted
5. Pencil sharpeners are emptied
6. Remove spider webs, debris from windowsills, ceilings, etc.
7. Mop floors
8. Clean glass in doors and classroom entrances
9. Cafeteria & Kitchens
10. Clean hood filters

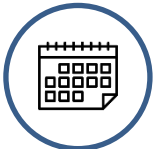


Monthly

1. Fire extinguisher inspections
2. Emergency Lighting backup test
3. Exit light illumination inspection
4. Fire Sprinkler System check
5. Playground and Exterior Grounds checks
6. Sidewalks

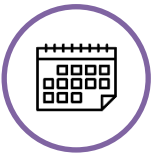


- 7. Blacktop
- 8. Fences
- 9. Gates



Annually

- 1. Punch and clean boiler breeches



As Needed

- 1. All other duties as time permits

Figure 14 – Daily, Weekly, Monthly, Annual, and As Needed Cleaning Checklist

4.04 Budget

PPS custodial budget is \$2.99 per SF, which is 71% of peer agencies with a K-12 average value of \$4.16 per SF. Due to the budget constraints, PPS is leveraging the cost savings from the staffing vacancies to fund tools, equipment, and emergency contracted help for the custodial team. It is recommended to increase PPS'S custodial budget to be in line with the K-12 averages. This would increase funding an additional \$1.17 per SF. Resulting in a requested yearly budget addition of \$10.5M respectively.

Custodial Budget per Gross Square Foot

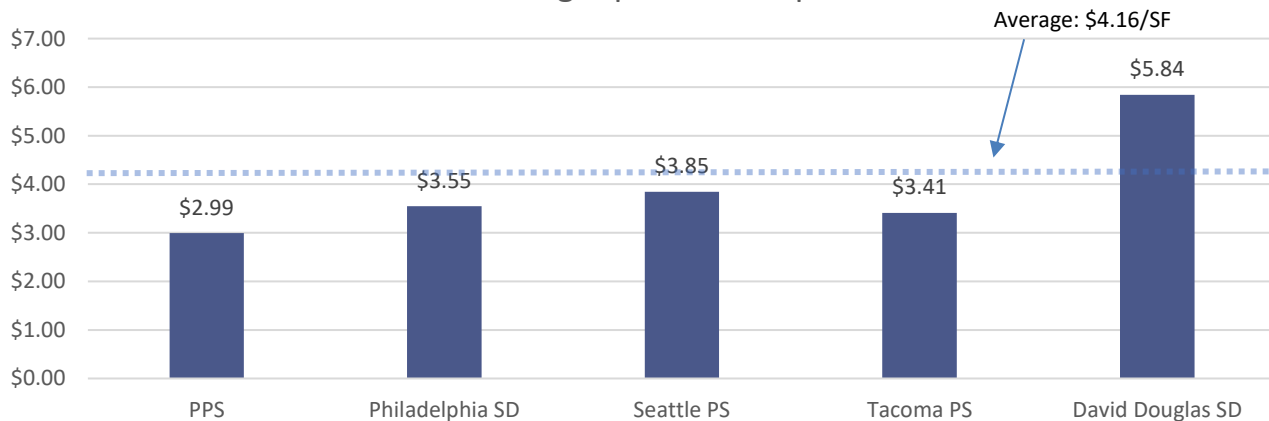


Figure 15 – Custodial budget per square foot. Budgets reflected above have a location factor applied.



5.0 State of Grounds

5.01 People

PPS Grounds department has 10 approved FTE positions with 9 positions staffed. These individuals provide the landscaping needs for 700 acres across the PPS portfolio, with one FTE per 70 acres.

5.02 Recommended Staffing Levels

To evaluate the approved FTE grounds staffing levels, the Sätzen team evaluated existing ground’s staffing levels against the 2019 APPA standards and peer school districts. Currently, PPS Grounds personnel are responsible for 70 acres per FTE. The 2019 APPA standards recommend one FTE per 18 acres of developed acreage. This staffing shortage results in reduced landscape maintenance at PPS’S facilities, corresponding to an APPA level 4 service level.



Figure 16 - Recommended grounds positions, increase staffing to 39 FTE.

It is recommended that PPS Grounds staffing be increased to align with APPA. This would result in a total of 39 grounds staff. While this is a large increase above current staffing levels, the recommended staffing correlates with other large urban school districts such as Seattle Public Schools and San Diego School District. See Figure 17 for a comparison of PPS staffing levels against APPA standards and other districts.

Acres Maintained per Approved Grounds FTE

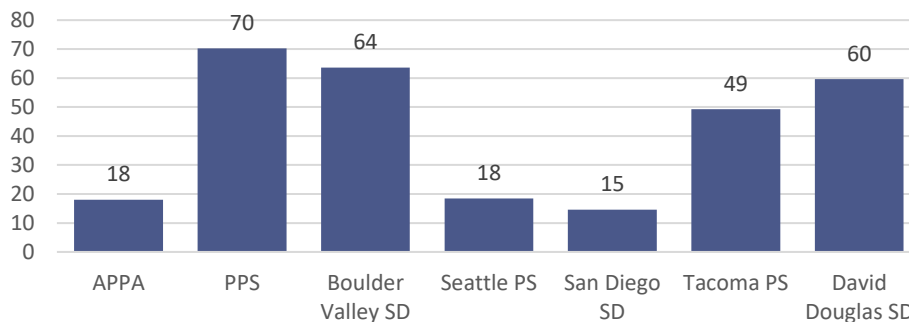


Figure 17 – Area of grounds-maintained vs FTE for surveyed entities. Per APPA the target is 18 Acres per grounds FTE.

5.03 Performance

In reviewing the number of acres each grounds FTE is responsible for, PPS was significantly higher than other organizations. Interviews with staff indicate that landscaping and grounds has traditionally been secondary to



the educational needs of PPS. Landscaping priorities align with PPS’s inclusivity mission by prioritizing CSI/TSI/Title 1 Schools. During the mowing season, mowing takes priority, leaving approximately 280 landscaping hours per person available per month to complete non-mowing work for 700 acres. This leaves 0.4 hours of landscaping for each acre.

With current staffing levels, only minimal maintenance is being performed equating to an APPA level 4 – Moderate to Low Level Maintenance service level. This service level is summarized as low-frequency mowing and weekly litter control with additional care given to weather damage or when safety is a concern. Specific items related to service levels and work tasks can be found in the 2021 PPS Grounds Staffing Allocation Report.

As PPS’s facilities are modernized, the revised landscaping needs must be accounted for with additional resources and budget for the grounds department. At the refurbished high schools and Kellogg Middle School, the grounds maintenance is performed by a maintenance contract for 2 years. After the initial two-year period, the grounds department takes over the maintenance of the landscaping and irrigation. When grounds assume responsibility for the maintenance at these sites, increased staffing levels will be required to maintain these facilities and align aesthetics with community expectations. The recommended staffing levels align with these increased responsibilities, which will bring the district into alignment with APPA level 2 service levels. This will result in an increased standard of care for all of PPS’s facilities.

5.04 Budget

In FY 2021 PPS’s grounds has a funding level of \$1,465 per acre, which is 45% below the average grounds budget per acre of comparable school districts surveyed. Based on local peer district’s, such as Seattle Public Schools, PPS’s funding levels should be increased to \$4,073 per developed acre. per year to achieve APPA level 2 service levels. This would result in a yearly grounds budget of \$2,851,100.

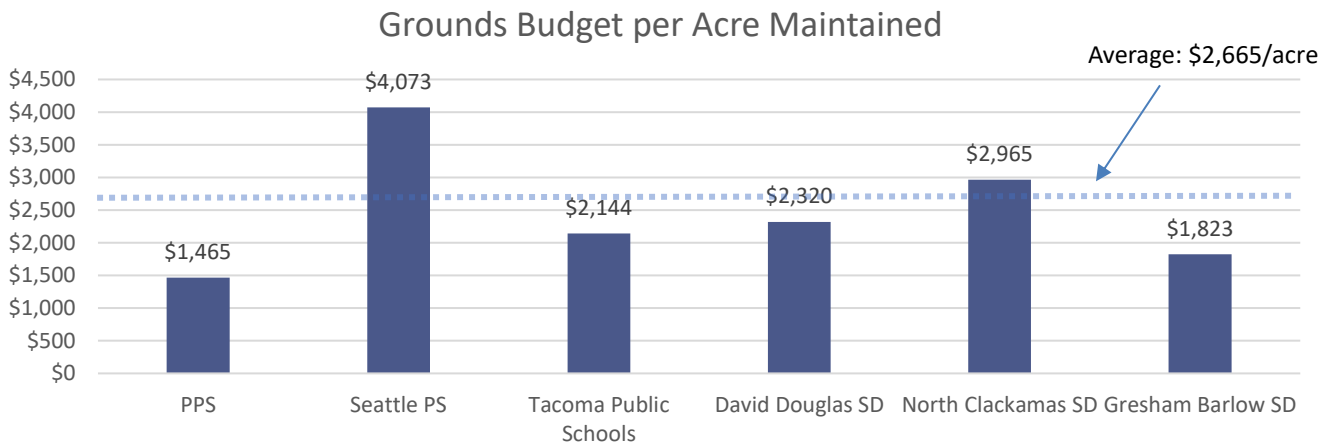


Figure 18 - PPS funding is 45% less than the average of surveyed districts. Budgets reflected above have a location factor applied.



6.0 Operations and Maintenance Support Tools and Processes

6.01 Computerized Maintenance Management System (CMMS)

People

The current CMMS system is provided by IBM Tririga with a third party mobile enabled application for field usage. During the development of the FMP, the system was updated and is now the most modern version of Tririga. The CMMS system has limited staff. The PPS team members that manage the CMMS, do so as ancillary duties and devote time as available. Based on our observations, the limited CMMS staffing impacts PPS’s ability to obtain quality performance metrics and data on their building portfolio.

Recommended Staffing Levels

It is recommended that a dedicated reliability engineer be added to manage the CMMS. This individual will optimize the maintenance program through the usage of the CMMS and creation of preventive, reliability-centered maintenance, and predictive maintenance tasks to minimize lifecycle costs of PPS’s assets.

Performance

The PPS CMMS is a robust tool that is underutilized due to a lack of staffing and resources, resulting in reduced facility stewardship. The CMMS system is predominantly used to create corrective maintenance work orders and some preventive maintenance. Work orders are linked to location but do not contain time or resource allocations to predict maintenance costs.

Work orders are assigned to individuals for time tracking however there is an ongoing challenge of closing them out. The status of work orders, as of December 2021, indicates that there are several thousand open work orders that are completed but are not properly closed. By closing work orders and evaluating the number of assigned vs. closed tasks, PPS can evaluate and have a data driven tool to manage maintenance staffing levels and the associated levels of service.

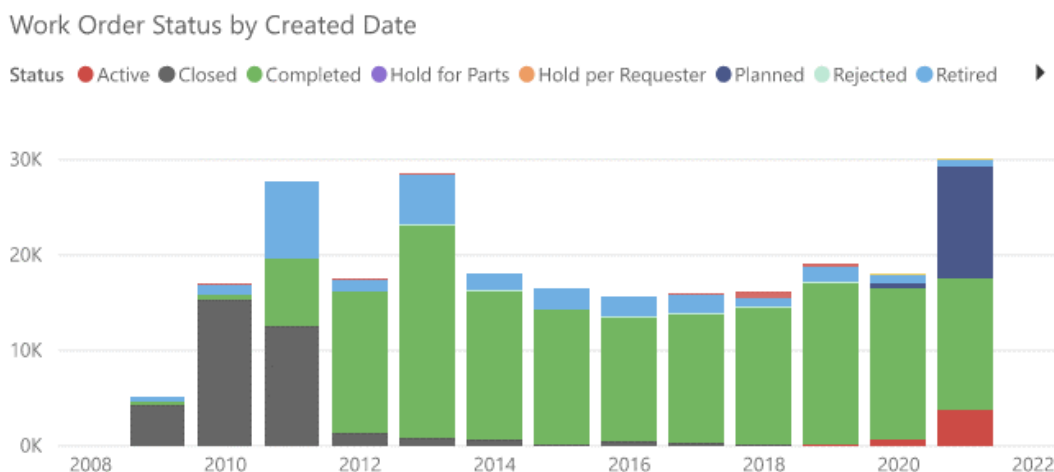


Figure 19 - figure showing the number of work orders completed but not closed within the CMMS. The proper closing and resolution of work orders is a powerful tool to for informed decision making.



Data within the CMMS is not actively maintained to PPS's desired standards. Existing data sources, including the 2020 facility condition assessment, inventory data, manufacturer information, and expected budgets of maintenance projects are not consistently integrated or utilized in the CMMS. There are few established workflow processes which complicates onboarding and process improvement.

Existing preventive maintenance schedules were incomplete across the PPS building portfolio. Newer buildings were not observed to have preventive maintenance schedules within the CMMS. Within the CMMS, there is limited cost and performance data indicating work orders status and completion and limited spare parts information. The cumulative impact of these items reduces the effectiveness of the CMMS system and limits the amount of reliable data metrics that PPS can utilize for informed decision making.

6.02 Capital Planning & Operations and Maintenance

People

There are no dedicated O&M staff members to assist with capital project delivery.

Recommended Staffing Levels

PPS has a robust and well-managed Capital Planning and delivery program. The study of the capital program is outside the scope of this project. However, throughout the development of the FMP, it is recommended that PPS should employ a team of resident engineers to assist with coordination between the capital program and O&M. This would include a dedicated mechanical engineer, electrical engineer, and a multi-discipline Civil/Structural/Architectural resource. There is a write up outlining this recommendation in the supplemental information.

Performance

PPS has a Capital Program Oversight Committee (CPOC). The Facilities Director is a heavy contributor and participates in capital project prioritization from an O&M perspective. This is a best practice. CPOC is helping to break down decision making silos within the organization. Based on industry trends, new building and renovation projects tend to prioritize aesthetics and lower initial cost over the durability of systems and reduced life cycle costs. PPS desires to change this dynamic with increased engagement with PPS O&M staff and a renewed focus on systems being designed to reduce PPS's total cost of ownership.

6.03 Energy and Sustainability Efficiency Program

People

The PPS Energy and Sustainability group consists of a senior manager and a sustainability program manager. The in-house team is complemented by contractors and consultants.

Recommend Staffing Levels

A detailed review of the Energy and Sustainability staffing levels is outside of project scope; however, it is recommended that an in-house retro-commissioning program, which will directly impact PPS energy usage,



be implemented within PPS. This group can reside in either the Energy and Sustainability group or as a part of the maintenance department.

Performance

Most of PPS facilities are aged, with 125 of the 177-building inventory built before 1960. Due to the simplicity of the systems and the ongoing energy work, PPS facilities are performing reasonably well. The energy program’s ongoing efforts and existing systems deliver persistent performance. Most PPS facilities do not have air-conditioning and utilize steam boilers. While steam is considered less efficient than modern systems, the steam systems have a consistent energy usage over time requiring minimal maintenance. This is complemented by the districtwide controls endeavor that enables and disables the boilers based on a schedule as an energy savings measure.

In April 2022, the district adopted the PPS Climate Crisis Response, Climate Justice, and Sustainable Practices Policy to combat the effects of climate change. Within this policy, “PPS commits to reducing its greenhouse gas emissions by 50 percent by 2030, using the 2018-2019 school year baseline, and reach net zero emissions by 2040”. This endeavor will require the widespread renovation of HVAC systems. It is recommended a Mechanical Master Plan be performed to guide this effort.

Distribution of Building Type by Year Constructed

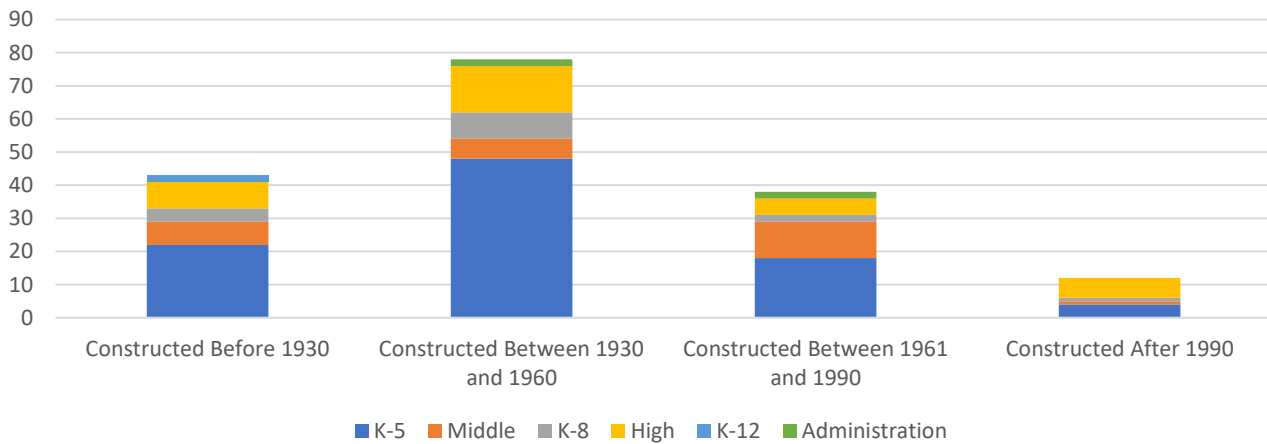


Figure 20 – Distribution of building type by year constructed.



Building Age	PPS Avg. '20-'21 EUI	Avg '20-'21 EUI with Steam Systems
Constructed Before 1930	57	58
Constructed Between 1930 and 1960	58	62
Constructed Between 1961 and 1990	53	56
Constructed After 1990	46	59

Figure 21 – Energy Utilization Index (EUI) by Building Age, it did not appear steam is significantly contributing to overall facility EUI unless that facility was constructed after 1990. Values in kBtu/SF.

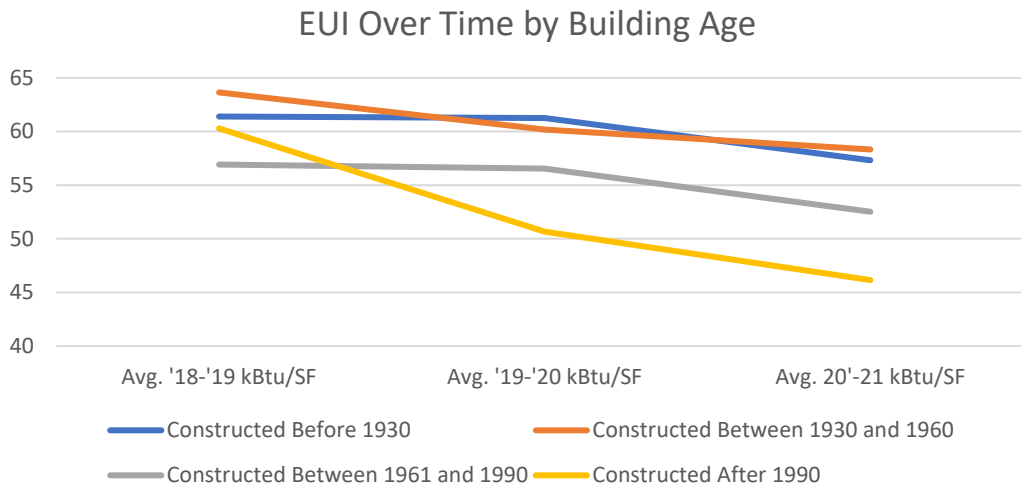


Figure 22 – EUI over time broken out by building age. Note the downward energy usage trend.

As a result of the energy group and modernization program, PPS portfolio Energy Utilization Index (EUI) on average is only 7.5 KBTU/SF higher than Washington State’s newly mandated Clean Building Act (CBA) energy efficiency goals for K-12 schools. While the CBA applies only to Washington facilities, it provides a useful benchmark to measure PPS’s energy efficiency efforts. Based on the data analyzed PPS’s building portfolio is only 13% less efficient than the stringent Clean Building Act requirements. Considering the age of PPS’s inventory, and the systems, this is a significant win for PPS that justifies the energy program.



School Type Use	PPS Avg. '18-'19 EUI	PPS Avg. '19-'20 EUI	PPS Avg. '20-'21 EUI	WA CBA EUI Targets ¹	'20-'21 EUI to CBA % Difference
K-5	64	64	60	49	+19%
Middle	54	57	55	49	+11%
K-8	59	53	55	49	+11%
High	68	57	48	48	0%
K-12	69	79	58	49	+16%
Administration	77	69	62	49	+21%
Average	65	63	56	49	+13%

Figure 23 – EUI over time by Facility Type and Washington Clean Building Act EUI Targets. Note that PPS’s building EUIs (on average) are only 7.5 KBTU/SF or +13% higher compared to recently mandated energy targets within Washington State. Note that the modernized high schools are just below the recent CBA energy benchmark being applied in Washington. Values in kBtu/SF.

6.04 Facility Condition Assessment (FCA)

People

The PPS FCA program is outsourced to contractors who perform the facility survey work with internal oversight by PPS.

Recommended Staffing Levels

No FCA specific staff are recommended as part of the FMP. However, it is expected that the recommended Reliability Engineer position within PPS (See supplemental information recommendations) would assist with determining and extending asset lifespan. This individual would assist with categorizing and prioritizing system condition based on the measured reliability of the asset, the consequence of failure, and the wear and tear on equipment. This data coupled with the age-based condition ratings would provide a robust prioritization framework for the district.

Asset Inventory Condition Breakdown

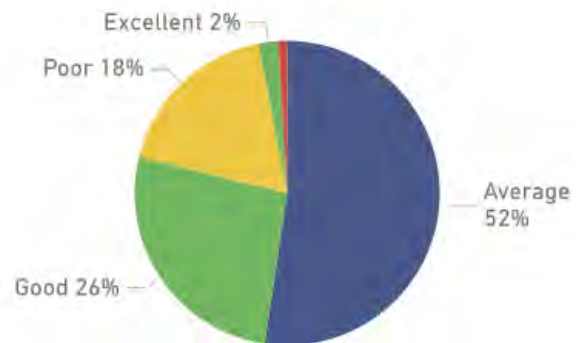


Figure 24 - Count of Equipment by Condition.

Performance

The 2020 FCA Report prepared by AECOM identified nearly 15,000 assets and more than 7,000 opportunities/deficiencies. Approximately 20% of assets are in Poor or Failing condition based on the asset age-related condition rating. The Facility Condition Index (FCI) was used as the metric for determining overall facility condition. FCI is calculated as a ratio of the building’s maintenance costs (total

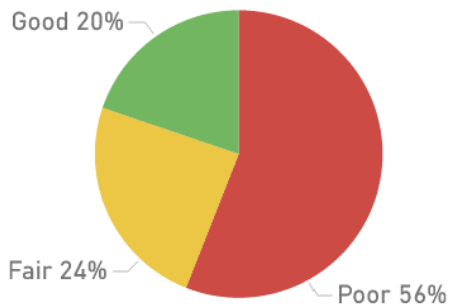
¹ Data pulled from the following website with Climate Zone 4C: <https://www.commerce.wa.gov/wp-content/uploads/2020/11/Combined-CR-103-rules-and-concise-explanatory-statement.pdf#page=39>



opportunities/deficiencies) relative to the building’s replacement cost. The district’s average FCI scores was 0.13 or “Poor” condition.

Based on observations of collected data, it appears that cost information was derived using RS Means; while RS Means is a useful high level estimating tool, it is recommended that a local cost estimating firm utilizing recent cost data from prior projects be utilized for future FCA studies.

Facility Condition Index by GSF



FCI	DESCRIPTION
0.01 to 0.05	GOOD
> 0.05 to 0.1	FAIR
> 0.1 to 0.3	POOR
> 0.3 to 1	CRITICAL

Figure 25 - Facility Condition Index by GSF per 2020 FCA report.

6.05 Asset Management Maturity

People

PPS asset management program is currently comprised of an individual, Senior Manager of Capital Planning, performing asset management as an ancillary duty.

Recommended Staffing Level

While asset management staffing levels are outside of the scope of this study, it is recommended that an asset management lead be acquired. Historically this was the Senior Manager of Capital Planning (or the replacement individual). This individual should continue providing asset management services and oversight for the program if the individual is qualified.

Performance

During the development of the FMP an initial assessment of PPS’s asset management was completed based on observations. While a full assessment is outside the scope of this project, the initial asset management maturity level is a measured by which agencies can evaluate their progress on the asset management journey. The assessment evaluates multiple categories based on the team’s observations. Management categories are broken out by a 1-5 rating scale, with 1 (innocent) being the lowest score and 5 (excellent) being the highest.

Based on the team’s analysis, PPS has an asset management maturity level between 2 (aware) and 3 (developing). This means PPS is aware that asset management exists and has a developing program moving



toward a best practice maturity level.

ASSET MANAGEMENT MATURITY	1	2	3	4	5
Topical Area	Innocent	Aware	Developing	Competent	Excellent
Organizational Adoption			✓		
Asset Management Policy			✓		
Asset Management Strategy and Objectives		✓			
Strategic Plan			✓		
Asset Definition		✓			
Asset Naming Convention		✓			
Asset Inventory			✓		
Analysis and Reporting			✓		
Risks			✓		
Asset Conditions			✓		
People / Roles and Responsibilities			✓		
Stakeholder expectations			✓		
Resources			✓		
Asset-Related Decision Making			✓		
Preventative Maintenance Schedule		✓			
Maintenance Strategy		✓			
Average Score			Current Position (2.68)	Desired Condition (4+)	

Figure 26 - PPS current and desired asset management maturity.

7.0 FMP Recommendations and Roadmap

The below FMP recommendations were developed by the project team for considered for implementation. While not all recommendations should be implemented, each recommendation should be considered and evaluated against PPS’s current and future business needs. A detailed workbook is available for the complex recommendations and can be found in Supplemental Information J. The workbooks will help PPS understand the underlying logic and decision-making criteria that the project team considered for each recommendation. This in turn will assist the district in the evaluation and implementation process. The recommendations for consideration are sorted by applicable department in this document. Note that there is overlap between categories. An Excel version of the below list can be found in Supplemental Information I.

The recommendations have been prioritized using the team’s engineering judgment. This includes priority by year based on a five-year timeline and an estimate of the required implementation level of effort. If desired, the initial evaluation criteria can be further modified by PPS, to incorporate metrics such as total or annual cost, return on investment, diversity equity and inclusion, or other factors. An overview of the recommended implementation framework is provided in section 8.0 of this report.



Implementation Plan Priority (High, Medium, Low)	
Priority	Year of Project Completion
High	2023 to 2024
Medium	2025 to 2026
Low	2026 to 2027

Figure 27 – FMP recommendation priority timeline

Implementation Relative Level of Effort (High, Medium, Low)	
Level of Effort	Description
Challenging	1 year + of implementation effort or \$250k+ consultant cost
Medium	6 months to 1 year implementation effort, or \$50k to \$250k consultant cost
Easy	Less than 6 months effort, less than \$50k consultant cost

Figure 28 – FMP recommendation implementation relative level of effort

7.01 Maintenance Organization Future State

PPS is a high performing organization challenged with aged facilities and staffing shortages. The district desires to enhance facility stewardship and optimize the maintenance organization. As a long-term goal, the district desires to achieve the APPA Level 2, Comprehensive Stewardship Level of Service. This will require additional funding, resources, and staffing. One key recommendation, noted throughout this document, is to increase maintenance staffing levels to align with the 2019 APPA and 2022 IFMA standards. This would increase maintenance staffing to 113 full time maintenance employees, not including supervisors or foreman.



APPA Level of Service	1	2	3	4	5
Description	Showpiece Facility	Comprehensive Stewardship	Managed Care	Reactive Management	Crisis Response
Customer Service and Response Time				✓	
Customer Satisfaction			✓		
Preventive vs. Corrective Maintenance					✓
Maintenance Mix				✓	
Aesthetics, Interior					✓
Aesthetics, Exterior					✓
Aesthetics, Lighting			✓		
Service Efficiency			✓		
Building Systems' Reliability			✓		
Facility Maintenance Operating Budget as % of CRV					✓
Campus Average FCI				✓	
Average Score		Desired Condition		Current Position	

Figure 29 - PPS Desired and Future Level of Service per APPA definition

Maintenance Organization Recommendations:

The below twenty-four maintenance recommendations were developed based on the value planning methodology to achieve the desired future state. The recommendations have been reviewed with the project team for feasibility. Each recommendation has a unique identifier with the facilities function that it enhances. For complex recommendations, a detailed workbook is contained in Supplemental Information J. This workbook provides insight and a roadmap for the implementation team to understand the logic behind the recommendation. This will help PPS successfully drive implementation. The proposed recommendations for consideration by PPS include:



Figure 30 - FMP recommended staffing levels.



Maintenance Recommendations				
ID *Workbook Available	Related Report Section	Recommendation Description	Implementation Plan Priority	Implementation Relative Level of Effort
MP-72*	Maintenance	Create maintenance KPIs and service levels.	High	Challenging
PA-136	Maintenance	Review and develop comprehensive Preventive maintenance program for all facilities. Use available data where feasible.	High	Challenging
PA-137	Maintenance	Prioritize PM/Maintenance on critical assets.	High	Easy
PI-147*	Maintenance	Onboard resident engineers to bridge operations and capital projects.	High	Medium
PM-58	Maintenance	Recommend performing detailed investigation of air handlers for remaining life and ability to rebuild or replace.	High	Easy
PM-61	Maintenance	Recommend linking building maintenance to sustainability effort.	High	Easy
S-116*	Maintenance	Right size maintenance staffing to meet maintenance needs.	High	Easy
T-23	Maintenance	Recommend creating building log at each facility to share information in field accessible format.	High	Easy
T-28*	Maintenance	Create Retro Commissioning (RCx) program for students and apprenticeship programs.	High	Medium
T-32	Maintenance	Create an in-house high-tech training program for building control systems for the operators to learn.	High	Easy



A-142	Maintenance	Increase opportunities for building automation to reduce maintenance personnel responsibilities.	Low	Medium
PA-140	Maintenance	Make justifiable decisions for run to failure on buildings and systems that are slated for replacement in capital plan.	Low	Medium
PM-60	Maintenance	Consider having PPS employees take their vehicles home in order to free up driving time back to Dixon building. (1 to 2 hours a day of time) Potential risk and liability to PPS. Vehicles already have GPS tracker.	Low	Easy
T-24	Maintenance	Consider having retiring employees provide on-call technical support during turn over as part of retirement program for 6 months.	Low	Easy
T-27	Maintenance	Recommend re-evaluating and updating roles and responsibilities for O&M staff to focus on priority work tasks such as preventive maintenance, roof repair, etc.	Low	Medium
MP-73	Maintenance	Tie functionality of spaces to maintenance service levels.	Medium	Challenging
MP-76*	Maintenance	Optimize HVAC PM plan and staffing.	Medium	Challenging
PA-138	Maintenance	Consider creating a CUB (Civic Use of Building) team to discuss how facilities are being used. For example, the district was using certain buildings as cooling centers this usage will have a cost impact on current and future buildings.	Medium	Challenging
PM-54*	Maintenance	Reimplement rover system for preventive maintenance.	Medium	Challenging



PM-63	Maintenance	Consider hiring and implementing a Preventive Maintenance (PM) team.	Medium	Easy
T-22*	Maintenance	Create O&M succession plan.	Medium	Easy
T-25	Maintenance	Create mentorship program to match up new employees and retiring employees to encourage knowledge sharing.	Medium	Medium
EE-46	Maintenance	Document PPS maintenance success stories in survey. Use as communication tool.	Medium	Medium
SE-101	Maintenance	Develop union apprenticeship program, to promote staff retention similar to City of Portland, Port of Portland. (Not recommended due to union resistance)	Not Recommended	Not Recommended

7.02 Custodial Future State

PPS Custodial staffing levels and recruitment challenges are impacting service levels. It is recommended that an APPA audit be completed to develop a comprehensive staffing recommendation for the PPS Custodial Department. The long-term goal is to fully staff custodial services to APPA level 2 across the portfolio. This goal will be enhanced through the below performance enhancement recommendations.

Custodial Recommendations:

The ten custodial recommendations shown below were developed based on the value planning methodology to achieve the desired future state. The recommendations have been reviewed with the project team for feasibility. For complex recommendations, a detailed workbook is contained in the Supplemental Information. This workbook provides insight and a roadmap for the implementation team to understand the logic behind the recommendation. This will help PPS successfully drive implementation. The proposed custodial recommendations include:

Custodial Staff

17% Vacancy

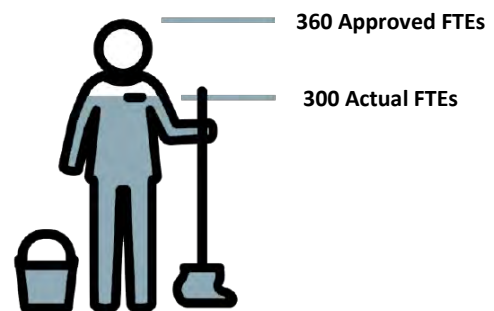


Figure 31– Approved and Actual FTE



Custodial Recommendations

ID * Workbook Available	Related Report Section	Recommendation Description	Implementation Plan Priority	Implementation Relative Level of Effort
S-127*	Custodial	Enhance custodial recruitment and promotional practices to enhance staffing.	High	Challenging
CF-1	Custodial	Increase custodial funding to meet average K-12 value of \$4.16 per SF. This would increase available custodial funds by \$1.17 per SF.	High	Challenging
A-143	Custodial	Spend money to automate floor scrubbers to reduce labor in the future.	Low	Medium
S-118	Custodial	Implement nighttime supervision to compliment FOMs working during the day.	Low	Easy
S-125	Custodial	Reform the promotion process. Hiring all position levels external & internally rather than just internally.	Low	Challenging
DQ-2*	Custodial	Modify standards to require completion of comprehensive Custodial Services Checklists monthly.	Medium	Medium
MP-79*	Custodial	Prioritize custodial activities for each space to ensure the critical tasks are accomplished.	Medium	Challenging
S-117	Custodial	Reform absenteeism policy to reduce and mitigate the amount of unplanned callouts.	Medium	Medium
S-126	Custodial	Enhance testing of custodial candidates to obtain more qualified employees.	Medium	Easy



T-26	Custodial	Create management training program to give custodians enhanced skillset as they move up.	Medium	Challenging
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7.03 Grounds Future State

The PPS Grounds department are understaffed compared to APPA models. It is recommended that PPS increase the Grounds FTE to 39 in line with the APPA level 2 service level. This staffing level will align PPS’s grounds staffing with the other urban school districts surveyed as part of the study. The below recommendations for consideration will help optimize the department to meet the desired future state.



Figure 32- Recommended grounds positions, increase staffing to 39 FTE.

Grounds Recommendations:

The two grounds recommendations shown below were developed based on the value planning methodology to achieve the desired future state. The recommendations have been reviewed with the project team for feasibility. Each recommendation has a unique identifier with the facilities function that it enhances. For complex recommendations, a detailed workbook is contained in the Supplemental Information. This workbook provides insight and a roadmap for the implementation team to understand the logic behind the recommendation. This will help PPS successfully drive implementation. The recommendations include:

Grounds Recommendations				
ID *Workbook Available	Related Report Section	Recommendation Description	Implementation Plan Priority	Implementation Relative Level of Effort
CP-163	Grounds	Enhance existing architectural standards to right size landscaping to the available staffing and budget levels of the grounds department.	Medium	Challenging
GS-1	Grounds	Increase grounds staffing to increase grounds coverage. Increase staffing levels to 18 acres per FTE in line with APPA.	High	Challenging



7.04 Budget Future State

PPS desires to fund PPS O&M at the APPA recommended level. This funding would enhance the maintenance program’s ability to deliver Safe, Dry, Warm facilities and maintain bond-funded facilities. This will result in reduced life cycle costs by extending the life of assets and reducing future replacement costs. PPS O&M staff understand that proper O&M funding will deliver value to the students and reduce PPS’s future expenses. It is recommended PPS increase the maintenance budget by \$0.54/SF to be in line with APPA standards. This would be a budget increase of \$4.8 million per year.

Budget Recommendations:

To meet the desired APPA levels of service, the below budget recommendations should be considered. The six budget recommendations shown below were developed based on the value planning methodology to achieve the desired future state. The recommendations have been reviewed with the project team for feasibility. Each recommendation has a unique identifier with the facilities function that it enhances. For complex recommendations, a detailed workbook is contained in the Supplemental Information. This workbook provides insight and a roadmap for the implementation team to understand the logic behind the recommendation. This will help PPS successfully drive implementation. The budget recommendations include:

Budget Recommendations				
ID *Workbook Available	Related Report Section	Recommendation Description	Implementation Plan Priority	Implementation Relative Level of Effort
BF-106*	Budget	Increase budget appropriation for maintenance to 3% of Gross Building Replacement Value (GRV).	High	Medium
CP-173*	Budget	Propose to change Oregon property tax structure to allow Capital Funds (400s) to dedicate a portion of proceeds to operations and maintenance.	High	Challenging
EE-43	Budget	Empower schools to perform non-traditional fund raising to obtain money (basketball entry, concert, etc.).	High	Challenging
SE-151	Budget	Return funds saved by energy efficiency to the maintenance and operations fund.	Low	Medium



EE-42	Budget	Consider aligning community expectations for school aesthetics with available budget and maintenance resources. Use as starting point for community improvement via funding / volunteering.	Medium	Challenging
PM-52	Budget	Utilize capital planning dollars to fund building maintenance through workflow process, asset performance, maintenance spending, asset condition.	Medium	Challenging

7.05 CMMS Future State

PPS desires to enhance their current CMMS and asset management tool set. During the FMP development PPS upgraded the CMMS to the most recent version. In addition, the district utilizes a mobile application for workorder management. This places PPS at a strategic advantage, as outdated maintenance management systems are a common roadblock to facilities management success.

CMMS Recommendations:

To optimize PPS’s CMMS, the below budget recommendations should be considered. The five CMMS recommendations shown below were developed based on the value planning methodology to achieve the desired future state. The recommendations have been reviewed with the project team for feasibility. Each recommendation has a unique identifier within the facilities function that it enhances. For complex recommendations, a detailed workbook is contained in the Supplemental Information. This workbook provides insight and a roadmap for the implementation team to understand the logic behind the recommendation. This will help PPS successfully drive implementation. The CMMS recommendations include:



CMMS Recommendations				
ID *Workbook Available	Related Report Section	Recommendation Description	Implementation Plan Priority	Implementation Relative Level of Effort
DQ-4*	CMMS	Incorporate estimated maintenance dollars and hours for corrective and preventive maintenance tasks in the CMMS system.	High	Medium
DQ-5	CMMS	Create section in Tririga work orders to distinguish if the work is being completed by contractors or in-house staff.	High	Medium
PM-50*	CMMS	Optimize distribution of work orders by similar locations to minimize travel.	Low	Challenging
DU-171*	CMMS	Tie CMMS to finance including maintenance spending, spare parts, inventory, maintenance, contractor costs, etc.	Medium	Challenging
PM-59	CMMS	Review maintenance parts ordering process and determine if there are efficiencies in altering the existing ordering process.	Medium	Challenging

7.06 Capital Planning & Operations and Maintenance Coordination Future State

PPS has a mature and well-developed capital planning and delivery program. This program successfully executes billions of dollars of modernization projects across the district. To build upon this success, PPS leadership desires to enhance O&M engagement in the capital project delivery program. This is a proactive strategy by PPS to drive down the total cost of ownership and increase facilities stewardship.

While a detailed view of the PPS capital program is outside the scope of this project, the below recommendations will assist PPS in reducing the total cost of facilities ownership throughout the district. The recommendations for consideration should be viewed as a long-term strategy. When implemented, these recommendations will enhance facility stewardship, improve educational outcomes, and reduce the total cost of ownership. This is important, as the future cost to maintain the PPS portfolio is directly dependent on the design decisions made during the ongoing modernization programs.

Capital Planning & Operations and Maintenance Coordination Recommendations:

The thirteen capital planning recommendations shown below were developed based on the value planning



methodology to achieve the desired future state. The recommendations have been reviewed with the project team for feasibility. The below capital planning recommendations each have a unique identifier with the facilities function that it enhances. For complex recommendations, a detailed workbook is contained in the Supplemental Information. This workbook provides insight and a roadmap for the implementation team to understand the logic behind the recommendation. This will help PPS successfully drive implementation. The capital planning recommendations include:

Capital Recommendations				
ID * Workbook Available	Related Report Section	Recommendation Description	Implementation Plan Priority	Implementation Relative Level of Effort
BF-107	Capital Planning	Create standardization of systems for new and existing buildings. If portfolio of similar systems needs to be replaced, standardize product / manufacturer for economies of scale for purchase and maintenance.	High	Medium
BF-110*	Capital Planning	Include Facilities in the process of approving alternates to PPS's Technical Design and Construction Standards to provide PPS with optimum life cycle performance.	High	Easy
CP-156*	Capital Planning	Have design teams complete a maintenance schedule.	High	Challenging
CP-160*	Capital Planning	Rewrite PPS HVAC design standards to prioritize more industrial systems and life cycle cost to reduce total cost of ownership.	High	Easy
CP-165	Capital Planning	Implement design standards for finish materials to reduce vandalism and graffiti removal.	High	Medium
DQ-13	Capital Planning	Integrate asset inventory data into commissioning process.	High	Medium
PM-57*	Capital Planning	Have a HVAC specific replacement contract vehicle to streamline project development and execution.	High	Medium



QC-153*	Capital Planning	Enhance construction QC program, especially with mechanical systems and envelope.	High	Challenging
QC-154*	Capital Planning	Perform 3rd party review of capital projects.	High	Easy
QC-155*	Capital Planning	Develop a protocol for including Maintenance staff in the capital project development process.	High	Easy
T-18	Capital Planning	Develop process for building turn over training of capital projects to PPS facilities.	High	Challenging
S-146	Capital Planning	Develop MEP master plan for district. This would investigate a comprehensive MEP replacement strategy across the district to comply with the 2040 sustainability goals.	High	Challenging
T-21	Capital Planning	Recommend PPS engage A4LE and provide informational presentations to communicate district long-term operations and design challenges. This will help educate industry partners on district needs.	Medium	Easy

7.07 Energy Future State

The continued success of the PPS energy program is impacted by the O&M and Capital Project delivery program. As these programs are optimized, the ability to save energy and reduce life cycle costs will be enhanced. The recently adopted sustainability goals and the ongoing modernization program provide an opportunity to positively impact the long-term energy usage of the portfolio. To meet the adopted sustainability goals, the PPS portfolio will need to be transitioned off fossil fuels. Best practices dictate that this process must be thoroughly planned, and that new technology such as alternative fuels, carbon capture, and carbon neutral fuel sources be considered as the technology matures. It is recommended that a mechanical master plan be developed to guide this process.

Energy Recommendations:

The four energy recommendations shown below were developed based on the value planning methodology to achieve the desired future state. The recommendations have been reviewed with the project team for feasibility. The below energy recommendations each have a unique identifier with the facilities function that it enhances. For complex recommendations, a detailed workbook is contained in the Supplemental Information.



This workbook provides insight and a roadmap for the implementation team to understand the logic behind the recommendation. This will help PPS successfully drive implementation. Note there are recommended measures in other sections that effect the energy program, however the specific energy recommendations include:

Energy Recommendations				
ID *Workbook Available	Related Report Section	Recommendation Description	Implementation Plan Priority	Implementation Relative Level of Effort
A-144	Energy	Consider piloting continuous commissioning AI tool set on existing building.	Low	High
BF-112	Energy	Revamp the sustainability criteria to encompass more than energy goals. For example: system selections based on system life, future replacement costs, reduced refrigerant, and future replacement costs.	Medium	Medium
SU-152*	Energy	PPS purchase renewable natural gas instead of normal natural gas for progress toward net zero. Could be through NW Natural or an association with PDX water bureau.	High	Challenging
SU-149*	Energy	Implement cogeneration strategy utilizing renewable natural gas as an interim solution to meet PPS sustainability and HVAC goals on upcoming retrofits.	Medium	Easy

7.08 Facility Condition Assessment (FCA) Future State

An optimized FCA process is crucial to enabling PPS goals for integrated decision making across the district. The district desires that all FCA data be of high quality and integrated into CMMS for future use. This includes facilitation of integrated decision making for capital planning that is dependent on asset inventory and condition data.

Facility Condition Assessment (FCA) Recommendations:

The five FCA recommendations shown below were developed based on the value planning methodology to achieve the desired future state. The recommendations have been reviewed with the project team for



feasibility. The below FCA recommendations each have a unique identifier identifying the facilities function that it enhances. For complex recommendations, a detailed workbook is contained in the Supplemental Information. This workbook provides insight and a roadmap for the implementation team to understand the logic behind the recommendation. This will help PPS successfully drive implementation. The specific FCA recommendations include:

FCA Recommendations				
ID	Related Report Section	Recommendation Description	Implementation Plan Priority	Implementation Relative Level of Effort
PM-62	FCA	Create alignment and consistency between FCA prioritization and Tririga (ex. FCA currently uses 1-5, Tririga currently uses Hi, med, low)	High	Easy
CP-170	FCA	Use local professional cost consultant and PPS pricing for FCAs in lieu of generic RS Means cost data.	Low	Medium
DQ-1	FCA	Use existing inventory and update as maintenance is performed. Use FCA Inventory as a starting point for linking to preventive maintenance. Update as maintenance is conducted.	Low	Challenging
DQ-11	FCA	Determine an appropriate Unifomat level for tracking inventory.	Low	Easy
T-29	FCA	Consider creating workflow process to capture corrective actions that are not picked up by FCA biannually. This would create a deficiency list in schools of items less than \$5k that are not covered by FCA.	Low	Challenging

7.09 Asset Management Future State

PPS desires to achieve an Asset Management maturity level of 4. The team is making progress with an asset data maturity assessment and gap analysis is underway. This endeavor will review naming conventions and asset definitions that are critical to a mature program.



ASSET MANAGEMENT MATURITY	1	2	3	4	5
Topical Area	Innocent	Aware	Developing	Competent	Excellent
Organizational Adoption			✓		
Asset Management Policy			✓		
Asset Management Strategy and Objectives		✓			
Strategic Plan			✓		
Asset Definition		✓			
Asset Naming Convention		✓			
Asset Inventory			✓		
Analysis and Reporting			✓		
Risks			✓		
Asset Conditions			✓		
People / Roles and Responsibilities			✓		
Stakeholder expectations			✓		
Resources			✓		
Asset-Related Decision Making			✓		
Preventative Maintenance Schedule		✓			
Maintenance Strategy		✓			
Average Score			Current Position (2.68)	Desired Condition (4+)	

Figure 33 - PPS Future proposed asset management state.

Asset Management Recommendations:

To achieve the asset management goals, the below recommendations should be considered. The eight asset management recommendations shown below were developed based on the value planning methodology to achieve the desired future state. The recommendations have been reviewed with the project team for feasibility. The below FCA recommendations each have a unique identifier identifying the facilities function that it enhances. Each recommendation has a unique identifier with the facilities function that it enhances. For complex recommendations, a detailed workbook is contained in the Supplemental Information. This workbook provides insight and a roadmap for the implementation team to understand the logic behind the recommendation. This will help PPS successfully drive implementation. The asset management recommendations include:



Asset Management Recommendations

ID *Workbook Available	Related Report Section	Recommendation Description	Implementation Plan Priority	Implementation Relative Level of Effort
CP-159*	Asset Management	Develop asset tagging / maintenance specification and insert into capital projects.	High	Medium
DQ-12*	Asset Management	Create Asset Management workflow processes.	High	Medium
DQ-14	Asset Management	Conduct training on asset data capture processes for new and existing assets.	High	Medium
DQ-15	Asset Management	Define and standardize asset data that is being collected through CMMS and FCA assessments.	High	Medium
DQ-3	Asset Management	Implement an asset naming and numbering strategy across the PPS portfolio.	High	Easy
DQ-6	Asset Management	Create and track metrics for work order. This includes corrective and PM functions. In addition, implement QC process to ensure correctness of work order.	High	Easy
DQ-10*	Asset Management	Utilize a modified asset life cycle calculation in the CMMS.	Medium	Challenging
EE-41	Asset Management	Create and share annual reports demonstrating maintenance KPIs with the community and tie the KPIs to student success and PPS's ability to achieve warm/safe/dry.	Medium	Low

7.10 Other Recommendations

In addition to the above items, the below recommendations address community and student engagement related to facilities and are included for completeness. The four recommendations shown below were developed based on the value planning methodology to achieve the desired future state. Each



recommendation has a unique identifier with the facilities function that it enhances. For complex recommendations, a detailed workbook is contained in the Supplemental Information. This workbook provides insight and a roadmap for the implementation team to understand the logic behind the recommendation. This will help PPS successfully drive implementation. The engagement recommendations include:

Engagement Recommendations				
ID *Workbook Available	Related Report Section	Recommendation Description	Implementation Plan Priority	Implementation Relative Level of Effort
EA-81	Employee Retention	Develop strategies for employee recruitment and retention at PPS for M&O positions.	High	Challenging
EE-33*	Student Engagement	Implement a Maintenance Career Pathways (MC2P) Campaign.	High	Challenging
SE-94	Student Engagement	Strategies for Student Engagement in the maintenance and operations job fields available at PPS.	Low	Challenging
EE-35	Community Engagement	Develop strategies for external engagement with the community members to communicate facility stewardship needs of the PPS portfolio.	Medium	Easy

8.0 FMP Implementation Plan

To achieve the desired end state, the FMP contains recommendations for PPS to consider and implement. The FMP recommendations are included in section 7.0 of this report and in Supplemental Information I. In total, 110 potential recommendations were generated with 80 of the ideas being recommended by the team. While a significant amount of research has been performed by the project team, more evaluation and vetting of the recommendations should be performed by PPS as part of the implementation process.

To meet performance goals, PPS should prioritize and execute the work items and recommendations contained within this report. PPS is a complex organization and optimizing the Facilities department will take more than just increased funding levels. The implementation effort will require significant resources, project



management expertise, organizational change management, and a sustained implementation effort throughout the organization. While challenging, the recommendations for consideration will increase value to the district and minimize the total cost of ownership of facilities. Due to the complex nature of the organization and the number of stakeholders, it is recommended that the FMP implementation effort be a program using Project Management Institute (PMI) best practices.



Figure 34 - The FMP recommendations will require coordination across the entire district.

To align with PMI standards, a formal project management structure and governance must be developed. The implementation program must have an approved and actively involved project sponsor at the PPS executive level and a signed charter to support the project.

There should be a dedicated program manager given the authority and resources needed to implement the individual recommendations or projects. The program manager should diligently plan out the implementation effort, forecast the required resources, and manage the overall program based on PPS’s needs. To be successful, the program manager must be supported by a technical team and individual project managers to execute each recommendation. These individuals consist of a shared resource pool utilized to implement the FMP recommendations. These individuals should be assigned based on the unique needs and requirements necessary to implement each recommendation. These internal team members can be complimented by consultant team members as needed.

As recommendations are selected for implementation, each recommendation should be considered a separate project as part of the larger program. These projects will need to be individually planned, managed, executed, monitored, and controlled by the assigned project manager and overseen by the program lead. Frequent program progress meetings should be conducted with monthly status meetings, performed to oversee, and monitor implementation and communicate status to stakeholders. Active risk management should be performed, change enablers and detractors should be identified and managed, and implementation



challenges should be documented. Lessons learned should be performed at regular intervals and communicated to the program team.

Clear, concise, and frequent communication with stakeholders is important to the program’s success. It is recommended that an overarching program communication plan be developed by the program manager. At a minimum this plan should identify: the overall communication structure, identify stakeholders and their communication requirements, identify the frequency and number of meetings including status and progress meetings, and identify any executive level communications and meetings that will be required. As implementation tasks are implemented, the progress and successes of individual recommendations should be tracked, publicized, and communicated throughout the organization to demonstrate progress.

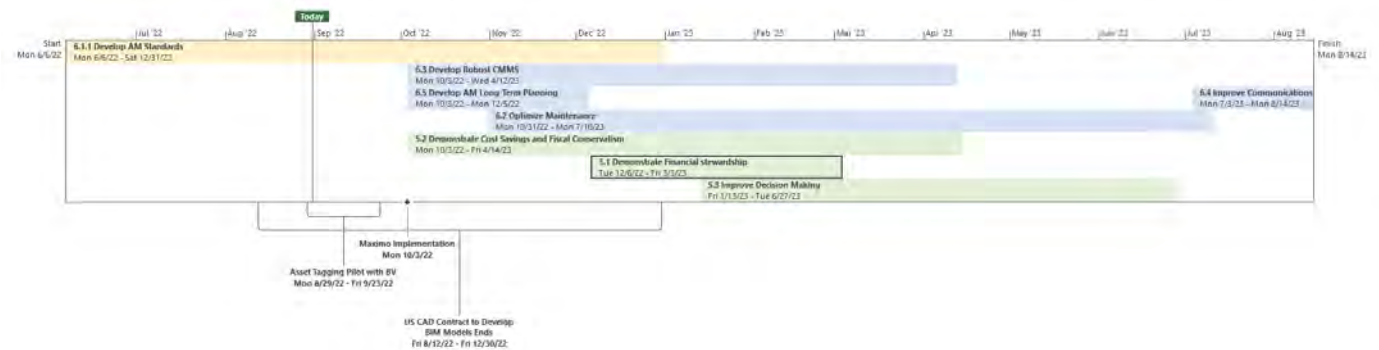


Figure 35 – Example from a milestone implementation schedule used for organizational change management. Once the recommendations are prioritized and validated by PPS, it is recommended that a detailed implementation schedule be developed by the PPS implementation team.

Implementation Best Practices:

1. Develop an implementation program for the FMP recommendations. Manage using PMI best practices to plan and execute the effort.
2. Assign a program manager to oversee, track, and ensure completion of the implementation program. Note that this person should have knowledge of capital planning, asset management, operations, and facilities, but does not need to be an expert.
3. Manage the implementation at a program level and develop each recommendation into an individual project within the program. Execute each recommendation/project following PMI best practices.
4. Create a resource pool to execute recommendations. Use upfront planning to determine how much time the PPS team can dedicate to implementation without impacting their current job performance. Note that many organizations want to perform these tasks in-house, however this is not always the most cost-effective method given the cost of inaction or implementation delays. Using a consultant/contractor for select tasks should be evaluated where appropriate.
5. Develop a clear and concise communication plan tailored to meet organizational dynamics. Schedule a reoccurring monthly progress meeting to review implementation process of each task.
6. Create an overarching implementation schedule for the program to guide the implementation projects. Review and update the schedule in the monthly progress meetings.



- 7. Quantify the cost of inaction for each recommendation. Use the cost of inaction as a communication tool to convey the importance of each task.

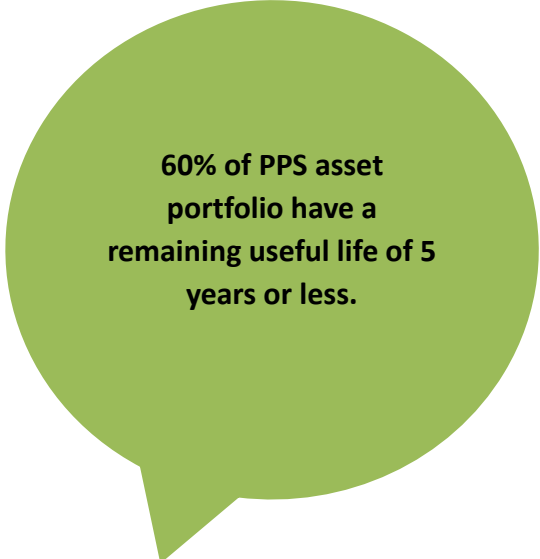
9.0 Impact of the Status Quo

Once implemented, the proposed FMP recommendations will enable PPS to reach the desired level of service. In addition, students will benefit from warm, safe, and dry facilities that drive educational success. The implementation of the proposed recommendations requires resources. While implementing the recommended measures requires time, effort, and money, maintaining the status quo involves the largest risk to PPS operations outlined below:

A. Increased Operational Failures

PPS has antiquated assets at the end of their useful service life. The asset inventory, performed as part of the most recent FCA, indicates that 60% of PPS assets have a remaining useful life of five years. This equates to over 9,000 assets. These assets may require additional funding and (potentially) emergency projects to fix and replace failed building systems.

Due to PPS’s asset age, the district is experiencing increased equipment failures and more emergency declarations. These can interrupt teaching and impact the student population’s ability to learn. Based on analysis of PPS provided data, the MEP related **emergency declarations (those that result in a school outage) are increasing at an average rate of 23% per year**. Besides impacting students and the community, this can result in a negative public perception of the district.



Subject: Emergency Declaration

This is to notify you that pursuant to PPS Contracting Rule PPS-46-0110 (28), Maintenance and Operations is declaring an emergency because of a failing end of life heating system at Kelly Center. Currently four rooms have issues with individual univents and issues with the central air system. Many of the other rooms have the same failing univents of the same age and may be unrepairable if they also fail. Feedback from our technicians and a contractor is that the system is at risk of failing and needs to be repaired/replaced quickly.

Our declaration is due to emergency circumstances that require prompt execution of a public contract.

Figure 36 - Example emergency declaration from HVAC failure on antiquated systems.



B. Understaffed O&M positions decrease facility stewardship

PPS maintenance and operations continue to be impacted by the industry wide recruitment challenges of obtaining qualified O&M staff. The following chart illustrates relative vacancies. The staffing shortages can result in reduce preventive maintenance impacting facility stewardship.

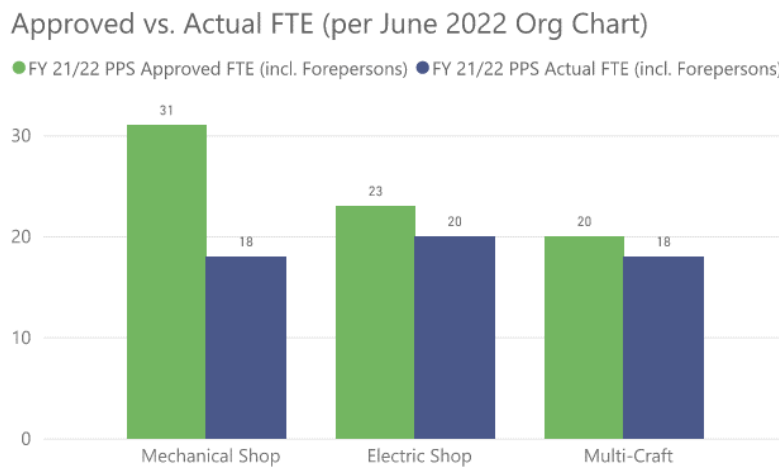


Figure 37 - Approved vs actual O&M FTEs.

C. Deferred maintenance increases total cost of ownership

The impact of reduced preventive maintenance and capital renewals has a detrimental impact on PPS operations. According to a 2020 National Administration of State Facility Administrators (NASFA) study:

A building itself is affected by deferred maintenance, as is life expectancy...Deferred maintenance can increase costs to the point where they exceed the value of the building itself. Replacement then becomes the only cost-effective solution, most often at a significantly higher cost than if maintenance had been done in the first place.

NASFA Deferred Maintenance: What it is, why it matters, and how to fix it, 2020

Similar to not changing the oil in a vehicle, the short-term cost savings from reduced preventative maintenance, result in increased total cost ownership.

The NASFA data illustrates the importance of maintaining assets. A reduction in preventive maintenance results in short term cost savings that increase the yearly deferred maintenance costs.

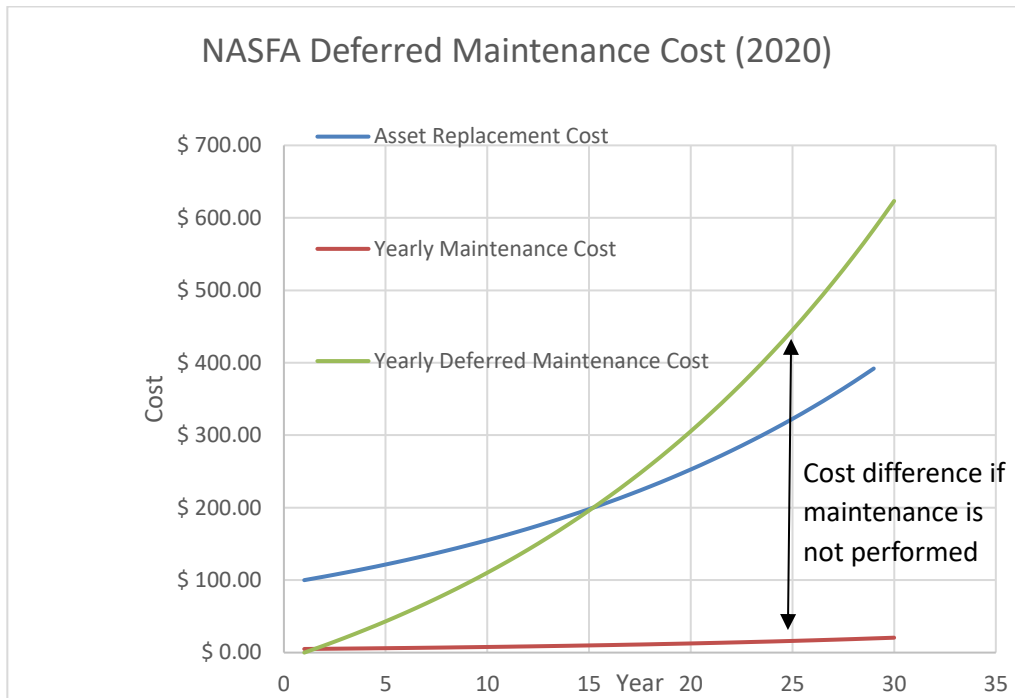


Figure 38 - Deferred maintenance cost impact data from NASFA 2020 Study. Note the increase in yearly deferred maintenance cost that occurs if maintenance is not performed on an asset. Note that at year 15, the cost of replacement equals the yearly cost to keep the asset running if not maintenance is performed.

D. Increased construction cost makes replacement and restoration of PPS buildings less cost effective

As the PPS building portfolio continues to age, replacing the facilities and assets in kind will become increasingly challenging due to construction cost escalation and market price increases. In Q1 2022, Portland experienced an 8.4% increase in construction cost as documented by Rider Levett Bucknall (RLB) Quarterly Construction Cost Report. This increase will impact future bonds. The continued escalation of construction cost places an increased emphasis on evaluating systems for total cost of ownership, obtaining long lasting facilities that can be repaired (not replaced) and maintaining existing facilities to reduce the total cost of ownership across the PPS building portfolio.



COMPARATIVE COST INDEX

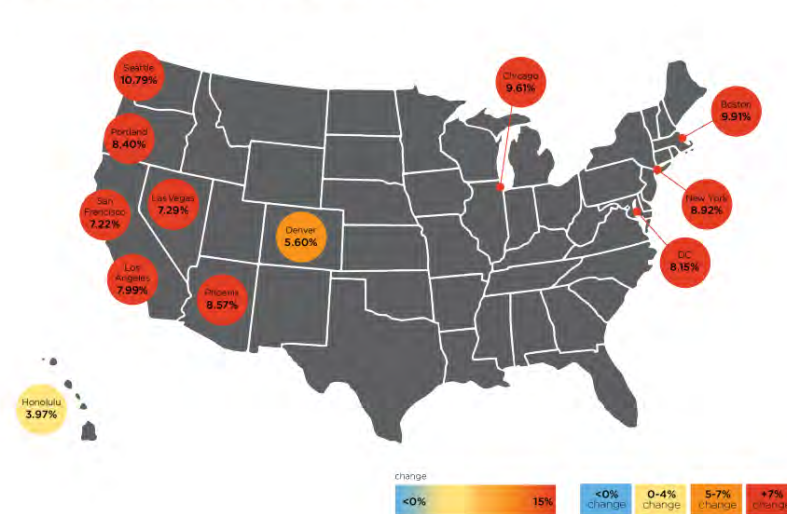


Figure 39 - The Rider Levett Bucknall Q1 2022 quarterly construction cost price escalation. Note that Portland’s construction price increased 8.4% (on average).

10.0 Conclusion

Facilities play a vital role in the Portland Public Schools’ mission to educate all children to their highest potential to be productive, respectful, self-reliant, and responsible citizens who value the richness of diversity. Facility quality is an important predictor of teacher retention and student learning. The physical and emotional health of students and teachers depend on the quality of the physical location, which makes establishing safe, healthy buildings essential.

PPS has developed this Facility Maintenance Plan (FMP) to provide a tool to improve facility maintenance planning that will result in better facility stewardship and educational environments for PPS stakeholders. This can only be accomplished through efficient, timely, and economical maintenance of facilities. It is recommended that the PPS team and stakeholders review the FMP, recommendations, and associated workbooks and begin implementing the proposed commendations over a five-year period. The successful implementation of the FMP will enable PPS to meet the service level goals for the district, driving value creation to support the educational mission.

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