

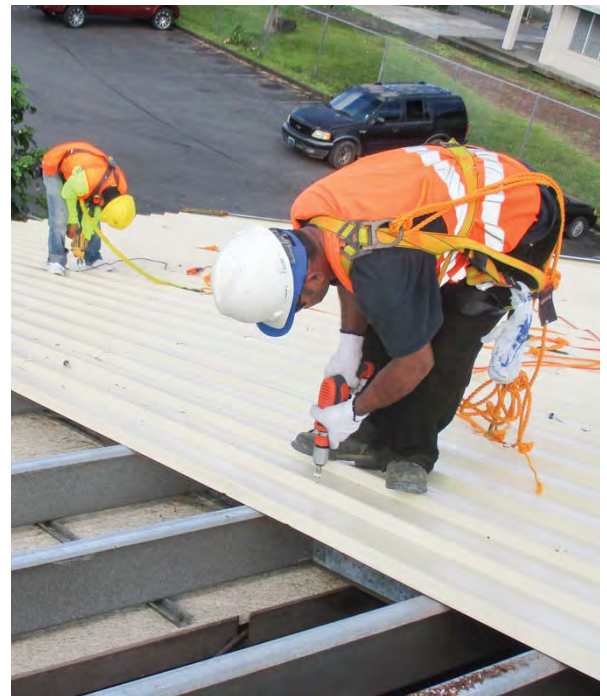


Commonwealth of the Northern Mariana Islands
PUBLIC SCHOOL SYSTEM
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Organizational Sustainability Plan

Insular Schools Assessment of Buildings and Classrooms, Phase 3, Year 2



November 2017



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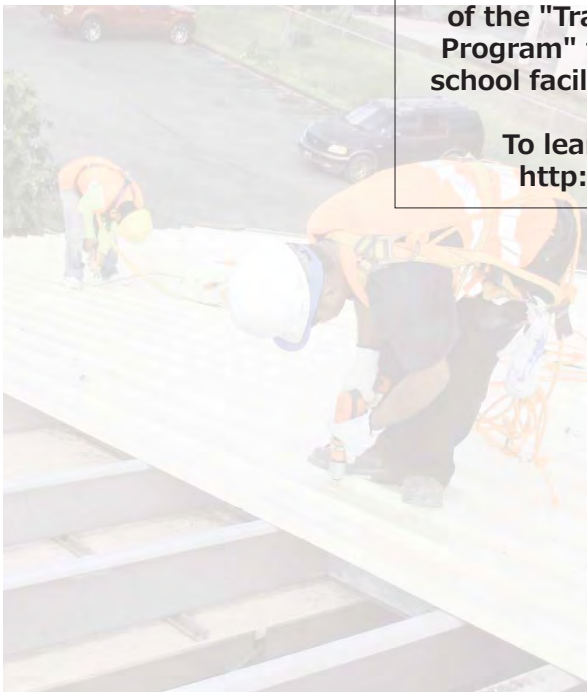


Commonwealth of the Northern Mariana Islands
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This Organizational Sustainability Plan is one of a number of "modules" being prepared as part of the "Training and Sustainability Program" focused on building local school facility maintenance capacity.

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Prepared by:



Prepared for:



Executive Summary

The Organizational Sustainability Plan for the Commonwealth of the Northern Mariana Islands (CNMI) Public School System (PSS) is a collaborative study funded by the Insular ABCs initiative¹ focused on improving the effectiveness and sustainability of school facilities management. The scope covers operations and maintenance staffing and budgeting, as well as facilities planning in the four Insular Areas. The strategies and policies included in this report were selected based on stakeholder input, including observations from Insular ABCs project managers that are embedded in the territories, working alongside procurement officers, public school administrators, and facilities managers and staff. The goal of this Organizational Sustainability Plan is to provide a menu of resources for facility managers and policymakers in the Insular Areas and to establish a framework for year over year improvement.

Most school districts (90%) in the country are able to levy property taxes or issue bonds to support needed facility improvements. In contrast, Insular Area school districts are uniquely challenged because they have less budgetary control, and are dependent on annual legislative appropriations of federal funds. Long-range school investment planning is frustrated by annual fluctuations in funding, which, in turn, forces Insular Area school districts to fluctuate maintenance and repair investments, oftentimes well below industry-recommended standards.

Maintenance items that should be addressed through preventive or planned investments (i.e., a continual level of proactive service) are reduced to emergency maintenance—reacting to building and equipment failure only after it has disrupted the academic environment and possibly damaged surrounding building components. Facility management literature shows that ongoing investments in preventive and planned maintenance is necessary and reduces long-term operational costs (i.e., cost-savings).

A common approach to facility investments is to install new equipment and replace as needed, with minimal maintenance in the interim. For fiscally-dependent school districts, there is often no other source of revenue for the Insular Area public school facilities besides state general fund revenue to maintain school facilities, which forces the districts to rely on sporadic lump sums of capital funds to fund substantial repairs or to build new facilities. Meanwhile, as the appearance of schools deteriorate, so do students' academic performance and the motivation to learn (BEST 2006).

In contrast, the recommended industry practice is to adequately fund ongoing maintenance, to ensure that schools remain safe, healthy and inspiring learning environments.

As a long-term strategy, territories and the federal government can proactively assist local education agencies by supporting the following actions recommended in this report and summarized as:

Because of the importance of public education and the effects of school locations, design, and condition on children and communities it is imperative that our public school facilities are healthy, safe, educationally appropriate, environmentally sustainable, and community-accessible, no matter the wealth of families or community.

(Filardo, 2016)

1. Establish recurring, long-term funding sources dedicated to school facility maintenance.

¹ The Assessment of Buildings and Classrooms (ABCs) initiative is a partnership between the US Department of Interior's Office of Insular Affairs (OIA) and CNMI. The US Army Corps of Engineers manages the ABCs program through its Contractor, HHF Planners.

ABCs is focused on (1) improving the physical condition of CNMI Public Schools and (2) supporting capacity-building initiatives to manage school facilities. Status reports are available at hhfplanners.com.

2. Encourage school facility management agencies to use more rigor during recruitment; create staff accountability standards, as well as performance assessment and correction processes.
3. Advance staffing structures that accommodate professional mobility, retain qualified workers, and provide for training and supervisory roles.
4. Create a preventive maintenance program that helps transition facility maintenance teams to conducting a higher percentage of proactive/planned activities (and less reactive work). Light maintenance and monitoring will inform facility managers of the needs for larger maintenance activities that can be planned to avoid school disturbances that could result from failure and unplanned downtime. The overall program should be comprehensive, but attention should focus on high value assets (e.g., fire protection, weather proofing, and air conditioning/quality). Provide training for in-house maintenance tasks and inspection of outsourced services.
5. Use the Enterprise Asset Management System (EAMS)² to improve work order tracking, worker productivity, worker performance monitoring, document retention, benchmarking, task scheduling, inventory awareness, and support a proactive maintenance culture; ensure that defined protocol for service requests and task execution are in place that provide efficient action and communication.
6. Provide warehousing/equipment storage areas as appropriate, and create drawdown purchase agreements with local hardware stores, to support maintenance efforts.
7. Use alternative project delivery methods (e.g., task order contracting) to supplement individual project procurement and add flexibility to contract scope.
8. Maintain a cost estimate and project scope library to assist with future project procurement efforts.
9. Track contractor performance and consider during bid evaluation, in addition to cost.
10. Establish a designee protocol to keep procurement documents moving when people are absent.
11. Create a school maintenance purchasing/procurement officer position to assist with moving school maintenance procurement.
12. Define operations and maintenance cost components and overall budget requirement; secure a dedicated maintenance funding source; define CIP cost components for a five-year horizon, as well as annual average need, and create a fund for planned replacement, renewal, and new construction.
13. Create a mid-term (5-7 year) facilities plan that is easily updateable, to guide capital investment when funds are available; incorporate a strategy for school rightsizing; maintain site maps that provide quick reference for planned demolition, renovation, new construction, or priority needs.
14. Consider new building designs, when planning new construction, that best support the academic program while minimizing construction, operations, and maintenance costs.
15. Add a staff planner position to assist with managing utility costs, space planning, and project management, or ensure that these duties are addressed in an existing position.

This report provides information on existing conditions, suggestions for improvements, and the basis upon which recommendations are made. Best practice examples from other regions, as well as national benchmarking metrics, are summarized and referenced to provide background rationale and leads for further information. The recommendations made herein are not expected to be exhaustive, but are

² The EAMS, being created as a part of the ABCs program, uses industry standard “off the shelf” software and custom development to provide computerized maintenance management system and computer aided facility management services that will help the host agencies streamline practices, record data, measure and report performance, monitor conditions, forecast major replacements, and estimate budgeting needs. Documentation and monitoring functions will help facility managers monitor maintenance and capital projects from concept through decommissioning.

believed to be implementable in the remaining three years of the five-year ABCs program and be helpful in bolstering current host-agency facility manager efforts.

Summary of Recommendations - Proposed Implementation Plan

Category	1. Operations and Maintenance - Action Recommendations	Responsibility	Timeframe
Organizational Structure	1. Create “lead tradesmen” positions for staff that can function as supervisors and mentors that provide training to and oversight of other staff for skill building, accountability, and knowledge transfer.	Host agency	Fall 2019
Staffing	2. Create well defined job positions and job descriptions so employment expectations are clear and to provide advancement opportunities or corrective measures.	Host agency; HHF may be able to assist in Year 4	Fall 2020
Staffing	3. Create a more rigid interview process to test applicant capabilities and personality; document interview results.	Host agency; HHF may be able to assist in Year 4	Fall 2020
Staffing	4. Create employee performance evaluations, conduct evaluations annually, and apply reward or corrective measures as appropriate.	Host agency; HHF may be able to assist in Year 4	Fall 2020
Work Order Management	5. Define grounds maintenance components and costs for managing outsourced or in-house services.	Host agency	Fall 2020
Work Order Management	6. Establish SOPs for maintenance service requests--requires school Principal concurrence and assistance with adherence.	Host agency	Fall 2019
Maintenance Management	7. Create a preventive maintenance program that defines the needed work, steps, frequencies, and required resources for respective assets. Develop specific job plans for each task.	HHF in collaboration with Host agency-Year 3	Fall 2019
Maintenance Management	8. Identify high value assets for more focused attention (e.g., equipment, the facility components that prevent valuable equipment from being damaged or failing such as weather proofing or fire protection assets, energy conservation measures such as AC duct insulation).	HHF in collaboration with Host agency-Year 4	Fall 2019
Maintenance Management	9. Train personnel to perform preventive maintenance tasks; provide oversight.	Host agency	Fall 2019
Resource Management	10. Transition service request SOP to the EAMS platform once it is ready.	Host agency; HHF can assist in Year 3	Fall 2019
Resource Management	11. Continue to create dedicated warehouse space, as needed, with access, material use, and equipment check out protocol.	Host agency; HHF can assist in Year 3	Fall 2019
Resource Management	12. Establish draw down purchase order agreements with local construction material suppliers; correct overdrawn accounts as needed.	Host agency; HHF can assist in Year 3	Fall 2019
Project Procurement	13. Create a Safety Administrator position, or align duties to an existing position and implement an ongoing safety training program.	Host agency; HHF can assist in Year 3	Fall 2019
Project Procurement	14. Establish formal expectations/guidance for clearly defined scopes and government cost estimates.	Host agency; HHF can assist in Year 4	Fall 2019

Category	1. Operations and Maintenance - Action Recommendations	Responsibility	Timeframe
Project Procurement	15. Set up a project scoping and cost estimation training process/ program and use experienced staff to mentor next generation construction managers.	Host agency; HHF can assist in Year 4	Fall 2020
Project Procurement	16. Create a school maintenance cost library as a collection of costs from previous projects, organized by project type (with locations and dates), that can show cost fluctuations for work types over time to help inform future cost estimates.	Host agency; HHF can assist in Year 3	Fall 2020
Project Procurement	17. Establish and maintain contractor performance tracking to inform bid selection process.	Host agency	Fall 2019
Project Procurement	18. Establish designee protocol to move procurement documents when key personnel are absent.	Host agency	Fall 2019
Project Procurement	19. Create a Division of School Maintenance purchasing/procurement officer position to assist with moving school maintenance procurement.	Host agency	Fall 2020
Project Procurement	20. Institute a task order project delivery process for M&R projects that would allow contractors to be selected based on qualifications and past performance.	Host agency	Fall 2020

Category	2. Funding - Action Recommendations	Responsibility	Timeframe
Dedicated Maintenance Funding	1. Define O&M cost components and overall budget need.	Host agency	Fall 2019
Dedicated Maintenance Funding	2. Identify sources of income for stable maintenance funding and secure a dedicated maintenance fund.	Host agency	Fall 2020
Recurring CIP Funding	3. Define CIP cost components for a five year horizon, overall budget need, as well as annual average need, and create a savings account for planned replacement, renewal, and new construction.	Host agency	Fall 2019
Supplemental Funding	4. Explore potential to secure supplemental funding by partnering (i.e., joint use of school facilities) with specialized vocational/technical schools or adult education centers.	Host agency	Fall 2020

Category	3. Planning - Action Recommendation	Responsibility	Timeframe
Facility Inventory	1. Develop an inventory of facility assets to assist with overall facility management and inventory monitoring (to be developed in the EAMS).	HHF, with host-agency support	Fall 2019
Facility Inventory	2. Create a 5-year facilities plan to assist with planning and prioritizing future capital investments (e.g., replacement and renewal of existing facility components; new construction). Track related metrics to facilitate low effort annual updates.	Host agency, HHF may be able to assist in Year 3	Fall 2019
School Right Sizing	3. Develop strategy for addressing school rightsizing that identifies needs, analysis of options, proposed actions, related costs, timeframes for execution, and consequences if timeframes are not met, and incorporate into the five year facilities plan.	Host agency	Fall 2019

Category	3. Planning - Action Recommendation	Responsibility	Timeframe
Site Maps	4. Maintain facility site maps that provide quick reference for building nomenclature, planned demolition or new construction, or facility conditions that require action within the plan's timeframe.	Host agency	Fall 2019 (and ongoing)
New Building Design	5. Consider new building designs when planning new construction that best support the academic program while minimizing construction, operations, and maintenance costs.	Host agency	Fall 2019 (and ongoing)
Energy Monitoring	6. Monitor and keep an ongoing accounting of energy use at all facilities.	Host agency	Fall 2019 (and ongoing)
Planner Duties	7. Add a staff planner position to assist with managing utility costs, space planning for future improvements, and procurement and contract management, or ensure that these duties are addressed in an existing position.	Host agency	Fall 2019 (and ongoing)

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Acronyms

ABC	Assessment of Building and Classrooms
APPA	Association of Physical Plant Administrators
CGCS	Center for Great City Schools
CNMI	Commonwealth of the Northern Mariana Islands
CIP	Capital Improvement Plan
CONUS	Continental United States
CRV	Current Replacement Value
DB	Design-bid
DBB	Design-bid-build
DM	Deferred Maintenance
DPO	Drawdown Purchase Order
EAMS	Enterprise Asset Management System
EPA	Environmental Protection Agency
FDM	Facilities Development and Management
FTE	Full-time Employee
HDOE	Hawaii Department of Education
HVAC	Heating, Ventilation, Air Conditioning
IFB	Invitation for Bid
IP&E	Isla Petroleum and Energy Holdings
LOS	Level of Service
M&R	Maintenance and Repair
NCES	National Center for Education Statistics
NFPA	National Fire Protection Association
O&M	Operations and Maintenance
OIA	Office of Insular Affairs
OSHA	Occupational Health and Safety Administration
PECO	Public Education Capital Outlay
PM	Preventive Maintenance
PSS	Public School System
PTA	Parent Teacher Association
RCx	Retrocommissioning
RFP	Request for Proposal
TOC	Task Order Contracting
USDA	US Department of Agriculture
VP	Vice Principal

1 Introduction

This report was created to compile information on CNMI's existing school facility management conditions, examples of best practices from case studies in comparable school districts, and provide recommendations on how to build on the current efforts of facility managers of the Insular Area³ school districts. Some of the questions that drove the research included:

1. How can staffing requirements and budgets be baselined and benchmarked?
2. Are there organizational incentives in place to motivate performance, and how can accountability be tied to measuring performance?
3. Do the host agencies have clearly defined roles, responsibilities, and communication chains?
4. What impediments exist for maintenance and repair workflows, and what can be done to correct or work around them?
5. How can facility plans be created and maintained to guide investments, and what information is needed, or already being tracked?

The most burning question, the riddle that facility managers have always struggled with, is how can an organization operate sustainably if it is chronically underfunded? This report works through these questions and documents related findings and recommended next steps. As the territorial agencies make strides, the ability to address issues will grow, and improvement can be exponential. Progress is dependent on the level of diligence applied in making use of available and incoming resources (e.g., staff, funding, management tools).

School maintenance budgets compete against other priorities such as teacher salaries and utilities and often fall short of what maintenance departments need to properly maintain their facilities. Insular area school districts receive a disproportionally larger share of federal funding (Table 1), attained through legislative appropriations, than schools in the Continental United States (CONUS). This makes school budgets unpredictable, and planning and paying for operational costs more difficult. The following section provides a perspective of national funding for public schools compared to Insular Area schools.

Table 1: Source of Public School Revenue
(FY2010-14, mean values)⁴

	Total Revenue (\$1,000)	Local	State	Federal
AS	81,992	<1%	13%	87%
CNMI	68,964	<1%	47%	53%
Guam	235,525		74%	26%
USVI	226,543		79%	21%
Hawaii	2,519,765	3%	84%	13%
USA	605,311,996	45%	45%	10%

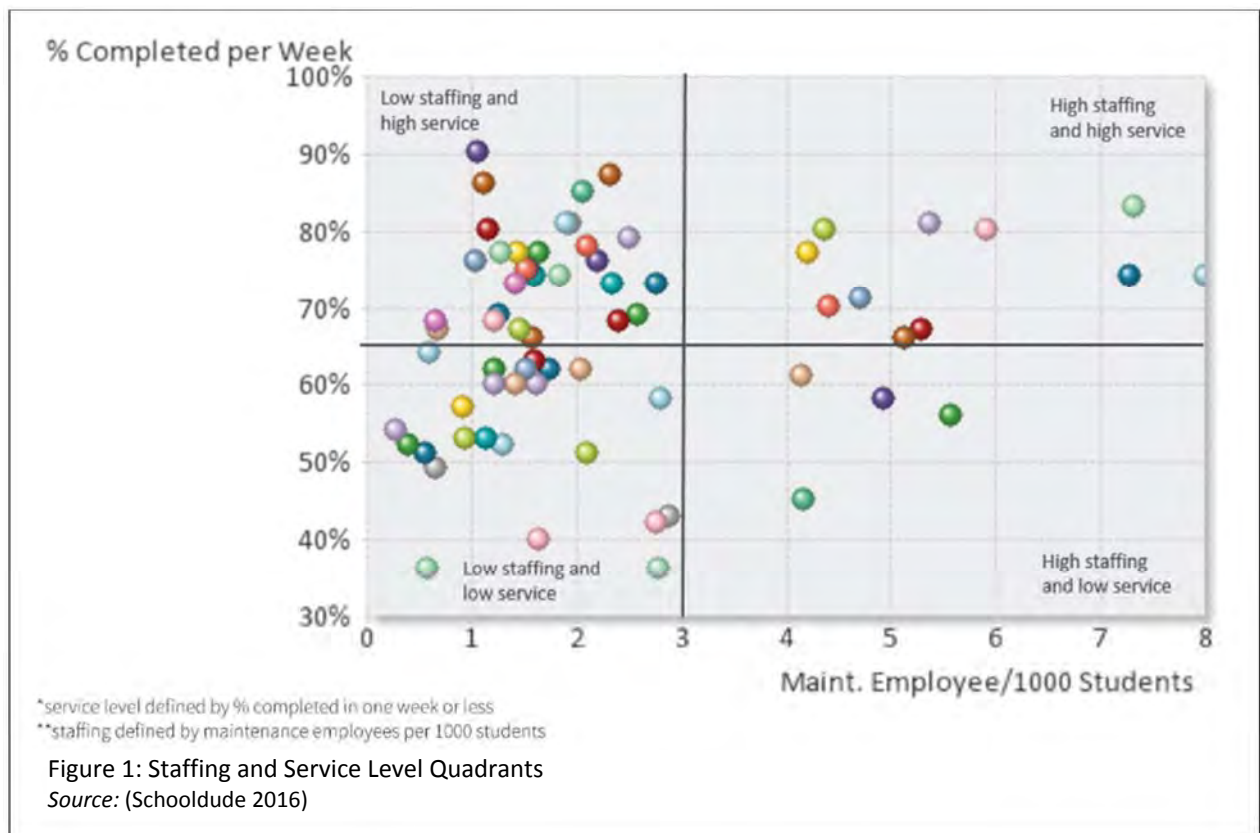
Source: NCES, FY2014

³ In this report, the Insular Areas/territories include American Samoa, the Commonwealth of the Northern Mariana Islands, Guam, and the United States Virgin Islands.

⁴ NCES (National Center for Education Statistics) characterized Guam and USVI funding as local; it has been reclassified as state funding in this report. An initial review of available public school financial statements and annual reports suggests Insular Area schools – with the exception of American Samoa's 1% goods tax – do not receive revenue from local (i.e., city, county or village) government.

Without dedicated funding, facility maintenance is often deferred until facilities deteriorate to a state beyond repair, requiring a more costly solution (i.e., large injections of capital investment funds to wholly or substantially replace existing assets). The current approach of funding deferred maintenance relies on legislative appropriations or one-time federal grants, such as the ABCs program. However, this reinforces the misconception that maintenance is a one-time expense. Maintenance is often characterized as a “vicious cycle” (see Figure 2), placing never-ending demands on school facilities, which only increase as buildings age. Maintenance funding, however, is often inadequate and reallocated to other priorities. As noted in the study, *Save a Penny, Lose a School: The Real Cost of Deferred Maintenance*, “When utility costs exceeded the amount in the budget, 40% of the nation’s districts covered utility bills with money from the maintenance allocation, which further reduced performance of routine and preventive maintenance tasks” (Lawrence 2003).

However, the solution requires more than just money; institutional leadership and the work culture of the organization also significantly influence facility management outcomes. Figure 1: Staffing and Service Level Quadrants provides a graphic analysis comparing staffing levels and productivity (the percent of work orders completed per week). Each dot represents a school, district or college included in the survey. Districts with more staff might be expected to also have a higher percentage of work orders completed per week, but the figure shows that low staffing levels are more common and can be more effective than high levels of staffing. This suggests that organizational leadership and other factors besides the number of staff profoundly influence performance.



1.1 The Maintenance Challenge

The need for ongoing maintenance does not mean that facilities are mismanaged. Facilities need constant attention and routine servicing (e.g., change air filters) but also to handle unplanned or emergency events (e.g., paint over graffiti or fix a broken water pipe). Appendix 8.1 provides a sample 50-year maintenance and repair (M&R) schedule for a typical school building. Facility managers can use asset schedules like these as a basis to develop maintenance and capital replacement budgets. Even though the example M&R schedule is not regionally relevant (a school building in Washington D.C.), it communicates three important points: 1. major facility assets have a lifespan, 2. facility managers should anticipate and plan for asset failure, and 3. the school's facility managers should have a capital replacement strategy.



Figure 2: Deferred Maintenance: Pay Now or Pay Later

Source: Gordian.com

Ideally, maintenance budgets are coordinated with the Capital Improvement Plan (CIP) through long-range plans, spanning five to ten years or longer. Long-range facility plans help school districts determine what is needed, by when, and how it will be funded. Basic considerations include facility age and condition (older buildings need more maintenance; critical repairs prioritized above work that can be deferred), enrollment trends (which schools are under or overcrowded, expected to grow or lose students), population trends (what areas of the island are adding or losing population) and economic trends (are general fund revenues expected to grow or shrink). See Section 5: Planning for more information.

The M&R schedule in Appendix 8.1 also shows that immediately after construction, even a new facility needs maintenance.⁵ This is to cover routine tasks such as lubricating equipment, testing/maintaining fire alarms and sprinklers, inspecting roofing, and clearing roof drains. Major components such as heating, ventilation, air conditioning (HVAC) systems, fire alarms, and even roofing materials require a minimum level of maintenance or the warranty coverage is void.

Annual M&R costs are expected to fluctuate each year, with periodic spikes when a major component or system needs replacement. However, manufacturers publish M&R schedules for building components.

⁵ Dollar amounts referenced in that M&R schedule are in 2009 dollars, adjusted for Washington D.C. and would need to be adjusted to current dollars with a location factor, to determine an equivalent amount for US territories.

These schedules help facility managers to estimate when to expect significant capital replacement costs and when to perform routine maintenance. For example, roofing maintenance should be provided annually, but significant roofing repairs should be expected around year 15 and re-roofing in year 30, depending on materials and climate.

The example building in Figure 3 has a planned 50-year lifespan and M&R costs based on square feet, allowing the facility manager to estimate an adequate annual repair and capital replacement budget. The M&R schedule does not include security, janitorial services and supplies or utilities, which would be in addition to amounts derived from this schedule.

1.2 Impacts of Inadequate Maintenance

Beyond the physical structure, the quality of maintenance affects its occupants in many ways. The following are all negatively impacted when schools cannot afford maintenance (Lawrence 2003):

- Occupant health and safety
- Staff and student morale
- Student academic performance
- Overall student achievement

For rural communities, like the Insular Areas, schools are especially important and can be the major local employer, supporting local businesses, raising property values, and serving as the heart of the community – anchoring the neighborhood fiscally, socially, historically and culturally. School closure can have devastating effects: decrease participation in local organizations and activities, discourage investment in the area and lead to further decline. “Like the roots of a large tree, schools support their communities in deep and extensive ways” (Lawrence 2003).

1.3 Repair vs Replace

Equipment replacement is more expensive than repair, although replacement can be justified in cases where in the end, it saves money – that is, replacement will reduce future service calls, saves on utilities and reduces parts and labor costs – when compared to repair. It is also important to consider the potential for disruption (i.e., equipment failure) on day-to-day classroom activities.

Operations and maintenance (O&M) administrators need information and ongoing training to make these kinds of decisions. Administrators need access to industry best practices, maintenance schedules and equipment lifecycle costs in addition to tracking past maintenance work, age of facilities, and equipment and component systems. At the very least, a long-range facility plan can help provide equipment and system (i.e., roofing, painting) replacement schedules to help districts allocate funding to plan for major system replacements. An energy conservation officer can further help identify and prioritize maintenance work to maximize budgets and reduce operating costs. It is not a matter of if the roofing needs replacing, but when.

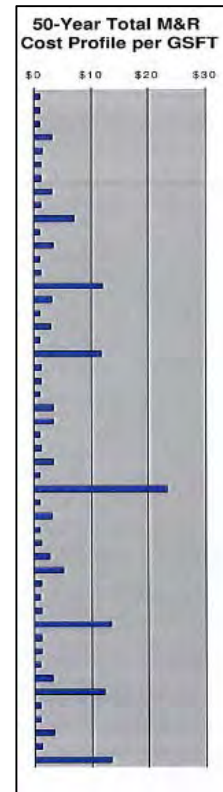


Figure 3: 50 year cost profile helps plan for major repair and replacement

Source: Duncombe and Wang 2009

2 Insular Funding for School Facilities

This section provides an overview of how US school districts budget for facility maintenance, raise funds for facility improvements and compares these approaches to the unique challenges of Insular Area schools.

While many states are projecting future enrollment growth, the Insular Areas face a particularly difficult challenge to provide adequate maintenance and facility funding when faced with declining enrollments. In many instances, operational funding, which includes maintenance, is tied to full-time enrollment (FTE) student allocations; when enrollment declines, maintenance also receives less funding, despite having the same amount of floor area to maintain. At the same time, newer facility systems (HVAC, security, life safety systems) are more complex and require a specialized skillset to maintain and operate. Insular Area school districts are further challenged with a smaller labor pool of qualified workers (vs larger urbanized areas) and must either pay higher salaries to retain qualified employees or use more expensive contract labor.

2.1 Federal Funding for School Facilities

For the overwhelming majority of Kindergarten through 12th grade (K-12) public schools in the US, the federal government provides almost no dedicated funding for public school facilities (Filardo 2016). The federal portion of funds received by public schools are primarily used for operating expenses, supplementing teacher salaries, academic programs, (21st Century School Fund 2010a) or supporting free and reduced meal subsidies and children with special needs.

Except for tax law that provides very favorable financing for school districts and public charter schools who generally borrow funds to pay for the upfront hard and soft costs of school facility improvement or new construction projects, the federal government has assumed no responsibility for the quality of public school facilities for teaching and learning. There is no staff dedicated to this issue at the US Department of Education. There is more staff time focused on this at the Department of Energy and the Environmental Protection Agency than at the US Department of Education. It [(school facility condition)] is considered a local school district responsibility (21st Century School Fund 2010a).

Compared to other public schools in the US, Insular Area school districts receive a larger share of their total revenue from the federal government (Table 1) and proportionally less from the local tax base. Although the portion of federal funds received that are specifically allocated to school facility capital improvements was not readily available, some Insular Area school districts confirmed they do receive federal funding for new buildings, but that funds are only available sporadically and this makes it difficult to rely on for long-range planning.

Each territory's federal programs coordinator is already managing or familiar with the following federal programs that provide funding for school facilities (21st Century School Fund 2010a):

- The US Department of Agriculture (USDA) Rural Development has established a Community Facilities Program.⁶ Its stated purpose is to provide affordable funding to develop essential

⁶ <https://www.rd.usda.gov/programs-services/all-programs/community-facilities-programs>

community facilities in rural areas. Other grant opportunities may be available through the USDA Food and Nutritional Service website.⁷

- Other federal programs do not specifically target school facilities, but provide funding that can be used for schools. For example, nearly all of the federal Headstart program's funding is used for teacher salaries and operating costs related to early childhood education, however, some funds can be used for facility improvements.
- The US Department of Energy provides formula and competitive grants through its State Energy Program for the purchase of new energy efficient or renewable energy equipment and technologies.
- The Environmental Protection Agency's Brownfields Program can be used by school districts for preventing, assessing, cleaning-up and reusing brownfields (formerly contaminated sites).
- FEMA Public Assistance Program Grants can be used to repair, replace or restore school facilities after a disaster or for hazard mitigation upgrades.

2.2 State and Local Funding for School Facilities

States spend on average 24% of their total budget on K-12 public education, including instruction and all other expenditures (NASBO 2016). Combined, public primary and secondary school facilities rank as the second⁸ largest sector of infrastructure investment by state and local governments (Figure 4). If added together, higher education and K-12 capital outlay expenditures would rank as the largest category of infrastructure capital spending nationwide (Filardo 2016).

Nationally, funding for school facility capital improvements is primarily provided by local school districts issuing long-term general obligation bonds. Debt service payments on those bonds are also usually locally funded through a percentage of real property taxes (Duncombe and Wang 2009). However, a difficult lending environment in the past few years and reluctance to burden taxpayers with additional fees has reduced school spending for CIP nationwide (Figure 5). "The drastic decline in school construction is greater than the decrease in overall education spending since the recession [in 2008]" (Filardo 2016).

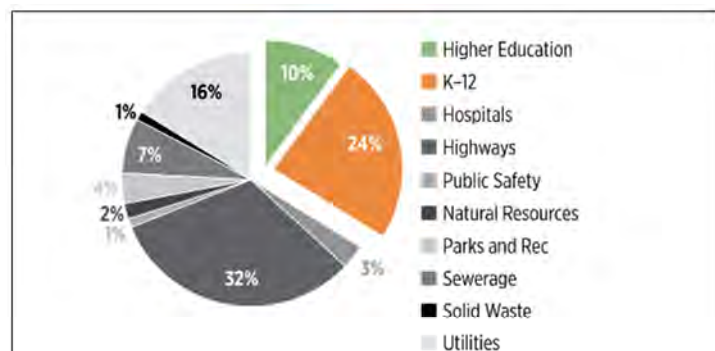


Figure 4: State and Local capital outlay spending by category. Combined, public education facilities (green and orange) received the largest share of infrastructure investment.

Source: US Census of Governments, State and Local Government F-13 Fiscal Survey, FY1995-2012, omitting 1997, 2001, 2003 as cited in (Filardo 2016).

⁷ <https://www.fns.usda.gov/grant-opportunities>

⁸ The largest sector was highways.

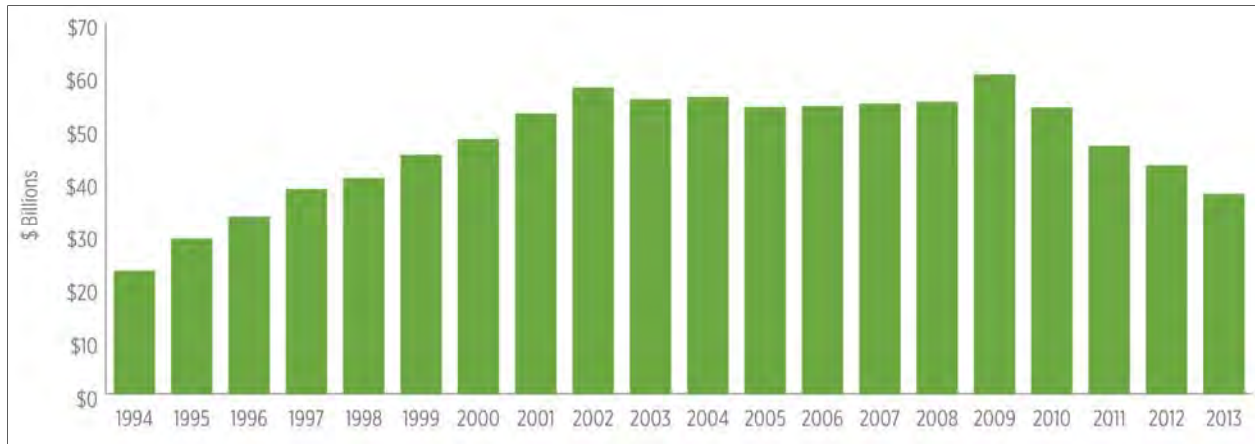


Figure 5: Nationwide Spending on Capital Construction Outlay (1994-2013)

Source: NCES data, analyzed by the 21st Century School Fund (Filardo 2016)

2.2.1 Operating Funds

This category of funding refers to recurring costs used to keep the school operational. Operating costs typically include teacher salaries, administrators, textbooks, utilities, supplies, operations and maintenance (O&M), school transportation, and day-to-day costs to keep the school running. NCES defines operations expenditures as, “Expenditures for operations and maintenance, student transportation, food services, and enterprise operations” (NCES FY2014).

Nationally, operating funds budgeted for deferred maintenance is often shifted to other priorities. A 2012 California Legislative Analyst’s Office study found that 70% of Local Educational Agencies (i.e., school districts) reported moving funds from deferred maintenance and 31% shifted all funds from deferred maintenance (California Legislative Analyst’s Office 2012).

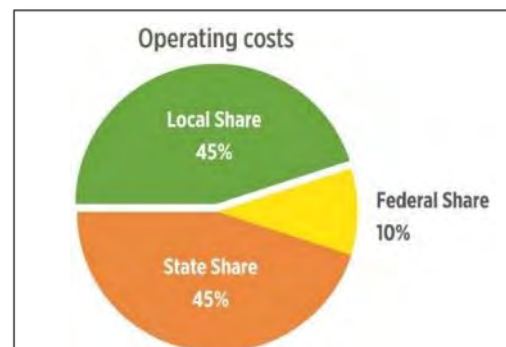


Figure 6: Operating Costs by source.

Source: NCES data, analyzed by the 21st Century School Fund (Filardo 2016)

Operating costs are evenly split between states (45%) and their local school districts (45%), totaling about 90%, while the federal government contributes about 10% (Figure 6). Adequate maintenance practices require a percentage of each school’s current replacement value (CRV) be allocated for maintenance each year for respective buildings or saved for future M&R. This should be considered an ongoing additional appropriation at the territorial level for operational school funds for the Insular Areas. This is similar to the current arrangement where Office of Insular Affairs (OIA) and the territorial governors have agreed to set aside \$1M per year for the Insular ABCs program. For recommended amounts, see Section 6.6: Maintenance Budgeting.

Most CONUS school districts are fiscally independent from the local and state governments and can levy property taxes specifically to generate revenue for their schools. In Florida, for example, local school districts collect a percentage of property taxes specifically to support capital outlay and maintenance.

The Florida state constitution established a Public Education Capital Outlay (PECO) and Debt Service Trust Fund that is funded by a gross receipts tax on utilities. PECO can also leverage this stream of income by issuing bonds, with the proceeds used to fund CIP projects. However, districts are regularly audited and penalized with a reduced amount of state funds if they violate expenditure provisions (FDOE 2014-15).

“States should ensure that public schools are provided long-term, adequate sources of funding to support planning, design, operation, and maintenance of their facilities.” (BEST 2005)

2.2.2 Capital Outlay Funds

In most states, school facility capital outlay funds are primarily provided by the local government. However, in Hawai‘i⁹ and the Insular Areas, public schools are administered entirely at the state or territorial level¹⁰ and the local government does not provide any significant revenue (Table 1).

Expenditures for durable assets (i.e., expected to last several years) are categorized as “capital outlay.” The NCES defined this as: “direct expenditures for construction of buildings, roads, and other improvements and for purchases of equipment, land, and existing structures. Includes amounts for additions, replacements, and major alterations to fixed works and structures” (NCES FY2014). In comparison to operational funds, capital funds are typically obtained through long-term financing that is repaid over an extended period. Most CONUS school districts use long-term general obligation bonds to pay for capital improvements and then use local property tax revenues to cover the debt service payments (Duncombe and Wang 2009).

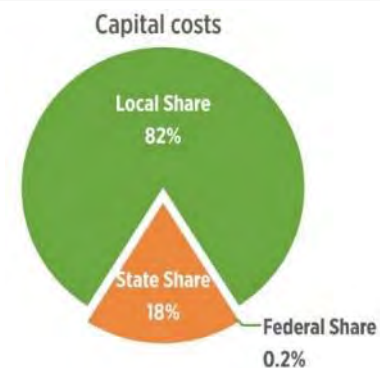


Figure 7: Capital Costs by funding source.
Source: NCES data, analyzed by the 21st Century School Fund (Filardo 2016).

In the US, most (90%) school districts are fiscally independent, meaning they can levy taxes (usually on real property) and can ask voters directly to support new bonds (up to the statutory limit) to support a specific purpose or project (21st Century School Fund 2010b). Nationwide, capital improvements in independent school districts in the US are typically funded by 82% local, 18% state and 0.2% federal funds (Figure 7). Independent school districts have a high degree of predictability and control over their budget and expenditures. In some cases, voter approval is only required for property tax increases above a specific amount (CPE 2008).

Hawai‘i and the Insular Area schools are fiscally dependent school districts. Fiscally dependent school districts depend on appropriations from their parent government (US Census Bureau 2017). There can be large fluctuations from year to year, and when appropriations are insufficient or unfunded, operational priorities (i.e., teacher salaries and school lunch programs) understandably take precedence over preventive maintenance and capital funding needs.

The inability to rely on a steady stream of long-term funding poses a unique challenge for dependent school districts, who do not control the revenue needed to implement their budgets and priorities. The

⁹ The Hawai‘i Department of Education cannot levy taxes or issue debt.

¹⁰ USVI is the exception, with two school districts.

Council of the Great City Schools (CGCS) is a coalition of 68 large U.S. city public school districts. Although CGCS provided the following remarks for an audit of the Anchorage School District, the comment relates to Insular Area school districts as well:

The district has a weak long-term financial planning structure, and there are few long-range funding strategies for facilities and technology infrastructure, a situation that is mostly due to the fiscal dependency of the school district on city hall for revenues and voter approval of bonds. The team often sees this weakness in financially dependent districts because of their inability to project revenues on a multiyear basis and to bond independently. For instance, the district has a \$400–\$500 million (CIP) that includes addressing the district’s sizable deferred maintenance backlog and other issues, but it lacks a mechanism to ensure the issues stay in front of the public on a sustained basis (CGCS 2012).

OIA provides annual grants for Insular Area CIP projects. According to OIA, from 2013 to 2015, Education (primary, secondary and post-secondary) was the largest recipient of OIA CIP funds. However, that allocation has been steadily declining (Table 2). While the total amount of OIA CIP funds available has remained constant, beginning in FY2016, Education was no longer the largest recipient (Figure 8).

Table 2: OIA’s CIP Expenditures

FY	% of OIA’s CIP Expenditures for Education ¹¹
2013	35%
2014	30%
2015	29%
2016	24%

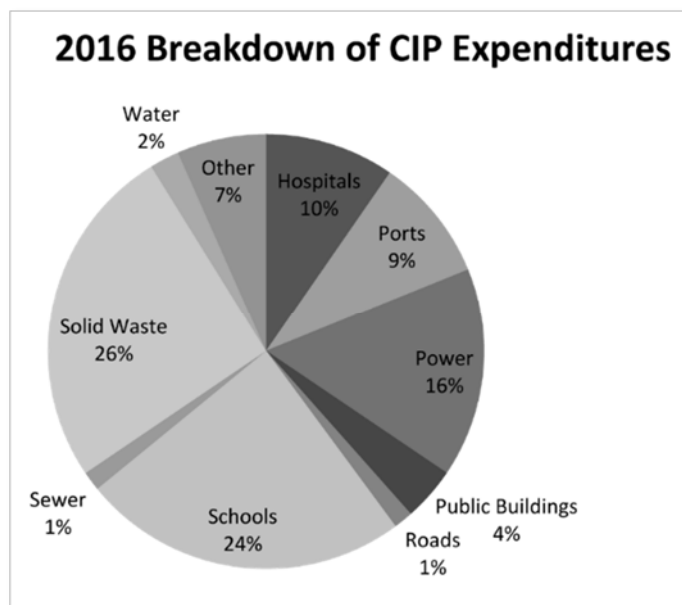


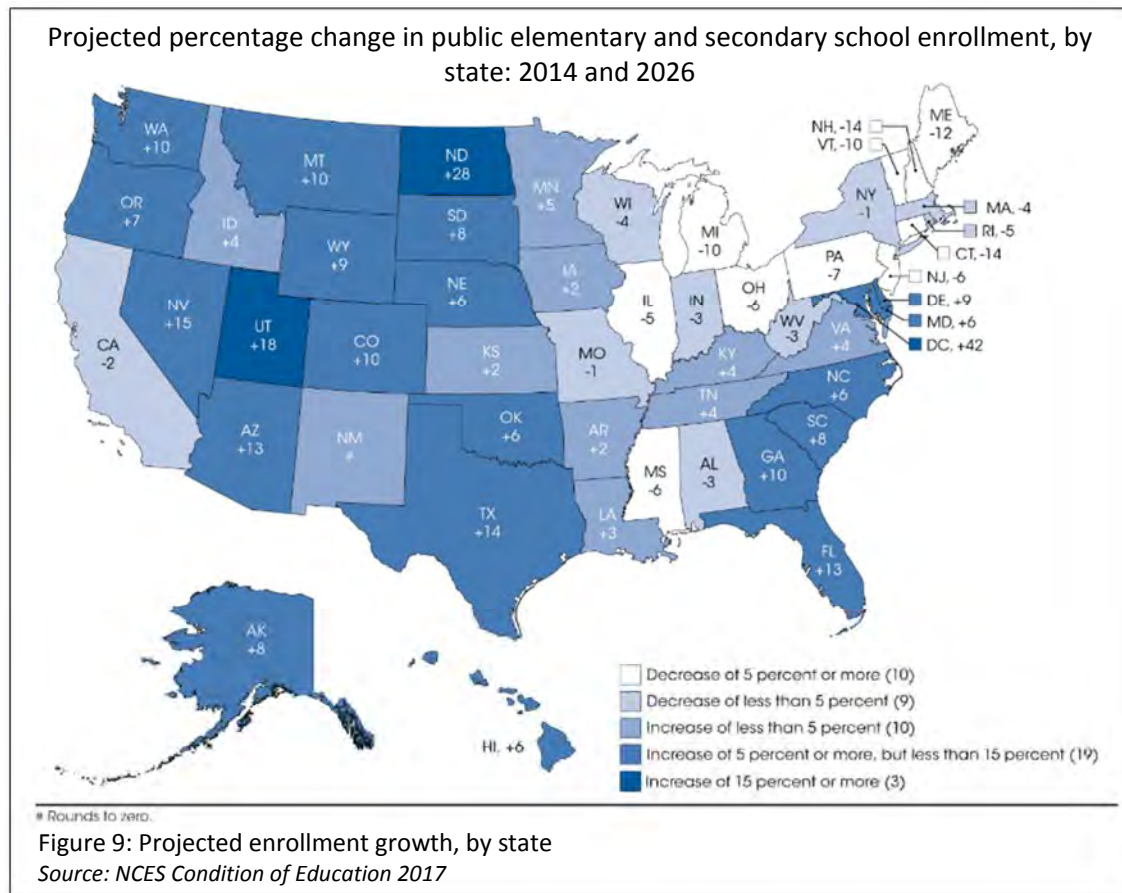
Figure 8: Allocation of OIA CIP funds, FY2016.
Source: (DOI FY2018)

2.2.3 National Enrollment Trends

While most Insular Area schools struggle with declining, constant or uncertain projected student enrollments, most states are projecting increased enrollment as shown in Figure 9. Declining enrollment or large demographic population shifts are difficult for school districts because it tends to be

¹¹ Education includes post-secondary schools as well as public K-12 school facilities.

- 1 accompanied by cuts in operating revenues (i.e., instructional staff is reduced). While maintenance and
 2 operations staffing are typically included within the operating budget, buildings still require a minimum
 3 amount of scheduled maintenance regardless of the number of students enrolled.



4

5 **2.3 Considerations for Continued School Facility Funding**

- 6 In summary, school facility funding for the Insular Areas cannot be considered in terms that apply to US
 7 mainland schools. As long as local revenue sources remain below levels needed to fund critical actions of
 8 all the local agencies that depend on those funds, federal dollars will be required to keep school facilities
 9 safe and healthy learning environments. Territorial finance agencies, when considering budget
 10 allocations, must also consider school facilities maintenance as a critical expense and strive to not only
 11 provide adequate funding, but to not redirect this funding when faced with other pressures.

- 12 Another point worth noting is that providing federal funds in the form of capital improvement dollars
 13 may encourage new construction over maintaining existing facilities. If the preference is continually
 14 given to new facilities, then underinvestment in maintenance will lead to significantly higher costs in the
 15 long run due to shortened useful lives of buildings (which can be a 30 percent loss to the investment
 16 [NASA-PR, 2008]). Ultimately, students and school staff pay the price because they are left to occupy the
 17 deteriorating buildings for years while the worst buildings are slowly replaced. These topics are
 18 discussed further in subsequent sections.

3 Operations and Maintenance Practices

Facility condition is dependent upon operations and maintenance (O&M) practices, even before considering funding issues. These practices should be defined by what is needed to provide an acceptable learning environment, including identifying and managing what is needed and with what frequency, who is responsible for the related tasks, and the related steps and staff needed to execute work (e.g., procurement; material and equipment storage). Defining these practices is paramount because they help define the budget needs, and they help recruit, assess, and retain qualified personnel. Clear needs and qualified staff help ensure that funding is used efficiently.

This section will consider host agency facility management practices, provide national baseline metrics and example best practices and make recommendations regarding ways for strengthening and building efficiency in host agency O&M practices.

The CNMI Public School System (PSS) is the agency responsible for the construction and maintenance of public school facilities. Maintenance and repair projects, as well as large CIP projects, are handled by the Facilities Development and Management (FDM) division of PSS.

3.1 Maintenance Staffing – Baseline Counts

3.1.1 Existing Conditions

Recently, in collaboration with the ABCs CNMI Program Manager, FDM created five new positions within FDM: a Maintenance Manager, Manager of Compliance, two HVAC Technicians, and an Administrative Assistant. Table 3 provides FDM job titles and number of positions.

Table 3: CNMI Facilities Development and Management Staffing*

Position	Job Title	# Actual Positions	Total Positions
Management	Director	1	4
	Maintenance Manager/Supervisor	1	
	Manager of Compliance	1	
	Lead Foreman/Supervisor, all Trades	1	
Staff	Engineering Technician	1	38
	Electrician	1	
	HVAC Technician	2	
	Maintenance Worker (unskilled)	34	
TOTAL			42

There is one Lead Foreman/Supervisor¹² for all trades, one Electrician, and two HVAC Technician positions (both are newly created positions; one is currently vacant). FDM calculated the cost of contracted HVAC maintenance work at about \$300K annually and that they could save about 50 percent by conducting a portion of HVAC maintenance in-house. However, CNMI's remote location poses a recruitment challenge and it has been difficult to find a qualified person to fill the second HVAC position.

¹² Ando has been with the FDM department for many years and continues to provide hands-on support, supervision, and also serves as a living repository of institutional knowledge about facilities information.

The Manager of Compliance is responsible for coordinating with PSS sister agencies (e.g., Public Works, environmental agencies and Fire Department). He was recently certified for completing one of two National Fire Protection Association (NFPA) courses and is now working on a second NFPA certification. The Maintenance Manager position started in March of 2016 to centrally manage and support the coordination and completion of work orders. FDM has already seen improvement in the short time they have been tracking work orders (discussed more in the Work Order Management section).

Maintenance staff skills and qualifications are reportedly low. Training and certification incentives were not historically provided or considered critical organizational need. Wages are not competitive to the local market, and no formal structure exists to advance exemplary staff or provide a path to leadership positions.

3.1.2 Determinations and Recommendations

Competitive wages and advancement structure with staff performance monitoring could help in identifying and retaining valuable staff. CNMI's neighbor islands, Rota and Tinian, have difficulty recruiting and retaining skilled staff. PSS has difficulty contracting maintenance work for the outer islands because there is a general lack of interest amongst contractors. The cost of living is higher there and logistics are challenging.

Table 4 lists baseline staff counts for FDM, based on campus size, building square footage and Association of Physical Plant Administrators (APPA) level two cleanliness recommended staffing needs. Level two standards of cleanliness means that most preventive maintenance work is completed satisfactorily, in a timely manner with occasional emergencies.

Based on these staffing benchmarks¹³, the number of maintenance staff could be reduced from 38 to about 15. Custodial and ground maintenance work are currently outsourced, but FDM is considering in-house options.

PSS could realize potential cost savings by converting some of the existing maintenance positions into custodial positions, hiring one or two skilled tradesmen from each trade – plumber, carpenter, and electrician – and paying them a competitive wage to encourage retention. Modifying and creating better job descriptions to recruit skilled tradesmen will help recruiters find the best talent. Providing maintenance staff with a clearly defined career path that rewards individuals for obtaining advanced trade certifications or positive performance reviews from supervisors will further help improve employee performance, job satisfaction and retention. PSS should consider other ways in which competitive wages could be accommodated with existing funding. Maintenance staff wages should be paid by PSS and not come out of individual school's budgets.

Table 4: Ideal Staff Count, CNMI

Category	Positions
Maintenance	15
Custodial	59
Grounds*	13
TOTAL	87

*Based on APPA level 2: open fields: 25 acres/FTE.

¹³ These staffing benchmarks are high-level estimates, local facility managers ultimately decide the appropriate levels of effort for their schools. For example, maintenance positions can be further refined by type of use – an office may take longer to clean than a classroom; cutting grass in an open field may not take as long as maintaining the landscaping around school buildings. Quality, availability and security of equipment can also affect staff productivity levels and need to be considered when estimating staffing needs.

Maintenance departments in similarly sized school districts use a lead tradesman to provide needed supervision instead of creating separate additional administrative positions (Appendix 8.2: Case Studies). These lead tradesmen work alongside the crew at the job site, instead of solely in a supervisory role, and should provide mentorship/training. One lead tradesmen for each skilled trade (e.g., HVAC, plumbing, and electrical) can oversee work at all Saipan public schools. These supervisors could work with staff on Rota and Tinian on an as-needed basis, or similar positions could be created on Rota and Tinian. Skilled tradesmen in other disciplines could be added as necessary. Having skilled tradesmen acting as supervisors can foster on-the-job skill building and teambuilding.

As a corresponding issue, staff that do not perform assigned tasks or act with disdain, can discourage other staff. Clear job definitions and advancement structure should be set up to help manage this, and could include position-based benefits or corrective measures.

The lead tradesmen can also serve as a mixed-trades rapid response team to address emergency repair needs. A conceptual staffing chart, showing basic positions and advancement opportunities, is provided in Figure 10.

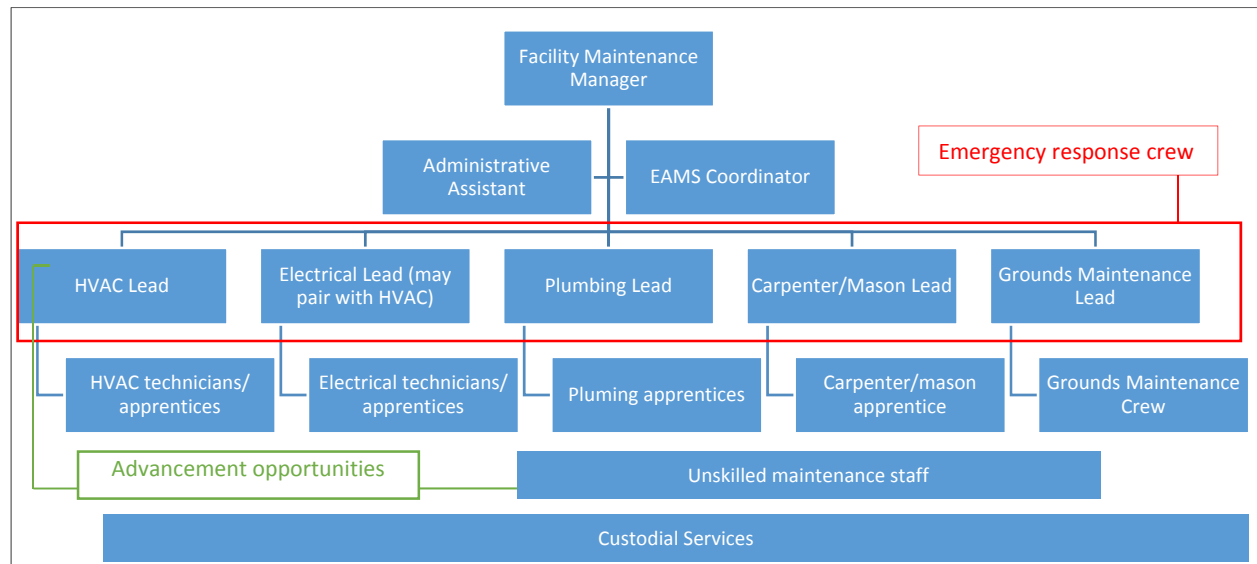


Figure 10: Conceptual Staffing Chart

As lead supervisors near retirement age there is a great risk that facility managers will lose a substantial amount of institutional memory. Creating a digital archive of scanned as-built drawings, specifications, example procurement documents, and utilizing an enterprise asset management system (EAMS) to store and share related information will help retain some of the facility maintenance knowledgebase.

School maintenance should also include grounds maintenance (see the Grounds Maintenance Primer for specifics). Appropriate tasks and frequencies should be defined and new positions should be created to execute the work. The grounds crew will need equipment, transportation vehicles, and access to a secure storage facility for equipment and hazardous materials (e.g., fuel, pesticides). Because of the need to purchase, store, and maintain equipment and vehicles, grounds maintenance costs must be considered. PSS FDM analyzed these and determined that having an in-house grounds maintenance

crew is preferable. FDM would like to improve efficiency by providing one or two centrally managed grounds keeping crews of three to six rotating groundskeepers that cover all schools.

Custodial services could be managed in the same centralized way although the HHF Program Manager has also suggested that janitorial services could be more efficiently handled if FDM outsourced it completely. Refer to section 6.2.1, Rightsizing: In-House vs. Contract Labor, for further discussion.

Table 5: Staffing Recommendations

Action Recommendation	Responsibility	Action Timeframe
1. Create “lead tradesmen” positions for staff that can function as supervisors and mentors that provide training to and oversight of other staff for skill building, accountability, and knowledge transfer.	Host agency	Fall 2019
2. Create well defined job positions and job descriptions so employment expectations are clear and to provide advancement opportunities or corrective measures.	Host agency; HHF may be able to assist in Year 4	Fall 2020
3. Create a more rigid interview process to test applicant capabilities and personality; document interview results.	Host agency; HHF may be able to assist in Year 4	Fall 2020
4. Create employee performance evaluations, conduct evaluations annually, and apply reward or corrective measures as appropriate.	Host agency; HHF may be able to assist in Year 4	Fall 2020

3.2 Work Order Management

3.2.1 Existing Conditions

In the past, work requests were not tracked and principals would call several PSS administrators until the problem was resolved, or they would be forced to contract and manage the repair work themselves, using their limited school operating funds. CIP staff were generally reserved for federally-funded projects due to limited staffing. Maintenance work was coordinated by a Lead Tradesman/Supervisor who, due to staffing shortages, primarily worked hands-on in the field.

The Maintenance Manager position was started in March of 2016 to centrally manage and support the coordination and completion of work orders. FDM has already seen improvement in the short time they have been tracking work orders. This underscores the need to collect and record performance data—the best benchmark to use is an organization’s past performance.

Table 6 shows that response time improved. From March 2016 to June 2017, a higher percentage of work orders were accomplished within a shorter amount of time.

Table 6: Summary of Work Order Completion Time

Calendar Days to Complete Work Order (WO)	2016*	%	2017	%
0 to 5	88	64%	128	82%
6 to 30	23	17%	20	13%
30 or more	26	19%	8	5%
Total WO Completed	137	100%	156	100%
Median Days	1		2	
Incomplete or Unknown Status	35		24	

*Work Order tracking began on 3/28/2016

As shown in Table 7, in 2016, the highest percentage of work orders were completed by the Lead Foreman/Supervisor (AM). From March 2016 to June 2017, the percentage of executed work orders shifted to another staffer (NA, GS, or O). This indicates that knowledge and responsibility transfer is taking place and that the Lead Foreman/Supervisor has more time for supervisory or other preventive maintenance tasks.

Table 7: Top 3 employees by work completed

Year	Employee	# of Completed Work Orders	% of Work Orders
2017	N	67	43%
	AM	57	37%
	O	15	10%
2016	NA	25	18%
	AM	28	20%
	GS	19	14%

3.2.2 Determinations and Recommendations

FDM plans to work with school Principals in directing maintenance requests to the FDM office to provide more centralized and consistent service to the schools. Regarding how assistance is requested by the school (e.g., school administrator), standard operating procedures (SOPs) should be defined for: janitorial, vendor service agreements, maintenance, CIP, and procurement for school furnishings and equipment. FDM is currently using a work order tracking method (using an Excel-type format in Google Docs). This process is to be replaced by EAMS when ready and service request SOPs are recommended to follow these steps:

1. Tenant reports service request to the school Vice Principal (VP), or designee.
2. VP, or designee, reports service request to FDM point of contact.
3. FDM creates a work order (in EAMS when ready); key information includes: requesting school name, date/time requested, location of work (asset and location within building), description of problem, employee assigned to the work order, notes/comments (e.g., to describe extenuating circumstances), date/time completed or other notes on outcome.
4. FDM dispatches the work order to the appropriate supervisor or tradesman.
 - a. Note: tool and material storage and sign out protocol may also be needed.

5. Tradesman signs in at the school office upon arrival at the school.
6. The tradesman reports work complete to the school office and gets the VP's (or designee's) signature confirming the work was complete, document time complete, and sign out.
7. Tradesman or supervisor submits the completed work order to FDM for closeout in EAMS.

Service request tracking should also include a field for tenant feedback, or other notes, to capture any comments that the tenant or repair staff would like to make regarding the work, worker performance, or any issues that arose. It is also recommended that senior-level facility managers be responsible for monitoring emergency or high priority work orders/repairs to assist in managing any delays that arise.

Table 8: Work Order Management Recommendations

Action Recommendation	Responsibility	Action Timeframe
1. Establish SOPs for centralized maintenance service requests--requires school Principal concurrence and assistance with adherence.	Host agency	Fall 2019

3.3 Maintenance Management

3.3.1 Existing Conditions

There are several types of maintenance that need to be considered with regard to staffing and funding (e.g., deferred maintenance), discussed more in Section 6.6, and summarized in the following categories:

1. Preventive – defined by the regular execution of scheduled actions to inspect, clean, and replace certain components to keep assets in good condition and ensure that intended functions are satisfied. These assets are taken out of use (planned downtime) during maintenance to reduce the risk of failure and unplanned downtime.
2. Corrective – executing work order to fix items that are identified as broken or otherwise not satisfying intended functions. This typically results in unplanned downtime, which lasts until the asset is repaired.

Currently, nearly all school maintenance activities are focused on corrective maintenance. Preventive maintenance is, in general, not being conducted. The Parent Teacher Association (PTA) or individuals (e.g., student parents) assist with grass cutting and building cleaning and painting at various times, which can be classified as preventive maintenance.

3.3.2 Determinations and Recommendations

Preventive maintenance is important for keeping facilities in good condition and avoiding “service interruptions” or loss of a certain function that can cause a room or building to be closed. This includes fines or citations for health and safety violations that can be avoided when regularly inspected and addressed by knowledgeable staff. Preventive maintenance tasks are often inspection based, and occur at set frequencies. The recurring nature of these tasks simplifies maintenance scheduling and resource

management, but given the high number of facilities, and assets within those facilities, the provision of resources, logistics, and funding require careful management (e.g., within EAMS) and support.

Inventory-specific preventive maintenance needs, task steps and frequencies, and resource allocation should be defined and instituted as a formal preventive maintenance program, to include the training of maintenance staff and providing oversight. This should also include the identification of high value assets. Focusing preventive maintenance efforts on these can yield the highest cost savings.

As the preventive maintenance program is developed, facility managers should look for opportunities to bundle preventive maintenance tasks or pair them with other maintenance tasks by region to improve efficiency (e.g., reduced transportation time). The EAMS scheduler function can be used for this. In line with the recommendation made in work order management, work order tracking should capture metrics that measure performance.

Table 9: Maintenance Management Recommendations

Action Recommendation	Responsibility	Action Timeframe
1. Create a preventive maintenance program that defines the needed work, steps, frequencies, and required resources for respective assets. Develop specific job plans for each task.	HHF in collaboration with Host agency - Year 3	Fall 2019
2. Identify high value assets for more focused attention (e.g., equipment, the facility components that prevent valuable equipment from being damaged or failing such as weather proofing or fire protection assets, energy conservation measures such as AC duct insulation).	HHF in collaboration with Host agency - Year 3	Fall 2019
3. Train personnel to perform preventive maintenance tasks; provide oversight.	Host agency	Fall 2019

3.4 Resource Management: Maintenance Staff, Material, and Equipment

3.4.1 Existing Conditions

Maintenance Staff:

To date, the ABCs team collaborated with FDM to provide 80 hours of HVAC maintenance training to 20 PSS maintenance staff in 2016 to build local capacity. An additional 80 hours of training for plumbing repair is being offered in 2017. About 15 (out of 34) maintenance workers are currently enrolled in the training program. Many of the maintenance staff have opted out, but training opportunities provide a substantial benefit to staff.

Maintenance responsibility at PSS schools has shifted over time. At the start of ABCs Phase 3, school maintenance was the responsibility of the principals. All schools typically have two to three maintenance workers who serve as “jack-of-all-trades,” performing a limited range of maintenance-type services. However, they are generally not certified skilled tradesmen and do not do electrical or air-conditioning work. School facility maintenance management within FDM is becoming more centralized. Starting as a phased implementation, beginning in March 2016, FDM recently implemented a new work order

tracking system using a Google Docs spreadsheet. This document is helping capture the key work order information discussed in Section 3.2.2.

Safety training (e.g., OSHA 30 hour course) is a serious need; there is currently no Safety Administrator.

Utility bill tracking is handled by the finance office, but information is not being shared with or being tracked by facility management/maintenance staff. This is needed for responding to significant fluctuations and monitoring for benchmarking and strategy testing (e.g., testing the effectiveness of temperature controls or equipment enhancements on sample buildings). This need is discussed further in the planning section.

Staffing time needs and utilization is not well documented.

School principals are starting to report their maintenance requests to one CIP Coordinator, instead of calling different PSS administrators and the Lead Supervisor, until the problem was resolved or forgotten, as was done in the past. However, school Principals are still currently tasked with providing facility maintenance on an individual school basis, out of their own limited operating budgets, without qualified maintenance staff, adequate supervision or materials (see Funding: Section 4.0). Janitorial services are primarily outsourced, but teachers are required to do all the cleaning within their classrooms.

FDM reports that it is not currently providing planned or preventive maintenance because they are fully occupied with responding to reactive/emergency maintenance. Adequate funding to address the backlog of deferred maintenance remains a constant struggle.

Material and Equipment:

Maintenance tools, supplies and replacement materials were not previously warehoused and required a fairly time consuming procurement process. These limitations, compounded by the limited amount of time experienced maintenance staff have to respond, impede progress.

Storage of standardized spare parts for plumbing and electrical repairs reduces response time and downtime/service interruption. FDM repurposed a used shipping container and added a lean-to roof and shelving next to the main FDM office to provide cost effective secure storage facilities (Figure 11). The space is also used to store tools. Skilled tradesmen usually provide their own hand tools and only need to check out larger equipment. While inventory control is always an issue, only the Maintenance Manager and Lead Supervisor have the keys and are responsible to monitor access. In the future, the EAMS Coordinator position can also be tasked to assist with inventory control. Limiting access has helped FDM avoid tool and material losses and avoid the need to hire a dedicated storekeeper position.

The Insular ABCs program assisted PSS with acquiring new tools and tool truck to assist the new HVAC Technicians and improve coverage across all campuses. The truck is also used to haul needed equipment and essential personnel between



Figure 11: Shipping containers converted into secure storage.
Photos by HHF Planners.

campuses. Two more vehicle purchases are planned to further enhance service coverage and reduce service wait time.

Storage capacity may still be inadequate as PSS continues to supply maintenance staff with needed materials and equipment. Just-in-time purchasing of materials currently requires a troublesome internal procurement process, but is an essential supplement to warehousing materials.

3.4.2 Determinations and Recommendations

Maintenance Staff:

Training opportunities should be continued as a standard element of staff advancement, and should align with response team needs and capabilities.

Among many other functions, using the EAMS will help define required staffing levels and track performance to better account for requirements and time spent. EAMS will allow facility managers to use empirical data/metrics to estimate future staffing demands and costs. This is discussed more in the Funding section.

Material and Equipment:

PSS, in collaboration with the ABCs team, is improving the provision of needed tools and materials. Additional storage capacity will need to be considered as tool and material holdings increase, and especially if grounds maintenance shifts from an outsourced service to in-house responsibility.

Protocol for small material purchases should be revised (e.g., draw down purchase order agreements) to accommodate more timely response to trouble calls.

Table 10: Resource Management Recommendations

Action Recommendation	Responsibility	Action Timeframe
1. Transition service request SOP to the EAMS platform once it is ready.	Host agency and HHF	Fall 2019
2. Continue to create dedicated warehouse space, as needed, with access, material use, and equipment check out protocol.	Host agency, with ABCs support	Ongoing
3. Establish draw down purchase order agreements with local construction material suppliers; correct overdrawn accounts as needed.	Host agency	Fall 2019
4. Create a Safety Administrator position, or align duties to an existing position and implement an ongoing safety training program.	Host agency	Fall 2019

3.5 Project Delivery

3.5.1 Existing Conditions

Scoping, cost estimates, and contractor performance:

New construction and larger scale repair and maintenance work is bid to contractors through the invitation for bid (IFB) or request for proposal (RFP) process. Typically, selections are made based on lowest cost. The reputation of the contractor in terms of past work is considered (e.g., quality of work, professional integrity, and competence), but contractor performance is not formally tracked.

Fairly detailed scopes are generally prepared for larger scale FDM projects (e.g., over \$100K), but not consistently for smaller-scale repair work. Lack of detail in scopes (e.g., material specifications) could leave FDM dependent on the judgement and integrity of contractors to adequately scope and bid on the needed work. If project procurement scopes do not include detailed breakdowns of project cost components, then bid reviewers cannot adequately determine if the bids are responsive (i.e., if the bid addresses all aspects of the scope of work). Construction market conditions in the CNMI are currently strong so there is less competition for PSS-related work so concerns about underbidding to secure work are less than in other territories (e.g., American Samoa).

Procurement process:

The PSS Division of School Maintenance executes work under three procurement categories:

1. Projects under \$10,000: procured in house; can be sole source, but typically fields three quotes
2. Projects from \$10,000-\$30,000: procured via a purchase order; requires three quotes
3. Projects over \$30,000: required to go through the Department of Procurement competitive bid process

Public agency procurement process delays are common, regardless of location. In the CNMI, the delays that the ABCs embedded team has encountered have been caused by:

1. Amount of items going through the Procurement office (i.e., overwhelmed capacity)
2. Low in-house procurement limit (this improved since the limit was raised from \$10K to \$30K)
3. Many action/responsibility steps involved in the procurement vehicles used
4. Inability to move paperwork/electronic procurement documents if key people are out of office
5. Paperwork/electronic procurement documents misplaced, or timely action not taken

The high number of procurement documents going through PSS and the Department of Finance is one cause of delays. To address this the ABCs Program Manager worked with PSS Procurement to raise the limit, from \$10,000 to \$30,000, for projects that could be procured with a purchase order instead of using the more time consuming IFB/RFP process that is conducted by the Department of Finance. This change allowed the FDM/ABCs team to execute more work through the internal procurement process. The FDM/ABCs team can also solicit quotes and select contractors directly for work under \$30,000 to expedite procurement for a higher number of repair projects, but the bid process is still used in most cases to ensure a fair distribution of work to available contractors. Guam DOE's in-house purchase limit was historically \$50,000, and was recently raised to \$100,000K; this can serve as a benchmark.

Procurement requires many reviews and signatures throughout the process, requiring that key personnel being available and responsive or else the project cannot move forward. Delay issues have

decreased since 2016, issues still exist where delays result from one person being out of the office for an extended period of time (e.g., one week or more), without identifying a replacement that could address the needed action. There are also instances where staff are present but may have higher priorities or otherwise cannot complete the needed action.

3.5.2 Determinations and Recommendations

Scoping, cost estimates, and contractor performance:

FDM/PSS should establish formal expectations/requirements for clearly defined scopes; levels of detail may be proportionate with extents and complexity of work to be performed. All work that is outsourced should have well defined scopes, specifications, and cost elements with corresponding cost estimates. Having clearly defined work steps and material quantities will help facility managers provide for a more thorough IFB preparation and bid review process, help contractors create more meaningful material and labor estimates for their bids, and help construction managers conduct field inspections during construction.

Scoping work and cost estimating requires experience. Training all staff that are responsible for creating scopes and cost estimates may be difficult, especially considering the wide range of maintenance and repair work required. Experienced staff should be used in a mentorship role. Training for cost estimating should include the establishment and ongoing use of a “cost library” from previous work, as well as published resources for cost estimating. A cost library is most simply a collection of costs from previous projects, and can show cost fluctuations for certain types of work over time to help inform future estimates. Keeping track of local material costs is also important for updating cost information. Given the wide range of work, document organization and access will be important for maintaining the usefulness of stored materials.

It is recommended that contractor performance be tracked for each award so that this information is available and can be considered during bid selection. This information can show trends of over or under-bidding, reliability, change orders, etc. over time. Performance tracking can also inform bid reviews and justify the rejection of certain bids if the contractor has a history of poor performance. This would not be done to block the contractor from all future work, but would be used as a sanction to let the contractor know that they need to improve defined aspects of their performance. This can also help facility managers see if there are recurring bid problems with any of the contractors, and communicate these problems to help the contractors understand how to improve their bids (e.g., providing incomplete or inadequate cost information).

Procurement Process:

Increased in-house purchase limits have helped reduce procurement related delays, and would benefit further if increased to a higher limit. Again, Guam DOE’s in-house purchase limit was recently raised to \$100,000; this can serve as a benchmark.

Procurement delays are experienced occasionally due to a high volume of work going through the Procurement Office and low number of staff to handle the volume. When projects are required to go through the Department of Finance there are several points at which the procurement documents have to “change hands” for data entry and signatures. This is where documents can get held up if key personnel are absent or unable to complete the task. Designee protocol (requiring qualified backup staff) should be put in place to ensure that procurement-related documents continue through the process if such hold ups occur. Follow up by an administrative assistant is also crucial for addressing

- 1 instances in which documents are held up or misplaced. FDM could add a purchasing/procurement
- 2 officer position, or add these duties to an existing position, to further reduce procurement time. See
- 3 Section 6.7 for more information on Alternative Project Delivery Methods.

4 *Table 11: Project Delivery Recommendations*

Action Recommendation	Responsibility	Action Timeframe
1. Establish formal expectations/guidance for clearly defined scopes and government cost estimates.	Host agency	Fall 2019
2. Set up a scoping and cost estimation training process/program and use experienced staff to mentor next generation construction managers.	Host agency	Fall 2020
3. Create a school maintenance cost library as a collection of costs from previous projects, organized by project type (with locations and dates), that can show cost fluctuations for work types over time to help inform future cost estimates.	Host agency	Fall 2020
4. Establish and maintain contractor performance tracking to inform bid selection process.	Host agency	Fall 2019
5. Establish designee protocol to move procurement documents when key personnel are absent.	Host agency	Fall 2019
6. Create a Division of School Maintenance purchasing/procurement officer position to assist with moving school maintenance procurement.	Host agency	Fall 2020
7. Institute a task order project delivery process for M&R projects that would allow PSS to select contractors based on qualifications and past performance.	Host agency	Fall 2020

4 Funding

O&M recommendations are inherently tied to available funding, and ways in which territorial budgets are allocated directly affect a school facility manager's ability to maintain facilities. Being able to define maintenance, renewal, replacement, and growth-related costs, as well as related budget allotments, is an important element in communicating how the budget deficit will impact facility condition over time to agency heads and budget offices.

In order to do this, facility managers must estimate near-term O&M and CIP costs, track actual expenses in clear categories (for direct reporting and estimate calculation refinement), and maintain clear records for future reference. In a reciprocal way, various offices within the agency responsible for school maintenance must be able to share information in a way that informs needs on all sides.

With this information, school facility management departments can work to improve funding circumstances, and their ability to implement the many tasks required to provide comprehensive facility management services.

"Although some states have made significant improvements and investments in their public infrastructure, many state and local authorities struggle to provide healthy, safe, educationally appropriate, and environmentally sustainable facilities. As a nation, we must not only close the funding gap, but also ensure that we continue to deliver on our responsibility to provide all students, regardless of wealth or location, access to an excellent education." (USGBC, 2017)

4.1 Existing Conditions

PSS is a fiscally dependent school district and does not have authority to levy taxes for revenue. Instead, PSS submits a budget and must rely on annual appropriations approved by the legislature and disbursed by the Governor. The Superintendent has some flexibility to determine how certain funds are distributed throughout PSS (i.e., what portion of operational funds will be apportioned for facility operations and maintenance).

In 2014, CNMI passed legislation that significantly raised the guaranteed annual share of general fund revenues to the entire Public School System (PSS) system from the CNMI government from 15% to not less than 25%¹⁴ (CNMI PSS 2016). As a result, PSS reported a slight increase in funding in FY2016. Future annual revenue to PSS is expected to grow by \$2 million, depending on CNMI's tourist-based economy.

The procurement department is located within the Finance Department of PSS and therefore PSS can exert a measure of control to internally resolve procurement bottlenecks. When the current PSS Commissioner Education took over in 2016, enacted more uniform procurement standards and requirements that helped streamline procurement. She also raised the limit at which a purchase needs to be competitively bid, from \$10,000 to \$30,000.¹⁵

¹⁴ House Legislative Initiative (HLI) 18-12 passed 2014 (Saipan Tribune 2014). PSS's appropriation cannot be reprogrammed for other purposes but at the end of the fiscal year, unencumbered funds can be re-appropriated (CNMI PSS 2016).

¹⁵ Although reportedly, many projects in the past have and continue to bypass lengthy procurement requirements by incrementing or breaking up the work into smaller contracts below the threshold limit.

For CNMI, federal funds associated with the Insular ABCs program are provided on a reimbursement basis. PSS is reimbursed for qualified expenditures, upon providing all required documentation.

4.1.1 Maintenance Funding

O&M funds for each school are currently apportioned using the following formula: small schools (less than 200 student enrollment) are allocated a \$17,000 base for janitorial supplies, maintenance, and all other miscellaneous student support expenditures (i.e., student competitions and graduation expenses). Larger schools (greater than 200 students) receive \$50/student. Utilities for large and small schools are reimbursed by PSS (HHF Planners 2015).

In FY2017, the legislature appropriated \$1 M for building repairs: \$500,000 for Tinian, \$400,000 for Rota, and \$100,000 for Saipan. FY2018's budget request included another \$1M for M&R.

As PSS's budget depends on annual appropriations, adding "permanent" staff positions is a challenge, requiring the support of key administrators, including the PSS Commissioner. In the 2017 budget, PSS added a request for dedicated HVAC technicians. FY2018's proposed budget will include a dedicated HVAC and fire protection technician to service the newly installed fire protection systems.

4.1.2 Capital Improvements

In the foreseeable future, PSS will continue to need federal support to fund capital improvements. In most school districts nationwide, CIP projects are substantial expenditures that are typically funded through bonds or long term financing. CNMI however, has limited ability to secure new long-term debt or bond funding. Table 12 itemizes amounts for maintenance and capital outlay. Despite the added revenue (25% of general fund to PSS) in FY2016, O&M was still only 5% of total expenditures. In comparison, maintenance and operations expenditures for public schools nationwide, were on average 9.6% of total district expenditures (NCES FY2014).

Table 12: Public School Expenditures, CNMI

FY	Maintenance & Operations	O&M % of Total Expenditures	Capital Outlay	Capital Outlay % of Total Expenditures	Total Expenditures	Student Enrollment
2010	\$2,931,000	4%	\$1,496,000	2%	\$66,240,000	10,961
2011	\$8,492,000	10%	\$1,145,000	1%	\$88,121,000	11,105
2012	\$4,578,000	6%	\$1,186,000	2%	\$71,875,000	11,011
2013	\$4,919,000	8%	\$240,000	0%	\$63,233,000	10,646
2014	\$3,408,000	5%	\$116,000	0%	\$64,688,000	10,638
US avg		10%		8%		

Source: NCES

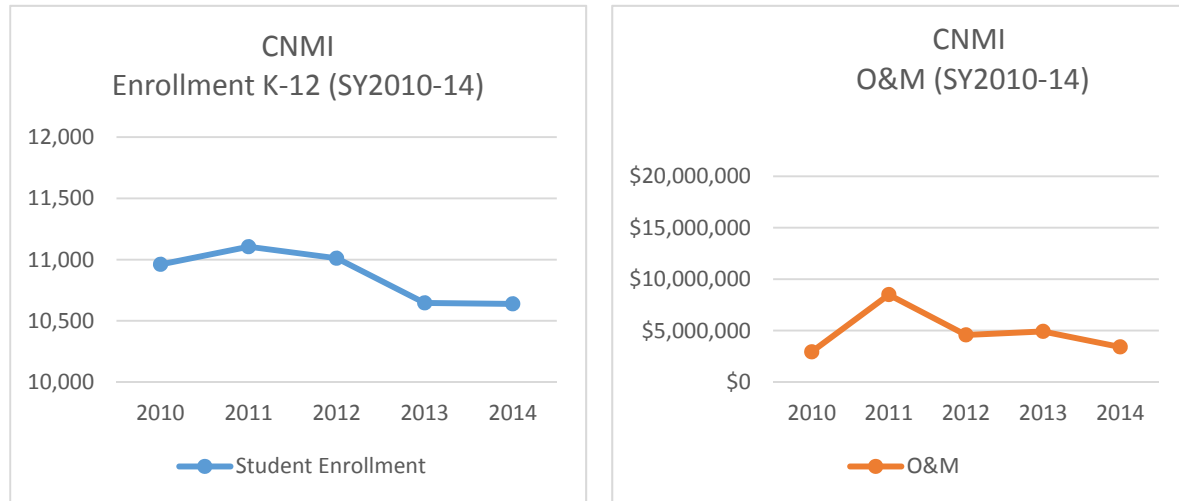


Figure 12: 5-Year Trend: Enrollment and O&M Expenditures, CNMI (NCES)

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2 FDM/PSS reports that CIP funds are provided by a variety of sources. Federal funds were recently
 3 provided for a new cafeteria. In the past, PSS has received loans for a new classroom building and to
 4 repave parking lots. CIP funds are often earmarked for specific projects identified by legislators; planned
 5 CIP projects are heavily contingent on legislative support for funding. The FDM FY2018 proposed budget
 6 is perhaps the first year that an activity-based budget was developed that lists specific projects with
 7 amounts for each. In the past, budgets were developed in a top-down manner, leaving capital projects
 8 scrambling to compete for remaining funds in the “Other” budget category.

Table 13: Capital Improvement Projects, CNMI

Project Name	Fund Source	Amount	Completed	Status
Rota HS Hardening of the Rota Walkway	Mitigation/NMHC	\$120,175	03/04/09	Closed
Oleai HeadStart Concrete Trike Path	HeadStart	\$4,000	06/30/09	Closed
Tinian HeadStart Concrete Trike Path	HeadStart	\$6,200	08/05/09	Closed
Dandan Elementary School Landscaping	PL16-4	\$8,878	08/24/09	Closed
Generator House at Various HeadStart Centers	HeadStart	\$22,034	10/21/09	Closed
Kagman HeadStart Concrete Trike Path	HeadStart	\$4,500	10/31/09	Closed
Sinapalo ES Perimeter Fence	PL16-24, GO Bond	\$80,000	12/24/09	Closed
Tinian Transformer	PL05-089/PL16-003	\$149,180	02/09/10	Closed
GTC Renovation of Building F and G	CIP 702 Funding	\$836,321	02/26/10	Closed
San Vicente ES Kindergarten	PL16-12	\$42,750	04/21/10	Closed
Termite Treatment for GTC, TAN, GES, WSR & MHS	FEMA/CIP 702 Funding	\$61,088	08/10/10	Closed
Kagman ES Multi-Purpose Stage	PL16-7/GO Bond	\$83,800	09/20/10	Closed
Tanapag Elementary School Drainage	FEMA/CIP 702	\$19,168	12/20/10	Closed
San Vicente Elementary School Drainage	FEMA/CIP 702	\$25,838	12/20/10	Closed
Oleai Covered Walkway	SSL16-5	\$20,000	01/01/11	Closed
Rehab Dandan Headstart Playground	HeadStart ARRA	\$63,120	02/28/11	Closed
Rehabilitation of SNP Public Facility	NMHC	\$349,371	08/11/11	Closed
Upgrade of Fire Alarms Systems MHS, SSHS, DAN, CHA	CIP 702 Funding	\$396,347	09/02/11	Closed
Asphalt Paving of MHS Bldg Parking Lot	GO Bond	\$118,760	03/08/12	Closed
Renovation and Rehabilitation of the PSS Lower Base Facility	FTA ARRA	\$1,652,118	03/31/12	Closed
Rehabilitation of the Rota HS Gymnasium	CIP 702 Funding	\$158,006	04/23/12	Closed

Table 13: Capital Improvement Projects, CNMI

Project Name	Fund Source	Amount	Completed	Status
GES Building E 5 Classroom Addition		\$864,472	07/31/12	Closed
GES Concrete Fence	GO Bond	\$115,900	10/23/12	Closed
Renovation of Government House #1251 for FNS	FNS Program Funding	\$59,000	11/21/12	Closed
Saipan Southern HS Aluminum Doors		\$44,734	04/15/13	Closed
TAN Building I Restroom Renovation	Saipan Local Law 17-18	\$34,575	09/06/13	Closed
Restroom Repairs for HJHS, SSHS, KAG, TAN, SVS	Saipan Local Law 17-18	\$35,899	09/02/14	Closed
TAN Headstart Concrete Fence	Headstart Funding	\$29,750	09/12/14	Closed
GTC Chain Link Fence	Local	\$37,940	09/13/14	Closed
FNS Sink Replacement Project (GTC, TAN, GES, KES)	FNS Program Funding	\$19,900	09/22/14	Closed
PSS Energy Efficient Lighting Upgrade	ARRA (Energy Ofc)	\$269,878		Ongoing
Construction of the KJHS Gymnasium	NMHC CDBG	\$1,405,817		Ongoing
RHIJSHS Covered Walkways	RLD Resolution 17-17	\$148,600		Ongoing
San Vicente Septic Tank and Leach Field	Saipan Local Law 17-18	\$18,782		Ongoing
MHS Buildings A, B, C & D Roof Repairs	OIA Grant	\$14,000		Ongoing

In FY2016, PSS secured a USDA Rural Development Program \$3 million loan to build additional classrooms and other school infrastructure needs. Repayment of the loan will be through local appropriations (CNMI PSS 2016).

FDM continues to cultivate additional sources of ongoing, stable revenue to supplement the capital budget, for example, requesting legislators dedicate a portion of the casino tax revenue to school infrastructure, facilities and capital outlay.

FDM has expressed interest in capital forecasting – the ability to anticipate the need for major improvements. But the lack of readily available facility data: condition, capacity, utilization, and adequacy of on- and off-site infrastructure¹⁶ has limited FDM's ability to formulate a budget or substantiate requests with objective criteria. A long-term facility plan can help address this, see Section 5 on Planning for more details.

Due to recent internal restructuring within the department, FDM has a renewed presence at Board of Education monthly meetings. Previously there was very little communication between FDM and the Board. Now, Board Members are also members of the Board's CIP Subcommittee, which has greatly improved communications between the Board and FDM. The PSS Superintendent attends Board meetings and determines if any maintenance or CIP issues need to be prioritized in negotiations with the legislature for additional funding. PSS also has a legislative liaison (lobbyist) to assist with communicating PSS's budget priorities to the legislator.

Community fundraisers have also partially funded capital projects (Figure 13). In 2017, three separate businesses: E-Land Group, Isla



Figure 13: Local businesses provide donations for capital improvements

¹⁶ Fire protection requires adequate off-site water supply and water pressure. In assisting with planning on-site fire protection upgrades, HHF's Program Manager discovered on at least one campus that the off-site water supply was inoperable. The public utility has been notified and is taking steps to implement repairs.

Petroleum and Energy Holdings (IP&E) and IT&E, provided a combined \$24,000 to rehabilitate the Koblerville basketball court and concrete spectator pavilion (Micronesia.com 2017) (Marianas Variety 2017). In the past, community volunteer efforts were not well coordinated with FDM, which resulted in new a building being constructed directly over a septic system. This is likely the reason other districts strictly limit and monitor such efforts. See Section 6.2.3 on Engaging Community Volunteers for details.

Annual teacher shortages are typical at PSS. Even with the FY2016 25% dedicated revenue from the general fund, it does not appear sufficient to fund competitive salaries or CIP projects. Federal grant funding or special legislative appropriations above and beyond current general revenue commitments, are highly inconsistent, which is a challenge when planning CIP projects.

Large fluctuations in O&M budget shows instability and the challenge that facility managers face when trying to budget work.

4.2 Determinations and Recommendations

Dedicated maintenance funding is essential for supporting a sound maintenance program. Defined cost components and associated staff, material, and equipment costs are needed, and can be estimated using EAMS functions once deployment is complete. Benchmark funding levels were provided in this report, but the estimates created in the EAMS would account for actual planned actions and existing conditions, and would provide more compelling rationale for requesting legislative appropriations.

Programmatic funding for CIP projects (e.g., renewal, major replacement, new construction) should also be planned (i.e., defined based on anticipates needs) and budgeted for based on population and enrollment analysis, tracking of facility conditions, and estimated service durations for various facility components. Planned expenditures should be refined annually based on observed conditions. Concepts and approaches for this are discussed further in the planning section.

Table 14: Funding Recommendations

Action Recommendation	Responsibility	Action Timeframe
1. Define O&M cost components and overall budget need.	Host agency	Fall 2019
2. Identify sources of income for stable maintenance funding and secure a dedicated maintenance fund.	Host agency	Fall 2020
3. Define CIP cost components for a five year horizon, overall budget need, as well as annual average need, and create a savings account for planned replacement, renewal, and new construction.	Host agency	Fall 2019
4. Explore potential to secure supplemental funding by partnering (i.e., joint use of school facilities) with specialized vocational/technical schools or adult education centers.	Host agency	Fall 2020

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5 Planning

A component of optimizing O&M practices, and establishing reasonable funding streams, is planning for large expenditures, which includes major repair or replacement, as well as new construction. This section primarily addresses capital investments, since CIP projects often take years to plan and implement, whereas M&R are operational or current year expenditures.

A continuously fulfilled cycle of facility investment is possible with facility master planning. Capital projects are adequately budgeted so they do not compete for limited operational or maintenance funds. Future changes in enrollment are anticipated: new capacity is added where needed and classroom space is repurposed for joint community uses where enrollment has dropped. Capital improvements to existing buildings can help reduce energy use and lower ongoing operational costs creating the opportunity to reallocate cost savings to preventive and planned maintenance. Reallocation of funds lowers future maintenance costs and creates further opportunities for savings and reinvestment.

Facility master plan:

- detailed summary of a district's facility needs

Communicate:

- facility investment needs
- Priorities: how to focus limited resources

Without a plan:

- investment decisions more likely to be reactionary, fragmented and driven by politics
- fail to consider conditions, alternatives and objective investment priorities holistically

Adequate funding for CIP and maintenance will always be a challenge. Unpredictable economic conditions, evolving technology and educational/programmatic needs, shifting enrollment patterns, investment and redevelopment patterns, aging facilities, and shortfalls in legislative appropriations – are just some of the common challenges that are beyond a school district's control.

School districts benefit from having a strategy that identifies how funds will be equitably distributed when funding becomes available. School administrators can use an updated facilities plan to defend budgets by being able to identify short-term (i.e., annual CIP) and long-term projects (i.e., planned 5-year annual funding appropriations that are required to develop a needed facility, or needed capital improvements based on building condition or enrollment capacity).

Facility master planning is particularly important for CIP because construction projects can easily take several years from planning to completion. CIP funding is often provided at irregular intervals in large appropriations and accumulating CIP funds over several years can help school districts save for these large projects.

About 40 states provided annual appropriations for school capital improvements and 44 states provide loans or grants. Most states require some percentage of local matching funds¹⁷ for school construction or CIPs. States use a variety of sources to provide loans and grants for public schools: state general fund, general obligation bonds, dedicated portion of sales tax, lottery tax, gambling revenue, tobacco settlement money and other miscellaneous sources (BEST 2005).

Several years from planning to completion - new CIPs often involve:

- initial research
- procuring design funds
- planning and community outreach
- design and preparation of construction documents
- procuring construction funds
- preparing construction documents
- obtaining entitlements and necessary approvals
- construction

¹⁷ In the continental US, school funding is provided at the federal, state, and local level. Insular ABCs schools primarily receive revenue from the federal and territory government (local level funding is not provided).

One ongoing funding challenge for school districts is that operation budgets are often tied to student enrollment counts. However, in declining enrollment situations, this causes the available funding per square foot to decrease while facility size stays constant. Fluctuations in enrollment are challenging for CIP and maintenance. After building modernization, new equipment (HVAC, security, fire alarms) often requires higher paid specialists to maintain – either outsourced or on staff. Even with minimal enrollment, these systems require some level of servicing.

The following is a background summary of the existing school facilities, a description of the extent of current planning efforts and needs, and recommendations for actions that could help facility managers capture and communicate priorities regarding facility investment needs.

5.1 Facilities Overview

PSS is the state education agency and local education agency within the CNMI and is the only public institution that provides educational services and programs to children on Saipan, Tinian and Rota (Sablan 2013). The CNMI PSS consists of 20 school campuses and 290 buildings. Most of the schools were built in the '50s and '60s and have age-related maintenance issues and functionality limitations.

As noted throughout the ABCs initiative, coastal and tropical environments cause various building systems to degrade faster than CONUS schools due to salt in the air, cyclone or other strong wind events, solar radiation, and humidity levels. These factors, along with generally higher material and utility costs, lead to above average operating expenses, and the need for special facility planning considerations.

PSS's most recent comprehensive facilities plan is the 2005 Capital Improvement Plan (2005-2012). According to the plan, in the late 1990's a \$16M state general obligation bond combined with Department of the Interior funds, matching grants and other revenues totaling \$33.7M was used to construct five new schools, including 60 classroom replacements, additions to existing schools, and many other high priority projects. In 2005, PSS anticipated continued enrollment growth at schools that were already overcrowded. The report also states that major CIP funds were needed to address termite infestation, build new/expanded facilities to address overcrowding and address other facility deficits at several campuses (7-Year CIP Plan 2005).

Maintenance and CIP projects are currently managed within the Department of Facilities Development and Management.¹⁸ FDM is interested in a long-range plan to help prioritize future investment based on objective criteria such as capacity, building age and classroom utilization. A 7-year facilities plan is currently out for bid.

5.2 Existing Conditions

Capital Investment

Facility master planning for the public schools is limited to annual CIP lists that are used to vie for funding. Legislative allotments are provided under the discretion of the Governor, but, even after funding is allocated, projects proposed in the CIP plan may be precluded by other priorities. This situation is not uncommon and speaks to the fluid nature of facility management and public agency funding. These types of lists are a great first step, and are useful for justifying funding requests, but they

¹⁸ The department was formerly known as PSS-CIP or Capital Improvement Projects

do not address needs comprehensively or set a path for prioritizing other existing problems and planning for major replacements, while addressing new construction needs or renewals.

School Rightsizing

Enrollment and capacity trends are being considered on an ongoing basis, and CIP projects are proposed to address capacity related needs (e.g., overcrowded classrooms, undersized cafeterias). Documentation and communication of recommendations are limited to intermittent line item reports of needs that may under-address inventory-wide needs, programmatic approaches to resolving immediate shortfalls, plans to prepare for foreseeable investments, or proposed actions for unneeded or underutilized spaces (e.g., joint use spaces, leasing for other uses).

Site Maps

Facility site maps, that could provide quick reference for building nomenclature, planned demolition or new construction, or facility conditions that require action, are not maintained for public schools by the host agencies. Unique building IDs are inconsistent or may have been lost (e.g., numbers were painted over).

New Building Design

Building designs that are replicated over time out of convenience may lack relevance as new technologies are incorporated into buildings, classrooms, and the overall educational program. Recycled building plans may not address innovative light and cooling options, modular classroom designs, shared learning spaces (e.g., creative maker spaces), indoor/ outdoor learning environments, or other. This approach may also perpetuate the use of materials that are difficult to procure, incur unnecessary costs, or wear down too easily resulting in excessive maintenance or replacement.

Energy Monitoring and Planning Position/Duties

Utility bill tracking is handled by the finance office, but information may not be shared with or tracked by facility management/maintenance staff in a way that allows them to respond to significant fluctuations and monitoring for benchmarking and strategy testing (e.g., temperature controls or equipment enhancements).

A planner position currently does not exist. This position could assist with managing/tracking utility costs, space planning for future improvements, and procurement and contract management. These duties could also be paired with an energy conservation officer position, responsible for implementing and operating an energy monitoring program. This program saves money by providing accurate utility usage statistics which are used to verify that the utility company's monthly billings to the public school system are accurate. The monitoring system is also able to identify specific circuits, appliances or classrooms within the school district that are inefficient and allows maintenance staff to make adjustments and reduce usage (Albuquerque Public Schools FY 2015). Albuquerque Public Schools installed utility sub-meters for electricity, gas, and water in new, LEED rated building projects. The new meters record data every 15 minutes and automatically upload the information into a district-wide database. An energy monitoring program saves money long-term but requires initial investments in metering equipment.

5.3 Determinations and Recommendations

Capital Investment

Comprehensive documentation of existing repair, code compliance, and capacity needs are required to ascertain not only the larger scale understanding of existing needs, but to set priorities that can guide ongoing investment. The EAMS will allow all facility investment needs to be assigned to the respective assets of each building through work orders, and provide real-time reporting of planned projects for existing facilities. This reporting can be used to build out campus improvement plans more holistically.

School Rightsizing

Capacity planning should be an element of the system-wide capital investment strategy. The overall strategy should identify needs, analysis of options, proposed actions, related costs, timeframes for execution, and consequences if timeframes are not met.

Site Maps

Facility site maps should be maintained by the host-agency to provide quick reference for building nomenclature, planned demolition or new construction, or facility conditions that require action within the plan's timeframe. Single-line conceptual site plans could be easily updated using Adobe Acrobat, or similar software, to show updates for planned demo, renovation or construction as well as to maintain readily available graphics of current school facility configurations.

New Building Design

Consider new building designs when planning new construction that best support the academic program while minimizing construction, operations, and maintenance costs. The design brief for a new prototype should require that the designer 1) incorporate (indirect) natural light into the classroom, 2) provide exterior shading devices to reduce solar heat gain, 3) allow for dual natural and HVAC ventilation, 4) design the solar control devices so that a contractor can easily modify the prototype to adapt to different sites, and 5) use construction materials that are durable, require minimal maintenance in a tropical climate, and found locally (i.e., commonly used in other construction projects). Design standards should also reference an energy code (i.e., the 2015 International Energy Efficiency Code, as amended by Hawai'i for a tropical climate (DBEDT 2017)). Humidity can create significant moisture-related maintenance problems. The benefits of natural ventilation and cleaning requirements should be evaluated when considering cooling options.

Energy Monitoring and Planner Position/Duties

Closely monitoring energy costs helps facility managers identify which buildings are the highest energy consumers and prioritize maintenance and repair work. Pairing needed deferred maintenance work (i.e., roofing replacement) with additional energy retrofit work in buildings that are high-energy consumers solves both issues and reduces long-term operating costs. The use of an energy monitoring program helps justify legislative appropriations for CIP funds by showing how facility upgrades reduce the amount of operational funds spent on utilities. It is recommended that the host agency add a staff planner position to assist with managing utility costs, space planning for future improvements, and procurement and contract management.

1 *Table 15: Planning Recommendations*

Action Recommendation	Responsibility	Action Timeframe
1. Develop an inventory of facility assets to assist with overall facility management and inventory monitoring (to be developed in the EAMS).	HHF with host-agency support	Fall 2019
2. Create a 5-year facilities plan to assist with planning and prioritizing future capital investments (e.g., replacement and renewal of existing facility components; new construction). Track related metrics to facilitate low effort annual updates.	Host agency, with HHF assistance	Fall 2019
3. Develop strategy for addressing school rightsizing that identifies needs, analysis of options, proposed actions, related costs, timeframes for execution, and consequences if timeframes are not met, and incorporate into the five year facilities plan.	Host agency	Fall 2019
4. Maintain facility site maps that provide quick reference for building nomenclature, planned demolition or new construction, or facility conditions that require action within the plan's timeframe.	Host agency	Fall 2019 (and ongoing)
5. Consider new building designs when planning new construction that best support the academic program while minimizing construction, operations, and maintenance costs.	Host agency	Fall 2019 (and ongoing)
6. Monitor and keep an ongoing accounting of energy use at all facilities.	Host agency	Fall 2019 (and ongoing)
7. Add a staff planner position to assist with managing utility costs, space planning for future improvements, and procurement and contract management, or ensure that these duties are addressed in an existing position.	Host agency	Fall 2019 (and ongoing)

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6 Recommended Policies for Public School Facilities

Policies help ensure that long-term sources of revenue and organizational support are in place to support ongoing maintenance and capital investment in school facilities.

Legislatures frequently do not appropriate enough funds to cover the entire Education Budget in the Insular Areas. Operational budgets are typically approved with only a portion of the requested amount and it is up to local school districts to prioritize what funding remains. Unlike 90% of other public school districts in the US, Insular Area schools are fiscally dependent on legislative appropriations and federal funding for revenue. They are not able to levy taxes or directly raise capital and thus even the most successful education programs risk elimination each year. Legislative appropriations and federal funding are unpredictable and unstable sources of funding, but it may still be easier to obtain a one-time, lump sum appropriation for a CIP project, rather than maintenance funding. A successful preventive maintenance program requires stable, annually recurring appropriations and commitment from the district that funds will be spent on maintenance and not other priorities that compete for operating funds (e.g., teacher salaries, utilities, or textbooks).

There is a built-in fiscal incentive for school districts to avoid prudent maintenance expenditures, and instead let physical structures deteriorate until replacement is the only real option. [In some cases,] state aid reimbursement is provided explicitly for capital expenditures at a generous rate, whereas it is not for routine maintenance.... Unfortunately, as long as state and local funding policies encourage construction of new building rather than appropriate maintenance and renovation of older ones, school districts will not be motivated to explore these solutions (Lawrence 2003).

Besides providing adequate maintenance funds, other recommended policies that support school facility maintenance include:

- (1) Establish recurring, long-term funding sources dedicated to school facility maintenance.
- (2) Enhance Work Flows:
 - (a) Maintenance: Improve work order tracking and worker productivity.
 - (b) Capital Investment Projects: Use alternative project delivery methods (i.e., task order contracting) to accelerate procurement and add flexibility to contract scope.
- (3) Create a long-term facilities plan to guide capital investment when, and to the extent that, funds are available.

6.1.1 Implement Preventive Maintenance for Operational Savings

The Albuquerque Public School system – with 89,000 students – is one of the largest school districts in the nation and has a proven track record of operational savings through its preventive maintenance (PM) program. From 2007 to 2013, Albuquerque expanded its facility footprint by roughly 50% and more than tripled spending on preventive maintenance from \$1.7M to \$5.5M, but managed to reduce its total O&M budget by \$6.9M (-20%), which also reduced O&M on a per square foot basis (Table 16).

Sightlines, a vendor providing higher education institutions with benchmarking data on facility construction and operating costs, reports that campuses that increased spending on planned and preventive maintenance by 65%, experienced a 25% reduction in total work orders (planned, preventive and corrective).

Table 16: Albuquerque Public School district Operations & Maintenance spending (2007 to 2013)

Metric	2007	2013	Change	Change %
District Square Footage	9,350,500	14,624,261	5,273,761	56%
Total M&O Budget*	\$ 35,005,840	\$ 28,115,946	\$ (6,889,894)	-20%
M&O Technicians	303	252	-51	-17%
M&O Work Orders	49,869	61,221	11,352	23%
Contractor Costs	\$ 5,657,848	\$ 8,615,103	\$ 2,957,255	52%
Preventive Maintenance Expenditures	\$ 1,777,360	\$ 5,507,883	\$ 3,730,523	210%
District Utility Expense	\$ 14,976,208	\$ 19,447,970	\$ 4,471,762	30%
M&O per Square Footage	\$ 3.74	\$ 1.92	\$ (1.82)	-49%

* Includes salaries and benefits

6.1.1.1 Retrocommissioning

Facility use and occupancy behavior gradually changes over time as enrollment fluctuates and teaching methods evolve. These changes gradually result in building system component inefficiencies. Retrocommissioning (RCx) is an efficiency increasing process (Figure 14) for retrofitting existing building components that is highly cost effective and requires minimal capital outlay.

The process begins with an in-depth energy audit and evaluation of occupancy behavior and use. RCx creates an implementation strategy for building component retrofits, upgrades and replacements and aims to reduce overall energy consumption.

Increased efficiency of building system components results in better equipment performance, extended equipment life and reduced operating costs. Building occupants enjoy more consistent temperature control and better indoor air quality as well. RCx is a good first step in reducing energy consumption and improving building system efficiency. RCx investigation and implementation phases help facility managers identify and prioritize which system components need upgrades or replacement.



Figure 14: Retrocommissioning Process
Source: (NREL 2013)

Albuquerque Public School's¹⁹ Capital Master Plan (Figure 15) is an example of a detailed, graphics-rich, long-term planning document. The Plan is updated every 5 years and is used as an investment strategy to direct resources to:

- Florida State Department of Education requires all districts complete a simple 5-year Work Plan and update it annually before they are eligible to receive CIP funding:

[illegible]

The plan includes descriptions of all capital outlay projects, anticipated cost and lists all sources of revenue for capital outlay projects. Projected appropriations are shown for each year. Larger projects may take 5 years, reserving a portion of required funds each year. The 5-year Work Plan is also integrated with the Florida Inventory of School Houses, which tracks capacity at all schools. Data tracked includes student stations (permanent, modular and relocatable), number of classrooms, actual average class size, utilization, and projected class size in 2020-21 school year. The plans also includes a section to discuss class size reduction, school closure, and 10- and 20-year projections for infrastructure, maintenance, capacity, and utilization planning to alert the Department of specific action or resources needed.

“The State should establish a process and procedure that allocates funding for school building improvements and/or new construction according to need on an equitable and fair basis throughout the State and within school districts” (BEST 2005).

¹⁹ As of SY2015-16, Albuquerque was the 32nd largest school district in the nation.

Areas (except USVI) only have a single district. The challenge for Insular Area schools is getting enough funding to support adequate maintenance and CIP projects.

The primary challenge for Insular Area Schools is to distribute CIP and maintenance funds using objective criteria, rather than legislators' preferences which tend to favor their home district because they are fiscally dependent on legislative appropriations. A long-range plan can help provide objective criteria, but legislators may be reluctant to fund the school district's budget without being able to earmark funds for specific capital improvements.

Suggested considerations for equitable long-range plans include:

- Facility age
- Condition
- Occupancy use
- Utilization
- Enrollment trends
- Urgency of the deficiency
- Project size and scope

Table 17: HIDEOE CIP Categories

Category	Description
Capacity	New schools, Classroom Additions, Temporary Facilities, Repurposing existing facilities to create capacity
Condition	Repair & Maintenance, Electrical/Technology Infrastructure, Hazardous Material Removal, Structural Improvements
Program Support	Gender Equity, New Restrooms, ADA Compliance, Support Programs Spaces, Playground Equipment
Equity	Science Facilities, Special Education, Energy Improvement, Right-sizing of spaces, Physical Education, Noise Abatement
Heat Abatement	Ventilation, Mechanical Cooling, Night Flushing, etc.

Table 17 describes how the Hawai'i Department of Education prioritizes CIP projects according to the following categories: Capacity, Condition, Program Support, Equity and Heat Abatement.

6.2.1 Rightsizing: In-House vs Contract Labor

To reduce costs, the facility manager is often asked to evaluate the cost-effectiveness of retaining in-house specialists for frequently occurring tasks, versus the benefits of contracting the work. This section provides considerations that can assist with this determination.

...[There] will be times when there are too many employees available who are sitting around waiting for work, or there are too few employees so work does not get done. Neither of these conditions is acceptable. A good facilities manager recognizes that it is more costly to have employees waiting for work to appear, so in-house organizations are often staffed to handle 80 percent of the average annual workload (APPA 2011).

Reactive maintenance or responding to emergency repairs likely occupies the majority of staff time, resulting in large fluctuations of workload (Figure 16). Adding preventive maintenance activities to staff duties reduces the peaks and valleys in maintenance workload by reducing the amount of maintenance emergencies and creating a more predictable schedule. Preventive maintenance includes periodic servicing and inspections to ensure proper functioning and for warranty coverage of roofing, HVAC, and fire protection systems.

If the organization is still uncertain whether to outsource, other factors to consider are: specialized skills, certifications, tools required, liability, urgency of timing and workload. Highly specialized tasks that do not occur very often (i.e., fraction of a typical staff-year²⁰) should probably be outsourced.

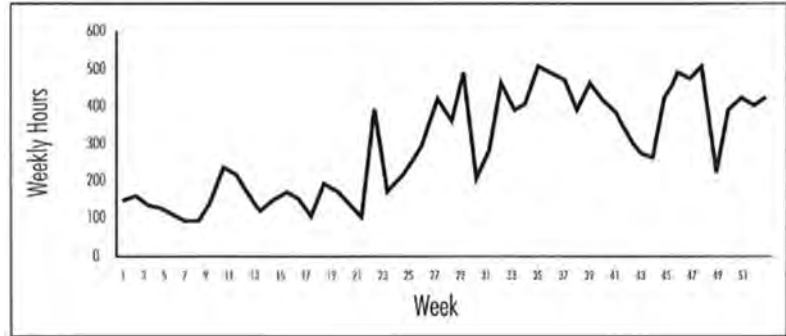


Figure 16: Sample Annual Maintenance Workload
Source: (APPA 2011)

Alternatively, some routine maintenance tasks that must occur on a frequent basis might also be better outsourced, as that frees up in-house staff to attend to unplanned maintenance activities. Maintenance tasks associated with liability such as servicing expensive equipment or accessing rooftops, may justify outsourcing.

Planned repair and capital renewal are typically contracted because they are long-cycle (i.e., once every 10+ years) and require specialized tools or skills. If a surge of maintenance or capital improvements need to be completed before a tight deadline, contract labor may also be better suited to coordinate the multiple tradesmen needed (APPA 2011).

*“A good facilities manager recognizes that it is more costly to have employees waiting for work to appear, so **in-house organizations are often staffed to handle 80 percent of the average annual workload**” (APPA 2011).*

Providing continuing education can be expensive, but can also build staff morale and competency. If staffs are cross-trained in more than one craft, it could allow greater flexibility in staffing and possibly improve efficiency.

6.2.2 Archiving As-Built Drawings and Specifications

The original building plans will often contain the only known set of structural or engineering details describing how, where, and what concealed building components were installed. Information in as-built drawings can answer basic questions when performing repairs or alterations: how thick is the existing foundation? What is the designed fire rating of the interior wall or ceiling system? Existing drawings should always be verified for accuracy, but can serve as a reference, when future work is proposed.

For new work that is accompanied by design drawings, a best practice is to always request a digital submittal, including a pdf version, to document the installed work. Hardcopies are useful as a reference while the project is ongoing, but afterwards, hardcopies can be difficult to store, easily misplaced or damaged. Digital files should be in a format that will be widely available, such as pdf that requires no special skill or software to access. It is also important to backup files. Cloud-based backup systems are available for a nominal monthly fee. Digital files make it easier to send drawings to partner organizations, but it is important for the facility manager to limit who can delete or overwrite files, to make sure these important documents are not accidentally deleted.

²⁰ 2,080 hours minus typical staff benefits: vacation, holiday and sick days.

Training materials and other resources such as maintenance and inspection schedules should be digitally archived and available as reference material for custodians and maintenance staff.

6.2.3 Engage Community Volunteers

Some school districts have included a process to include community supported/funded capital improvements and to help ensure that construction standards are followed. A sample Facilities Volunteer Projects form (Appendix 8.6) provides an example of the careful coordination required between well-meaning volunteers and Facilities Management. Atlanta Public Schools, for example, provides the following memo on their CIP website:

“Schools, corporate partners, PTA’s or other outside groups occasionally desire to complete capital improvement projects at APS facilities. The following steps are intended to guide and direct that process.

- 1 Submit a Capital Improvement and or Space Re-Allocation Request form in consultation with the Regional Manager. Refer to the “Capital Project – Request Procedures” (dated July 1, 2013).
- 2 Facilities Services will assign a Project Manager to act as your support with regards to consultation, standards, inspections, ensuring a positive impact and safety for your teachers, parents and staff and the community, etc.
- 3 Confirm that the persons completing the project will be responsible for all planning, design, neighborhood meetings, notifications, documents, permitting, construction administration, etc.
- 4 All projects must be properly reviewed and permitted by the City of Atlanta and all other applicable agencies.
- 5 Confirm that the project must be totally self-funded by the school or sponsor without any funds from APS Facilities Services being directed to the project.
- 6 The Project Manager will review and approve progress documents and the final construction documents prior to the start of construction.
- 7 The Project Manager will engage with the respective project participants and design parties to ensure that any concerns we might have are addressed and that there is not an adverse impact upon the facility or the neighborhood.
- 8 The design and scope of work should be in accordance with the APS Design Guidelines, Bulletins to Design and Construction Professionals, APS Standard Specifications and all applicable local codes and ordinances.”²¹

6.3 Litigation, Regulation, and Voluntary Modernization

When maintenance and periodic investment in school facilities interferes with access to services (i.e., public education) or results in substandard learning environments, facility maintenance can become the subject of litigation. HHF Program Managers report that school readiness visits and the threat of losing school accreditation or forced closure due to poor sanitation or facility condition are often drivers of maintenance.

²¹ Atlanta Public Schools: Capital Projects – School Performed Process Outline.

<http://www.atlanta.k12.ga.us/cms/lib/GA01000924/Centricity/Domain/4657/Capital%20Project%20-%20School%20Performed%20Process.pdf>

While some lawsuits help generate additional funding for school facilities to demonstrate compliance, the effect is often temporary, resulting in only short term mandates for maintenance. Litigation is not policy and in the few years following legal action, priorities often shift and can leave legal mandates unfunded.

About 30% or 15 out of 50 US states and the District of Columbia have a school facilities court case (21st Century School Fund 2010b). As an example, the following describes legal action related to school facilities in California:

Two legal settlements specify the state's responsibility for facility spending. The 2000 settlement in Godinez v. California resulted in the state developing a new system for funding school facilities, with prioritization of funding to alleviate overcrowded schools. In the 2004 settlement of Williams v. California, the state agreed to provide \$800 million for emergency school repairs in certain schools across the state and review school conditions annually. There has been progress towards greater equity made as a result of these settlements, though the significant cuts to state education funding in 2009 and 2010, including a freeze on many construction projects, may impede this progress.

Similarly, Guam's Public Law 28-45, "Every Child is Entitled to an Adequate Education Act," provides student academic performance goals but also requires that schools provide "Air-conditioned or properly ventilated classrooms in which the sensible air temperature is no greater than 78 degrees Fahrenheit."²² However, it is unclear how schools will obtain the necessary revenue to pay for the facility upgrades needed to achieve this goal.

Besides legal action, schools are also subject to regulatory compliance with the Fire, Building, Health and Sanitation Codes. Citations for noncompliant facilities can impact school operations or at worse, result in school closure. But in these situations, as with litigation, schools districts struggle to obtain funding to conform to regulatory requirements. There are also federal requirements from the Environmental Protection Agency (EPA) relating to environmental quality and hazardous waste, the Occupational Health and Safety Administration (OSHA), the Americans with Disabilities Act (ADA), and other organizations.

Hawai'i's DOE spends about \$48 million annually on electricity. That will rise as more air-conditioning is installed. In at least one instance, **a school's monthly power bill doubled after air-conditioning was installed.** There are also ongoing maintenance costs with these systems (Hawai'i Department of Education 2016).

While not an example of litigation, The Hawai'i Department of Education's (HIDOE) heat abatement effort illustrates the complexities involved in voluntary retrofits to modernize existing facilities. The heat abatement program weighed utility costs before and after adding air-conditioning, electric wiring upgrades, prioritization of schools and heat abatement options (i.e., ceiling fans were acceptable in some locations, while complete air-conditioning was limited to the hottest classrooms). The program also considered retrofits required to the exterior envelope and roof (i.e., thermal insulation, sealing air leaks, and heat reflective coating), the feasibility of PV-powered air-conditioning units, maintenance costs associated with adding HVAC systems, and anticipated changes in climate patterns: hotter, more humid weather and loss of "trade winds" that support natural ventilation (Hawai'i Department of Education 2016).

²² <https://sites.google.com/a/gdoe.net/lyndon-b-johnson-elementary-school/home/gdoe>

6.4 Integrate Energy Saving Features in Capital Improvements

Energy bills are typically the second largest public school expenditure after salaries (US Dept of Energy 2002). Several case studies of other similarly sized school districts in this report (Appendix 8.2) feature an energy conservation officer.

The energy conservation officer works with the CIP or facilities development team when to identify projects that reduce total lifecycle and ongoing operational costs. For example, when replacing a building roof, depending on the construction materials and structural condition, it may be possible for the design professional to add clerestory windows. The cost for the clerestory windows may be partially offset by reduced energy use (daylight instead of artificial lighting). Use of natural daylighting also improves indoor environmental quality and enhances student academic performance (NREL 2013). Depending on local codes (i.e., International Energy Conservation and International Building Code) roof insulation, impact resistant glazing, energy efficient HVAC systems, and structural retrofits or reinforcing may also be required. If the building also serves as a school shelter, a portion of the work may be eligible for federal funding as a hazard mitigation project.

The energy retrofits case study is as an example of a CIP project that also provides energy (operational) savings. Equipment upgrades also help increase efficiency. According to the US Department of Energy's website (energy.gov), replacing a 10-year-old air-conditioning unit with a newer, more efficient model could reduce energy costs by 20% to 40% (US Dept of Energy n.d.). The energy conservation office can determine when HVAC equipment needs replacement to achieve maximum operational savings. Refer to Section 4.7 for more information on repair versus replace.

Bid solicitations and construction specifications should reference current energy code standards (International Energy Efficiency Code, 2015) to improve the performance of new equipment and installed building systems (i.e., replacement roofing, windows, and exterior walls),

CASE STUDY: Pairing CIP with energy retrofits

Daylighting using clerestory windows and other energy efficiency measures helped Durant Road Middle School reduce its lighting and air-conditioning costs. The initial investment for these energy savings measures was paid back within two years (US Dept of Energy n.d.).



6.4.1 Energy Monitoring Program

The energy conservation officer is also responsible for implementing and operating an energy monitoring program. This program saves money by providing accurate utility usage statistics which are used to verify that the utility company's monthly billings to the public school system are accurate. The monitoring system is also able to identify specific circuits, appliances or classrooms within the school district that are inefficient and allows maintenance staff to make adjustments and reduce usage (Albuquerque Public Schools FY 2015). Albuquerque Public Schools installed utility sub-meters for

1 electricity, gas, and water²³ in new, LEED rated building projects. The new meters record data every 15
2 minutes and automatically upload the information into a district-wide database. An energy monitoring
3 program saves money long-term but requires initial investments in metering equipment.

4 Closely monitoring energy costs helps facility managers identify which buildings are the highest energy
5 consumers and prioritize maintenance and repair work. Pairing needed deferred maintenance work (i.e.,
6 roofing replacement) with additional energy retrofit work in buildings that are high-energy consumers
7 solves both issues and reduces long-term operating costs. The use of an energy monitoring program
8 helps justify legislative appropriations for CIP funds by showing how facility upgrades reduce the
9 amount of operational funds spent on utilities.

10 **6.5 Coordinate O&M with Capital Improvements**

11 Albuquerque Public Schools also realized efficiency gains and economies of scale by coordinating
12 deferred maintenance (DM) work with larger capital improvement projects (i.e., remodel and rebuilds).
13 While the O&M and Facilities Design and Construction Departments remain separate, distinct
14 departments, this shared approach and work culture results in economic savings for the district.
15 (Albuquerque Public Schools FY 2014).

16 O&M now plays a formal role on the new building commissioning team as part of the design concept
17 and end-user group. Organizational sustainability – or a “we’re in this together” attitude – requires
18 maintenance considerations and staff be involved in the design and systems selection process from the
19 beginning. Architects drive the design, but O&M must be part of the navigation team as experts of the
20 materials and complex apparatuses and systems that drive the building (Albuquerque Public Schools FY
21 2014). The O&M Department also provides key input in prioritizing Capital Master Plan improvement
22 projects and allocating DM funds.

23 **6.6 Maintenance Budgeting**

24 This section summarizes the main drivers of facility O&M and CIP costs and provides benchmarks to
25 develop an approximate budget.

26 **6.6.1 Annual Maintenance and Operations**

27 At a minimum, school facilities need ongoing maintenance to address normal wear-and-tear and to
28 extend a building’s useful life. For example, periodic repainting of a building’s exterior is a type of
29 maintenance because it restores the building’s moisture resistance and durability. Conversely, without
30 repainting (deferred maintenance), the building becomes exposed to the weather, allowing moisture to
31 migrate into wall systems, damaging the exterior, as well as adjacent building systems such as insulation,
32 electrical and eventually structural components.

33 Operational costs include utilities. Electricity costs for lighting and HVAC can be a substantial portion of a
34 school’s total expenditures as noted in Section 2. Depending on the school district’s accounting policies,
35 operational expenses may include provision for janitorial, grounds keeping, security services and

²³ Albuquerque used EnTouch Controls to install sub-meters.

supplies. As a general rule, 3% of a facility's Current Replacement Value (CRV) should be allocated for annual O&M.²⁴

6.6.2 Periodic Renewals

Over time, even with adequate maintenance, major building systems will fail and need to be replaced. Roofing and HVAC systems are high cost items and their eventual replacement can and should be budgeted for as a planned CIP project. In practice, these systems are often neglected and maintenance is not provided for these systems until they fail and need to be replaced. However, emergency repairs/replacement of major components can be disruptive to campus operations and more costly. An estimated 2% of a facility's CRV should be budgeted for periodic renewals.

6.6.3 As-Needed Alterations

Classroom configuration and learning spaces will need to be altered as a school's needs evolve. For example, new learning technologies and pedagogies may require classroom modernization to adequately prepare students, or expanding enrollment may require storage and office space to be converted into classrooms. An estimated 1% of a facility's CRV should be budgeted for as-needed alterations.

6.6.4 Deferred Maintenance

Deferred maintenance is a catch-all category for needed work mentioned in previous sections that is not funded in the current fiscal year. An estimated 1% of a facility's CRV should be budgeted to address deferred maintenance. While a lump sum of funding can be used to reduce the backlog of deferred maintenance, operations and maintenance should generally be considered as an ongoing expense.

BEST-identified potential funding sources include: general funds, general obligation bonds, dedicated sales taxes, gambling revenue, or tobacco and alcohol taxes.²⁵ In practice, some local governments require schools to submit progress and expenditure reports to ensure that funding is being used appropriately.

6.6.4.1 Recommended Annual Maintenance Budget

An individual school's actual data of previous maintenance expenditures is the best method of estimating an adequate M&R budget. However, given that data is not readily available for Insular ABCs schools, a parametric estimate is provided in Table 18.

The current replacement value is also an estimate based on multiplying total building square footage in each territory by a fixed cost per square foot. CRV was then multiplied by the percentages provided in Figure 17 to calculate recommended O&M budget components.

²⁴ Some sources suggest a range of 2-4% of a facility's Current Replacement Value (CRV) should be allocated for general repair and maintenance purposes (BEST 2005).

²⁵ CNMI is constructing new casinos. The PSS may want to lobby for a permanent appropriation of gambling tax proceeds for the benefit of schools and also specifically for school facilities.

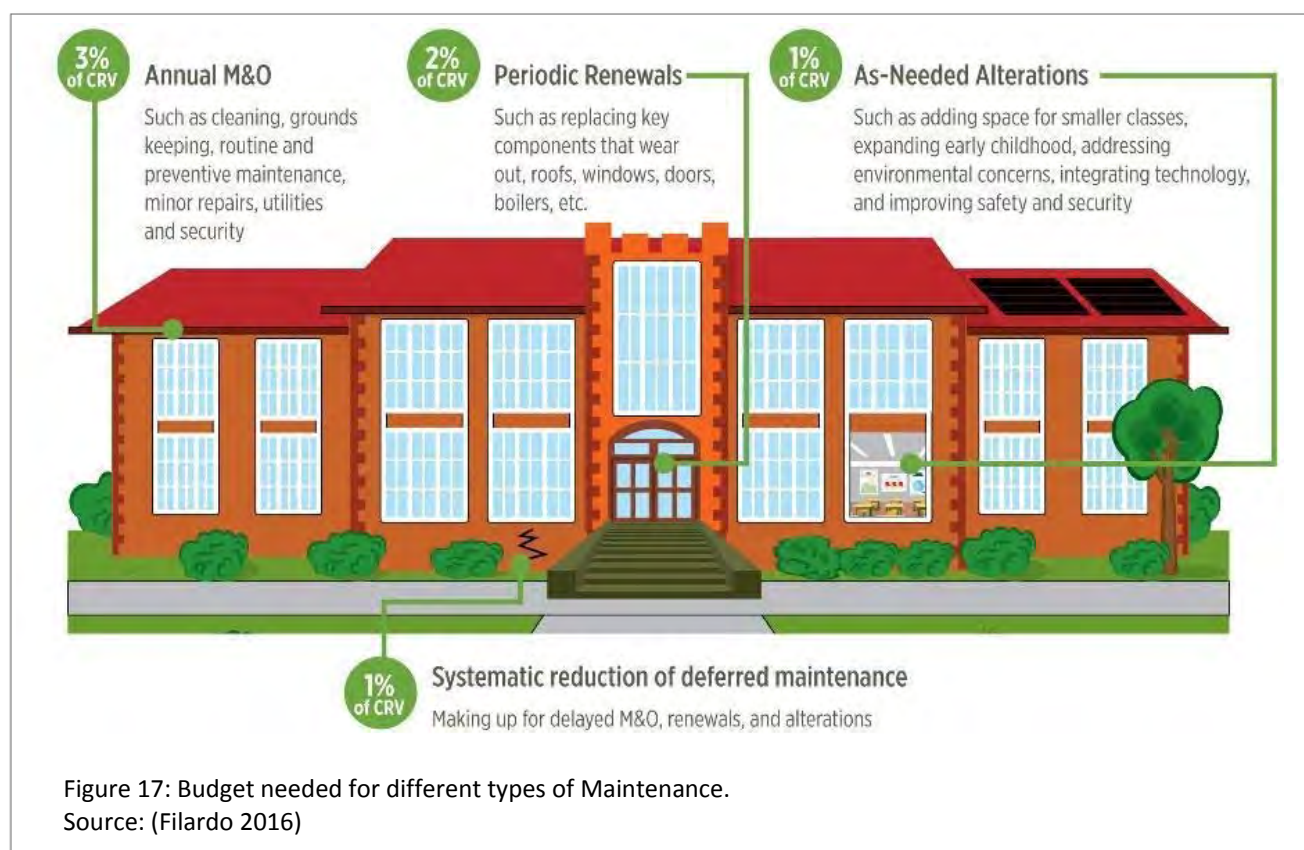
Table 18: Estimated Maintenance Budgets by Territory

Territory	CRV ²⁶	Annual O&M (3%)	Renewal (2%)	Alterations (1%)	DM (1%) ²⁷	Rcmd. Annual Maint Budget	Actual Maintenance (FY2014)
American Samoa	\$75M	\$2.25M	\$1.50M	\$0.75M	\$0.75M	\$5.25M	\$3.07M
CNMI	\$167M	\$5.01M	\$3.34M	\$1.67M	\$1.67M	\$11.69M	\$3.41M
Guam	\$791M	\$23.73M	\$15.82M	\$7.91M	\$7.91M	\$55.37M	\$40.57M
USVI	\$379M	\$11.37M	\$7.58M	\$3.79M	\$3.79M	\$26.53M	\$11.23M

Source: NCES, FY2014 (most recent date for consistent information)

6.6.4.2 Staffing Benchmarks

The following section provides facility managers with a reference in determining an adequate number of FTE staff required. Industry standards refer to level of service (LOS) when describing adequate staffing, with higher levels of service (i.e., cleaner or better maintained facilities) requiring more staff and a larger operational budget (Table 19). The following staffing model is provided by American School and University (ASU), the Center for Great City Schools (CGCS), and Department of Education staffing formulas used in the state of California and Florida.



²⁶ Current Replacement Value (CRV) only includes facilities in the Insular ABCs Program.

²⁷ Totals based on 2013 ABCs Phase 2 DM estimates, escalated to 2015 dollars.

Table 19: Compilation of Recommended Maintenance Staffing Levels

Position	CGCS Standard ²⁸	ASU Standard ²⁹	APPA (level 1) ³⁰	APPA (level 2)	APPA (level 5)	Schooldude ³¹
Maintenance	90,000 sq ft	92,074 sq ft	47,220 sq ft	67,456 sq ft	236,098 sq ft	103,571 sq ft
Custodian	25,451 sq ft	32,100 sq ft	8,500 sq ft	16,700 sq ft	45,600 sq ft	23,598 sq ft
Groundskeeper	28.0 ac	31.0 ac	20 ac	25 ac	100 ac	70 ac

While these metrics provide a useful reference to communicate performance, it is important to understand what is included in the benchmark, so that fair and equal comparisons can be made.

From a fiscal perspective, maintenance is a current expenditure, within the same general category as utilities, security, janitorial services and supplies. However, maintenance funds are often tapped to complete capital work, using maintenance staff and maintenance funds (Operating Costs), instead of capital outlay funds (Capital Costs). For reference, the APPA staffing benchmark strictly defines “Maintenance” and does not include “Capital Construction” projects or “Capital Renewal” work in its benchmark staffing pattern. The following definitions are provided by APPA:

Maintenance – Work required to preserve or restore buildings and equipment to their original condition or to such condition that they can be effectively used for their intended purpose, ensuring ongoing operation of the campus.

Capital (Major) Maintenance/Repairs – Previous or future repairs or replacement, paid from the capital funds budget and not funded by normal maintenance resources received in the annual operating budget cycle.

- *Capital Repair – work to restore damaged or worn-out assets/systems/components (e.g., large-scale roof replacement after a windstorm) to normal operating condition.*
- *Capital Replacement – an exchange of one fixed asset for another (e.g., replacing a transformer that blows up and shuts down numerous buildings) that has the same capacity to perform the same function.*

Capital Renewal (CR)/Replacement – The systematic management process of planning and budgeting for known future cyclical repair and replacement requirements that extend the life and retain the usable condition of facilities and systems, not normally contained in the annual operating budget. Includes major activities that have a maintenance cycle in excess of one year (e.g., replace roofs).... These activities may extend the useful life and retain the usable condition of an associated capital asset (e.g., replacement of an HVAC system). Replacement may be capitalized based on the Governmental Accounting Standards Board/Financial Accounting Standards Board (GASB/FASB) definition. A depreciation model calculates a sinking fund for this maintenance activity... (APPA 2011).

²⁸ Council of the Great City Schools (CGCS) is a coalition of 66 of the nation’s largest urban public school systems. Median Custodial Workload: Total square footage of non-vacant buildings that are managed by the district, divided by total number of district custodial field staff. This measure only applies to district-operated sites (CGCS 2016). Maintenance standard (CGCS 2008); Groundskeeper standard as cited in (Albuquerque Public Schools FY 2014).

²⁹ American School and University 2009 survey (AS&U 2009).

³⁰ APPA custodial LOS/sq ft assumed all areas are on Classroom with hard floor. Grounds Standards based on maintaining an Open Area.

³¹ Schooldude provides facility maintenance tracking software as a service. Standards for Enrollment Range of 5,000-20,000 students are shown in the table. For schools with higher than 20,000 students, Custodian: 20,000 sq ft; Maintenance: 77,021 sq ft; and Grounds: 85 ac (Schooldude 2016).

For example, territorial schools within the same district are sometimes located on different islands. Typical benchmark figures do not account for the added logistical costs to transport materials and staff between islands nor higher utility costs. Other facility details that have a significant impact on O&M costs include: topography, building age, type of construction (i.e., wood frame buildings typically require more maintenance than concrete buildings), and utility costs – also known to be higher in the Insular Areas than CONUS. It is common to apply location cost adjustments that include cost of living differences when comparing costs between different cities. Although beyond the scope of this report, benchmarks should be locally adapted using a location adjustment factor before making comparisons between schools outside of CONUS. Benchmark metrics related to O&M can be found online at the Center for Great City Schools.³²

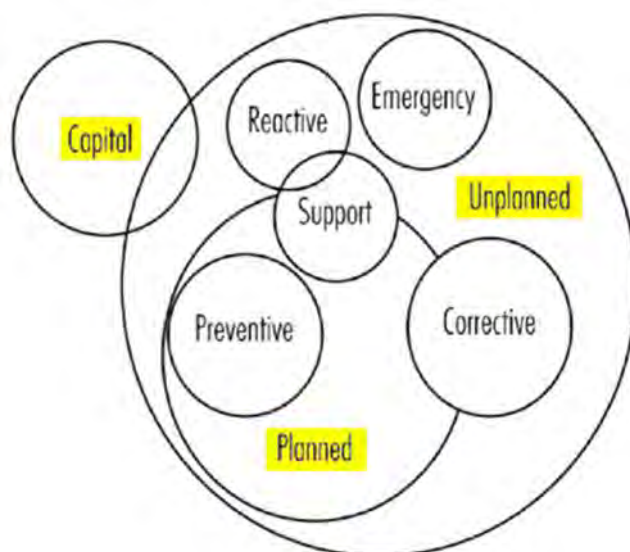


Figure 18: Different types of maintenance

APPA uses Facilities Performance Indicators to provide metrics and comparison data. A new survey is issued each year to provide a representative set of statistics about educational facilities, however for K-12 facilities, only two school districts participated in their 2013-14 survey (newer surveys must be purchased). Among all institutions, the survey shows that most educational facilities are operating at LOS 3 – Managed Care – none were at LOS 5 – Crisis response.

6.6.4.3 Maintenance Workers

APPA benchmark staffing levels for maintenance workers (Table 20) were created based on the facility floor area being maintained and the desired LOS by the school district. Management and support staff are not included in these benchmarks. Table 21 describes the LOS for each APPA benchmarks. Staffing benchmarks are only meant to serve as guidelines for facility managers who must ultimately determine what tradesmen are provided on site and the total quantity of each position.

Table 20: Benchmark Maintenance Staffing Levels by Territory*

Territory	Total Area Maintained (sq ft)	Level 1 SHOWPIECE FACILITY (1 FTE/66,667 sq ft)	Level 5 CRISIS RESPONSE (1 FTE/166,667 sq ft)	Actual
American Samoa	904,512	14	4	42
CNMI	977,196	15	6	38
Guam ³³	3,074,049	46	18	53
USVI	2,369,810	36	14	38

*Does not include custodial, grounds keeping, security work, management or per diem workers.

³² http://www.cgcs.org/cms/lib/DC00001581/Centricity/Domain/4/Managing%20for%20Results_2016.pdf

³³ Guam Actual FTE count based on FY2017.

Table 21: APPA Level of Service Descriptions

Level	1	2	3	4	5
Description	Showpiece Facility	Comprehensive Stewardship	Managed Care	Reactive Management	Crisis Response
Customer Service and Response Time	Able to respond to virtually any type of service, immediate response.	Response to most service needs, including limited nonmaintenance activities, is typically in a week or less.	Services available only by reducing maintenance, with response times of 1 month or less.	Services available only by reducing maintenance, with response times of 1 year or less	Services not available unless directed from top administration; none provided except emergencies.
Customer Satisfaction	Proud of facilities, have a high level of trust for the facilities organization	Satisfied with facilities related services, usually complimentary of staff	Accustomed to basic level of facilities care. Generally able to perform mission duties.	Generally critical of costs, responsiveness, and quality of facilities services.	Consistent customer ridicule, mistrust of facilities services
Preventive vs. Corrective Maintenance	100%	75-99%	50-74%	25-49%	0-25%

Source: (APPA 2011)

6.6.4.4 Exceptions to the Rule

While APPA benchmarks estimate that for the highest level of service – Showpiece Facility – only 46 FTEs would be required but actual staffing patterns may differ if personnel are tasked with additional duties. For example, more staff would be expected if they were also assisting with custodial or grounds keeping duties. Some districts opt to have maintenance staff perform non-maintenance tasks (i.e., assist teachers with moving heavy equipment) in the interest of customer service and fostering positive relations with instructional and administrative staff, but limit it to jobs that require less than 16 man-hours or less than \$1,000 (APPA 2011).

There are many definitions of what is M&R vs CIP. For example, reroofing, replacing an air chiller unit, major concrete spall repairs, or installing new instructional equipment are considered capital improvements (not maintenance) because it extends service life, adds to the value of the building, and is not a task that a maintenance crew is typically equipped, trained, or budgeted to handle. If the maintenance department is doing some or a portion of capital improvements, then their budget should be supplemented to support it, and this expanded requirement should be noted when comparing staffing levels and performance against industry benchmarks.

APPA's benchmark staffing also assumes that the maintenance program has been adequately funded and there is not an overwhelming backlog of deferred maintenance. A higher staffing pattern should be expected as school districts transition from reactive or emergency maintenance to preventive maintenance. Having adequate tools, equipment, materials and training are also important to staff productivity. These considerations must be taken into account when benchmarking staff performance.

The Albuquerque School District is a recognized leader in the nation for reducing its maintenance expenditures. Although it has an O&M Department and a separate Facilities Design and Construction department that is responsible for capital improvements (construction, renovation and major repairs), both departments coordinate their work closely to monitor projects and avoid duplication and wasted effort (i.e., If a building needs frequent repairs to its electronic system, the facility manager may prefer using CIP funds to upgrade the electrical system, rather than continual repairs).

6.6.5 Further Reading

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 - Offers case studies of energy efficient buildings' performance and financial data (i.e., first costs and operating costs per sq ft). Searchable by building name.
- <http://www.ed-data.k12.ca.us/Pages/Home.aspx> Provides fiscal, demographic and performance data for free on California's K-12 schools.
- Electronic Municipal Market Access lists bond prospectus for many projects including many (not all) public schools. Able to search by school name. <https://emma.msrb.org/Search/Search.aspx>
- New Life for Old Schools: Philadelphia.
- *School Design and Student Learning in the 21st Century* by the American Architectural Foundation, Washington, D.C. <http://www.schools.utah.gov/finance/Facilities/References/DesignForLearning.aspx>
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6.7 Alternative Project Delivery Methods

"The State should examine and review alternative design, construction and/or financing methods and offer guidance and assistance to school districts that are desirous of implementing these options." (BEST 2005)

Most US schools use a design-bid-build (DBB) procurement method although the trend is slowly changing to alternative methods. While this method is widely understood by the construction industry, it emphasizes lowest price as the determining factor in contractor selection, rather than performance or overall value. Using a different method of financing or project delivery requires the local education agency to have the expertise to properly scope and manage the project. Local contractors also need to be familiar with the process and expectations of a different method. Procurement changes may also require legislation.

Alternative forms of project delivery include:

- Design-build
- Task Order Contracting

6.7.1 Design-Bid-Build

This well-established project delivery method allows for straightforward bid evaluation and awards the contractor with the lowest bid. This process has been criticized for not considering other factors such as the contractor's previous performance or complexity of the project. When there are cost or schedule overruns, it can result in an adversarial relationship between the Architect and Contractor.

Characteristics of Design-Bid-Build *projects*:³⁴

- Three prime players – owner, designer, contractor
- Two separate contracts – owner-designer, owner-contractor
- Final contractor selection is based on Low Bid or Best Value: Total Cost

Characteristics of the DBB *approach*:

- Three phases – design, bid, build. These phases may be linear or overlapping if a project is fast-tracked or bid-out to multiple prime contractors
- Well-established and broadly documented roles
- Contract documents that are typically completed in a single package before construction begins, requiring construction-related decisions in advance of actual execution
- Construction planning based on completed documents
- Complete specifications that produce clear quality standards
- Configuration and details of finished product agreed to by all parties before construction begins

The following are pros and cons of the DBB project delivery method.

PROS

- Owner retains highest degree of control in design.
- Design complete prior to bidding.
- Cost fixed at construction contract award.
- Low cost bid, maximizes competition.
- Familiar contracting vehicle.

CONS

- Owner requires expertise to manage project.
- Owner at risk if there are design errors.
- Design and construction are sequential; takes longer. No contractor input until after design is complete; late value-engineering expensive.
- Construction cost unknown until after bid opening; may require redesign.

6.7.2 Design-Build

The State of Hawai'i Department of Education (HDOE) has begun exploring Design-Build (DB) procurement method as an alternative to the traditional DBB approach. Ho'okeke Elementary School, completed in 2015, was HDOE's first design-build project see Appendix 8.3 for further details. HDOE facility planners expressed concern that the statement of work must be carefully developed to provide enough detail to ensure that the finished product meets the educational specifications and programmatic needs. Once the scope is agreed to, the Contractor is given broad flexibility over how to achieve the objectives within the scope. This requires HDOE project managers who have experience with design-build projects. Hawai'i also lacks sufficient numbers of contractors who are comfortable with DB contracts. Given these concerns, DB does not seem a suitable recommendation for the Insular Areas at this point.

The following information is provided to give the reader a general background about the DB project delivery method. One of the primary benefits of DB, is that it provides a single point of responsibility for design and construction. As the prime player, the DB entity has greater control over total project cost, schedule and design.

³⁴ Excerpted from the *Primer on Project Delivery* (AIA and GCA 2011).

Characteristics of Design-Build *projects*:³⁵

- Two prime players – owner, DB entity
- One contract – owner to DB entity

Characteristics of the Design-Build *approach*:

- Final design-builder selection may be based on any of the following: Direct Negotiation, Qualifications based Selection, Best Value: Fee or Total Project Cost, or Low Bid.
- Project-by-project basis for establishing and documenting roles
- Continuous execution of design and construction
- Overlapping phases—design and build
- Some construction-related decisions after the start of the project
- Overall project planning and scheduling by the design-build entity prior to mobilization (made possible by the single point of responsibility)

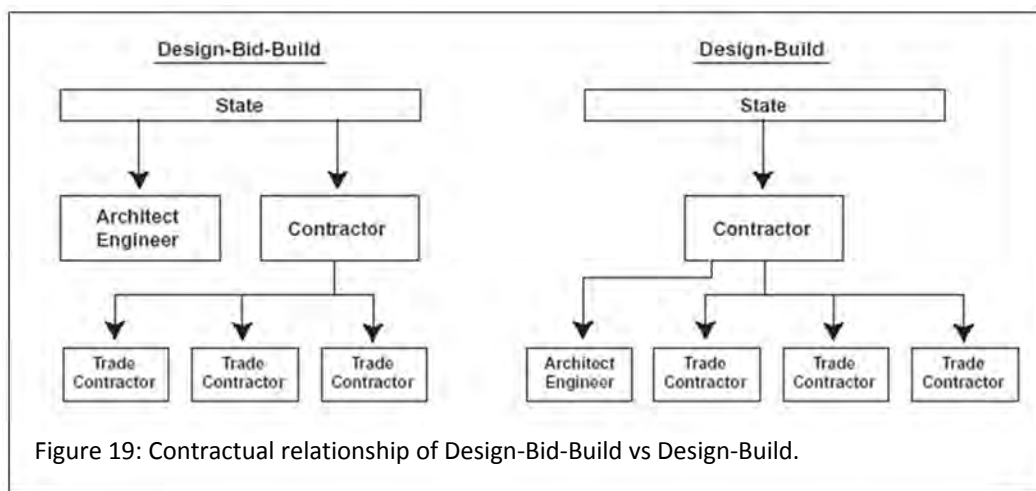
The following are pros and cons of the DB project delivery method

PROS

- Construction costs fixed during design; emphasis on cost containment.
- Design-Build is generally faster; construction begins before design is complete.
- Encourages innovation.
- Transfer of design and construction risk to DB entity.
- Best value approach to procurement, rather than lowest bid. DB entity is selected based on qualifications, experience, capabilities and price.

CONS

- Loss of design control. To control costs, DB entity given greater flexibility in design.
- May require changes to procurement law to allow DB.
- No one to represent the Owner's interest.
- Less competitive than bidding, there are fewer qualified DB contractors and selection criteria is subjective.



³⁵ Excerpted from the *Primer on Project Delivery* (AIA and GCA 2011).

6.7.3 Task Order Contracting (Master Service Agreements)

While the traditional design-bid-build approach emphasizes the lowest responsive and responsible bidder, Task order contracting (TOC)³⁶ focusses on best value and allows administrators to select a contractor based on past experience, performance and quality, instead of solely on price.

TOC has been used for over 25 years by the U.S. Department of Defense, but has also been used successfully in other sectors, including public school systems. TOCs work best for renovation, M&R projects, in-kind replacement, and especially repetitive, repair work. TOC is not recommended for major new construction.

A primary feature of TOCs is that the contractor's pricing structure is based on a list of construction tasks, each with a unit price. At an initial joint-scoping meeting with the school department, a pre-screened, approved contractor would walk the site with the Department and collaboratively develop the scope of work needed. As a member of the team (versus being competitive bidder), the contractor is able to better understand the Department's concerns and expectations, leading to fewer change orders.

Following the joint-scoping meeting, the Contractor submits his proposal, which includes a task list, unit costs and quantities (based on the joint-scoping walk-thru). Some proposals also include a cost multiplier based on the perceived complexity involved:

- Unit Price x Quantity of work x Contractor's multiplier = Proposed Award

Based on funds available for this project, the Department then negotiates with the Contractor to fine-tune total costs, proposed schedule and subcontractors, and overall scope of work, to reach a mutual agreement.

A key inducement to contractor performance is the potential for future, ongoing work. TOCs are also known as Master Service Agreements³⁷ or Indefinite Delivery, Indefinite Quantity (IDIQ) contracts, which typically only state the maximum amount of work covered and timeframe (i.e., contract period of performance). Normally, TOCs do not guarantee the Contractor will get any work and the Department can terminate the TOC at any time, based on performance. Therefore, it is in the Contractor's best interest to complete work on time and within budget. The Department is able to award the same Contractor additional projects under the same TOC as a reward for good service.

Procurement administrators also save time using TOC. Instead of procuring each job separately, multiple jobs can be awarded under a single TOC, thereby reducing overall procurement time and costs. Also, global risk management and insurance company, XL Insurance says, "The beauty of the master agreement/task order arrangement is that when a task order is issued, you don't need to negotiate terms such as indemnification, insurance, risk allocation, dispute resolution, ownership of documents, suspension or termination, because these provisions are already set forth in the master agreement" (XL Group 2015).

³⁶ Also known as Job Order Contracting (TOC) and Indefinite Delivery, Indefinite Quantity (IDIQ).

³⁷ The American Institute of Architects provides [B121-2014](#): Standard Form of Master Agreement between Owner and Architect for Services provided under multiple Service Orders. This form defines general conditions and requirements that would be scoped in a separate follow-on contract documents: [B221-2014](#), Service Order.

6.7.4 Drawdown Purchase Order

A drawdown purchase order (DPO)³⁸ is a single large purchase order a customer places with one supplier that allows multiple delivery dates over a predetermined period at a set price. A DPO is commonly used to fulfill a recurring need of an expendable good. Utilizing a DPO results in the customer needing to store less goods on site, only ordering them when needed, and reduces waste. Making a single, large purchase up front allows the customer to buy larger quantities and possibly obtain special bulk pricing. Using a single purchase order also reduces the administrative expense of processing multiple purchase orders for recurring needs. Suppliers benefit from DPO's by receiving ongoing business and having predictive orders and cash flow (GSA 2016).

Several years ago the Department started moving away from issuing separate purchase orders for transaction payments which has significantly reduced the number of requisitions waiting for approval, paperwork processes, and time....Vendors are paid more promptly and closing financials at the end of the fiscal year is streamlined. Support Services personnel and the Capital Fiscal Division staff quickly recognized how tracking invoices and payments was greatly expedited. (Albuquerque Public Schools FY 2015)

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³⁸ Also called a Blanket Purchase Agreement or Blanket Order.

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8 Appendices

8.1 Sample Maintenance & Capital Replacement Schedule

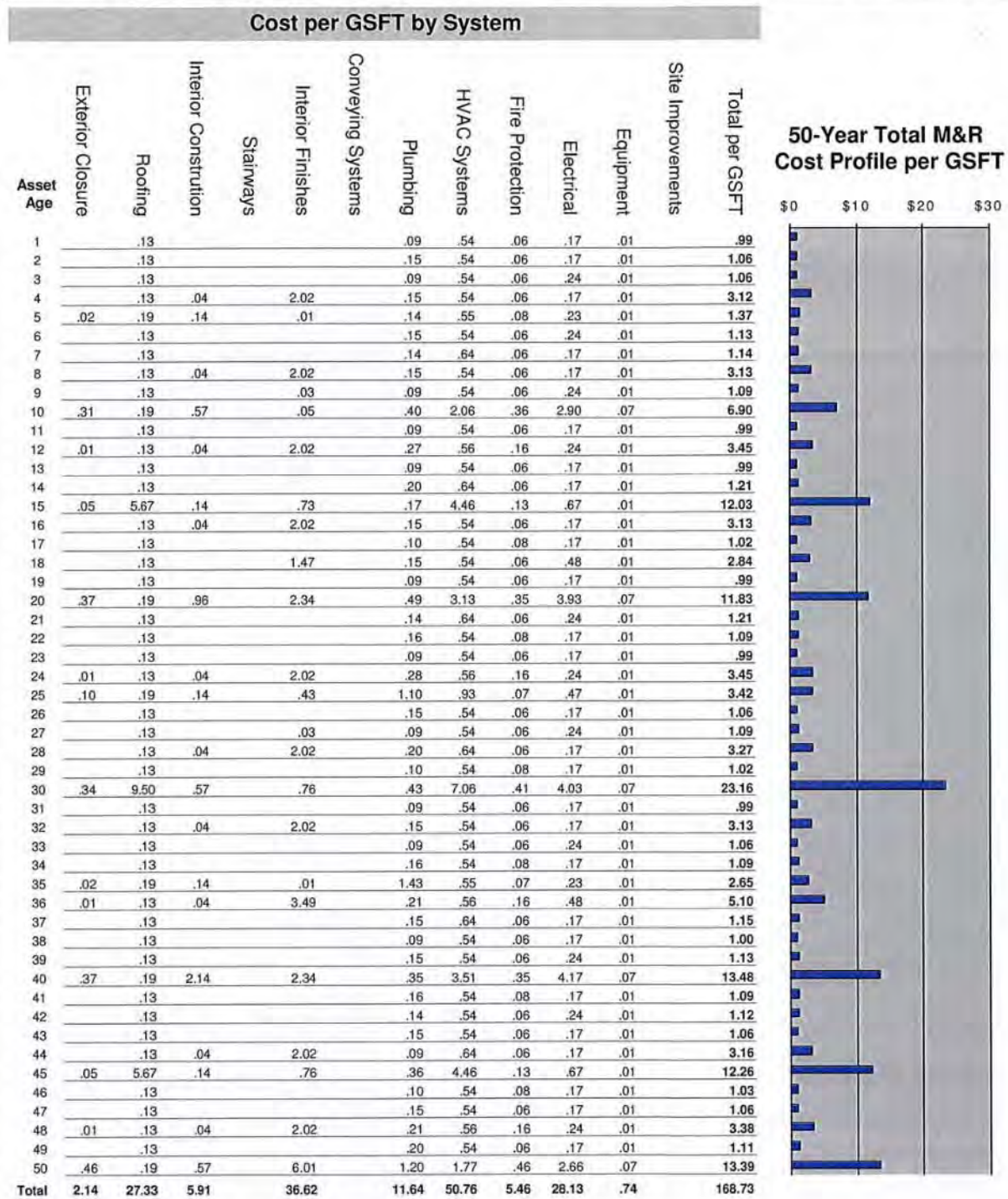
The following maintenance and repair cost profile is for an elementary school building located in Washington D.C. The schedule shows costs that have been adjusted for the location; these costs as shown do not apply to the Insular Areas.

Although construction materials and systems are slightly different from Insular Area Schools, this document provides a basic capital replacement schedule that can assist Insular Area school facility managers estimate when substantial capital renewal funds will be needed. This schedule assumes that the building is properly maintained. If inadequate maintenance and repair is provided, the capital replacement would be needed sooner.

2. M&R Cost Profiles

Elementary School

Washington, D.C.



A value of ".00" means a cost of more than \$.000 but less than \$.005 per GSFT.

Note: For alternative locations use the Local Indexes shown in Chapter 3.

2. M&R Cost Profiles

Elementary School

Washington, D.C.

Elementary School

Gross Square Feet:	47,000
Height in Ft:	12
Exterior:	Concrete
Floor coverings:	Finished Concrete, Tile, Carpet
HVAC:	Chilled Air, Gas Boiler, Multizone Air
Capacity:	N/A
Occupancy:	2,110
Replacement Cost:	\$9,701,531

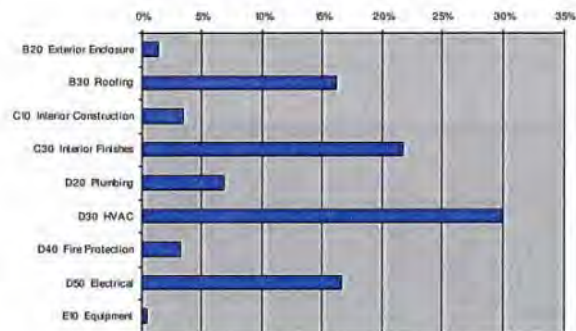
Components (Continued on Page 153)

Uniformat / Component	Quantity	Units
B20 Exterior Enclosure		
Concrete, Painted, Exterior, 1st Floor	6934	Sq Ft
Aluminum Fixed Window, 12 sf, 1st Floor	110	Each
Aluminum Frame, Fully Glazed, Exterior Door	4	Each
Steel w/ Safety Glass, Painted, Exterior Door	8	Each
B30 Roofing		
Built-up Roof	47000	Sq Ft
C10 Interior Construction		
Toilet Partitions, Painted Metal, Overhead Braced	22	Each
Wood, Solid Core, Painted, Interior Door	16	Each
Wood, Solid Core w/ Safety Glass, Painted, Interior Door	52	Each
C30 Interior Finishes		
Concrete Block, Painted, Interior Wall Finish	2350	Sq Ft
Plaster, Interior Wall Finish	50650	Sq Ft
Carpet, Nylon 20 oz., Low Traffic	4700	Sq Ft
Concrete, Painted Flooring	2350	Sq Ft
Quarry Tile Flooring	11750	Sq Ft
Vinyl Tile Flooring	26200	Sq Ft
Plaster Ceiling	47000	Sq Ft
D20 Plumbing		
Drinking Fountain, Vitreous China	18	Each
Lavatory, Vitreous China	18	Each
Service Sink, Iron, Enamel	4	Each
Tankless Water Closet	22	Each
Urinal, Vitreous China	12	Each
Circulator Pump, 1/6 HP, Cold Water	1	Each
Circulator Pump, 1/6 HP, Hot Water	1	Each
Pipe & Fittings, 3/4" Copper, Cold Water	2.5	K Lb Ft
Pipe & Fittings, 3/4" Copper, Hot Water	0.7	K Lb Ft
Pipe & Fittings, 2" Copper, Cold Water	3	K Lb Ft
Pipe & Fittings, 2" Copper, Hot Water	3	K Lb Ft
Pipe Insulation, Fiberglass, Cold Water	1	K Lb Ft
Pipe Insulation, Fiberglass, Hot Water	1	K Lb Ft
Water Heater, Gas/Oil, 130 Gph	1	Each
Backflow Preventer, 4"	1	Each
Pipe & Fittings, 6" Cast Iron	1.5	K Lb Ft
Pipe & Fittings, 10" Cast Iron	0.5	K Lb Ft
Pipe & Fittings, 4" PVC	0.4	K Lb Ft
Roof Drain, 4-6"	14	Each
D30 HVAC		
Pipe & Fittings, 4" Steel, Gas	1.8	K Lb Ft
Chemical Feed System	1	Each
Circulation Pump, 5 HP, Hot Water	1	Each
Expansion Tank, 60 Gal	2	Each
Gas Boiler, 2,500 Mph	1	Each
Chiller, Reciprocal Water-Cooled Hermetic, 165 Ton	1	Each
Circulation Pump, 5 HP, Chiller & Condenser Water	3	Each
Cooling Tower, 200 Ton	1	Each
Air Handler, Multizone, 15,000 Cfm	1	Each
Air Handler, Multizone, 50,000 Cfm	1	Each
Duct Insulation, Fiberglass Blanket	9085	Sq Ft
Ductwork	13560	Lbs
Exhaust Fan, Ceiling, 200-500 Cfm	8	Each
Thermostat	12	Each
D40 Fire Protection		
Fire Alarm Control Panel	1	Each
Fire Sprinkler Head	235	Each
Fire Sprinkler System	1	Each
Fire Extinguisher	16	Each
D50 Electrical		
Distribution Switch, Fused, <600 V	5	Each
Main Switchgear, <1,200 Amp	1	Each
Motor Starter, 5-20 HP, <600 V	4	Each
Motor Starter, 21-50 HP, <600 V	5	Each
Motor Starter, 51-75 HP, <600 V	1	Each
Secondary Transformer, Dry, 150 KVA	3	Each
Exit Lighting Fixture, w/ Battery	12	Each
Fluorescent Lighting Fixture, 160 w	981	Each
Receptacle, 120 V, 15 Amp	270	Each
Wiring Device, Switch	70	Each
Annunciation Panel	1	Each
Fire Alarm Bell, 6"	6	Each
Fire Alarm Horn & Strobe	16	Each
Heat Detector	16	Each
Manual Pull Station	32	Each
Smoke Detector	94	Each
E10 Equipment		

50-Year M&R Cost Summary

Task Type	50 Year Total Cost	Annual Cost per GSFT	Annual Cost as % of Replacement
PM & Minor Repair	\$1,389,231	\$0.59	0.29%
Unscheduled Maintenance	\$1,070,522	\$0.46	0.22%
Renewal & Replacement	\$5,470,564	\$2.33	1.13%
Total	\$7,930,317	\$3.37	1.63%

Distribution of M&R Costs



Thirty Most Costly M&R Tasks

M&R Task	Task Cost*	Pct.**
Refinish Plaster Ceiling	13.20	9.0%
Place New Membrane Over Existing, Built-up Roof	10.97	7.5%
Refinish Plaster, Interior Wall Finish	10.52	7.2%
Replace Membrane, Built-up Roof	9.50	6.5%
Replace Ballast & Lamps, Fluorescent Lighting Fixture, 160 w	7.21	4.9%
Replace Air Handler, Multizone, 50,000 Cfm	6.83	4.7%
Replace Fluorescent Lighting Fixture, 160 w	6.59	4.5%
Replace Quarry Tile Flooring	5.56	3.8%
Replace Chiller, Reciprocal Water-Cooled Hermetic, 165 Ton	4.96	3.4%
Maintain Chemical Feed System	3.96	2.7%
Inspect & Test Gas Boiler, 2,500 Mph	3.78	2.6%
Repair Chiller, Reciprocal Water-Cooled Hermetic, 165 Ton	3.16	2.2%
Maintain Built-up Roof	3.04	2.1%
Replace Vinyl Tile Flooring	2.95	2.0%
Replace Batteries & Check Operation, Smoke Detector	2.39	1.6%
Maintain Chiller, Reciprocal Water-Cooled Hermetic, 165 Ton	2.34	1.6%
Replace Air Handler, Multizone, 15,000 Cfm	2.17	1.5%
Replace Cooling Tower, 200 Ton	2.10	1.4%
Replace Carpet, Nylon 20 oz., Low Traffic	1.81	1.2%
Maintain Cooling Tower, 200 Ton	1.69	1.2%
Replace Wood, Solid Core w/ Safety Glass, Painted, Interior Door	1.33	0.9%
Replace Wood, Solid Core w/ Safety Glass, Painted, Interior Door Locks	1.31	0.9%
Maintain Air Handler, Multizone, 50,000 Cfm	1.24	0.9%
Replace Pipe & Fittings, 2" Copper, Cold Water (20% of Pipe)	1.23	0.8%
Maintain Air Handler, Multizone, 15,000 Cfm	1.07	0.7%
Refinish Concrete, Painted, Exterior, 1st Floor	1.02	0.7%
Maintain Fire Sprinkler System	1.01	0.7%
Test Gages & Valves, Fire Sprinkler System	.93	0.6%
Replace Smoke Detector	.91	0.6%
Test Fire Sprinkler Head	.85	0.6%

*Task cost (\$2009) per GSFT over 50 years.

**Percent of total M&R costs.

Note: For alternative locations use the Local Indexes shown in Chapter 3.

8.2 Case Studies

The following case studies were selected from California, Florida and Alaska. The California DOE has published extensive reports about funding and the condition of school facilities. Florida was selected as the CONUS state with climate conditions closest to the Insular Areas. While climate conditions are very different in Alaska, school districts there are similar in that they are fiscally dependent; California and Florida are fiscally independent school districts. Hawai'i was not used as a case study mainly because of the scale of enrollment; its student enrollment is about 180,000.

Within the selected states, school districts were selected based on 1) student enrollment size that was generally similar to the Insular Areas and 2) locale. US Census geography identifies two types of urban areas: Urbanized Areas (UAs) with 50,000 or more people and Urban Clusters (UCs) of at least 2,500 and less than 50,000 people. Significant portions of Guam and CNMI are considered urbanized UCs, all of American Samoa and USVI are rural. The case studies include a mix of rural and UC areas.

8.2.1 Fairbanks North Star Borough (Alaska)

CASE STUDY:

Fairbanks North Star Borough School District (Alaska)

Locale: Suburb - small



Table 1: Expenditures

Maintenance & Operations	Capital Outlay	Total Expenditures	M&O % of Total Expenditures	Student Enrollment	FY
\$28,728,249	\$407,717	\$266,915,544	10%	13,926	2016
\$27,781,546	\$707,947	\$432,899,775	6%	13,851	2015

Source: Comprehensive Annual Financial Report³⁹ and Alaska Dept of Education & Early Development

Facilities Overview

The School District provides area wide primary and secondary education to the children of the borough.

The School District has 30-plus schools serving approximately 13,850 students. Student enrollment overall has been fluctuating in the past few years and overall, district schools are generally below capacity. Alaska's public school enrollment is slowly declining. Class sizes are closely monitored. Figure 2 shows the "live" class⁴⁰ size dashboard. Red and yellow circles represent classes that are above the threshold maximum size; blue circles are under target class sizes.



Figure 1: North Pole Elementary School in Fairbanks North Star school district

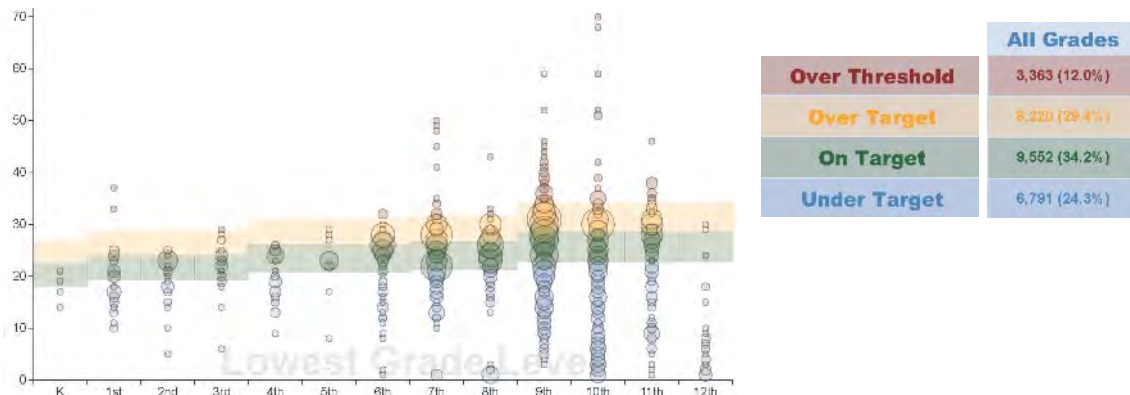


Figure 2: Class size by Grade Level

Source: Image edited from FNSBSD website https://premierutils.k12northstar.org/class_size2/

Fairbanks school district explored the potential of school building prototypes and concluded it was not recommended due to differences in geography, climate, shifts in enrollment and varying functional

³⁹ Fairbanks North Star Borough Comprehensive Annual Financial Report (FY2016)

<http://www.co.fairbanks.ak.us/fs/Comprehensive%20Annual%20Financial%20Reports/FY016%20CAFR.pdf>

⁴⁰ A "Class" is defined as the entire group of students a teacher is responsible for during any given period of the day. This may include multiple subjects and/or grade-levels taught in the same room during the period.

needs of the curriculum between school locations. However, it did recommend savings could be achieved by maintenance:

[C]omponent standardization in combination with standardized operations and maintenance training programs showed the greatest potential and opportunity for long-term cost savings. Operational efficiencies achieved by well-trained maintenance staff and the proper operation of complex “state of the art” mechanical systems is a key ingredient in a district’s potential to realize long term operational savings.⁴¹

In Alaska, all school districts are required to have a six-year facility plan, which is used to generate a list of CIP projects – the School Construction Grant Fund.⁴² CIP funds are not only used for new buildings but there is also a Major Maintenance Grant Fund used to provide a partial state match for capital improvements. Proposed projects are ranked using established criteria, which determines the order of funding.⁴³ In Fairbanks, Major Maintenance projects total \$19.9 million at 4 schools.⁴⁴

Funding

The School District is fiscally dependent; it has no taxing authority and cannot borrow funds. The Borough owns and has responsibility for all school facilities. The Borough is financially accountable for the Fairbanks North Star Borough School District, even though the School District is governed by an independently elected school board. Major maintenance and CIP projects are funded by the state and borough and primarily managed by the borough.

For its financial report for the Fiscal Year ended June 30, 2015 the district was awarded a Certificate of Excellence in Financial Reporting from the Association of School Business Officials International (ASBO).

Work Flow

Alaska school districts are all on some form of computerized maintenance management system (most use Maximo or Schooldude). Fairbanks uses a Web Help Desk software.⁴⁵ Critical Tasks performed by the Facilities Management Department include:⁴⁶

1) FMD Management

- Liaison between school administration, maintenance staff, custodial staff & contractors
- W/O system management
- Energy and Utility management
- FMD software support
- After hours on call phone support
- Employee training & scheduling
- Quality control

2) Custodial Services

- Safety/sanitation
- Minor maintenance

3) Maintenance of Facilities, grounds and Fleet

⁴¹ A Report on the benefits and Disadvantages of Prototypical School Design and Construction in Alaska, 2015.

⁴² https://education.alaska.gov/Facilities/publications/Prototype_Report.pdf

⁴³ https://education.alaska.gov/Facilities/final/18_school_construction_priority_final.pdf

⁴⁴ https://education.alaska.gov/Facilities/ProjecDesc/18_maintdescr.pdf

⁴⁵ https://education.alaska.gov/Facilities/final/18_maintenance_list_priority_final.pdf

⁴⁶ Report of Maintenance Assessments <https://education.alaska.gov/Facilities/publications/SofSFinal.pdf>

⁴⁶ Fairbanks North Star Borough School District (2017-2018 Recommended Budget)

- 1 • Fleet and equipment repair and maintenance
- 2 • Emergency generator repair and maintenance
- 3 • Grounds care and snow removal
- 4 • Preventive maintenance program
- 5 • Parts procurement
- 6 • Hazardous waste management and disposal
- 7 • Building controls systems/DDC
- 8 • HVAC, Mechanical, Plumbing and electrical system maintenance and repairs
- 9 • Kitchen equipment maintenance
- 10 • Refrigeration/AC systems
- 11 • Fire systems and Fire alarms
- 12 • Audio/video and radio equipment repairs
- 13 • Clocks, bells, intercoms
- 14 • Data cabling. Security systems
- 15 • Doors, lock hardware and FOB systems
- 16 • Carpentry, painting, patching
- 17 • Roofing repair
- 18 • Boiler maintenance
- 19 4) Management of Facility Use
 - 20 • Building Rentals; Event management systems; Theater rental support
 - 21 • School support for theater use and other productions
- 22 5) Project Management
 - 23 • Facilities planning project design review
 - 24 • Capital construction liaison
 - 25 • DEED reports and AHERA compliance
 - 26 • Underground storage tank compliance

27 Staffing (FY2018, recommended)*

28 In addition to the staffing table provided below, further budgetary information on the Facilities
 29 Management Department staffing is provided from the district's proposed FY2018 budget.

Position	Job Title	No. of Actual Positions	Total Positions
Management	Exec Director of Facilities Management	1	8
	Projects Manager	1	
	Electrical Administrator / Energy Specialist	1	
	Custodial & Grounds Manager	1	
	Maintenance Foreman	1	
	Maintenance, Construction, Energy Mgr	1	
	Custodial Zone Manager	2	
Maintenance	HVAC Maint Technician	3	28
	Carpenter	4	
	Locksmith	1	
	Wire Installation Crew	1	
	Plumber Maint Technician	3	

Position	Job Title	No. of Actual Positions	Total Positions
	Preventive Maint	1	
	Electronics	4	
	Mech-Haz Materials	1	
	Electrician Maint Technician	5	
	Maint Mechanics	1	
	Boiler Maint Technician	2	
	Warehouse Expediter	1	
	Auto/Generator Mechanic	1	
Custodial & Groundskeeping	Custodian	99.2	132.2
	Lead Custodian	30	
	Districtwide Roving Custodian	1	
	Groundsperson/Technician	2	
Building Rentals	Theater Coordinator	1	2.6
	Custodian	1.6	
TOTAL			170.8

*Support staff (i.e., Admin Asst, Clerk Typist) not included in the above table.

Source: Recommended Budget FY2018⁴⁷

Organizational Chart⁴⁸

The Facilities department includes oversight of maintenance and custodial activities. Total staffing numbers were obtained from the recommended school budget.

Maintenance Technicians receive the highest rates among classified job positions; even higher than network technicians and the school nurses. Maintenance Mechanics are paid at the next highest classified payment level. A list of all job descriptions and salaries is available online.⁴⁹

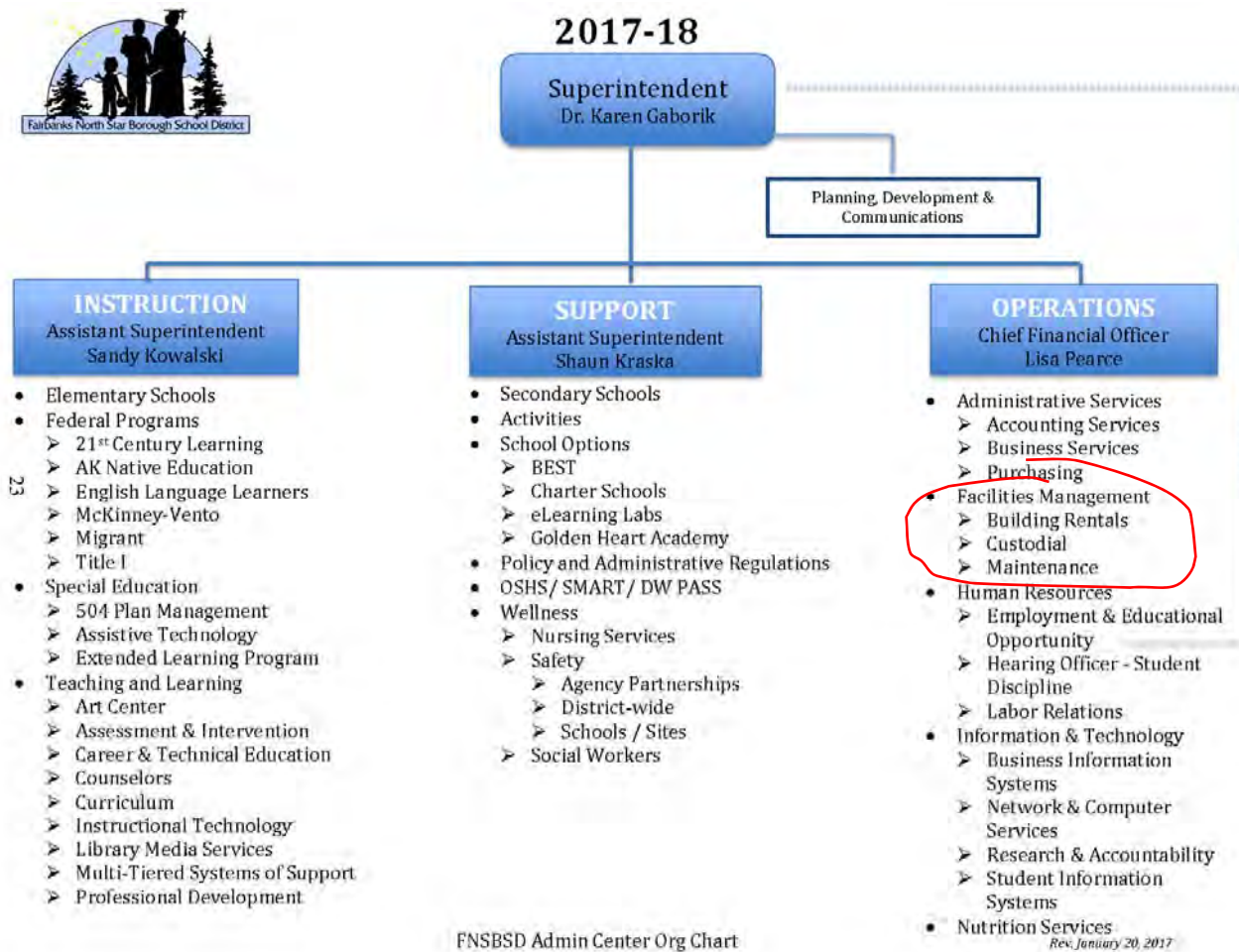
⁴⁷ Fairbanks North Star Borough School District FY 2017-18 Recommended Budget

<https://www.k12northstar.org/cms/lib/AK01901510/Centricity/Domain/3457/Recommended%20Budget.pdf>

⁴⁸ Org chart from the Fairbanks North Star Borough School District (2017-2018 Recommended Budget)

⁴⁹ Fairbanks North Star Borough School District, Human Resources <https://www.k12northstar.org/Page/1987>

1



2

8.2.2 Perris Union High (California)

CASE STUDY:

Perris Union High School District (Riverside County, California)

Locale: Rural - Fringe



Table 1: Expenditures

Maintenance & Operations	Capital Outlay	Total Expenditures	M&O % of Total Expenditures	Student Enrollment	FY
\$12,283,129	\$24,383,571	\$157,509,210	8%	10,744	2016
\$10,869,985	\$19,536,294	\$160,994,852	7%	10,510	2015
\$10,607,739	\$23,846,330	\$129,553,595	8%	10,435	2014

Source: Annual Financial Report⁵⁰ and Ed-data.org

Facilities Overview

Perris Union HSD serves a 182 square mile area in the State of California and includes grades 7 through 12.⁵¹ For FY2016, 74% of students were eligible for free or reduced price meals and 18% were English Language Learners.⁵²



Figure 1: School in the District

Work Flow

The Maintenance & Operations Department processes over 4,000 work orders per year and is responsible for maintaining nearly 209 acres of district facilities and grounds.

Funding

The district collects revenue from developer fees, local property taxes, and lottery funds. In FY2016, lottery funds for the district totaled about \$1.1M. Projected FY2017 lottery proceeds are roughly \$189 per student, based on prior-year average daily attendance.

According to the district's FY2016 annual report, it had \$127.7M outstanding principal in General Obligation bonds. The district

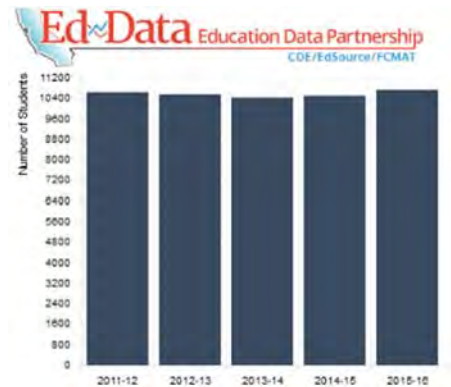


Figure 2: Districtwide enrollment has remained stable in past 5 years

⁵⁰ Perris Union High School District Annual (Audited) Financial Report (FY2014 to FY2016), available online at <http://www.puhisd.org/pages/publications>

⁵¹ Series A GO Bond, Annual Continuing Disclosure Report FY ended 6/30/2015 <https://emma.msrb.org/ES768392-ES603602-ES999400.pdf>

⁵² <https://www.ed-data.org/district/Riverside/Perris-Union-High>

also carried about \$5M in Qualified Zone Academy Bonds (QZAB) and about \$1.2M in capital lease agreements.

Staffing (2016)⁵³*

Position	Job Title	No. of Actual Positions	Total Positions
Management	Director Of Facilities Services	1	7
	Director of Facilities	1	
	Maint. & Opr. Supervisor	1	
	Plant Supervisor	4	
Maintenance	Senior Skilled Maint. Worker	4	12
	HVAC Technician	3	
	Locksmith	2	
	Pool Maintenance Worker/Custodian	1	
	Delivery Driver	2	
Custodial & Groundskeeping	Custodian	44	56
	Senior Groundskeeper	3	
	Groundskeeper	9	
TOTAL			75

*Support staff (i.e., Admin Asst, Clerk Typist) not included in the above table.

Source: <http://transparentcalifornia.com/agencies/salaries/school-districts/>

Organizational Chart

Both of the following M&O and Facilities Departments are located within the Business Services Division.

Maintenance & Operations

The Maintenance and Operations Department (M&O) is responsible for the maintenance and repair of all district buildings, grounds, and equipment. M&O Department staff coordinates custodial, landscape and security operations, performs minor renovation and construction projects, and assesses school

⁵³ [Transparentcalifornia.com](http://transparentcalifornia.com)

facilities for planned replacement of various building components through the District's Deferred Maintenance Program.

The Maintenance and Operations Department also oversees and ensures that PUHSD is in compliance with programs relating to:

- Safety and Cleanliness
- AHERA (Asbestos Hazard Emergency Response Act)
- Indoor Air Quality
- Integrated Pest Management
- Hazardous Waste Disposal
- Universal Waste Recycling

Facilities Department

The Facilities Department is also within the Business Services Division. Facilities is responsible for the planning and construction of all schools and ancillary facilities within the Perris Union High School District.

The Facilities Department is charged with developing district projects, through short and long term facilities planning. Facilities works collaboratively with selected architects, engineers, and consultants to develop detailed plans and specifications which meet the highest safety standards for school facilities. Facilities works with local, state, and federal agencies to ensure that all mandated guidelines and specifications are being met and complied with during our capital improvements. Our facilities department works closely with district staff to ensure construction activities are conducted in a manner in which all students and staff are safe and minimally impacted during construction activities, which might be occurring at our district sites.

Facilities strives to work collaboratively and efficiently in all activities related to facilities planning and construction in our district. Our goal is to provide excellent customer service to all staff, parents, and community members that require our services.⁵⁴

Organizational Chart⁵⁵

Superintendent

- Secretary x2

Educational Services

- Asst Superintendent
- Secretary

Business Services

- Asst Superintendent
- Secretary

Facilities and Planning

- Director of Facilities

Fiscal Services

⁵⁴ <http://www.puhsd.org/pages/facilities>

⁵⁵ An organizational chart was not available for download; this list was compiled from PUHSD's website: <http://www.puhsd.org/pages/divisions>

- Director of Fiscal Services

Maintenance and Operations

- Director of Facilities Services
- Asst Director of Maintenance and Operations
- Secretary
- Account Clerk

Nutrition Services

- Director

Purchasing

- Director

Risk Management

- Director of Risk Management and Environmental Safety

Technology

- Director of Instructional and Information Technology

Transportation

Human Resources

- Asst Superintendent
- Director Human Resources
- Secretary x3
- Personnel Technician x3
- Senior Clerk
- Receptionist

8.2.3 Matanuska-Susitna Borough (Alaska)

CASE STUDY:

Matanuska-Susitna Borough School District (Alaska)

Locale: Town - distant



Table 1: Expenditures

Maintenance & Operations	Capital Outlay	Total Expenditures	M&O % of Total Expenditures	Student Enrollment	FY
\$26,129,500	\$5,701,499	\$287,470,258	9%	18,745	2016
\$26,728,663	\$5,908,069	\$505,096,292	5%	18,037	2015
\$24,054,428	\$7,056,205	\$281,351,715	9%	17,477	2014
\$23,049,191	\$2,684,128	\$207,070,574	11%	17,247	2013
\$24,274,025	\$3,217,541	\$254,553,617	10%	17,338	2012

Source: Comprehensive Annual Financial Reports⁵⁶ and Alaska Dept of Education & Early Development

Facilities Overview

Ranging in campus size from 20 to more than 1,500 students per campus, the district educates a total of about 18,800 students at 47 school sites. MSBSD is the second largest public school district in the State of Alaska. The district encompasses over 25,000 square miles, transporting students more miles than any other district. The district has experienced a growth in student enrollment in the past few years and anticipates continued growth.



Figure 1: SuValley Jr/Sr High School was a Council of Educational Facility Planners International (CEFPI) 2011 award finalist.

Funding

The following text is from the Preliminary Adopted FY18 Budget:⁵⁷ The Mat-Su Borough provides for new school construction, debt services, and maintenance of buildings for the District. All bonded debt and Borough-managed capital improvement funds are accounted for by the Borough in their annual budget.

Designated Legislative Grants are funds set aside through the State's capital budget process and allocated by the Department of Commerce, Community, and Economic Development. The District utilizes two funds to track these designated grants from the State Legislature; Funds 503 and 505. Designated Legislative Grants are grants that are specified and can only be used for the following purposes:

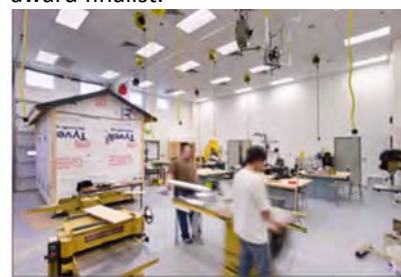


Figure 2: Power cords hang from the ceiling to providing maximum flexibility for students to rearrange work spaces to suit their needs. Spaces that can adapt to users' learning needs, are a hallmark of 21st century classrooms.

⁵⁶ Fairbanks North Star Borough Comprehensive Annual Financial Report (FY2012-16)

<https://www.matsuk12.us/financial-info>

⁵⁷ <https://www.k12northstar.org/budget>

- Feasibility Studies
- Construction Projects
- Building Improvements
- Design and Engineering
- Land Acquisition
- Equipment Purchase, Upgrades, or Repairs

Capital funding requests for the upcoming year are made by school principals and department heads and submitted to administration in October. After a thorough review and scoring of all capital project requests, highest scoring projects are submitted to the State. Those requests are entered into the State's CAPSIS system by the end of January. The Legislature deliberates and approved requests are signed into law with corresponding grant award notifications sent over the summer months, making funds available for the following fiscal year. These funds are carried over from year to year until fully expended or until the funds expire. Due to the State's current fiscal climate, no requests were approved by the Legislature for FY17.

Although the School District is fiscally dependent and has no taxing authority and cannot borrow funds, the district clearly communicates its priorities in a way that uses enrollment and programmatic changes to justify facility needs and funding. For example, the district legislative priorities brochure states:⁵⁸

- Priority #6: Reinstate the School Bond Debt Reimbursement Program to fund new school construction for growing districts.
 - Rationale: Within the past 10 years, the Mat-Su Borough School District has increased in enrollment by 2,619 students. Within the past two years, the District's enrollment has grown by over 1,000 students. Current projections forecast growth for the next three years. To accommodate continued growth in this area of the State, a need exists to fund new school construction in the Mat-Su Borough School District.
- Capital Request #4: Portable and Temporary Facilities (\$1,500,000)
 - Rationale: The Mat-Su Borough School District seeks funding for portable facilities and the cost-effective relocation of existing portable facilities to include the costs of disconnection and connection of facility systems and site infrastructure requirements. This capital request is necessitated by the fact that the Mat-Su Borough School District's student enrollment continues to grow during a period when funding for the School Bond Debt Reimbursement Program has been suspended [4 AAC 31.050].

The district has been awarded the prestigious Association of School Business Officials International's Meritorious Budget Award (MBA) every year since 2014. The award application process also helps school business professionals build solid skills in developing, analyzing, and presenting an award-winning budget.⁵⁹

In Alaska, all school districts are required to have a six-year facility plan, which is used to generate a list of CIP projects – the School Construction Grant Fund.⁶⁰ CIP funds are not only used for new buildings but there is also a Major Maintenance Grant Fund used to provide a partial state match for capital

⁵⁸ 2017-18 Legislative Priorities: <https://www.matsuk12.us/cms/lib/AK01000953/Centricity/Domain/1/2016-2017%20Leg%20Priorities%20Brochure%202.pdf>

⁵⁹ Financial Information <https://www.matsuk12.us/financial-info>

⁶⁰ https://education.alaska.gov/Facilities/final/18_school_construction_priority_final.pdf

improvements. Proposed projects are ranked using established criteria, which determines the order of funding.⁶¹ In this district, Major Maintenance projects total \$28.3 million at 5 schools.⁶²

Capital funding requests for the upcoming year are made by school principals and department heads and submitted to administration in October. After a thorough review and scoring of all capital project requests, highest scoring projects are submitted to the State. Those requests are entered into the State's CAPSIS system by the end of January. The Legislature deliberates and approved requests are signed into law with corresponding grant award notifications sent over the summer months, making funds available for the following fiscal year. These funds are carried over from year to year until fully expended or until the funds expire. Due to the State's current fiscal climate, no requests were approved by the Legislature for FY17.⁶³

Work Flow

Facilities is responsible for upkeep and general maintenance of all school district locations. This includes painting, repairing equipment, plowing/shoveling snow, sanding parking lots and sidewalks, mowing grass, preventive maintenance, and similar tasks. Alaska school districts are all on some form of computerized maintenance management system (most use Maximo or Schooldude). Matanuska uses Schooldude.

Staffing*

The Facilities Department oversees the care and use of our buildings and physical structures district-wide. From energy conservation programs and capital improvement projects to preventative maintenance programs and snowplowing, the Facilities Department serves employees and students.⁶⁴

Position	Job Title	No. of Actual Positions	Total Positions
Management	Exec Director Operations	1	13
	Director of Facilities	1	
	Capital Planning and Construction Manager	1	
	Safety & Emergency Preparedness Manager	1	
	Purchasing	1	
	Food Services/Warehouse	1	
	Transportation	1	
	Maint Foreman	3	
	Custodial Supervisor	3	133
Maintenance ⁶⁵	(unspecified staff)		
Custodial & Groundskeeping	(unspecified staff)		
Building Rentals	(unspecified staff)		
TOTAL			146.53

*Support staff (i.e., Admin Asst, Clerk Typist) may have been included in the above table.

Source: FY18 Preliminary Adopted Budget.

⁶¹ https://education.alaska.gov/Facilities/ProjecDesc/18_maintdescr.pdf

⁶² https://education.alaska.gov/Facilities/final/18_maintenance_list_priority_final.pdf

⁶³ Proposed FY20108 Budget

⁶⁴ <https://www.matsuk12.us/Page/23967>

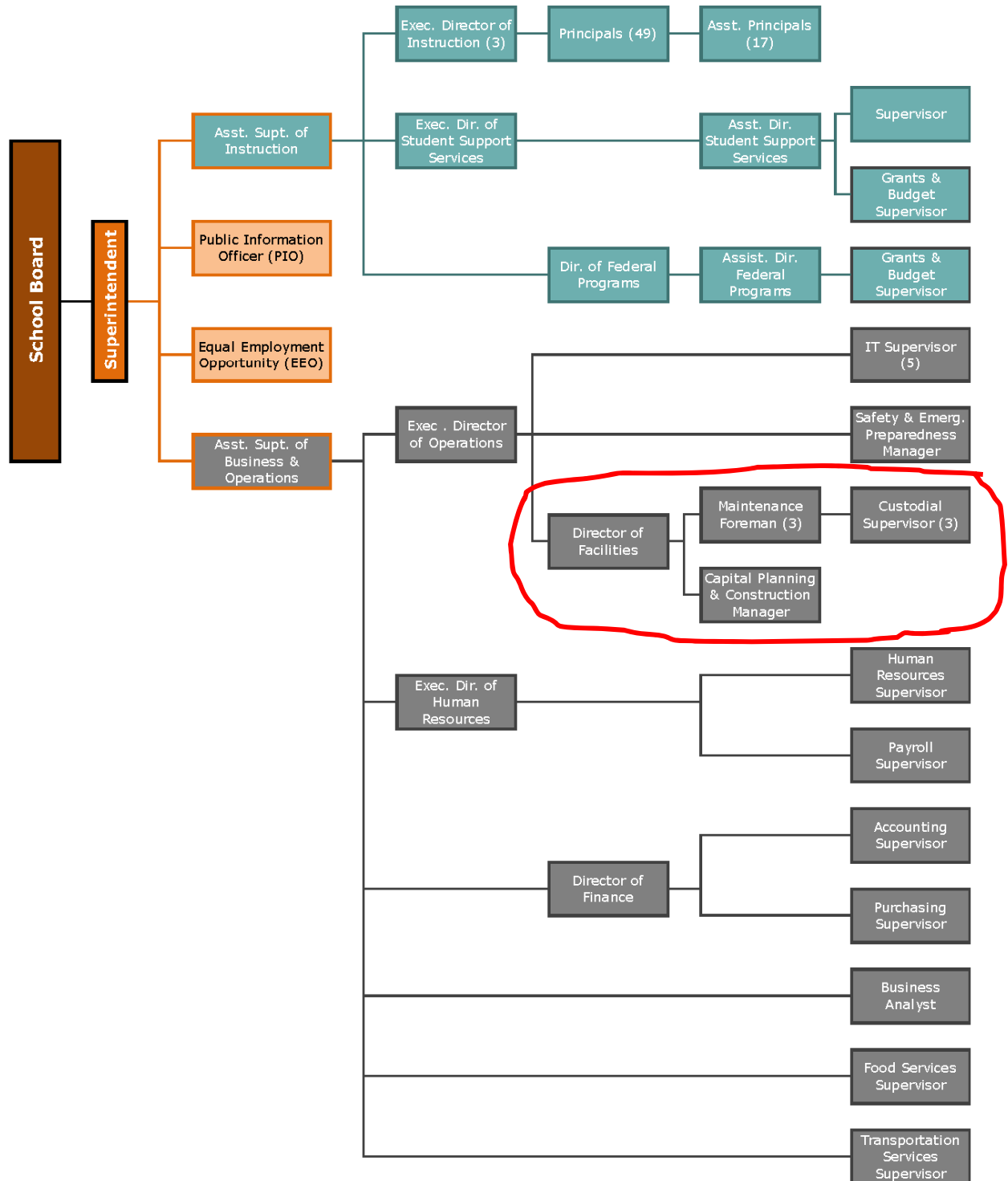
⁶⁵ Actual number of staff in each position, not specified.

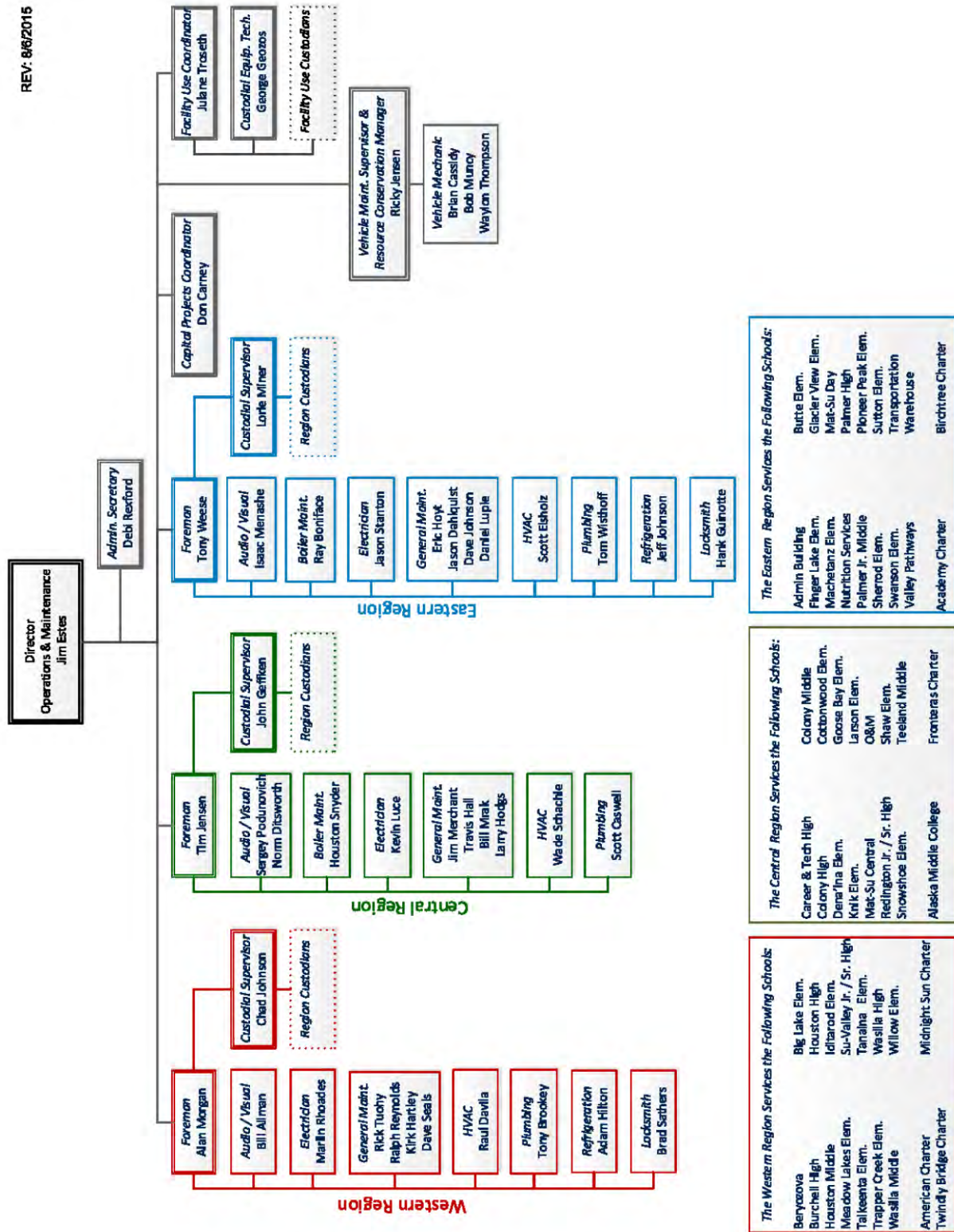
- 1 The Facilities department includes oversight of operations and maintenance, including custodial
2 activities.⁶⁶ The detailed Operations and Maintenance organizational chart shows that each of the
3 regional Custodial Supervisors report to their regional Maintenance Foreman. Even though there is a
4 separate Transportation department, the Facilities department provides fleet maintenance services and
5 mechanics.
- 6 Attached documents include an organization chart for the entire school district and one for the Facilities
7 Department. Also, excerpts related to staffing are provided from the Matanuska-Susitna Borough School
8 District's Preliminary Adopted Budget 2017-18.

⁶⁶ <https://www.matsuk12.us/cms/lib/AK01000953/Centricity/Domain/4531/OandM%20Org%20Chart.pdf>

1

ORGANIZATION CHART





8.2.4 Okaloosa (Florida)

CASE STUDY:

Okaloosa County School District (Okaloosa County, Florida)

Locale: Suburb - midsize



Table 1: Expenditures

Maintenance & Operations	Capital Outlay	Total Expenditures	M&O % of Total Expenditures	Student Enrollment	FY
\$23,496,116	\$2,683,389	\$268,992,894	9%	30,183	2016
\$23,114,960	\$510,879	\$286,622,413	8%	29,972	2015
\$23,114,960	\$518,084	\$283,543,983	8%	29,876	2014

Source: Audited Annual Financial Reports⁶⁷

Facilities Overview⁶⁸

Okaloosa County consists of 936 square miles located in the heart of the Florida panhandle. The county is home to three major military facilities: Eglin AFB, Duke Field, and Hurlburt Field. As such, the student population of Okaloosa County School District is a diverse group representing many different ethnic and cultural groups.



Figure 1: Laurel Hill School in Okaloosa County

The Okaloosa County School District serves approximately 30,000 students and operates thirty-nine neighborhood public schools and one digital learning school. Included in the school system are:

- Nineteen elementary schools
- Eight middle schools
- Five high schools
- Two Gr. K-12 schools
- One Gr. K-8 school
- One Gr. 3-8 performing arts academy in cooperation with the Northwest Florida Ballet
- Two schools for significantly cognitively delayed students
- One digital learning school
- One alternative education high school facility

The variety of school configurations within our district is a direct result of the expanse of the geographical area within our district and our enrollment challenges.

⁶⁷ Annual (Audited) Financial Reports (FY2014 to FY2016), <http://www.puhsd.org/pages/publications> and FTE student enrollment <http://www.fldoe.org/finance/fl-edu-finance-program-fefp/fte-info/student-enrollment.stml>

⁶⁸ <https://www.okaloosaschools.com/district>

In this district, a professional culture exists in which a high level of performance is expected of OCSD students; therefore, all students engage in rigorous, standards-based curriculum that promotes critical thinking and application of learning across content areas with the ultimate purpose of inspiring a lifelong passion for learning.

Funding

The District's operating revenue relies primarily on the Florida Education Finance Program (FEFP) fund, which allocates funding based on the number of full-time equivalent (FTE) students. Current projections expect enrollment to increase over the next few years. However, the primary revenue source for the state's general operating fund is sales tax and tourism, which have historically been an unstable revenue stream. Potential changes in the broader economy or changes in revenue collection or allocation could impact District revenues.

Securing adequate capital outlay funding is a concern for the district. Approximately 40% of district facilities are older than 50 years and another 40% are more than 40-years-old. Older facilities also have higher capital maintenance requirements.⁶⁹

Work Flow⁷⁰

5-year District Facilities Work Program

Each school district in Florida is required to submit an updated 5-year work program each year. The first year must align with that district's approved capital outlay budget and be consistent with the recommendations in the 5-year education plant survey (FDOE 2014). For reference, OCSD's 5-year facilities work plan is included at the end of this case study.

Facilities Planning

The Okaloosa School District Facilities Planning Department is responsible for the development and implementation of the District's Capital Construction Program. This includes the renovation, remodeling, and construction to meet the District's needs.

The Department also develops the Five Year Work Plan, the Educational Plant Survey and the District Project Priority list which are submitted annually to the Florida Department of Education. In this process, the department develops plans for growth to meet the district's long-range goals. In addition, we oversee the care of legal documents for all parcels of land owned by the Okaloosa County School District. Construction documents and blueprints are housed in a secure area where an inventory is in process.

Maintenance and Grounds

The mission of the Maintenance Department is to provide assistance for preventive, emergency and routine maintenance. We repair heating and cooling systems, scoreboards and intercoms and also provide plumbing, electrical, carpentry, welding, locksmith and grounds services, including athletic field preparation and maintenance.

⁶⁹ FY2014 OCD Audited Financial Statement <http://www.okaloosa.k12.fl.us/finance/AuditInfo.aspx>

⁷⁰ <http://www.okaloosaschools.com/district/facilities-planning-maintenance>

1 Fire Safety / Inspections / Surplus

2 This Department assists with the permitting, and inspection of school facilities.

3 Staffing^{*71}

Position	Job Title	No. of Actual Positions	Total Positions
Management	Director	1	1
	Plan Inspector/Building Official	0.5	0.5
Maintenance	Foreman	4	45
	Leaderman	3	
	Leaderman, Trades	3	
	Electricians	8	
	Plumbers	6	
	Carpenter	3	
	Air-Conditioning Technician	9	
	Welder	3	
	Heavy Equipment Operator	5	
	Custodian II	1	
Groundskeeping	Leaderman, Site Base	4	30
	Site Base Technician	21	
	PA/Scorecard technician	1	
	Athletic Fields Grounds Personnel	4	
Fire Safety / Inspection / Surplus	Fire Safety Foreman	1	2.5
	Plan Inspector/Building Official	0.5	
	Surplus Foreman	1	
TOTAL			79

4 *Support staff (i.e., Admin Asst, Clerk Typist) were not included in the above tables. Groundskeeping is included in
5 the department responsibilities (as Site Base Technician position); custodial work is not included.

6 Maintenance staff are organized into 4 teams, each consisting of 14 to 16 workers, 2 trade leadermen
7 and 1 foreman. The trade leaderman job description appears to be a versatile supervisory and worker
8 position allowing the team some flexibility and overlap in abilities and coverage of duties. Teams are
9 organized into regions (north, central and south zones). Teams include a mix of trades: electricians, A/C
10 technicians, plumbers and site base technicians (groundskeepers), with 1 team focused on playgrounds
11 and athletic fields for the entire county. Locksmithing is included, but not shown on the org chart.

12 To provide more efficient service, each zone has its own maintenance shop. While the Maintenance
13 Department supports the District as a whole, the foreman assigned to each zone should be the point of
14 contact for schools in that zone.

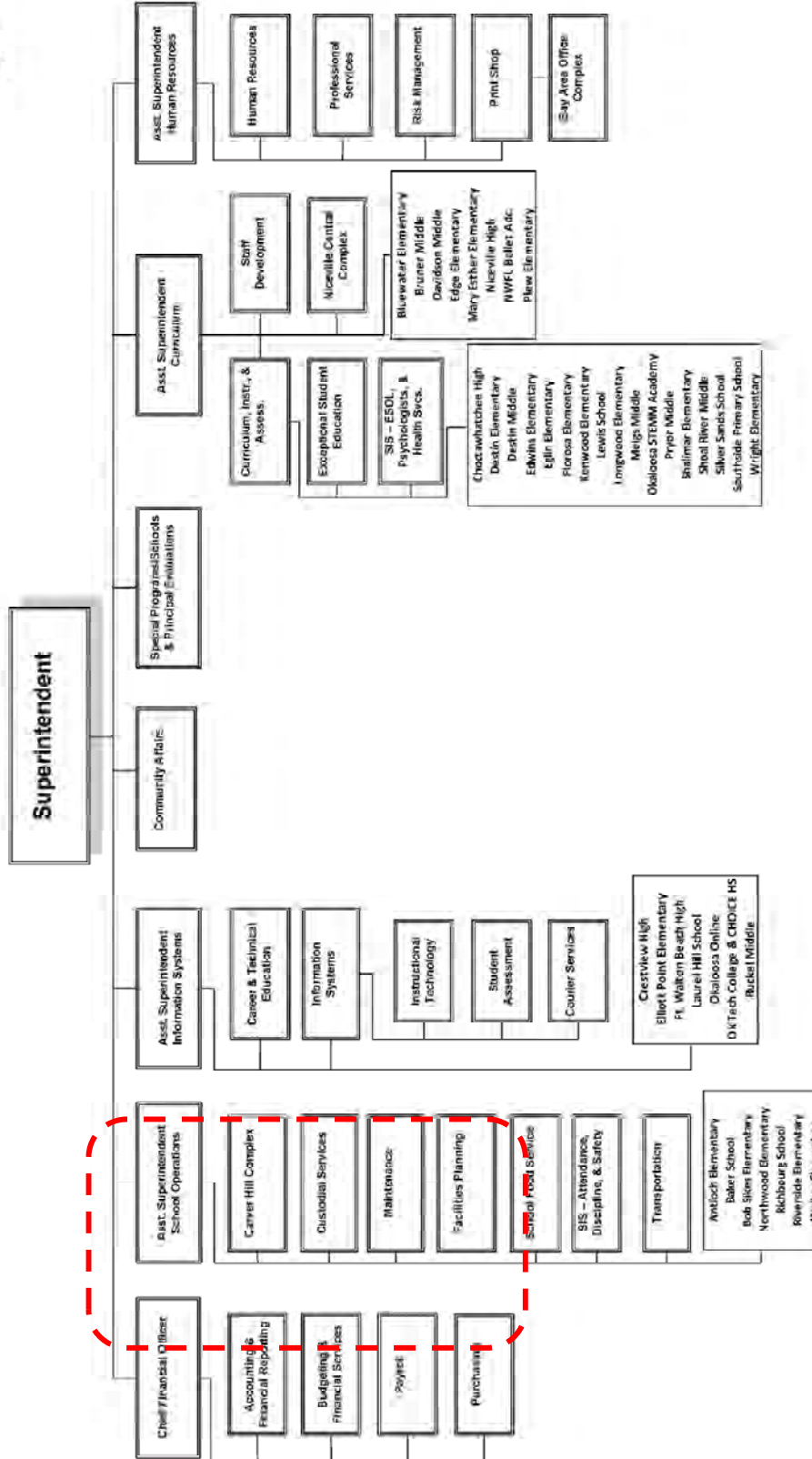
⁷¹ Based on <http://www.okaloosaschools.com/district/facilities-planning-maintenance/staff>

Revised June 7, 2017



School District of Okaloosa County

ORGANIZATIONAL CHART
Fiscal Year 2017-2018



1



Steve Bolton, Director
 850-689-7159
 BoltonS@mail.okaloosa.k12.fl.us
 Carver Hill Admin Complex
 461 W. School Avenue
 Crestview, Florida 32536

**Facilities Planning
and Maintenance**

Offices are open 7AM - 3:30PM Weekdays

[Home](#)
[Staff](#)
[Forms](#)
[Self Help](#)
[Awarded Bids](#)
[Construction](#)
[Surplus/Auction](#)

FACILITIES STAFF

Tom Cox Plan Inspector/Building Official CoxT2@mail.okaloosa.k12.fl.us (850) 689-2048	Linda Castleman Secretary CastlemanL@mail.okaloosa.k12.fl.us (850) 833-3455	Debbie Wyman Secretary WymanD@mail.okaloosa.k12.fl.us (850) 689-7158
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MAINTENANCE/GROUND STAFF

Nicole Loggins, Secretary LogginsN@mail.okaloosa.k12.fl.us (850) 689-2045 FAX: (850) 683-7650	Shelley Bengston, Secretary Shelley.Bengston@mail.okaloosa.k12.fl.us (850) 689-7193 FAX: (850) 683-7650
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North Zone	Central Zone	South Zone	Support/Grounds Zone
Foreman Jon Myers (850) 689-7214	Foreman Luke Mitchell (850) 833-3639	Foreman Winston Reed (850) 833-3598	Foreman Rick Kilpatrick (850) 833-3661
Leaderman, Site Base Jimmy Adams (850) 689-7214	Leaderman, Site Base Joey Bonta (850) 833-3639	Leaderman, Site Base Dennis Bowling (850) 833-3598	Leaderman Gary Brown (850) 833-3661
Leaderman, Trades Phillip Reed (850) 689-7214	Leaderman, Trades Billy Simmons (850) 833-3639	Leaderman, Trades Rick Patrick (850) 833-3598	Leaderman Jerry Payne (850) 833-3661
Responsibilities All Schools and Admin Buildings North of Shoal River	Responsibilities All Schools and Admin Buildings in the Destin, Eglin, Niceville, and Shalimar Areas	Responsibilities All Schools and Admin Buildings in the Fort Walton Beach Area	Responsibilities District-Wide support for Playgrounds and Athletic Fields
Capabilities 2 Electricians, 2 Plumbers 3 A/C, 7 Site Base Technicians	Capabilities 1 Carpenter, 3 Electricians, 2 Plumbers 3 A/C, 7 Site Base Technicians	Capabilities 2 Carpenters, 3 Electricians, 2 Plumbers, 3 A/C, 1 PA/Scoreboard who is County- Wide, 7 Site Base Technicians	Capabilities 3 Welders, 5 Heavy Equipment Operators, 4 Athletic Field Grounds Personnel, 1 Custodian II
Schools Antioch ES Baker K-12 Bob Sikes ES Crestview HS Davidson MS Laurel Hill K-12 Northwood ES Richbourg School Riverside ES Shoal River MS Southside Center Walker ES	Schools Bluewater ES Destin ES Destin MS Edge ES Eglin ES Lewis K-8 Longwood ES Meigs MS Niceville HS Plew ES Ruckel MS Shalimar ES Valp-STEMM Center	Schools Bruner MS Choctaw HS Choia HS Edwins ES Elliott Point ES FWBHS Florosa ES Kenwood ES Mary Esther ES Pryor MS Silver Sands Wright ES	
Admin Buildings Carver Hill, DJJ, Trans North	Admin Buildings Central Admin, Nutrition Center, Trans Central	Admin Buildings Bay Area Office, Maint South, Trans South	

FIRE SAFETY / INSPECTIONS / SURPLUS

Fire Safety Foreman John Jamieson (850) 978-3088	Plan Inspector/Building Official Tom Cox (850) 689-2048/833-3455	Surplus Foreman Luke Mitchell (850) 833-6314
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Bill Smith, Ed. D.
 Custodial Specialist
 (850) 689-7158
 461 W. School Avenue
 Crestview, Florida 32536
 SmithB@mail.okaloosa.k12.fl.us

Custodial Services


[Custodial Home](#)
[Employment](#)
[Documents](#)
[Training](#)
[MSDS Sheets](#)
[Spanish Version](#)
[Contact Us](#)

Our mission is to provide a clean, safe and healthy environment in which teachers can teach and students can learn. We strive to provide a workable, friendly place for people to improve and enhance life skills. We will accomplish this by committing to our shared values and by achieving the highest level of customer satisfaction, with extraordinary emphasis on creation of partnership and teamwork. Our custodians clean and maintain over 3,573,982 gross square feet of space, on a daily basis.

Our main office is located at 461 School Ave. Crestview, Fl. 32536. The office opens at 7:00 am every weekday and closes at 3:30 pm. Please feel free to contact us with compliments or concerns via our [Contact Us](#) link or by calling our office.



Teresa Atkins
 Zone Manager - North
 (850) 259-9111
 Schools Covered: Laurel Hill, Crestview, Baker, Southside Center, Davidson, Walker, Antioch, Bob Sikes, Northwood, ECCI, and Richbourg



Malcolm Bracewell
 Zone Manager - Central
 (850) 699-1150
 Schools Covered: Niceville, Lewis, Ruckel, Shoal River, Bluewater, Plew, Edge, Riverside, and STEMM



Andy Mims
 Zone Manager - Fort Walton Beach North
 (850) 499-7886
 Schools Covered: Choctawhatchee, Meigs, Pryor, CHOICE, Longwood, Shalimar, Kenwood, Wright, and Eglin



Clif Shutt
 Zone Manager - Fort Walton Beach South
 (850) 865-4555
 Schools Covered: FWB, Bruner, Destin MS, Destin ES, Silver Sands, Elliott Point, Edwins, Mary Esther, and Florosa



Michele Williams
 Secretary
 (850) 689-7298

2

8.2.5 West Contra Costa USD (California)

CASE STUDY:

West Contra Costa Unified School District (Contra Costa, California)

Locale: Suburb - large



Table 1: Expenditures

Maintenance & Operations	Capital Outlay	Total Expenditures	M&O % of Total Expenditures	Student Enrollment	FY
\$33,772,997	\$89,648,964	\$503,261,783	7%	30,973	2016
\$33,175,004	\$160,765,074	\$561,909,491	6%	30,596	2015
\$33,192,565	\$104,438,285	\$497,070,463	7%	30,720	2014

Source: Audited Annual Financial Reports⁷²

Facilities Overview

This district has prepared numerous planning documents. Links are provided to serve as exemplars of school facility planning. A key difference to the territories though is this district's location within a large suburban area. Planning documents for the district include a [Long Range Facilities Master Plan](#) (2016), [Demographic Analysis and Facility Capacity Study](#), [Prioritization Plan](#), [Implementation Plan](#), and Education Specifications for Elementary, Middle and [High Schools](#).



Figure 1: New Coronado Elementary campus in the District

Although the district has stable enrollment that has been growing slightly in the past 5 years, it anticipates charter schools will attract students away from the public school system and cause enrollment to decline by 8% in the next 10 years.⁷³ Declining enrollment can be particularly challenging since operating revenues typically decline in proportion to student population, while facility operating costs typically remain the same.

Funding

WCCUSD is an independent school district, meaning they can levy taxes (usually on real property) and can ask voters directly to support new bonds (up to the statutory

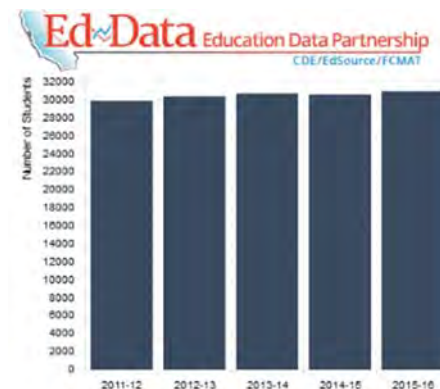


Figure 2: While districtwide enrollment has grown in past 5 years, it is expected to decline

⁷² Annual Audited Financial Reports (FY2014 to FY2016), <https://www.wccusd.net/page/96> and FTE student enrollment www.Ed-data.org

⁷³ Student Population Projections [2015-2016](#)

limit) to support a specific purpose or project. Independent school districts have a high degree of predictability and control over their budget and expenditures.

At the end of FY2016, the district had \$1.6 billion in long-term debt. California limits the amount of general obligation debt the district can issue to 2.5 percent of assessed value of taxable property within the district, however, the district has sought and received waivers to exceed the debt limit, and go up to 5.0% of assessed value. Insular Area school districts are fiscally dependent and do not need a Bond Finance department within the local Department of Education.

As Table 1 shows, in the past 3 years, the district has aggressively invested in school facilities, spending 18% to 29% of total district expenditures on capital outlay. The district's webpage provides information about a forensic accounting investigation of the district's construction bond program and address "myths" about irresponsible financial stewardship, mismanagement of bond funds and reckless construction spending.⁷⁴

California's economy is forecasted to grow faster than the national economy, and experience declining unemployment and a 3.6% growth in personal income.⁷⁵

Work Flow

Equipment asset management is handled by Schooldude:

*If the relocation of an asset requires the services of the warehouse, a work order will need to be submitted to Schooldude.... In order to complete the process for disposal of assets a work order must be submitted to Schooldude. Under no circumstances are sites and departments allowed to dispose of assets. Assets are only to be disposed of by warehouse personnel.*⁷⁶

The district also uses Munis financial software to make purchases (purchase requisitions), approve purchases and track budgets related to general and warehouse services.

Staffing (2015)*⁷⁷

Position	Job Title	No. of Actual Positions	
Management	ASSOC SUPT FACIL MAINT & BOND	1	22
	EXECUTIVE DIRECTOR OF M&O	1	
	GROUNDS SUPERVISOR	1	
	MAINTENANCE SUPERVISOR	4	
	ASST CUSTODIAL SERVICES SUPV	1	
	CUSTODIAL SERVICES SUPERVISOR	1	
	CUSTODIAL SUPV JR HIGH SCHOOL	7	
	CUSTODIAL SUPV SR HIGH SCHOOL	6	
Maintenance & Groundskeeping	AUTO MECHANIC	1	45
	CARPENTER	4	

⁷⁴ <https://www.wccusd.net/financialstewardship>

⁷⁵ WCCUSD's Annual Financial Statement FY2016

⁷⁶ <https://www.wccusd.net/page/569>

⁷⁷ Transparentcalifornia.com Based on 2015 data

Position	Job Title	No. of Actual Positions	
	ELECTRICIAN	3	
	ELECTRONICS TECHNICIAN	5	
	EQUIPMENT MECHANIC	1	
	FIELD MAINT GROUNDS KPR	1	
	FIELD MAINT GROUNDSKPR LDWKR	1	
	GARDENER	2	
	GARDENER LEAD WORKER	6	
	GARDENER OPERATOR	2	
	GENERAL MECHANIC	1	
	GLAZIER	2	
	HEATING/VENTILATING MECHANIC	3	
	IRRIGATION EQUIPMENT TECH	1	
	IRRIGATION TECHNICIAN	1	
	LOCKSMITH	2	
	PAINTER	5	
	PLUMBER	3	
	ROOFER	1	
Custodial	CUSTODIAN	109	148
	HEAD CUSTODIAN ELEMENTARY	39	
TOTAL			215

*Secretary and support staff were not included in the above tables.

Source: TransparentCalifornia.com⁷⁸

Facilities Planning and Construction

The Facilities Planning and Development Department is responsible for:

- New Construction/Modernization Program
- Long Range Facilities Master Plan
- \$140 Million State School Building Program
- \$40 Million Local Facilities Bond
- \$184 Million Deferred Maintenance Program
- Site Acquisition for New Schools
- Architect Selection
- Liaison to Local/State/Federal Government Agencies
- Property Management
- Developer Fees
- Energy Management
- Other Related Facilities Services

⁷⁸ <http://transparentcalifornia.com/salaries/2015/school-districts/contra-costa/west-contra-costa-unified/>

Organizational Chart⁷⁹

Maintenance & Operations

- Asst Superintendent
- Executive Director
- Secretary x2
- Carpenter/Lockshop/Glass/Paint Supervisor
 - Carpenter x4
 - Glazier x2
 - Locksmith x2
 - Painter x3
 - Asst Painter
- Electrical/Electronic Supervisor
 - Electrician x3
 - Electronic Technician x3
- General Maintenance Supervisor
 - General Mechanic x4
 - Roofer
- Plumbing/HVAC Supervisor
 - HVAC Technician x3
 - Plumber x3
- Grounds Supervisor
 - Equipment Mechanic
 - Field Maintenance Grounds Keeper
 - Field Maintenance Lead Worker x2
 - Gardener x4
 - Gardener Lead Worker x12
 - Gardener Operator x6
 - Irrigation Technician x1
 - Irrigation Equipment Technician x2
 - Tree Topper Lead Worker x2
- Operations Supervisor
 - Asst Supervisor
 - Scrub Crew x3
 - Utility Worker
- Vehicle Garage Supervisor
 - Auto Mechanic

Facilities & Planning

- District Engineering Officer
- Director of Contracts Administration
- Bond Regional Facilities Project Manager x4
- Coordinator of Business Services
- Administrative Services Manager
- Senior School Facilities Planning Specialist x 2
- Receptionist

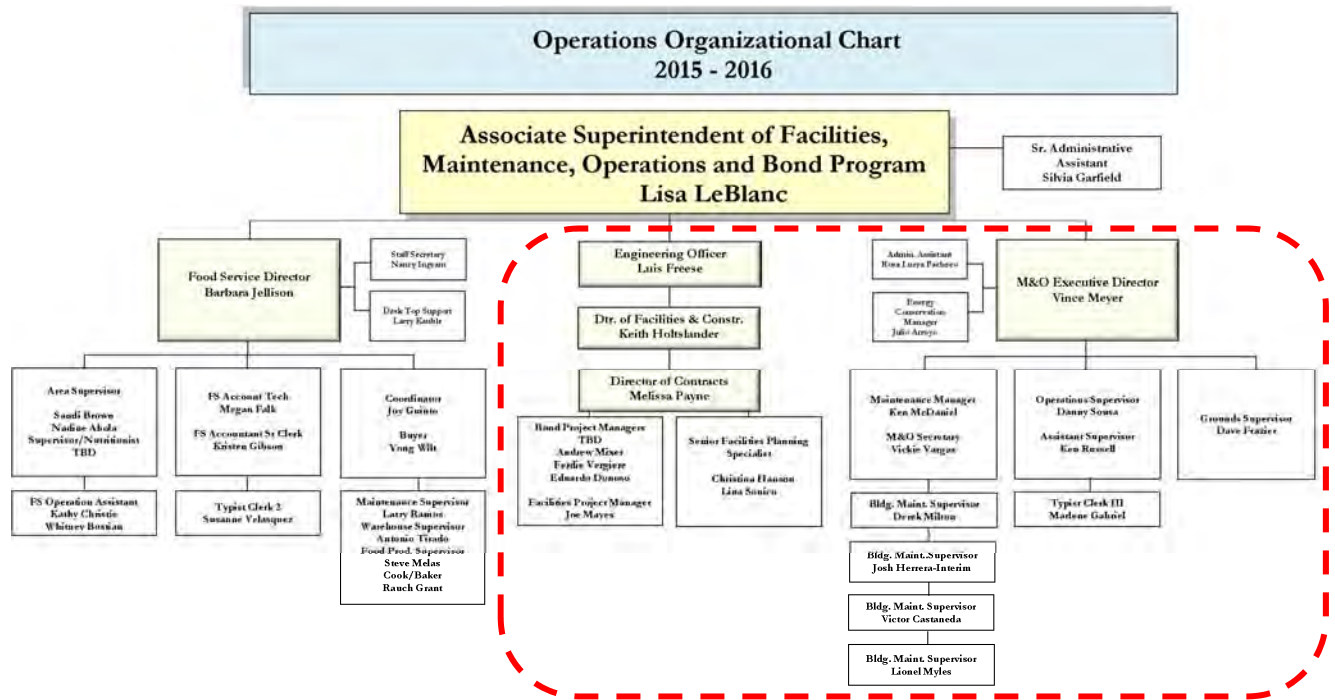
⁷⁹ <https://www.wccusd.net/site/Default.aspx?PageType=1&SiteID=1&ChannelID=4&DirectoryType=6>

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Bond Finance

- Asst Superintendent
- Executive Director of Bond Finance
- Secretary
- Principal Accountant
- Senior Budget Clerk

Other departments in the organization, not listed here.



6-1-15

8.2.6 Columbia County (Florida)

CASE STUDY:

Columbia County School District (Columbia County, Florida)

Locale: Town - distant



Table 1: Expenditures

Maintenance & Operations	Capital Outlay	Total Expenditures	M&O % of Total Expenditures	Student Enrollment	FY
\$8,685,134	\$500,548	\$90,989,791	10%	10,123	2016
\$8,686,008	\$181,151	\$88,486,356	10%	10,080	2015
\$8,405,684	\$200,140	\$84,416,844	10%	10,056	2014

Source: Audited Annual Financial Reports⁸⁰

Facilities Overview

The Florida Department of Education routinely updates its facility asset database (Florida Inventory of School Houses – or FISH)⁸¹ and uses it to guide capital investment projects and facility planning.

For example, CCSD has experienced below average growth over the past 25 years – both in terms of student enrollment and expansion of its facilities (Table 2). Although enrollment is about 10,000 students, the district overall has capacity for 13,091 students. Overall classroom utilization is 71%, with an actual average class size of 14 students.⁸²

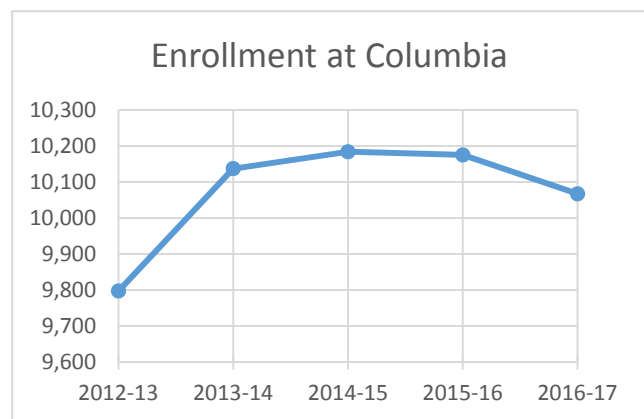


Figure 1: Enrollment off its 10,184 peak in SY2014-15

Table 2: Facility and Enrollment Growth at Columbia vs Statewide Average

DISTRICT	TOTAL		RELOCATABLE		PERMANENT	
	StuSta Average Annual Growth	NSF Average Annual Growth	StuSta Average Annual Growth	NSF Average Annual Growth	StuSta Average Annual Growth	NSF Average Annual Growth

⁸⁰ Annual Audited Financial Reports (FY2014 to FY2016), <https://flauditor.gov/pages/subjects/dsb.htm> and FTE student enrollment <http://www.fldoe.org/finance/fl-edu-finance-program-fefp/fte-info/student-enrollment.stml>

⁸¹ FISH database.

⁸² CCSD 5-Year Work Plan ([SY2016-17](#)).

Table 3: Age of Facilities Permanent Square Footage

District	Total NSF	SqFt 1-10 yrs old	SqFt 11-20 yrs old	SqFt 21-30 yrs old	SqFt 31-40 yrs old	SqFt 41-50 yrs old	SqFt > 50 yrs old	Avg Age
COLUMBIA	1,810,141	12.5%	23.2%	17.2%	3.3%	16.4%	27.4%	35
District Totals	411,254,177	15.41%	27.10%	17.79%	10.48%	14.46%	14.75%	30
Columbia	2.49%	2.56%	0.15%	0.10%	2.34%	2.46%		
Statewide	3.71%	3.22%	0.48%	0.18%	3.22%	3.04%		

1 StuSta: Student Stations; NSF: Net Sq Foot; COFTE: Capital Outlay Full-time Equivalent

2 Source: Florida Inventory of School Houses (FISH) Average Annual Growth

4 Educational Plant Survey

5 Every 5 years, the state requires all districts to conduct an Educational Plant Survey. Surveys are
6 conducted on a rotating basis⁸³ and include the following components:

- 7 1. Correct inventory data
- 8 2. Appropriate inventory changes; i.e., satisfactory to unsatisfactory, etc.
- 9 3. New square footage within normal allocation limits
- 10 4. Cost projections that are within state required cost limits
- 11 5. Distribution of state-generated enrollment projections (K-12)

⁸³ Rotating School Survey [Schedule](#) and [Survey Components](#)

6. Facility lists that are within normal limits
7. Uniform utilization factors
8. Survey recommendations for existing and new plants
9. Summary of cost for survey recommendations
10. Documented need of programs offered per site
11. Documented approval of vocational and adult programs by the Division of Workforce Development
12. Assigned student stations to required areas
13. Documentation showing utilization of plants based on regular and extended day/year round operation
14. Capacity of existing satisfactory facilities - Permanent and relocatables
15. Past and projected membership trends
16. Financial trends in assessed valuation
17. Required local millage contribution
18. Current tax levies on non-exempt property
19. Debt service obligations
20. Anticipated state revenue allocations
21. Plan for financing the proposed facility program



Figure 2: Sunny Hills Elementary School



Figure 3: Eastside Elementary School

Operating Cost and New Construction Cost Data

Information on total energy costs is collected and publically available for all Florida school districts. Maintenance and Operations costs is also collected at the district level and publically available. Since total gross square footage is known for all districts, costs per square foot is also provided.⁸⁴ A detailed spreadsheet on construction costs for each school is also publically available.⁸⁵

Funding

The largest source of funding (64% of total revenue) is state revenues, primarily through the Florida Education Finance Program (FEFP) funding formula. The FEFP formula is based on enrollment and was designed to equalize the distribution of funds to school districts, in consideration of the local property tax base.

⁸⁴ Annual [Energy and M&O Reports](#)

⁸⁵ [Cost of Construction](#)

- 1 FEFP revenues have increased each year, from FY2013 to 2016. Maintenance and Operation of Plant
 2 expenses are about 10% of total expenditures (Table 1 and Figure 3).

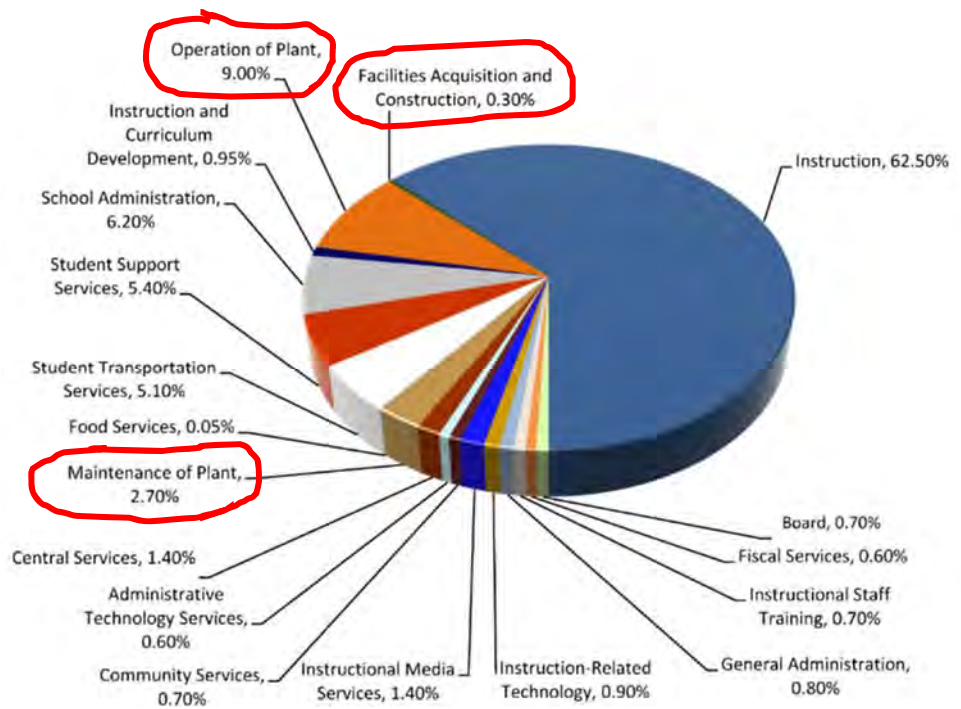


Figure 4: General Fund Expenditures

3 Work Flow

- 4 Work Orders are processed using the TeamWorks software program. No further information was
 5 publically available.

6 Staffing

- 7 Staffing and organizational information was not publically available for this school district.

8

1 8.3 Hawai'i Department of Education Experience with Design-Build

Organizational Sustainability Plan

Whitepaper on Design-Build and the Hawai'i Department of Education **Ho'okele Elementary School**



Precast concrete structure, wall panels and double tees

Design-build (DB) is an alternative construction delivery method to Design-bid-build, the traditional method of competitive bidding. Under DB, a single entity, the “design-builder” is contracted to provide Architect/Engineer (A/E) design and construction services (Figure 1). To accomplish this task, control over design, scheduling, materials and methods of construction shifts from the school district to the design-builder. In comparison to the lowest bid approach, which emphasizes lowest initial cost, DB contracts are awarded on the basis of qualifications.

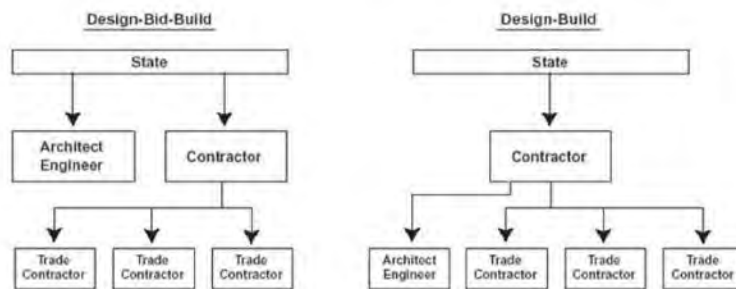


Figure 1: Contractual relationship of Design-Build vs Design-Bid-Build

Appendix B – Hawaii DOE Design-Build

Organizational Sustainability Plan

The Hawai'i Department of Education's (HDOE) primary procurement method for construction projects is a "low bid" method.¹ DB was used at Hookele Elementary, the first school to use this approach. HDOE is still evaluating lessons learned before adopting this strategy statewide.



New Hookele campus plan at \$38.3M; \$310/sq ft

PROS

- Construction costs fixed during design; emphasis on cost containment
- Design-build generally is faster; construction begins before design is complete
- Encourages innovation
- Transfer of design and construction risk to DB entity
- Best value approach to procurement, rather than lowest bid; DB contractor is selected based on qualifications, experience, capabilities and price.

CONS

- No one to represent the DOE's interests
- May require changes to procurement law to allow DB
- Loss of design control. To control costs, DB entity given greater flexibility in design
- Less competitive than bidding; there are fewer qualified DB contractors and selection criteria is subjective

HDOE compared two recently constructed schools to compare design-build and design-bid-build:

	<u>Pu'u Kukui Elementary</u>	<u>Hookele Elementary²</u>
Location	island of Maui	island of O'ahu
Topography	11% slope	flat
Site Acreage	13.8	12.4
Design Capacity	550 (K-5)	750 (K-6)
Size	98,849 sq ft	123,173 sq ft
Cost	\$34,929,400 (2010)	\$38,288,000 (2013)
Geographic adjustment	(1.15%)	(1.00%)
Adjusted Cost (O'ahu)	\$30,373,400	\$38,288,000
Cost per acre	\$2,200,971	\$3,087,741
Cost per student	\$55,224	\$51,050
Cost per sq ft	\$307	\$310
Cost per sq ft (2013)	\$331	\$310

¹ Presumably the traditional design-bid-build.

² 20 months from Design to Occupancy. Design: 8 months, partially overlapping Construction: 15 months.

Appendix B – Hawaii DOE Design-Build

Organizational Sustainability Plan

In Hawai'i, some legislators feel the ability of design-builders to contain costs is a very compelling reason to mainstream design-build. However, HDOE facility planners have concerns that the statement of work or scoping document, must be very carefully developed to provide enough detail to ensure that the finished product meets the educational specifications and programmatic needs. In addition to the pros and cons noted, HDOE has the following lessons learned: lump-sum funding can be an issue (e.g., they may need to wait for the next legislative session to appropriate additional funds, whereas under traditional design-bid-build, a contingency is typically built-in.) Design-build takes time to do correctly and is

not suited for all projects. So far, HDOE seems to have had a positive experience with DB, which can allow greater flexibility and creativity in their projects.



Main classrooms:
Interior



Learning Lāna'i; view to school's interior courtyard



Large interior courtyard:
Exterior color and facade treatments break up large concrete building masses

Appendix B – Hawaii DOE Design-Build

Organizational Sustainability Plan



Rear of school:

Precast concrete structure. Second floor covered walkways connect all buildings. Covered playcourt, far right



Large multipurpose room: flexible use as cafeteria or auditorium. Mechanically conditioned space but with natural light tubes in ceiling to reduce energy use.



Covered Playcourt: Steel frame construction. High ceilings provide passive cooling.



Appendix B – Hawaii DOE Design-Build

1 8.4 HDOE Fact Sheet: Cooling Schools

FACTSHEET

Cooling schools

July 2016



The challenge

Hawaii's cooling tradewinds are faltering, ocean temperatures are rising. As climate change makes the Islands hotter, focus once again turns to quickly cooling our aging classrooms. As funding is released by the state, we will continue to whittle away our lengthy project list. Our goal is to make all classrooms comfortable, sustainably, using fact-based, data-driven methodologies that lead to effective long-term solutions. We will continue to work with the Legislature and community on this pressing issue.

New schools are built to modern standards, with technologies that ensure energy efficiency and stability. For the majority of our schools, however, the following are realities to keep in mind.

OLD BUILDINGS, INFRASTRUCTURE

The majority of HDOE schools are on average **more than 50 years old**. Their electrical systems reflect a bygone era. They weren't designed to support today's high level of energy demand — for computers and broadband networks, let alone air conditioning (AC). Many older classrooms have only four electrical outlets, for example. Schools that installed AC units without the proper electrical support have blown circuits to classrooms, even building wings. Also, most of our buildings are not designed to be air-tight. For an AC system to cool a room, the building envelope needs to be sealed, requiring replacement of windows and doors, among other things.

BUDGET CONSIDERATIONS

HIDOE spends about \$48 million annually on electricity. That will rise as more AC is installed. After Pohakea Elementary's AC went live, **its power bill doubled**. There are also ongoing maintenance costs with these systems.

HEAT ABATEMENT OPTIONS

MECHANICAL COOLING

- Air conditioning, including photovoltaic AC
- Ceiling fans
- Nighttime heat flushing fans
- Solar light

PASSIVE COOLING

- Trees to reduce sunlight on buildings
- Heat reflective paint
- Awnings/coverings to cut direct sunlight
- Trellises, covered walkways and plant-covered walls

CAN I DONATE AC?

Yes, anyone can donate AC units provided they meet health and safety requirements and are a match for the electrical system at the school. Learn more: bit.ly/HIDOE-ACdonate.

If you have additional questions, please contact HIDOE's Auxiliary Services Branch at 586-3452.



PV/AC, Waianae High School

Cool Classrooms initiative

On May 5, 2016, Gov. David Ige signed Act 47 into law appropriating \$100 million to fund equipment and installation costs for AC and other cooling measures at public schools, with a goal to have 1,000 classrooms cooled by the end of 2016. HIDOE released projects to bid the same day, covering needs at schools on the Heat Abatement Priority List (right).

Two problems emerged:

- Though more than 3,000 contractors were contacted to pre-qualify, the final pool was limited, which constrained bids.
- Among those bids, cost of equipment was roughly in line with estimates, but the cost of labor was extremely high, as much as six times the initial estimate.

HIDOE re-opened the contractor qualification process in June 2016 to expand the pool and will resubmit projects for bid in order to bring costs down and ensure the greatest number of classrooms will be cooled. The goal of having 1,000 classrooms cooled by the end of the year, however, will be delayed.

For details, answers to common questions, and an article from Asst. Supt. Carlson on the effort, please read the July 2016 edition of Education Update: bit.ly/EdUpdateJUL16

HEAT ABATEMENT PRIORITY LIST

1. Ewa Beach Elementary
2. Ilima Intermediate
3. Campbell High
4. Kamaile Academy
5. Kaimiloa Elementary
6. Nimitz Elementary
7. Mokulele Elementary
8. Pearl Harbor Kai EI
9. Lehua Elementary
10. Waimalu Elementary
11. Aliamanu Elementary
12. Aliamanu Middle
13. Waipahu High
14. Ewa Elementary
15. Barber's Point EI
16. Waipahu Intermediate
17. Pearl Harbor EI
18. August Ahrens EI
19. Waipahu Elementary
20. Waiailua H&I
21. Leihoku Elementary
22. Honowai Elementary
23. Nanakuli Elementary
24. Nanakuli H&I
25. Kaunakakai Elementary
26. Kilohana Elementary
27. Manana Elementary
28. Princess Nahienaena EI
29. Lahaina Intermediate
30. Lihikai Elementary
31. Kekaha Elementary
32. Kahakai Elementary
33. Maui High

SCHOOLS WITH 100% AC

- Elementary: 33 schools
- Middle: 6 schools
- Elementary & Middle: 1 school
- High: 1 school
- K-12: 1 school

Learn about the Heat Abatement program: bit.ly/heatabatement

1 8.5 Listing of States with Fiscally Dependent and Independent School Districts



Education Commission of the States • 700 Broadway, Suite 1200 • Denver, CO 80203-3460 • 303.299.3600 • Fax: 303.296.8332 • www.ecs.org

Taxation and Spending Policies

June 2004

Revenue for K-12 public schools comes primarily from state governments, local school districts and the federal government. In the aggregate, the states provide 48% of all revenue, school districts provide 45%, and the federal government provides 7% of all revenue.¹ The majority of state level education funding is appropriated from state general funds, with other funding from earmarked taxes such as income and sales taxes.

Local Control Over School Budgets and Taxes

School district budget and tax rate procedures vary among the states. Often, local school boards have authority for both developing budgets and levying taxes to support district budgets. If school districts can levy taxes to support public education, they are considered **fiscally independent**. The nature of this taxing authority varies from state to state. For example, school boards in some states may need voter approval for any tax increase, while others may need only voter approval after a specified tax rate is surpassed.

In some instances, school boards do not have independent tax authority, so another governmental entity – typically a municipal or county governing body – approves the budget and levies taxes. If a school district cannot levy its own taxes, it is considered **fiscally dependent**.

- **34 states** have no fiscally dependent districts
- **9 states** have no fiscally independent districts
- **26 states** allow local districts to levy taxes other than property taxes.

¹ Augenblick, John. *The Status of School Finance Today*, Education Commission of the States, 2001. Available at <http://www.ecs.org/clearinghouse/28/01/2801.htm>.

State Taxation and Spending Caps

Tax caps restrict the amount of taxes that the state, local governments and school districts may levy on taxpayers. These caps are often on property taxes, however, they can be on total taxes raised or even on other individual taxes (for example, income taxes and sales taxes). Another way to control tax levels is to limit how much state and local governments may spend in any given year. Spending caps often are limits on the increase in the amount of spending from one year to the next.

- **36 states** have tax caps
- **12 states** have spending caps

The table below presents a compilation of both taxation and spending caps as reported by the National Center for Education Statistics (NCES). Only those spending/taxation caps that could affect state or local education spending are included in this summary. This information is not meant to be a complete guide to school finance or tax restrictions. For a full description of any of these taxation caps, please contact ECS at 303.299.3625 or ecs@ecs.org or staff from an individual state's treasury or budget department.

State	Total # of School Districts	# of Fiscally Dependent Districts	# of Fiscally Independent Districts	Local Taxes Used To Fund Education	Taxation Cap	Spending Cap
Alabama	128	128	0	Property, sales, amusement, tobacco, alcohol, gasoline and mineral lease taxes	Maximum tax rate of \$10 to \$20 per \$1000 assessed property valuation, depending on the classification of the property.	None
Alaska	53	53	0	Property and Sales taxes	Maximum tax rate of \$6 per \$1000 of the true value of the property	None
Arizona	228	6	222	Property taxes	None	A maximum per-student spending amount is established each year by the legislature. A district can spend up to 10% beyond this amount with voter approval.
Arkansas	310	0	310	Property, personal property and severance taxes	Districts with property tax rates greater than \$25 per \$1000 of assessed property must forward one-half of the additional taxes to the state for redistribution.	None

State	Total # of School Districts	# of Fiscally Dependent Districts	# of Fiscally Independent Districts	Local Taxes Used To Fund Education	Taxation Cap	Spending Cap
California	988	0	988	Property tax and sales tax (used by the San Francisco district only)	School districts are limited to a property tax levy of \$10 per \$1000 of assessed property valuation.	None
Colorado	176	0	176	Property and specific ownership (vehicle) taxes	Districts may supplement their spending with additional property taxes. However, this additional property tax can account for only 20% of a district's total spending or \$200,000, whichever is greater.	The "Taxpayers Bill of Rights" (TABOR) caps all governmental expenditure from one year to the next. The impact of this cap on K-12 education was offset by a voter initiative passed in 2002.
Connecticut	166	166	0	Property taxes	None	None
Delaware	19	0	19	Property taxes	None	None
Florida	67	0	67	Property taxes	School districts are limited to a property tax levy of \$10 per \$1000 of assessed property valuation (there are exceptions to this cap).	None
Georgia	180	0	180	Property and sales taxes	School districts are limited to a property tax levy of \$20 per \$1,000 of assessed property valuation (there are exceptions to this cap).	None
Hawaii	1	1	0	None	None	None
Idaho	113	0	113	Property taxes	Any local property tax assessment beyond \$3 per \$1000 of assessed value requires a vote of the local electorate.	None
Illinois	897	0	897	Property taxes	Counties can participate in the state's Property Tax Extension Limitation Law, which caps property tax increases at 5% or the rate of inflation, whichever is less; 29 of the state's 102 counties participate in this program.	None

State	Total # of School Districts	# of Fiscally Dependent Districts	# of Fiscally Independent Districts	Local Taxes Used To Fund Education	Taxation Cap	Spending Cap
Indiana	294	0	294	Property, motor vehicle, financial institutions and income taxes	The General Assembly has controlled general fund property tax rates each year since 1973.	The school funding formula dictates how much instructional revenues per pupil may increase each year.
Iowa	375	0	375	Property and income taxes	The school funding formula dictates the local tax revenue that may be collected each year.	The school funding formula dictates how much instructional revenues per pupil may increase each year.
Kansas	304	0	304	Property taxes and motor vehicle/ recreational vehicle taxes	School districts are limited to a property tax levy of \$20 per \$1000 of assessed property valuation (there are exceptions to this cap).	None
Kentucky	176	0	176	Property, motor vehicle, utility, income tax surcharges and occupational license taxes	None	Districts can spend up to 49.5% above the state's adjusted base guarantee with voter approval.
Louisiana	66	0	66	Sales and property taxes	School districts are limited to a property tax levy of \$7 per \$1000 of assessed property valuation and a local sales tax levy of 3%.	None
Maine	285	189	66	Property taxes	None	None
Maryland	24	24	0	Property and income taxes	None	None
Massachusetts	329	329	0	Property, motor vehicle excise and hotel/accommodations taxes	Property tax levies can only increase by 2.5% each year. Communities can vote to raise the limit permanently through an override referendum.	None
Michigan	555	0	555	Property taxes	Local property taxes are strictly limited to \$18 per \$1000 of assessed property valuation. This amount may only be increased by a 3/4 vote of the state legislature.	Local per-student spending is determined by the state. Local districts have no option to increase this amount.

State	Total # of School Districts	# of Fiscally Dependent Districts	# of Fiscally Independent Districts	Local Taxes Used To Fund Education	Taxation Cap	Spending Cap
Minnesota	350	0	350	Property and mineral taxes	The state determines the maximum amount of taxes that a district may levy. This amount may be overridden by a local referendum vote.	None
Mississippi	152	0	152	Property taxes	Maximum property tax rate of \$55 per \$1000 of the assessed value of the property	None
Missouri	525	0	525	Property taxes	None	None
Montana	456	0	456	Property and "flat taxes" (which include revenue from motor vehicle/recreational vehicle fees and oil, gas and coal production taxes)	None	Districts may not increase spending by more than 4% over the previous year
Nebraska	604	0	604	Property taxes, city/county fines and license fees and proceeds from sales tax on public power districts	None	Districts may increase spending by only 2.5% to 4.5% over the previous year
Nevada	17	0	17	Property, tangible personal property, motor vehicle privilege and franchise taxes	School districts are limited to a mandatory property tax levy of \$7.50 per \$1000 of assessed property valuation	None
New Hampshire	177	176	1	Property taxes	None	None
New Jersey	575	0	575	Property taxes	None	Districts are permitted to increase spending by an amount equal to 3% or the rate of inflation, whichever is greater
New Mexico	59	0	59	Property taxes	Maximum tax rate of \$.50 per \$1000 assessed property valuation	All local district budgets must be approved by the state.

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State	Total # of School Districts	# of Fiscally Dependent Districts	# of Fiscally Independent Districts	Local Taxes Used To Fund Education	Taxation Cap	Spending Cap
New York	682	5 (New York City, Yonkers, Buffalo, Rochester, and Syracuse)	677	Property taxes, a share of the county sales tax and a utility tax (for small districts only)	Only the Big 5 districts (the state's dependent districts) have constitutional tax limits.	None
North Carolina	117	115	2	Property taxes and sales taxes (for school construction only)	Maximum tax rate of \$15 per \$1000 assessed property valuation	None
North Dakota	231	0	231	Property and mineral taxes	Maximum tax rate of \$8.33 per \$1000 of the true value of the property (exemptions are allowed)	None
Ohio	611	0	611	Property and income/payroll taxes	None	None
Oklahoma	547	0	547	Property taxes	Maximum tax rate of \$13.65 per \$1000 of the true value of the property (exemptions are allowed)	None
Oregon	198	0	198	Property Taxes and private timber taxes	Cap of \$5 per \$1000 of assessed value, no exceptions	None
Pennsylvania	501	1 (Philadelphia)	500	Property taxes and "Act 511" taxes (see note)	Cap of \$25 per \$1000 of assessed value; the numerous exemptions to this cap essentially renders the cap useless.	None
Rhode Island	36	36	0	Property taxes	Cities and towns may not exceed a 5.5% cap on increasing property tax rates without state approval.	None
South Carolina	86	27	59	Property and sales taxes	See Note	None

State	Total # of School Districts	# of Fiscally Dependent Districts	# of Fiscally Independent Districts	Local Taxes Used To Fund Education	Taxation Cap	Spending Cap
South Dakota	176	0	176	Property taxes	School districts may levy up to a maximum tax rate of \$4.73 per \$1000 for general agriculture, \$16.25 per \$1000 for other general non-agriculture/utilities, and \$7.61 per \$1000 for general owner occupied	None
Tennessee	138	138	0	Property and sales taxes	Local option sales tax may not exceed 2.75%	None
Texas	1042	0	1042	Property taxes	Maximum tax rate of \$15 per \$1000 of true value of the property (amounts above this rate result in reductions in state funds)	None
Utah	40	0	40	Property taxes	Maximum local property tax rate of \$3.858 per \$1000 of assessed property	None
Vermont	252	0	252	Property taxes & sales taxes (in use in only one district)	For households with income under \$75,000, education taxes are capped at no more than 2% of income (exemptions are allowed).	None
Virginia	137	137	0	Property, tangible personal property and sales taxes	None	None
Washington	296	0	296	Property Taxes and private timber taxes	Maximum local property tax rate of \$9.15 per \$1000 of a property's market value (exemptions are allowed)	Spending can be increased at a rate over the previous year that is not greater than the sum of population growth plus inflation.
West Virginia	55	0	55	Property taxes	Maximum local property tax rate of \$2.295 to \$9.18 per \$1000 of assessed property, depending on the property's classification (exemptions are allowed)	None

State	Total # of School Districts	# of Fiscally Dependent Districts	# of Fiscally Independent Districts	Local Taxes Used To Fund Education	Taxation Cap	Spending Cap
Wisconsin	426	0	426	Property taxes	None	School districts are subject to a limit on the annual increase in their per-pupil revenue derived from general school aid and property taxes based on inflation.
Wyoming	46	0	46	Property taxes	None	None

Please note: The total number of school districts in a state may change periodically due to district consolidation or merging. Also, there may be differences in our numbers and those reported by a state depending on how fiscal dependence/independence is defined.

If you find that our numbers or summaries are incorrect, according to our definitions listed above, please contact us at ecs@ecs.org

Source: [Public School Finance Programs of the U.S. and Canada: 1998-99](#), National Center for Education Statistics, 2001.


This ECS StateNote was completed by Michael Griffith, policy analyst, as part of ECS' study, Full-Day Kindergarten: An Exploratory Study of Finance and Access in the United States, which is funded by a grant from the Foundation for Child Development.

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Helping State Leaders Shape Education Policy

1 8.6 Sample Facilities Volunteer Projects Form

 BOSTON Public Schools Focus on Children	Superintendent's Circular School Year 2013-2014	NUMBER: FMT-17 DATE: April 14, 2014
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FACILITIES VOLUNTEER PROJECTS

Boston Public Schools' (BPS) Facilities Management Department is supportive of leveraging community resources and engaging the services of volunteer organizations to perform improvement projects at school sites. To ensure your volunteer project complies with all BPS and City of Boston rules and regulations and that it is the most successful project possible, please follow these simple policies and procedures.

Policy

All facilities related work conducted at a school site (inside or outside of the school) must be approved by the Facilities Management Department and all applicable volunteer project documents must be submitted and approved at least two weeks prior to work commencing.

All materials and equipment shall be furnished by the Volunteer Organization unless otherwise agreed upon, and will conform to the standards of Boston Public Schools/Facilities Management. In addition, the cost of custodial overtime (see BPS Circular FMT-05), will be the responsibility of the Volunteer Organization and must be paid prior to work commencing, unless prior arrangements have been made with the Director of Facilities Management.

Implementation

Project Forms:

The following two (2) project permits, as well as the volunteer waiver (to be signed by all volunteers), are required for any volunteer project taking place on BPS property to ensure the safety of all volunteers:

1. *Volunteer Project Permit*
2. *Building Permit (Form A)*
3. *Volunteer Release of Liability and Indemnity Contract*

Both permits should be sent to Facilities Management at least two weeks prior to work commencing. Volunteers must sign the Release of Liability before beginning work, and it must be submitted on the next business day. Forms can be submitted by e-mailing facilities-volunteer@bostonpublicschools.org, or faxing (617) 635-9252.

Project Walk-through:

The school leadership or volunteer organization project coordinator must arrange a meeting and site walk through with the Headmaster/Principal, Sr. Custodian, Area Manager, and A & R Supervisor to discuss proposed projects for approval by the Director of Facilities Management. Contact Facilities Management about your project and to schedule a walk through by emailing: facilities-volunteer@bostonpublicschools.org

Project Review/Approval:

Once all project permits have been submitted and a walkthrough of the site has taken place, permits will be reviewed by the Director/Assistant Director of Facilities Management. Facilities Management will inform the school and volunteer project coordinator if the project has been approved. Facilities Management will also inform the school's Area Manager, Alterations & Repairs Supervisor and Building Services of the project.

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Volunteer Project Opportunities

Safety of the volunteers is the highest priority in evaluating any project request. There are many infrastructure, cleaning and beautification projects that can be effectively completed by volunteers. Please refer to the list below when brainstorming project ideas for your site.

Exterior Projects

Dos

- Landscaping, pruning, planting shrubs, flowers or trees (Approved by BPS Landscape Consultant, Neil McCarthy, 978-580-1759)
- Clean & remove debris from exterior grounds
- Construct benches/tables for OUTSIDE USE ONLY
- Refinish existing murals or graphics
- Create new murals (Approved by Director of Facilities)
- Spread mulch, stone dust
- Paint galvanized fence (no scraping)
- Paint existing previously painted surfaces to a height no greater than 12-feet above floor level (Approved by Director of Facilities)
- Build outdoor learning spaces such as vegetable gardens (Approved by Director of Facilities)

Don'ts

- No scraping and refinishing of iron fences (lead paint)
- No painting of natural or factory finished surfaces
- No construction of any type on the site or with regards to the building structure without the Director of Facilities written approval
- No replacement of any finished surface without the Director of Facilities written approval
- No structural work on fences

Interior Projects

Dos

- Refinish existing murals
- Create new murals (Approved by Director of Facilities)
- Cleaning out or re-arrangement of closets, storage areas, various rooms, etc.
- Install bulletin or dry erase marker boards that are already on site (max size 3' x 4')
- Painting to a height no greater than 12-feet above floor level and ONLY during school vacations (Approved by Director of Facilities)
- Using "whiteboard paint" with proper surface prep, and a minimum of three (3) days to dry

Don'ts

- No painting with only one (1) day to dry/aerate, three (3) days for "whiteboard paint"
- No construction without the Director of Facilities approval
- No building of benches or tables without the Director of Facilities approval
- No replacement of any factory finished surfaces without the Director of Facilities approval

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For more information about this circular, contact:

Name:	Khadijah Brown
Department:	Facilities Management
Mailing Address:	26 Court Street – 2 nd Floor, Boston, MA 02108
Phone:	617-635-9117
Fax:	617-635-9252
E-mail:	kibrown@bostonpublicschools.org or facilities-volunteer@bostonpublicschools.org

John P. McDonough, Interim Superintendent

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**Boston Public Schools - Facilities Management
 Volunteer Project Permit**

_____ School Name	_____ Event Date & Hours
_____ Headmaster/Principal	_____ Headmaster/Principal Email
_____ School Telephone #	_____ Volunteer Organization Name
_____ Volunteer Organization Telephone #	_____ # of Volunteers expected at event
_____ Volunteer Coordinator Name	_____ Volunteer Coordinator Email & Telephone #

Project Details:

(Please describe the project(s) being proposed, including support needed from Facilities, if any, for the project to be completed)

Cost for Custodial Overtime to be paid by the: (see BPS Circular FMT-05)

☐ Volunteer Organization ☐ School ☐ Facilities Management

To Be Completed by Facilities Management

A project walkthrough and all documents and permits have been completed and approved:

☐ Building Permit ☐ Volunteer Project Permit ☐ Walkthrough ☐ Additional Project Documents

Approved:

_____ Khadijah J. Brown, Director	_____ Robert Harrington, Assistant Director
_____ Anthony Pomella, Assistant Director	_____ Paul Wood, Assistant Director

Cc: _____
 Area Manager Alteration & Repairs Supervisor Building Services

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VOLUNTEER RELEASE OF LIABILITY AND INDEMNITY CONTRACT

The undersigned volunteer ("Volunteer") in consideration for permission to act as a volunteer for the Boston Public Schools ("BPS"), hereby acknowledges and agrees to the following:

1. **Volunteer Relationship:** Volunteer has expressed an interest in providing services, as needed, to the BPS on a voluntary basis. This Release and Agreement will apply to all events or activities at which the BPS permits Volunteer to provide voluntary services. Volunteer hereby acknowledges Volunteer's desire to volunteer services to the BPS for civic, charitable and/or humanitarian reasons. Volunteer understands and agrees that as a volunteer, Volunteer is not an employee, partner, agent, representative or contractor of the BPS under federal, state and/or local law or regulations. Volunteer also understands and agrees that because Volunteer is donating services to the BPS for altruistic reasons: (i) Volunteer has no expectation of any compensation, pay fee or benefits for the services; (ii) entitled; (iii) the BPS has not promised Volunteer any compensation for services as a volunteer; and (iv) the BPS has not promised or suggested that Volunteer will receive any employment opportunities or greater consideration for any future employment opportunities, as a result of the volunteer service. Volunteer agrees that if at any time Volunteer believes that Volunteer should be compensated for the services, or that Volunteer is acting as an employee rather than as a volunteer, Volunteer will immediately notify the BPS of this belief in writing.
2. **Waiver and Liability and Release:** Volunteer assumes all risks of injury to Volunteer's person and damage to Volunteer's property arising from the services provided as a BPS volunteer, the use of provided facilities and equipment, and participation in related activities. Volunteer further releases, discharges and holds harmless, for Volunteer and Volunteer's heirs, administrators, executors and assigns, the BPS, its directors, officers, employees, agents, administrators, insurers, successors and assigns, and any facility used for a BPS activity, and the facility's members, medical volunteers, directors, committees, agents, and employees, from all liability and claims of any and every kind and nature, whether arising out of negligence or otherwise, for any injuries, including physical injury and loss of or damage to property, including but not limited to theft, loss, negligence, invasion of privacy, fire or other acts, and Volunteer hereby waives all current and future claims, whether or not known and whether or not foreseeable, against such parties arising from any loss, damage or injury to Volunteer's person and property arising from the services as a BPS volunteer, Volunteer's attendance at any BPS event or activity, the use of provided facilities and equipment, and participation in activities.
3. **Indemnification:** Volunteer agrees to indemnify, hold harmless and defend, to the fullest extent permitted by law, the BPS, its directors, officers, employees, agents, administrators, insurers, successors and assigns from and against any and all demands, claims, liabilities, suits, causes of action, judgments, damages, losses, penalties, and/or expenses of any kind or nature whatsoever, including attorneys' fees, arising or resulting from, directly or indirectly, Volunteer's performance of volunteer services hereunder, however caused and regardless of any actions or omissions of the BPS.

I acknowledge that I have read and fully understand the terms and conditions of the foregoing Release and Agreement and agree and will comply with the same.

Name of Volunteer: _____

Signature: _____

Date: _____

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[illegible]