



# SPPS Facilities Condition

March 2021

St. Paul Public Schools (SPPS) has 73 buildings, 7.7 million square feet, and over 500 acres of land to maintain and keep functioning in order to provide quality teaching and learning spaces. The current physical condition of SPPS facilities is generally good, but aging. The buildings have been well maintained, but components are reaching the end of their expected life spans. While progress has been made through the District's Five-Year Facilities Maintenance and Capital Implementation Plan, continued investments are needed to preserve these assets. Updating mechanical systems, roofs, and interior spaces form the majority of the projected needed improvements.

SPPS tracks the physical condition of its buildings and grounds on an annual basis using a Facility Condition Assessment (FCA). An FCA consists of a set of quality indicators which are measured to establish the Facility Condition Index (FCI), a numerical rating for the condition of a facility. The FCA and FCI provide objective data to determine how to wisely invest resources in sites that will provide the biggest and most efficient impact for our dollars. The FCA development process is outlined in this document, together with detailed results and recommendations.

## Facilities Condition Assessment

As a strategic means of monitoring a building's health and performance, an FCA is a process of analyzing the condition of a facility using predetermined quality indicators. The FCA methodology leverages the expertise of SPPS professionals who have years of experience in their respective trades and a vast knowledge of the workings of the District's buildings, and includes on-site inspections as well as a review of pertinent building records.

The goal of the FCA is to identify:

- Routine and/or deferred maintenance that is needed.
- Systemic deficiencies.
- Remaining useful life of all major building systems.
- Capital replacement needs.
- Overall system compliance with the original design/engineering intent.
- Compatibility with contiguous systems.
- Total building replacement cost.

The assessment is used by the Facilities Department to:

- Manage the District's buildings.
- Optimize and maintain the physical condition and value of built assets.
- Develop capital budgets for renovations and repairs.
- Prioritize resources.

# Deferred Maintenance Parametric Estimating

Deferred Maintenance (DM) Parametric Estimating is a standard approach taken to estimate the potential costs to repair or replace aged systems and prioritize needs. It is based on the findings of the FCA as well as the overall age of the building’s elements. Maintenance is considered ‘deferred’ when an element of the building or site is in use past its expected life cycle, whether it is fully functional or not. As an industry standard, DM is a time-tested method for effectively and efficiently managing facility condition.

Condition ratings for 13 systems ranging from Site to Equipment are entered into a parametric estimating model that uses the facility’s current replacement value (CRV) as its basis. The CRV (2.7 billion dollars at the end of 2020) is divided among the 13 systems, and facility deferred maintenance is the sum of replacement costs for all systems.

The table below shows Saint Paul Schools’ deferred maintenance estimates (totaled from all buildings) by system, broken out by ratings. Systems are described on following page.

Sum of DM \$ SYSTEM	Rating in \$1,000					Grand Total
	1	2	3	4	5	
Electrical	\$ 732	\$ 15,386	\$ 18,820	\$ 1,186	\$ -	\$ 36,124
Equipment	\$ 1,711	\$ 4,960	\$ 11,571	\$ 784	\$ -	\$ 19,026
Exterior	\$ -	\$ 9,388	\$ 12,388	\$ 1,776	\$ -	\$ 23,553
Fire and Life Safety	\$ 5,007	\$ 10,207	\$ 3,116	\$ 759	\$ -	\$ 19,090
Interior	\$ 2,949	\$ 31,464	\$ 19,231	\$ 4,440	\$ 520	\$ 58,603
Mechanical (HVAC)	\$ 4,002	\$ 107,458	\$ 25,075	\$ 1,477	\$ -	\$ 138,011
Plumbing	\$ 488	\$ 4,371	\$ 6,726	\$ 670	\$ -	\$ 12,256
Roofing	\$ 1,425	\$ 33,259	\$ 22,440	\$ 2,620	\$ -	\$ 59,744
Site	\$ 4,832	\$ 3,611	\$ 4,796	\$ 2,477	\$ -	\$ 15,716
Specialties	\$ -	\$ 706	\$ 2,682	\$ 610	\$ -	\$ 3,998
Stairs and Elevators	\$ -	\$ 1,207	\$ 1,740	\$ 513	\$ -	\$ 3,460
Structural	\$ 3,537	\$ 777	\$ 13,039	\$ 3,469	\$ -	\$ 20,821
Technology	\$ 3,536	\$ 6,407	\$ 1,218	\$ 289	\$ -	\$ 11,450
<b>Grand Total</b>	<b>\$ 28,218</b>	<b>\$ 229,202</b>	<b>\$ 142,842</b>	<b>\$ 21,070</b>	<b>\$ 520</b>	<b>\$ 421,851</b>

## Key to Ratings:

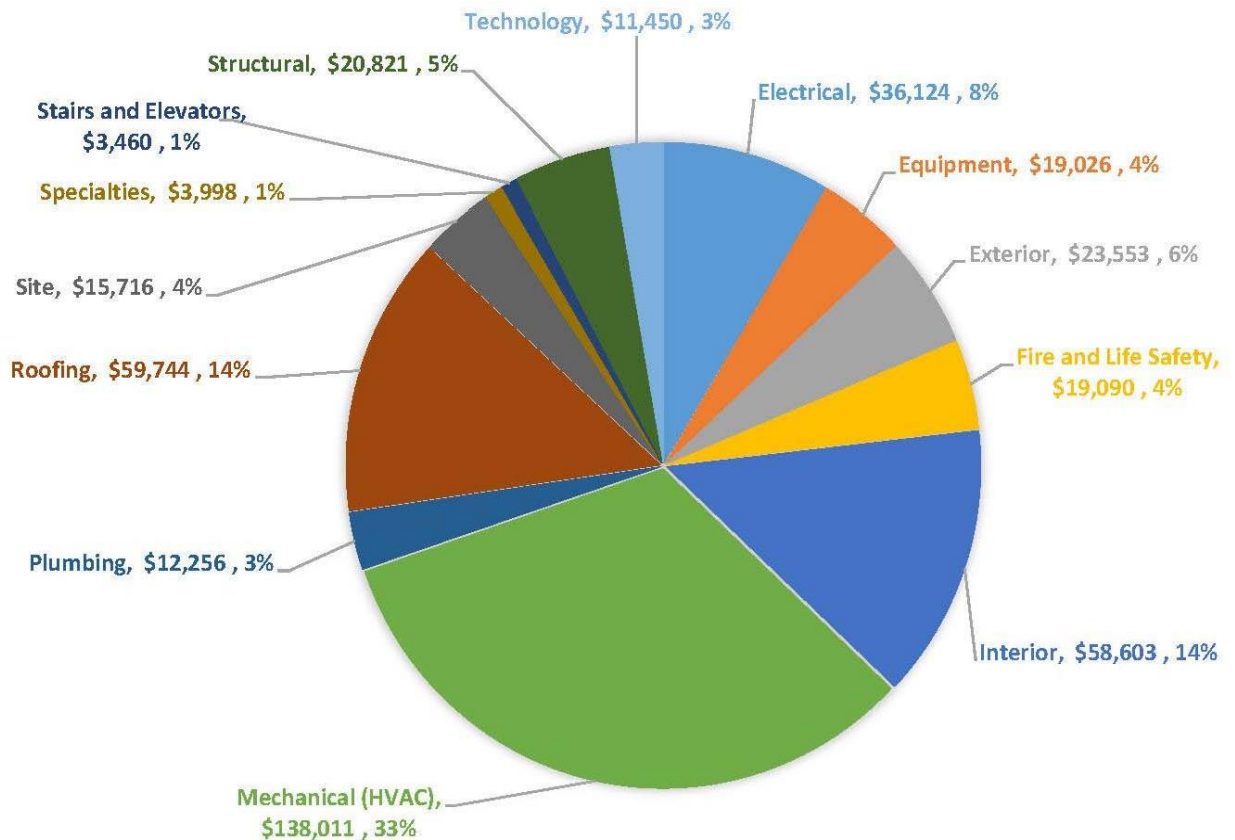
- 5 = Excellent:** Only normal scheduled maintenance required.
- 4 = Good:** Some minor repairs needed. System normally functions as intended.
- 3 = Fair:** More minor repairs and some infrequent larger repair required. Systems occasionally unable to function as intended. May need replacement in 3-5 years
- 2 = Poor:** Significant repairs required. Excessive wear and tear is clearly visible. System not fully functional as intended. Repair parts not easily obtainable. May need replacement in 1-2 years.
- 1 = Critical:** At or past end of expected life. Major repair or replacement required to restore function.

What the chart shows is substantial near-term need spread across all the building systems. Categories 2 (Poor) and 3 (Fair) make up 88% of the deferred maintenance estimates. Category 1 (Critical) is less than 7% of the total, and just over 1% of the CRV, but still a sizable amount. Fire and Life Safety systems are an important part of Category 1 and 2 estimated costs, and include improving fire sprinkler coverage and updating fire alarms across the District.

**SYSTEMS**

- A. **Site:** Grading, parking lots and curbs, sidewalk and stairs, fencing, athletic structures and fields, tennis courts and hard-surface play areas, tracks, playground structures, site utilities, site lighting, stormwater management, landscaping and turf, monument signs, retaining walls and flagpoles.
- B. **Structural:** Footing and foundations, slabs, trenching, concrete supported floor slabs, steel columns, beams and joists.
- C. **Roofing:** Roof coverings, roof insulation, roof openings, skylights and curbs, gutters and flashing.
- D. **Exterior:** Exterior coatings, brick, stone, concrete and concrete masonry, metal panels, stucco, wall insulation, sealants, windows and exterior doors.
- E. **Interior Finishes:** Interior walls, doors and hardware, marker boards, toilet partitions, casework, wall coverings, floor coverings and ceiling finishes.
- F. **Mechanical Systems (HVAC):** Heat, ventilating and air conditioning systems including controls, test and balance, exhaust fans, or other mechanical equipment associated with indoor air quality.
- G. **Plumbing Systems:** Plumbing fixtures, plumbing piping waste and supply, roof drains, water heaters and water conditioners.
- H. **Electrical Systems:** Electrical service, panelboards and feeders, switchgear and distribution, lighting, outlets and switches, grounding systems, generators.
- I. **Fire and Life Safety:** Wet pipe sprinkler, standpipes, fire extinguishers, special systems.
- J. **Technology:** Audio/visual systems, wired and wireless internet, communication systems, fiber optic, security and fire protection wiring and controls, switchgear and hubs.
- K. **Stairs and Elevators:** Elevators, lifts, stairs and railings.
- L. **Specialties:** Theater and stage equipment, swimming pools, portable classrooms.
- M. **Equipment:** Kitchen equipment and connections, gymnasium bleachers and equipment, loading dock equipment, lockers, theater seating, signage, window coverings, operable partitions.

**District-wide Deferred Maintenance, broken out by System (in thousands of \$)**



Mechanical systems are the most expensive systems in a building and typically have a 20 to 25-year life cycle (ASHRAE, which provides ‘industry standards’ for the heating and ventilating systems of buildings, publishes life cycle data for mechanical systems). As the equipment nears the end of its standard life, its rating goes

down and thus contributes more to the district DM. Roofing is similar. Attention to life cycle allows the Facilities Department's Planning Team to begin to allocate future funds to repairs or replacement.

## Facility Condition Index (FCI)

The Facility Condition Index (FCI) of a facility is the ratio of all of its deferred maintenance needs compared to the cost of building the building new. Mathematically, it is derived by dividing the sum of the Deferred Maintenance costs of all systems by the cost to build the exact same building new, which is referred to as the Current Replacement Value (CRV). SPPS uses the following FCI ranges to categorize the overall condition of the building:

Good Condition = **.0 to .10**

Average Condition = **.11 to .20**

Below Average Condition = **.21 to .30**

Poor/Very Poor Condition = **.31 to .65**

FCI **over .65** - Replacement Candidate

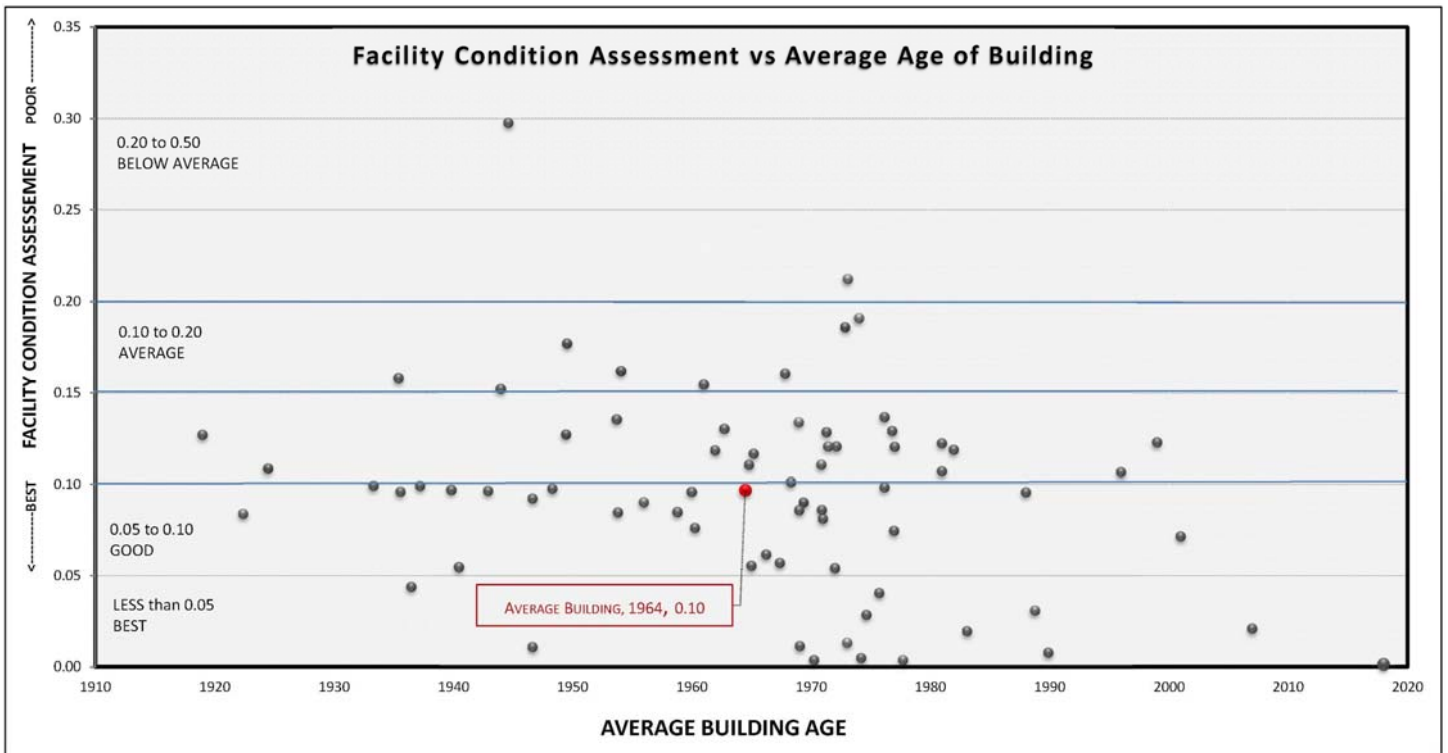
*Note: This rating scale was implemented in the 2009 SPPS Facilities Conditions and Educational Adequacy Assessment Summary.*

**The purpose** of FCI ratings in SPPS is:

- To assist in making resource-allocation decisions among the District's buildings, particularly with limited funds, to address the deferred maintenance needs of all facilities. It is therefore a means of determining priorities.
- To determine annual reinvestment rates to prevent further accumulation of deferred maintenance.
- To calculate catch-up costs.
- To provide a KPI for resource allocation decisions and monitor changing conditions over time.
- To plan major projects based on facilities condition, as well as program needs and use and utilization.

Using an FCI for a given building allows benchmark comparisons on the relative condition of a particular facility: a) with other facilities within the District (see scatter plot below), and b) against the same facility at a point in time in the past, referred to as FCI trending.

The scatter plot below shows the range of facility conditions among the District's buildings (buildings organized by their age). SPPS buildings mostly are in good to average condition in spite of their 56-year average age. There are only two sites with an FCI over 0.20 ("below average"); all other sites are in the "average to good" condition bands. *It is important to re-emphasize that an FCI is a measure of conditions relative to the cost to build that building new.*



## Conclusion

Facility Condition Assessments are critical tools in managing a portfolio of buildings, allowing for both a holistic and systems level analysis of needs. Saint Paul Public Schools uses the FCA process to prioritize investments and activities to ensure we are good long-term stewards of the community assets that are our buildings. Overall, our buildings are in good condition, especially considering their age, and the information gleaned during the FCA process will allow the District to continue prioritizing work to ensure long term, high value investments are being made in our buildings.