Facility Condition Assessment Summary Report

This report provides a summary of the Facility Condition Index (FCI) value of a school facility and select major building systems. The FCI calculation represents the cost of needed repairs divided by the replacement value. The FCI is a numerical value of condition and helps to identify the need for renewal or replacement of specific parts of the facility. The FCI is particularly useful when comparing similar facilities within the same portfolio.

Arthur School

Governance	DISTRICT	Report Type	Elementarymiddle
Address	2000 Catharine St.	Enrollment	249
	Philadelphia, Pa 19146	Grade Range	'00-08'
Phone/Fax	215-875-5774 / 215-875-8057	Admissions Category	Neighborhood
Website	Www.Philasd.Org/Schools/Arthur	Turnaround Model	School Redesign Initiative

Building/System FCI Tiers

Facility Condition Index (FCI) = Cost of Assessed Deficiencies / Replacement Value

< 15%	15 to 25%	25 to 45%	45 to 60%	> 60%
Buildings				
Minimal Current Capital Funding Required	Refurbish Systems in building	Replace Systems in building.	Building should be considered for major renovation.	Building should be considered for closing/replacement.
Systems				
Perform routine maintenance on system	System requires minor repairs	System should be studied to determine repair vs. replacement.	System is nearing end of its life expectancy and should be considered for replacement	System should be replaced as part of the Capital Program

Building and Grounds

	FCI	Repair Costs	Replacement Cost
Overall	**31.51%**	**$7,423,265**	**$23,557,045**
Building	29.95 %	$6,871,458	$22,941,265
Grounds	89.61 %	$551,807	$615,780

Major Building Systems

Building System	System FCI	Repair Costs	Replacement Cost
Roof (Shows physical condition of roof)	89.37 %	$613,129	$686,088
Exterior Walls (Shows condition of the structural condition of the exterior facade)	00.00 %	$0	$1,711,701
Windows (Shows functionality of exterior windows)	00.00 %	$0	$835,214
Exterior Doors (Shows condition of exterior doors)	00.00 %	$0	$67,244
Interior Doors (Classroom doors)	20.52 %	$33,394	$162,776
Interior Walls (Paint and Finishes)	00.00 %	$0	$734,580
Plumbing Fixtures	12.09 %	$75,792	$626,990
Boilers	00.00 %	$0	$865,821
Chillers/Cooling Towers	28.29 %	$321,202	$1,135,260
Radiators/Unit Ventilators/HVAC	79.24 %	$1,579,872	$1,993,661
Heating/Cooling Controls	158.90 %	$994,838	$626,063
Electrical Service and Distribution	174.47 %	$784,819	$449,838
Lighting	38.53 %	$619,652	$1,608,285
Communications and Security (Cameras, Pa System and Fire Alarm)	54.29 %	$327,058	$602,411

Please note that some FCIs may be over 100% because there are times when replacing a building system requires that other building systems be upgraded to complete the installation. A FCI of 0.0% represents that there are no current deficiencies with the associated system.

School District of Philadelphia

S248001;Arthur

Final

Site Assessment Report

January 30, 2017

PARSONS

Table of Contents

Site Executive Summary

The organization of this report, as displayed in the Table of Contents, follows the structure of the associated eCOMET database. The overall node for each school campus begins with the letter "S", which indicates the "Site" label. Each Site is comprised of separate "Building" and "Grounds" nodes; their asset names begin with the letters "B" and "G" respectively. Information rolls up to the Site node from the Building and Grounds nodes. This Site report combines facility information with subsections for the Buildings And Grounds nodes.

The basis for the evaluation of condition is the functional systems and elements of a building and grounds organized according to the UNIFORMAT II Elemental Classification. The grouping of these systems and elements and applying a current replacement value to them develops a representative building cost model. Cost Models are typically developed for similar building types and functions. Evaluation of systems and their elements takes into account their current replacement values, life cycles, installation dates and next renewal dates. Systems and their elements that are within their useful lives are further evaluated to identify current deficient conditions that may have a significant impact on a system's or element's remaining service life, and to determine if they are beyond their predicted expected life. The system's or element's current replacement value is based on RS Means Commercial Cost Data.

Following are the cost model's system details for this facility. The Replacement Value is the amount needed to replace the property of the same present value. The Current Repair Amount, also known as Condition Needs, represents the budgeted contractor installed costs plus owner's soft costs for the repair, replacement or renewal for a component or system level deficiency. It excludes contributing costs for other components or systems that might also be associated with the corrective actions due to packaging the work. Facility Condition Index (FCI) is an industry-standard measurement calculated as the ratio of the repair costs to correct a facility's deficiencies to the facility's Current Replacement Value. Condition Index (CI) for a system is calculated as the sum of a the deficiencies divided by the sum of a system's Replacement Value (both values include soft-cost) expressed as a percentage ranging from 0% 100%.

Gross Area (SF):	80,000
Year Built:	1963
Last Renovation:	
Replacement Value:	$23,557,045
Repair Cost:	$7,423,264.80
Total FCI:	31.51 %
Total RSLI:	71.06 %

Description:

Facility Assessment
August 17th, 2015

School District of Philadelphia
Chester A. Arthur Elementary School
2000 Catharine Street
Philadelphia, PA 19146

46,375 SF / 417 Students / LN 01

GENERAL

Mr. Dave Loftus FAC, provided input to the assessment team on current problems. Mr. Thomas Maronski Building Engineer accompanied us on our tour of the school and provided us with detailed information on the building systems and maintenance history. Mr. Maronski has been in the school for the last 6 years.

The 4 story, 46,375 square foot building was originally constructed in 1963. The building has a multi-level basement and

sub-basement gym.

STRUCTURAL EXTERIOR CLOSURE

The building typically rests on concrete foundations and bearing walls that are not showing signs of settlement damage. The main structure typically consists of cast-in-place concrete columns, beams, and concrete, one way ribbed slab. The main roof structure consists of concrete one-way slab supported by main structural frame. Main roofing is built up application in poor condition with sections near the center in an advanced state of deterioration and in need of replacement. The building envelope is typically masonry and concrete with face brick in good condition. The original windows were replaced in 2005 with extruded aluminum, single hung tilt-out windows with insect/security screens. All windows are generally in very good condition. Exterior doors are typically hollow metal in good condition with at least one entrance with accessible hardware. Public access doors have concrete stoops and stairs. The building is accessible per ADA requirements from a gated courtyard on the south side of the building.

Partition walls are painted CMU block in good condition. Interior doors are generally hollow metal frame with solid core wood doors with lites in good condition. Doors leading to exit stairways are hollow metal frame and doors in good condition. Most interior doors do not have lever type handles. Fittings include: toilet accessories in good condition; composite plastic toilet partitions in good condition; and handrails and ornamental metals, generally in fair condition. A few toilet partitions and accessories are ADA accessible. Interior identifying signage is typically directly painted on wall or door surfaces in good condition. Stair construction is generally concrete with cast iron nosing in good condition. Stair railings are floor mounted metal railing in fair condition.

The interior wall finishes include: painted CMU throughout. Paint is good condition. Flooring includes patterned or bare concrete in stairways, storage, and basement service areas in good condition; carpet in two partial classrooms and IMC in poor condition; and vinyl in all other areas in good condition. Ceiling finishes include: direct mounted acoustic ceiling tiles in auditorium, main entry and main office areas in very good condition; and painted plaster or structural concrete in all other areas good condition. Multiple service and utility conduit lines can be seen in corridors where a suspended acoustic tile ceiling system could be installed to conceal them.

The building has one elevator serving 4 stories and is accessible.

Commercial and Institutional equipment includes: stage equipment in good condition, and gym equipment in fair condition. Other equipment includes: food service equipment in good condition.

Fixed furnishings include: fixed casework in classrooms, corridors and library, generally in fair to good condition; and fixed auditorium seating for 280 generally in good condition.

MECHANICAL SYSTEMS

Building plumbing fixtures are a mix of originals and contemporary replacements. Restroom fixtures on each floor consist of wall hung water closets, urinals and lavatories. Faucets and flush valves work well. The fixtures should provide reliable service for the next 5 to 10 years.

There are no cafeteria kitchen sinks, because food service for the school is in the building across the street. The third floor science classroom lab sink has a faucet which drips. Floor level, concrete, shallow basin service sinks are located in mop closets on each floor. They have wall-mounted mixing faucets with vacuum breakers. The building engineer office has a shower, water closet, and lavatory.

Drinking fountains in the corridors are mixture of porcelain and stainless steel, wall hung without coolers. They are not accessible and have exceeded their service life and should be replaced.

A 3” city water service enters the building from Catharine St. on the ground level behind the boiler room. There is no backflow preventer and one should be installed. The domestic hot and cold water distribution piping is copper with soldered, threaded, and flanged connections. There is no pressure booster. The engineer reported no significant problems with domestic piping and the supply is adequate to the fixtures.

Two Paloma brand tankless gas-fired water heaters supply hot water for domestic use. Each heater has a relieve valve

and circulation pump. Hot water storage is provided by a 1999, tube and shell, steam to water heat exchanger that is no longer being operated on steam. The building hot water loop has its own circulation pump controlled by an aquastat. The water heaters are within their service life and should provide reliable service for the next 5-10 years. The storage vessel is leaking slightly from the manway cover and this should be repaired as routine maintenance.

The sanitary sewer piping is hub and spigot cast iron pipe with lead and oakum connections. Visible areas of sanitary piping show internal rust reaching the outer surface. The entire sanitary drain piping system should be replaced. The building has a sewage ejector with two pumps.

Rain water drain pipes are cast iron. No problems were visible or reported by the building engineer, and the system should not need repair for at least 5 years.

Steam is supplied by 2 Smith, model 350 Mills, 12 section, cast iron, 2,360 MBH (70 HP) boilers installed in 1998. They are fired by Power Flame pressure atomized oil burners installed in 1998. Both boilers are operational, and will not need replacement for 15 years. The engineer stated the boiler controls do not work, so he runs them in manual mode because automatic mode does not provide enough heat for the building. There is a water softener for makeup water with a backflow preventer from the domestic water piping. Fuel oil is supplied from an indoor 8,000 gallon tank by two pumps. The burners are natural gas capable and all the piping, regulators, valves, meter, and booster were installed when the boilers were installed, but the building piping is not connected to the city piping. Combustion air is supplied by louvers equipped with automatic control. The boiler feed water tank has 3 pumps. There is no separate condensate sump in use.

The school has no central cooling equipment. A 20 ton cooling system should be installed to provide cooling to the 220 seat auditorium and gymnasium.

The auditorium and gym are ventilated by ductwork supplied by 3 air handlers located in the building fan room. These units do not have cooling coils. They appear original to the building, have pneumatic controls, and have exceeded their lifespan. They should be replaced with new units including cooling coils.

Steam piping is threaded steel. There is no history of steam trap replacement, and they should be surveyed based on age. The building engineer stated he did not need large amounts of makeup water for the steam system. There is presently no hydronic piping or pumps.

Classroom heating and ventilation is provided by original unit ventilators and natural draft finned tube steam heaters. The unit vents have exceeded their lifespan, some are physically damaged, and their controls are obsolete, so they should be replaced. Hallways, bathrooms, and other areas are heated by natural draft steam finned tube convectors, which despite their age can be expected to serve another 10-15 years. Classroom cooling is provided by window unit air conditioners. Some classrooms do not have air conditioners, some units are inoperable, and all of them are beyond their expected service life. Where operable, these units provide adequate cooling. Air conditioners should be added to rooms lacking them and replaced where they have failed.

The original pneumatic control system is inoperable according to the building engineer. Class rooms have wall mounted analog thermostats. The building control system should be upgraded to modern digital controls, when other components are upgraded.

The school does not have stand pipes or sprinkler system. A sprinkler system should be added including fire pump if needed.

ELECTRICAL SYSTEMS

A service drop to a transformer pit from a Medium voltage overhead line on wooden poles along Catharine Street serves this school. The transformer pit houses a single phase transformer with secondary voltage of 120/240V. The electrical room is located in the basement on the middle of the building. The electrical room houses the utility main disconnect switch, utility metering No 222MUC 38351 and estimated 400A, 120/240V distribution section. The existing service has no extra capacity for expansion or new Heating, Ventilation, Air Conditioning (HVAC) system. The electrical service entrance needs to be upgraded, using the present utility pole, and a pad mounted transformer. The new service will be 480V/277V, 3 phase power, approximate 800 Amperes and will be located in the vicinity of the existing electrical service.

The new electrical service would feed a 480V Motor Control Center (MCC) and HVAC (Heating, Ventilation and Air Conditioning) equipment, and a 480V 3 phase to 120V/208V 3 phase 150 KVA step-down transformer to feed receptacles, lighting and other smaller loads. The National Electric Code requires that electrical equipment be provided with minimum 36” front working clearance, most of the electrical equipment front access is blocked by boxes, furniture and ladders.

There are 120/240V panel-boards in each floor for lighting and receptacles. These panel-boards and associated wiring have exceeded the end of their useful life and are undersized to absorb additional loads. They need to be replaced. There are (1) 75KVA and (1) 15KVA phase converters from 240V to 120/208V which normally feeds newest mechanical equipment. Panel-board’s doors at corridors are not locked and represent a potential hazard for students. As a safety issue all panel-boards at corridor or in areas where students are present must be provided with lockable devices.

There numbers of receptacles in classrooms are inadequate. Teachers use extension cords. The teacher’s whiteboard wall and the opposite of it need to be provided with double compartment surface raceways, the other two walls with minimum two duplex outlets each, when feasible.

Classrooms, corridors, stairways, equipment rooms are illuminated with surface mounted fluorescent fixtures, with T-12 lamps. The IMC room is illuminated with pendant mounted, up/down, modern fluorescent fixtures with T-8 lamps. The auditorium is illuminated with pendant mounted architectural fixture with most probably compact fluorescent lamps. The Gymnasium is illuminated with High Intensity Discharge (HID), surface mounted fixtures. Approximately 90% of the fluorescent fixtures need to be replaced.

The Fire Alarm system is manufactured by Edwards. The system is approximately 30 years old. The present Fire Alarm system does not meet current code and needs to be replaced. Fire alarm system is tested every day in the morning.

The present telephone system is adequate.

An independent and separate PA system does not exist, or is not working. School uses the telephone systems for public announcement. Wall mounted speakers are old but this system is working adequately for most part.

The present clocks are old and difficult to find parts and repair. Replace clock system with wireless, battery operated, clock system.

There is not television system.

The security system consists of CCTV cameras at corridors and building exterior. There are missing CCTV cameras at the gym, south stairway the auditorium. Provide additional CCTV cameras.

The emergency power system consists of a gas powered generator, manufactured by Generac 20KW, 120/240V. The present emergency power system serves the corridor, exit signs, auditorium, stair ways, Boiler room, battery charger and fire alarm panel. The gas powered generator is approximately 30 years old and has exceeded its useful service life. Generator is tested once a week. Provide 50KW, outdoor, diesel powered generator.

There were no access to the server room, but district standard practice is to provide (2) rack mounted UPS.

The emergency lighting is obtained with dedicated fixtures connected to the emergency generator. Exit signs are located at each exit door and corridors and are connected to the school emergency system.

The lightning protection is obtained with air terminals mounted on the school chimney. A study should be conducted to determine if the existing lightning system provide the proper protection to the school building.

The school has one traction power elevator rated 10HP at 240V. Elevator controller and motor are approximately 10 years old and are expected to provide 10 more years of useful service life. Elevator motor and controller are not connected to the school emergency system.

The stage theatrical lighting is composed of ceiling mounted one single row of downlights that are ON/OFF from local panel-board. Provide a dimming panel and additional theatrical lighting.

There is a portable sound system. It is approximately 4 years old. The present sound system is adequate.

GROUNDS:

The site surrounds the building on all four sides which is set back from the street. Yard area on the west side is asphalt paving in poor condition with multiple patches and in need of resurfacing. Parking for staff vehicles is on the far west side and is accessible via Webster St. Metal fence surrounding and separating yard and parking area is in good condition. Fencing and gates at courtyards are also in good condition. Play structure and fall protection surface is in good condition. Landscaping is limited to courtyards on north and south sides of building with mature trees in need of trimming at south student entrance.

Accessibility: the building does have an accessible entrance, and accessible routes. Some of the toilets are equipped with accessible fixtures, partitions and accessories, such as grab bars and accessible partitions. Most of the doors in the building do not have lever type door handles.

The school parking lot is poorly illuminated at least 8 pole mounted fixtures are required for security.

CCTV cameras around the building perimeter and parking lot are provided.

There are not wall mounted loud speaker facing the parking lot/playground area. Provide (2) loud speakers.

RECOMMENDATIONS

- Replace roof - beyond service life and failing
- Replace interior door handles with lever type handles and latch sets
- Replace carpet – worn and beyond service life
- Install suspended acoustic tile ceiling system – visible service conduit in corridors
- Repair and repaint plaster ceilings (15% of plaster ceiling surface)
- Resurface asphalt play yard – damaged and failing
- Trim landscaping for student safety
- Replace aged, non-accessible drinking fountains.
- Install backflow prevention device on city water supply connection.
- Replace failing sanitary drain piping.
- Install 20 ton central cooling system for auditorium and gym.
- Replace 3 air handlers due to age and lack of cooling coils.
- Survey steam traps due to age and replace as needed.
- Replace unit vents due to age.
- Install window unit air conditioners to provide cooling for classrooms presently lacking, replace failed units, and replace units expected to fail soon.
- Upgrade failed pneumatic building controls to modern digital controls.
- Install fire sprinkler system including fire pump if needed.
- Provide a new electrical service 480V/277V, 3 phase power, approximate 800 Amperes and will be located in the vicinity of the existing electrical service.
- Replace the entire distribution system with new panels and new wiring/conduits. Approximate (16) 208/120V panel boards.
- Provide (2)25FT of surface raceways with 24” receptacles on center and two-duplex wall mount receptacles. Approximate 352 receptacles
- Replace 90% of the existing fluorescent lighting fixtures with up/down, recessed fluorescent fixtures with T8 lamps in classroom/offices and corridors. Approximate 552.
- Replace old fire alarm system with addressable type with audio/visual devices at corridors and classrooms.
- Replace clock and bell system with wireless, battery operated, clock system. Approximate 39 clocks
- Add CCTV cameras to provide a full coverage of the building interior. Approximate 22 CCTV cameras
- Provide 50KW, outdoor, diesel powered generator.
- Prepare a study to determine if the existing lightning protection system provides proper coverage of the school building.
- Provide a dimming system and additional theatrical lighting.
- Provide 8 pole-mounted lighting fixtures.

- Provide two PA loud speakers facing the parking lot/playground area.

Attributes:

General Attributes:

Active:	Open	Bldg Lot Tm:	Lot 2 / Tm 3
Status:	Accepted by SDP	Team:	Tm 3
Site ID:	S248001		

Site Condition Summary

The Table below shows the CI and FCI for each major system shown at the UNIFORMAT classification Level II. Note that Systems with lower FCIs require less investment than systems with higher FCIs.

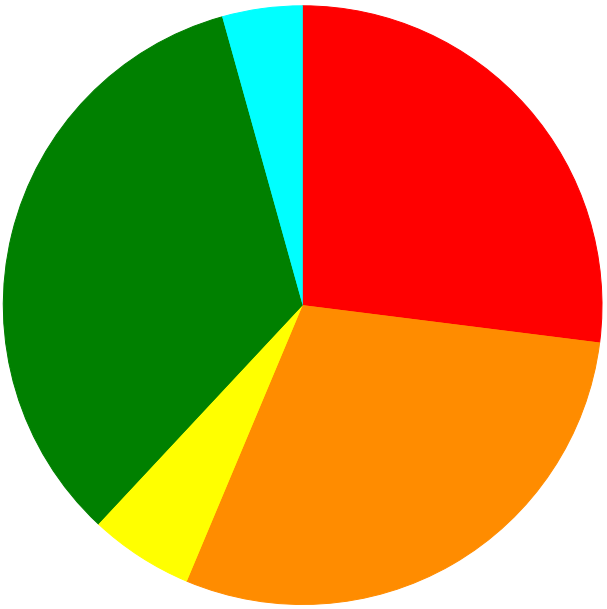
Current Investment Requirement and Condition by Uniformat Classification

UNIFORMAT Classification	RSLI%	FCI %	Current Repair
A10 - Foundations	48.00 %	0.00 %	$0.00
A20 - Basement Construction	48.00 %	0.00 %	$0.00
B10 - Superstructure	48.00 %	0.00 %	$0.00
B20 - Exterior Enclosure	55.13 %	0.00 %	$0.00
B30 - Roofing	110.00 %	89.37 %	$613,128.84
C10 - Interior Construction	51.92 %	2.93 %	$33,394.17
C20 - Stairs	48.00 %	0.00 %	$0.00
C30 - Interior Finishes	60.18 %	2.49 %	$52,190.20
D10 - Conveying	74.29 %	0.00 %	$0.00
D20 - Plumbing	34.52 %	39.48 %	$373,874.09
D30 - HVAC	96.06 %	57.31 %	$2,956,464.52
D40 - Fire Protection	105.71 %	177.49 %	$663,414.38
D50 - Electrical	110.11 %	68.08 %	$1,855,936.90
E10 - Equipment	61.39 %	43.76 %	$323,055.06
E20 - Furnishings	57.50 %	0.00 %	$0.00
G20 - Site Improvements	61.09 %	78.67 %	$374,734.01
G40 - Site Electrical Utilities	99.99 %	126.99 %	$177,072.63
Totals:	**71.06 %**	**31.51 %**	**$7,423,264.80**

Condition Deficiency Priority

Facility Name	Gross Area (S.F.)	FCI %	1 - Response Time (< 2 yr)	2 - Response Time (2-3 yrs)	3 - Response Time (3-4 yrs)	4 - Response Time (4-5 yrs)	5 - Response Time (> 5 yrs)
B248001;Arthur	46,375	29.95	$2,003,797.17	$2,177,297.31	$240,542.32	$2,128,619.78	$321,201.58
G248001;Grounds	33,000	89.61	$0.00	$0.00	$177,072.63	$374,734.01	$0.00
Total:		**31.51**	**$2,003,797.17**	**$2,177,297.31**	**$417,614.95**	**$2,503,353.79**	**$321,201.58**

Deficiencies By Priority



- 1 - Response Time (< 2 yr) - $2,003,797.17
- 2 - Response Time (2-3 yrs) - $2,177,297.31
- 3 - Response Time (3-4 yrs) - $417,614.95
- 4 - Response Time (4-5 yrs) - $2,503,353.79
- 5 - Response Time (> 5 yrs) - $321,201.58

Budget Estimate Total: $7,423,264.80

Executive Summary

Building condition is evaluated based on the functional systems and elements of a building and organized according to the UNIFORMAT II Elemental Classification. The grouping of these systems and elements and applying a current replacement value to them develops a representative building cost model. Cost Models are developed for similar building types and functions. Systems and their elements are evaluated based on their current replacement values, life cycles, installation dates and next renewal dates. Systems and their elements that are within their useful lives are further evaluated to identify current deficient conditions that may have a significant impact on a system's or element's remaining service life, and to determine if they are beyond their predicted expected life. The system's or element's current replacement value is based on RS Means Commercial Cost Data.

Following are the cost model's system details for this facility. The Replacement Value is the amount needed to replace the property of the same present value. The Current Repair Amount, also known as Condition Needs, represents the budgeted contractor installed costs plus owner's soft costs for the repair, replacement or renewal for a component or system level deficiency. It excludes contributing costs for other components or systems that might also be associated with the corrective actions due to packaging the work. Facility Condition Index (FCI) FCI is an industry-standard measurement of facility condition calculated as the ratio of the costs to correct a facility's deficiencies to the facility's Current Replacement Value. It ranges from 0% (new) to 100% (very poor). Condition Index (CI) is calculated as the sum of a renewable system's Remaining Service Life (RSL) divided by the sum of a system's Replacement Value (both values exclude soft-cost to simplify calculation updates) expressed as a percentage ranging from 100% (new) to 0% (expired).

Function:	Elementary School
Gross Area (SF):	46,375
Year Built:	1963
Last Renovation:	
Replacement Value:	$22,941,265
Repair Cost:	$6,871,458.16
Total FCI:	29.95 %
Total RSLI:	71.09 %

Description:

Attributes:

General Attributes:

Active:	Open	Bldg ID:	B248001
Sewage Ejector:	Yes	Status:	Accepted by SDP
Site ID:	S248001		

Condition Summary

The Table below shows the CI and FCI for each major building system shown at the UNIFORMAT classification Level II. Note that Systems with lower FCIs require less investment than systems with higher FCIs.

UNIFORMAT Classification	RSLI %	FCI %	Current Repair Cost
A10 - Foundations	48.00 %	0.00 %	$0.00
A20 - Basement Construction	48.00 %	0.00 %	$0.00
B10 - Superstructure	48.00 %	0.00 %	$0.00
B20 - Exterior Enclosure	55.13 %	0.00 %	$0.00
B30 - Roofing	110.00 %	89.37 %	$613,128.84
C10 - Interior Construction	51.92 %	2.93 %	$33,394.17
C20 - Stairs	48.00 %	0.00 %	$0.00
C30 - Interior Finishes	60.18 %	2.49 %	$52,190.20
D10 - Conveying	74.29 %	0.00 %	$0.00
D20 - Plumbing	34.52 %	39.48 %	$373,874.09
D30 - HVAC	96.06 %	57.31 %	$2,956,464.52
D40 - Fire Protection	105.71 %	177.49 %	$663,414.38
D50 - Electrical	110.11 %	68.08 %	$1,855,936.90
E10 - Equipment	61.39 %	43.76 %	$323,055.06
E20 - Furnishings	57.50 %	0.00 %	$0.00
Totals:	**71.09 %**	**29.95 %**	**$6,871,458.16**

Condition Detail

This section of the report contains results of the Facility Condition Assessment. The building is separated into system components based on UNIFORMAT II classification. The columns in the System Listing table below represent the following:

1. System Code: A code that identifies the system.
2. System Description: A brief description of a system present in the building.
3. Unit Price $: The unit price of the system.
4. UoM: The unit of measure for of the system.
5. Qty: The quantity for the system
6. Life: anticipated service life for thesystem based on Building Owners and Managers Association (BOMA) recommendations.
7. Year Installed: The date of system installation.
8. Calc Next Renewal Year: The date of system expiration based on the life, NR stands for non renewable.
9. Next Renewal Year: The suggested system expiration date by the assessor based on visual inspection.
10. CI: The Condition Index of the system.
11. FCI: The Facility Condition Index of the system.
12. RSL: Remaining Service Life.
13. eCR: eCOMET Condition Rating (not used).
14. Deficiency $: The financial investment to repair/replace system.

System Listing

The System Listing table below lists each of the systems organized by their UNIFORMAT II classification. The assessment team was tasked with recording the most recent replacement year of each system, determining the remaining service life based on the theoretical life, and evaluating the condition to confirm the forecast next replacement year. The system listing is the basis for all data contained in the Building Assessment Report.

Additionally, a condition rating (eCR) based on the following guidelines is provided as observed at the time of the assessment.

- Excellent (E) - No noticeable distress or damage. The entire system is free from observable defect.
- Very Good (VG) - Overall no serviceability reduction for the entire system. No degradation of critical components and minor distress and defect noticeable for some but not non critical components within the system.
- Good (G) - Slight or no serviceability reduction for the entire system. There may be noticeable defects for some non critical components and slight noticeable degradation of the critical components.
- Fair (F) - Overall serviceability is degraded but adequate. There may be moderate deterioration for very few of the critical components and few of the non critical components may have severe degradation.
- Marginal (MA) - Overall serviceability and reliability loss. Most if not all of the non critical components suffer from severe degradation and a few of the critical component may have severe degradation.
- Moderate (MO) - Overall a significant serviceability loss. Most if not all the components have severe degradation with the reminder of the component showing visible distress.
- Very Poor (VP) - Overall the system is barely functional. All of the components are severely degraded.
- Non-Functional (NF) - Overall the system does not function with all the components having no serviceability and suffer from severe degradation.

Site Assessment Report - B248001;Arthur

System Code	System Description	Unit Price $	UoM	Qty	Life	Year Installed	Calc Next Renewal Year	Next Renewal Year	RSLI%	FCI%	RSL	eCR	Deficiency $	Replacement Value $
A1010	Standard Foundations	$18.40	S.F.	46,375	100	1963	2063		48.00 %	0.00 %	48			$853,300
A1030	Slab on Grade	$7.73	S.F.	46,375	100	1963	2063		48.00 %	0.00 %	48			$358,479
A2010	Basement Excavation	$6.55	S.F.	46,375	100	1963	2063		48.00 %	0.00 %	48			$303,756
A2020	Basement Walls	$12.70	S.F.	46,375	100	1963	2063		48.00 %	0.00 %	48			$588,963
B1010	Floor Construction	$75.10	S.F.	46,375	100	1963	2063		48.00 %	0.00 %	48			$3,482,763
B1020	Roof Construction	$13.88	S.F.	46,375	100	1963	2063		48.00 %	0.00 %	48			$643,685
B2010	Exterior Walls	$36.91	S.F.	46,375	100	1963	2063		48.00 %	0.00 %	48			$1,711,701
B2020	Exterior Windows	$18.01	S.F.	46,375	40	2003	2043		70.00 %	0.00 %	28			$835,214
B2030	Exterior Doors	$1.45	S.F.	46,375	25	2003	2028		52.00 %	0.00 %	13			$67,244
B3010105	Built-Up	$37.76	S.F.	18,096	20	1997	2017	2037	110.00 %	89.73 %	22		$613,128.84	$683,305
B3020	Roof Openings	$0.06	S.F.	46,375	20	1997	2017	2037	110.00 %	0.00 %	22			$2,783
C1010	Partitions	$17.91	S.F.	46,375	100	1963	2063		48.00 %	0.00 %	48			$830,576
C1020	Interior Doors	$3.51	S.F.	46,375	40	2000	2040		62.50 %	20.52 %	25		$33,394.17	$162,776
C1030	Fittings	$3.12	S.F.	46,375	40	2000	2040		62.50 %	0.00 %	25			$144,690
C2010	Stair Construction	$1.41	S.F.	46,375	100	1963	2063		48.00 %	0.00 %	48			$65,389
C3010230	Paint & Covering	$15.84	S.F.	46,375	10	2012	2022		70.00 %	0.00 %	7			$734,580
C3020411	Carpet	$7.30	S.F.	928	10	2003	2013	2027	120.00 %	153.31 %	12		$10,385.04	$6,774
C3020413	Vinyl Flooring	$9.68	S.F.	38,491	20	2003	2023		40.00 %	0.00 %	8			$372,593
C3020415	Concrete Floor Finishes	$0.97	S.F.	6,956	50	2000	2050		70.00 %	0.00 %	35			$6,747
C3030	Ceiling Finishes	$20.97	S.F.	46,375	25	2005	2030		60.00 %	4.30 %	15		$41,805.16	$972,484
D1010	Elevators and Lifts	$1.53	S.F.	46,375	35	2006	2041		74.29 %	0.00 %	26			$70,954
D2010	Plumbing Fixtures	$13.52	S.F.	46,375	35	1964	1999	2025	28.57 %	12.09 %	10		$75,791.90	$626,990
D2020	Domestic Water Distribution	$1.68	S.F.	46,375	25	1964	1989	2025	40.00 %	21.72 %	10		$16,919.08	$77,910
D2030	Sanitary Waste	$2.90	S.F.	46,375	25	1964	1989	2032	68.00 %	209.06 %	17		$281,163.11	$134,488
D2040	Rain Water Drainage	$2.32	S.F.	46,375	30	1964	1994	2022	23.33 %	0.00 %	7			$107,590
D3020	Heat Generating Systems	$18.67	S.F.	46,375	35	1998	2033		51.43 %	0.00 %	18			$865,821
D3030	Cooling Generating Systems	$24.48	S.F.	46,375	30			2047	106.67 %	28.29 %	32		$321,201.58	$1,135,260
D3040	Distribution Systems	$42.99	S.F.	46,375	25	1964	1989	2042	108.00 %	79.24 %	27		$1,579,872.40	$1,993,661
D3050	Terminal & Package Units	$11.60	S.F.	46,375	20	1964	1984	2032	85.00 %	11.26 %	17		$60,552.32	$537,950
D3060	Controls & Instrumentation	$13.50	S.F.	46,375	20	1964	1984	2037	110.00 %	158.90 %	22		$994,838.22	$626,063
D4010	Sprinklers	$7.05	S.F.	46,375	35			2052	105.71 %	202.91 %	37		$663,414.38	$326,944
D4020	Standpipes	$1.01	S.F.	46,375	35			2052	105.71 %	0.00 %	37			$46,839
D5010	Electrical Service/Distribution	$9.70	S.F.	46,375	30	1964	1994	2047	106.67 %	174.47 %	32		$784,818.70	$449,838
D5020	Lighting and Branch Wiring	$34.68	S.F.	46,375	20	1964	1984	2037	110.00 %	38.53 %	22		$619,651.73	$1,608,285
D5030	Communications and Security	$12.99	S.F.	46,375	15	1964	1979	2032	113.33 %	54.29 %	17		$327,057.94	$602,411
D5090	Other Electrical Systems	$1.41	S.F.	46,375	30	1964	1994	2047	106.67 %	190.26 %	32		$124,408.53	$65,389
E1020	Institutional Equipment	$4.82	S.F.	46,375	35	1998	2033		51.43 %	144.53 %	18		$323,055.06	$223,528
E1090	Other Equipment	$11.10	S.F.	46,375	35	2003	2038		65.71 %	0.00 %	23			$514,763
E2010	Fixed Furnishings	$2.13	S.F.	46,375	40	1998	2038		57.50 %	0.00 %	23			$98,779
								Total	**71.09 %**	**29.95 %**			**$6,871,458.16**	**$22,941,265**

System Notes

The facility description in the site executive summary contains an overview of each system. The notes listed below provide additional information on select systems found within the facility.

System: C3010 - Wall Finishes — This system contains no images

Note: 100% - Paint & covering

System: C3020 - Floor Finishes — This system contains no images

Note: 2% - Carpet
83% - Vinyl Flooring
15% - Concrete Floor Finishes

System: D5010 - Electrical Service/Distribution

Note: 1)75KVA and (1)15KVA phase converters

Renewal Schedule

eCOMET forecasts future Capital Renewal funding needed to address expiring systems based on the Next Renewal year found in the Cost Models. A 3% annual inflation factor is applied to the costs for systems expiring in future years. The table below reflects recommended Capital Renewal funding needs over the next 10 years. Note: Cells with a zero value indicate systems for which renewal is not scheduled in that year.

Inflation Rate: 3%

System	Current Deficiencies	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Total:	**$6,871,458**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$1,139,339**	**$519,188**	**$0**	**$1,042,059**	**$9,572,045**
*** A - Substructure**	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
A10 - Foundations	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
A1010 - Standard Foundations	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
A1030 - Slab on Grade	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
A20 - Basement Construction	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
A2010 - Basement Excavation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
A2020 - Basement Walls	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
B - Shell	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
B10 - Superstructure	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
B1010 - Floor Construction	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
B1020 - Roof Construction	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
B20 - Exterior Enclosure	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
B2010 - Exterior Walls	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
B2020 - Exterior Windows	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
B2030 - Exterior Doors	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
B30 - Roofing	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
B3010 - Roof Coverings	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
B3010105 - Built-Up	$613,129	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$613,129**
B3020 - Roof Openings	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
C - Interiors	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
C10 - Interior Construction	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
C1010 - Partitions	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
C1020 - Interior Doors	$33,394	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$33,394**
C1030 - Fittings	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
C20 - Stairs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**

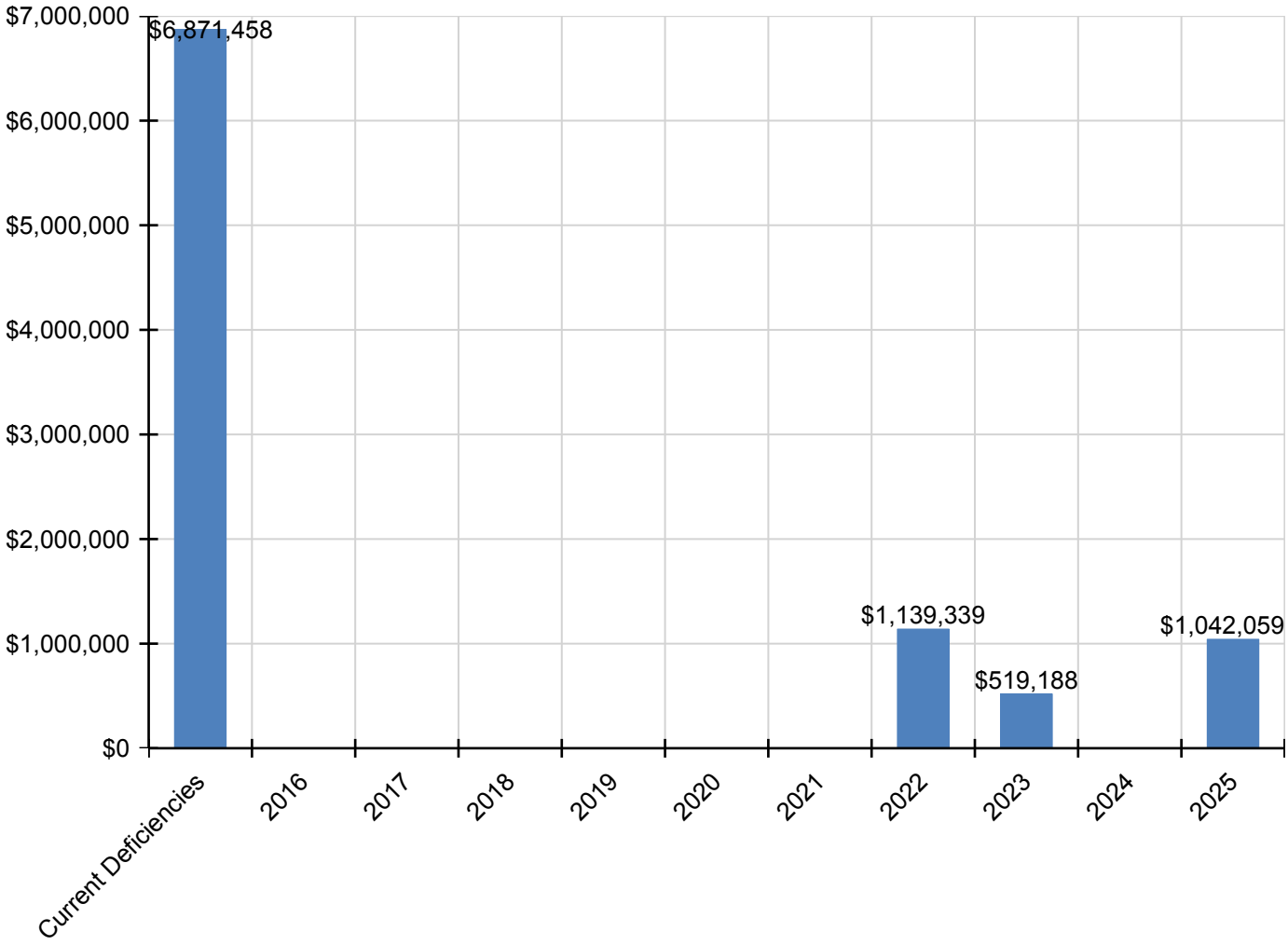
C2010 - Stair Construction	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
C30 - Interior Finishes	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
C3010 - Wall Finishes	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
C3010230 - Paint & Covering	$0	$0	$0	$0	$0	$0	$0	$993,785	$0	$0	$0	**$993,785**
C3020 - Floor Finishes	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
C3020411 - Carpet	$10,385	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$10,385**
C3020413 - Vinyl Flooring	$0	$0	$0	$0	$0	$0	$0	$0	$519,188	$0	$0	**$519,188**
C3020415 - Concrete Floor Finishes	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
C3030 - Ceiling Finishes	$41,805	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$41,805**
D - Services	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
D10 - Conveying	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
D1010 - Elevators and Lifts	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
D20 - Plumbing	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
D2010 - Plumbing Fixtures	$75,792	$0	$0	$0	$0	$0	$0	$0	$0	$0	$926,884	**$1,002,676**
D2020 - Domestic Water Distribution	$16,919	$0	$0	$0	$0	$0	$0	$0	$0	$0	$115,175	**$132,094**
D2030 - Sanitary Waste	$281,163	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$281,163**
D2040 - Rain Water Drainage	$0	$0	$0	$0	$0	$0	$0	$145,554	$0	$0	$0	**$145,554**
D30 - HVAC	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
D3020 - Heat Generating Systems	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
D3030 - Cooling Generating Systems	$321,202	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$321,202**
D3040 - Distribution Systems	$1,579,872	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$1,579,872**
D3050 - Terminal & Package Units	$60,552	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$60,552**
D3060 - Controls & Instrumentation	$994,838	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$994,838**
D40 - Fire Protection	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
D4010 - Sprinklers	$663,414	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$663,414**
D4020 - Standpipes	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
D50 - Electrical	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
D5010 - Electrical Service/Distribution	$784,819	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$784,819**
D5020 - Lighting and Branch Wiring	$619,652	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$619,652**
D5030 - Communications and Security	$327,058	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$327,058**
D5090 - Other Electrical Systems	$124,409	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$124,409**
E - Equipment & Furnishings	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
E10 - Equipment	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**

E1020 - Institutional Equipment	$323,055	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$323,055**
E1090 - Other Equipment	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
E20 - Furnishings	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
E2010 - Fixed Furnishings	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**

** Indicates non-renewable system*

Forecasted Sustainment Requirement

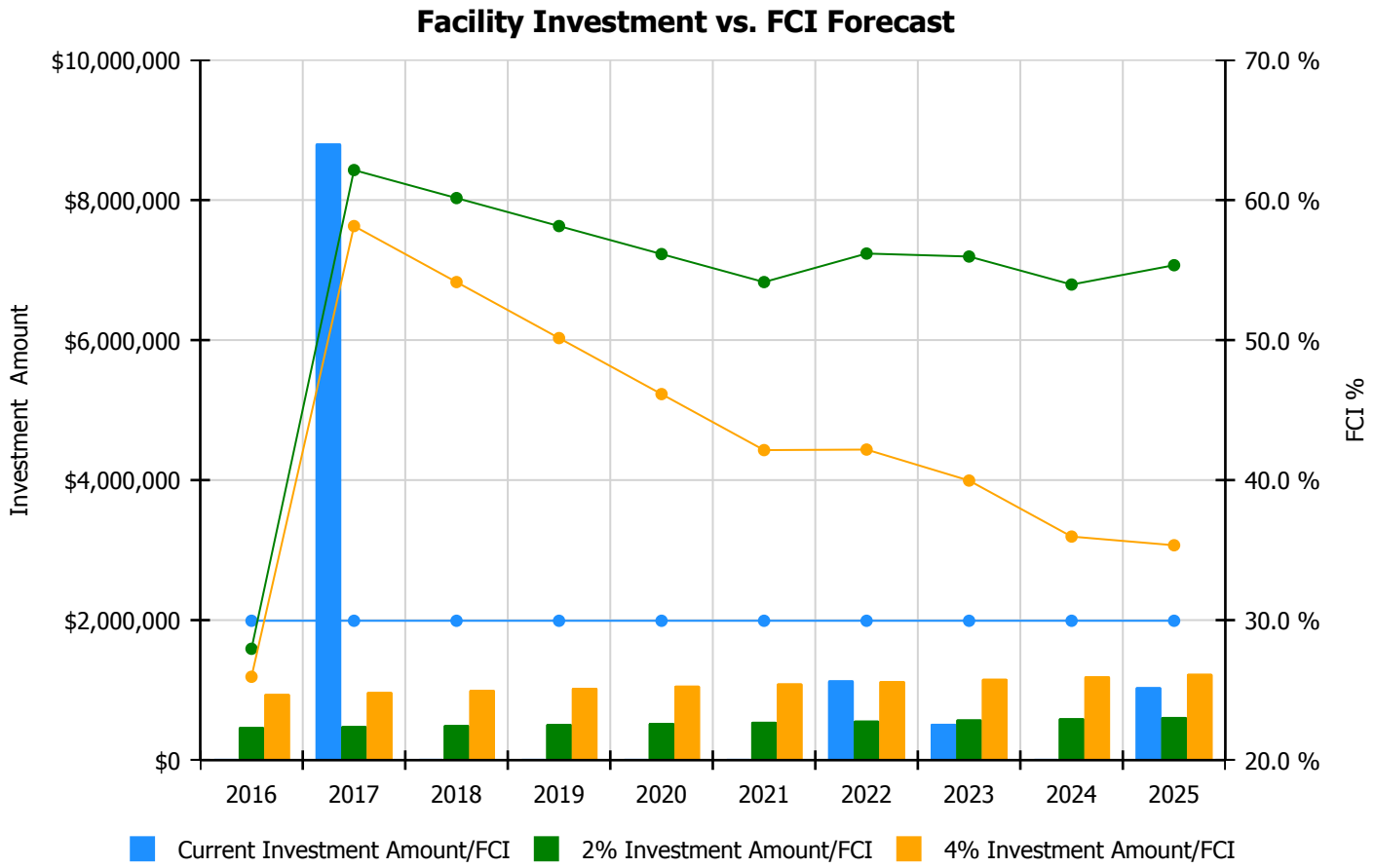
The following chart shows the current building deficiencies and forecasting sustainment requirements over the next ten years.



10 Year FCI Forecast by Investment Scenario

The chart below illustrates the effect of various investment levels on the building FCI for the next 10 years. The levels of investment shown below include:

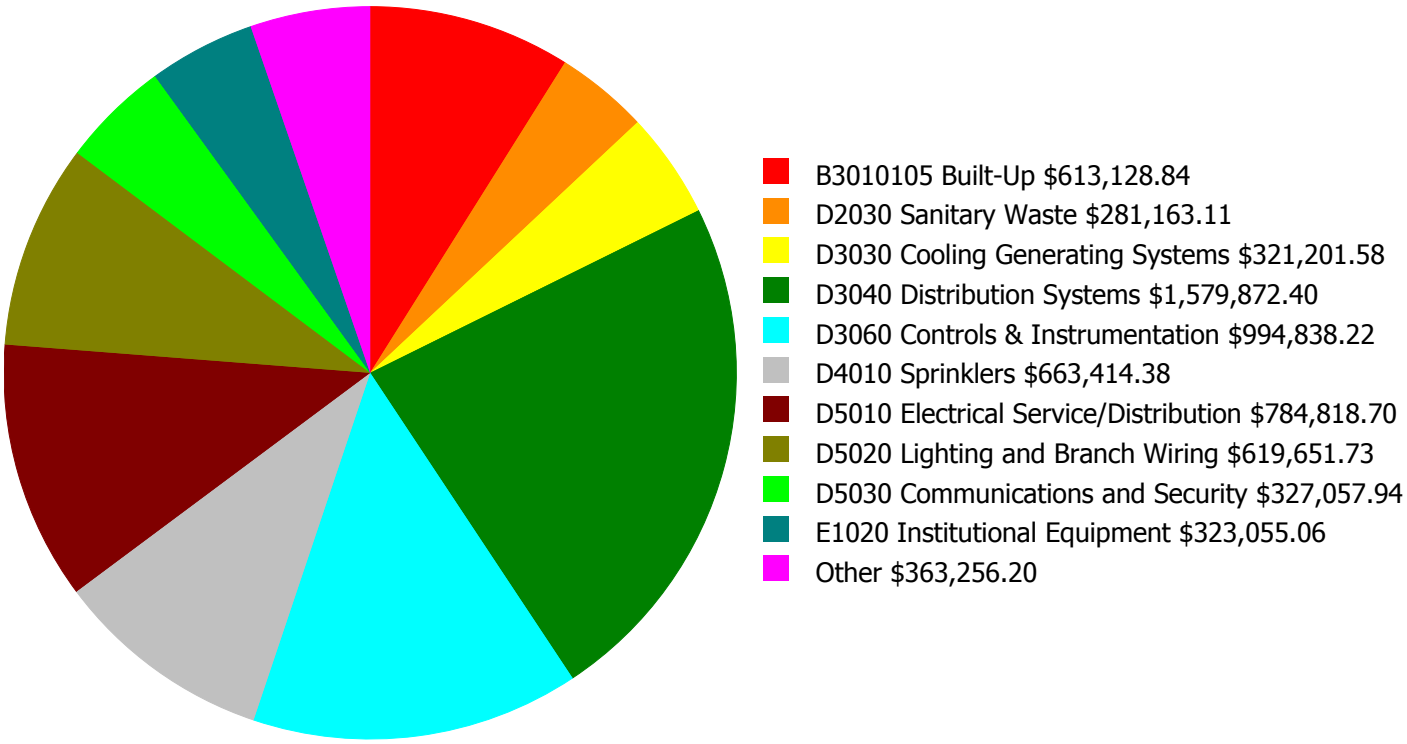
- Current FCI: a variable investment amount based on renewing expired systems to maintain the current FCI for the building
- 2% Investment: an annual investment of 2% of the replacement value of the building, escalated for inflation
- 4% Investment: an annual investment of 4% of the replacement value of the building, escalated for inflation



Year	Investment Amount Current FCI - 29.95%	2% Investment		4% Investment	
		Amount	FCI	Amount	FCI
2016	$0	$472,590.00	27.95 %	$945,180.00	25.95 %
2017	$8,807,916	$486,768.00	62.14 %	$973,536.00	58.14 %
2018	$0	$501,371.00	60.14 %	$1,002,742.00	54.14 %
2019	$0	$516,412.00	58.14 %	$1,032,824.00	50.14 %
2020	$0	$531,904.00	56.14 %	$1,063,809.00	46.14 %
2021	$0	$547,861.00	54.14 %	$1,095,723.00	42.14 %
2022	$1,139,339	$564,297.00	56.18 %	$1,128,594.00	42.18 %
2023	$519,188	$581,226.00	55.97 %	$1,162,452.00	39.97 %
2024	$0	$598,663.00	53.97 %	$1,197,326.00	35.97 %
2025	$1,042,059	$616,623.00	55.35 %	$1,233,246.00	35.35 %
Total:	**$11,508,503**	**$5,417,715.00**		**$10,835,432.00**	

Deficiency Summary by System

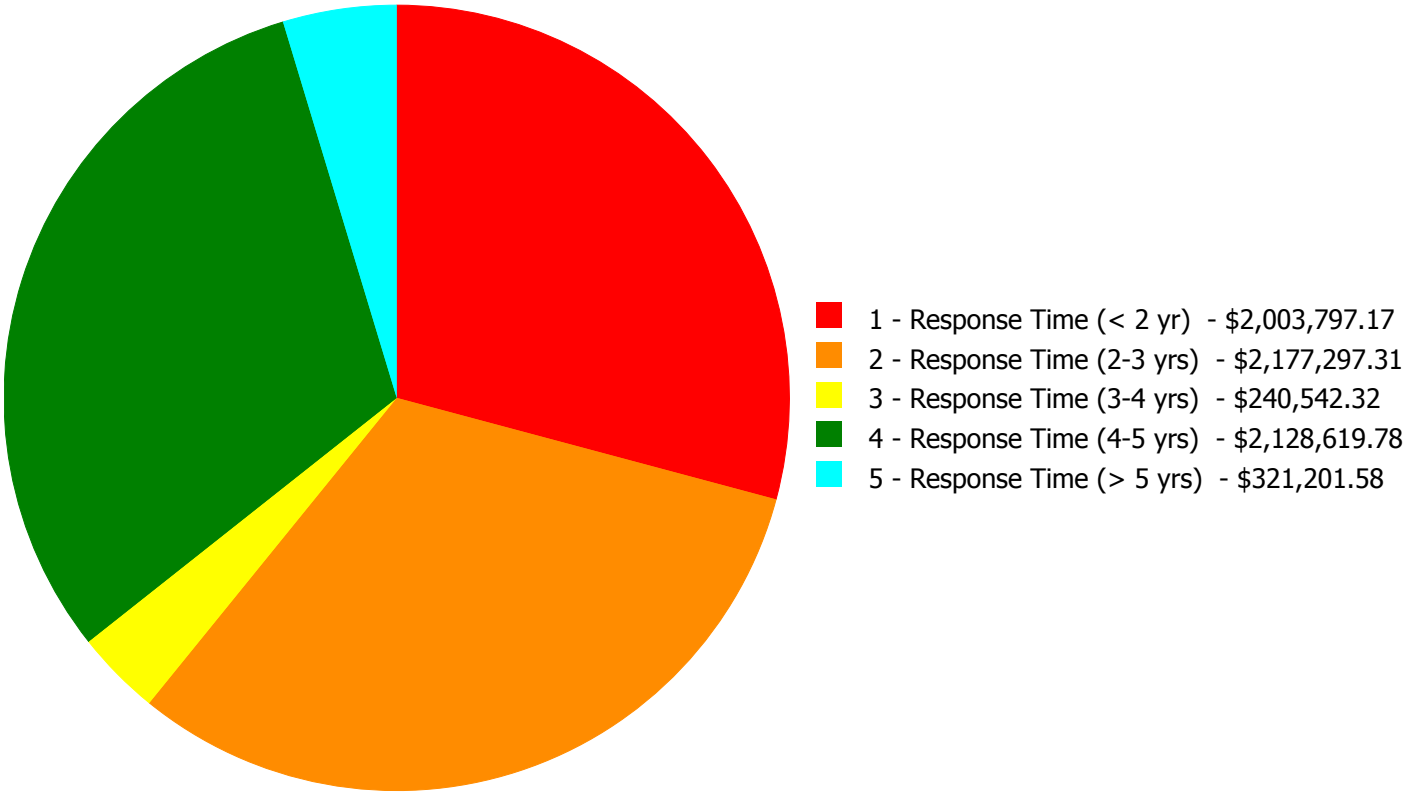
Current deficiencies included assemblies that have reached or exceeded their design life or components of the assemblies that are in need of repair. Assemblies that have reached their design life are identified as current deficiencies and assigned the distress 'Beyond Useful Life'. The following chart lists all current deficiencies associated with this facility.



Budget Estimate Total: $6,871,458.16

Deficiency Summary by Priority

The following chart shows the total repair costs broken down by priority. Assessors assigned deficiencies within eCOMET to one of the following priority categories:



Budget Estimate Total: $6,871,458.16

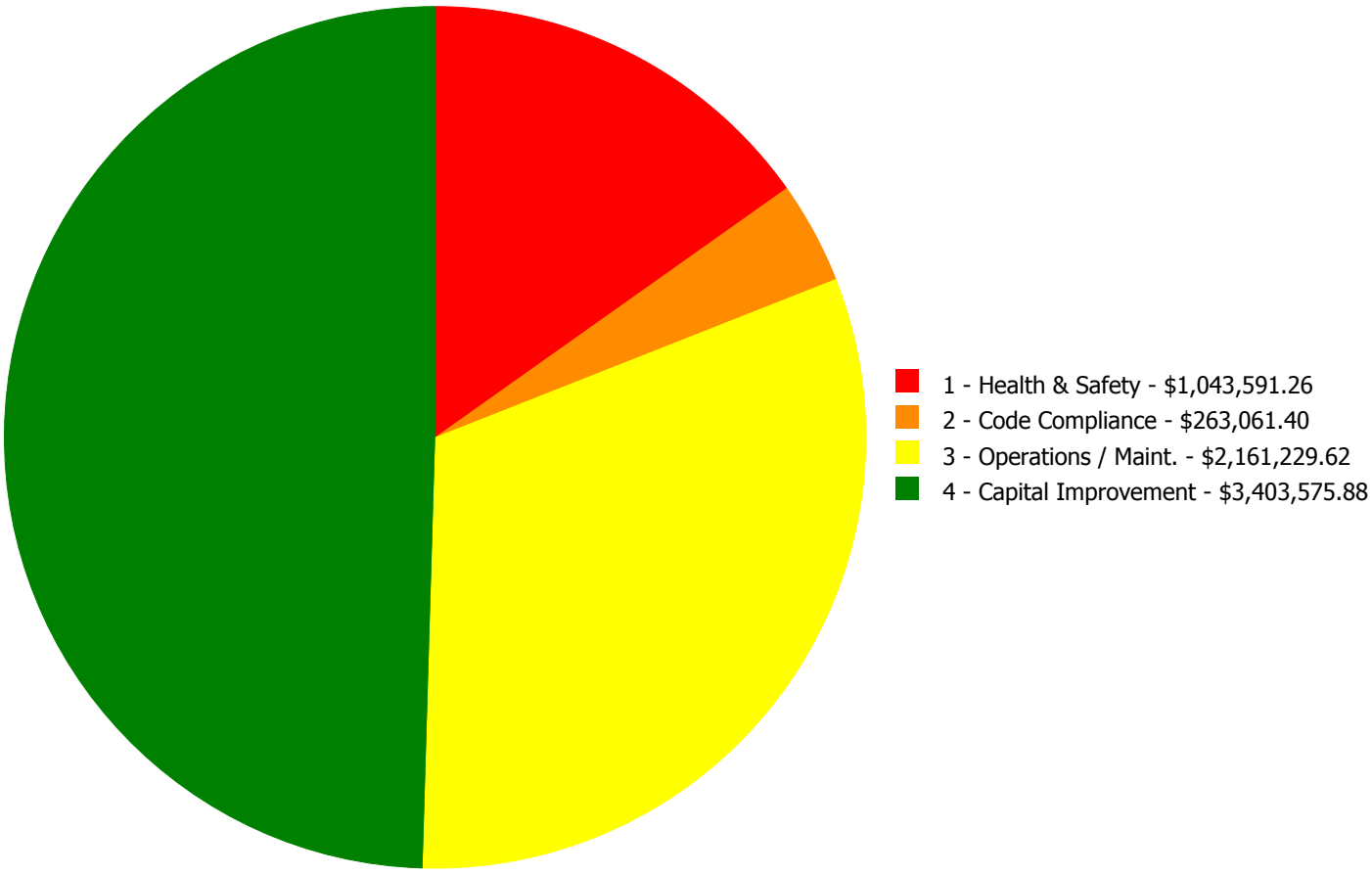
Deficiency By Priority Investment Table

The table below shows the current investment cost grouped by deficiency priority and building system.

System Code	System Description	1 - Response Time (< 2 yr)	2 - Response Time (2-3 yrs)	3 - Response Time (3-4 yrs)	4 - Response Time (4-5 yrs)	5 - Response Time (> 5 yrs)	Total
B3010105	Built-Up	$613,128.84	$0.00	$0.00	$0.00	$0.00	$613,128.84
C1020	Interior Doors	$0.00	$33,394.17	$0.00	$0.00	$0.00	$33,394.17
C3020411	Carpet	$0.00	$0.00	$10,385.04	$0.00	$0.00	$10,385.04
C3030	Ceiling Finishes	$0.00	$0.00	$41,805.16	$0.00	$0.00	$41,805.16
D2010	Plumbing Fixtures	$0.00	$0.00	$75,791.90	$0.00	$0.00	$75,791.90
D2020	Domestic Water Distribution	$0.00	$16,919.08	$0.00	$0.00	$0.00	$16,919.08
D2030	Sanitary Waste	$281,163.11	$0.00	$0.00	$0.00	$0.00	$281,163.11
D3030	Cooling Generating Systems	$0.00	$0.00	$0.00	$0.00	$321,201.58	$321,201.58
D3040	Distribution Systems	$1,109,505.22	$0.00	$0.00	$470,367.18	$0.00	$1,579,872.40
D3050	Terminal & Package Units	$0.00	$60,552.32	$0.00	$0.00	$0.00	$60,552.32
D3060	Controls & Instrumentation	$0.00	$0.00	$0.00	$994,838.22	$0.00	$994,838.22
D4010	Sprinklers	$0.00	$0.00	$0.00	$663,414.38	$0.00	$663,414.38
D5010	Electrical Service/Distribution	$0.00	$784,818.70	$0.00	$0.00	$0.00	$784,818.70
D5020	Lighting and Branch Wiring	$0.00	$619,651.73	$0.00	$0.00	$0.00	$619,651.73
D5030	Communications and Security	$0.00	$214,497.72	$112,560.22	$0.00	$0.00	$327,057.94
D5090	Other Electrical Systems	$0.00	$124,408.53	$0.00	$0.00	$0.00	$124,408.53
E1020	Institutional Equipment	$0.00	$323,055.06	$0.00	$0.00	$0.00	$323,055.06
	Total:	$2,003,797.17	$2,177,297.31	$240,542.32	$2,128,619.78	$321,201.58	$6,871,458.16

Deficiency Summary by Category

The following chart shows the total repair costs broken down by deficiency categories. Assessors assigned deficiencies to one of the following categories:



Budget Estimate Total: $6,871,458.16

Deficiency Details by Priority

The deficiency detail notes listed below provide additional information on identified deficiencies found within the facility.

Priority 1 - Response Time (< 2 yr):

System: B3010105 - Built-Up

Location: Roof
Distress: Failing
Category: 3 - Operations / Maint.
Priority: 1 - Response Time (< 2 yr)
Correction: Remove and Replace Built Up Roof
Qty: 18,096.00
Unit of Measure: S.F.
Estimate: $613,128.84
Assessor Name: System
Date Created: 09/15/2015

Notes: Replace roof – beyond service life and failing

System: D2030 - Sanitary Waste

Location: Entire building
Distress: Health Hazard / Risk
Category: 1 - Health & Safety
Priority: 1 - Response Time (< 2 yr)
Correction: Inspect sanitary waste piping and replace damaged sections. (+100KSF)
Qty: 46,375.00
Unit of Measure: S.F.
Estimate: $281,163.11
Assessor Name: System
Date Created: 09/03/2015

Notes: Replace failing sanitary drain piping.

System: D3040 - Distribution Systems

Location: Classrooms

Distress: Beyond Service Life

Category: 3 - Operations / Maint.

Priority: 1 - Response Time (< 2 yr)

Correction: Replace the existing unit ventilators with new units designed to provide adequate ventilation per ASHRAE Std 62 - insert the SF of bldg. in the qty.

Qty: 23,000.00

Unit of Measure: S.F.

Estimate: $1,109,505.22

Assessor Name: System

Date Created: 09/03/2015

Notes: Replace unit vents due to age.

Priority 2 - Response Time (2-3 yrs):

System: C1020 - Interior Doors

Location: Throughout

Distress: Accessibility

Category: 2 - Code Compliance

Priority: 2 - Response Time (2-3 yrs)

Correction: Replace door knobs with compliant lever type

Qty: 60.00

Unit of Measure: Ea.

Estimate: $33,394.17

Assessor Name: System

Date Created: 09/15/2015

Notes: Replace interior door handles with lever type handles and latch sets

System: D2020 - Domestic Water Distribution

Location: Meter room

Distress: Building / MEP Codes

Category: 2 - Code Compliance

Priority: 2 - Response Time (2-3 yrs)

Correction: Provide 3" reduced pressure back flow preventer

Qty: 1.00

Unit of Measure: Ea.

Estimate: $16,919.08

Assessor Name: System

Date Created: 09/03/2015

Notes: Install backflow prevention device on city water supply connection.

System: D3050 - Terminal & Package Units

Location: Classrooms

Distress: Failing

Category: 3 - Operations / Maint.

Priority: 2 - Response Time (2-3 yrs)

Correction: Remove window air conditioners - replace window - if not required remove the qty. from the window replacement

Qty: 17.00

Unit of Measure: Ea.

Estimate: $60,552.32

Assessor Name: System

Date Created: 01/19/2016

Notes: Remove failing window unit air conditioners and replace with new

System: D5010 - Electrical Service/Distribution

Location: Entire Building

Distress: Inadequate

Category: 4 - Capital Improvement

Priority: 2 - Response Time (2-3 yrs)

Correction: Replace Panelboard

Qty: 16.00

Unit of Measure: Ea.

Estimate: $475,183.64

Assessor Name: System

Date Created: 10/16/2015

Notes: Replace the entire distribution system with new panels and new wiring/conduits. Approximate (16) 208/120V panel boards.

System: D5010 - Electrical Service/Distribution

Location: Basement

Distress: Inadequate

Category: 4 - Capital Improvement

Priority: 2 - Response Time (2-3 yrs)

Correction: Replace Switchboard

Qty: 1.00

Unit of Measure: Ea.

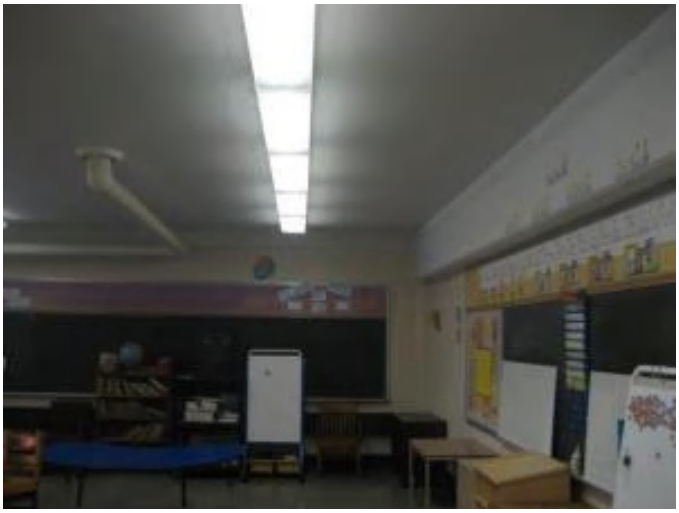
Estimate: $309,635.06

Assessor Name: System

Date Created: 10/16/2015

Notes: Provide a new electrical service 480V/277V, 3 phase power, approximate 800 Amperes and will be located in the vicinity of the existing electrical service.

System: D5020 - Lighting and Branch Wiring



Location: Entire Building

Distress: Energy Efficiency

Category: 4 - Capital Improvement

Priority: 2 - Response Time (2-3 yrs)

Correction: Add Lighting Fixtures

Qty: 552.00

Unit of Measure: Ea.

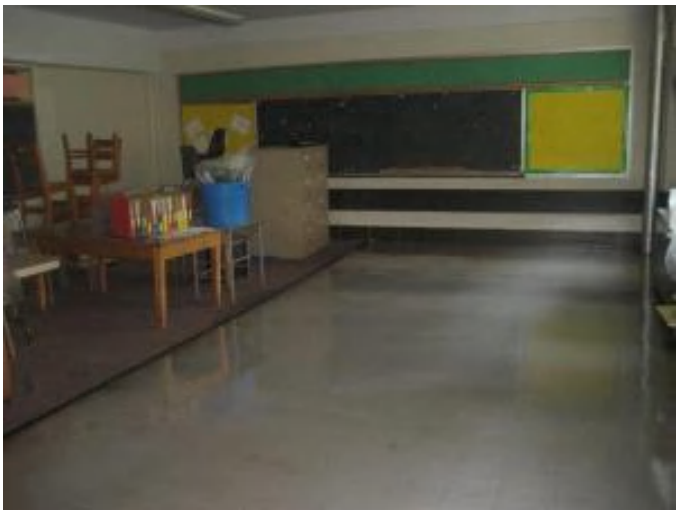
Estimate: $490,337.14

Assessor Name: System

Date Created: 10/16/2015

Notes: Replace 90% of the existing fluorescent lighting fixtures with up/down, recessed fluorescent fixtures with T8 lamps in classroom/offices and corridors. Approximate 552.

System: D5020 - Lighting and Branch Wiring



Location: Classrooms

Distress: Inadequate

Category: 4 - Capital Improvement

Priority: 2 - Response Time (2-3 yrs)

Correction: Add wiring device

Qty: 352.00

Unit of Measure: Ea.

Estimate: $129,314.59

Assessor Name: System

Date Created: 10/16/2015

Notes: Provide (2)25FT of surface raceways with 24” receptacles on center and two-duplex wall mount receptacles. Approximate 352 receptacles

System: D5030 - Communications and Security

Location: Entire Building

Distress: Building / MEP Codes

Category: 2 - Code Compliance

Priority: 2 - Response Time (2-3 yrs)

Correction: Replace fire alarm system

Qty: 1.00

Unit of Measure: S.F.

Estimate: $115,483.95

Assessor Name: System

Date Created: 10/16/2015

Notes: Replace old fire alarm system with addressable type with audio/visual devices at corridors and classrooms.

System: D5030 - Communications and Security

Location: Entire Building
Distress: Security Issue
Category: 1 - Health & Safety
Priority: 2 - Response Time (2-3 yrs)
Correction: Add/Replace Video Surveillance System
Qty: 22.00
Unit of Measure: Ea.
Estimate: $99,013.77
Assessor Name: System
Date Created: 10/16/2015

Notes: Add CCTV cameras to provide a full coverage of the building interior. Approximate 22 CCTV cameras

System: D5090 - Other Electrical Systems

Location: Outdoor
Distress: Beyond Service Life
Category: 3 - Operations / Maint.
Priority: 2 - Response Time (2-3 yrs)
Correction: Add Standby Generator System
Qty: 1.00
Unit of Measure: Ea.
Estimate: $102,936.23
Assessor Name: System
Date Created: 10/16/2015

Notes: Provide 50KW, outdoor, diesel powered generator

System: D5090 - Other Electrical Systems

Location: Roof

Distress: Building / MEP Codes

Category: 2 - Code Compliance

Priority: 2 - Response Time (2-3 yrs)

Correction: Provide Lightning Protection System

Qty: 1.00

Unit of Measure: LS

Estimate: $21,472.30

Assessor Name: System

Date Created: 10/19/2015

Notes: Prepare a study to determine if the existing lightning system provide the proper protection to the school building.

System: E1020 - Institutional Equipment

Location: Auditorium

Distress: Inadequate

Category: 4 - Capital Improvement

Priority: 2 - Response Time (2-3 yrs)

Correction: Add/Replace Stage Theatrical Lighting System

Qty: 1.00

Unit of Measure: Ea.

Estimate: $323,055.06

Assessor Name: System

Date Created: 10/19/2015

Notes: Provide a dimming system and additional theatrical lighting.

Priority 3 - Response Time (3-4 yrs):

System: C3020411 - Carpet

Location: Various

Distress: Appearance

Category: 3 - Operations / Maint.

Priority: 3 - Response Time (3-4 yrs)

Correction: Remove and replace carpet

Qty: 928.00

Unit of Measure: S.F.

Estimate: $10,385.04

Assessor Name: System

Date Created: 09/15/2015

Notes: Replace carpet – worn and beyond service life

System: C3030 - Ceiling Finishes

Location: Corridors

Distress: Inadequate

Category: 4 - Capital Improvement

Priority: 3 - Response Time (3-4 yrs)

Correction: Remove and replace suspended acoustic ceilings - lighting not included

Qty: 4,200.00

Unit of Measure: S.F.

Estimate: $41,805.16

Assessor Name: System

Date Created: 09/15/2015

Notes: Install suspended acoustic tile ceiling system – visible service conduit in corridors

---

System: D2010 - Plumbing Fixtures

Location: Entire building

Distress: Accessibility

Category: 2 - Code Compliance

Priority: 3 - Response Time (3-4 yrs)

Correction: Remove and Replace Water Fountains - without ADA new recessed alcove

Qty: 10.00

Unit of Measure: Ea.

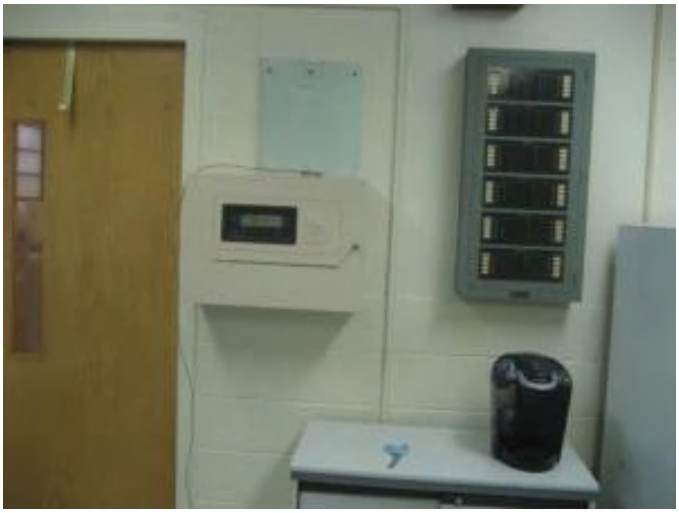
Estimate: $75,791.90

Assessor Name: System

Date Created: 09/03/2015

Notes: Replace aged, non-accessible drinking fountains.

System: D5030 - Communications and Security



Location: Entire Building

Distress: Obsolete

Category: 3 - Operations / Maint.

Priority: 3 - Response Time (3-4 yrs)

Correction: Add/Replace Clock System or Components

Qty: 39.00

Unit of Measure: Ea.

Estimate: $112,560.22

Assessor Name: System

Date Created: 10/19/2015

Notes: Replace clock and bell system with wireless, battery operated, clock system. Approximate 39 clocks

Priority 4 - Response Time (4-5 yrs):

System: D3040 - Distribution Systems

Location: Fan room

Distress: Inadequate

Category: 4 - Capital Improvement

Priority: 4 - Response Time (4-5 yrs)

Correction: Install HVAC unit for Auditorium (200 seat).

Qty: 220.00

Unit of Measure: Seat

Estimate: $318,205.43

Assessor Name: System

Date Created: 09/03/2015

Notes: Replace 3 air handlers due to age and lack of cooling coils.

System: D3040 - Distribution Systems

Location: Entire building.

Distress: Maintenance Required

Category: 3 - Operations / Maint.

Priority: 4 - Response Time (4-5 yrs)

Correction: Conduct a steam trap survey and replace failed units.

Qty: 46,375.00

Unit of Measure: S.F.

Estimate: $152,161.75

Assessor Name: System

Date Created: 09/03/2015

Notes: Survey steam traps due to age and replace as needed.

System: D3060 - Controls & Instrumentation

Location: Entire building

Distress: Energy Efficiency

Category: 4 - Capital Improvement

Priority: 4 - Response Time (4-5 yrs)

Correction: Replace pneumatic controls with DDC (75KSF)

Qty: 46,375.00

Unit of Measure: S.F.

Estimate: $994,838.22

Assessor Name: System

Date Created: 09/03/2015

Notes: Upgrade failed pneumatic building controls to modern digital controls.

System: D4010 - Sprinklers

This deficiency has no image.

Location: Entire building

Distress: Life Safety / NFPA / PFD

Category: 1 - Health & Safety

Priority: 4 - Response Time (4-5 yrs)

Correction: Install a fire protection sprinkler system

Qty: 46,375.00

Unit of Measure: S.F.

Estimate: $663,414.38

Assessor Name: System

Date Created: 09/04/2015

Notes: Install fire sprinkler system including fire pump if needed.

Priority 5 - Response Time (> 5 yrs):

System: D3030 - Cooling Generating Systems

Location: Auditorium and gym

Distress: Inadequate

Category: 4 - Capital Improvement

Priority: 5 - Response Time (> 5 yrs)

Correction: Install chilled water system with distribution piping and pumps. (+75KSF)

Qty: 20,000.00

Unit of Measure: S.F.

Estimate: $321,201.58

Assessor Name: System

Date Created: 09/03/2015

Notes: Install 20 ton central cooling system for auditorium and gym.

Equipment Inventory

The following table represents the inventory details of the inventory found in the building, which fall under the following subsystems:

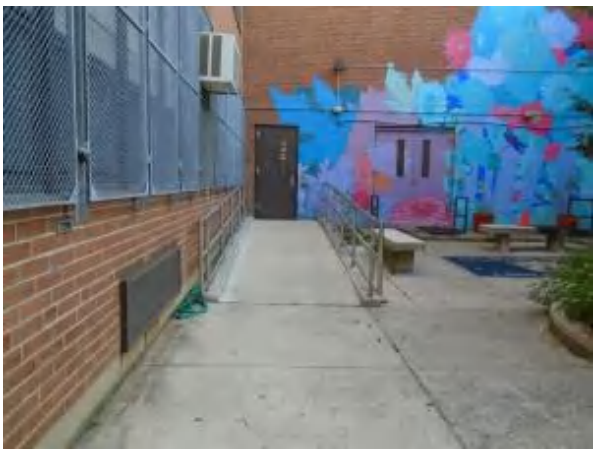
Subsystem	Inventory	Qty	UoM	Location	Manufacturer	Model Number	Serial Number	Barcode	Life	Install Date	Next Renewal	Raw Cost	Inventory Cost
D3020 Heat Generating Systems	Boiler, gas/oil combination, cast iron, steam, gross output, 2040 MBH, includes burners, controls and insulated jacket, packaged	2.00	Ea.	Boiler room					35	1998	2033	$43,116.20	$94,855.64
D5010 Electrical Service/Distribution	Panelboards, 3 pole 3 wire, main lugs, 240 V, 400 amp, no main breaker	1.00	Ea.	Basement					30	1964	2037	$2,297.70	$2,527.47
												Total:	**$97,383.11**

Executive Summary

Building condition is evaluated based on the functional systems and elements of a building and organized according to the UNIFORMAT II Elemental Classification. The grouping of these systems and elements and applying a current replacement value to them develops a representative building cost model. Cost Models are developed for similar building types and functions. Systems and their elements are evaluated based on their current replacement values, life cycles, installation dates and next renewal dates. Systems and their elements that are within their useful lives are further evaluated to identify current deficient conditions that may have a significant impact on a system's or element's remaining service life, and to determine if they are beyond their predicted expected life. The system's or element's current replacement value is based on RS Means Commercial Cost Data.

Following are the cost model's system details for this facility. The Replacement Value is the amount needed to replace the property of the same present value. The Current Repair Amount, also known as Condition Needs, represents the budgeted contractor installed costs plus owner's soft costs for the repair, replacement or renewal for a component or system level deficiency. It excludes contributing costs for other components or systems that might also be associated with the corrective actions due to packaging the work. Facility Condition Index (FCI) FCI is an industry-standard measurement of facility condition calculated as the ratio of the costs to correct a facility's deficiencies to the facility's Current Replacement Value. It ranges from 0% (new) to 100% (very poor). Condition Index (CI) is calculated as the sum of a renewable system's Remaining Service Life (RSL) divided by the sum of a system's Replacement Value (both values exclude soft-cost to simplify calculation updates) expressed as a percentage ranging from 100% (new) to 0% (expired).

Function:	
Gross Area (SF):	33,000
Year Built:	1963
Last Renovation:	
Replacement Value:	$615,780
Repair Cost:	$551,806.64
Total FCI:	89.61 %
Total RSLI:	69.90 %



Description:

Attributes:

General Attributes:

Bldg ID:	S248001	Site ID:	S248001

Condition Summary

The Table below shows the CI and FCI for each major building system shown at the UNIFORMAT classification Level II. Note that Systems with lower FCIs require less investment than systems with higher FCIs.

UNIFORMAT Classification	RSLI %	FCI %	Current Repair Cost
G20 - Site Improvements	61.09 %	78.67 %	$374,734.01
G40 - Site Electrical Utilities	99.99 %	126.99 %	$177,072.63
Totals:	**69.90 %**	**89.61 %**	**$551,806.64**

Condition Detail

This section of the report contains results of the Facility Condition Assessment. The building is separated into system components based on UNIFORMAT II classification. The columns in the System Listing table below represent the following:

1. System Code: A code that identifies the system.
2. System Description: A brief description of a system present in the building.
3. Unit Price $: The unit price of the system.
4. UoM: The unit of measure for of the system.
5. Qty: The quantity for the system
6. Life: anticipated service life for thesystem based on Building Owners and Managers Association (BOMA) recommendations.
7. Year Installed: The date of system installation.
8. Calc Next Renewal Year: The date of system expiration based on the life, NR stands for non renewable.
9. Next Renewal Year: The suggested system expiration date by the assessor based on visual inspection.
10. CI: The Condition Index of the system.
11. FCI: The Facility Condition Index of the system.
12. RSL: Remaining Service Life.
13. eCR: eCOMET Condition Rating (not used).
14. Deficiency $: The financial investment to repair/replace system.

System Listing

The System Listing table below lists each of the systems organized by their UNIFORMAT II classification. The assessment team was tasked with recording the most recent replacement year of each system, determining the remaining service life based on the theoretical life, and evaluating the condition to confirm the forecast next replacement year. The system listing is the basis for all data contained in the Building Assessment Report.

Additionally, a condition rating (eCR) based on the following guidelines is provided as observed at the time of the assessment.

- Excellent (E) - No noticeable distress or damage. The entire system is free from observable defect.
- Very Good (VG) - Overall no serviceability reduction for the entire system. No degradation of critical components and minor distress and defect noticeable for some but not non critical components within the system.
- Good (G) - Slight or no serviceability reduction for the entire system. There may be noticeable defects for some non critical components and slight noticeable degradation of the critical components.
- Fair (F) - Overall serviceability is degraded but adequate. There may be moderate deterioration for very few of the critical components and few of the non critical components may have severe degradation.
- Marginal (MA) - Overall serviceability and reliability loss. Most if not all of the non critical components suffer from severe degradation and a few of the critical component may have severe degradation.
- Moderate (MO) - Overall a significant serviceability loss. Most if not all the components have severe degradation with the reminder of the component showing visible distress.
- Very Poor (VP) - Overall the system is barely functional. All of the components are severely degraded.
- Non-Functional (NF) - Overall the system does not function with all the components having no serviceability and suffer from severe degradation.

System Code	System Description	Unit Price $	UoM	Qty	Life	Year Installed	Calc Next Renewal Year	Next Renewal Year	RSLI%	FCI%	RSL	eCR	Deficiency $	Replacement Value $
G2020	Parking Lots	$8.50	S.F.	9,000	30	2003	2033		60.00 %	489.85 %	18		$374,734.01	$76,500
G2030	Pedestrian Paving	$12.30	S.F.	24,000	40	1998	2038		57.50 %	0.00 %	23			$295,200
G2040	Site Development	$4.36	S.F.	24,000	25	2008	2033		72.00 %	0.00 %	18			$104,640
G2050	Landscaping & Irrigation	$4.36	S.F.		15	2003	2018		20.00 %	0.00 %	3			$0
G4020	Site Lighting	$4.84	S.F.	24,000	30			2047	106.67 %	141.08 %	32		$163,883.98	$116,160
G4030	Site Communications & Security	$0.97	S.F.	24,000	30	2005	2035		66.67 %	56.65 %	20		$13,188.65	$23,280
								Total	**69.90 %**	**89.61 %**			**$551,806.64**	**$615,780**

System Notes

The facility description in the site executive summary contains an overview of each system. The notes listed below provide additional information on select systems found within the facility.

No data found for this asset

Renewal Schedule

eCOMET forecasts future Capital Renewal funding needed to address expiring systems based on the Next Renewal year found in the Cost Models. A 3% annual inflation factor is applied to the costs for systems expiring in future years. The table below reflects recommended Capital Renewal funding needs over the next 10 years. Note: Cells with a zero value indicate systems for which renewal is not scheduled in that year.

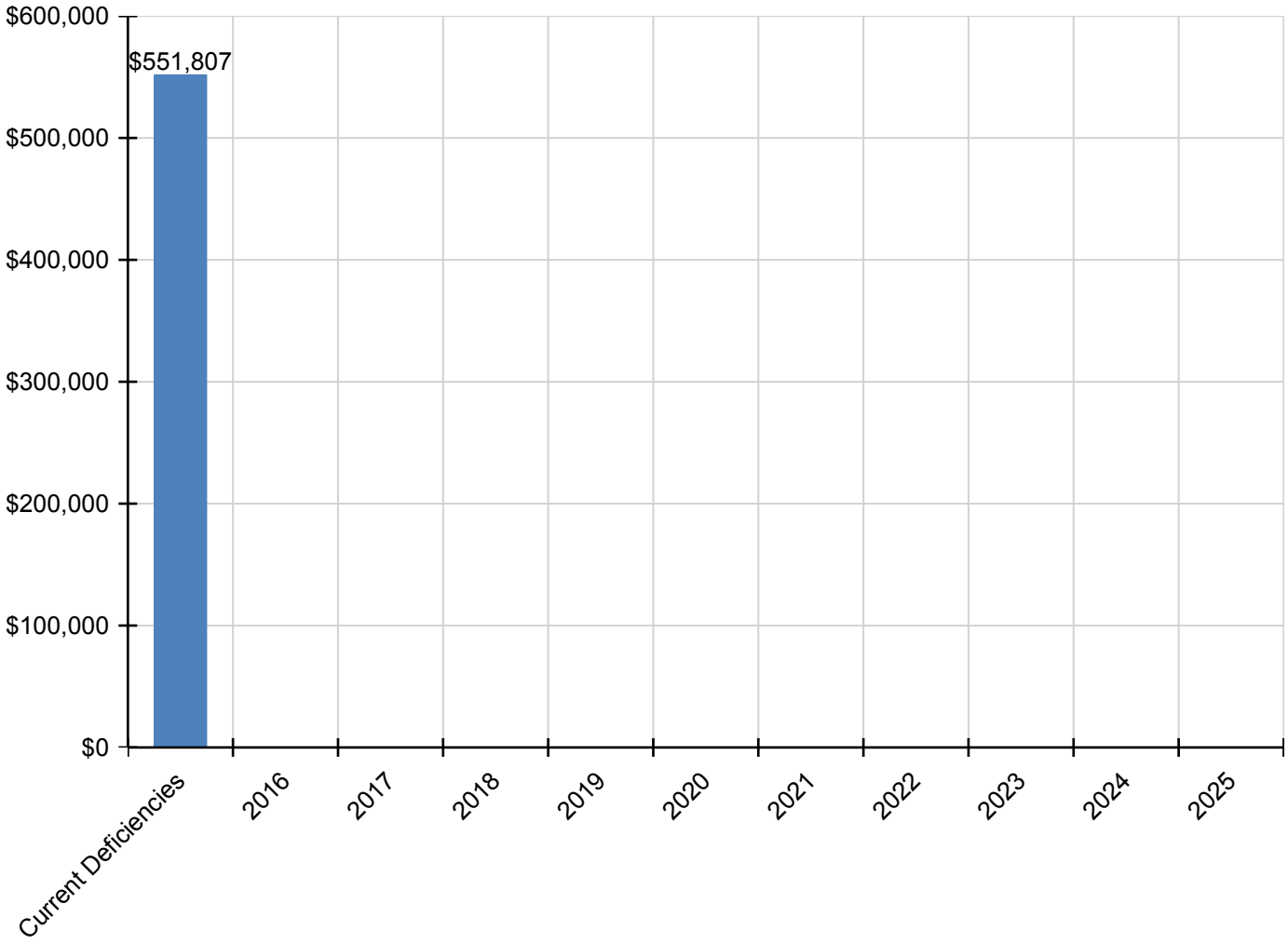
Inflation Rate: 3%

System	Current Deficiencies	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Total:	**$551,807**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$551,807**
G - Building Sitework	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
G20 - Site Improvements	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
G2020 - Parking Lots	$374,734	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$374,734**
G2030 - Pedestrian Paving	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
G2040 - Site Development	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
G2050 - Landscaping & Irrigation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
G40 - Site Electrical Utilities	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
G4020 - Site Lighting	$163,884	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$163,884**
G4030 - Site Communications & Security	$13,189	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$13,189**

** Indicates non-renewable system*

Forecasted Sustainment Requirement

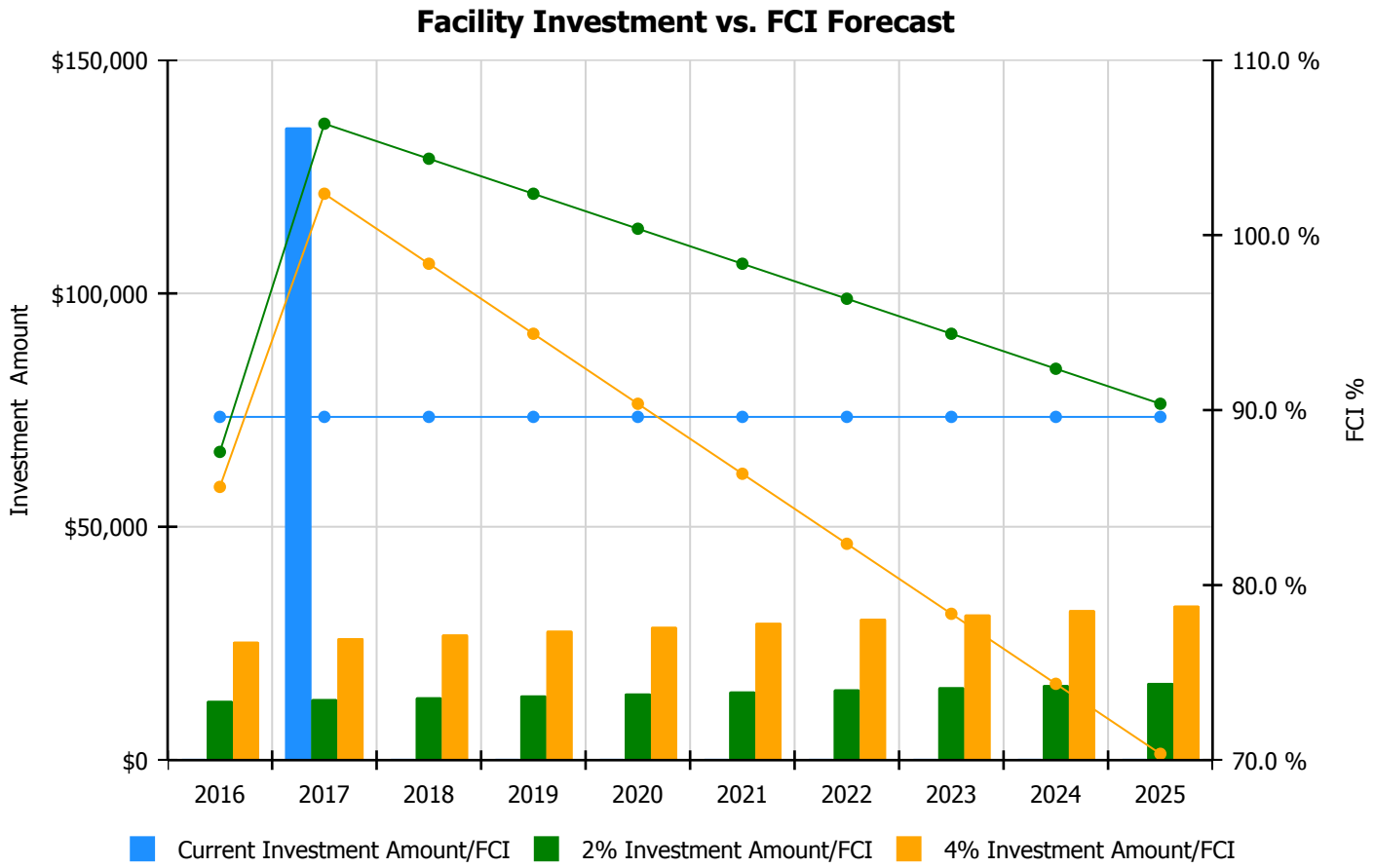
The following chart shows the current building deficiencies and forecasting sustainment requirements over the next ten years.



10 Year FCI Forecast by Investment Scenario

The chart below illustrates the effect of various investment levels on the building FCI for the next 10 years. The levels of investment shown below include:

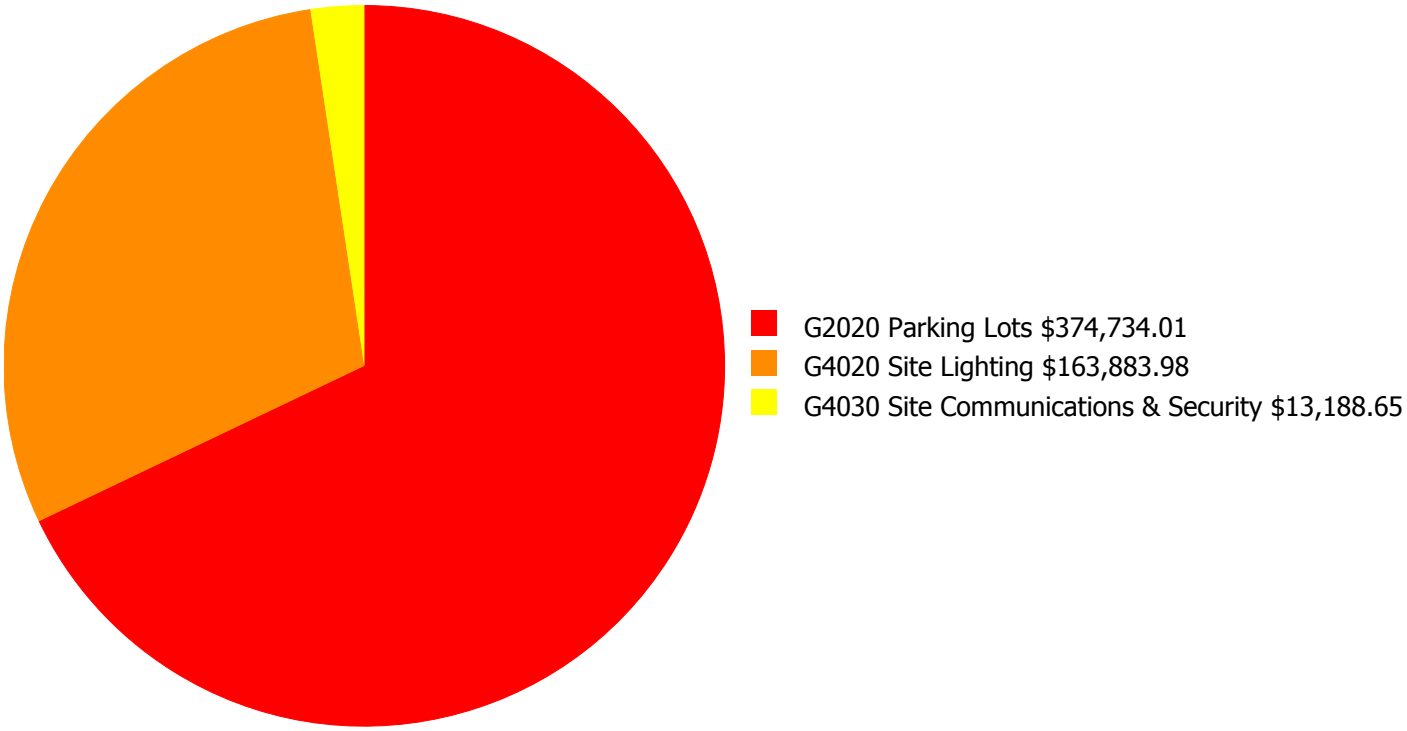
- Current FCI: a variable investment amount based on renewing expired systems to maintain the current FCI for the building
- 2% Investment: an annual investment of 2% of the replacement value of the building, escalated for inflation
- 4% Investment: an annual investment of 4% of the replacement value of the building, escalated for inflation



Year	Investment Amount Current FCI - 89.61%	2% Investment		4% Investment	
		Amount	FCI	Amount	FCI
2016	$0	$12,685.00	87.61 %	$25,370.00	85.61 %
2017	$135,558	$13,066.00	106.36 %	$26,131.00	102.36 %
2018	$0	$13,458.00	104.36 %	$26,915.00	98.36 %
2019	$0	$13,861.00	102.36 %	$27,723.00	94.36 %
2020	$0	$14,277.00	100.36 %	$28,554.00	90.36 %
2021	$0	$14,705.00	98.36 %	$29,411.00	86.36 %
2022	$0	$15,147.00	96.36 %	$30,293.00	82.36 %
2023	$0	$15,601.00	94.36 %	$31,202.00	78.36 %
2024	$0	$16,069.00	92.36 %	$32,138.00	74.36 %
2025	$0	$16,551.00	90.36 %	$33,102.00	70.36 %
Total:	**$135,558**	**$145,420.00**		**$290,839.00**	

Deficiency Summary by System

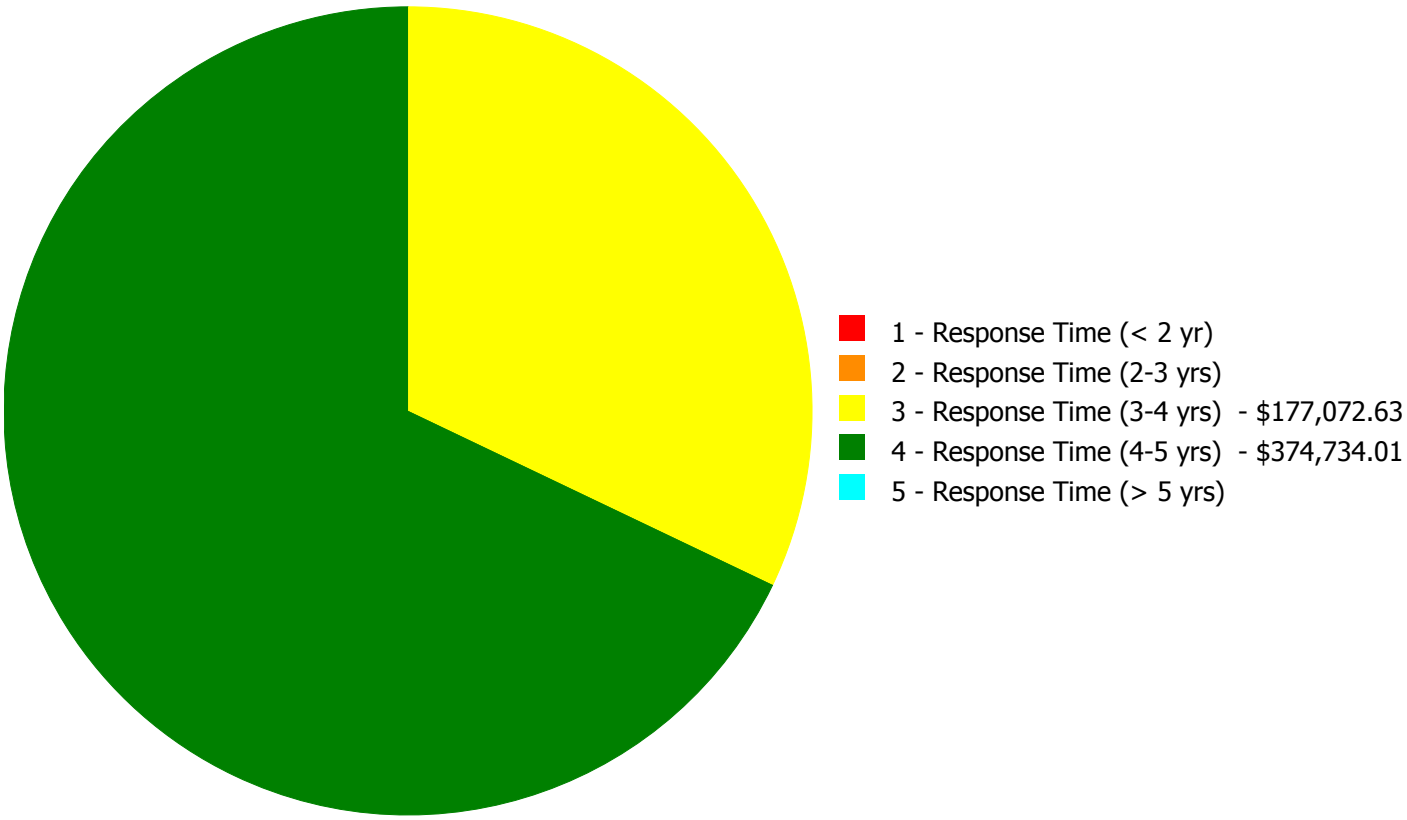
Current deficiencies included assemblies that have reached or exceeded their design life or components of the assemblies that are in need of repair. Assemblies that have reached their design life are identified as current deficiencies and assigned the distress 'Beyond Useful Life'. The following chart lists all current deficiencies associated with this facility.



Budget Estimate Total: $551,806.64

Deficiency Summary by Priority

The following chart shows the total repair costs broken down by priority. Assessors assigned deficiencies within eCOMET to one of the following priority categories:



Budget Estimate Total: $551,806.64

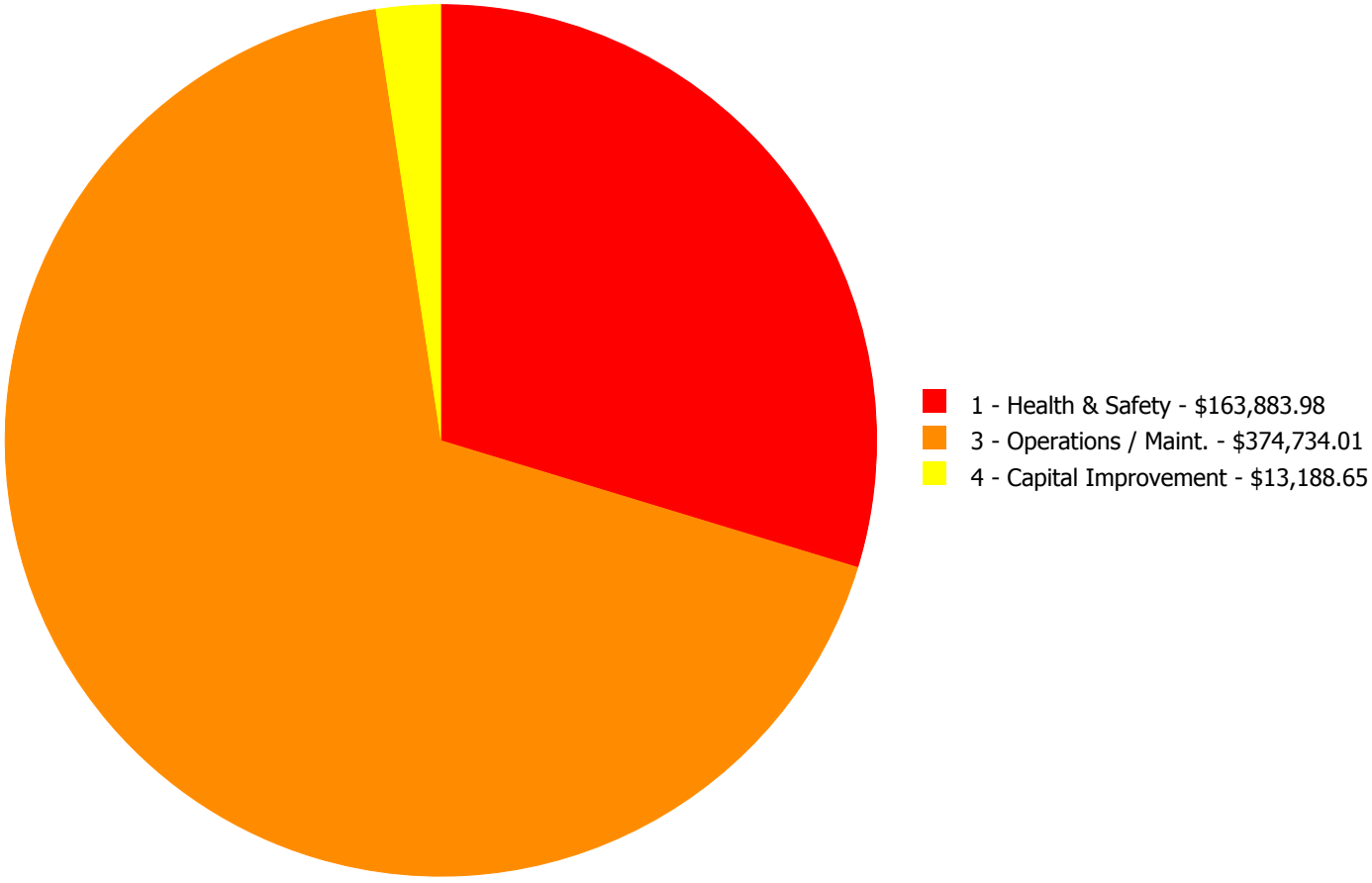
Deficiency By Priority Investment Table

The table below shows the current investment cost grouped by deficiency priority and building system.

System Code	System Description	1 - Response Time (< 2 yr)	2 - Response Time (2-3 yrs)	3 - Response Time (3-4 yrs)	4 - Response Time (4-5 yrs)	5 - Response Time (> 5 yrs)	Total
G2020	Parking Lots	$0.00	$0.00	$0.00	$374,734.01	$0.00	$374,734.01
G4020	Site Lighting	$0.00	$0.00	$163,883.98	$0.00	$0.00	$163,883.98
G4030	Site Communications & Security	$0.00	$0.00	$13,188.65	$0.00	$0.00	$13,188.65
	Total:	$0.00	$0.00	$177,072.63	$374,734.01	$0.00	$551,806.64

Deficiency Summary by Category

The following chart shows the total repair costs broken down by deficiency categories. Assessors assigned deficiencies to one of the following categories:



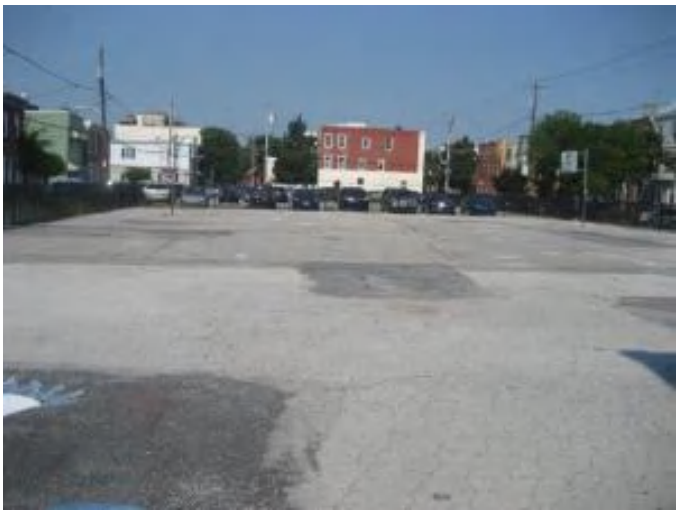
Budget Estimate Total: $551,806.64

Deficiency Details by Priority

The deficiency detail notes listed below provide additional information on identified deficiencies found within the facility.

Priority 3 - Response Time (3-4 yrs):

System: G4020 - Site Lighting



Location: Outdoor
Distress: Security Issue
Category: 1 - Health & Safety
Priority: 3 - Response Time (3-4 yrs)
Correction: Add Site Lighting - pole mounted - select the proper light and pole
Qty: 8.00
Unit of Measure: Ea.
Estimate: $163,883.98
Assessor Name: Ben Nixon
Date Created: 10/19/2015

Notes: Provide 8 pole mounted lighting fixtures.

System: G4030 - Site Communications & Security

Location: Outdoor
Distress: Inadequate
Category: 4 - Capital Improvement
Priority: 3 - Response Time (3-4 yrs)
Correction: Add Site Paging System
Qty: 2.00
Unit of Measure: Ea.
Estimate: $13,188.65
Assessor Name: Ben Nixon
Date Created: 10/19/2015

Notes: Provide two PA loud speakers facing the parking lot/playground area.

Priority 4 - Response Time (4-5 yrs):

System: G2020 - Parking Lots

Location: Yard

Distress: Failing

Category: 3 - Operations / Maint.

Priority: 4 - Response Time (4-5 yrs)

Correction: Remove and replace AC paving parking lot

Qty: 26,500.00

Unit of Measure: S.F.

Estimate: $374,734.01

Assessor Name: Ben Nixon

Date Created: 09/15/2015

Notes: Resurface asphalt play yard – damaged and failing

Equipment Inventory

The following table represents the inventory details of the inventory found in the building, which fall under the following subsystems:

No data found for this asset

Glossary

ABMA	American Boiler Manufacturers Association http://www.abma.com/
ACEEE	American Council for an Energy-Efficient Economy
ACGIH	American Council of Governmental and Industrial Hygienists
AEE	Association of Energy Engineers
AFD	Adjustable Frequency Drive
AFTC	After Tax Cash Flow
AGA	American Gas Association
AHU	Air Handling Unit
Amp	Ampere
ANSI	American National Standards Institute
ARI	Air Conditioning and Refrigeration Institute
ASD	Adjustable Speed Drive
ASHRAE	American Society of Heating Refrigerating and Air-Conditioning Engineers Inc.
ASME	American Society of Mechanical Engineers
Assessment	Visual survey of a facility to determine its condition. It involves looking at the age of systems reviewing information from local sources and visual evidence of potential problems to assign a condition rating. It does not include destructive testing of materials or testing of systems or equipment for functionality.
ATS	After Tax Savings
AW	Annual worth
BACNET	Building Automation Control Network
BAS	Building Automation System
BCR	Benefit Cost Ratio
BEP	Business Energy Professional (AEE)
BF	Ballast Factor
BHP	Boiler Horsepower (boilers)
BHP	Brake Horsepower (motors)
BLCC	Building Life Cycle Cost analysis program (FEMP)
BOCA	Building Officials and Code Administrators
BTCF	Before Tax Cash Flow

BTS	Before Tax Savings
Btu	British thermal unit
Building Addition	An area space or component of a building added to a building after the original building's year built date.
CAA	Clean Air Act
CAAA-90	Clean Air Act Amendments of 1990
CABO	Council of American Building Officials
CAC	Conventional Air Conditioning
CADDET	Center for the Analysis and Dissemination of Demonstrated Energy Technologies
Calculated Next Renewal	The year a system or element would be expected to expire based solely on the date it was installed and the expected useful lifetime for that kind of system.
Capital Renewal	Capital renewal is condition work (excluding suitability and energy audit work) that includes the replacement of building systems or elements (as they become obsolete or beyond their useful life) not normally included in an annual operating budget. Calculated next renewal The year a system or element would be expected to expire based solely on the date it was installed and the expected useful lifetime for that kind of system. Next renewal The assessor adjusted expected useful life of a system or element based on on-site inspection.
CDD	Cooling Degree Days
CDGP	Certified Distributed Generation Professional
CEC	California Energy Commission
CEM	Certified Energy Manager
CEP	Certified Energy Procurement Professional
CFC	Chlorofluorocarbon
CFD	Cash Flow Diagram
CFL	Compact Fluorescent Light
CFM cfm	Cubic Feet per Minute
CHP	Combined Heat and Power (a.k.a. cogeneration)
CHW	Chilled Water
Condition	Condition refers to the state of physical fitness or readiness of a facility system or system element for its intended use.
COP	Coefficient of Performance
Cp	Heat Capacity of Material
CPUC	California Public Utility Commission
CRI	Color Rendering Index
CRT	Cathode Ray Tube VDT HMI

CTC	Competitive Transition Charge
Cu	Coefficient of Utilization
Current Replacement Value (CRV)	CRV represents the hypothetical total cost of rebuilding or replacing an existing facility in current dollars to its optimal condition (excluding auxiliary facilities) under current codes and construction standards.
Cv	Value Coefficient
CWS	Chilled Water System
D d	Distance (usually feet)
DB	Dry Bulb
DCV	Demand Control Ventilation
DD	Degree Day
DDB	Double Declining Balance
DDC	Direct Digital Controls
Deferred maintenance	Deferred maintenance is condition work (excluding suitability and energy audit needs) deferred on a planned or unplanned basis to a future budget cycle or postponed until funds are available.
Deficiency	A deficiency is a repair item that is damaged missing inadequate or insufficient for an intended purpose.
Delta	Difference
Delta P	Pressure Difference
Delta T	Temperature Difference
DG	Distributed Generation
DOE	Department of Energy
DP	Dew Point
DR	Demand Response
DX	Direct Expansion Air Conditioner
EA	Energy Audit
EBITDA	Earnings before Interest Taxes Depreciation and Amortization
ECI	Energy Cost Index
ECM	Energy Conservation Measure
ECO	Energy Conservation Opportunity
ECPA	Energy Conservation and Production Act
ECR	Energy Conservation Recommendation
ECS	Energy Control System

EER	Energy Efficiency Ratio
EERE	Energy Efficiency and Renewable Energy division of US DOE
EIA	Energy Information Agency
EIS	Energy Information System
EMCS	Energy Management Computer System
EMO	Energy Management Opportunity
EMP	Energy Management Project
EMR	Energy Management Recommendation
EMS	Energy Management System
Energy Utilization Index (EUI)	EUI is the measure of total energy consumed in the cooling or heating of a building in a period expressed as British thermal unit (BTU) per (cooled or heated) gross square foot.
EO	Executive Order
EPA	Environmental Protection Agency
EPACT	Energy Policy Act of 1992
EPCA	Energy Production and Conservation Act of 1975
EPRI	Electric Power Research Institute
EREN	Efficiency and Renewable Energy (Division of USDOE)
ERV	Energy Recovery Ventilator
ESCO	Energy Service Company
ESPC	Energy Savings Performance Contract
EUI	Energy Use Index
EWG	Exempt Wholesale Generators
Extended Facility Condition Index (EFCI)	EFCI is calculated as the condition needs for the current year plus facility system renewal needs going out to a set time in the future divided by Current Replacement Value.
f	Frequency
F	Fahrenheit
Facility	A facility refers to site(s) building(s) or building addition(s) or combinations thereof that provide a particular service.
Facility Condition Assessment (FCA)	FCA is a process for evaluating the condition of buildings and facilities for programming and budgetary purposes through an on site inspection and evaluation process.
Facility Condition Index (FCI)	FCI is an industry-standard measurement of a facility's condition that is the ratio of the cost to correct a facility's deficiencies to the Current Replacement Value of the facilities. The higher the FCI the poorer the condition of a facility. After an FCI is established for all buildings within a portfolio a building's condition can be ranked relative to other buildings. The FCI may also represent the condition of a portfolio based on the cumulative FCIs of the portfolio's facilities.

FC	Footcandle
FCA	Fuel Cost Adjustment
FEMIA	Federal Energy Management Improvement Act of 1988
FEMP	Federal Energy Management Program
FERC	Federal Energy Regulatory Commission
FESR	Fuel Energy Savings Ratio
FLA	Full Load Amps
FLF	Facility Load Factor (usually monthly)
FLRPM	Full Load Revolutions per Minute
FMS	Facility Management System
FPM fpm	Feet per Minute (velocity)
FSEC	Florida Solar Energy Center
Ft	Foot
GPM gpm	Gallons per Minute
GRI	Gas Research Institute
Gross Square Feet (GSF)	The size of the enclosed floor space of a building in square feet measured to the outside face of the enclosing wall.
GUI	Graphical User Interface
H h	Enthalpy Btu/lb
HCFC	Hydrochlorofluorocarbons
HDD	Heating Degree days
HFC	Hydrofluorocarbons
HHV	Higher Heating Value
HID	High Intensity Discharge (lamp)
HMI	Human Machine Interface
HMMI	Human Man Machine Interface
HO	High Output (lamp)
HP Hp hp	Horsepower
HPS	High Pressure Sodium (lamp)
HR	Humidity Ratio
Hr hr	Hour

HRU	Heat Recovery Unit
HVAC	Heating Ventilation and Air-Conditioning
Hz	Hertz
I	Intensity (lumen output of lamp)
I i	Interest rate or Discount rate
IAQ	Indoor Air Quality
ICA	International Cogeneration Alliance
ICBO	International Conference of Buildings Officials
ICC	International Code Council
ICP	Institutional Conservation Program
IECC	International Energy Conservation Code
IEEE	Institute of Electrical and Electronic Engineers
IESNA	Illuminating Engineering Society of North America
Install year	The year a building or system was built or the most recent major renovation date (where a minimum of 70 of the system?s Current Replacement Value (CRV) was replaced).
IRP	Integrated Resource Planning
IRR	Internal Rate of Return
ISO	Independent System Operator
ITA	Independent Tariff Administrator
k	Kilo multiple of thousands in SI system
K	Kelvins (color temperature of lamp)
K k	Thermal Conductivity of Material
KVA	Kilovolt Ampere
KVAR	Kilovolt Ampere Reactive
kW	kiloWatt
kWh	kiloWatt hour
L	Length (usually feet)
LCC	Life Cycle Costing
LDC	Local Distribution Company
LEED	Leadership in Energy and Environmental Design
LEED EB	LEED for Existing Buildings

LEED NC	LEED for new construction
LF	Load Factor
LHV	Lower Heating Value
Life cycle	The period of time that a building or site system or element can be expected to adequately serve its intended function.
LPS	Low Pressure Sodium (lamp)
Lu	Lumen Output of a Lamp or Fixture
M	Mega multiple of millions in SI system
M&V	Measurement and Verification
MACRS	Modified Accelerated Cost Recovery System
MARR	Minimum Attractive Rate of Return
Mbtu	Thousand Btu
MCF	Thousand Cubic Feet (usually of gas)
MEC	Model Energy Code
Mm	Multiple of Thousands in I/P System
MMBtu	Million Btu
MMCS	Maintenance Management Computer System
MMI	Man Machine Interface
MMS	Maintenance Management System
MSE 2000	Management System for Energy 2000 (ANSI Georgia Tech Univ)
MW	MegaWatt
MWH MWh	MegaWatt hour
NAAQS	National Ambient Air Quality Standards
NAESCO	National Association of Energy Service Companies
NAIMA	North American Insulation Manufacturers Association
NEA	National Energy Act of 1978
NECPA	National Energy Conservation Policy Act
NEMA	National Electrical Manufacturer's Association
NERC	North American Electric Reliability Council
Next Renewal	The Next Renewal date is an override of the 'Calculated Next Renewal' date and is based upon the assessor?s visual inspection.

NFPA	National Fire Protection Association
NGPA	National Gas Policy Act of 1978
NLRPM	No Load Revolutions per Minute (speed)
Nn	Equipment or Project lifetime in economic analysis
NOPR	Notice of Proposed Rule Making from FERC
NOx	Nitrogen Oxide Compounds
NPV	Net present value in economic analysis
NREL	National Renewable Energy Laboratory
NUG	Non-Utility Generator
O&M	Operation and Maintenance
OA	Outside Air
ODP	Ozone Depletion Potential
OPAC	Off-Peak Air Conditioning
P	Present value in economic analysis
PBR	Performance Based Rates
PEA	Preliminary Energy Audit
PF	Power Factor
PID	Proportional plus integral plus derivative (control system)
PM	Portfolio Manager in Energy Star rating system
PM	Preventive Maintenance
PoolCo	Power Pool Company or Organization
POU	Point of Use
PQ	Power Quality
PSC	Public Service Commission
PSIA psia	Pounds per square inch absolute (pressure)
PSIG psig	Pounds per square inch gauge (pressure)
PUC	Public Utility Commission
PUHCA	Public Utilities Holding Company Act of 1935
PURPA	Public Utilities Regulatory Policies of 1978
PV	Photovotaic system

PV	Present Value
PW	Present Worth
PX	Power Exchange
q	Rate of heat flow in Btu per hour
Q	Heat load due to conduction using degree days
QF	Qualifying Facility
R	Electrical resistance
R	Thermal Resistance
RC	Remote controller
RCR	Room Cavity Ratio
RCRA	Resource Conservation and Recovery Act
Remaining Service Life (RSL)	RSL is the number of years service remaining for a system or equipment item. It is automatically calculated based on the difference between the current year and the 'Calculated Next Renewal' date or the 'Next Renewal' date whichever one is the later date.
Remaining Service Life Index (RSLI)	RSLI is defined as a percentage ratio of the remaining service life of a system. It usually ranges from 0 to 100
REMR	Repair Evaluation Maintenance Rehabilitation (REMR) is a scale used to objectively rank systems based on their condition
Renewal Schedule	A timeline that provides the items that need repair the year in which the repair is needed and the estimated price of the renewal.
RH	Relative Humidity
RLA	Running Load Amps
RMS	Root Mean Square
RO	Reverse Osmosis
ROI	Return on Investment
RPM	Revolutions Per Minute
RTG	Regional Transmission Group
RTO	Regional Transmission Organization
RTP	Real Time Pricing
SBCCI	Southern Building Code Congress International
SC	Scheduling Coordinator
SC	Shading Coefficient
SCADA	Supervisory Control and Data Acquisition Systems

SEER	Seasonal Energy Efficiency Ratio
SHR	Sensible Heat Ratio
Site	The grounds and utilities roadways landscaping fencing and other typical land improvements needed to support the facility.
Soft Cost	An expense item that is not considered direct construction cost. Soft cost includes architectural engineering financing legal fees and other pre-and-post construction expenses.
SOx	Sulfur Oxide Compounds
SP	Static Pressure
SP SPB	Simple Payback
SPP	Simple Payback Period
SPP	Small Power Producers
STR	Stack Temperature Rise
SV	Specific Volume
System	System refers to building and related site work elements as described by ASTM Uniformat II Classification for Building Elements (E1557-97) a format for classifying major facility elements common to most buildings. Elements usually perform a given function regardless of the design specification construction method or materials used. See also Uniformat II.
T	Temperature
T	Tubular (lamps)
TAA	Technical Assistance Audit
TCP/IP	Transmission Control Protocol/Internet Protocol
TES	Thermal Energy Storage
THD	Total Harmonic Distortion
TOD	Time of Day
TOU	Time of Use
TQM	Total Quality Management
TransCo	Transmission Company
U	Thermal Conductance
UDC	Utility Distribution Company
UL	Underwriters Laboratories
UNIFORMAT II	The ASTM UNIFORMAT II Classification for Building Elements (E1557-97) a format for classifying major facility components common to most buildings.
USGBC	US Green Building Council
v	Specific Volume

V	Volts Voltage
V	Volume
VAV	Variable Air Volume
VDT	Video Display Terminal
VFD	Variable Frequency Drive
VHO	Very High Output
VSD	Variable Speed Drive
W	Watts
W	Width
WB	Wet bulb
WH Wh	Watt Hours
Year built	The year that a building or addition was originally built based on substantial completion or occupancy.
Z	Electrical Impedance