

Green Capital Needs Assessment and Replacement Reserve Analysis

Prepared for:

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Southwest Terrace Apartments
CHFA # 87028D

Windsor Locks Housing Authority
Windsor Locks, CT

April 20, 2013

Final Report




Southwest Terrace Apartments

120 Southwest Avenue
Windsor Locks, CT 06096

Info Zoom In Zoom Out Pan Initial Map

Once map has loaded, select info tool & click on your property to display flood & census data



The map shows a street grid in Windsor Locks, CT. A red crosshair marks the location of Southwest Terrace Apartments at the intersection of Southwest Avenue and Guilford Street. Surrounding streets include Andover Rd, Cornwall Dr, Guilford St, Stevens St, John St, Pershing Rd, Green Manor Ter, Greenwood Rd, Greenview Ln, Laurel Rd, Walnut Cir, Avon St, Old County Rd, Fairfield Dr, Enfield St, and Darrien Dr. The map is powered by Mapitude for the Web.

PROPERTY INFORMATION

FLOOD DATA:

COMMUNITY: 090042
PANEL: 0217F
ZONE: X
DATE: 20080926
Year/Month/Day

CENSUS DATA:

TRACT : 4763
NAME: 09003476300
POPULATION: 5114
MEDIAN AGE: 43.5999984741211
HOUSING UNITS: 2266
UNITS OCCUPIED: 2197
UNITS VACANT: 69

Southwest Terrace Apartments

120 Southwest Avenue
Windsor Locks, CT 06096

Zone X = Outside the 500-year floodplain and
Outside the 1% and 0.2% annual chance floodplains

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HOW TO READ THIS REPORT

The report is divided into two sections: "Findings and Recommendations" and "Supporting Data".

Findings and Recommendations: The three elements comprising this section constitute the main content of the report. A comprehensive list of the recommended green options and their benefits, and a snapshot of key energy findings, are included in the Executive Summary. Additional detail regarding the property's existing conditions, current and future capital needs, and green recommendations are illustrated in the narrative and photo pages.

Supporting Data: These nine sections contain the support data and calculations used in determining the feasibility of the green recommendations. Hard costs estimates and replacement/repair timing are presented in the capital needs worksheets. The Capital Needs Summaries and Replacement Reserve Analyses highlight the total 20-year capital costs for both the conventional and green scenarios pitted against current funding circumstances. Cost-benefit analyses are included in the Simple Payback and Life Cycle Cost "cut sheets" at the end of the report.

Executive Summary

Overview and Goals

This Green Capital Needs Assessment (GCNA) has been undertaken on behalf Southwest Terrace and Connecticut Housing Finance Authority (CHFA). It is aimed at determining the development's current and prospective physical circumstances, on both a traditional and green basis. A traditional CNA focuses on those capital activities that reasonably can be expected to ensure that a property is viable and in good condition over a twenty-year horizon. In a traditional CNA, it is common for On-Site Insight (OSI) to informally comment on maintenance practices, or suggest discretionary upgrades that might affect operations, marketability, or occupant well being. This GCNA is aimed at more rigorously and more formally identifying green alternatives to conventional replacement of major components and systems. It offers options aimed at helping:

- improve energy and water efficiency,
- reduce operating and capital costs through the use of durable materials and improved maintenance,
- safeguard indoor environmental quality (IEQ) for residents, and
- reduce the property's environmental impact.

Conventional Summary

Future capital actions are based on useful life expectations and assume continued effective maintenance and physical management. The timing of actions by system (including quantities and costs) is also presented in the Capital Needs Worksheet. Costs for the twenty-year plan total \$1,335,991 in current dollars (\$39,900/unit), or \$1,784,283 (\$44,607/unit) in inflated dollars. Current reserves would be outpaced starting in Year 5. However an infusion of \$800,000 in Year 1, coupled with contribution increases of \$120 per apartment in Years 2 through 6 fully funds the plan.

Executive Summary

Green Summary

Future capital actions are based on useful life expectations and assume continued effective maintenance and physical management. The timing of actions by system (including quantities and costs) is also presented in the Capital Needs Worksheet. Costs for the twenty-year Green plan total \$1,634,595 in current dollars (\$40,865/unit), or \$2,035,555 (\$50,889/unit) in inflated dollars. Current reserves would be outpaced throughout the entire plan. However an infusion of \$1,100,000 in Year 1, coupled with contribution increases of \$120 per apartment in Years 2 through 6 fully funds the plan.

We see a number of sensible green opportunities, now and in the future, to replace existing elements with more durable and/or environmentally friendly materials and technology. In both the narrative and detailed capital needs worksheets that follow, conventional and green capital activities are presented in parallel. Capital needs summaries are presented separately for conventional and green models. The green opportunities described in the plan fall into one of two categories: energy and water conservation measures (EWCMs), or green measures (GMs), expanded in detail below:

Energy and Water Conservation Measures (EWCMs):

In the report, 3 energy and water conservation measures (EWCMs) are identified. Additional measures are discussed within the report, but not shown with calculated savings due to the limited amount of utility and cost information.

Green Measures (GMs):

The report identifies 5 Green Measures (GMs). Green measures are replacements of existing materials and systems that do not have a direct impact on energy consumption; however, they represent opportunities to reduce capital and operational expenditures in the future due to increased durability, enhanced performance, and increased expected useful life (EUL) potential. Additionally, if implemented properly, GMs can improve indoor environmental quality and can benefit resident and staff health, safety, and well-being.

Executive Summary

The life cycle costs for the GMs are calculated in the attached worksheets with the comparative life cycle cost for the conventional replacement alternatives. Other GMs included in the plan do not represent enhanced performance or extended expected useful lives, and therefore the life cycle costs for these GMs are not calculated. Many of the projected savings are based on certain performance and EUL criteria for the respective systems and materials. Several factors may impede upon the expected performance and may skew the estimated savings. In this case, the savings presented in the plan are estimated and cannot be guaranteed.

Building Modeling Methodology

This report uses an energy model created in TREAT to determine the energy loads (electric and fossil fuel uses including heating, domestic hot water, and non-heating systems) for this property. The TREAT model is based on building-specific construction, HVAC systems, and other building systems (i.e. lighting, appliances, etc.) as identified by the inspection team. The energy model also incorporates 12 months of utility bills, and matches weather data to the utility billing period.

Using the SUNREL™ energy simulation software developed by the National Renewable Energy Laboratory (NREL), TREAT calculates energy uses on an hourly basis (again factoring in weather/climate, existing HVAC systems, and internal gains) for an entire year. The result produces calculated energy use for the property, and proposed energy savings for identified measures. The energy savings are shown both independently and with full interaction of all measures. Additional measures such as water usage, which is currently not modeled in TREAT has been presented using OSI's existing utility models. Also, since TREAT evaluates the building as a whole, it is possible that measures reduce electric consumption, could also show an increase in heating requirements (i.e. lighting reduction reduces heat typically produced by the original lighting system and in turn would require an increase to the heating load). The calculated loads (electricity, natural gas) are reconciled against billed utility loads within a 10% margin.

Executive Summary

A Note on NPV

Net present value (NPV) is the difference in total life cycle costs between the conventional recommendation and the green recommendation. The EWCs and GMs that carry a negative NPV are viewed as cost-prohibitive, despite potential environmental benefits or additional energy savings. In this report, OSI does not recommend measures that carry a negative NPV.

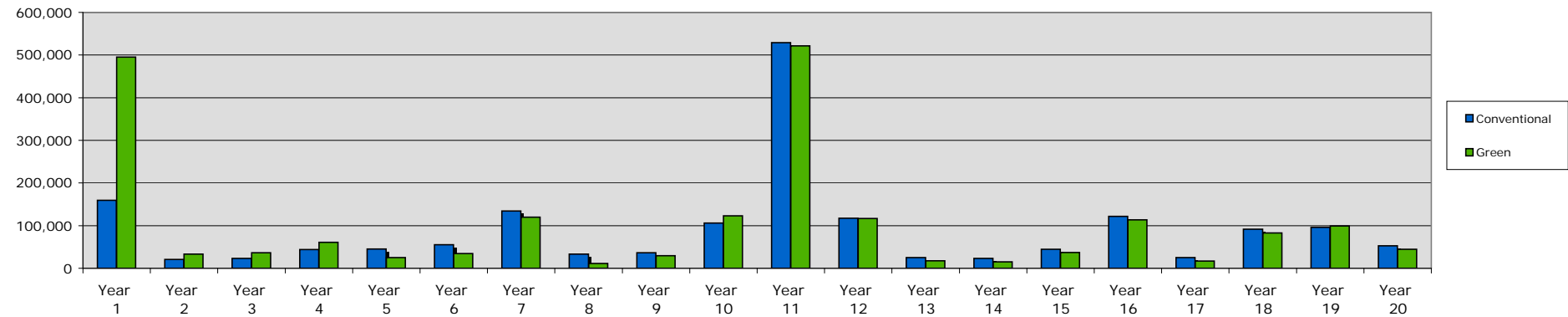
Executive Summary

Dashboard

Property Data

Location:	Windsor Locks, CT
Year Built:	1987
Number of Units:	40
Number of Buildings:	1

Comparison of Capital Needs - Conventional vs. Green



Environmental Impact

(Total Carbon Release Based on Current Annual Energy Usage)

Building Square Footage:	41,400
Resident Population (estimated):	44

	BTUs/yr	Conversion	lbs CO ₂	lbs CO ₂ / Res
Gas	0	x 11.023100	0	0
Oil	0	x 11.023100	0	0
Electricity	0	x 1.582917	0	0
Total	0		0	0

Replacement Reserve Analysis

Conventional

Plan #1: Capital costs exceed reserves in Years 5 through 20
Plan #2: Infusion of \$800K; increase in reserves of \$120/unit/year in Years 2 through 6.

Green

Plan #1: Capital costs exceed reserves in each year of the plan.
Plan #2: Infusion of \$1.1M; increase in reserves of \$120/unit/year in Years 2 through 6.

Health and Safety

Hazardous Materials

	Identified	Location / Notes
Lead Based Paint (LBP):	none	n/a
Asbestos Containing Materials (ACMs):	none	n/a
Mold:	none	n/a

Indoor Ventilation

0

Indoor Air Quality (IAQ)

	Design Specification	Actual Read	Notes
Air Flow Rate	400 cfm/apt	Not measured	0
Thermal Comfort	68-77F	70-72F	Two Apts
Carbon Monoxide	0	0	Mech & Comm Rms
Carbon Dioxide	<1000	1234-1322 ppm	Closed windows

Executive Summary

Green Improvement Plan

Measure	Upfront Cost	EUL	Simple SIR ¹	Incremental Cost ²	Green NPV ⁴	Annual Utility Savings								Total \$	Recommended Timing
						Electric KWh	\$	Gas Therms	\$	Oil Gallons	\$	Water & Sewer Gallons	\$		

Recommended EWCMs (Based on Financial Analysis)

Interactive Group															
EWCM 3 Energy Star Refrigerator	720	15	0.39	50	156	135	19							190	Year 9
Interactive Group Total ⁵	720			50			19							19	
EWCM 1 Induction Lighting	3,500	30	12.42	3,500	20,247	10,399	1,449							1,449	Immediate
EWCM 2 High Efficient Pump Motors	5,570	25	0.29	170	802	470	66							66	Immediate
EWCM Subtotal	9,790			3,720		10,869	1,533	0	0	0	0	0	0	1,533	

Recommended GMs (Based on Financial Analysis)

GM 2 Linoleum-Common Floors	59,659	25		5,424	2,553	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Year 7
GM 3 Linoleum - Apartment Floors	119,618	25		10,874	5,119	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Immediate
GM 4 FSC Certified Wood Cabinets	106,425	30		7,425	2,811	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Immediate
GM Subtotal	285,702			23,723		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	

Total	295,492			27,443		10,869	1,533	0	0	0	0	0	0	1,533	
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Optional Actions

GM 1 Cement Fiberboard Siding	51,723	50		49,897	(9,138)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Year 18
GM 5 Stone Countertops	39,000	30		21,594	(8,360)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Year 11

Notes:

- Simple SIR is calculated as (Total Annual Savings * Estimated Useful Life) / Upfront Cost.
- Incremental Cost is the difference in cost between the green and conventional alternatives.
- Green SIR (Savings to Investment Ratio) is a relative measure that reflects the ratio of total savings to total investment of Green vs. Conventional. Unlike Simple SIR, this calculation takes into account maintenance costs, inflation, discounting, and differences in expected useful life.
- Green NPV is the net present value of installing a green vs. conventional product.
- Interactive group total recognizes full interaction of all measures based on the TREAT model.

Narrative

Southwest Terrace is an affordable housing for elderly residents. The building, which was a school and converted into its current configuration in 1987, contains a total of 40 apartments: 7 efficiencies (studios or singles), 29 one-bedrooms, and 4 one-bedroom accessible units. All apartments can be accessed through the common hallways, and each unit also has a direct-entry door (a second egress out of the bedroom/sleeping area. A portion of the facility has been recently converted to serve as the central office for the Housing Authority; this area which includes offices and meeting spaces was excluded from the scope of this assessment.

Site & Handicap Accessibility

Site Surface

Southwest Terrace is located on a large parcel of land in a residential neighborhood of Windsor Locks, CT. The site includes asphalt-paved parking areas, a mix of asphalt-paved and concrete walkways that encompass the building, pole-mounted high intensity discharge (HID) lighting along the driveways and parking areas, and surrounding lawns with flowerbeds, bushes, and trees.

Parking and Walkways

Existing conditions	Capital needs	Green alternative
Cracks and some potholes were observed in sections of the asphalt paving. There are also signs of recent paving repairs. The concrete walkways appear to be in good condition.	The costs to resurface the driveways, parking areas, and walkways are shown in the first year of the plan. Future repairs (crackfilling, sealcoating, and parking lot re-striping) are shown every five years beginning in Year 6. The plan also includes an allowance for anticipated concrete repairs in Year 20.	For future repaving, consider a lighter colored porous asphalt material. The lighter asphalt material decreases heat retention associated with darker asphalt materials and therefore reduces the heat island effect and allows for a cooler, more comfortable site for the residents and visitors alike.

Narrative

Existing conditions	Capital needs	Green alternative
		<p>Using a porous asphalt material also helps to reduce the heat island effect and similar to open pavers (proposed for the parking areas) helps to promote adequate drainage.</p> <p>No green alternative is carried for the crack-fill and sealcoat work; however, it is recommended that a low volatile organic compound (VOC) and/or recycled-content paint (content should be at least 50%; VOCs should not exceed 250 grams per liter) is used during the restriping process.</p>

Exterior Lighting

Existing conditions	Capital needs	Green alternative
There are pole-mounted HID (CFLs), used to provide lighting throughout this site, appear to be in good condition.	The lamps and ballasts are to be replaced using existing operating accounts	The green alternative would be to replace the HID lighting with comparably-sized induction lighting, provides a cost-effective lighting alternative. (See EWCM 1).

Narrative

Landscaping		
Existing conditions	Capital needs	Green alternative
The site features a well-maintained surrounding lawn and garden beds. The landscaping was recently upgraded.	The plan includes an allowance for replanting and pruning in Year 19.	The green alternative would be to replace the existing landscaping with a Xeriscape, which employs native and adaptive plantings that require significantly less water and fertilizers than traditional lawns and garden beds.

Narrative

Handicap Accessibility / Section 504 Analysis

As part of this assessment, the exterior areas and dwelling units at the development were examined for compliance with the requirements of the Uniform Federal Accessibility Standards (UFAS). In general, the units have compliant accessible designs. One of the 4 designated units was included in the inspection sample.

Circulation, Interior Common Areas, and Units

Existing conditions	Capital needs	Green alternative
Common areas, including designated parking spaces, interior circulation, and community spaces have compliant designs. The designated units are mostly compliant. The bathroom drain line (at the wall-hung sink) is not insulated.	The bathroom sink drain line is to be insulated (adding a sleeve); this is to be addressed using existing operating accounts.	No green options shown.

Narrative

Mechanical Room

The central mechanical room contains the heating system and the common domestic hot water (DHW) system. Each apartment has its own DHW tank which is discussed in the Dwelling Units report section. The heating system consists of a pair of natural gas-fired atmospheric Burnham boilers each with an energy input of 528 MBH. A central controller uses outside air and return water temperature inputs to adjust the boiler output to match the daily heating requirement. The heating system also has a pair of in-line 2 horsepower (hp) circulating pumps to distribute the hydronic heat throughout the facility. The central DHW system serves only the common facilities (community kitchen, restrooms, and laundry); it consists of a natural gas-fired AO Smith commercial DHW tank and a pair of fractional horsepower in-line pumps.

Boiler Plant and Controls

Existing conditions	Capital needs	Green alternative
The boiler plant appears to be in good condition and is expected to continue to provide reliable performance throughout the first half of the plan. The control system also appears to be in good operating condition.	The plan includes the cost to replace the boilers in Year 10, after 25 years of use. The control system is also to be replaced concurrent with the boilers.	Condensing boilers are the green alternative to the existing boilers, resulting in a higher combustion efficiency and reduced natural gas consumption. The proposed condensing heating boilers include direct combustion air supply (ducted to each boiler's combustion chamber) and corrosion-resistant flues. The resultant flue gases are also low temperature (below 100°F) and require either stainless steel or heat-resistant plastic (CPVC) flues to address corrosive flue vapors.

Narrative

Hydronic Circulating Pumps

Existing conditions	Capital needs	Green alternative
Both pumps appear to be in good condition and should provide reliable performance throughout the first half of the plan. The pumps have standard efficiency motors.	The plan includes the cost to replace the pumps in Year 10.	Both pumps are shown being replaced with high efficiency pumps and pump motors. The increased motor efficiency will consume less electricity without sacrificing pump performance. See EWCM 2.

Domestic Hot Water

Existing conditions	Capital needs	Green alternative
The existing DHW tank appears to be at the mid-point of its useful life and is expected to continue to perform reliably throughout the first half of this plan	The plan includes the costs to replace the DHW tank and pumps in Year 10, after 20 years of use.	The green alternatives include replacing the DHW tank with a comparably-sized condensing DHW tank. Similar to the proposed condensing boiler plant, the condensing DHW tank has a higher combustion efficiency, which translates to lower natural gas usage to meet the DHW load. The pumps are also to be upgraded with high efficiency pump motors. See EWCM 2.

Narrative

Building Mechanical and Electrical Systems

The major building systems include waste management, fire suppression, distribution piping systems for hydronic heat, domestic hot and cold water, sanitary wastewater, and natural gas services, as well as heating and ventilation, electrical, fire detection, and security and elevators.

Electrical

Existing conditions	Capital needs	Green alternative
<p>The common hallway has a series of fluorescent light fixtures which include emergency ballasts, designed to provide up to 2 hours of emergency electrical power for lighting during a power outage.</p> <p>The central fire alarm system is governed by a Zans Gamewell fire alarm control panel (FACP), and the main entrance has intercom panel to help control visitor access throughout this facility.</p>	<p>The emergency ballasts are to be maintained from existing operating accounts.</p> <p>The intercom panel appears to be original and is to be replaced in the first year of the plan. The fire alarm system was recently upgraded with a new fire alarm control panel; this system is expected to perform reliably throughout most of the plan and is to be upgraded in Year 16.</p>	<p>No green alternatives shown.</p>

Narrative

Building Architectural Systems

Building Exterior

Southwest Terrace is a single level apartment building established in a converted school facility. The exterior walls are clad with brick and vinyl siding. The roof has both flat and pitched surfaces, all of which are covered with a rubber membrane. Windows have double glazing and vinyl frames. In addition to the common doors (main entrance and hallway egress), each apartment has its own direct-entry door.

Siding		
Existing conditions	Capital needs	Green alternative
Several areas of mortar loss and step cracks were observed along the upper portion of the brickwork, at the roof overhang metal supports. The vinyl siding appears to be in good condition.	The plan includes the costs for initial brickwork repair (repointing) in Year 1, with a future repair cycle anticipated in Year 11. The plan also includes the cost to power wash the vinyl siding in Years 3 and 13. Replacement of the vinyl siding is shown toward the end of the plan in Year 18.	Cement fiberboard is shown as a possible green alternative to vinyl siding. This product has more of a wood-like appearance, and is also resistant to water, fire, and insects, and as well, has a long useful life. This opportunity, evaluated in GM 1 however does not appear to be a cost-effective alternative to the vinyl siding.

Narrative

Doors		
Existing conditions	Capital needs	Green alternative
Most of the doors (common and unit) appear to be in good condition. The unit doors also include a storm door.	The plan includes the cost to replace the storm doors starting in Year 6. The service door is to be replaced in Year 10 and the common doors are shown being replaced at the end of the plan in Year 20.	<p>The green option would be to replace the existing common and unit doors with fiberglass models. Fiberglass doors are more durable to metal or wood doors since they are resistant to rusting, impact-related damage, and deterioration associated with wood or metal options. Not only are they more durable, but they also lower operations costs since they don't require periodic painting, and therefore have a lower life cycle cost than the traditional alternatives.</p> <p>Insulated fiberglass doors often have higher insulating qualities compared to conventional flush wood or metal models, and therefore reduce heat loss.</p>

Narrative

Windows

Existing conditions	Capital needs	Green alternative
Vinyl framed double-glazed windows appear to be in good condition. None of these windows had signs of fogging (an indication of failed window glazing seals allowing moisture to get trapped in between the glazing layers).	Based on the age of the windows, the plan includes an allowance for anticipated glazing replacement (for possible window seal failure) starting in Year 1. Window replacement is shown in the second half of the plan in Year 12.	Replacement of the windows with fiberglass-framed, double-glazed models with a low-E (low emissivity) coating, and a gas fill between the glazing layers. The low-e coating will reflect heat from entering the building during the summer, and can reflect radiant infrared energy from escaping the building during the heating months. A gas fill (such as argon) between the glazing layers will reduce heat transfer through the glass similar to the low-e coating. It is recommended that the windows be monitored and appropriately caulked going forward to keep air infiltration to a minimum.

Narrative

Roof		
Existing conditions	Capital needs	Green alternative
The building has mix of flat and pitched roof sections with each covered with a rubber membrane and downspouts for roof drainage. There were no signs or reports of active roof leaks. The listed insulation level in the attic is R-38 which is excellent by today's standards and represents the green alternative for roof insulation.	Replacement of the existing roof covering is shown in Year 11.	The current roof is considered to be the green alternative.

Note:

We do not, as yet, recommend a 'green vegetative roof' – the installation of soil and vegetation on a waterproof membrane - as an option. While these may also reduce roof temperatures and cooling loads, and reduce stormwater run-off, they are much more expensive than conventional systems, and we see too many questions about performance and maintenance.

Narrative

Building Interior Common Areas

The building interior includes the common hallways, a community room with a kitchenette, a management office (currently used for storage), a public laundry facility, and a set of public restrooms. Walls are mostly painted drywall throughout, with a few areas that have wallpaper. Ceiling finishes are a mix of ceiling tiles and painted surfaces. Allowances are shown throughout the plan for as-needed repairs and painting. As a green measure, the plan specifies low-VOC or recycled-content paint for painting cycles at no additional premium. Most of the common areas with the exception of the restrooms have vinyl composite tile (VCT) floor covering. The restrooms have ceramic tile flooring, considered to be the green alternative. Interior lighting has been recently upgraded to energy efficient fluorescent fixtures and LED exit signs (through a recent utility-sponsored program).

Flooring

Existing conditions	Capital needs	Green alternative
The VCT throughout the building is in good condition, with no appreciable signs of significant wear or damage.	The VCT is to be replaced in Year 7 of the plan. The ceramic tile restroom flooring is to be maintained as an operating concern throughout the plan.	Replacement of the VCT with a linoleum product is considered to be the green alternative. Linoleum is a natural product (containing linseed oil, powdered wood or cork, ground limestone, resin binders, natural jute backing), which has been found to be more durable than its vinyl tile counterpart. Linoleum tile hardens over time, and therefore becomes less susceptible to scratching and cracking. Installation of linoleum has a lower annual life cycle cost than existing flooring. (See GM 2).

Narrative

Common Appliances, Toilets, and Furnishings

Existing conditions	Capital needs	Green alternative
<p>The community kitchen includes a frost-free refrigerator, wood cabinets, and laminated particleboard countertops. The public restrooms include low flush toilets (1.6 gallon per flush or gpf). Furnishings throughout the common areas include tables, chairs, and audio-visual equipment. The laundry room has leased equipment, which includes two top-loading washers and a pair of electric dryers.</p>	<p>The plan includes an allowance to replace the furnishings and refrigerator in Year 9. The kitchenette cabinets and countertops are to be maintained as operating concerns. The cost to replace the toilets is shown in Year 10. The laundry equipment replacement is to be addressed as an operating concern.</p>	<p>The refrigerator could be replaced with an Energy Star-rated refrigerator to reduce electric consumption. This opportunity is shown in EWCM 3. The low flush toilets could also be replaced with high efficient toilets (1.28 gpf). These toilets will reduce water consumption. The laundry equipment could also be upgraded with a pair of front-loading washers to replace the existing top-loading washers. The front-loading washers use less water (as much as 40%), resulting in lower water usage and lower clothes drying-related costs.</p>

Narrative

Dwelling Units

During the course of the assessment, OSI inspected 3 units which represented all unit types and conditions. A sample of this size is felt to be sufficient given the age, tenancy, design, and location of the development. Additional information about units and capital replacements was obtained from discussions with residents during inspections and additional capital history forms submitted by management.

Finishes

Existing conditions	Capital needs	Green alternative
Each unit features painted walls and ceilings, hollow core interior and closet doors. Living areas, kitchens, and bathrooms have VCT flooring. The finishes were found to be in good condition, including some of the VCT that is original.	Apartment repainting and any entry, interior or closet door replacement are to be addressed as operating concerns. VCT replacement is shown annually starting in Year 1.	The existing VCT is to be replaced with a linoleum product. This product will offer a substantially longer useful life than the VCT. Additionally, the linoleum product should help to improve indoor air quality (IAQ) by being easier to clean and maintain, and being significantly more resistant to dust accumulation (see GM 3).

Narrative

Bathrooms

Existing conditions	Capital needs	Green alternative
Bathrooms have an enamel steel bathtub with a ceramic tile tub surround, and an anti-scald mixing valve. Ventilation is provided via a ceiling-mounted exhaust fan. Low-flow showerheads (2.0 gallons per minute (gpm) or less) are in place, and existing toilets are rated at 1.6 gallons per flush (gpf). Bathrooms also have wall-hung sinks.	The plan includes allowances to replace general accessories and to reglaze bathtubs, starting in Years 1 and 4, respectively. Sink replacement is also shown starting in Year 4. Exhaust fans are shown being replaced in Year 10. The plan also shows toilet replacement starting in Year 10.	<p>The one viable green option for bathrooms is to replace the existing 1.6 gpf toilets with high efficiency 1.28 gpf toilets, shown in Year 11.</p> <p>Bathrooms could also be upgraded with variable speed exhaust fans, designed to react to humidity (moisture) level variations. These fans are controlled by a humidistat and will automatically adjust their fan speed and exhaust rate to match the variations in humidity levels.</p>

Narrative

Kitchens

Existing conditions	Capital needs	Green alternative
Kitchens have plywood cabinets, laminated particleboard countertops, frost-free refrigerators, ceiling exhaust fans, and 20-inch electric ranges.	Cabinet and countertop replacement is shown starting in Year 1 with a future countertop replacement shown starting in Year 11. The plan shows refrigerator replacement starting in Year 1, with a second cycle for refrigerators starting in Year 16. Range replacement starts in Year 5. The exhaust fans are to be replaced in Year 5.	<p>The refrigerators could also be replaced with comparable Energy Star rated units, which significantly reduce energy consumption.</p> <p>Replacing the existing cabinets with comparable FSC-certified wood cabinets will reduce the existence of formaldehyde gases (from adhesives used with laminated particleboard products), and as well provide a product that has a longer useful life. (See GM 4).</p> <p>Stone countertops were considered as the green alternative to the existing countertops, primarily because of a longer useful life. However this opportunity was not shown to be cost-effective. (See GM 5).</p>

Narrative

Unit Mechanical and Electrical

Existing conditions	Capital needs	Green alternative
<p>Hydronic baseboard sections are used throughout the apartments, each controlled by a wall-mounted thermostat (one per apartment). Each apartment has an electric-heated DHW tank.</p> <p>Additionally, each apartment has its own circuit breaker panel and there hardwired and battery-powered smoke detectors in each apartment.</p>	<p>The plan includes the costs to start replacing the DHW tanks starting in Years 4 and 16, and baseboard sections starting in Year 4.</p> <p>The existing thermostats are to be replaced in the 10.</p> <p>Future replacement of all apartment smoke detectors is shown in Years 5 and 15.</p>	<p>The green plan includes the cost to upgrade each apartment with a programmable thermostat to govern hydronic baseboard heat. These thermostats, when properly used can control space temperatures to match occupant's preference, including a night setback and time-of-day use.</p>

Narrative

Health and Safety

Resident and Staff Concerns:

As part of the assessment, the property was examined for potential resident and staff health and safety concerns.

Lead-Based Paint and Asbestos:

- OSI did not conduct any testing for asbestos containing material (ACMs) or for lead-based paint (LBP). Therefore, this section OSI did not conduct any testing for asbestos containing material (ACMs) or for lead-based paint (LBP). Therefore, this section should not be interpreted as a comprehensive or conclusive identification of ACMs or LBP. No areas or components containing LPBs or ACMs were identified or reported.

Other Health and Safety Issues:

- Domestic hot water temperatures were recorded at 120°F. DHW temperatures should be in the range of 110°F to 130°F; at temperatures of 140°F, burns (scalding) can occur.

Indoor Air Quality

Ventilation (Common Areas and Apartments):

This building does not have any mechanically supplied fresh air; instead each occupied space has a series of operable windows to provide fresh air. There is a series of rooftop exhaust fans used to remove stale air from kitchens and bathrooms. The exhaust fans are ducted through the roof.

Narrative

Temperature, Humidity, Carbon Dioxide (CO₂)

Space temperature and humidity are the key components for comfort level. Temperature and relative humidity was measured in two apartments. The temperature of the conditioned spaces ranged between 70°F to 72°F db, and the humidity ranged from 26.8% to 32.8% rH.

Carbon dioxide levels were measured during the assessment, and are included in Table B below. Carbon monoxide was also tested during the assessment and is included in Table C below.

Mold and airborne concerns:

No mold was observed on the interior of the apartments, nor in any common spaces at the property.

Reporting:

The tables below describe actual conditions versus design specifications for flow rate and carbon dioxide. The “Notes” column describes a possible reason for a discrepancy between these values where applicable.

Table A. Flow Rate:

Conditioned Space	Actual Read	Design Specification	Notes
Hallways	Not measured		N/A No mechanical ventilation
Community Room	Not measured		N/A No mechanical ventilation
Apartment	Not measured		N/A No mechanical ventilation

Narrative

Table B. Carbon Dioxide:

Space	Actual Read	Design Specification	Notes
Apartment W16	1234 ppm	< 1,000 ppm	Windows closed
Apartment N9	1322 ppm	< 1,000 ppm	Windows closed

Table C. Carbon Monoxide:

Conditioned Space	Actual Read	Design Specification	Notes
Central Mechanical Room	0 ppm	≈0 ppm	Unconditioned space
Community Room	0 ppm	≈0 ppm	Conditioned space

Narrative

Capital Needs Summary, Replacement Reserve Analysis - *Conventional*

Future capital actions are based on useful life expectations and assume continued effective maintenance and physical management. The timing of actions by system (including quantities and costs) is also presented in the Capital Needs Worksheet. Costs for the twenty-year plan total \$1,335,991 in current dollars (\$39,900/unit), or \$1,784,283 (\$44,607/unit) in inflated dollars.

Two approaches to funding the property's physical needs through replacement reserves are presented in the Replacement Reserve Analysis section of the report, with accompanying graphics.

Plan #1 presents current capital funding circumstances. The development is estimated to have a replacement reserve balance of \$249,458 on December 31, 2012. There was no available information regarding annual contributions at the time of the assessment. From OSI's experience, this is seen as an inadequate funding level for a property of this age and complexity. For planning purposes here, these contributions are shown being indexed at 3% for inflation going forward. Under this scenario, the property's needs exceed reserves starting in Year 5.

Plan #2, as one alternative, is aimed at fully meeting projected needs through Year 20. It starts with the same annual funding assumptions outlined above. The plan includes an infusion of \$800,000 in Year 1 to help fund the near term capital needs. Additionally, plan calls for an increase in annual contributions of \$120/unit (\$10/unit/month) in Years 2 through 6. Contributions are then indexed at 3%. This is one hypothetical option, and is included for illustrative purposes only. No assumptions are made about its viability; various alternatives might achieve similar results.

Narrative

Capital Needs Summary, Replacement Reserve Analysis - *Green*

Future capital actions are based on useful life expectations and assume continued effective maintenance and physical management. The timing of actions by system (including quantities and costs) is also presented in the Capital Needs Worksheet. Costs for the twenty-year plan total \$1,634,595 in current dollars (\$40,865/unit), or \$2,035,555 (\$50,889/unit) in inflated dollars.

Two approaches to funding the property's physical needs through replacement reserves are presented in the Replacement Reserve Analysis section of the report, with accompanying graphics.

Plan #1 presents current capital funding circumstances. The development is estimated to have a replacement reserve balance of \$249,458 on December 31, 2012. There was no available information regarding annual contributions at the time of the assessment. From OSI's experience, this is seen as an inadequate funding level for a property of this age and complexity. For planning purposes here, these contributions are shown being indexed at 3% for inflation going forward. Under this scenario, the property's needs exceed reserves in each year of the plan.

Plan #2, as one alternative, is aimed at fully meeting projected needs through Year 20. It starts with the same annual funding assumptions outlined above. The plan includes an infusion of \$1,100,000 in Year 1 to help fund the near term capital needs. Additionally, plan calls for an increase in annual contributions of \$120/unit (\$10/unit/month) in Years 2 through 6. Contributions are then indexed at 3%. This is one hypothetical option, and is included for illustrative purposes only. No assumptions are made about its viability; various alternatives might achieve similar results.

Narrative

Additional Notes:

1. The Physical Assessment of the property was conducted on March 26th, 2013. Members of the site staff provided information on the property's current condition, recent repairs, and near-term needs. Additional information was provided by informal interviews with residents during the dwelling unit evaluation portion of the assessment. We would like to thank site staff for their assistance.
2. OSI was represented on this assignment by David Jackson. Mr. Jackson is a Building Performance Institute (BPI)-certified energy auditor, and LEED Green Associate accredited. Mr. Jackson complied with the applicable professional standards for ethics as defined by the BPI Code of Ethics during the assessment process.
3. Regular updates of this plan are recommended to ensure careful monitoring of major building systems and to adjust the program to accommodate unanticipated circumstances surrounding the buildings, operations, and/or occupants.



The main parking lot is located at the front of the development.



A close-up of a cracked walkway section.



An elevation view of the main building section.
This is a converted school building.



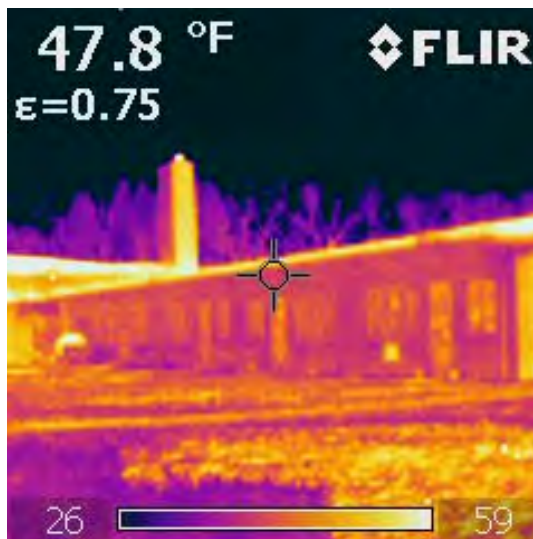
Roofs are covered with a single ply membrane.



Vinyl siding is also used to clad portions of the exterior walls.



Direct entry doors also have storm doors.



An infra-red image of a portion of the development. This shows a greater heat loss from the apartment windows and exterior doors than through the exterior walls.



A close-up of a step crack along a section of a brick exterior wall.



This is the community room
(converted from a former school cafeteria).



This is the community kitchen.



One of the public restroom, which features a toilet
with a flushometer and ceramic tile flooring.



The public laundry room has leased equipment:
top-loading washers and electric dryers.



A view of one of the living rooms.



Each unit has a direct entry door in the bedroom.



Kitchens have electric ranges and plywood cabinets.



This is an exhaust fan in one of the kitchens.



Bathrooms have wall-hung sinks and vinyl flooring.



Bathrooms also include an anti-scald mixing valve (over the tub), and a medical emergency pull cord (on right).



A typical circuit breaker panel in one of the apartments.



Each apartment has an intercom panel to converse with visitors at the main entrance to the development.



This pair of gas-fired boilers produces hydronic heat for the facility.



This is the DHW tank that serves the common areas. Each apartment has its own DHW tank.



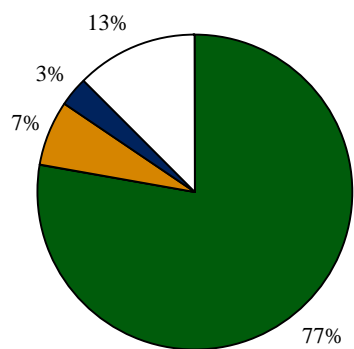
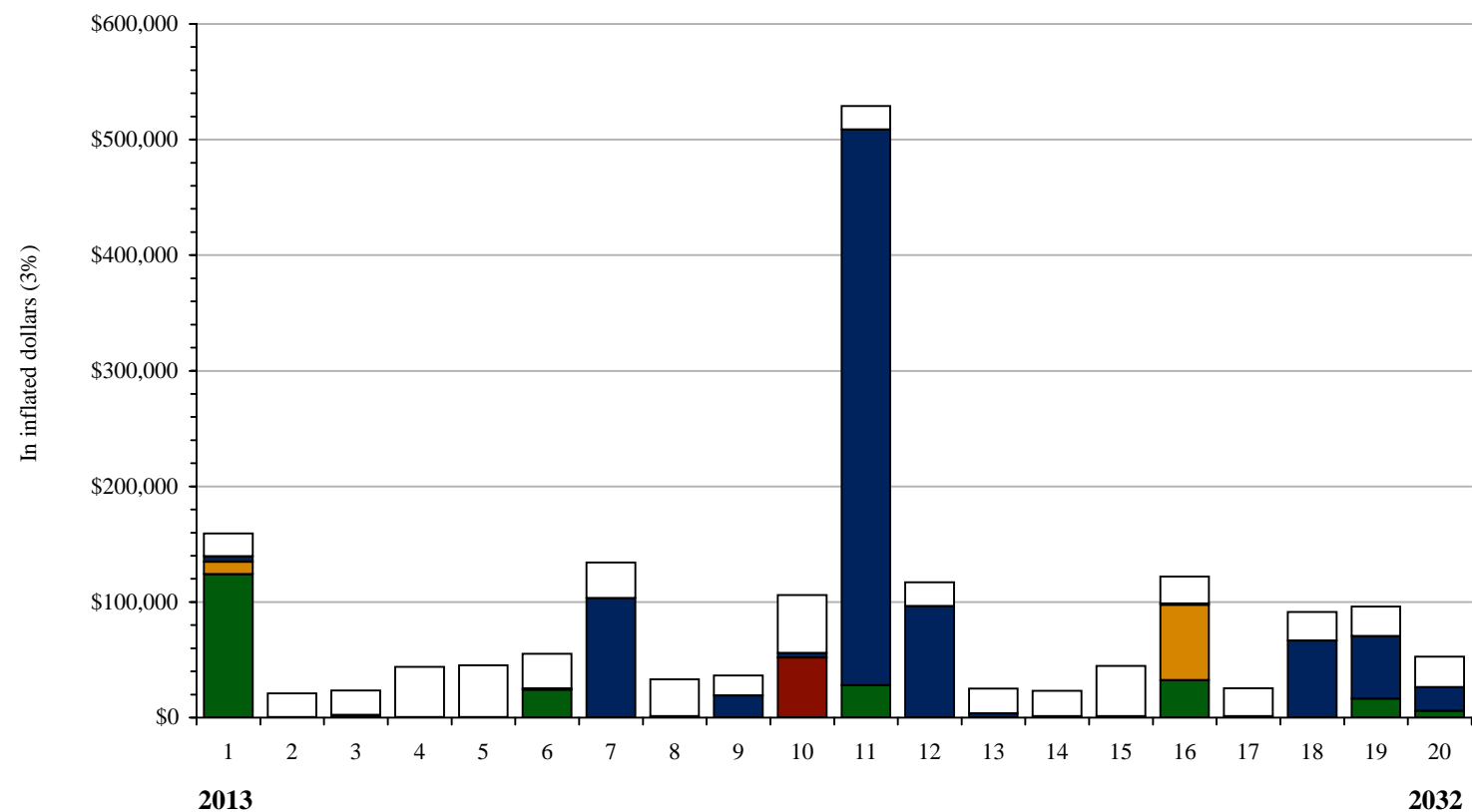
A view of the boiler plant controller.



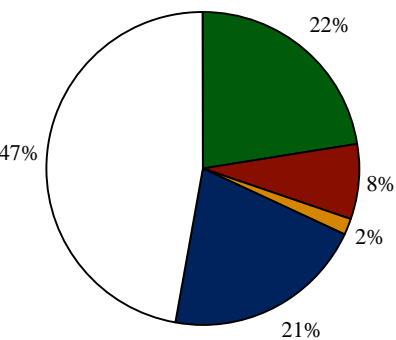
This is the fire alarm control panel (FACP).

Capital Needs Summary - Conventional

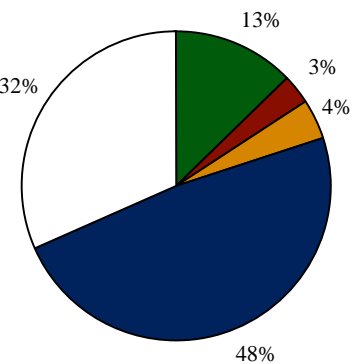
Southwest Terrace Apartments



Year One Distribution



Ten Year Distribution



Twenty Year Distribution

Total Costs by Building System (inflated dollars)

	Year 1	Years 1-10	Years 1-20
Site Systems & Accessibility	\$123,992 or \$3,100/unit	\$147,949 or \$3,699/unit	\$229,927 or \$5,748/unit
Mechanical Room		\$52,019 or \$1,300/unit	\$52,019 or \$1,300/unit
Building Mech. & Elec.	\$10,700 or \$268/unit	\$10,700 or \$268/unit	\$75,979 or \$1,899/unit
Building Architectural	\$4,697 or \$117/unit	\$136,081 or \$3,402/unit	\$861,879 or \$21,547/unit
Dwelling Units	\$19,967 or \$499/unit	\$311,005 or \$7,775/unit	\$564,480 or \$14,112/unit
In inflated dollars:	\$159,357 or \$3,984/unit	\$657,754 or \$16,444/unit	\$1,784,283 or \$44,607/unit
In current dollars:	\$159,357 or \$3,984/unit	\$578,995 or \$14,475/unit	\$1,355,991 or \$33,900/unit

Capital Needs Summary - *Conventional*

OSI Ref: **13193**
 Property Age: **26 Years**
 Financing: **CHFA**

Residential Buildings: **1**
 Total Number of Units: **40**
 Occupancy: **Elderly**

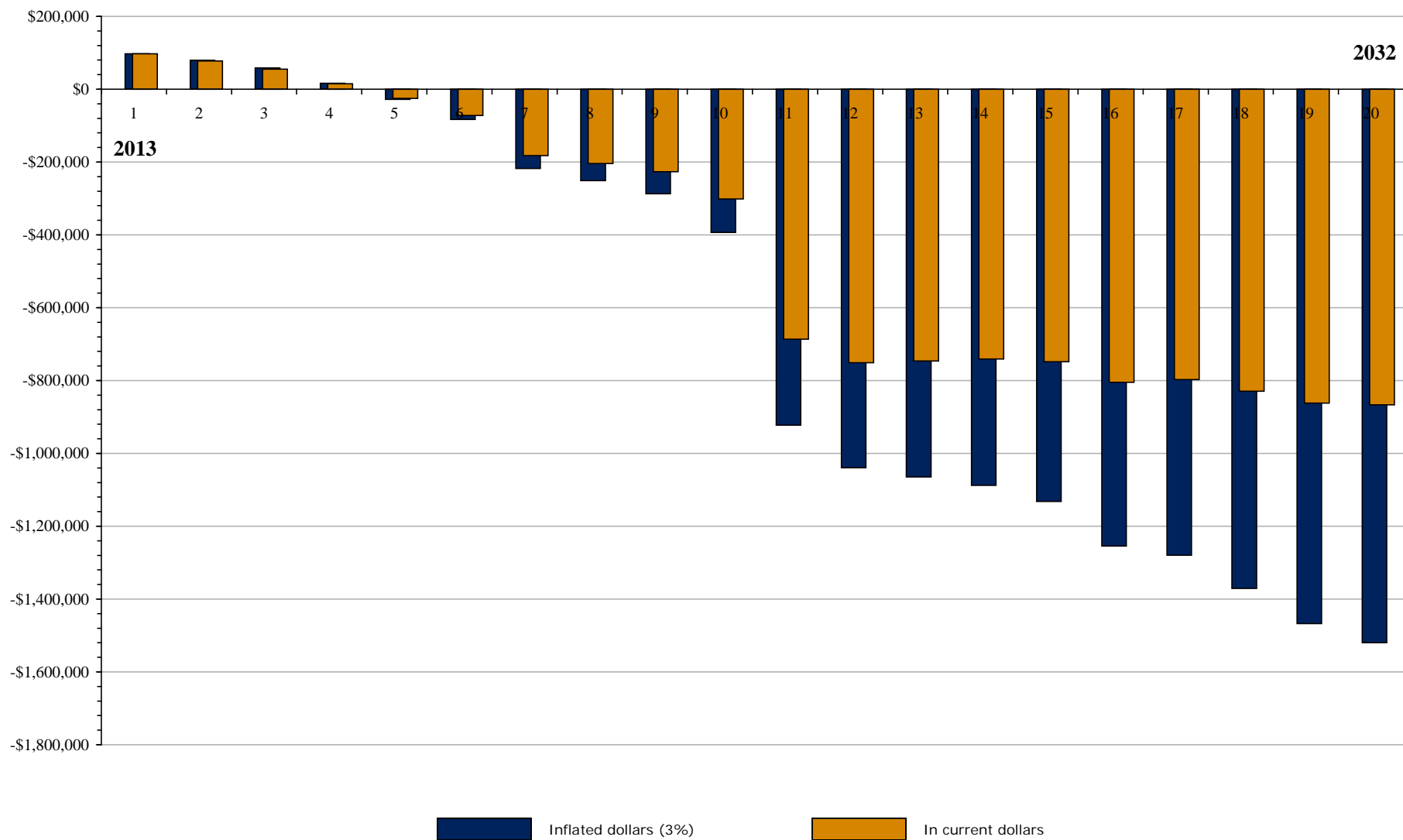
	2013 Year 1	2014 Year 2	2015 Year 3	2016 Year 4	2017 Year 5	2018 Year 6	2019 Year 7	2020 Year 8	2021 Year 9	2022 Year 10
Site Systems & Accessibility										
Surface	\$123,992	\$0	\$0	\$0	\$0	\$23,957	\$0	\$0	\$0	\$0
Accessibility	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Site Sub-Total	\$123,992	\$0	\$0	\$0	\$0	\$23,957	\$0	\$0	\$0	\$0
Mechanical Room										
Boilers	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$41,124
Boiler Room Systems	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$10,895
Mechanical Sub-Total	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$52,019
Building Mech. & Electrical										
Mechanical	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Electrical	\$10,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Elevators	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Mechanical & Electrical Sub-Total	\$10,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building Architectural										
Structural and Exterior	\$4,697	\$291	\$2,236	\$308	\$318	\$1,091	\$1,123	\$1,157	\$1,192	\$2,578
Roof Systems	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Halls, Stairs, Lobbies	\$0	\$0	\$0	\$0	\$0	\$0	\$74,325	\$0	\$0	\$0
Community Spaces	\$0	\$0	\$0	\$0	\$0	\$0	\$27,745	\$0	\$17,950	\$1,070
Building Architectural Sub-Total	\$4,697	\$291	\$2,236	\$308	\$318	\$1,091	\$103,193	\$1,157	\$19,142	\$3,648
Dwelling Units										
Living Areas	\$4,228	\$4,355	\$4,485	\$4,620	\$4,758	\$4,901	\$5,048	\$5,200	\$5,356	\$5,516
Bathrooms	\$808	\$832	\$857	\$18,192	\$1,855	\$1,911	\$1,968	\$2,027	\$2,088	\$29,290
Kitchens	\$14,931	\$15,379	\$15,840	\$16,315	\$18,178	\$18,723	\$19,285	\$19,863	\$4,783	\$4,927
Mechanical & Electrical	\$0	\$0	\$0	\$4,358	\$20,100	\$4,624	\$4,762	\$4,905	\$5,052	\$10,684
Dwelling Units Sub-Total	\$19,967	\$20,566	\$21,183	\$43,485	\$44,891	\$30,159	\$31,063	\$31,995	\$17,279	\$50,417
Total Capital Costs	\$159,357	\$20,856	\$23,419	\$43,794	\$45,209	\$55,206	\$134,257	\$33,153	\$36,421	\$106,083

Southwest Terrace Apartments

Costs on these pages are aggregated by category from the Capital Needs worksheets which follow. Total capital costs on these pages are carried forward to line F of the Replacement Reserve Analysis(es) that follow.

2023 Year 11	2024 Year 12	2025 Year 13	2026 Year 14	2027 Year 15	2028 Year 16	2029 Year 17	2030 Year 18	2031 Year 19	2032 Year 20	
\$27,773	\$0	\$0	\$0	\$0	\$32,196	\$0	\$0	\$16,173	\$5,836	Site Systems & Accessibility Surface Accessibility
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
\$27,773	\$0	\$0	\$0	\$0	\$32,196	\$0	\$0	\$16,173	\$5,836	Site Sub-Total
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Mechanical Room Boilers Boiler Room Systems
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Mechanical Sub-Total
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Building Mech. & Electrical Mechanical Electrical Elevators
\$0	\$0	\$0	\$0	\$0	\$65,279	\$0	\$0	\$0	\$0	
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
\$0	\$0	\$0	\$0	\$0	\$65,279	\$0	\$0	\$0	\$0	
										Mechanical & Electrical Sub-Total
\$7,198	\$96,244	\$3,542	\$967	\$996	\$1,026	\$1,057	\$66,463	\$1,121	\$20,331	Building Architectural Structural and Exterior Roof Systems Halls, Stairs, Lobbies Community Spaces
\$473,655	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$41,297	\$0	
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$11,899	\$0	
\$480,853	\$96,244	\$3,542	\$967	\$996	\$1,026	\$1,057	\$66,463	\$54,317	\$20,331	Building Architectural Sub-Total
\$5,682	\$5,852	\$6,028	\$6,209	\$6,395	\$6,587	\$6,784	\$6,988	\$7,198	\$7,413	Dwelling Units Living Areas Bathrooms Kitchens Mechanical & Electrical
\$2,215	\$2,282	\$2,350	\$2,421	\$2,493	\$2,568	\$2,645	\$2,724	\$2,806	\$2,890	
\$7,024	\$7,234	\$7,451	\$7,675	\$7,905	\$8,142	\$8,387	\$8,638	\$8,897	\$9,164	
\$5,360	\$5,521	\$5,686	\$5,857	\$27,012	\$6,214	\$6,400	\$6,592	\$6,790	\$6,994	
\$20,281	\$20,889	\$21,516	\$22,161	\$43,806	\$23,511	\$24,216	\$24,943	\$25,691	\$26,462	Dwelling Units Sub-Total
\$528,907	\$117,133	\$25,058	\$23,128	\$44,802	\$122,012	\$25,273	\$91,406	\$96,181	\$52,629	Total Capital Costs

Replacement Reserve (RR) Analysis: *Plan One - Conventional*



Current Replacement Reserve Balance: **\$249,458**

Adjusted Replacement Reserve Balance: **\$249,458**

Current annual contributions to reserve accounts: **\$0**

At the end of Year One, Reserve Balances are projected to be: **\$97,585**

At the end of Year 20, Reserve Balances are projected to be: **(\$1,519,767)**

Unmet needs projected in most years of the plan

Replacement Reserve (RR) Analysis: *Plan One - Conventional*

		Reserve Funding In Year 1									
		Starting Balance:		Replacement Reserve (RR) analysis starts here with the starting RR balance reported, or imputed, to have been on hand at the start of Year 1, and current annual RR contributions. The projections below reflect Starting RR Balance (Line A), plus the Total Annual RR Contributions (Line D) and Interest Earnings on RR (Line E), minus Total Annual Capital Costs (Line F), taken from the CNS above. This is expressed arithmetically as (A+D+E)-F=G, Year-End Balances, then carries forward to Line A of the following Year.							
		Contributions to Reserves:									
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
(A) Reserve Balances											
Starting Replacement Reserves		\$249,458	\$97,585	\$79,656	\$58,627	\$16,592	(\$28,119)	(\$83,325)	(\$217,582)	(\$250,735)	(\$287,155)
(B) Annual Funding											
Contributions Indexed at 3%		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
(C) Additional Unit Contributions											
(D) Total Annual Reserve Funding		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
(E) Interest on Reserves at 3%		\$7,484	\$2,928	\$2,390	\$1,759	\$498	\$0	\$0	\$0	\$0	\$0
Total Funds Available		\$256,942	\$100,513	\$82,046	\$60,386	\$17,090	(\$28,119)	(\$83,325)	(\$217,582)	(\$250,735)	(\$287,155)
(F) Total Capital Cost		\$159,357	\$20,856	\$23,419	\$43,794	\$45,209	\$55,206	\$134,257	\$33,153	\$36,421	\$106,083
(G) Reserve Balances		\$97,585	\$79,656	\$58,627	\$16,592	(\$28,119)	(\$83,325)	(\$217,582)	(\$250,735)	(\$287,155)	(\$393,239)
Outside Capital:											
Adjusted Reserve Balances		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Notes:

1. Starting reserve balance is \$249,458.
2. There is no available information regarding annual contribution; this category is shown as \$0.
3. Capital costs outpace reserves starting in Year 5.

*ANNUAL RR CONTRIBUTIONS are shown being indexed for inflation at the % specified above except when Additional Contributions are called for.

Line C, Additional Contributions allows for material adjustments in annual RR funding that would enable the property to meet all projected needs out of reserves through Year 20.

**INTEREST EARNINGS ON RESERVES are calculated on 100% of starting balances and on 50% of the total annual contribution for the year at the rate shown

Replacement Reserve (RR) Analysis: *Plan One - Conventional*

Reserve Funding In Year 20

Projected replacement reserve balance is **(\$1,519,767)**

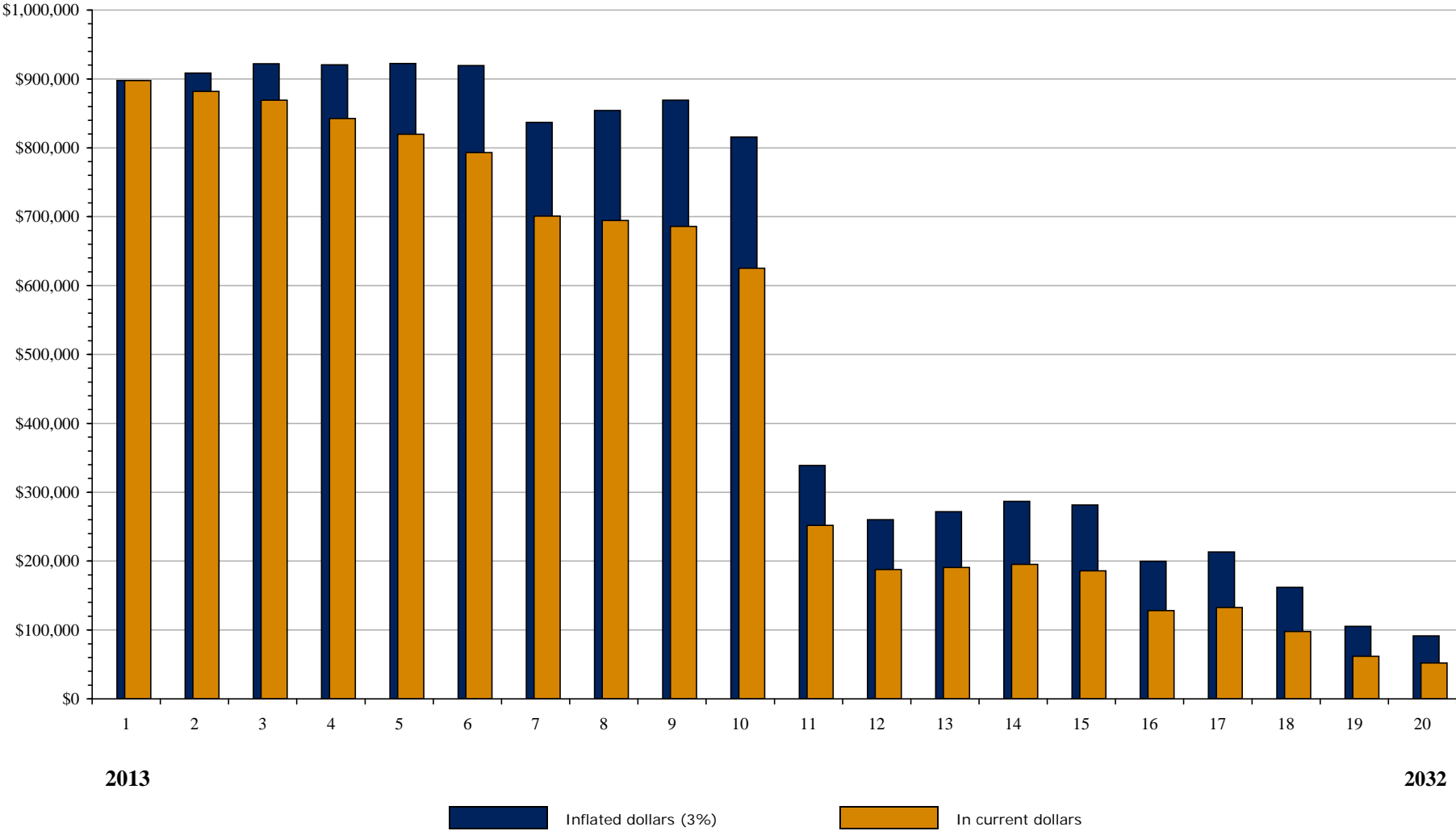
This is (\$37,994) per unit in inflated dollars or (\$21,668) per unit in uninflated dollars

Projected annual funding to reserves is **\$0**

This is \$0 per unit in inflated dollars or \$0 per unit in current dollars

2023 Year 11	2024 Year 12	2025 Year 13	2026 Year 14	2027 Year 15	2028 Year 16	2029 Year 17	2030 Year 18	2031 Year 19	2032 Year 20	
										Reserve Balances (A)
(\$393,239)	(\$922,145)	(\$1,039,278)	(\$1,064,336)	(\$1,087,464)	(\$1,132,266)	(\$1,254,278)	(\$1,279,551)	(\$1,370,957)	(\$1,467,138)	Starting Replacement Reserves
										Annual Funding (B)
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Contributions Indexed at 3%
										Additional Unit Contributions (C)
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Total Annual Reserve Funding (D)
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Interest on Reserves at 3% (E)
(\$393,239)	(\$922,145)	(\$1,039,278)	(\$1,064,336)	(\$1,087,464)	(\$1,132,266)	(\$1,254,278)	(\$1,279,551)	(\$1,370,957)	(\$1,467,138)	Total Funds Available
\$528,907	\$117,133	\$25,058	\$23,128	\$44,802	\$122,012	\$25,273	\$91,406	\$96,181	\$52,629	Total Capital Cost (F)
(\$922,145)	(\$1,039,278)	(\$1,064,336)	(\$1,087,464)	(\$1,132,266)	(\$1,254,278)	(\$1,279,551)	(\$1,370,957)	(\$1,467,138)	(\$1,519,767)	Reserve Balances (G)
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	

Replacement Reserve (RR) Analysis: *Plan Two - Conventional*



Current Replacement Reserve Balance: **\$249,458**

Adjusted Replacement Reserve Balance: **\$249,458**

Current annual contributions to reserve accounts: **\$0**

At the end of Year One, Reserve Balances are projected to be: **\$897,585**

At the end of Year 20, Reserve Balances are projected to be: **\$91,507**

All projected capital needs are met throughout the plan

Replacement Reserve (RR) Analysis: *Plan Two - Conventional*

Reserve Funding In Year 1										
Starting Balance:		Replacement Reserve (RR) analysis starts here with the starting RR balance reported, or imputed, to have been on hand at the start of Year 1, and current annual RR contributions. The projections below reflect Starting RR Balance (Line A), plus the Total Annual RR Contributions (Line D) and Interest Earnings on RR (Line E), minus Total Annual Capital Costs (Line F), taken from the CNS above. This is expressed arithmetically as (A+D+E)-F=G, Year-End Balances, then carries forward to Line A of the following Year.								
Contributions to Reserves:		\$0 or \$00/unit								
	2013 Year 1	2014 Year 2	2015 Year 3	2016 Year 4	2017 Year 5	2018 Year 6	2019 Year 7	2020 Year 8	2021 Year 9	2022 Year 10
(A) Reserve Balances										
Starting Replacement Reserves	\$249,458	\$897,585	\$908,528	\$922,109	\$920,595	\$922,492	\$919,320	\$837,003	\$854,051	\$869,096
(B) Annual Funding										
Contributions Indexed at 3%	\$0	\$0	\$120	\$240	\$360	\$480	\$600	\$618	\$637	\$656
(C) Additional Unit Contributions		\$120	\$120	\$120	\$120	\$120				
(D) Total Annual Reserve Funding	\$0	\$4,800	\$9,600	\$14,400	\$19,200	\$24,000	\$24,000	\$24,720	\$25,462	\$26,225
(E) Interest on Reserves at 3%	\$7,484	\$27,000	\$27,400	\$27,879	\$27,906	\$28,035	\$27,940	\$25,481	\$26,003	\$26,466
Total Funds Available	\$256,942	\$929,385	\$945,528	\$964,388	\$967,701	\$974,527	\$971,260	\$887,204	\$905,517	\$921,787
(F) Total Capital Cost	\$159,357	\$20,856	\$23,419	\$43,794	\$45,209	\$55,206	\$134,257	\$33,153	\$36,421	\$106,083
(G) Reserve Balances	\$97,585	\$908,528	\$922,109	\$920,595	\$922,492	\$919,320	\$837,003	\$854,051	\$869,096	\$815,704
Outside Capital:	\$800,000									
Adjusted Reserve Balances	\$897,585	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Notes:

1. Same starting reserve balance and annual contribution amount as shown in Plan 1.
2. Outside capital of \$800K is added in Year 1.
3. Annual contributions are established at \$120 per apartment in Year 2 and increased by \$120 per apt in Years 3 through 6.
4. Plan is fully funded.

*ANNUAL RR CONTRIBUTIONS are shown being indexed for inflation at the % specified above except when Additional Contributions are called for.

Line C, Additional Contributions allows for material adjustments in annual RR funding that would enable the property to meet all projected needs out of reserves through Year 20.

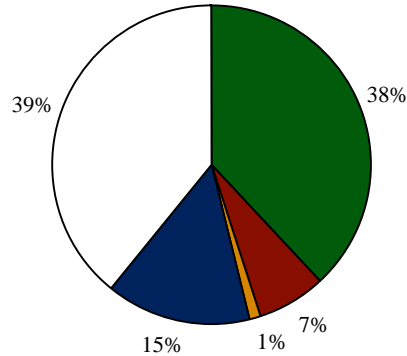
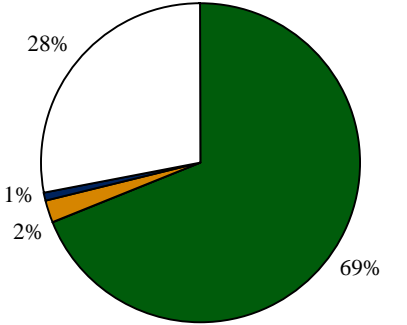
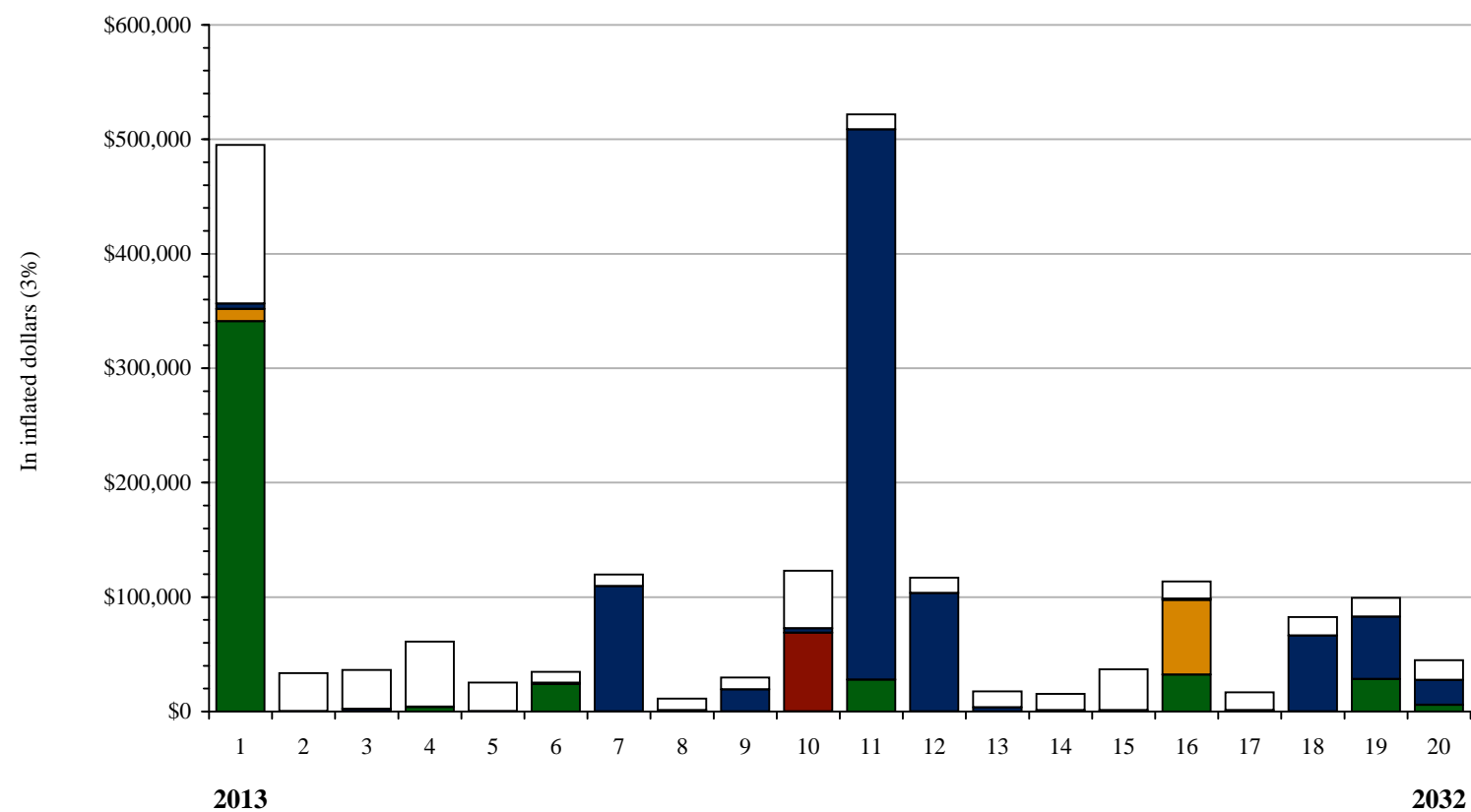
**INTEREST EARNINGS ON RESERVES are calculated on 100% of starting balances and on 50% of the total annual contribution for the year at the rate shown

Replacement Reserve (RR) Analysis: *Plan Two - Conventional*

Reserve Funding In Year 20										
Projected replacement reserve balance is \$91,507					This is \$2,288 per unit in inflated dollars or \$1,305 per unit in uninflated dollars					
Projected annual funding to reserves is \$35,245					This is \$881 per unit in inflated dollars or \$502 per unit in current dollars					
2023 Year 11	2024 Year 12	2025 Year 13	2026 Year 14	2027 Year 15	2028 Year 16	2029 Year 17	2030 Year 18	2031 Year 19	2032 Year 20	
										Reserve Balances (A)
\$815,704	\$338,686	\$259,953	\$271,781	\$286,766	\$281,426	\$199,641	\$213,095	\$161,802	\$105,206	Starting Replacement Reserves
										Annual Funding (B)
\$675	\$696	\$716	\$738	\$760	\$783	\$806	\$831	\$855	\$881	Contributions Indexed at 3%
										Additional Unit Contributions (C)
\$27,012	\$27,823	\$28,657	\$29,517	\$30,402	\$31,315	\$32,254	\$33,222	\$34,218	\$35,245	Total Annual Reserve Funding (D)
\$24,876	\$10,578	\$8,228	\$8,596	\$9,059	\$8,912	\$6,473	\$6,891	\$5,367	\$3,685	Interest on Reserves at 3% (E)
\$867,592	\$377,086	\$296,839	\$309,895	\$326,228	\$321,653	\$238,368	\$253,208	\$201,388	\$144,136	Total Funds Available
\$528,907	\$117,133	\$25,058	\$23,128	\$44,802	\$122,012	\$25,273	\$91,406	\$96,181	\$52,629	Total Capital Cost (F)
\$338,686	\$259,953	\$271,781	\$286,766	\$281,426	\$199,641	\$213,095	\$161,802	\$105,206	\$91,507	Reserve Balances (G)
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	

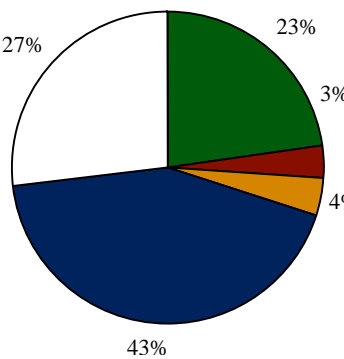
Capital Needs Summary - Green

Southwest Terrace Apartments



Total Costs by Building System (inflated dollars)

	Year 1	Years 1-10	Years 1-20
Site Systems & Accessibility	\$341,075 or \$8,527/unit	\$368,856 or \$9,221/unit	\$463,092 or \$11,577/unit
Mechanical Room		\$68,827 or \$1,721/unit	\$68,827 or \$1,721/unit
Building Mech. & Elec.	\$10,700 or \$268/unit	\$10,700 or \$268/unit	\$75,979 or \$1,899/unit
Building Architectural	\$4,697 or \$117/unit	\$142,701 or \$3,568/unit	\$877,087 or \$21,927/unit
Dwelling Units	\$138,618 or \$3,465/unit	\$378,799 or \$9,470/unit	\$550,571 or \$13,764/unit
In inflated dollars:	\$495,091 or \$12,377/unit	\$969,884 or \$24,247/unit	\$2,035,555 or \$50,889/unit
In current dollars:	\$495,091 or \$12,377/unit	\$897,446 or \$22,436/unit	\$1,634,595 or \$40,865/unit



Capital Needs Summary - Green

OSI Ref: **13193**
 Property Age: **26 Years**
 Financing: **CHFA**

Residential Buildings: **1**
 Total Number of Units: **40**
 Occupancy: **Elderly**

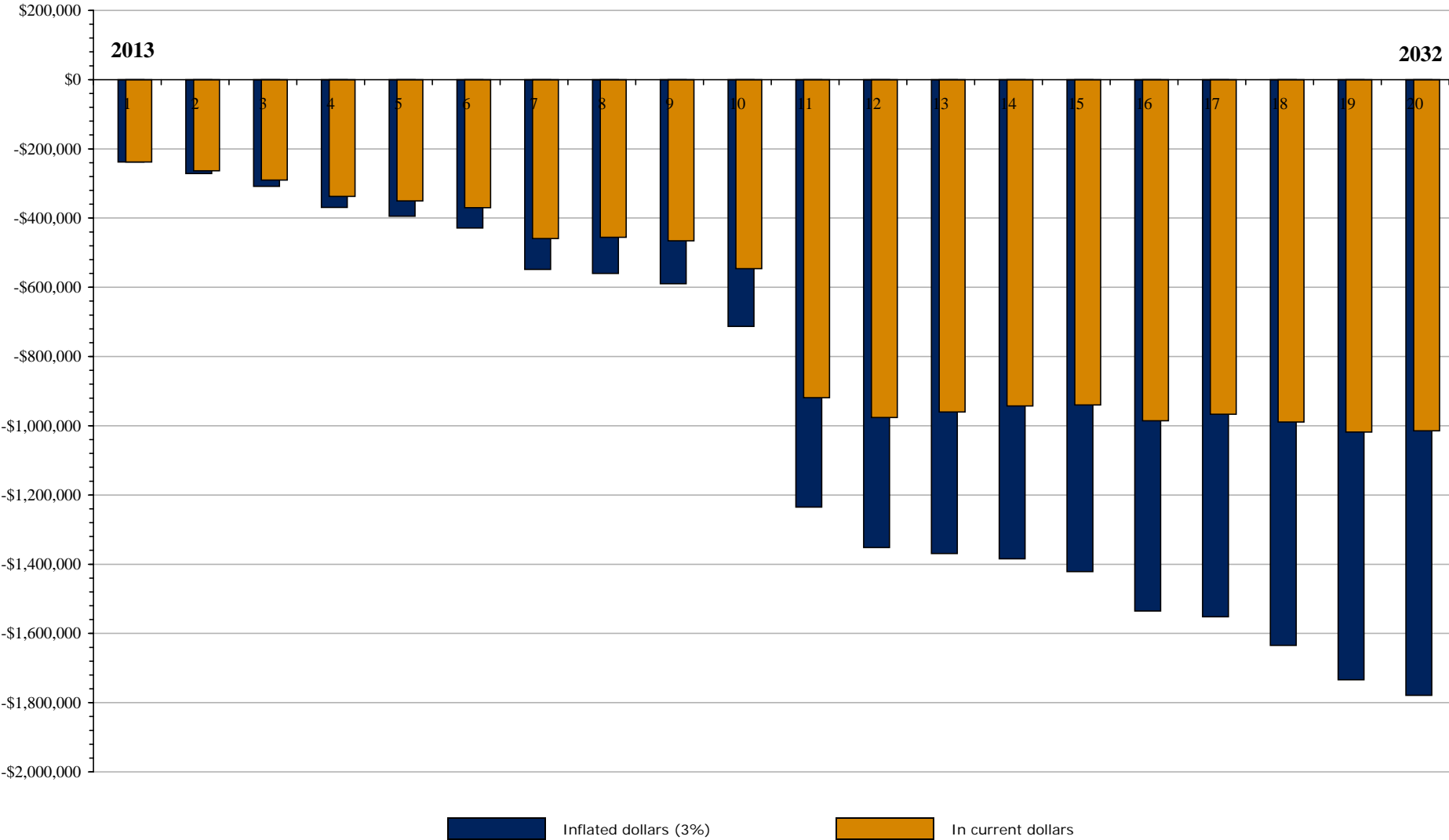
	2013 Year 1	2014 Year 2	2015 Year 3	2016 Year 4	2017 Year 5	2018 Year 6	2019 Year 7	2020 Year 8	2021 Year 9	2022 Year 10
Site Systems & Accessibility										
Surface	\$341,075	\$0	\$0	\$3,825	\$0	\$23,957	\$0	\$0	\$0	\$0
Accessibility	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Site Sub-Total	\$341,075	\$0	\$0	\$3,825	\$0	\$23,957	\$0	\$0	\$0	\$0
Mechanical Room										
Boilers	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$55,362
Boiler Room Systems	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$13,465
Mechanical Sub-Total	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$68,827
Building Mech. & Electrical										
Mechanical	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Electrical	\$10,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Elevators	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Mechanical & Electrical Sub-Total	\$10,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building Architectural										
Structural and Exterior	\$4,697	\$291	\$2,236	\$308	\$318	\$1,091	\$1,123	\$1,157	\$1,192	\$2,578
Roof Systems	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Halls, Stairs, Lobbies	\$0	\$0	\$0	\$0	\$0	\$0	\$78,861	\$0	\$0	\$0
Community Spaces	\$0	\$0	\$0	\$0	\$0	\$0	\$29,685	\$0	\$18,014	\$1,150
Building Architectural Sub-Total	\$4,697	\$291	\$2,236	\$308	\$318	\$1,091	\$109,669	\$1,157	\$19,206	\$3,728
Dwelling Units										
Living Areas	\$23,253	\$23,950	\$24,669	\$25,409	\$0	\$0	\$0	\$0	\$0	\$0
Bathrooms	\$2,789	\$2,873	\$2,959	\$20,357	\$1,360	\$1,400	\$1,442	\$1,486	\$1,530	\$30,751
Kitchens	\$112,576	\$6,335	\$6,525	\$6,721	\$3,535	\$3,641	\$3,750	\$3,863	\$3,979	\$4,098
Mechanical & Electrical	\$0	\$0	\$0	\$4,358	\$20,100	\$4,624	\$4,762	\$4,905	\$5,052	\$15,746
Dwelling Units Sub-Total	\$138,618	\$33,159	\$34,154	\$56,845	\$24,994	\$9,665	\$9,955	\$10,253	\$10,561	\$50,595
Total Capital Costs	\$495,091	\$33,450	\$36,390	\$60,978	\$25,312	\$34,712	\$119,624	\$11,411	\$29,767	\$123,150

Southwest Terrace Apartments

Costs on these pages are aggregated by category from the Capital Needs worksheets which follow. Total capital costs on these pages are carried forward to line F of the Replacement Reserve Analysis(es) that follow.

2023 Year 11	2024 Year 12	2025 Year 13	2026 Year 14	2027 Year 15	2028 Year 16	2029 Year 17	2030 Year 18	2031 Year 19	2032 Year 20	
\$27,773	\$0	\$0	\$0	\$0	\$32,196	\$0	\$0	\$28,431	\$5,836	Site Systems & Accessibility
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Surface Accessibility
\$27,773	\$0	\$0	\$0	\$0	\$32,196	\$0	\$0	\$28,431	\$5,836	Site Sub-Total
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Mechanical Room
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Boilers Boiler Room Systems
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Mechanical Sub-Total
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Building Mech. & Electrical
\$0	\$0	\$0	\$0	\$0	\$65,279	\$0	\$0	\$0	\$0	Mechanical Electrical Elevators
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
\$0	\$0	\$0	\$0	\$0	\$65,279	\$0	\$0	\$0	\$0	Mechanical & Electrical Sub-Total
\$7,198	\$103,394	\$3,542	\$967	\$996	\$1,026	\$1,057	\$66,463	\$1,121	\$21,770	Building Architectural
\$473,655	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Structural and Exterior Roof Systems
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$41,297	\$0	Halls, Stairs, Lobbies
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$11,899	\$0	Community Spaces
\$480,853	\$103,394	\$3,542	\$967	\$996	\$1,026	\$1,057	\$66,463	\$54,317	\$21,770	Building Architectural Sub-Total
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Dwelling Units
\$1,623	\$1,672	\$1,722	\$1,774	\$1,827	\$1,882	\$1,938	\$1,997	\$2,057	\$2,118	Living Areas
\$6,170	\$6,355	\$6,546	\$6,742	\$6,945	\$7,153	\$7,368	\$7,589	\$7,816	\$8,051	Bathrooms
\$5,360	\$5,521	\$5,686	\$5,857	\$27,012	\$6,214	\$6,400	\$6,592	\$6,790	\$6,994	Kitchens Mechanical & Electrical
\$13,154	\$13,548	\$13,955	\$14,373	\$35,784	\$15,249	\$15,706	\$16,177	\$16,663	\$17,162	Dwelling Units Sub-Total
\$521,780	\$116,942	\$17,497	\$15,341	\$36,780	\$113,750	\$16,763	\$82,640	\$99,411	\$44,768	Total Capital Costs

Replacement Reserve (RR) Analysis: *Plan One - Green*



Current Replacement Reserve Balance: **\$249,458**
Adjusted Replacement Reserve Balance: **\$249,458**
Current annual contributions to reserve accounts: **\$0**

At the end of Year One, Reserve Balances are projected to be: **(\$238,149)**
At the end of Year 20, Reserve Balances are projected to be: **(\$1,778,613)**
Unmet needs projected in most years of the plan

Replacement Reserve (RR) Analysis: *Plan One - Green*

		Reserve Funding In Year 1								
		Starting Balance:		\$249,458 or \$6,236/unit		Replacement Reserve (RR) analysis starts here with the starting RR balance reported, or imputed, to have been on hand at the start of Year 1, and current annual RR contributions. The projections below reflect Starting RR Balance (Line A), plus the Total Annual RR Contributions (Line D) and Interest Earnings on RR (Line E), minus Total Annual Capital Costs (Line F), taken from the CNS above. This is expressed arithmetically as (A+D+E)-F=G, Year-End Balances, then carries forward to Line A of the following Year.				
		Contributions to Reserves:		\$0 or \$00/unit						
	2013 Year 1	2014 Year 2	2015 Year 3	2016 Year 4	2017 Year 5	2018 Year 6	2019 Year 7	2020 Year 8	2021 Year 9	2022 Year 10
(A) Reserve Balances										
Starting Replacement Reserves	\$249,458	(\$238,149)	(\$271,598)	(\$307,988)	(\$368,966)	(\$394,278)	(\$428,990)	(\$548,615)	(\$560,025)	(\$589,792)
(B) Annual Funding										
Contributions Indexed at 3%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
(C) Additional Unit Contributions										
(D) Total Annual Reserve Funding	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
(E) Interest on Reserves at 3%	\$7,484	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Funds Available	\$256,942	(\$238,149)	(\$271,598)	(\$307,988)	(\$368,966)	(\$394,278)	(\$428,990)	(\$548,615)	(\$560,025)	(\$589,792)
(F) Total Capital Cost	\$495,091	\$33,450	\$36,390	\$60,978	\$25,312	\$34,712	\$119,624	\$11,411	\$29,767	\$123,150
(G) Reserve Balances	(\$238,149)	(\$271,598)	(\$307,988)	(\$368,966)	(\$394,278)	(\$428,990)	(\$548,615)	(\$560,025)	(\$589,792)	(\$712,942)
Outside Capital:										
Adjusted Reserve Balances	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Notes:

1. Starting reserve balance is \$249,458.
2. There is no available information regarding annual contribution; this category is shown as \$0.
3. Capital costs outpace reserves starting in each year of the plan.

*ANNUAL RR CONTRIBUTIONS are shown being indexed for inflation at the % specified above except when Additional Contributions are called for.

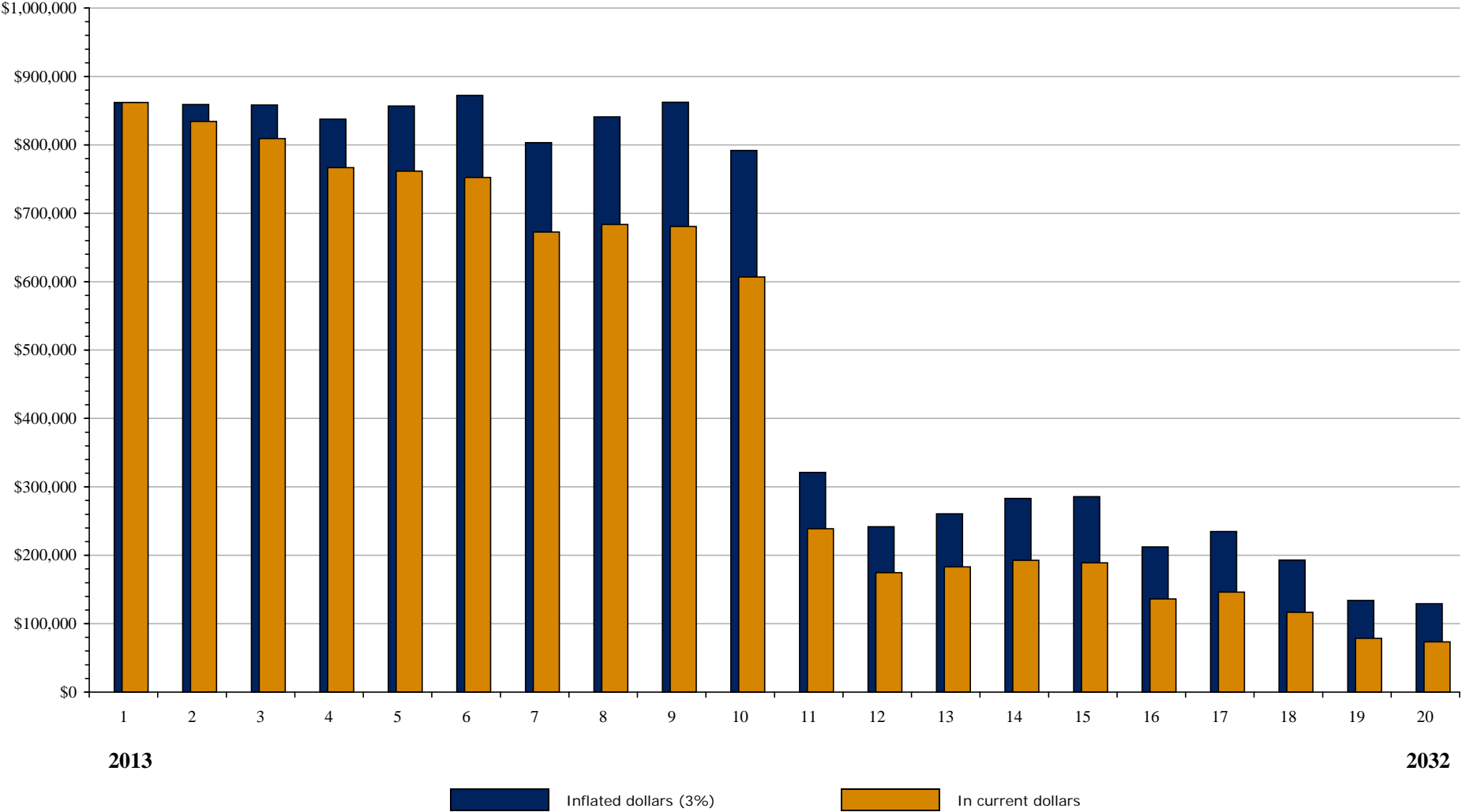
Line C, Additional Contributions allows for material adjustments in annual RR funding that would enable the property to meet all projected needs out of reserves through Year 20.

**INTEREST EARNINGS ON RESERVES are calculated on 100% of starting balances and on 50% of the total annual contribution for the year at the rate shown

Replacement Reserve (RR) Analysis: *Plan One - Green*

Reserve Funding In Year 20										
Projected replacement reserve balance is (\$1,778,613)					This is (\$44,465)per unit in inflated dollars or (\$25,358) per unit in uninflated dollars					
Projected annual funding to reserves is \$0					This is \$0 per unit in inflated dollars or \$0 per unit in current dollars					
2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	
Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	
										Reserve Balances (A)
(\$712,942)	(\$1,234,722)	(\$1,351,664)	(\$1,369,160)	(\$1,384,501)	(\$1,421,281)	(\$1,535,031)	(\$1,551,794)	(\$1,634,434)	(\$1,733,845)	Starting Replacement Reserves
										Annual Funding (B)
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Contributions Indexed at 3%
										Additional Unit Contributions (C)
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Total Annual Reserve Funding (D)
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Interest on Reserves at 3% (E)
(\$712,942)	(\$1,234,722)	(\$1,351,664)	(\$1,369,160)	(\$1,384,501)	(\$1,421,281)	(\$1,535,031)	(\$1,551,794)	(\$1,634,434)	(\$1,733,845)	Total Funds Available
\$521,780	\$116,942	\$17,497	\$15,341	\$36,780	\$113,750	\$16,763	\$82,640	\$99,411	\$44,768	Total Capital Cost (F)
(\$1,234,722)	(\$1,351,664)	(\$1,369,160)	(\$1,384,501)	(\$1,421,281)	(\$1,535,031)	(\$1,551,794)	(\$1,634,434)	(\$1,733,845)	(\$1,778,613)	Reserve Balances (G)
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	

Replacement Reserve (RR) Analysis: *Plan Two - Green*



Current Replacement Reserve Balance: **\$249,458**

Adjusted Replacement Reserve Balance: **\$249,458**

Current annual contributions to reserve accounts: **\$0**

At the end of Year One, Reserve Balances are projected to be: **\$861,851**

At the end of Year 20, Reserve Balances are projected to be: **\$129,024**

All projected capital needs are met throughout the plan

Replacement Reserve (RR) Analysis: *Plan Two - Green*

		Reserve Funding In Year 1								
		Starting Balance:		\$249,458 or \$6,236/unit		Replacement Reserve (RR) analysis starts here with the starting RR balance reported, or imputed, to have been on hand at the start of Year 1, and current annual RR contributions. The projections below reflect Starting RR Balance (Line A), plus the Total Annual RR Contributions (Line D) and Interest Earnings on RR (Line E), minus Total Annual Capital Costs (Line F), taken from the CNS above. This is expressed arithmetically as (A+D+E)-F=G, Year-End Balances, then carries forward to Line A of the following Year.				
		Contributions to Reserves:		\$0 or \$00/unit						
	2013 Year 1	2014 Year 2	2015 Year 3	2016 Year 4	2017 Year 5	2018 Year 6	2019 Year 7	2020 Year 8	2021 Year 9	2022 Year 10
(A) Reserve Balances										
Starting Replacement Reserves	\$249,458	\$861,851	\$859,129	\$858,257	\$837,643	\$856,948	\$872,304	\$803,209	\$840,986	\$862,292
(B) Annual Funding										
Contributions Indexed at 3%	\$0	\$0	\$120	\$240	\$360	\$480	\$600	\$618	\$637	\$656
(C) Additional Unit Contributions		\$120	\$120	\$120	\$120	\$120				
(D) Total Annual Reserve Funding	\$0	\$4,800	\$9,600	\$14,400	\$19,200	\$24,000	\$24,000	\$24,720	\$25,462	\$26,225
(E) Interest on Reserves at 3%	\$7,484	\$25,928	\$25,918	\$25,964	\$25,417	\$26,068	\$26,529	\$24,467	\$25,611	\$26,262
Total Funds Available	\$256,942	\$892,579	\$894,647	\$898,621	\$882,260	\$907,017	\$922,834	\$852,396	\$892,059	\$914,780
(F) Total Capital Cost	\$495,091	\$33,450	\$36,390	\$60,978	\$25,312	\$34,712	\$119,624	\$11,411	\$29,767	\$123,150
(G) Reserve Balances	(\$238,149)	\$859,129	\$858,257	\$837,643	\$856,948	\$872,304	\$803,209	\$840,986	\$862,292	\$791,630
Outside Capital:	\$1,100,000									
Adjusted Reserve Balances	\$861,851	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Notes:

1. Same starting reserve balance and annual contribution amount as shown in Plan 1.
2. Outside capital of \$1.1M is added in Year 1.
3. Annual contributions are established at \$120 per apartment in Year 2 and increased by \$120 per apt in Years 3 through 6.
4. Plan is fully funded.

*ANNUAL RR CONTRIBUTIONS are shown being indexed for inflation at the % specified above except when Additional Contributions are called for.

Line C, Additional Contributions allows for material adjustments in annual RR funding that would enable the property to meet all projected needs out of reserves through Year 20.

**INTEREST EARNINGS ON RESERVES are calculated on 100% of starting balances and on 50% of the total annual contribution for the year at the rate shown

Replacement Reserve (RR) Analysis: *Plan Two - Green*

Reserve Funding In Year 20										
Projected replacement reserve balance is \$129,024					This is \$3,226 per unit in inflated dollars or \$1,840 per unit in uninflated dollars					
Projected annual funding to reserves is \$35,245					This is \$881 per unit in inflated dollars or \$502 per unit in current dollars					
2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	
Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	
										Reserve Balances (A)
\$791,630 \$321,016 \$241,945 \$260,794 \$283,237 \$285,812 \$212,421 \$234,768 \$192,891									\$133,998	Starting Replacement Reserves
										Annual Funding (B)
\$675 \$696 \$716 \$738 \$760 \$783 \$806 \$831 \$855									\$881	Contributions Indexed at 3%
										Additional Unit Contributions (C)
\$27,012 \$27,823 \$28,657 \$29,517 \$30,402 \$31,315 \$32,254 \$33,222 \$34,218									\$35,245	Total Annual Reserve Funding (D)
\$24,154 \$10,048 \$7,688 \$8,267 \$8,953 \$9,044 \$6,856 \$7,541 \$6,300									\$4,549	Interest on Reserves at 3% (E)
\$842,796 \$358,887 \$278,290 \$298,577 \$322,592 \$326,170 \$251,531 \$275,531 \$233,409									\$173,792	Total Funds Available
\$521,780 \$116,942 \$17,497 \$15,341 \$36,780 \$113,750 \$16,763 \$82,640 \$99,411									\$44,768	Total Capital Cost (F)
\$321,016 \$241,945 \$260,794 \$283,237 \$285,812 \$212,421 \$234,768 \$192,891 \$133,998									\$129,024	Reserve Balances (G)
\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0									\$0	

Projected Capital Needs Over Twenty Years

SITE SYSTEMS

Replacement Items	Quantity	Cost / Unit in 2013 \$	Total Cost in 2013 \$	Total Premium	AGE (Years)	EUL (Years)	Replacement Schedule (Year of action AND duration of project)			Notes
SURFACE										
Parking	55,900 sf	2.10	\$117,390		26	20	1	in	1 Year	Asphalt, cracks, potholes and patched observed Resurface in Year 1
Parking (Green)	55,900 sf	5.75	\$321,425	\$204,035	26	20	1	in	1 Year	Resurface using pourous asphalt
Walkway-Asphalt	3,144 sf	2.10	\$6,602		26	20	1	in	1 Year	Asphalt paved, cracks and patched areas observed Resurface in Year 1
Walkway-Asphalt (Green)	3,144 sf	6.25	\$19,650	\$13,048	26	20	1	in	1 Year	Resurface using open pavers
Crack-Fill and Sealcoat	59,044 sf	0.35	\$20,665		26	5	6 /11 /16	in	1 Year	Repair allowance in Years 6, 11, and 16 (parking lots and asphalt walkways)
Walkway-Concrete	5,325 sf				26					Concrete, in good condition
Walkway-Concrete	533 sf	6.25	\$3,328		26	50	20	in	1 Year	Allowance for anticipated repairs in Year 20
Walkway-Concrete (Green)	533 sf				26	50				
Fencing	1 ls				4	25				Chain link, recently installed Maintain out of Operating
Fencing (Green)	lf									
Site Lighting	14 ea				≈10	20				Pole-mounted HID fixtures (≈250w metal halide) Maintain out of Operating
Site Lighting (Green)	14 ea	250.00	\$3,500		26	30	4	in	1 Year	Replace existing with induction lighting (65 w each) Longevity and energy savings. See EWCM 1
Retaining Walls	lf									
Landscaping	1 ls	9500.00	\$9,500		26	45	19	in	1 Year	Surrounding lawn/flowerbeds, in good condition Allowance to replant and prune
Landscaping (Green)	1 ea	16700.00	\$16,700	\$7,200	26	45	19	in	1 Year	Replace existing w/Xeriscape (local plantings) Minimum maintenance and water use. Discuss
ACCESSIBILITY										
Circulation	1 ls				26	10				Compliant design
Circulation (Green)	ls									
Common Areas	1 ea				26	20				Compliant design
Common Areas (Green)	ea									
Dwelling Units	4 ea				26	20				Wall-hung sink in bathroom; add insulation sleeve to drain line (Operating)
Dwelling Units (Green)	ea									
Miscellaneous	ls									

SITE SYSTEMS

Replacement Items	Year 1 2013	Year 2 2014	Year 3 2015	Year 4 2016	Year 5 2017	Year 6 2018	Year 7 2019	Year 8 2020	Year 9 2021	Year 10 2022	Year 11 2023	Year 12 2024	Year 13 2025	Year 14 2026	Year 15 2027	Year 16 2028	Year 17 2029	Year 18 2030	Year 19 2031	Year 20 2032
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SURFACE

Parking	\$117,390	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Parking (Green)	\$321,425	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Walkway-Asphalt	\$6,602	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Walkway-Asphalt (Green)	\$19,650	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Crack-Fill and Sealcoat	\$0	\$0	\$0	\$0	\$0	\$23,957	\$0	\$0	\$0	\$0	\$27,773	\$0	\$0	\$0	\$0	\$32,196	\$0	\$0	\$0	\$0
Walkway-Concrete	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,836
Walkway-Concrete (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Fencing	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Fencing (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Site Lighting	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Site Lighting (Green)	\$0	\$0	\$0	\$3,825	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Retaining Walls	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Landscaping	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$16,173	\$0
Landscaping (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$28,431	\$0

ACCESSIBILITY

Circulation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Circulation (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Common Areas	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Common Areas (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Dwelling Units	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Dwelling Units (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Miscellaneous	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Projected Capital Needs Over Twenty Years

MECHANICAL ROOM

Replacement Items	Quantity		Cost / Unit in 2013 \$	Total Cost in 2013 \$	Total Premium	AGE (Years)	EUL (Years)	Replacement Schedule (Year of action AND duration of project)		Notes
BOILERS										
										Gas-fired Burnham (528 MBH each)
Boilers - 1	2	ea	12,084	\$24,168		≈15	25	10	in 1 Year	Replace in Year 10
Boilers - 1 (Green)	2	ea	17,490	\$34,980	\$10,812	≈15	25	10	in 1 Year	Replace existing with condensing boilers, includes corrosion-resistant flues
Controls	1	ea	3,850	\$3,850		5	15	10	in 1 Year	Outside air and return water inputs to contoller Replace in Year 10
Controls (Green)		ea								Green option in place
Circulating Pumps	2	ea	1,750	\$3,500		≈15	25	10	in 1 Year	In-line 3/4 hp pumps w/standard efficiency mtrs ≈80% Replace
Circulating Pumps (Green)	2	ea	1,800	\$3,600	\$100	≈15	25	10	in 1 Year	Replace existing w/high efficiency pump motors ≈83% See EWCM 2
Chilled Water Pumps		ea								
Chilled Water Pumps (Green)		ea								
Cooling Water Pumps		ea								
Cooling Water Pumps (Green)		ea								
Domestic Water Booster Pumps		ea								
DW Booster Pumpgsg (Green)		ea								
Combustion Air System	1	ls				26	15			Maintain out of Operating
Combustion Air System (Green)	1	ls				26	15			Direct combustion air supply included with proposed condensing boilers
Flue Exhaust	1	ls				26	20			Metal flues: no loose, damaged, or missing sections observed. Maintain out of Operating
Flue Exhaust (Green)	1	ls				26	20			Corrosion-resistant flues included with proposed condensing boilers
Condensate & Feed Water		ea								
Sump Pumps	2	ea				26	20			Maintain out of Operating
Sump Pumps (Green)		ea								
Miscellaneous		ea								
Miscellaneous (Green)		ea								

Costs projected at 3%

Replacement Items	Year 1 2013	Year 2 2014	Year 3 2015	Year 4 2016	Year 5 2017	Year 6 2018	Year 7 2019	Year 8 2020	Year 9 2021	Year 10 2022	Year 11 2023	Year 12 2024	Year 13 2025	Year 14 2026	Year 15 2027	Year 16 2028	Year 17 2029	Year 18 2030	Year 19 2031	Year 20 2032
BOILERS																				
Boilers - 1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$31,534	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Boilers - 1 (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$45,641	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Controls	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,023	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Controls (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Circulating Pumps	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$4,567	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Circulating Pumps (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$4,697	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Chilled Water Pumps	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Chilled Water Pumps (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Cooling Water Pumps	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Cooling Water Pumps (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Domestic Water Booster Pumps	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
DW Booster Pumpgs (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Combustion Air System	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Combustion Air System (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Flue Exhaust	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Flue Exhaust (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Condensate & Feed Water	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sump Pumps	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sump Pumps (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Miscellaneous	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Miscellaneous (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Projected Capital Needs Over Twenty Years

MECHANICAL ROOM--*continued*

Replacement Items	Quantity		Cost / Unit in 2013 \$	Total Cost in 2013 \$	Total Premium	AGE (Years)	EUL (Years)	Replacement Schedule (Year of action AND duration of project)		Notes
BOILER ROOM SYSTEMS										
										No active leaks or signs of corrosion
Boiler Room Piping/Valves	1	ea				26	25			Maintain out of Operating
Boiler Room Piping/Valves (Green)		ea								
3-Way Valve & Controller		ea								
3-Way Valve & Controller (Green)		ea								
Heat Exchanger		ea								
Heat Exchanger (Green)		ea								
DHW Generation - 1	1	ea	6450.00	\$6,450		10	20	10	in 1 Year	Gas-fired AO Smith (305 MBH, 277 gph, 75 gals) Replace in Year 10
DHW Generation - 1 (Green)	1	ea	8350.00	\$8,350	\$1,900	10	20	10	in 1 Year	Replace existing w/condensing gas-fired DHW tank Energy savings
DHW Pumps	2	ea	950.00	\$1,900		10	20	10	in 1 Year	In-line fractional hp pumps Replace in Year 10
DHW Pumps (Green)	2	ea	985.00	\$1,970	\$70	10	20	10	in 1 Year	Replace existing w/high efficiency motors Energy savings. See EWCM 2
DHW Storage - 1		ea								
DHW Storage - 1 (Green)		ea								
DHW Storage - 2		ea								
DHW Storage - 2 (Green)		ea								
Water Softner		ea								
Water Softner (Green)		ea								
Miscellaneous		ea								
Miscellaneous (Green)		ea								
Miscellaneous		ea								
Miscellaneous (Green)		ea								
Miscellaneous		ea								

Costs projected at 3%

Replacement Items	Year 1 2013	Year 2 2014	Year 3 2015	Year 4 2016	Year 5 2017	Year 6 2018	Year 7 2019	Year 8 2020	Year 9 2021	Year 10 2022	Year 11 2023	Year 12 2024	Year 13 2025	Year 14 2026	Year 15 2027	Year 16 2028	Year 17 2029	Year 18 2030	Year 19 2031	Year 20 2032
BOILER ROOM SYSTEMS																				
Boiler Room Piping/Valves	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Boiler Room Piping/Valves (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3-Way Valve & Controller	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3-Way Valve & Controller (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Heat Exchanger	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Heat Exchanger (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
DHW Generation - 1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$8,416	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
DHW Generation - 1 (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$10,895	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
DHW Pumps	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,479	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
DHW Pumps (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,570	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
DHW Storage - 1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
DHW Storage - 1 (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
DHW Storage - 2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
DHW Storage - 2 (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Water Softner	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Water Softner (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Miscellaneous	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Miscellaneous (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Miscellaneous	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Miscellaneous (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Miscellaneous	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Projected Capital Needs Over Twenty Years

BUILDING MECHANICAL AND ELECTRICAL

Replacement Items	Quantity	Cost / Unit in 2013 \$	Total Cost in 2013 \$	Total Premium	AGE (Years)	EUL (Years)	Replacement Schedule (Year of action AND duration of project)		Notes
BUILDING MECHANICAL									
Compactors	_____ ea	_____	_____		_____	_____	_____	_____	
Building Fire Suppression	_____ ls	_____	_____		_____	_____	_____	_____	
Building Distribution Systems	_____ 1 ls	_____	_____		26	50	_____	_____	No observed or reported systemic problems Maintain out of Operating
Building HVAC Systems - 1	_____ ea	_____	_____		_____	_____	_____	_____	
Building HVAC Systems - 1 (Green)	_____ ea	_____	_____		_____	_____	_____	_____	
Building HVAC Systems - 2	_____ ea	_____	_____		_____	_____	_____	_____	
Building HVAC Systems - 2 (Green)	_____ ea	_____	_____		_____	_____	_____	_____	
Building HVAC Systems - 3	_____ ea	_____	_____		_____	_____	_____	_____	
Building HVAC Systems - 3 (Green)	_____ ea	_____	_____		_____	_____	_____	_____	
Building Vent. & Exhaust	_____ ea	_____	_____		_____	_____	_____	_____	
Building Vent. & Exhaust (Green)	_____ ea	_____	_____		_____	_____	_____	_____	
Cold Water Booster Pumps	_____ ea	_____	_____		_____	_____	_____	_____	
Cold Water Booster Pumps (Green)	_____ ea	_____	_____		_____	_____	_____	_____	

BUILDING ELECTRICAL

Building Power Wiring	_____	1 ls	_____	_____	26	99	_____	_____	Maintain out of Operating
Emergency Generator	_____	ea	_____	_____	_____	_____	_____	_____	_____
Emergency Lights	_____	19 ea	_____	_____	Varies	20	_____	_____	Special ballasts in some common area fixtures Maintain out of Operating
Smoke / Fire Detection	_____	1 ls	41900.00	\$41,900	4	20	16	in 1 Year	Zans Gamewell FACP w/hardwired common area devcies. Upgrade in Year 16
Signaling / Communication	_____	1 ls	10700.00	\$10,700	26	20	1	in 1 Year	Main intercom panel in main lobby, problematic Replace in Year 1

BUILDING ELEVATORS

Shafts and Doorways	_____	ea	_____	_____	_____	_____	_____	_____	n/a: No elevators at property
Cabs	_____	ea	_____	_____	_____	_____	_____	_____	_____
Controller/Dispatcher	_____	ea	_____	_____	_____	_____	_____	_____	_____
Machine Room Equipment	_____	ea	_____	_____	_____	_____	_____	_____	_____

BUILDING MECHANICAL AND ELECTRICAL

Costs projected at 3%

Replacement Items	Year 1 2013	Year 2 2014	Year 3 2015	Year 4 2016	Year 5 2017	Year 6 2018	Year 7 2019	Year 8 2020	Year 9 2021	Year 10 2022	Year 11 2023	Year 12 2024	Year 13 2025	Year 14 2026	Year 15 2027	Year 16 2028	Year 17 2029	Year 18 2030	Year 19 2031	Year 20 2032
BUILDING MECHANICAL																				
Compactors	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building Fire Suppression	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building Distribution Systems	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building HVAC Systems - 1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building HVAC Systems - 1 (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building HVAC Systems - 2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building HVAC Systems - 2 (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building HVAC Systems - 3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building HVAC Systems - 3 (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building Vent. & Exhaust	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building Vent. & Exhaust (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Cold Water Booster Pumps	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Cold Water Booster Pumps (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
BUILDING ELECTRICAL																				
Building Power Wiring	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Emergency Generator	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Emergency Lights	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Smoke / Fire Detection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$65,279	\$0	\$0	\$0	\$0
Signaling / Communication	\$10,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Shafts and Doorways	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Cabs	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Controller/Dispatcher	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Machine Room Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Projected Capital Needs Over Twenty Years

BUILDING ARCHITECTURE

Replacement Items	Quantity		Cost / Unit in 2013 \$	Total Cost in 2013 \$	Total Premium	AGE (Years)	EUL (Years)	Replacement Schedule (Year of action AND duration of project)		Notes
STRUCTURE										
Foundation	1,700	lf				26	50			Below-grade mechanical room, concrete walls and floor; slab-on-grade for majority of bldg. Monitor
Framing		ls								
Slab		sf								
Miscellaneous		ea								
BUILDING EXTERIOR										
Ext Common Doors-Main	1	ea	3196.00	\$3,196		6	25	20	in 1 Year	Solid core door with glass insert Replace in Year 19
Ext Common Doors-Main (Green)	1	ea	3435.70	\$3,436	\$240	6	25	20	in 1 Year	Replace existing w/fiberglass doors -glass inserts Lower maintenace, energy savings.
Ext Common Doors-Secondary	4	ea	1935.00	\$7,740		6	25	20	in 1 Year	Solid core door with glass insert Maintain out of Operating
Ext Comm Doors-Secondary (Green)	4	ea	2080.13	\$8,321	\$581	6	25	20	in 1 Year	Replace existing w/fiberglass doors -glass inserts Lower maintenace, energy savings.
Unit Doors-Second Egress	40	ea				6	35			Solid core Maintain out of Operating
Unit Doors-Second Egress (Green)	40	ea				6	35			Replace existing w/fiberglass doors -glass inserts Lower maintenace, energy savings.
Service Doors	1	ea	1035.00	\$1,035		26	25	10	in 1 Year	Double leaf metal doors Replace in Year 10
Storm Doors	40	ea	247.00	\$9,880		Varies	15	6	over 15 Years	On all unit second egress doors, in good condition Replace starting in Year 6
Exterior Walls - Brick	12,615	sf				26				Cracks and mortar loss at roof overhang supports into brickwork. Repair in Years 1 and 11
	631	sf	7.00	\$4,415		26	20	1 11	in 1 Year	
Exterior Walls - Brick (Green)	631	sf				26	20			
Exterior Walls - Vinyl	6,085	sf	6.50	\$39,553		26	40	18	in 1 Year	Vinyl, in good condition. Power wash in Yrs 3 & 13
	6,085	sf	0.30	\$1,826		26	40	3 13	in 1 Year	Replace in Year 18
Exterior Walls - Vinyl (Green)	6,085	sf	8.50	\$51,723	\$49,897	26	50		Years	Replace existing with cement fiberboard Longevity, durability. See GM 1
Exterior Walls - 3		sf								
Trim, Soffit, Fascia		lf								
Trim, Soffit, Fascia (Green)		lf								
Exterior Ceilings		sf								
Miscellaneous		ea								
Miscellaneous (Green)		ea								

BUILDING ARCHITECTURE

Costs projected at 3%

Replacement Items	Year 1 2013	Year 2 2014	Year 3 2015	Year 4 2016	Year 5 2017	Year 6 2018	Year 7 2019	Year 8 2020	Year 9 2021	Year 10 2022	Year 11 2023	Year 12 2024	Year 13 2025	Year 14 2026	Year 15 2027	Year 16 2028	Year 17 2029	Year 18 2030	Year 19 2031	Year 20 2032
STRUCTURE																				
Foundation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Framing	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Slab	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Miscellaneous	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
BUILDING EXTERIOR																				
Ext Common Doors-Main	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,604
Ext Common Doors-Main (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$6,025
Ext Common Doors-Secondary	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$13,572
Ext Comm Doors-Secondary (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$14,590
Unit Doors-Second Egress	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Doors-Second Egress (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Service Doors	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,350	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Storm Doors	\$0	\$0	\$0	\$0	\$0	\$764	\$786	\$810	\$834	\$859	\$885	\$912	\$939	\$967	\$996	\$1,026	\$1,057	\$1,089	\$1,121	\$1,155
Exterior Walls - Brick	\$4,415	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,934	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Exterior Walls - Brick (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Exterior Walls - Vinyl	\$0	\$0	\$1,937	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,603	\$0	\$0	\$0	\$0	\$65,374	\$0	\$0
Exterior Walls - Vinyl (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Exterior Walls - 3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Trim, Soffit, Fascia	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Trim, Soffit, Fascia (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Exterior Ceilings	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Miscellaneous	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Miscellaneous (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Projected Capital Needs Over Twenty Years

BUILDING ARCHITECTURE--*continued*

Replacement Items	Quantity		Cost / Unit in 2013 \$	Total Cost in 2013 \$	Total Premium	AGE (Years)	EUL (Years)	Replacement Schedule (Year of action AND duration of project)		Notes
BUILDING EXTERIORS (cont.)										
Windows - Operable	184	ea	355.00	\$65,320		26	35	12	in 1 Year	Vinyl clad windows, in good condition Replace in Year 12
Windows - Operable (Green)	184	ea	381.63	\$70,219	\$4,899	26	35	12	in 1 Year	Replace existing w/fiberglass framed insulated glass windows. Energy savings
Windows - Fixed	10	ea	355.00	\$3,550		26	35	12	in 1 Year	Vinyl clad windows, in good condition Replace in Year 12
Windows - Fixed (Green)	10	ea	381.63	\$3,816	\$266	26	35	12	in 1 Year	Replace existing w/fiberglass framed insulated glass windows. Energy savings
Window Glazing	39	ea	80.00	\$3,104		26	15	1	over 11 Years	No fogged windows observed. Allowance for anticipated glazing replacement starting in Yr 1
Window Glazing (Green)		ea								
Window Lintels		ea								
Unit Balconies		ea								
Unit Balconies (Green)		ea								
Unit Patios		ea								
Unit Patios (Green)		ea								
Building Mounted Lighting	0	ea								
Building Mounted Lighting (Green)		ea								
ROOF SYSTEMS										
Structure	41,464	sf				26	50			Wood framed w/wood deckings Monitor
Roof Covering - 1	41,464	sf	8.50	\$352,444		9	20	11	in 1 Year	Rubber membrane w/downspout drainage Replace in Year 11
Roof Covering - 1 (Green)	41,464	sf				9	20			Green option in place.
Roof Covering - 2		sf								
Roof Covering - 2 (Green)		sf								
Roof Covering - 3		sf								
Skylights		ea								
Penthouses		ea								

Costs projected at 3%

Replacement Items	Year 1 2013	Year 2 2014	Year 3 2015	Year 4 2016	Year 5 2017	Year 6 2018	Year 7 2019	Year 8 2020	Year 9 2021	Year 10 2022	Year 11 2023	Year 12 2024	Year 13 2025	Year 14 2026	Year 15 2027	Year 16 2028	Year 17 2029	Year 18 2030	Year 19 2031	Year 20 2032
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BUILDING EXTERIORS (cont.)

Windows - Operable	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$90,418	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Windows - Operable (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$97,200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Windows - Fixed	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$4,914	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Windows - Fixed (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,283	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Window Glazing	\$282	\$291	\$299	\$308	\$318	\$327	\$337	\$347	\$357	\$368	\$379	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Window Glazing (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Window Lintels	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Balconies	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Balconies (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Patios	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Patios (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building Mounted Lighting	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building Mounted Lighting (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

ROOF SYSTEMS

Structure	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Roof Covering - 1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$473,655	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Roof Covering - 1 (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Roof Covering - 2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Roof Covering - 2 (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Roof Covering - 3	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Skylights	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Penthouses	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Projected Capital Needs Over Twenty Years

BUILDING ARCHITECTURE--*continued*

Replacement Items	Quantity	Cost / Unit in 2013 \$	Total Cost in 2013 \$	Total Premium	AGE (Years)	EUL (Years)	Replacement Schedule (Year of action AND duration of project)	Notes
HALLS								
Hallway Walls and Ceilings	21,070 sf	1.15	\$24,258		5	12	7 19	Ceiling tiles and painted walls, in good condition Replace tiles and repaint walls in Yrs 7 and 19
Hallway Walls and Ceilings (Green)	21,070 sf	1.15	\$24,258	\$0	5	12	7 19	Use low VOC paint
Hallway Floors - 1	7,598 sf	5.00	\$37,989		13	20	7	VCT, in good condition Replace in Year 7
Hallway Floors - 1 (Green)	7,598 sf	5.50	\$41,788	\$3,799	13	25	7	Replace existing with linoleum product Longevity. See GM 2
Hallway Lighting	59 ea				≈1	20		Fluorescent T8 U-lamps, recent retrofit Maintain out of Operating
Hallway Lighting (Green)								Green option in place
Exit Signs	10 ea				≈1	20		LED-based exit signs Maintain out of Operating
Exit Signs (Green)								Green option in place
Community Area Lighting	24 ea				26	20		Fluorescent T8 lamps, mostly switched, restrooms w/occupancy sensors. Maintain out of Operating
Community Area Lighting (Green)								Green options in place
Hallway Doors								
Miscellaneous								
Miscellaneous (Green)								
STAIRS								
Stair Walls and Ceilings								n/a: No common interior public stairs
Stair Walls and Ceilings (Green)								
Stair Floors								
Stair Floors (Green)								
Stair Interior Lighting								
Stair Interior Lighting (Green)								
Stair Doors								
Stair Railings								

Costs projected at 3%

Replacement Items	Year 1 2013	Year 2 2014	Year 3 2015	Year 4 2016	Year 5 2017	Year 6 2018	Year 7 2019	Year 8 2020	Year 9 2021	Year 10 2022	Year 11 2023	Year 12 2024	Year 13 2025	Year 14 2026	Year 15 2027	Year 16 2028	Year 17 2029	Year 18 2030	Year 19 2031	Year 20 2032
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HALLS

Hallway Walls and Ceilings	\$0	\$0	\$0	\$0	\$0	\$0	\$28,965	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$41,297	\$0
Hallway Walls and Ceilings (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$28,965	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$41,297	\$0
Hallway Floors - 1	\$0	\$0	\$0	\$0	\$0	\$0	\$45,361	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Hallway Floors - 1 (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$49,897	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Hallway Lighting	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Hallway Lighting (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Exit Signs	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Exit Signs (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Community Area Lighting	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Community Area Lighting (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Hallway Doors	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Miscellaneous	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Miscellaneous (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

STAIRS

Stair Walls and Ceilings	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Stair Walls and Ceilings (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Stair Floors	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Stair Floors (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Stair Interior Lighting	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Stair Interior Lighting (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Stair Doors	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Stair Railings	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Projected Capital Needs Over Twenty Years

BUILDING ARCHITECTURE--*continued*

Replacement Items	Quantity		Cost / Unit in 2013 \$	Total Cost in 2013 \$	Total Premium	AGE (Years)	EUL (Years)	Replacement Schedule (Year of action AND duration of project)			Notes
LOBBIES / MAIL FACILITIES											
Lobby Walls & Ceilings		sf									
Lobby Walls & Ceilings (Green)		sf									
Lobby Floors	150	sf	5.00	\$750		13	20	7	in	1 Year	VCT, in good condition Replace in Year 7
Lobby Floors (Green)	150	sf	5.50	\$825	\$75	13	25	7	in	1 Year	Replace existing with linoleum product Longevity. See GM 2
COMMUNITY ROOM / OFFICE											
Walls and Ceilings	5,056	sf	1.15	\$5,821		5	12	7 19	in	1 Year	Ceiling tiles and painted walls, in good condition Replace tiles and repaint walls in Yrs 7 and 19
Walls and Ceilings (Green)	5,056	sf	1.15	\$5,821	\$0	5	12	7 19	in	1 Year	Use low VOC paint
Floor Covering	2,856	sf	5.00	\$14,281		13	20	7	in	1 Year	VCT, in good condition Replace in Year 7
Floor Covering (Green)	2,856	sf	5.50	\$15,709	\$1,428	13	25	7	in	1 Year	Replace existing with linoleum product Longevity. See GM 2
Community Kitchen Cabinets	1	ls				26	20				
Community Kitchen Cabinets (Green)	1	ls				26	20				
Furnishings and Appliances	1	ls	14170.00	\$14,170		Varies	15	9	in	1 Year	Tables, chairs, sofas, A/V equipment, frost-free refrigerator. Replacement allowance
Furnishings and Appliances (Green)	1	ls	14220.25	\$14,220	\$50	Varies	15	9	in	1 Year	Furnishing replacement allowance and Energy Star refrigerator (See EWCM 3)
PUBLIC LAUNDRY / RESTROOMS											
Walls and Ceilings	1,230	sf	0.95	\$1,168		5	12	7 19	in	1 Year	Ceiling tiles in laundry room, all other surfaces painted Replace tiles and repaint walls in Yrs 7 and 19
Walls and Ceilings (Green)	1,230	sf	0.95	\$1,168	\$0	5	12	7 19	in	1 Year	Use low VOC paint
Floor Covering	478	sf				26	40				Ceramic tile in restrooms, VCT in laundry room
Floor Covering	243	sf	5.00	\$1,215		13	20	7	in	1 Year	Replace VCT; maintain ceramic tile out of Operating
Floor Covering (Green)	243	sf	5.50	\$1,337	\$122	13	25	7	in	1 Year	Replace VCT w/linoleum flooring Longevity. See GM 2
Laundry Equipment	4	ea				Varies	10				Leased Maintain out of Operating
Laundry Equipment (Green)	4	ea				Varies	10				Consider front-loading washers
Restroom Fixtures / Accessories	1	ls				26	20				Maintain out of Operating
Toilets	2	ea	410.00	\$820		26	30	10	in	1 Year	Toilets with low flushometers (1.6 gpf) Replace in Year 10
Toilets (Green)	2	ea	440.75	\$882	\$62	26	30	10	in	1 Year	Replace existing toilets w/high efficiency toilets and flushometers. Water savings

Costs projected at 3%

Replacement Items	Year 1 2013	Year 2 2014	Year 3 2015	Year 4 2016	Year 5 2017	Year 6 2018	Year 7 2019	Year 8 2020	Year 9 2021	Year 10 2022	Year 11 2023	Year 12 2024	Year 13 2025	Year 14 2026	Year 15 2027	Year 16 2028	Year 17 2029	Year 18 2030	Year 19 2031	Year 20 2032
LOBBIES / MAIL FACILITIES																				
Lobby Walls & Ceilings	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Lobby Walls & Ceilings (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Lobby Floors	\$0	\$0	\$0	\$0	\$0	\$0	\$896	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Lobby Floors (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$985	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
COMMUNITY ROOM / OFFICE																				
Walls and Ceilings	\$0	\$0	\$0	\$0	\$0	\$0	\$6,951	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$9,910	\$0
Walls and Ceilings (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$6,951	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$9,910	\$0
Floor Covering	\$0	\$0	\$0	\$0	\$0	\$0	\$17,053	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Floor Covering (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$18,758	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Community Kitchen Cabinets	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Community Kitchen Cabinets (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Furnishings and Appliances	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$17,950	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Furnishings and Appliances (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$18,014	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
PUBLIC LAUNDRY / RESTROOMS																				
Walls and Ceilings	\$0	\$0	\$0	\$0	\$0	\$0	\$1,395	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,989	\$0
Walls and Ceilings (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$1,395	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,989	\$0
Floor Covering	\$0	\$0	\$0	\$0	\$0	\$0	\$1,451	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Floor Covering (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$1,596	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Laundry Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Laundry Equipment (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Restroom Fixtures / Accessories	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Toilets	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,070	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Toilets (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,150	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Projected Capital Needs Over Twenty Years

DWELLING UNITS

Replacement Items	Quantity	Cost / Unit 2013.00	Total Cost in 2013 \$	Total Premium	AGE (Years)	EUL (Years)	Replacement Schedule (Year of action AND duration of project)		Notes
LIVING AREA FINISHES									
Unit Hallway Doors	40 ea				26	30			Solid core Maintain out of Operating
Unit Interior Doors	73 ea				26	25			Hollow core Maintain out of Operating
Unit Closet Doors	200 ea				26	25			Hollow core Maintain out of Operating
Unit Walls and Ceilings	88,285 sf				Varies	10			Painted surfaces Maintain out of Operating
Unit Walls and Ceilings (Green)	88,285 sf				Varies	10			Use Low VOC paints
Living Area Floors - 1	16,911 sf	5.00	\$84,556		Varies	20	1	over 20 Years	VCT, living rooms and bedrooms Replace starting in Yr 1
Living Area Floors - 1 (Green)	16,911 sf	5.50	\$93,012	\$8,456	Varies	20	1	over 4 Years	Replace existing with linoleum flooring Longevity. See GM 3
Living Area Floors - 2	sf								
Living Area Floors - 2 (Green)	sf								

BATHROOMS

Bathroom Floors	1,761 sf	5.00	\$8,805		Varies	20	1	over 20 Years	VCT, in varying conditions Replace starting in Year 1
Bathroom Floors (Green)	1,761 sf	5.50	\$9,686	\$881	Varies	20	1	over 4 Years	Replace existing with linoleum flooring Longevity. See GM 3
Bathtub and Shower	40 ea	375.00	\$15,000		26	30	4	in 1 Year	Enameled steel tubs, low flow showerheads Allowance for tub reglazing
Bathtub and Shower (Green)	ea								Green option in place
Bathroom Vanity	ea								
Bathroom Vanity (Green)	ea								
Bathroom Sinks	40 ea	420.00	\$16,800		26	30	4	over 20 Years	Wall-hung sinks, in good condition Replacement allowance starts in Year 4
Bathroom Toilets	40 ea	410.00	\$16,400		26	30	10	in 1 Year	Low flush toilets (1.6 gpf) Replace
Bathroom Toilets (Green)	40 ea	440.75	\$17,630	\$1,230	26	30	10	in 1 Year	Replace existing with high eff toilets (1.28 gpf<) Water savings.
Ventilation & Exhaust	40 ea	110.00	\$4,400		Varies	20	10	in 1 Year	Ceiling mounted fans Replace in Year 10
Ventilation & Exhaust (Green)	40 ea	118.25	\$4,730	\$330	Varies	20	10	in 1 Year	Replace existing with humidistat controlled variable speed exhaust fans. Discuss
Accessories	40 ea	184.00	\$7,360		26	20	1	over 20 Years	Towel bars, mirrors, etc. Replace starting in Year 1

Costs projected at 3%

Replacement Items	Year 1 2013	Year 2 2014	Year 3 2015	Year 4 2016	Year 5 2017	Year 6 2018	Year 7 2019	Year 8 2020	Year 9 2021	Year 10 2022	Year 11 2023	Year 12 2024	Year 13 2025	Year 14 2026	Year 15 2027	Year 16 2028	Year 17 2029	Year 18 2030	Year 19 2031	Year 20 2032
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LIVING AREA FINISHES

Unit Hallway Doors	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Interior Doors	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Closet Doors	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Walls and Ceilings	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Walls and Ceilings (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Living Area Floors - 1	\$4,228	\$4,355	\$4,485	\$4,620	\$4,758	\$4,901	\$5,048	\$5,200	\$5,356	\$5,516	\$5,682	\$5,852	\$6,028	\$6,209	\$6,395	\$6,587	\$6,784	\$6,988	\$7,198	\$7,413
Living Area Floors - 1 (Green)	\$23,253	\$23,950	\$24,669	\$25,409	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Living Area Floors - 2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Living Area Floors - 2 (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

BATHROOMS

Bathroom Floors	\$440	\$453	\$467	\$481	\$496	\$510	\$526	\$541	\$558	\$574	\$592	\$609	\$628	\$647	\$666	\$686	\$706	\$728	\$749	\$772
Bathroom Floors (Green)	\$2,421	\$2,494	\$2,569	\$2,646	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bathtub and Shower	\$0	\$0	\$0	\$16,391	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bathtub and Shower (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bathroom Vanity	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bathroom Vanity (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bathroom Sinks	\$0	\$0	\$0	\$918	\$945	\$974	\$1,003	\$1,033	\$1,064	\$1,096	\$1,129	\$1,163	\$1,198	\$1,234	\$1,271	\$1,309	\$1,348	\$1,388	\$1,430	\$1,473
Bathroom Toilets	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$21,398	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bathroom Toilets (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$23,003	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Ventilation & Exhaust	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,741	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Ventilation & Exhaust (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$6,172	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Accessories	\$368	\$379	\$390	\$402	\$414	\$427	\$439	\$453	\$466	\$480	\$495	\$509	\$525	\$540	\$557	\$573	\$591	\$608	\$626	\$645

Projected Capital Needs Over Twenty Years

DWELLING UNITS--*continued*

Replacement Items	Quantity		Cost / Unit in 2013 \$	Total Cost in 2013 \$	Total Premium	AGE (Years)	EUL (Years)	Replacement Schedule (Year of action AND duration of project)		Notes
KITCHENS										
										VCT, in varying conditions
Kitchen Floors	3,077	sf	5.00	15,383		Varies	20	1	over 20 Years	Replace starting in Year 1
Kitchen Floors (Green)	3,077	sf	5.50	16,921	\$1,538	Varies	20	1	over 4 Years	Replace existing with linoleum flooring Longevity. See GM 3
Kitchen Cabinets	40	ea	2475.00	99,000		26	25	1	over 8 Years	Plywood, in good condition. Replacement cost includes countertop. Replace starting in Yr 1
Kitchen Cabinets (Green)	40	ea	2660.63	106,425	\$7,425	26	30	1	in 1 Year	Replace existing w/FSC certified wood cabinets Longevity, lower VOCs. GM 4
Kitchen Cabinets		ea								
Kitchen Cabinets (Green)		ea								
Kitchen Countertops	40	ea	435.16	17,406		Varies	12	11	over 12 Years	Laminated particleboard. Future replacement starts in Year 11
Kitchen Countertops (Green)	40	ea	975.00	39,000	\$21,594	Varies	30		Years	Replace existing with solid stone countertops, longer EUL. Not cost-effective. GM 5
Range	40	ea	500.00	20,000		Varies	25	5	over 20 Years	20-inch electric ranges, in good condition Replace
Range (Green)		ea								
Range		ea								
Range (Green)		ea								
Refrigerator	40	ea	670.00	26,800		Varies	15	1 16	over 15 Years	Frost-free Replace
Refrigerator (Green)	40	ea	720.25	28,810	\$2,010	Varies	15	1 16	over 15 Years	Replace existing w/Energy Star refrigerators Energy savings.
Refrigerator		ea								
Refrigerator (Green)		ea								
Dishwasher		ea								
Dishwasher (Green)		ea								
Rangehood and Vent	40	ea	110.00	4,400		Varies	20	5	over 20 Years	Ceiling exhaust fans, ducted to roof Replace
Disposals		ea								
Miscellaneous		ea								
Miscellaneous (Green)		ea								

Costs projected at 3%

Replacement Items	Year 1 2013	Year 2 2014	Year 3 2015	Year 4 2016	Year 5 2017	Year 6 2018	Year 7 2019	Year 8 2020	Year 9 2021	Year 10 2022	Year 11 2023	Year 12 2024	Year 13 2025	Year 14 2026	Year 15 2027	Year 16 2028	Year 17 2029	Year 18 2030	Year 19 2031	Year 20 2032
KITCHENS																				
Kitchen Floors	\$769	\$792	\$816	\$840	\$866	\$892	\$918	\$946	\$974	\$1,004	\$1,034	\$1,065	\$1,097	\$1,129	\$1,163	\$1,198	\$1,234	\$1,271	\$1,309	\$1,349
Kitchen Floors (Green)	\$4,230	\$4,357	\$4,488	\$4,622	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Kitchen Cabinets	\$12,375	\$12,746	\$13,129	\$13,522	\$13,928	\$14,346	\$14,776	\$15,220	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Kitchen Cabinets (Green)	\$106,425	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Kitchen Cabinets	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Kitchen Cabinets (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Kitchen Countertops	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,949	\$2,008	\$2,068	\$2,130	\$2,194	\$2,260	\$2,328	\$2,398	\$2,469	\$2,544
Kitchen Countertops (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Range	\$0	\$0	\$0	\$0	\$1,126	\$1,159	\$1,194	\$1,230	\$1,267	\$1,305	\$1,344	\$1,384	\$1,426	\$1,469	\$1,513	\$1,558	\$1,605	\$1,653	\$1,702	\$1,754
Range (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Range	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Range (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Refrigerator	\$1,787	\$1,840	\$1,895	\$1,952	\$2,011	\$2,071	\$2,133	\$2,197	\$2,263	\$2,331	\$2,401	\$2,473	\$2,547	\$2,624	\$2,702	\$2,784	\$2,867	\$2,953	\$3,042	\$3,133
Refrigerator (Green)	\$1,921	\$1,978	\$2,038	\$2,099	\$2,162	\$2,227	\$2,293	\$2,362	\$2,433	\$2,506	\$2,581	\$2,659	\$2,738	\$2,821	\$2,905	\$2,992	\$3,082	\$3,175	\$3,270	\$3,368
Refrigerator	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Refrigerator (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Dishwasher	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Dishwasher (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Rangehood and Vent	\$0	\$0	\$0	\$0	\$248	\$255	\$263	\$271	\$279	\$287	\$296	\$305	\$314	\$323	\$333	\$343	\$353	\$364	\$375	\$386
Disposals	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Miscellaneous	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Miscellaneous (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Projected Capital Needs Over Twenty Years

DWELLING UNITS--continued

Replacement Items	Quantity		Cost / Unit in 2013 \$	Total Cost in 2013 \$	Total Premium	AGE (Years)	EUL (Years)	Replacement Schedule (Year of action AND duration of project)		Notes
IN-UNIT MECHANICAL										
Unit Warm Air Furnaces		ea								
Unit Warm Air Furnaces (Green)		ea								
Unit Thermostats	40	ea	105.00	\$4,200		Varies	20	10	in 1 Year	Wall mounted manual thermostats Replace
Unit Thermostats (Green)	40	ea	202.00	\$8,080	\$3,880	Varies	20	10	in 1 Year	Replace existing with programmable thermostats. Energy savings.
Unit Air Conditioning		If								
Unit Air Conditioning (Green)		If								
Unit Radiation	40	ea	577.50	\$23,100		26	30	4	over 20 Years	Hydronic baseboard, in good condition Replacement allowance
Unit Radiation (Green)		ea								
Unit Domestic Hot Water	40	ea	850.00	\$34,000		26	12	4 16	over 12 Years	Electric DHW tanks Replace starting in Years 4 and 16
Unit Domestic Hot Water (Green)		ea								
Miscellaneous		ea								
Miscellaneous (Green)		ea								
IN-UNIT ELECTRICAL										
Unit Electrical Panel	40	ea				26	50			Circuit breaker panels; no missing breakers or exposed wires. Maintain out of Operating
Unit Wiring	40	ea				26	50			Maintain out of Operating
Unit Security Call System	40	ea				26	20			Intercom panel in each unit. Local emergency call assist system. Maintain out of Operating
Unit Smoke/Fire Detection	40	ea	346.75	\$13,870		Varies	10	5 15	in 1 Year	Hardwired and battery powered smokes in each unit Replace in Years 5 and 15
Unit Lighting		If								
Unit Lighting (Green)		If								
Unit Lighting		ea								
Unit Lighting (Green)		ea								
Miscellaneous		ea								

Costs projected at 3%

Replacement Items	Year 1 2013	Year 2 2014	Year 3 2015	Year 4 2016	Year 5 2017	Year 6 2018	Year 7 2019	Year 8 2020	Year 9 2021	Year 10 2022	Year 11 2023	Year 12 2024	Year 13 2025	Year 14 2026	Year 15 2027	Year 16 2028	Year 17 2029	Year 18 2030	Year 19 2031	Year 20 2032
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IN-UNIT MECHANICAL

Unit Warm Air Furnaces	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Warm Air Furnaces (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Thermostats	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,480	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Thermostats (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$10,543	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Air Conditioning	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Air Conditioning (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Radiation	\$0	\$0	\$0	\$1,262	\$1,300	\$1,339	\$1,379	\$1,421	\$1,463	\$1,507	\$1,552	\$1,599	\$1,647	\$1,696	\$1,747	\$1,799	\$1,853	\$1,909	\$1,966	\$2,025
Unit Radiation (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Domestic Hot Water	\$0	\$0	\$0	\$3,096	\$3,189	\$3,285	\$3,383	\$3,485	\$3,589	\$3,697	\$3,808	\$3,922	\$4,040	\$4,161	\$4,286	\$4,414	\$4,547	\$4,683	\$4,824	\$4,968
Unit Domestic Hot Water (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Miscellaneous	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Miscellaneous (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

IN-UNIT ELECTRICAL

Unit Electrical Panel	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Wiring	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Security Call System	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Smoke/Fire Detection	\$0	\$0	\$0	\$0	\$15,611	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$20,980	\$0	\$0	\$0	\$0	\$0
Unit Lighting	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Lighting (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Lighting	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Lighting (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Miscellaneous	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Simple Payback Analysis

EWCM #1 Convert Lighting - Common Area

Replacement Costs

A. Total cost to replace metal halide lighting with induction lighting.

\$3,500.00

Utility Cost

Electricity: \$0.14
Natural Gas: \$0.00

Existing Types / Usage

	Description	Wattage per Fixture	Number of Fixtures	Lighting Hours/Day	Usage Days/Year	Usage kWh/Year	Usage \$/Year
Type 1:	Pole-mounted Metal Halide	250	14	11	365	14,053	\$1,957.98
Type 2:						0	\$0.00
Type 3:						0	\$0.00
Type 4:						0	\$0.00
Type 5:						0	\$0.00
Total:						14,053	\$1,957.98

Proposed Green Types / Usage

	Description	Wattage per Fixture	Number of Fixtures	Lighting Hours/Day	Usage Days/Year	Usage kWh/Year	Usage \$/Year
Type 1:	Induction Lamp Retrofit	65	14	11	365	3,654	\$509.08
Type 2:						0	\$0.00
Type 3:						0	\$0.00
Type 4:						0	\$0.00
Type 5:						0	\$0.00
Total:						3,654	\$509.08

Annual Electric Savings

35,480,876 BTUs

10,398.85 kWh

Savings = 10,398.85 x \$0.14 = \$1,448.91/yr

Annual Natural Gas Savings¹

0 BTUs

0.00 therms

Savings = 0.00 x \$0.00 = \$0.00/yr

Annual Net Cost Savings

\$1,448.91 + \$0.00 = \$1,448.91

5. Simple Payback

\$3,500.00 / \$1,448.91 = 2.42 yrs

Additional Notes/Comments:

¹Exterior lighting; no impact to heating system.

Simple Payback Analysis

EWCM #2 Replace Pump Motors

Description: This worksheet calculates the annual savings and simple payback of replacing existing pump motors with comparable premium efficient motors.

Methodology: Energy usage for each motor is calculated by converting the motor's horsepower (hp) rating to kilowatts (kW), and multiplying the kW value by the annual hours of use, and dividing this amount by the motor's efficiency:

$$\{ (\text{hp}) \times (0.746 \text{ kW/hp}) \times (\text{hours}) \} \div (\text{Motor efficiency})$$

Replacement Costs

	Type	Cost
A. Proposed Conventional:	Standard efficiency motors	\$5,400.00
B. Proposed Green:	High efficiency motors	\$5,570.00
C. Incremental Cost Between Proposed Conventional and Proposed Green:		\$170.00

Utility Cost

Electricity: \$0.14

Existing Conditions

Existing Motor	Quantity	Size: hp	Conversion Factor kW/hp	kW per Motor	Usage hrs/Yr	Load	Existing Efficiency	Total Usage kWh	Operational Cost \$
Heat P1	2	2	.746	1.4920	3100	100%	80.0%	11,563	\$1,611
Heat P2			.746	0.0000		100%		0	\$0
Heat P3			.746	0.0000		100%		0	\$0
Heat P4			.746	0.0000		100%		0	\$0
DHW P1	2	0.25	.746	0.1865	3600	100%	79.0%	1,700	\$237
DHW P2			.746	0.0000		100%		0	\$0
DHW P3			.746	0.0000		100%		0	\$0
Totals:								13,263	\$1,848

Proposed Green Conditions

Existing Motor	Quantity	Size: hp	Conversion Factor kW/hp	kW per Motor	Usage hrs/Yr	Load	Proposed Efficiency	Total Usage kWh	Operational Cost \$
Heat P1	2	2	.746	1.4920	3100	100%	83.0%	11,145	\$1,553
Heat P2			.746	0.0000		100%		0	\$0
Heat P3			.746	0.0000		100%		0	\$0
Heat P4			.746	0.0000		100%		0	\$0
DHW P1	2	0.25	.746	0.1865	3600	100%	81.5%	1,648	\$230
DHW P2			.746	0.0000		100%		0	\$0
DHW P3			.746	0.0000		100%		0	\$0
Totals:								12,793	\$1,782

Annual Savings: Existing to Proposed Green

$$\text{Savings} = \$1,847.94 - \$1,782.45 = \$65.50 / \text{yr}$$

Simple Payback: Existing to Proposed Green

$$\$170.00 / \$65.50 = 2.6 \text{ yrs}$$

Simple Payback Analysis

EWCM #3 Replace Refrigerators - Common Area

Replacement Costs

A. Proposed Conventional	\$670.00
B. Proposed Green	\$720.25
C. Incremental Cost Between Proposed Conventional and Proposed Green	\$50.25

Electricity: \$0.14
Natural Gas:

Existing Conditions

A. Existing refrigerator type	Frost-free
B. Number of refrigerators	1
C. Average annual energy use per refrigerator	650 kWh / Year
D. Total annual energy use	650.00 kWh / Year
E. Total annual operational cost	\$90.57 \$ / Year

Proposed Conventional Conditions

A. Proposed standard refrigerator type	Frost-free
B. Number of refrigerators	1
C. Average annual energy use per refrigerator	650 kWh / Year
D. Total annual energy use	650.00 kWh / Year
E. Total annual operational cost	\$90.57 \$ / Year

Proposed Green Conditions

A. Proposed green refrigerator type	Energy Star
B. Number of refrigerators	1
C. Average annual energy use per refrigerator	515 kWh / Year
D. Total annual energy use	515.00 kWh / Year
E. Total annual operational cost	\$71.76 \$ / Year

Annual Savings: Existing to Proposed Conventional

Electricity: \$0.14 x 0.00 = \$0.00 \$ / Year
Natural Gas¹: \$0.00 x = \$0.00 \$ / Year
Total: \$0.00 \$ / Year

Annual Savings: Proposed Conventional to Proposed Green

Electricity: \$0.14 x 135.00 = \$18.81 \$ / Year
Natural Gas¹: \$0.00 x = \$0.00 \$ / Year
Total: \$18.81 \$ / Year

Annual Savings: Existing to Proposed Green

Electricity: \$0.14 x 135.00 = \$18.81 \$ / Year
Natural Gas¹: \$0.00 x 0.00 = \$0.00 \$ / Year
Total: \$18.81 \$ / Year

Simple Payback: Conventional

¹B \$670.00 / ¹O \$0.00 = n/a yrs

Simple Payback: Green

\$720.25 / \$18.81 = 38.29 yrs

Incremental Payback: Proposed Conventional to Proposed Green

\$50.25 / \$18.81 = 2.67 yrs

Additional Notes/Comments:

¹Negative natural gas savings attributed to decrease in heating gain from the reduced refrigerator wattage; therefore, additional natural gas required for space heating in these areas.

Life Cycle Cost Analysis

Energy and Water Conservation Measure (EWCM): # 1

Induction Lighting

250 watt Metal Halide Pole-mounted

vs.

Induction Lamp Retrofit (65 watt)

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term

30

Conventional Product:

250 watt Metal Halide Pole-mounted

Cost over Life Cycle (EUL)

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
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Life Cycle Costs

Maintain	Pole-mounted MH	14	ea	\$0.00		20	1	1.5		
Utility Cost	Electric Usage	14,053	kWh	\$0.14	\$1,958	1	1	30.0	\$93,152	\$32,091
Total Life Cycle Cost									\$93,152	\$32,091

Energy Savings

Net Life Cycle Cost after Energy Savings									\$93,152	\$32,091

Green Product:

Induction Lamp Retrofit (65 watt)

Cost over Life Cycle (EUL)

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
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Life Cycle Costs

Install/Replace	Induction Lamps (65w)	14	ea	\$250.00	\$3,500	30	1	1.0	\$3,500	\$3,500
Utility Cost	Electric Usage	3,654	kWh	\$0.14	\$509	1	1	30.0	\$24,219	\$8,344
Total Life Cycle Cost									\$27,719	\$11,844

Energy Savings

Net Life Cycle Cost after Energy Savings									\$27,719	\$11,844

ECONOMIC RETURN ANALYSIS

Green NPV	\$20,247
Green IRR	75.8%

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Green Product: Induction Lamp Retrofit (65 watt)

Override with Green Product? No

Final Product Choice

Green Product: Induction Lamp Retrofit (65 watt)

Notes:

1. Analysis performed using a discount rate of 8.00% and an inflation rate of 3.00% for both expenses and energy costs.
2. Green NPV and Green IRR are relative measures comparing Green vs. Conventional implementation.

Energy and Water Conservation Measure (EWCM): # 1
Induction Lighting
STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product	3
Replacement Year	4

Final Product Choice
Green Product: Induction Lamp Retrofit (65 watt)

Immediate Replacement				Year	1						Cost over Life Cycle (EUL)	
Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted		
Install/Replace	Induction Lamps (65w)	14	ea	\$250.00	\$3,500	30	1	1.0	\$3,500	\$3,500		
Utility Cost	Electric Usage	3,654	kWh	\$0.14	\$509	1	1	30.0	\$24,219	\$8,344		
Total Life Cycle Cost										\$27,719	\$11,844	
<i>Energy Savings</i>												
Net Life Cycle Cost after Energy Savings										\$27,719	\$11,844	

Replacement at End of Remaining Useful Life				Year	4							
Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted		
Install/Replace	Induction Lamps (65w)	14	ea	\$250.00	\$3,500	30	4	0.9	\$3,000	\$2,948		
Utility Cost	Electric Usage	3,654	kWh	\$0.14	\$509	1	4	27.0	\$22,646	\$6,886		
Total Life Cycle Cost										\$31,698	\$15,440	
<i>Expenses for Current Product Through Useful Life</i>												
Utility Cost	Current Electric Usage	14,053	kWh	\$0.14	\$1,958	1	1	3.0	\$6,052	\$5,606		
Total Life Cycle Cost										\$31,698	\$15,440	
<i>Energy Savings</i>												
Net Life Cycle Cost after Energy Savings										\$31,698	\$15,440	

ECONOMIC RETURN ANALYSIS

Timing NPV	\$3,596
Timing IRR	75.76%

TIMING RECOMMENDATION

Replacement Year:	1
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Notes:

1. Analysis performed using a discount rate of 8.00% and an inflation rate of 3.00% for both expenses and energy costs.
2. Timing NPV and Timing IRR are relative measures comparing Immediate Replacement vs. Replacement at End of Remaining Useful Life.

Life Cycle Cost Analysis

Energy and Water Conservation Measure (EWCM): # 2

High Efficient Motors

Standard Efficient Motors

vs.

High Efficient Motors

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term

25

Conventional Product:

Standard Efficient Motors

Cost over Life Cycle (EUL)

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
<i>Life Cycle Costs</i>										
Install/Replace	2hp Circ Pumps	2	ea	\$1,750.00	\$3,500	25	1	1.0	\$3,500	\$3,500
Install/Replace	DHW Circ Pumps	2	ea	\$950.00	\$1,900	20	1	1.3	\$2,435	\$2,179
Utility Cost	Electric Usage	13,263	kWh	\$0.14	\$1,848	1	1	25.0	\$67,375	\$27,712
Total Life Cycle Cost									\$73,310	\$33,392

Energy Savings

Net Life Cycle Cost after Energy Savings									\$73,310	\$33,392

Green Product:

High Efficient Motors

Cost over Life Cycle (EUL)

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
<i>Life Cycle Costs</i>										
Install/Replace	2hp High Eff Pump Mtrs	2	ea	\$1,800.00	\$3,600	25	1	1.0	\$3,600	\$3,600
Install/Replace	DHW High Eff Pump Mtrs	2	ea	\$985.00	\$1,970	20	1	1.3	\$2,525	\$2,260
Utility Cost	Electric Usage	12,793	kWh	\$0.14	\$1,782	1	1	25.0	\$64,987	\$26,730
Total Life Cycle Cost									\$71,111	\$32,590

Energy Savings

Net Life Cycle Cost after Energy Savings									\$71,111	\$32,590

ECONOMIC RETURN ANALYSIS

Green NPV	\$802
Green IRR	67.6%

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Green Product: High Efficient Motors

Override with Green Product? No

Final Product Choice

Green Product: High Efficient Motors

Notes:

1. Analysis performed using a discount rate of 8.00% and an inflation rate of 3.00% for both expenses and energy costs.
2. Green NPV and Green IRR are relative measures comparing Green vs. Conventional implementation.

Energy and Water Conservation Measure (EWCM): # 2
High Efficient Motors
STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product
Replacement Year

9
10

Final Product Choice

Green Product: **High Efficient Motors**

Immediate Replacement

Year

1

Cost over Life Cycle (EUL)

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	2hp High Eff Pump Mtrs	2	ea	\$1,800.00	\$3,600	25	1	1.0	\$3,600	\$3,600
Install/Replace	DHW High Eff Pump Mtrs	2	ea	\$985.00	\$1,970	20	1	1.3	\$2,525	\$2,260
Utility Cost	Electric Usage	12,793	kWh	\$0.14	\$1,782	1	1	25.0	\$64,987	\$26,730
Total Life Cycle Cost									\$71,111	\$32,590

Energy Savings

Net Life Cycle Cost after Energy Savings									\$71,111	\$32,590

Replacement at End of Remaining Useful Life

Year

10

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	2hp High Eff Pump Mtrs	2	ea	\$1,800.00	\$3,600	25	10	0.6	\$2,063	\$1,934
Install/Replace	DHW High Eff Pump Mtrs	2	ea	\$985.00	\$1,970	20	10	0.8	\$1,769	\$1,160
Utility Cost	Electric Usage	12,793	kWh	\$0.14	\$1,782	1	10	16.0	\$46,879	\$13,359

Expenses for Current Product Through Useful Life

Maintain	Current Electric Usage	13,263	kWh	\$0.14	\$1,848	1	1	9.0	\$18,773	\$13,862
Total Life Cycle Cost									\$69,484	\$30,315

Energy Savings

Net Life Cycle Cost after Energy Savings									\$69,484	\$30,315

ECONOMIC RETURN ANALYSIS

Timing NPV	(\$2,275)
Timing IRR	n/a

TIMING RECOMMENDATION

Replacement Year: **10**

Notes:

1. Analysis performed using a discount rate of 8.00% and an inflation rate of 3.00% for both expenses and energy costs.
2. Timing NPV and Timing IRR are relative measures comparing Immediate Replacement vs. Replacement at End of Remaining Useful Life.

Life Cycle Cost Analysis

Energy and Water Conservation Measure (EWCM): # 3

Energy Star Refrigerator

Frost-Free Refrigerator

vs.

Energy Star Refrigerator

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term

15

Conventional Product:

Frost-Free Refrigerator

Cost over Life Cycle (EUL)

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
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Life Cycle Costs

Install/Replace	Frost-Free Refrigerator	1	ea	\$670.00	\$670	15	1	1.0	\$670	\$670
Utility Cost	Electric Usage	650	kWh	\$0.14	\$91	1	1	15.0	\$1,684	\$995
Total Life Cycle Cost									\$2,354	\$1,665

Energy Savings

Net Life Cycle Cost after Energy Savings									\$2,354	\$1,665

Green Product:

Energy Star Refrigerator

Cost over Life Cycle (EUL)

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
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Life Cycle Costs

Install/Replace	Energy Star Refrigerator	1	ea	\$720.25	\$720	15	1	1.0	\$720	\$720
Utility Cost	Electric Usage	515	kWh	\$0.14	\$72	1	1	15.0	\$1,335	\$789
Total Life Cycle Cost									\$2,055	\$1,509

Energy Savings

Net Life Cycle Cost after Energy Savings									\$2,055	\$1,509

ECONOMIC RETURN ANALYSIS

Green NPV	\$156
Green IRR	64.5%

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Green Product: Energy Star Refrigerator

Override with Green Product? No

Final Product Choice

Green Product: Energy Star Refrigerator

Notes:

1. Analysis performed using a discount rate of 8.00% and an inflation rate of 3.00% for both expenses and energy costs.
2. Green NPV and Green IRR are relative measures comparing Green vs. Conventional implementation.

Energy and Water Conservation Measure (EWCM): # 3
Energy Star Refrigerator
STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product	8
Replacement Year	9

Final Product Choice	Energy Star Refrigerator
Green Product:	Energy Star Refrigerator

Immediate Replacement				Year	1						Cost over Life Cycle (EUL)	
Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted		
Install/Replace	Energy Star Refrigerator	1	ea	\$720.25	\$720	15	1	1.0	\$720	\$720		
Utility Cost	Electric Usage	515	kWh	\$0.14	\$72	1	1	15.0	\$1,335	\$789		
Total Life Cycle Cost										\$2,055	\$1,509	
<i>Energy Savings</i>												
Net Life Cycle Cost after Energy Savings										\$2,055	\$1,509	

Replacement at End of Remaining Useful Life				Year	9							
Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted		
Install/Replace	Energy Star Refrigerator	1	ea	\$720.25	\$720	15	9	0.5	\$331	\$295		
Utility Cost	Electric Usage	515	kWh	\$0.14	\$72	1	9	7.0	\$697	\$300		
Total Life Cycle Cost										\$1,833	\$1,212	
<i>Expenses for Current Product Through Useful Life</i>												
Install/Replace	Current Electric Usage	650	kWh	\$0.14	\$91	1	1	8.0	\$805	\$617		
Total Life Cycle Cost										\$1,833	\$1,212	
<i>Energy Savings</i>												
Net Life Cycle Cost after Energy Savings										\$1,833	\$1,212	

ECONOMIC RETURN ANALYSIS

Timing NPV	(\$297)
Timing IRR	n/a

TIMING RECOMMENDATION

Replacement Year:	9
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Notes:

1. Analysis performed using a discount rate of 8.00% and an inflation rate of 3.00% for both expenses and energy costs.
2. Timing NPV and Timing IRR are relative measures comparing Immediate Replacement vs. Replacement at End of Remaining Useful Life.

Life Cycle Cost Analysis

Green Measure (GM):

1

Cement Fiberboard Siding

Vinyl Siding

vs.

Cement Fiberboard Siding

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term

50

Conventional Product:

Vinyl Siding

Cost over Life Cycle (EUL)

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
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Life Cycle Costs

Install/Replace	Vinyl Siding	6,085	sf	\$6.50	\$39,553	40	1	1.3	\$42,316	\$42,584
Total Life Cycle Cost									\$42,316	\$42,584

Energy Savings

Net Life Cycle Cost after Energy Savings									\$42,316	\$42,584

Green Product:

Cement Fiberboard Siding

Cost over Life Cycle (EUL)

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
--------	-------------	----------	------	-----------	------------	-----	------------	--------	----------	------------

Life Cycle Costs

Install/Replace	Cement Fiberboard Siding	6,085	sf	\$8.50	\$51,723	50	1	1.0	\$51,723	\$51,723
Total Life Cycle Cost									\$51,723	\$51,723

Energy Savings

Net Life Cycle Cost after Energy Savings									\$51,723	\$51,723

ECONOMIC RETURN ANALYSIS

Green NPV	(\$9,138)
Green IRR	n/a

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Conventional Product: Vinyl Siding

Override with Green Product? No

Final Product Choice

Conventional Product: Vinyl Siding

Notes:

1. Analysis performed using a discount rate of 8.00% and an inflation rate of 3.00% for both expenses and energy costs.
2. Green NPV and Green IRR are relative measures comparing Green vs. Conventional implementation.

Green Measure (GM):

1

Cement Fiberboard Siding

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product
Replacement Year

17
18

Final Product Choice

Conventional Product: Vinyl Siding

Immediate Replacement

Year

1

Cost over Life Cycle (EUL)

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	Vinyl Siding	6,085	sf	\$6.50	\$39,553	40	1	1.3	\$42,316	\$42,584
Total Life Cycle Cost									\$42,316	\$42,584

Energy Savings

Net Life Cycle Cost after Energy Savings									\$42,316	\$42,584

Replacement at End of Remaining Useful Life

Year

18

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	Vinyl Siding	6,085	sf	\$6.50	\$39,553	40	18	0.8	\$35,914	\$16,990

Expenses for Current Product Through Useful Life

Total Life Cycle Cost									\$35,914	\$16,990

Energy Savings

Net Life Cycle Cost after Energy Savings									\$35,914	\$16,990

ECONOMIC RETURN ANALYSIS

Timing NPV	(\$25,594)
Timing IRR	(0.72%)

TIMING RECOMMENDATION

Replacement Year:	18
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Notes:

1. Analysis performed using a discount rate of 8.00% and an inflation rate of 3.00% for both expenses and energy costs.
2. Timing NPV and Timing IRR are relative measures comparing Immediate Replacement vs. Replacement at End of Remaining Useful Life.

Life Cycle Cost Analysis

Green Measure (GM):

2

Replace VCT with Linoleum Flooring

Vinyl Composite Tile (VCT) Flooring

vs.

Linoleum Flooring

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term

25

Conventional Product:

Vinyl Composite Tile (VCT) Flooring

Cost over Life Cycle (EUL)

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
--------	-------------	----------	------	-----------	------------	-----	------------	--------	----------	------------

Life Cycle Costs

Install/Replace	Common Halls VCT	7,598	sf	\$5.00	\$37,989	20	1	1.3	\$48,683	\$43,576
Install/Replace	Community Area VCT	2,856	sf	\$5.00	\$14,281	20	1	1.3	\$18,302	\$16,382
Install/Replace	Laundry VCT	243	sf	\$5.00	\$1,215	20	1	1.3	\$1,557	\$1,394
Install/Replace	Lobby	150	sf	\$5.00	\$750	20	1	1.3	\$961	\$860

Total Life Cycle Cost

\$69,503

\$62,211

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$69,503

\$62,211

Green Product:

Linoleum Flooring

Cost over Life Cycle (EUL)

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
--------	-------------	----------	------	-----------	------------	-----	------------	--------	----------	------------

Life Cycle Costs

Install/Replace	Common Halls Linoleum	7,598	sf	\$5.50	\$41,788	25	1	1.0	\$41,788	\$41,788
Install/Replace	Common Area Linoleum	2,856	sf	\$5.50	\$15,709	25	1	1.0	\$15,709	\$15,709
Install/Replace	Laundry Linoleum	243	sf	\$5.50	\$1,337	25	1	1.0	\$1,337	\$1,337
Install/Replace	Lobby	150	sf	\$5.50	\$825	25	1	1.0	\$825	\$825

Total Life Cycle Cost

\$59,659

\$59,659

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$59,659

\$59,659

ECONOMIC RETURN ANALYSIS

Green NPV	\$2,553
Green IRR	11.0%

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Green Product:	Linoleum Flooring
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Override with Green Product?

No

Final Product Choice

Green Product:	Linoleum Flooring
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Notes:

1. Analysis performed using a discount rate of 8.00% and an inflation rate of 3.00% for both expenses and energy costs.
2. Green NPV and Green IRR are relative measures comparing Green vs. Conventional implementation.

Green Measure (GM):

2

Replace VCT with Linoleum Flooring

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product
Replacement Year

6
7

Final Product Choice

Green Product:

Linoleum Flooring

Immediate Replacement

Year

1

Cost over Life Cycle (EUL)

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	Common Halls Linoleum	7,598	sf	\$5.50	\$41,788	25	1	1.0	\$41,788	\$41,788
Install/Replace	Common Area Linoleum	2,856	sf	\$5.50	\$15,709	25	1	1.0	\$15,709	\$15,709
Install/Replace	Laundry Linoleum	243	sf	\$5.50	\$1,337	25	1	1.0	\$1,337	\$1,337
Install/Replace	Lobby	150	sf	\$5.50	\$825	25	1	1.0	\$825	\$825
Total Life Cycle Cost									\$59,659	\$59,659

Energy Savings

Net Life Cycle Cost after Energy Savings									\$59,659	\$59,659

Replacement at End of Remaining Useful Life

Year

7

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	Common Halls Linoleum	7,598	sf	\$5.50	\$41,788	25	7	0.8	\$29,510	\$28,228
Install/Replace	Common Area Linoleum	2,856	sf	\$5.50	\$15,709	25	7	0.8	\$11,094	\$10,612
Install/Replace	Laundry Linoleum	243	sf	\$5.50	\$1,337	25	7	0.8	\$944	\$903
Install/Replace	Lobby	150	sf	\$5.50	\$825	25	7	0.8	\$583	\$557

Expenses for Current Product Through Useful Life

Total Life Cycle Cost									\$42,130	\$40,300

Energy Savings

Net Life Cycle Cost after Energy Savings									\$42,130	\$40,300

ECONOMIC RETURN ANALYSIS

Timing NPV	(\$19,358)
Timing IRR	n/a

TIMING RECOMMENDATION

Replacement Year:	7
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Notes:

1. Analysis performed using a discount rate of 8.00% and an inflation rate of 3.00% for both expenses and energy costs.
2. Timing NPV and Timing IRR are relative measures comparing Immediate Replacement vs. Replacement at End of Remaining Useful Life.

Life Cycle Cost Analysis

Green Measure (GM):

3

Linoleum Flooring in Apartments

VCT Apartment Flooring

vs.

Linoleum Apartment Flooring

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term

25

Conventional Product:

VCT Apartment Flooring

Cost over Life Cycle (EUL)

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
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Life Cycle Costs

Install/Replace	Living Area VCT	16,911	sf	\$5.00	\$84,556	20	1	1.3	\$108,360	\$96,992
Install/Replace	Bathroom VCT	1,761	sf	\$5.00	\$8,805	20	1	1.3	\$11,284	\$10,100
Install/Replace	Kitchen VCT	3,077	sf	\$5.00	\$15,383	20	1	1.3	\$19,713	\$17,645

Total Life Cycle Cost

\$139,356

\$124,736

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$139,356

\$124,736

Green Product:

Linoleum Apartment Flooring

Cost over Life Cycle (EUL)

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
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Life Cycle Costs

Install/Replace	Living Area Linoleum	16,911	sf	\$5.50	\$93,012	25	1	1.0	\$93,012	\$93,012
Install/Replace	Bathroom Linoleum	1,761	sf	\$5.50	\$9,686	25	1	1.0	\$9,686	\$9,686
Install/Replace	Kitchen Linoleum	3,077	sf	\$5.50	\$16,921	25	1	1.0	\$16,921	\$16,921

Total Life Cycle Cost

\$119,618

\$119,618

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$119,618

\$119,618

ECONOMIC RETURN ANALYSIS

Green NPV	\$5,119
Green IRR	11.0%

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Green Product: Linoleum Apartment Flooring

Override with Green Product? No

Final Product Choice

Green Product: Linoleum Apartment Flooring

Notes:

1. Analysis performed using a discount rate of 8.00% and an inflation rate of 3.00% for both expenses and energy costs.
2. Green NPV and Green IRR are relative measures comparing Green vs. Conventional implementation.

Green Measure (GM):

3

Linoleum Flooring in Apartments

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product

0

Final Product Choice

Green Product:

Linoleum Apartment Flooring

Immediate Replacement

									Cost over Life Cycle (EUL)	
Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	Living Area Linoleum	16,911	sf	\$5.50	\$93,012	25	1	1.0	\$93,012	\$93,012
Install/Replace	Bathroom Linoleum	1,761	sf	\$5.50	\$9,686	25	1	1.0	\$9,686	\$9,686
Install/Replace	Kitchen Linoleum	3,077	sf	\$5.50	\$16,921	25	1	1.0	\$16,921	\$16,921
Total Life Cycle Cost									\$119,618	\$119,618
Energy Savings										
Net Life Cycle Cost after Energy Savings									\$119,618	\$119,618

ECONOMIC RETURN ANALYSIS

Timing NPV	n/a
Timing IRR	n/a

TIMING RECOMMENDATION

Replacement Year:	1
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Notes:

1. Analysis performed using a discount rate of 8.00% and an inflation rate of 3.00% for both expenses and energy costs.
2. Timing NPV and Timing IRR are relative measures comparing Immediate Replacement vs. Replacement at End of Remaining Useful Life.

Life Cycle Cost Analysis

Green Measure (GM):

4

FSC-Certified Wood Cabinets

Plywood Cabinets

vs.

FSC-Certified Wood Cabinets

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term

30

Conventional Product:

Plywood Cabinets

Cost over Life Cycle (EUL)

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
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Life Cycle Costs

Install/Replace	Plywood Cabinets	40	ea	\$2,475.00	\$99,000	25	1	1.2	\$119,644	\$109,236
Total Life Cycle Cost									\$119,644	\$109,236

Energy Savings

Net Life Cycle Cost after Energy Savings									\$119,644	\$109,236

Green Product:

FSC-Certified Wood Cabinets

Cost over Life Cycle (EUL)

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
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Life Cycle Costs

Install/Replace	FSC Wood Cabinets	40	ea	\$2,660.63	\$106,425	30	1	1.0	\$106,425	\$106,425
Total Life Cycle Cost									\$106,425	\$106,425

Energy Savings

Net Life Cycle Cost after Energy Savings									\$106,425	\$106,425

ECONOMIC RETURN ANALYSIS

Green NPV	\$2,811
Green IRR	10.0%

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Green Product: FSC-Certified Wood Cabinets

Override with Green Product? No

Final Product Choice

Green Product: FSC-Certified Wood Cabinets

Notes:

1. Analysis performed using a discount rate of 8.00% and an inflation rate of 3.00% for both expenses and energy costs.
2. Green NPV and Green IRR are relative measures comparing Green vs. Conventional implementation.

Green Measure (GM):

4

FSC-Certified Wood Cabinets

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product

0

Final Product Choice

Green Product:

FSC-Certified Wood Cabinets

Immediate Replacement

									Cost over Life Cycle (EUL)	
Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	FSC Wood Cabinets	40	ea	\$2,660.63	\$106,425	30	1	1.0	\$106,425	\$106,425
Total Life Cycle Cost									\$106,425	\$106,425
<i>Energy Savings</i>										
Net Life Cycle Cost after Energy Savings									\$106,425	\$106,425

ECONOMIC RETURN ANALYSIS

Timing NPV	n/a
Timing IRR	n/a

TIMING RECOMMENDATION

Replacement Year:	1
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Notes:

1. Analysis performed using a discount rate of 8.00% and an inflation rate of 3.00% for both expenses and energy costs.
2. Timing NPV and Timing IRR are relative measures comparing Immediate Replacement vs. Replacement at End of Remaining Useful Life.

Life Cycle Cost Analysis

Green Measure (GM):

5

Solid Stone Countertops

Laminated Particleboard Countertops (LPB)

vs.

Solid Stone Countertops

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term

30

Conventional Product:

Laminated Particleboard Countertops (LPB)

Cost over Life Cycle (EUL)

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
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Life Cycle Costs

Install/Replace	LPB Countertops	40	ea	\$435.16	\$17,406	12	1	2.5	\$57,098	\$30,640
Total Life Cycle Cost									\$57,098	\$30,640

Energy Savings

Net Life Cycle Cost after Energy Savings									\$57,098	\$30,640

Green Product:

Solid Stone Countertops

Cost over Life Cycle (EUL)

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
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Life Cycle Costs

Install/Replace	Stone Countertops	40	ea	\$975.00	\$39,000	30	1	1.0	\$39,000	\$39,000
Total Life Cycle Cost									\$39,000	\$39,000

Energy Savings

Net Life Cycle Cost after Energy Savings									\$39,000	\$39,000

ECONOMIC RETURN ANALYSIS

Green NPV	(\$8,360)
Green IRR	4.4%

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Conventional Product: Laminated Particleboard Countertops (LPB)

Override with Green Product?

No

Final Product Choice

Conventional Product: Laminated Particleboard Countertops (LPB)

Notes:

1. Analysis performed using a discount rate of 8.00% and an inflation rate of 3.00% for both expenses and energy costs.
2. Green NPV and Green IRR are relative measures comparing Green vs. Conventional implementation.

Green Measure (GM):

5

Solid Stone Countertops

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product
Replacement Year

10
11

Final Product Choice

Conventional Product: Laminated Particleboard Countertops (LPB)

Immediate Replacement

Year

1

Cost over Life Cycle (EUL)

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	LPB Countertops	40	ea	\$435.16	\$17,406	12	1	2.5	\$57,098	\$30,640
Total Life Cycle Cost									\$57,098	\$30,640

Energy Savings

Net Life Cycle Cost after Energy Savings									\$57,098	\$30,640

Replacement at End of Remaining Useful Life

Year

11

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	LPB Countertops	40	ea	\$435.16	\$17,406	12	11	1.7	\$43,072	\$15,503

Expenses for Current Product Through Useful Life

Total Life Cycle Cost									\$43,072	\$15,503

Energy Savings

Net Life Cycle Cost after Energy Savings									\$43,072	\$15,503

ECONOMIC RETURN ANALYSIS

Timing NPV	(\$15,138)
Timing IRR	(9.69%)

TIMING RECOMMENDATION

Replacement Year: **11**

Notes:

1. Analysis performed using a discount rate of 8.00% and an inflation rate of 3.00% for both expenses and energy costs.
2. Timing NPV and Timing IRR are relative measures comparing Immediate Replacement vs. Replacement at End of Remaining Useful Life.

Statement of Delivery

ON-SITE INSIGHT, Inc. (and/or its representatives) hereby certifies that, this Green Capital Needs Assessment (the “GCNA” or the “Report”) is delivered subject to the following terms and conditions:

1. This report and analysis are based upon observations for the visible and apparent condition of the building and its major components on the date of the fieldwork. Although care has been taken in the performance of this assessment, ON-SITE INSIGHT, Inc (and/or its representatives) makes no representations regarding latent or concealed defects that may exist and no warranty or guarantee is expressed or implied. This report is made only in the best exercise of our ability and judgment.
2. We have undertaken no formal evaluations of environmental concerns, including but not limited to asbestos containing materials (ACMs), lead based paint, chlorofluorocarbons (CFCs), polychlorinated biphenyls (PCBs), and mildew/mold.
3. Conclusions in this report are based on estimates of the age and normal working life of various items of equipment and/or statistical comparisons. Actual conditions can alter the useful life of any item. When an item needs immediate replacement depends on many factors, including previous use/misuse, irregularity of servicing, faulty manufacturer, unfavorable conditions, Acts of God and unforeseen circumstances. Certain components that may be working when we made our inspection might deteriorate or break in the future without notice.
4. To prepare this report, we used historic data on capital activities and costs, blueprints (when available), and current prices for capital actions. We have not independently verified this information, have assumed that it is reliable, but assume no responsibility for its accuracy.
5. Unless otherwise noted in the report, we assume that all building components meet code requirements in force when the property was built.
6. If accessibility issues are referenced in the report, the site elements, common areas, and dwelling units at the development were examined for compliance with the requirements of the Uniform Federal Accessibility Standards (UFAS), and for Massachusetts properties, the Massachusetts Architectural Accessibility Board (AAB). The methodology employed in undertaking this examination is adapted from a Technical Assistance Guide (TAG-88-11) titled “Supplemental Information About the Section 504 Transition Plan Requirements” published by the Coordination and Review section of the U.S. Department of Justice Civil Rights Division, and the AAB Rules and Regulations, 521 CMR effective July 10, 1987. The Guide also incorporates the requirements of UFAS, published, April 1, 1988 by the General Services Administration, the Department of Defense, the Department of Housing and Urban Development, and the U.S. Postal Service. Changes in legislation and/or regulations may make some observations moot.

7. Response Actions and estimated costs of responses were developed by ON-SITE INSIGHT, Inc. If additional structural work is necessary, costs for some Response Actions may exceed estimates. Whenever the Response Action is to remove, reposition, or modify walls, a competent structural engineer should be retained before any work is done, because such investigation may disclose that a Response Action is either more costly than estimated, or is not possible.
8. Conclusions reached in this report assume current and continuing responsible ownership and competent property management.
9. Regular updates of this plan are recommended to ensure careful monitoring of major building systems and to adjust the program to accommodate unanticipated circumstances surrounding the buildings, operations, and/or occupants.

Signed,



Signature

David Jackson

Name

Senior Associate/Mechanical Specialist

Title

January 28, 2011

Date