

Green Capital Needs Assessment and Replacement Reserve Analysis

Prepared for:

Connecticut Housing Finance Authority

999 West Street
Rocky Hill, CT 06067

and

Recap Real Estate Advisors

38 Chauncy Street, Suite 600
Boston, MA 02111



38 Chauncy Street, Suite 600 | Boston, MA 02111
T: 617.338.9484 | F: 617.338.9422

on-site-insight.com



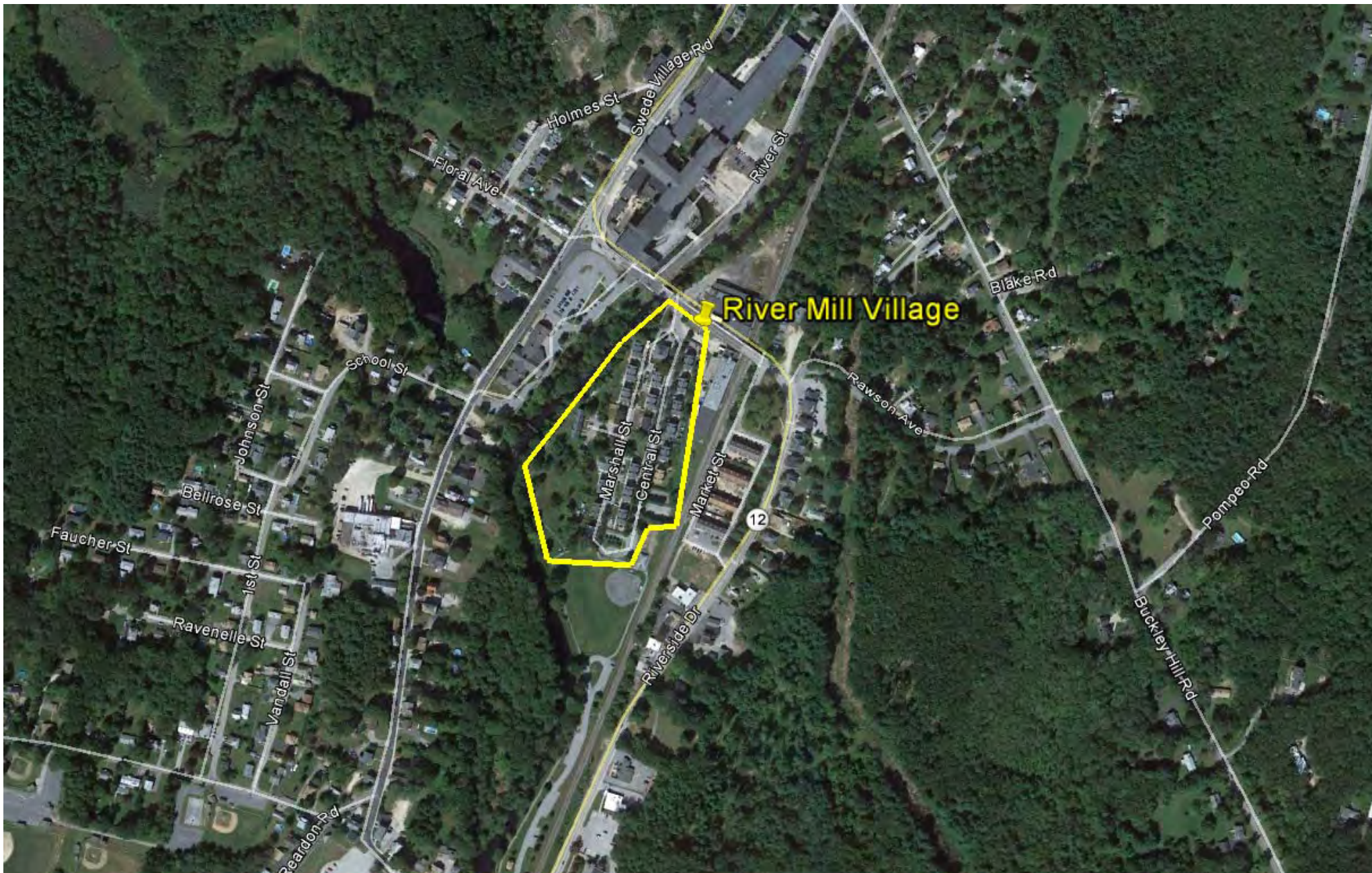
River Mill Village

CHFA # 95056D

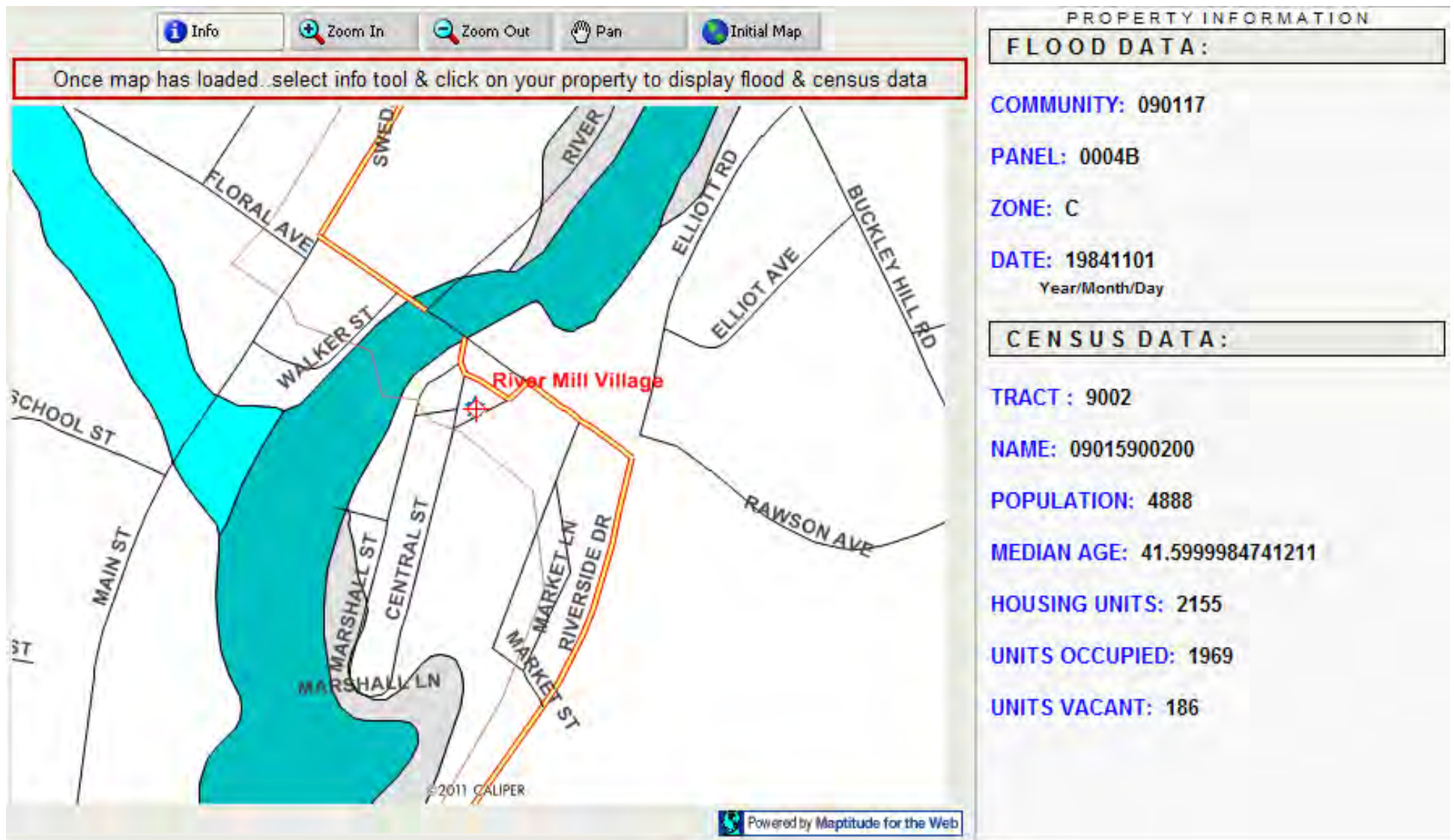
North Grosvenor Dale Restoration, LP
Deep River, CT

May 10, 2013

Final Report



River Mill Village
4 Central Street
North Grosvenor Dale, CT 06255



River Mill Village

4 Central Street
North Grosvenor Dale, CT 06255

Zone C = 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 of River Mill Village 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 \$2,298,492 in current dollars (\$43,368/unit), or \$3,002,199 (\$56,645/unit) in inflated dollars. Current reserves would be outpaced in each year of the plan. However an infusion of \$1,800,000 in Year 1, coupled with contribution increases of \$120 per apartment in Years 2 through 4 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 \$2,490,442 in current dollars (\$46,989/unit), or \$3,125,831 (\$58,978/unit) in inflated dollars. Current reserves would be outpaced throughout the entire plan. However an infusion of \$2,000,000 in Year 1, coupled with contribution increases of \$120 per apartment in Years 2 through 4 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. Since this property is individually-metered for electricity and fuel oil, any energy savings would in most cases benefit the residents. 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 7 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

Executive Summary

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.

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:

A computer energy model was not generated for River Mill Village, due solely to limited utility data. Fuel oil costs were provided, but an estimation of fuel oil cost per gallon was used to estimate the annual consumption. Energy savings, regardless if the benefit would apply to the Owner or the residents were calculated manually to show potential savings for pump motors, toilets, and refrigerators. Other measures such as building envelope and HVAC improvements are discussed within this report.

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 EWCMs 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.

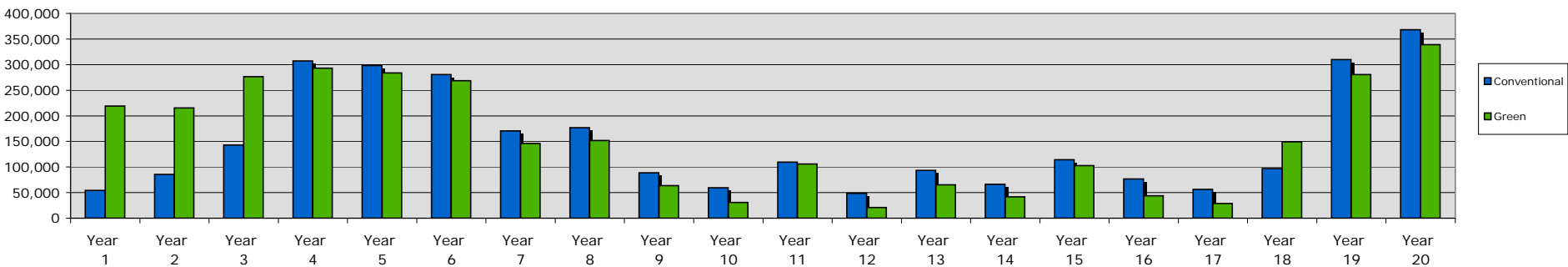
Executive Summary

Dashboard

Property Data

Location:	North Grosvernordale, CT
Year Built:	1992
Number of Units:	53
Number of Buildings:	15

Comparison of Capital Needs - Conventional vs. Green



Environmental Impact

(Total Carbon Release Based on Current Annual Energy Usage)

Building Square Footage: **59,700**
Resident Population (*estimated*): **212**

	BTUs/yr	Conversion	lbs CO ₂	lbs CO ₂ / Res
Gas	0	x 11.023100	0	0
Oil	1,467,647,198	x 0.000161	235,666	1,112
Electricity	59,307,384	x 1.582917	27,506	130
Total	1,526,954,582		263,172	1,241

Replacement Reserve Analysis

Conventional

Plan #1: Capital costs exceed reserves in each year of the plan.
Plan #2: Infusion of \$1.8M; increase in reserves of \$120/unit/year in Years 2 through 4.

Green

Plan #1: Capital costs exceed reserves throughout the entire plan.
Plan #2: Infusion of \$2M; increase in reserves of \$120/unit/year in Years 2 through 4.

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

Operable windows, ducted kitchen & bathroom exhaust

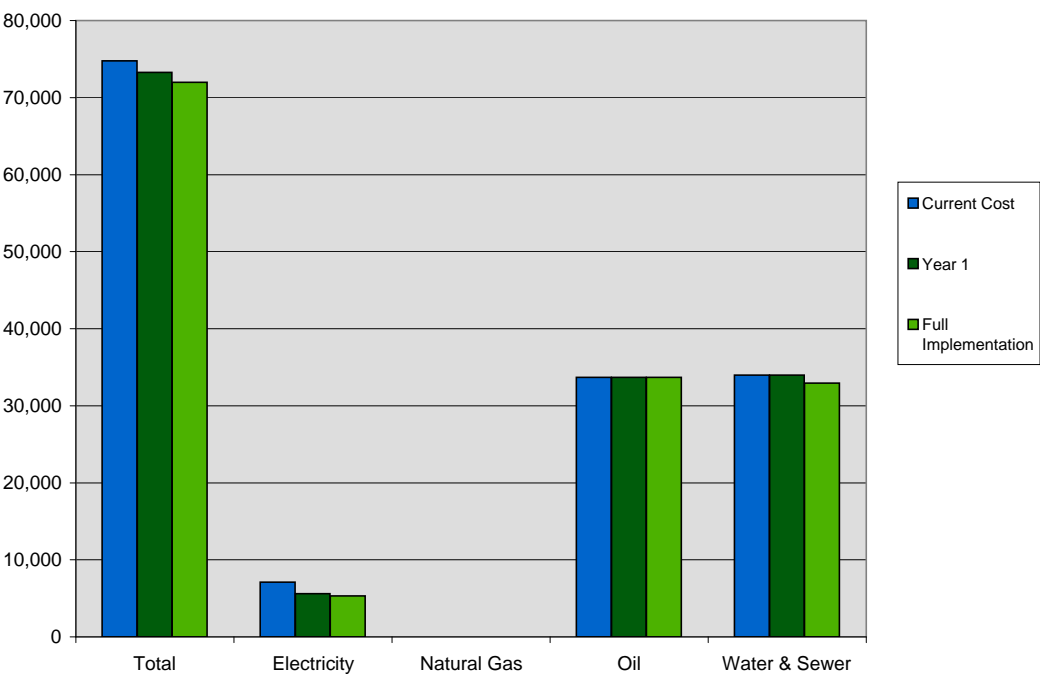
Indoor Air Quality (IAQ)

	Design Specification	Actual Read	Notes
Air Flow Rate	400 cfm	Not measured	0
Thermal Comfort	68F-77F	61F	Vacant Unit
Carbon Monoxide	0	0	Basement
Carbon Dioxide	<1000	768	Apt 19a

Executive Summary

Energy Savings

Current and Projected Energy Cost



Energy Intensity / Benchmarking Data

TREAT Modeled Data

Building Square Footage: **59,700**

Heating Degree Days: 5,714

	Amount	Units	BTUs/yr	Energy Intensity (BTUs/(HDDs x SF))
Heating	0	kWh	0	0
Cooling	0	kWh	0	0
DHW	0	therms	0	0
Electricity	17,382	kWh	59,307,384	0
Total			59,307,384	0

	Gallons/yr	Gallons/sf/yr
Water	2,299,000	39

Energy Usage Summary

Billing Data

Utility	Current Usage		Current Cost	Projected Usage		Projected Cost	% Savings
Electricity	17,382	kWh	\$7,098	25,399	kWh	\$5,320	25.1%
Natural Gas	0	therms	\$0	0	therms	\$0	n/a
Oil	10,528	gallons	\$33,691	10,528	gallons	\$33,691	0.0%
Water & Sewer	2,299,000	gallons	\$33,984	2,229,504	gallons	\$32,956	3.0%
Total			\$74,773			\$71,967	3.8%

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	Electric \$	Gas Therms	Gas \$	Oil Gallons	Oil \$	Water & Sewer Gallons	Water & Sewer \$		

Recommended EWCMs (Based on Financial Analysis)

Interactive Group															
EWCM 3 Energy Star Refrigerators	38,173	15	0.59	2,663	13,809	7,155	1,499							1,499	Immediate
Interactive Group Total ⁵	38,173			2,663			1,499							1,499	
EWCM 1 High Efficient Pump Motors	74,790	25	0.09	1,890	2,304	1,335	280							280	Year 4
EWCM 2 High Efficient Toilets	37,464	30	0.82	2,614	14,223							69,496	1,027	1,027	Year 9
EWCM Subtotal	150,427			7,167		1,335	1,778	0	0	0	0	69,496	1,027	2,806	

Recommended GMs (Based on Financial Analysis)

GM 4 Common Area Linoleum	8,451	25		3,227	497	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Year 6
GM 5 Apartment Linoleum	288,069	25		106,566	22,816	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Immediate
GM 6 FSC Wood Cabinets & Vanities	187,770	25		13,100	12,589	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Immediate
GM Subtotal	484,290			122,893		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	

Total	634,717			130,060		1,335	1,778	0	0	0	0	69,496	1,027	2,806	
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Optional Actions

GM 1 Alternative Fencing	7,500	30		2,250	(880)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Immediate
GM 2 Cement Fiberboard Siding	631,422	50		162,288	(127,188)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Year 19
GM 3 Metal Roofs	238,122	40		115,220	(67,596)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Year 2
GM 7 Stone Countertops	51,675	30		26,515	(7,386)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Year 12

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

River Mill Village is an affordable housing development for families. This development has 15 direct-entry buildings and a total of 53 apartments: 2 efficiencies (studios) 21 one-bedroom including a pair of accessible one-bedroom, 14 two-bedroom including 4 two-bedroom, 13 three-bedroom, and 3 four-bedroom apartments. Most of the units are arranged as townhouses with living space on two levels; the four-bedroom units have three levels of living space. The property is adjacent to the French River and is part of the historic mill section. Originally built in 1900, this property was re-established into its current configuration in 1994.

Site & Handicap Accessibility

Site Surface

River Mill Village is located on a large, flat land parcel adjacent to the French River downstream from the historic mill section in North Grosvenordale, CT. The site includes asphalt-paved driveways, parking areas, municipal-owned streets, walkways and pole-mounted high intensity discharge (HID) fixtures. The site also features lawns with flowerbeds and bushes as well as sections of stockade fencing separating residential buildings from adjacent private buildings.

Driveways, Parking Areas, and Walkways		
Existing conditions	Capital needs	Green alternative
Cracks and some potholes were observed in some of the driveways. The walkways (concrete paved) appear to be in good condition.	The cost to repair the driveways is shown in Years 3, 8, and 13. The driveways are to be resurfaced toward the end of the plan in Year 18. The plan also includes an allowance for anticipated walkway repairs	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

Narrative

Existing conditions	Capital needs	Green alternative
	<p>(the property is responsible for walkway maintenance as part of an arrangement with the local municipality.</p>	<p>allows for a cooler, more comfortable site for the residents and visitors alike.</p> <p>Using a porous asphalt material also helps to reduce the heat island effect; and similar to open pavers (proposed for the parking areas), it 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>

Narrative

Fencing

Existing conditions	Capital needs	Green alternative
The stockade fencing sections runs along the length of the driveways that are adjacent to private housing. There is no fencing located behind some of the Central Street buildings, which are in close proximity to an active railroad line.	The plan includes an allowance in Year 1 to replace the existing stockade fencing and to add stockade fencing behind several Central Street buildings, providing a barrier between the property and the railroad tracks.	An alternative wood product could provide a fence structure with a longer useful life that would also be resistant to water and insects. Despite these benefits, this alternative is not a cost-effective replacement. (See GM 1)

Landscaping

Existing conditions	Capital needs	Green alternative
The site features a well-maintained surrounding lawn and garden beds.	The plan includes an allowance for replanting and pruning in Year 11.	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 common 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 (in part because this is a congregate housing development), with six designated units that are designed to be fully compliant. One designated unit was included as part of this assessment and it is fully compliant. The interior common areas are also fully compliant. The parking lot has designated parking within close proximity to the main entrance.

Narrative

Mechanical Room

The heating and domestic hot water (DHW) systems that serve the common areas of the Office/Residential building are located in the basement of that building. The heating system features an oil-fired hydronic boiler, similar to the individual boilers used for each apartment (the apartment boilers are discussed in the Dwelling Units report section). The DHW system consists of a single storage tank with an internal water-to-water heat exchanger (coils).

Boilers

Existing conditions	Capital needs	Green alternative
The boiler appears to be original and in good condition. The above-ground fuel storage tank (approximately 275 gallon capacity) is located in a nearby area within the basement. An in-line fractional horsepower pump is used to distribute the hydronic heat throughout the common area.	The boiler is to be replaced in Year 4, at the end of its 25-year useful life. The replacement cost also includes the boiler controls (i.e. aquastats, etc.). The circulating pump is also to be replaced in Year 4.	The green plan includes the cost to upgrade to a high efficiency boiler (combustion efficiency of 86%). The higher efficiency will enable the boiler to achieve a greater energy output, resulting in energy savings. Also, replacing the existing pump with a pump that has a higher efficiency motor will reduce electric usage. (See EWCM 1)

Narrative

Domestic Hot Water		
Existing conditions	Capital needs	Green alternative
The DHW system serves the public restroom and the laundry. The community kitchen was off-line at the time of the assessment and management has to decide if a kitchen is going to be installed.	The DHW tank is to be replaced in Year 4, concurrent with the boiler.	No green option shown.

Narrative

Building Mechanical and Electrical Systems

The major building systems include distribution piping systems for hydronic heat, domestic hot and cold water, sanitary wastewater, air conditioning, electrical, and fire detection. There were no observed or reported problems with most of these systems.

Air Condition System		
Existing conditions	Capital needs	Green alternative
A pair of split direct expansion (DX) air conditioning units serves the common areas of the Office/Residence building. The condensing units are mounted on the rooftop, and the fan coils are located in the plenum on the first floor.	The air conditioners are to be replaced every 15 years, starting in Year 5 of the plan.	Comparably-sized split DX units that have a higher Seasonal Energy Efficiency Ratio (SEER) rating should be used to achieve energy savings. The higher SEER rating indicates that the air conditioner uses less electricity than the standard unit without sacrificing output.

Narrative

Fire Detection and Intercom		
Existing conditions	Capital needs	Green alternative
The central fire alarm system is governed by a Simplex fire alarm control panel (FACP), which is located in the basement of the Office/Residential building. At this same building, the residential entrance has intercom panel to help control visitors' access to the four apartments located on the upper floor of this building.	The plan includes the costs to replace the intercom panel in Year 1 and to upgrade the fire alarm system in Year 11.	No green alternatives shown.

Narrative

Building Architectural Systems

Building Exterior

River Mill Village consists of 15 walk-up buildings, most which are similar in design. There are 14 residential buildings along the two interlacing public streets, each with direct-entry apartments. These buildings were originally built at the start of the previous century and were renovated into their current configuration in 1994. Each building has vinyl siding, single glazed historic windows (12 lites or sections), and historic six panel wood entry doors. Roofs are pitched and covered with asphalt shingles. The Office/Residential building is located at the main entrance to this development and has wood siding and common entry doors. Its roof is mostly pitched and covered with asphalt shingle; there is a flat center roof section that is bordered by a widow’s walk (rooftop railing) and covered by a single-ply rubber membrane. The aforementioned split DX air conditioning condensers are located on this enclosed roofing section. The site’s office (management and maintenance), laundry and public restrooms are located in this building, which also has four residential apartments on the upper floor.

Siding		
Existing conditions	Capital needs	Green alternative
The existing vinyl and wood siding is mostly in good condition, with only isolated damage observed.	The plan includes the cost to initially power wash the vinyl siding in Year 5, with a second cycle in Year 15. Wood siding repainting is shown concurrent with the vinyl siding power washing. Replacement of the vinyl siding is shown over a three-year period starting in Year 19.	Cement fiberboard is shown as a possible green alternative to the vinyl and wood 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.

Narrative

Existing conditions	Capital needs	Green alternative
	The wood siding is shown being replaced at the end of the plan in Year 20.	However, this opportunity, evaluated in GM 2 , does not appear to be a cost-effective alternative for either vinyl or wood.

Windows / Curtain Walls

Existing conditions	Capital needs	Green alternative
The wood-framed single glazed windows used throughout this development are approaching the end of their expected 30-year useful life. Each single glazed window also has an interior storm window, to reduce heat loss without impacting the historic appearance at this site.	Vinyl framed double-glazed windows are shown being installed starting in Year 4 to replace the existing wood-framed and storm windows. This proposed effort assumes that an acceptable vinyl window that has a historic appearance will be approved (by the local historic society) as a replacement window.	Replacement of the windows and fixed panels 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 working in concert with the low-E coating.

Narrative

Doors

Existing conditions	Capital needs	Green alternative
<p>Most of the doors appear to be original and in fair-to-good condition. The historic designation of this development restricts the replacement doors at the residential buildings to six-panel wood doors, repainted with the historic blue paint as well. The Office/Residential building has metal-framed glass common doors (single and double leaf). Also, all buildings have a metal double leaf bulkhead door that provides access to the basements.</p>	<p>The unit doors replacement costs are shown over three years starting in Year 7 of the plan. The common and bulkhead (service) doors are to be replaced in the second half of the plan in Year 14.</p>	<p>The green option would be to replace the unit and common 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. Typically, insulated fiberglass doors can attain R-Values of at least R-5</p>

Narrative

Roof		
Existing conditions	Capital needs	Green alternative
The roofing throughout this development appears to be in good condition. There was no indication of missing shingles or active leaks, however management did report of a recent roof repair within the last year.	The plan includes the costs to replace the asphalt shingle roofing over a three-year period starting in Year 2. The additional membrane roofing section at the Office/Residential building is to be replaced in Year 3	A metal roof was evaluated as a green measure in terms of a longer useful life than the architectural (asphalt) shingles. The existing insulation level addresses the energy savings component. However in terms of a longer lasting roof surface, the metal roof option is not considered to be cost-effective. (See GM 3).

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 Office/Residential building includes the stairwells, management office, conference room, a public laundry facility, and a set of public restrooms. Wall and ceiling surfaces are painted drywall throughout. 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.

Flooring

Existing conditions	Capital needs	Green alternative
The carpeting and VCT throughout the building is in good condition, with no appreciable signs of significant wear or damage.	<p>The floor covering replacement costs are shown every 10 years starting in Year 6.</p> <p>The ceramic tile bathroom flooring is to be maintained as an operating concern throughout the plan.</p>	<p>Replacement of the VCT and carpeting 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 and carpet 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.</p> <p>(See GM 4)</p>

Narrative

Restrooms

Existing conditions	Capital needs	Green alternative
The public restrooms include low flush toilets (1.6 gallon per flush or gpf).	Toilet replacement is shown in Year 9.	The low flush toilets could also be replaced with high efficient toilets (1.28 gpf). These toilets will reduce water consumption, as shown in EWCM 2 (which also includes apartment toilets).

Common Area Furnishings

Existing conditions	Capital needs	Green alternative
Furnishings throughout the common areas include tables, chairs, audio-visual equipment, and recreational facilities.	The plan includes an allowance to common area furnishings in Year 11.	No green alternatives shown.

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 are carpeted; bathrooms and kitchens have VCT flooring. Most of these finishes were found to be in good condition, an indication of some of the continuing upgrades that have occurred.	Apartment repainting and any interior or closet door replacement are to be addressed as operating concerns. Carpet replacement is shown over a 12-year period beginning in Years 1 and 13; VCT replacement is shown over a 15-year period starting in Years 1 and 16.	<p>A linoleum flooring product is shown as an alternative for carpeting and VCT. Linoleum offers a substantially longer useful life than the carpeting and VCT.</p> <p>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.</p> <p>(See GM 5).</p>

Narrative

Bathrooms

Existing conditions	Capital needs	Green alternative
<p>Full bathrooms have an anti-scald mixing valve and either a fiberglass bathtub with a fiberglass tub surround or a fiberglass shower enclosure. In every bathroom, 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). Most bathrooms have a plywood-base vanity; the exceptions are found in the accessible units, where each of the accessible bathrooms has a wall-hung sink.</p>	<p>The plan includes annual allowances starting in Year 1 for replacement of general bathroom accessories and in Year 11 for anticipated bathtub/shower enclosure repairs. Vanity replacement is shown starting in Year 1 and the wall-hung sink replacement is shown in Year 10. Exhaust fans are shown being replaced in the first year of the plan. Toilet replacement is shown starting toward the midpoint of the plan in Year 9.</p>	<p>The existing 1.6 gpf toilets with high efficiency 1.28 gpf toilets, shown starting in Year 9. (See EWCM 2).</p> <p>Replacing the vanities with a Forest Stewardship Council certified wood product provides a longer lasting vanity that also reduces the amount of possible off-gassing (due to less use of formaldehyde). (See GM 6).</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. This item should be discussed at the client review meeting.</p>

Narrative

Kitchens

Existing conditions	Capital needs	Green alternative
<p>Kitchens have plywood cabinets, laminated particleboard countertops, frost-free refrigerators, ducted rangehoods, and 30-inch electric ranges. The rangehoods have a pair of portable fire extinguishing canisters, designed to react to high heat (grease fire) conditions.</p>	<p>The plan shows range and refrigerator replacement starting in Year 1, with a second cycle for refrigerators starting in Year 16. Cabinet and countertop replacement is shown starting in Year 1 with a future countertop replacement shown starting in Year 12. The rangehoods are to be replaced throughout the plan starting in Year 1. The plan also includes the replacement costs for the portable fire extinguishers in Years 2, 7, 12, and 17.</p>	<p>The refrigerators could also be replaced with comparable Energy Star rated units, which significantly reduce energy consumption.</p> <p>See EWCM 3 (which shows the savings potential, however since these buildings are individually metered, the residents would receive the savings benefit).</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.</p> <p>(See GM 6)</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 7).</p>

Narrative

Unit Mechanical and Electrical

Existing conditions	Capital needs	Green alternative
<p>Each apartment has its own oil-fired Weil McLain boiler, located in the basement of the buildings. The boilers produce hydronic heat which is distributed via a fractional horsepower in-line pump to the hydronic baseboard sections within the apartment. Each apartment floor has a wall-mounted thermostat to control space temperature. Additionally, each apartment has an electric-heated DHW tank.</p> <p>Additionally, each apartment has its own circuit breaker panel and there is a hardwired smoke detector in the living area of the apartments on each floor.</p>	<p>The plan includes the costs to start replacing the DHW tanks annually starting in Years 1 and 13. Boiler and circulating pump replacements are shown over a five-year period starting in Year 4.</p> <p>The plan also establishes a replacement allowance starting in Year 9 for anticipated baseboard failures. The existing thermostats are to be replaced in Year 15.</p> <p>Also, smoke detectors are to be added to all bedrooms and existing apartment smoke detectors replaced in Year 3. Future replacement of all apartment smoke detectors is shown in Year 13.</p>	<p>The green plan includes the costs to upgrade each apartment a high efficiency boiler (combustion efficiency of 86%), a new circulating pump with a high efficiency motor, and a programmable thermostat to govern hydronic baseboard heat. The 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 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):

Each building has operable windows to provide fresh air. Kitchen and bathrooms have ducted ceiling fans to remove stale air; each exhaust fan is operated by a wall switch.

Narrative

Temperature, Humidity, Carbon Dioxide (CO₂)

Space temperature and humidity are the key components for comfort level. Temperature and relative humidity was measured only in one apartment, which was vacant. The temperature was 61°F db, and the humidity average 22% rH. Each apartment has its own oil-fired boiler and each resident is responsible for purchasing fuel oil for heating.

Carbon dioxide levels were measured during the inspection, and are included in Table B below. Carbon monoxide was also tested during the inspection 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
Apartment 19A	Not measured		N/A Operable windows

Narrative

Table B. Carbon Dioxide:

Space	Actual Read	Design Specification	Notes
Apartment 19A	768 ppm	< 1,000 ppm	Conditioned space

Table C. Carbon Monoxide:

Conditioned Space	Actual Read	Design Specification	Notes
Apt 19A	0 ppm	≈0 ppm	Conditioned space
Basement/Mech Rm (5 Central)	0 ppm	≈0 ppm	Unconditioned 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 \$2,298,492 in current dollars (\$43,368/unit), or \$3,002,199 (\$56,645/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 \$12,241 on December 31, 2012. Annual contributions are currently \$10,494 per year, or \$198 per unit. 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 calls for an infusion of \$1,800,000 in Year 1. The plan calls for an increase in annual contributions of \$120/unit (\$10/unit/month) in Years 2 through 4. 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 Green plan total \$2,490,442 in current dollars (\$46,989/unit), or \$3,125,831 (\$58,978/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 \$12,241 on December 31, 2012. Annual contributions are currently \$10,494 per year, or \$198 per unit. 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 every 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 calls for an infusion of \$2,000,000 in Year 1. The plan calls for an increase in annual contributions of \$120/unit (\$10/unit/month) in Years 2 through 4. 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 27th, 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.



A view from the main entrance.
The Office Building, which also has apartments
on the upper floor, is on the right.



One of the public streets that runs
through the development.



Localized erosion near a building entrance.



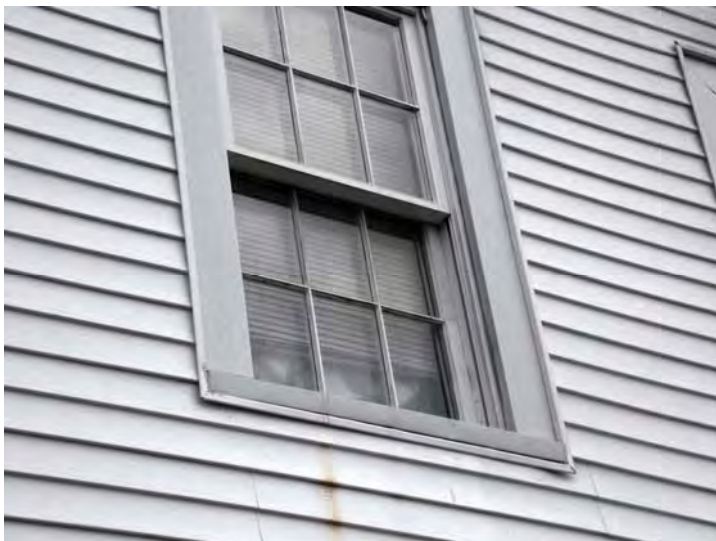
The residential buildings are similar in design and
configuration; each has a pitched roof, vinyl siding,
single-glazed windows and most have six-panel doors.



A rear/side elevation view of one of the residential buildings.



An infra-red image of one of the buildings showing greater heat loss at the windows.



Most of the windows are single-glazed and have the historic 12-lite configuration. Also, windows have interior storm windows to reduce heat loss.



This is the open community space in the Office building.



The public laundry includes both top-loading and front-loading (arrow) washers.



A view in one of the public restrooms.



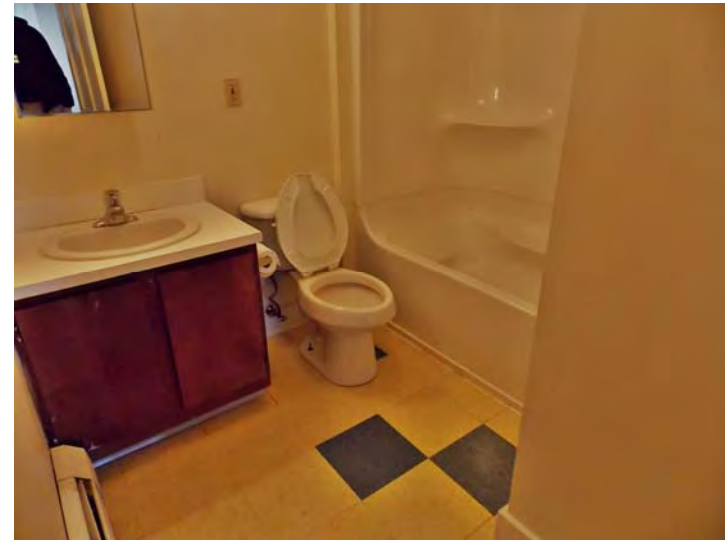
Living areas have carpeted flooring and hydronic baseboard radiation.



Kitchens include plywood cabinets, laminated particleboard countertops, electric ranges, and VCT flooring.



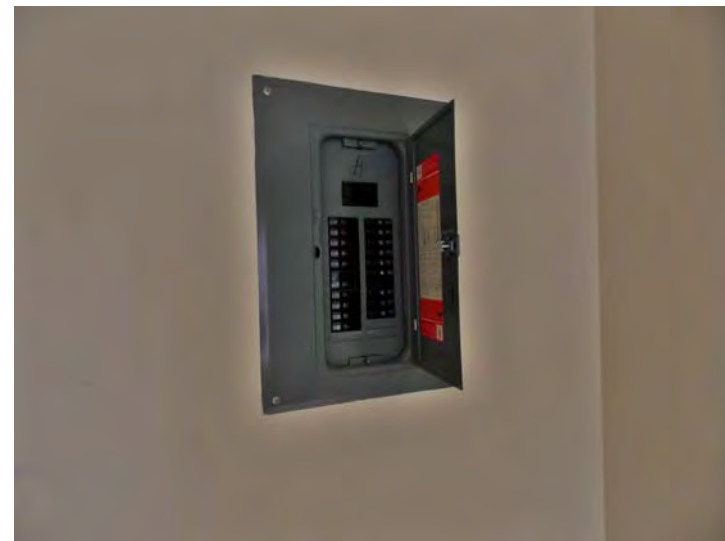
Portable fire extinguishers are included in each rangehood.



Most bathrooms include a vanity, a fiberglass bathtub and surround and VCT flooring.



The basement of each building contains the individual oil-fired boilers.



This is a typical apartment circuit breaker panel.



One of the washer/dryer hookups within an apartment. The dryer vent is on the lower right (arrow).



This common DHW tank serves the public laundry and restrooms.

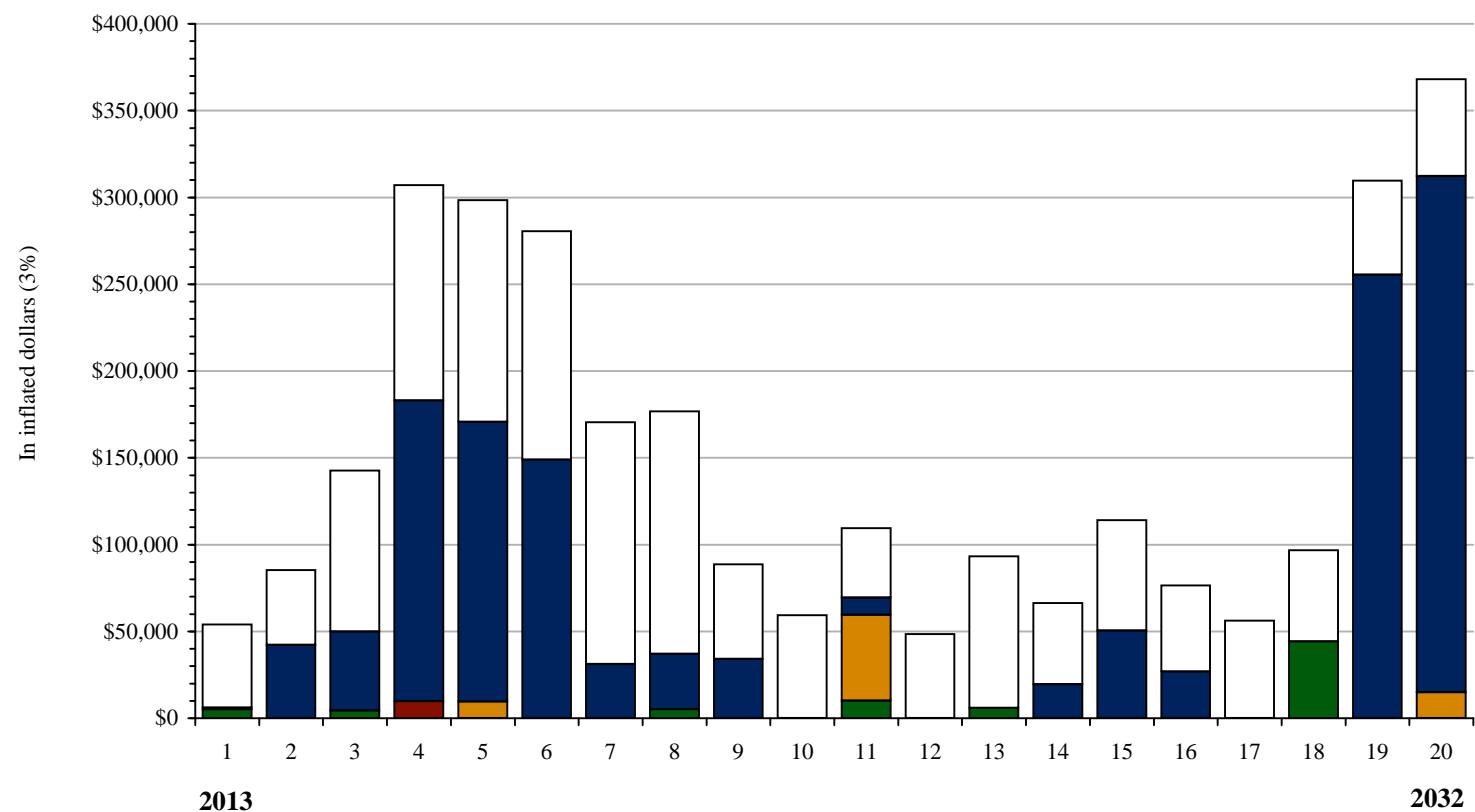


The fire sprinkler connection (serving the Office building) includes a backflow preventer (blue).

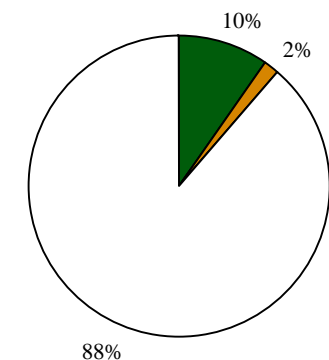


This is the central fire alarm control panel (FACP).

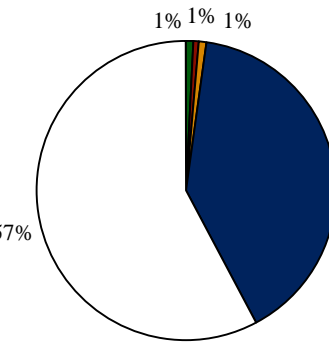
Capital Needs Summary - *Conventional*



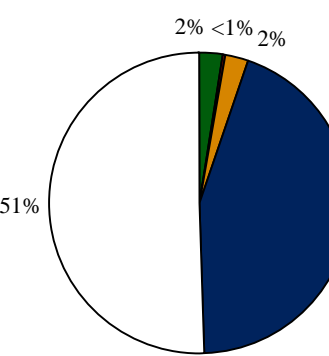
River Mill Village



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	\$5,250 or \$99/unit	\$14,695 or \$277/unit	\$74,900 or \$1,413/unit
Mechanical Room		\$9,835 or \$186/unit	\$9,835 or \$186/unit
Building Mech. & Elec.	\$850 or \$16/unit	\$10,417 or \$197/unit	\$74,711 or \$1,410/unit
Building Architectural		\$668,236 or \$12,608/unit	\$1,328,164 or \$25,060/unit
Dwelling Units	\$47,911 or \$904/unit	\$960,220 or \$18,117/unit	\$1,514,590 or \$28,577/unit
In inflated dollars:	\$54,011 or \$1,019/unit	\$1,663,402 or \$31,385/unit	\$3,002,199 or \$56,645/unit
In current dollars:	\$54,011 or \$1,019/unit	\$1,461,563 or \$27,577/unit	\$2,298,492 or \$43,368/unit

Capital Needs Summary - *Conventional*

OSI Ref: **13192**
 Property Age: **21 Years**
 Financing: **CHFA**

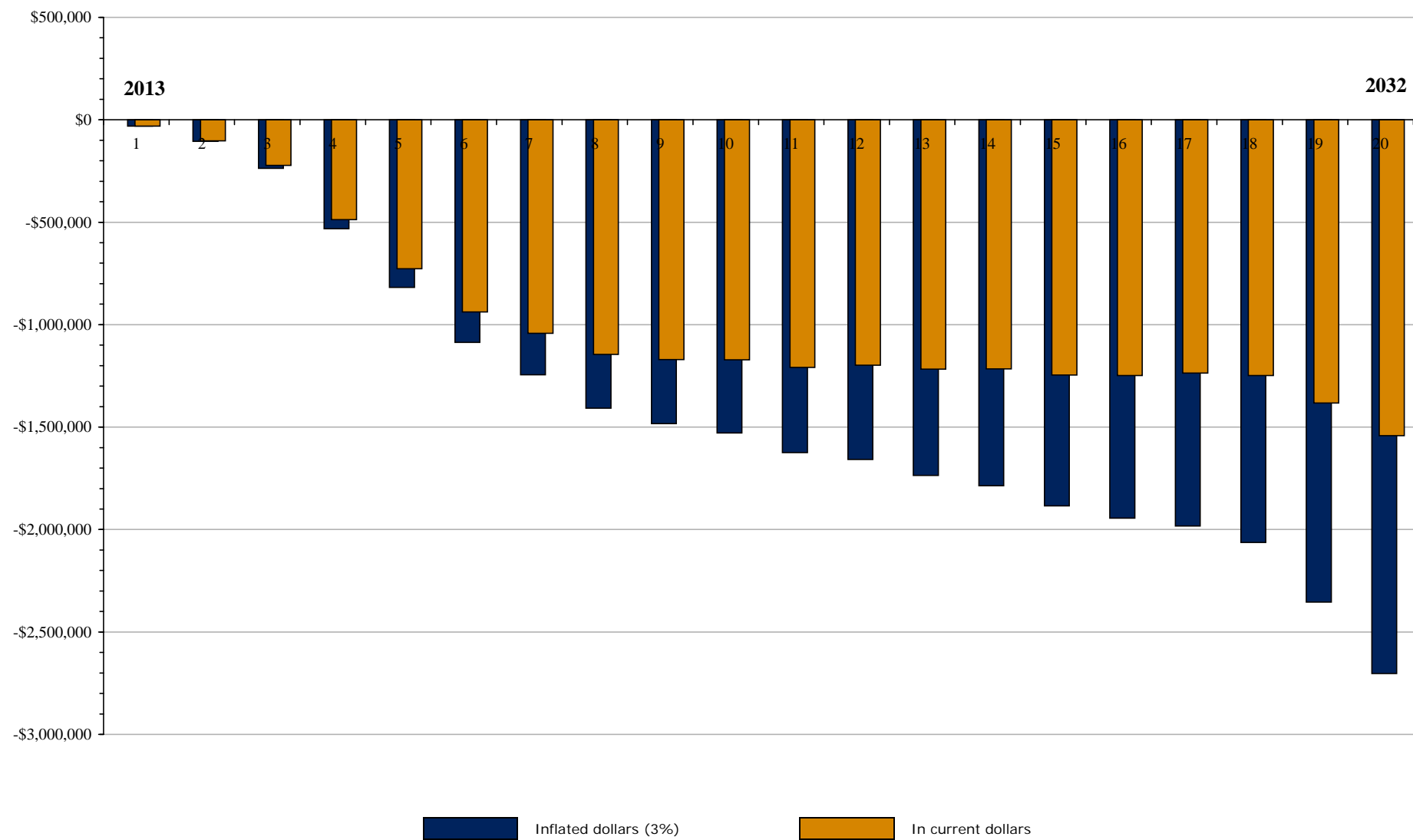
Residential Buildings: **15**
 Total Number of Units: **53**
 Occupancy: **Family**

	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	\$5,250	\$0	\$4,374	\$0	\$0	\$0	\$0	\$5,071	\$0	\$0
Accessibility	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Site Sub-Total	\$5,250	\$0	\$4,374	\$0	\$0	\$0	\$0	\$5,071	\$0	\$0
Mechanical Room										
Boilers	\$0	\$0	\$0	\$7,704	\$0	\$0	\$0	\$0	\$0	\$0
Boiler Room Systems	\$0	\$0	\$0	\$2,131	\$0	\$0	\$0	\$0	\$0	\$0
Mechanical Sub-Total	\$0	\$0	\$0	\$9,835	\$0	\$0	\$0	\$0	\$0	\$0
Building Mech. & Electrical										
Mechanical	\$0	\$0	\$0	\$0	\$9,567	\$0	\$0	\$0	\$0	\$0
Electrical	\$850	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Elevators	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Mechanical & Electrical Sub-Total	\$850	\$0	\$0	\$0	\$9,567	\$0	\$0	\$0	\$0	\$0
Building Architectural										
Structural and Exterior	\$0	\$0	\$0	\$128,394	\$161,117	\$136,213	\$31,129	\$32,063	\$33,025	\$0
Roof Systems	\$0	\$42,196	\$45,491	\$44,766	\$0	\$0	\$0	\$0	\$0	\$0
Halls, Stairs, Lobbies	\$0	\$0	\$0	\$0	\$0	\$5,062	\$0	\$0	\$0	\$0
Community Spaces	\$0	\$0	\$0	\$0	\$0	\$7,742	\$0	\$0	\$1,039	\$0
Building Architectural Sub-Total	\$0	\$42,196	\$45,491	\$173,160	\$161,117	\$149,017	\$31,129	\$32,063	\$34,063	\$0
Dwelling Units										
Living Areas	\$10,047	\$10,349	\$10,659	\$10,979	\$11,308	\$11,647	\$11,997	\$12,357	\$12,728	\$13,109
Bathrooms	\$13,114	\$4,103	\$4,226	\$4,353	\$4,484	\$4,618	\$4,757	\$4,900	\$7,202	\$10,706
Kitchens	\$20,996	\$24,901	\$22,274	\$22,942	\$23,631	\$24,340	\$28,867	\$25,822	\$26,596	\$27,394
Mechanical & Electrical	\$3,754	\$3,867	\$55,659	\$85,762	\$88,335	\$90,985	\$93,714	\$96,526	\$7,987	\$8,226
Dwelling Units Sub-Total	\$47,911	\$43,219	\$92,819	\$124,036	\$127,757	\$131,590	\$139,335	\$139,604	\$54,513	\$59,436
Total Capital Costs	\$54,011	\$85,416	\$142,684	\$307,030	\$298,441	\$280,607	\$170,464	\$176,737	\$88,576	\$59,436

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	
\$10,079	\$0	\$5,878	\$0	\$0	\$0	\$0	\$44,248	\$0	\$0	Site Systems & Accessibility Surface Accessibility
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
\$10,079	\$0	\$5,878	\$0	\$0	\$0	\$0	\$44,248	\$0	\$0	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	\$14,905	Building Mech. & Electrical Mechanical Electrical Elevators
\$49,389	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
\$49,389	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$14,905	Mechanical & Electrical Sub-Total
\$0	\$0	\$0	\$19,627	\$50,486	\$12,035	\$0	\$0	\$255,473	\$297,413	Building Architectural Structural and Exterior Roof Systems Halls, Stairs, Lobbies Community Spaces
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
\$0	\$0	\$0	\$0	\$0	\$6,803	\$0	\$0	\$0	\$0	
\$10,079	\$0	\$0	\$0	\$0	\$8,010	\$0	\$0	\$0	\$0	
\$10,079	\$0	\$0	\$19,627	\$50,486	\$26,849	\$0	\$0	\$255,473	\$297,413	Building Architectural Sub-Total
\$13,503	\$13,908	\$14,325	\$14,755	\$15,197	\$15,653	\$16,123	\$16,607	\$17,105	\$17,618	Dwelling Units Living Areas Bathrooms Kitchens Mechanical & Electrical
\$8,976	\$9,245	\$9,523	\$9,808	\$10,103	\$10,406	\$10,718	\$11,039	\$11,371	\$11,712	
\$8,985	\$16,558	\$12,521	\$12,897	\$13,284	\$13,682	\$19,196	\$14,516	\$14,951	\$15,400	
\$8,473	\$8,727	\$50,978	\$9,259	\$25,101	\$9,823	\$10,117	\$10,421	\$10,733	\$11,055	
\$39,937	\$48,439	\$87,347	\$46,719	\$63,685	\$49,564	\$56,154	\$52,582	\$54,160	\$55,785	Dwelling Units Sub-Total
\$109,484	\$48,439	\$93,225	\$66,346	\$114,171	\$76,413	\$56,154	\$96,830	\$309,633	\$368,103	Total Capital Costs

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



Current Replacement Reserve Balance: **\$12,241**
Adjusted Replacement Reserve Balance: **\$12,241**
Current annual contributions to reserve accounts: **\$10,494**

At the end of Year One, Reserve Balances are projected to be: **(\$30,751)**
At the end of Year 20, Reserve Balances are projected to be: **(\$2,703,383)**
Unmet needs projected in most years of the plan

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

		Reserve Funding In Year 1								
		Starting Balance: \$12,241 or \$231/unit Contributions to Reserves: \$10,494 or \$198/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.								
	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	\$12,241	(\$30,751)	(\$105,196)	(\$236,580)	(\$531,971)	(\$818,424)	(\$1,086,683)	(\$1,244,428)	(\$1,408,066)	(\$1,483,149)
(B) Annual Funding										
Contributions Indexed at 3%	\$198	\$204	\$210	\$216	\$223	\$230	\$236	\$244	\$251	\$258
(C) Additional Unit Contributions										
(D) Total Annual Reserve Funding	\$10,494	\$10,809	\$11,133	\$11,467	\$11,811	\$12,165	\$12,530	\$12,906	\$13,293	\$13,692
(E) Interest on Reserves at 3%	\$525	\$162	\$167	\$172	\$177	\$182	\$188	\$194	\$199	\$205
Total Funds Available	\$23,260	(\$19,780)	(\$93,896)	(\$224,941)	(\$519,983)	(\$806,076)	(\$1,073,965)	(\$1,231,328)	(\$1,394,573)	(\$1,469,251)
(F) Total Capital Cost	\$54,011	\$85,416	\$142,684	\$307,030	\$298,441	\$280,607	\$170,464	\$176,737	\$88,576	\$59,436
(G) Reserve Balances	(\$30,751)	(\$105,196)	(\$236,580)	(\$531,971)	(\$818,424)	(\$1,086,683)	(\$1,244,428)	(\$1,408,066)	(\$1,483,149)	(\$1,528,687)
Outside Capital:										
Adjusted Reserve Balances	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Notes:

1. Starting reserve balance is **\$12,241**.
2. Annual contribution is **\$10,494**
3. Capital costs outpace reserves throughout the entire plan.

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

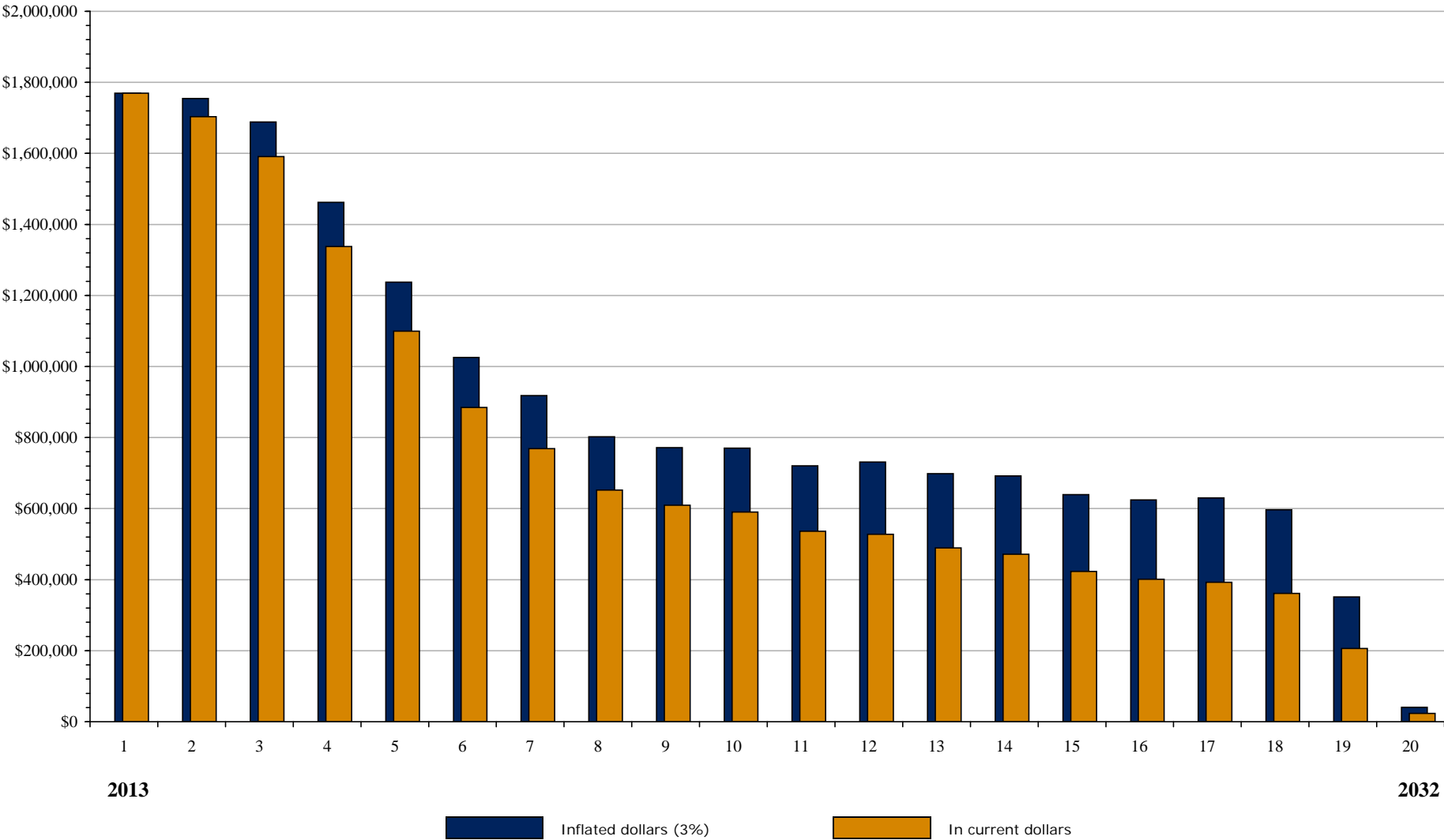
Line C, Additional Contributions allows for material adjustments in annual RR funding that would enable the property to meet all projected needs out of reserves through Year 20.

**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 - Conventional*

Reserve Funding In Year 20										
Projected replacement reserve balance is (\$2,703,383)					This is (\$51,007)per unit in inflated dollars or (\$29,089) per unit in uninflated dollars					
Projected annual funding to reserves is \$18,401					This is \$347 per unit in inflated dollars or \$198 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)
(\$1,528,687) (\$1,623,857) (\$1,657,552) (\$1,735,591) (\$1,786,294) (\$1,884,354) (\$1,944,172) (\$1,983,234) (\$2,062,459)									(\$2,353,958)	Starting Replacement Reserves
										Annual Funding (B)
\$266 \$274 \$282 \$291 \$299 \$308 \$318 \$327 \$337									\$347	Contributions Indexed at 3%
										Additional Unit Contributions (C)
\$14,103 \$14,526 \$14,962 \$15,411 \$15,873 \$16,349 \$16,840 \$17,345 \$17,865									\$18,401	Total Annual Reserve Funding (D)
\$212 \$218 \$224 \$231 \$238 \$245 \$253 \$260 \$268									\$276	Interest on Reserves at 3% (E)
(\$1,514,373) (\$1,609,113) (\$1,642,365) (\$1,719,949) (\$1,770,183) (\$1,867,759) (\$1,927,080) (\$1,965,629) (\$2,044,325)									(\$2,335,281)	Total Funds Available
\$109,484 \$48,439 \$93,225 \$66,346 \$114,171 \$76,413 \$56,154 \$96,830 \$309,633									\$368,103	Total Capital Cost (F)
(\$1,623,857) (\$1,657,552) (\$1,735,591) (\$1,786,294) (\$1,884,354) (\$1,944,172) (\$1,983,234) (\$2,062,459) (\$2,353,958)									(\$2,703,383)	Reserve Balances (G)
\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0									\$0	

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



Current Replacement Reserve Balance: **\$12,241**
Adjusted Replacement Reserve Balance: **\$12,241**
Current annual contributions to reserve accounts: **\$10,494**

At the end of Year One, Reserve Balances are projected to be: **\$1,769,249**
At the end of Year 20, Reserve Balances are projected to be: **\$40,729**
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:		\$10,494 or \$198/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	\$12,241	\$1,769,249	\$1,754,337	\$1,688,165	\$1,462,117	\$1,237,876	\$1,025,653	\$918,143	\$802,100	\$771,732
(B) Annual Funding										
Contributions Indexed at 3%	\$198	\$204	\$324	\$444	\$564	\$581	\$598	\$616	\$635	\$654
(C) Additional Unit Contributions		\$120	\$120	\$120						
(D) Total Annual Reserve Funding	\$10,494	\$17,169	\$23,529	\$29,889	\$29,889	\$30,785	\$31,709	\$32,660	\$33,640	\$34,649
(E) Interest on Reserves at 3%	\$525	\$53,335	\$52,983	\$51,093	\$44,312	\$37,598	\$31,245	\$28,034	\$24,568	\$23,672
Total Funds Available	\$23,260	\$1,839,753	\$1,830,849	\$1,769,147	\$1,536,317	\$1,306,259	\$1,088,607	\$978,838	\$860,308	\$830,053
(F) Total Capital Cost	\$54,011	\$85,416	\$142,684	\$307,030	\$298,441	\$280,607	\$170,464	\$176,737	\$88,576	\$59,436
(G) Reserve Balances	(\$30,751)	\$1,754,337	\$1,688,165	\$1,462,117	\$1,237,876	\$1,025,653	\$918,143	\$802,100	\$771,732	\$770,617
Outside Capital:	\$1,800,000									
Adjusted Reserve Balances	\$1,769,249	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Notes:

1. Same starting reserve balance and annual contribution as shown in Plan 1.
2. An infusion of \$1.8M is added in Year 1
3. Contributions are increased by \$120 per apartment (\$10/month) in Years 2 through 4.
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.

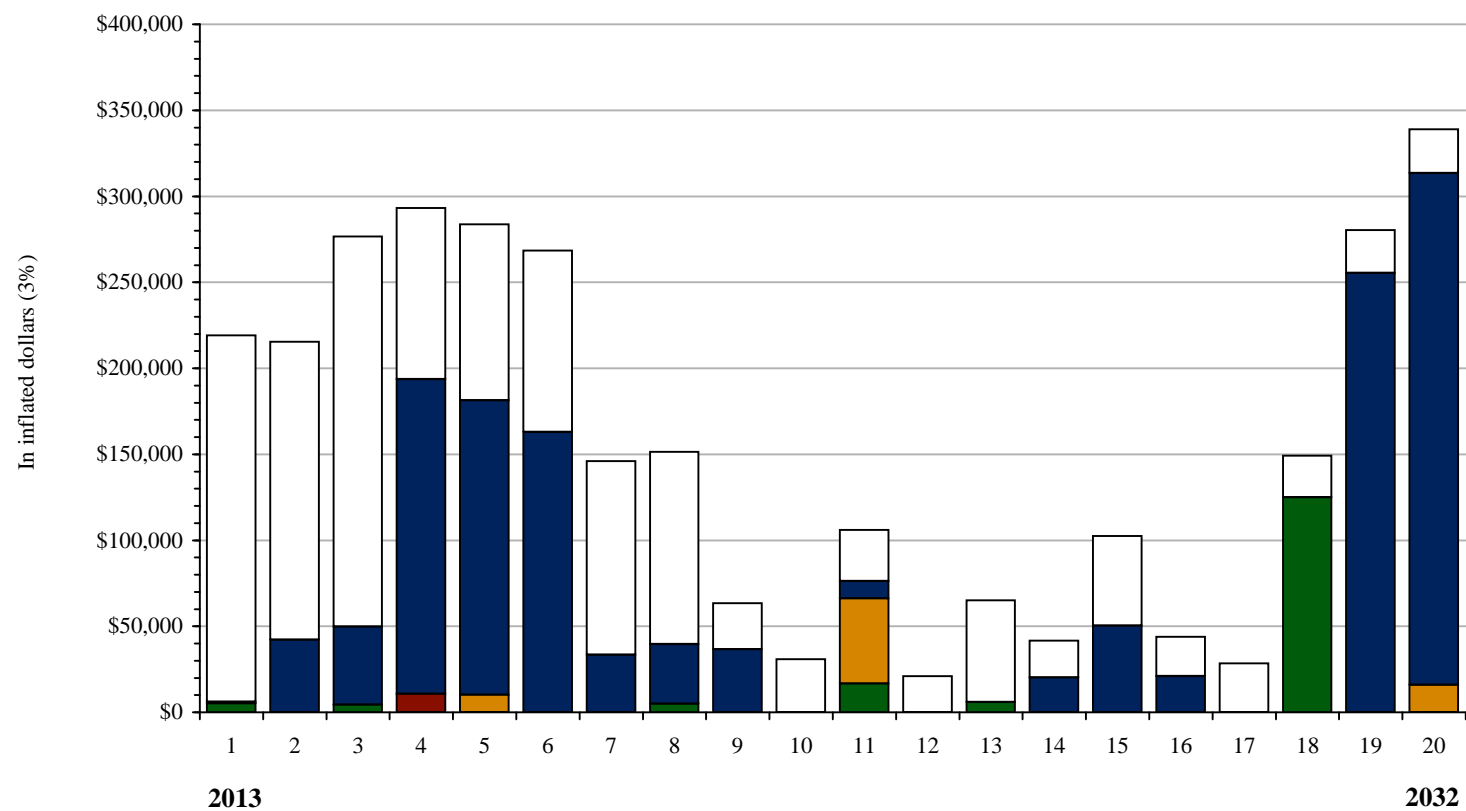
Line C, Additional Contributions allows for material adjustments in annual RR funding that would enable the property to meet all projected needs out of reserves through Year 20.

**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 \$40,729					This is \$768 per unit in inflated dollars or \$438 per unit in uninflated dollars						
Projected annual funding to reserves is \$46,566					This is \$879 per unit in inflated dollars or \$501 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)	
\$770,617	\$720,476	\$730,962	\$698,096	\$692,276	\$639,644	\$624,414	\$630,246	\$596,875	\$351,036	Starting Replacement Reserves	
										Annual Funding (B)	
\$673	\$694	\$714	\$736	\$758	\$781	\$804	\$828	\$853	\$879	Contributions Indexed at 3%	
										Additional Unit Contributions (C)	
\$35,689	\$36,759	\$37,862	\$38,998	\$40,168	\$41,373	\$42,614	\$43,893	\$45,210	\$46,566	Total Annual Reserve Funding (D)	
\$23,654	\$22,166	\$22,497	\$21,528	\$21,371	\$19,810	\$19,372	\$19,566	\$18,584	\$11,230	Interest on Reserves at 3% (E)	
\$829,960	\$779,401	\$791,321	\$758,622	\$753,815	\$700,827	\$686,400	\$693,705	\$660,669	\$408,832	Total Funds Available	
\$109,484	\$48,439	\$93,225	\$66,346	\$114,171	\$76,413	\$56,154	\$96,830	\$309,633	\$368,103	Total Capital Cost (F)	
\$720,476	\$730,962	\$698,096	\$692,276	\$639,644	\$624,414	\$630,246	\$596,875	\$351,036	\$40,729	Reserve Balances (G)	
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0		

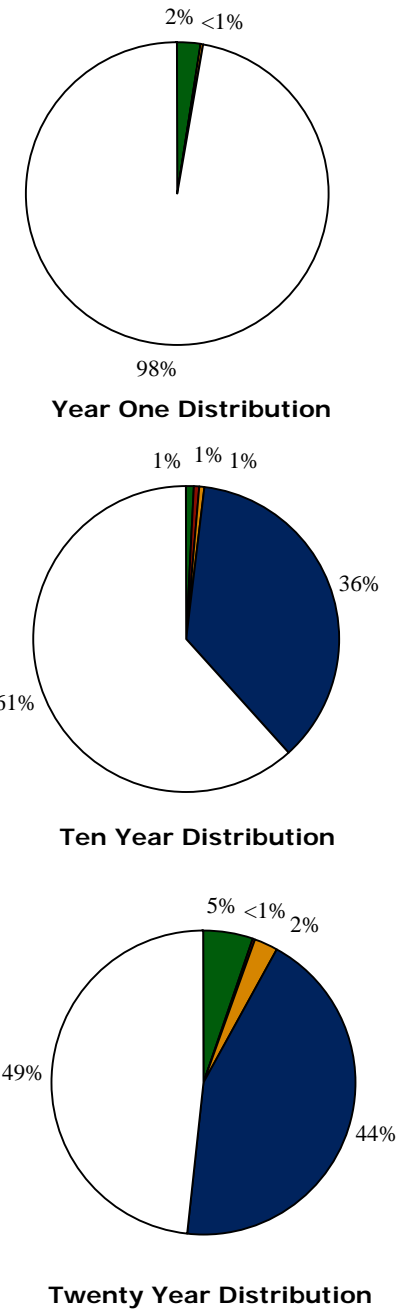
Capital Needs Summary - Green



Total Costs by Building System (inflated dollars)

	Year 1	Years 1-10	Years 1-20
Site Systems & Accessibility	\$5,250 or \$99/unit	\$14,695 or \$277/unit	\$162,423 or \$3,065/unit
Mechanical Room		\$10,856 or \$205/unit	\$10,856 or \$205/unit
Building Mech. & Elec.	\$850 or \$16/unit	\$11,134 or \$210/unit	\$76,546 or \$1,444/unit
Building Architectural		\$709,035 or \$13,378/unit	\$1,363,838 or \$25,733/unit
Dwelling Units	\$213,016 or \$4,019/unit	\$1,202,781 or \$22,694/unit	\$1,512,168 or \$28,531/unit
In inflated dollars:	\$219,116 or \$4,134/unit	\$1,948,501 or \$36,764/unit	\$3,125,831 or \$58,978/unit
In current dollars:	\$219,116 or \$4,134/unit	\$1,760,309 or \$33,213/unit	\$2,490,442 or \$46,989/unit

River Mill Village



Capital Needs Summary - Green

OSI Ref: **13192**
 Property Age: **21 Years**
 Financing: **CHFA**

Residential Buildings: **15**
 Total Number of Units: **53**
 Occupancy: **Family**

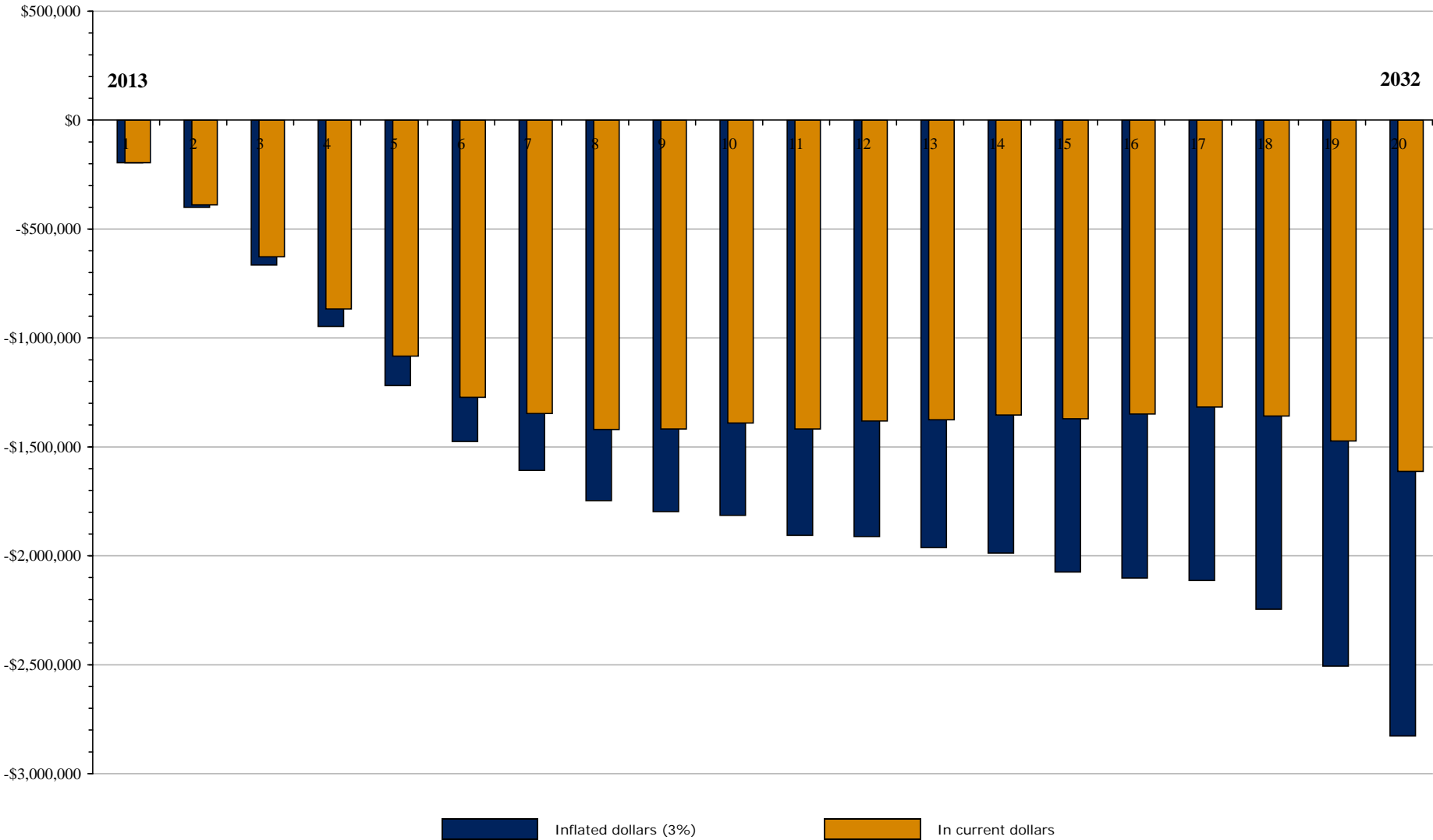
	2013 Year 1	2014 Year 2	2015 Year 3	2016 Year 4	2017 Year 5	2018 Year 6	2019 Year 7	2020 Year 8	2021 Year 9	2022 Year 10
Site Systems & Accessibility										
Surface	\$5,250	\$0	\$4,374	\$0	\$0	\$0	\$0	\$5,071	\$0	\$0
Accessibility	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Site Sub-Total	\$5,250	\$0	\$4,374	\$0	\$0	\$0	\$0	\$5,071	\$0	\$0
Mechanical Room										
Boilers	\$0	\$0	\$0	\$8,725	\$0	\$0	\$0	\$0	\$0	\$0
Boiler Room Systems	\$0	\$0	\$0	\$2,131	\$0	\$0	\$0	\$0	\$0	\$0
Mechanical Sub-Total	\$0	\$0	\$0	\$10,856	\$0	\$0	\$0	\$0	\$0	\$0
Building Mech. & Electrical										
Mechanical	\$0	\$0	\$0	\$0	\$10,284	\$0	\$0	\$0	\$0	\$0
Electrical	\$850	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Elevators	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Mechanical & Electrical Sub-Total	\$850	\$0	\$0	\$0	\$10,284	\$0	\$0	\$0	\$0	\$0
Building Architectural										
Structural and Exterior	\$0	\$0	\$0	\$138,023	\$171,036	\$146,429	\$33,464	\$34,468	\$35,502	\$0
Roof Systems	\$0	\$42,196	\$45,491	\$44,766	\$0	\$0	\$0	\$0	\$0	\$0
Halls, Stairs, Lobbies	\$0	\$0	\$0	\$0	\$0	\$5,997	\$0	\$0	\$0	\$0
Community Spaces	\$0	\$0	\$0	\$0	\$0	\$10,548	\$0	\$0	\$1,117	\$0
Building Architectural Sub-Total	\$0	\$42,196	\$45,491	\$182,789	\$171,036	\$162,973	\$33,464	\$34,468	\$36,618	\$0
Dwelling Units										
Living Areas	\$73,680	\$75,890	\$78,167	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bathrooms	\$30,920	\$21,739	\$22,391	\$834	\$859	\$885	\$912	\$939	\$16,414	\$20,195
Kitchens	\$104,662	\$71,759	\$70,538	\$2,073	\$2,136	\$2,200	\$6,063	\$2,334	\$2,404	\$2,476
Mechanical & Electrical	\$3,754	\$3,867	\$55,659	\$96,592	\$99,490	\$102,474	\$105,548	\$108,715	\$7,987	\$8,226
Dwelling Units Sub-Total	\$213,016	\$173,255	\$226,755	\$99,500	\$102,485	\$105,559	\$112,523	\$111,988	\$26,805	\$30,897
Total Capital Costs	\$219,116	\$215,451	\$276,620	\$293,145	\$283,804	\$268,532	\$145,987	\$151,526	\$63,423	\$30,897

River Mill Village

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	
\$16,799	\$0	\$5,878	\$0	\$0	\$0	\$0	\$125,050	\$0	\$0	Site Systems & Accessibility
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Surface
										Accessibility
\$16,799	\$0	\$5,878	\$0	\$0	\$0	\$0	\$125,050	\$0	\$0	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	\$16,023	Building Mech. & Electrical
\$49,389	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Mechanical
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Electrical
										Elevators
\$49,389	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$16,023	Mechanical & Electrical Sub-Total
\$0	\$0	\$0	\$20,248	\$50,486	\$12,035	\$0	\$0	\$255,473	\$297,413	Building Architectural
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Structural and Exterior
\$0	\$0	\$0	\$0	\$0	\$5,296	\$0	\$0	\$0	\$0	Roof Systems
\$10,079	\$0	\$0	\$0	\$0	\$3,773	\$0	\$0	\$0	\$0	Halls, Stairs, Lobbies
										Community Spaces
\$10,079	\$0	\$0	\$20,248	\$50,486	\$21,104	\$0	\$0	\$255,473	\$297,413	Building Architectural Sub-Total
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Dwelling Units
\$18,750	\$2,433	\$2,506	\$2,581	\$2,658	\$2,738	\$2,820	\$2,905	\$2,992	\$3,082	Living Areas
\$2,550	\$9,931	\$5,695	\$9,603	\$9,891	\$10,187	\$15,596	\$10,808	\$11,132	\$11,466	Bathrooms
\$8,473	\$8,727	\$50,978	\$9,259	\$39,480	\$9,823	\$10,117	\$10,421	\$10,733	\$11,055	Kitchens
										Mechanical & Electrical
\$29,773	\$21,090	\$59,178	\$21,442	\$52,029	\$22,748	\$28,533	\$24,133	\$24,857	\$25,603	Dwelling Units Sub-Total
\$106,040	\$21,090	\$65,056	\$41,690	\$102,515	\$43,852	\$28,533	\$149,184	\$280,330	\$339,039	Total Capital Costs

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



Current Replacement Reserve Balance: **\$12,241**
Adjusted Replacement Reserve Balance: **\$12,241**
Current annual contributions to reserve accounts: **\$10,494**

At the end of Year One, Reserve Balances are projected to be: **(\$195,857)**
At the end of Year 20, Reserve Balances are projected to be: **(\$2,827,016)**
Unmet needs projected in most years of the plan

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

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 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	\$12,241	(\$195,857)	(\$400,336)	(\$665,657)	(\$947,162)	(\$1,218,979)	(\$1,475,163)	(\$1,608,431)	(\$1,746,857)	(\$1,796,787)
(B) Annual Funding										
Contributions Indexed at 3%	\$198	\$204	\$210	\$216	\$223	\$230	\$236	\$244	\$251	\$258
(C) Additional Unit Contributions										
(D) Total Annual Reserve Funding	\$10,494	\$10,809	\$11,133	\$11,467	\$11,811	\$12,165	\$12,530	\$12,906	\$13,293	\$13,692
(E) Interest on Reserves at 3%	\$525	\$162	\$167	\$172	\$177	\$182	\$188	\$194	\$199	\$205
Total Funds Available	\$23,260	(\$184,886)	(\$389,036)	(\$654,017)	(\$935,174)	(\$1,206,631)	(\$1,462,445)	(\$1,595,331)	(\$1,733,364)	(\$1,782,890)
(F) Total Capital Cost	\$219,116	\$215,451	\$276,620	\$293,145	\$283,804	\$268,532	\$145,987	\$151,526	\$63,423	\$30,897
(G) Reserve Balances	(\$195,857)	(\$400,336)	(\$665,657)	(\$947,162)	(\$1,218,979)	(\$1,475,163)	(\$1,608,431)	(\$1,746,857)	(\$1,796,787)	(\$1,813,786)
Outside Capital:										
Adjusted Reserve Balances	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Notes:

1. Starting reserve balance is \$12,241.
2. Annual contribution is \$10,494
3. Capital costs outpace reserves throughout the entire 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 **(\$2,827,016)**

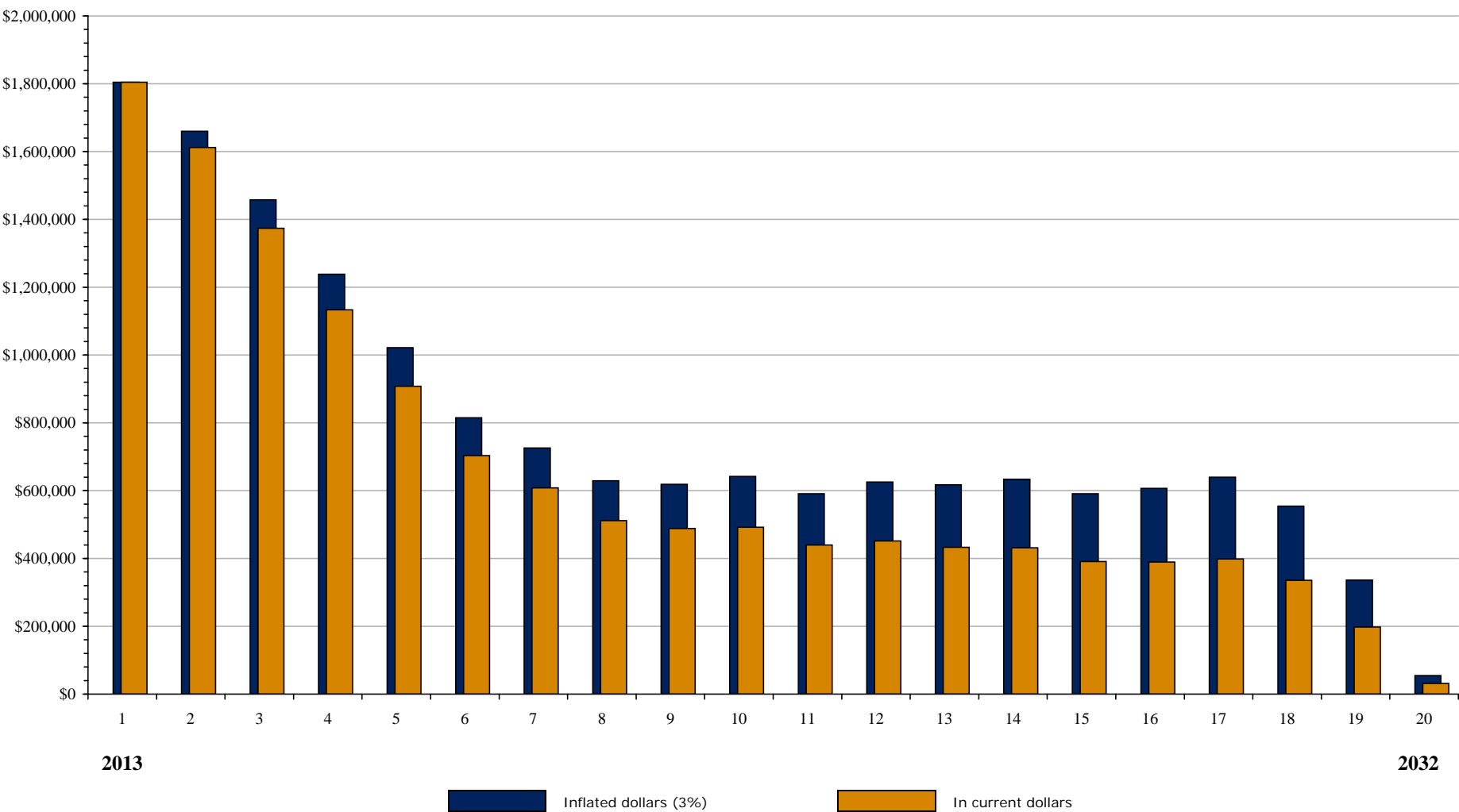
This is (\$53,340) per unit in inflated dollars or (\$30,419) per unit in uninflated dollars

Projected annual funding to reserves is **\$18,401**

This is \$347 per unit in inflated dollars or \$198 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)
(\$1,813,786)	(\$1,905,512)	(\$1,911,858)	(\$1,961,728)	(\$1,987,777)	(\$2,074,180)	(\$2,101,437)	(\$2,112,878)	(\$2,244,457)	(\$2,506,654)	Starting Replacement Reserves
										Annual Funding (B)
\$266	\$274	\$282	\$291	\$299	\$308	\$318	\$327	\$337	\$347	Contributions Indexed at 3%
										Additional Unit Contributions (C)
\$14,103	\$14,526	\$14,962	\$15,411	\$15,873	\$16,349	\$16,840	\$17,345	\$17,865	\$18,401	Total Annual Reserve Funding (D)
\$212	\$218	\$224	\$231	\$238	\$245	\$253	\$260	\$268	\$276	Interest on Reserves at 3% (E)
(\$1,799,472)	(\$1,890,768)	(\$1,896,672)	(\$1,946,086)	(\$1,971,665)	(\$2,057,586)	(\$2,084,345)	(\$2,095,273)	(\$2,226,324)	(\$2,487,977)	Total Funds Available
\$106,040	\$21,090	\$65,056	\$41,690	\$102,515	\$43,852	\$28,533	\$149,184	\$280,330	\$339,039	Total Capital Cost (F)
(\$1,905,512)	(\$1,911,858)	(\$1,961,728)	(\$1,987,777)	(\$2,074,180)	(\$2,101,437)	(\$2,112,878)	(\$2,244,457)	(\$2,506,654)	(\$2,827,016)	Reserve Balances (G)
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	

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



Current Replacement Reserve Balance: **\$12,241**
Adjusted Replacement Reserve Balance: **\$12,241**
Current annual contributions to reserve accounts: **\$10,494**

At the end of Year One, Reserve Balances are projected to be: **\$1,804,143**
At the end of Year 20, Reserve Balances are projected to be: **\$54,844**
All projected capital needs are met throughout the plan

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

		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:		\$10,494 or \$198/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	\$12,241	\$1,804,143	\$1,660,243	\$1,457,312	\$1,238,224	\$1,021,903	\$815,275	\$725,931	\$629,334	\$618,936
(B) Annual Funding										
Contributions Indexed at 3%	\$198	\$204	\$324	\$444	\$564	\$581	\$598	\$616	\$635	\$654
(C) Additional Unit Contributions										
		\$120	\$120	\$120						
(D) Total Annual Reserve Funding	\$10,494	\$17,169	\$23,529	\$29,889	\$29,889	\$30,785	\$31,709	\$32,660	\$33,640	\$34,649
(E) Interest on Reserves at 3%	\$525	\$54,382	\$50,160	\$44,168	\$37,595	\$31,119	\$24,934	\$22,268	\$19,385	\$19,088
Total Funds Available	\$23,260	\$1,875,694	\$1,733,932	\$1,531,369	\$1,305,708	\$1,083,807	\$871,918	\$780,860	\$682,359	\$672,673
(F) Total Capital Cost	\$219,116	\$215,451	\$276,620	\$293,145	\$283,804	\$268,532	\$145,987	\$151,526	\$63,423	\$30,897
(G) Reserve Balances	(\$195,857)	\$1,660,243	\$1,457,312	\$1,238,224	\$1,021,903	\$815,275	\$725,931	\$629,334	\$618,936	\$641,776
Outside Capital:	\$2,000,000									
Adjusted Reserve Balances	\$1,804,143	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Notes:

1. Same starting reserve balance and annual contribution as shown in Plan 1.
2. An infusion of \$2.0M is added in Year 1
3. Contributions are increased by \$120 per apartment (\$10/month) in Years 2 through 4.
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 **\$54,844**

This is \$1,035 per unit in inflated dollars or \$590 per unit in uninflated dollars

Projected annual funding to reserves is **\$46,566**

This is \$879 per unit in inflated dollars or \$501 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)
\$641,776	\$591,213	\$625,170	\$617,299	\$633,711	\$590,978	\$606,849	\$639,775	\$554,336	\$336,523	Starting Replacement Reserves
										Annual Funding (B)
\$673	\$694	\$714	\$736	\$758	\$781	\$804	\$828	\$853	\$879	Contributions Indexed at 3%
										Additional Unit Contributions (C)
\$35,689	\$36,759	\$37,862	\$38,998	\$40,168	\$41,373	\$42,614	\$43,893	\$45,210	\$46,566	Total Annual Reserve Funding (D)
\$19,789	\$18,288	\$19,323	\$19,104	\$19,614	\$18,350	\$18,845	\$19,852	\$17,308	\$10,794	Interest on Reserves at 3% (E)
\$697,253	\$646,261	\$682,356	\$675,401	\$693,493	\$650,701	\$668,308	\$703,519	\$616,853	\$393,883	Total Funds Available
\$106,040	\$21,090	\$65,056	\$41,690	\$102,515	\$43,852	\$28,533	\$149,184	\$280,330	\$339,039	Total Capital Cost (F)
\$591,213	\$625,170	\$617,299	\$633,711	\$590,978	\$606,849	\$639,775	\$554,336	\$336,523	\$54,844	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										
Roadways	_____	sf	_____	_____	_____	_____	_____	_____	_____	Central and Marshal streets owned and maintained by local municipality
Roadways (Green)	_____	sf	_____	_____	_____	_____	_____	_____	_____	
Parking/Driveways	11,780	sf	2.10	\$24,738		Varies	20	18	in 1 Year	Asphalt paved, minor cracks observed Resurface in Year 18
Parking/Driveways (Green)	11,780	sf	6.25	\$73,625	\$48,887	Varies	20	18	in 1 Year	Resurface using open pavers
Crack-Fill and Sealcoat	11,780	sf	0.35	\$4,123		Varies	5	3 /8 /13	in 1 Year	Minor cracks observed Repair in Years 3, 8, and 13
	6,504	sf				21				Concrete walkways, in good condition
Pedestrian Paving	325	sf	6.25	\$2,033		21	40	18	in 1 Year	Repair allowance in Year 18
Pedestrian Paving (Green)	325	sf	6.25	\$2,033	\$0	21	40	18	in 1 Year	Repair allowance using recycle concrete
Fencing	1	ls	5250.00	\$5,250		21	20	1	in 1 Year	Damaged wood stockade at various driveways, replace and add fencing at bldgs near RR tracks. Wood stockade
Fencing (Green)	1	ls	7500.00	\$7,500	\$2,250	21	30			Replace w/wood alternative material Longevity Not cost-effective. GM 1
Site Lighting	1	ls				21	15			Municipal owned and maintain No capital cost shown
Site Lighting (Green)		lf								
Retaining Walls		lf								
Landscaping	1	ls	7500.00	\$7,500		21	45	11	in 1 Year	Surrounding lawns, flowerbeds,and bushes Allowance to replant and prune
Landscaping (Green)	1	ls	12500.00	\$12,500	\$5,000	21	45	11	in 1 Year	Replace existing w/Xeriscape (local plantings) Minimum maintenance and water use. Discuss

ACCESSIBILITY

Circulation	1	ls			21	10			Compliant design
Circulation (Green)		ls							
Common Areas	1	ea			21	20			Compliant design
Common Areas (Green)		ea							
Dwelling Units	6	ea			21	20			Compliant design
Dwelling Units (Green)		ea							
Miscellaneous		ls							

River Mill Village
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
SURFACE																				
Roadways	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Roadways (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Parking/Driveways	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$40,888	\$0	\$0
Parking/Driveways (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$121,691	\$0	\$0
Crack-Fill and Sealcoat	\$0	\$0	\$4,374	\$0	\$0	\$0	\$0	\$5,071	\$0	\$0	\$0	\$0	\$5,878	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pedestrian Paving	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,359	\$0	\$0
Pedestrian Paving (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,359	\$0	\$0
Fencing	\$5,250	\$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	\$0	\$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	\$10,079	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Landscaping (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$16,799	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$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										
										Oil-fired, similar to unit boilers, local controls
Boilers - 1	1	ea	5700.00	\$5,700		21	25	4	in 1 Year	Replace in Year 4
Boilers - 1 (Green)	1	ea	6600.00	\$6,600	\$900	21	25	4	in 1 Year	Replace w/high efficiency boiler (86% vs 80%) Energy savings
Circulating Pump	1	ea	1,350	\$1,350		21	25	4	in 1 Year	Fractional hp circulating pump, standard eff Replace
Circulating Pump (Green)	1	ea	1,385	\$1,385	\$35	21	25	4	in 1 Year	Replace w/high efficiency pump motor Energy savings. EWMC 1
Chilled Water Pumps		ea								
Chilled Water Pumps (Green)		ea								
Cooling Water Pumps		ea								
Cooling Water Pumps (Green)		ea								
Boiler Water Pumps		ea								
Boiler Water Pumps (Green)		ea								
Heating Water Pumps - 1		ea								
Heating Water Pumps - 1 (Green)		ea								
Combustion Air	1	ls				21	15			Louvered air opening Maintain out of Operating
Combustion Air (Green)		ea								
Flue Exhaust	1	ls				21	20			Metal flue, no missing, damaged, or loose flue sections Maintain out of Operating
Flue Exhaust (Green)		ea								
Condensate & Feed Water		ea								
Miscellaneous		ea								
Miscellaneous (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	\$6,229	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Boilers - 1 (Green)	\$0	\$0	\$0	\$7,212	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Circulating Pump	\$0	\$0	\$0	\$1,475	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Circulating Pump (Green)	\$0	\$0	\$0	\$1,513	\$0	\$0	\$0	\$0	\$0	\$0	\$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
Boiler Water Pumps	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Boiler Water Pumps (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Heating Water Pumps - 1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Heating Water Pumps - 1 (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Combustion Air	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Combustion Air (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
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

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									
Boiler Room Piping/Valves	ea								
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	ea								
DHW Generation - 1 (Green)	ea								
DHW Generation - 2	ea								
DHW Generation - 2 (Green)	ea								
DHW Storage - 1	1 ea	1950.00	\$1,950		21	20	4	in 1 Year	Storage tank at Office/Residence Bldg (restrooms and laundry) 70 gal cap. Replace
DHW Storage - 1 (Green)	ea								
DHW Storage - 2	ea								
DHW Storage - 2 (Green)	ea								
DHW Pumps - 1	ea								
DHW Pumps - 1 (Green)	ea								
DHW Pumps - 2	ea								
DHW Pumps - 2 (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	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
DHW Generation - 1 (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
DHW Generation - 2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
DHW Generation - 2 (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
DHW Storage - 1	\$0	\$0	\$0	\$2,131	\$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
DHW Pumps - 1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
DHW Pumps - 1 (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
DHW Pumps - 2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
DHW Pumps - 2 (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	_____ 1 ls	_____	_____		_____ 21	_____ 35	_____	_____	_____	_____	
Building Distribution Systems	_____ 1 ls	_____	_____		_____ 21	_____ 50	_____	_____	_____	_____	
Building HVAC Systems-1	_____ 2 ea	4250.00	\$8,500		_____ ≈10	_____ 15	_____ 5	_____ 20	_____ in	_____ 1 Year	Split DX air conditioning units at Office/Resid Bldg
Building HVAC Systems-1 (Green)	_____ 2 ea	4568.75	\$9,138	\$638	_____ ≈10	_____ 15	_____ 5	_____ 20	_____ in	_____ 1 Year	Replace Replace existing w/higher SEER units Energy savings
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	_____	_____		_____ 21	_____ 99	_____	_____	Monitor
Emergency Generator	_____ ea	_____	_____		_____	_____	_____	_____	_____
Emergency Lights	_____ 1 ls	_____	_____		_____ 21	_____ 10	_____	_____	Maintain out of Operating
Smoke / Fire Detection	_____ 1 ls	36750.00	\$36,750		_____ ≈10	_____ 20	_____ 11	_____ in 1 Year	Simplex FACP w/hardwired devices Upgrade in Year 11
Signaling / Communication	_____ 1 ls	850.00	\$850		_____ 21	_____ 20	_____ 1	_____ in 1 Year	At common entrance (Office/Residence Bldg) Replace

BUILDING ELEVATORS

Shafts and Doorways	_____ ea	_____	_____		_____	_____	_____	_____	n/a: No elevator 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	\$9,567	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$14,905
Building HVAC Systems-1 (Green)	\$0	\$0	\$0	\$0	\$10,284	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$16,023
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	\$49,389	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Signaling / Communication	\$850	\$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
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STRUCTURE

Foundation	2,510	lf			21	50			
Framing		ls							
Slab		sf							
Miscellaneous		ea							

BUILDING EXTERIOR

Exterior Common Doors	2	ea	1410.00	\$2,820		21	35	14	in	1	Year	Double leaf glass doors Replace in Year 14
Exterior Common Doors (Green)	2	ea	1515.75	\$3,032	\$212	21	35	14	in	1	Year	Replace existing w/fiberglass door (insulated glass) Energy savings
Exterior Unit Doors - 2	4	ea	705.00	\$2,820		21	35	14	in	1	Year	Single leaf with glass inserts Replace in Year 14
Exterior Unit Doors - 2 (Green)	4	ea	757.88	\$3,032	\$212	21	35	14	in	1	Year	Fiberglass-faux wood six panel door Energy savings, lower maintenance
Exterior Unit Doors	79	ea	990.00	\$78,210		Varies	35	7	over	3	Years	Solid wood six-panel doors - historic design Replace starting in Year 7
Exterior Unit Doors (Green)	79	ea	1064.25	\$84,076	\$5,866	Varies	35	7	over	3	Years	Fiberglass-faux wood six panel door Energy savings, lower maintenance
Service Doors	30	ea	772.50	\$23,175		21	30	14	over	3	Years	Metal bulkhead doors and basement doors Replace starting in Year 14
Storm Doors		ea										
Exterior Walls -Vinyl	69,260	sf	6.50	\$450,190		21	40	19	over	3	Years	Vinyl siding on residential bldgs. Power wash in Yrs 5 and 15; replace starting in Year 19
Exterior Walls -Vinyl (Green)	69,260	sf	8.50	\$588,710	\$138,520	21	50				Years	Replace existing w/cement fiberboard product Longevity, lower maintenance. Not cost-effective. GM 2
Exterior Walls - Wood	5,025	sf	3.77	\$18,944		21	45	20	in	1	Year	Wood siding on Office/Resident Bldg. Repaint in Yrs 5 and 15; replace in Year 20
Exterior Walls - Wood (Green)	5,025	sf	8.50	\$42,712	\$23,768	21	50				Years	Replace existing w/cement fiberboard product Longevity, lower maintenance. Not cost-effective. GM 2
Exterior Walls - 3		sf										
Trim, Soffit, Fascia		lf										
Trim, Soffit, Fascia (Green)		lf										
Exterior Ceilings		sf										
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
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																				
Exterior Common Doors	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$4,141	\$0	\$0	\$0	\$0	\$0	\$0
Exterior Common Doors (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$4,452	\$0	\$0	\$0	\$0	\$0	\$0
Exterior Unit Doors - 2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$4,141	\$0	\$0	\$0	\$0	\$0	\$0
Exterior Unit Doors - 2 (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$4,452	\$0	\$0	\$0	\$0	\$0	\$0
Exterior Unit Doors	\$0	\$0	\$0	\$0	\$0	\$0	\$31,129	\$32,063	\$33,025	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Exterior Unit Doors (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$33,464	\$34,468	\$35,502	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Service Doors	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$11,344	\$11,685	\$12,035	\$0	\$0	\$0	\$0
Storm Doors	\$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	\$0	\$0	\$23,386	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$31,429	\$0	\$0	\$0	\$255,473	\$263,137
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 - Wood	\$0	\$0	\$0	\$0	\$5,486	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$7,373	\$0	\$0	\$0	\$0	\$33,219
Exterior Walls - Wood (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 - 1	754	ea	467.50	\$352,495		21	30	4	over 3 Years	Single glazed with interior storm windows
Windows - 1 (Green)	754	ea	502.56	\$378,932	\$26,437	21	30	4	over 3 Years	Replace starting in Yr 4, vinyl dbl glazed
Windows - 2		ea								Replace existing w/fiberglass frame insulated
Windows - 2 (Green)		ea								glazing. Energy savings
Window Glazing	151	ea	80.00	\$12,064		Varies	20	20	over 20 Years	Glazing replacement allowance starts in Yr 20
Window Glazing (Green)		ea								
Window Lintels		ea								
Unit Balconies		ea								
Unit Balconies (Green)		ea								
Unit Patios		ea								
Unit Patios (Green)		ea								
Building Mounted Lighting	83	ea				21	10			CFLs cold-weather rated at common and unit doors
Building Mounted Lighting (Green)		ea								Maintain out of Operating
ROOF SYSTEMS										
Structure	30,950	sf				21	50			Wood-frame, wood decking
Roof Covering -Asphalt Shingles	30,725	sf	4.00	\$122,902		Varies	20	2	over 3 Years	Monitor
Asphalt Shingles (Green)	30,725	sf	7.75	\$238,122	\$115,220	Varies	40		Years	Asphalt shingles over pitched roofing
Roof Covering -Rubber Membrane	225	sf	8.50	\$1,913		21	20	3	in 1 Year	Replace starting in Year 2
Rubber Membrane (Green)		sf								Replace existing w/metal shingles - historic appearance
Roof Covering - 3		sf								Longevity. Not cost-effective. GM 3
Skylights		ea								Center section (flat) of Office/Residence building
Penthouses		ea								Replace in Year 3

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 - 1	\$0	\$0	\$0	\$128,394	\$132,245	\$136,213	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Windows - 1 (Green)	\$0	\$0	\$0	\$138,023	\$142,164	\$146,429	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Windows - 2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Windows - 2 (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Window Glazing	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,058
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 -Asphalt Shingles	\$0	\$42,196	\$43,462	\$44,766	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Asphalt Shingles (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Roof Covering -Rubber Membrane	\$0	\$0	\$2,029	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Rubber Membrane (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	_____	sf	_____	_____	_____	_____	_____	_____	_____	
Hallway Walls and Ceilings (Green)	_____	sf	_____	_____	_____	_____	_____	_____	_____	
Hallway Floors - 1	_____0	sf	_____	_____	_____	_____	_____	_____	_____	
Hallway Floors - 1 (Green)	_____	sf	_____	_____	_____	_____	_____	_____	_____	
Hallway Floors - 2	_____	sf	_____	_____	_____	_____	_____	_____	_____	
Hallway Floors - 2 (Green)	_____	sf	_____	_____	_____	_____	_____	_____	_____	
Hallway Interior Lighting	_____	ea	_____	_____	_____	_____	_____	_____	_____	
Hallway Interior Lighting (Green)	_____	ea	_____	_____	_____	_____	_____	_____	_____	
Hallway Heating	_____	ea	_____	_____	_____	_____	_____	_____	_____	
Hallway Heating (Green)	_____	ea	_____	_____	_____	_____	_____	_____	_____	
Hallway Doors	_____	ea	_____	_____	_____	_____	_____	_____	_____	
Miscellaneous	_____	ea	_____	_____	_____	_____	_____	_____	_____	
Miscellaneous (Green)	_____	ea	_____	_____	_____	_____	_____	_____	_____	

STAIRS

Stair Walls and Ceilings	5,483	sf	0.62	\$3,399		≈4	10	6	16	in	1	Year	Painted surfaces Repaint
Stair Walls and Ceilings (Green)	5,483	sf	0.62	\$3,399	\$0	≈4	10	6	16	in	1	Year	Repaint using low VOC paints
Stair Floors	323	sf	3.00	\$968		≈4	10	6	16	in	1	Year	Carpeted Replace
Stair Floors (Green)	323	sf	5.50	\$1,774	\$806	≈4	25	6		in	1	Year	Replace w/linoleum flooring product Longevity GM 4
Stair Interior Lighting	1	ls				Varies	20						Energy efficient T8 fluorescent fixtures Maintain out of Operating
Stair Interior Lighting (Green)		ea											
Stair Doors	1	ls				21	25						Maintain out of Operating
Stair Railings	1	ls				21	25						Maintain out of Operating

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
HALLS																				
Hallway Walls and Ceilings	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Hallway Walls and Ceilings (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Hallway Floors - 1	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Hallway Floors - 1 (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Hallway Floors - 2	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Hallway Floors - 2 (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Hallway Interior Lighting	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Hallway Interior Lighting (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Hallway Heating	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Hallway Heating (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	\$3,941	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,296	\$0	\$0	\$0	\$0
Stair Walls and Ceilings (Green)	\$0	\$0	\$0	\$0	\$0	\$3,941	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,296	\$0	\$0	\$0	\$0
Stair Floors	\$0	\$0	\$0	\$0	\$0	\$1,122	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,507	\$0	\$0	\$0	\$0
Stair Floors (Green)	\$0	\$0	\$0	\$0	\$0	\$2,056	\$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		sf										
Lobby Floors (Green)		sf										
COMMUNITY SPACE / OFFICE												
Walls and Ceilings	2,407	sf	0.62	\$1,492		Varies	10	6	16		in 1 Year	Painted surfaces Repaint
Walls and Ceilings (Green)	2,407	sf	0.62	\$1,492	\$0	Varies	10	6	16		in 1 Year	Repaint using low VOC paints
Floor Covering	907	sf	3.00	\$2,720		≈4	10	6	16		in 1 Year	Carpeted Replace
Floor Covering (Green)	907	sf	5.50	\$4,987	\$2,267	≈4	25	6			in 1 Year	Replace w/linoleum flooring product Longevity GM 4
Com Rm Kitchen Cabinets		ea										
Com Rm Kitchen Cabinets (Green)		ea										
Furnishings	1	ls	7500.00	\$7,500		Varies	20	11			in 1 Year	Tables, chairs, etc. Replacement allowance
Furnishings (Green)		ea										
PUBLIC LAUNDRY / RESTROOMS												
Walls and Ceilings	1,499	sf	0.62	\$929		Varies	10	6	16		in 1 Year	Painted surfaces Repaint
Walls and Ceilings (Green)	1,499	sf	0.62	\$929	\$0	Varies	10	6	16		in 1 Year	Repaint using low VOC paints
Floor Covering	307	sf	5.00	\$1,537		Varies	15	6			in 1 Year	VCT, in good condition Replace
Floor Covering (Green)	307	sf	5.50	\$1,690	\$154	Varies	25	6			in 1 Year	Replace existing w/linoleum flooring product Longevity: GM 4
Laundry Equipment	10	ea				21	10					Leased: 5 washers (2 front-loaders) and 5 electric dryers Maintain out of Operating
Laundry Equipment (Green)	10	ea				21	10					Consider all-front-loading washers
Restroom Fixtures / Accessories	1	ea				21	20					Countertops w/sink inserts, mirrors, light fixtures, etc. Maintain out of Operating
Toilets	2	ea	410.00	\$820		21	30	9			in 1 Year	Toilets with low flushometers (1.6 gpf) Replace in Year 10
Toilets (Green)	2	ea	440.75	\$882	\$62	21	30	9			in 1 Year	Replace existing toilets w/high efficiency toilets and flushometers. Water savings. EWCM 2

BUILDING ARCHITECTURE--continued

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	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Lobby Floors (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
COMMUNITY SPACE / OFFICE																				
Walls and Ceilings	\$0	\$0	\$0	\$0	\$0	\$1,730	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,325	\$0	\$0	\$0	\$0
Walls and Ceilings (Green)	\$0	\$0	\$0	\$0	\$0	\$1,730	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,325	\$0	\$0	\$0	\$0
Floor Covering	\$0	\$0	\$0	\$0	\$0	\$3,153	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$4,238	\$0	\$0	\$0	\$0
Floor Covering (Green)	\$0	\$0	\$0	\$0	\$0	\$5,781	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Com Rm Kitchen Cabinets	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Com Rm Kitchen Cabinets (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Furnishings	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$10,079	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Furnishings (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
PUBLIC LAUNDRY / RESTROOMS																				
Walls and Ceilings	\$0	\$0	\$0	\$0	\$0	\$1,077	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,448	\$0	\$0	\$0	\$0
Walls and Ceilings (Green)	\$0	\$0	\$0	\$0	\$0	\$1,077	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,448	\$0	\$0	\$0	\$0
Floor Covering	\$0	\$0	\$0	\$0	\$0	\$1,781	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Floor Covering (Green)	\$0	\$0	\$0	\$0	\$0	\$1,960	\$0	\$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	\$1,039	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Toilets (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,117	\$0	\$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	4 ea				Varies	30				Entry doors for units at Office/Residence Bldg
										Maintain out of Operating
Unit Interior Doors	185 ea				Varies	25				Mix of solid and hollow core doors
										Maintain out of Operating
Unit Closet Doors	257 ea				Varies	25				Mix of solid and hollow core doors
										Maintain out of Operating
Unit Walls and Ceilings	196,523 sf				Varies	5				Painted surfaces
										Maintain out of Operating
Unit Walls and Ceilings (Green)	196,523 sf				Varies	5				
Living Area Floors - 1	40,189 sf	3.00	\$120,567		Varies	12	1 13	over 12 Years		Carpeted, includes stairs, most in good condition
										Replace starting in Years 1 and 13
Living Area Floors - 1 (Green)	40,189 sf	5.50	\$221,039	\$100,472	Varies	25	1	over 3 Years		Replace with linoleum flooring
										Longevity, IAQ. GM 5
Living Area Floors - 2	sf									
Living Area Floors - 2 (Green)	sf									
BATHROOMS										
Bathroom Floors	4,925 sf	5.00	\$24,625		Varies	15	1 16	over 15 Years		VCT, most in good condition
										Replace starting in Years 1 and 16
Bathroom Floors (Green)	4,925 sf	5.50	\$27,088	\$2,463	Varies	25	1	over 3 Years		Replace existing w/linoleum flooring
										Longevity. GM 5
Bathtub and Shower	53 ea	375.00	\$19,875		Varies	20	11	over 20 Years		Fiberglass tubs and shower enclosures
										Repair allowance starting in Year 11
Bathtub and Shower (Green)	ea									
Bathroom Vanity	77 ea	410.00	\$31,570		21	20	1	over 20 Years		Plywood base, in good condition
										Replacement allowance
Bathroom Vanity (Green)	77 ea	440.75	\$33,938	\$2,368	21	25	1	over 3 Years		Replace w/FSC-certified wood vanity
										Longevity, IAQ GM 6
Bathroom Sinks	6 ea	420.00	\$2,520		21	20	10	in 1 Year		Wall-hung sinks in the accessible bathrooms
										Replace in Year 10
Bathroom Toilets	83 ea	410.00	\$34,030		21	30	9	over 20 Years		Low flush (1.6 gpf) toilets
										Replace starting in Year 9
Bathroom Toilets (Green)	83 ea	440.75	\$36,582	\$2,552	21	30	9	over 3 Years		Replace existing with high efficiency (1.28 gpf) toilets
Ventilation & Exhaust	83 ea	110.00	\$9,130		Varies	20	1	in 1 Year		Ceiling exhaust fans
										Replace in Year 1
Ventilation & Exhaust (Green)	83 ea	118.25	\$9,815	\$685	Varies	20	1	in 1 Year		Replace existing w/variable speed fan, controlled by humidistat
Accessories	83 ea	184.00	\$15,272		21	20	1	over 20 Years		Mirrors, light fixtures, towel racks, etc.
										Replacement allowance

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
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	\$10,047	\$10,349	\$10,659	\$10,979	\$11,308	\$11,647	\$11,997	\$12,357	\$12,728	\$13,109	\$13,503	\$13,908	\$14,325	\$14,755	\$15,197	\$15,653	\$16,123	\$16,607	\$17,105	\$17,618
Living Area Floors - 1 (Green)	\$73,680	\$75,890	\$78,167	\$0	\$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	\$1,642	\$1,691	\$1,742	\$1,794	\$1,848	\$1,903	\$1,960	\$2,019	\$2,080	\$2,142	\$2,206	\$2,272	\$2,341	\$2,411	\$2,483	\$2,558	\$2,634	\$2,713	\$2,795	\$2,879
Bathroom Floors (Green)	\$9,029	\$9,300	\$9,579	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bathtub and Shower	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,336	\$1,376	\$1,417	\$1,459	\$1,503	\$1,548	\$1,595	\$1,643	\$1,692	\$1,743
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	\$1,579	\$1,626	\$1,675	\$1,725	\$1,777	\$1,830	\$1,885	\$1,941	\$2,000	\$2,060	\$2,121	\$2,185	\$2,251	\$2,318	\$2,388	\$2,459	\$2,533	\$2,609	\$2,687	\$2,768
Bathroom Vanity (Green)	\$11,313	\$11,652	\$12,002	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bathroom Sinks	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,288	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bathroom Toilets	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,155	\$2,220	\$2,287	\$2,355	\$2,426	\$2,499	\$2,574	\$2,651	\$2,730	\$2,812	\$2,897	\$2,984
Bathroom Toilets (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$15,447	\$15,911	\$16,388	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Ventilation & Exhaust	\$9,130	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Ventilation & Exhaust (Green)	\$9,815	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Accessories	\$764	\$787	\$810	\$834	\$859	\$885	\$912	\$939	\$967	\$996	\$1,026	\$1,057	\$1,089	\$1,121	\$1,155	\$1,190	\$1,225	\$1,262	\$1,300	\$1,339

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	7,262	sf	5.00	36,312		Varies	15	1	16	over 15 Years	Replace starting in Years 1 and 16
Kitchen Floors (Green)	7,262	sf	5.50	39,943	\$3,631	Varies	25	1		over 3 Years	Replace existing w/linoleum flooring Longevity. GM 5
Kitchen Cabinets	53	ea	2700.00	143,100		21	20	1		over 10 Years	Plywood cabinets, most in good condition Replace starting in Year 1
Kitchen Cabinets (Green)	53	ea	2902.50	153,833	\$10,733	21	25	1		over 3 Years	Replace existing w/FSC-certified wood cabinets Longevity, less off-gassing. GM 6
Kitchen Cabinets		ea									
Kitchen Cabinets (Green)		ea									
Kitchen Countertops	53	ea	474.72	25,160		21	12	12		over 12 Years	Laminated particleboard, in varying conditions Included w/cabinets; future replacements starts in Yr 12
Kitchen Countertops (Green)	53	ea	975.00	51,675	\$26,515	21	30			Years	Replace w/stone countertops starting in Yr 12 Longevity. Not cost-effective. GM 7
Range	53	ea	435.00	23,055		Varies	20	1		over 20 Years	30-inch electric ranges, mostly original, in good condiiton Replace starting in Year 1
Range (Green)		ea									
Range		ea									
Range (Green)		ea									
Refrigerator	53	ea				21	15				
Refrigerator (Green)		ea									
Refrigerator	53	ea	670.00	35,510		Varies	15	1	16	over 15 Years	Frost-free, most in good condition Replace starting in Years 1 and 16
Refrigerator (Green)	53	ea	720.25	38,173		21	15	14		over 15 Years	Replace existing w/Energy Star refrigerators
	53	ea	720.25	38,173	\$2,663	Varies	15	1		in 1 Year	Energy savings. EWCM 3
Dishwasher		ea									
Dishwasher (Green)		ea									
Rangehood and Vent	53	ea	281.00	14,893		Varies	20	1		over 20 Years	Ducted rangehoods, in good condition Replace starting in Year 1
Rangehood Fire Extinguishers	53	ea	60.00	3,180		≈3	5	2	7 12 17	in 1 Year	Portable fire extinguishers, reacts to high heat (grease fires) Replace in Years 2, 7, 12, and 17
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	\$2,421	\$2,493	\$2,568	\$2,645	\$2,725	\$2,806	\$2,891	\$2,977	\$3,067	\$3,159	\$3,253	\$3,351	\$3,451	\$3,555	\$3,662	\$3,771	\$3,885	\$4,001	\$4,121	\$4,245
Kitchen Floors (Green)	\$13,314	\$13,714	\$14,125	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Kitchen Cabinets	\$14,310	\$14,739	\$15,181	\$15,637	\$16,106	\$16,589	\$17,087	\$17,599	\$18,127	\$18,671	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Kitchen Cabinets (Green)	\$51,278	\$52,816	\$54,400	\$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	\$0	\$2,902	\$2,989	\$3,079	\$3,171	\$3,267	\$3,365	\$3,465	\$3,569	\$3,677
Kitchen Countertops (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Range	\$1,153	\$1,187	\$1,223	\$1,260	\$1,297	\$1,336	\$1,376	\$1,418	\$1,460	\$1,504	\$1,549	\$1,596	\$1,644	\$1,693	\$1,744	\$1,796	\$1,850	\$1,905	\$1,962	\$2,021
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	\$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
Refrigerator	\$2,367	\$2,438	\$2,512	\$2,587	\$2,664	\$2,744	\$2,827	\$2,912	\$2,999	\$3,089	\$3,181	\$3,277	\$3,375	\$3,477	\$3,581	\$3,688	\$3,799	\$3,913	\$4,030	\$4,151
Refrigerator (Green)	\$38,173	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,737	\$3,849	\$3,965	\$4,084	\$4,206	\$4,332	\$4,462
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	\$745	\$767	\$790	\$814	\$838	\$863	\$889	\$916	\$943	\$972	\$1,001	\$1,031	\$1,062	\$1,094	\$1,126	\$1,160	\$1,195	\$1,231	\$1,268	\$1,306
Rangehood Fire Extinguishers	\$0	\$3,275	\$0	\$0	\$0	\$0	\$3,797	\$0	\$0	\$0	\$0	\$4,402	\$0	\$0	\$0	\$0	\$5,103	\$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

DWELLING UNITS--*continued*

IN-UNIT ELECTRICAL

River Mill Village • Green Capital Needs Assessment • © On-Site Insight

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 Hydronic Boilers	\$0	\$0	\$0	\$66,023	\$68,003	\$70,043	\$72,145	\$74,309	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Hydronic Boilers (Green)	\$0	\$0	\$0	\$76,447	\$78,741	\$81,103	\$83,536	\$86,042	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Circulating Pumps	\$0	\$0	\$0	\$15,637	\$16,106	\$16,589	\$17,087	\$17,599	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Circulating Pumps (Green)	\$0	\$0	\$0	\$16,042	\$16,524	\$17,019	\$17,530	\$18,056	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Thermostats	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$15,565	\$0	\$0	\$0	\$0	\$0
Unit Thermostats (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$29,943	\$0	\$0	\$0	\$0	\$0
Unit Radiation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,231	\$3,328	\$3,428	\$3,531	\$3,637	\$3,746	\$3,858	\$3,974	\$4,093	\$4,216	\$4,342	\$4,473
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	\$3,754	\$3,867	\$3,983	\$4,102	\$4,225	\$4,352	\$4,483	\$4,617	\$4,756	\$4,898	\$5,045	\$5,197	\$5,353	\$5,513	\$5,679	\$5,849	\$6,024	\$6,205	\$6,391	\$6,583
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	\$51,676	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$41,989	\$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
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

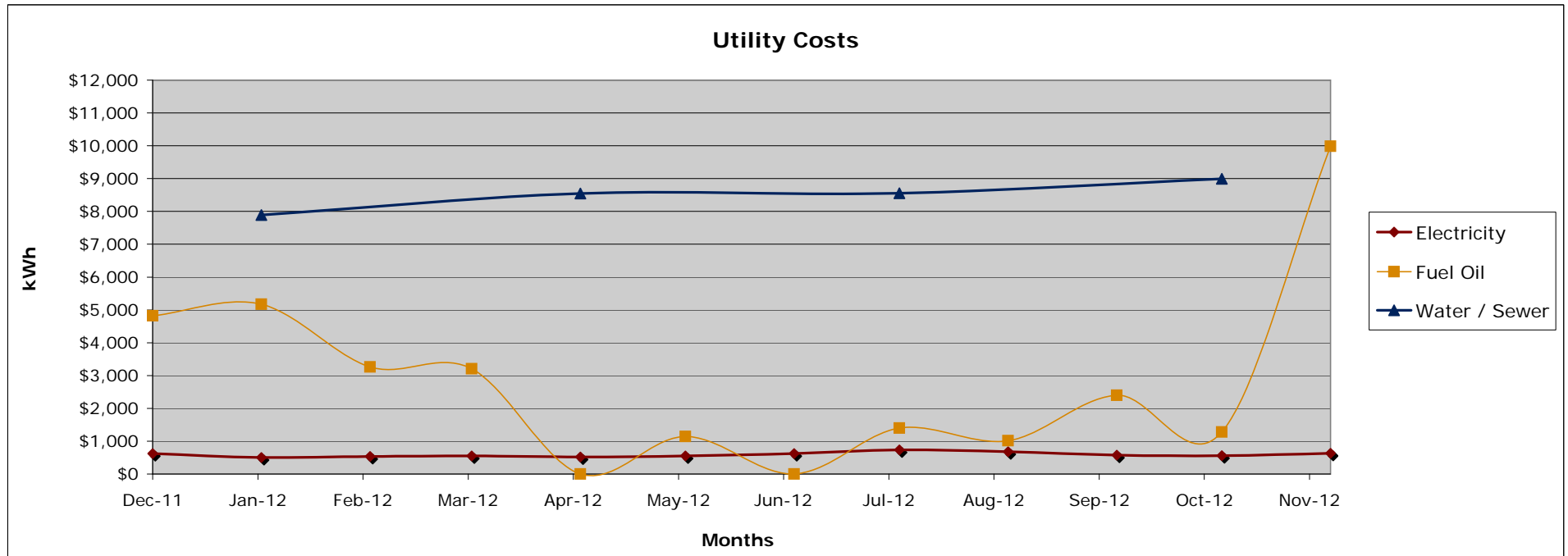
Energy Analysis

Utility Usage

River Mill Village

The energy analysis portion of this GCNA examines utility bills for the most recent 12 months to summarize at electricity, fuel oil, and water/sewer usage. The following table and charts show the utility information by utility source, and by month. The annual utility costs chart shows the actual purchase periods of the utilities.

	ELECTRICITY		NATURAL GAS		WATER / SEWER				OIL		TOTAL
	kWh	\$	Therms	\$	Gallons	Water \$	Sewer \$	Total \$	Gallons	\$	
Nov-12	1,490	\$629			653,000	\$4,754	\$4,240	\$8,994	3,120	\$9,985	\$10,614
Oct-12	1,161	\$563							400	\$1,281	\$10,838
Sep-12	1,343	\$572							750	\$2,401	\$2,974
Aug-12	1,450	\$680							318	\$1,017	\$1,697
Jul-12	1,593	\$737	579,000	\$4,315	\$4,240	\$8,555	436	\$1,396	\$10,688		
Jun-12	1,376	\$626					0	\$0	\$626		
May-12	1,387	\$554					357	\$1,143	\$1,697		
Apr-12	1,186	\$520					0	\$0	\$9,065		
Mar-12	1,385	\$553	573,000	\$4,304	\$4,240	\$8,544	1,001	\$3,204	\$3,757		
Feb-12	1,654	\$537					1,020	\$3,265	\$3,802		
Jan-12	1,486	\$506					1,617	\$5,176	\$13,572		
Dec-11	1,871	\$621					1,507	\$4,823	\$5,444		
Total	17,382	\$7,098			2,299,000	\$17,024	\$16,960	\$33,984	10,528	\$33,691	\$74,773
Unit Cost		\$0.408						\$0.01478		\$3.20	

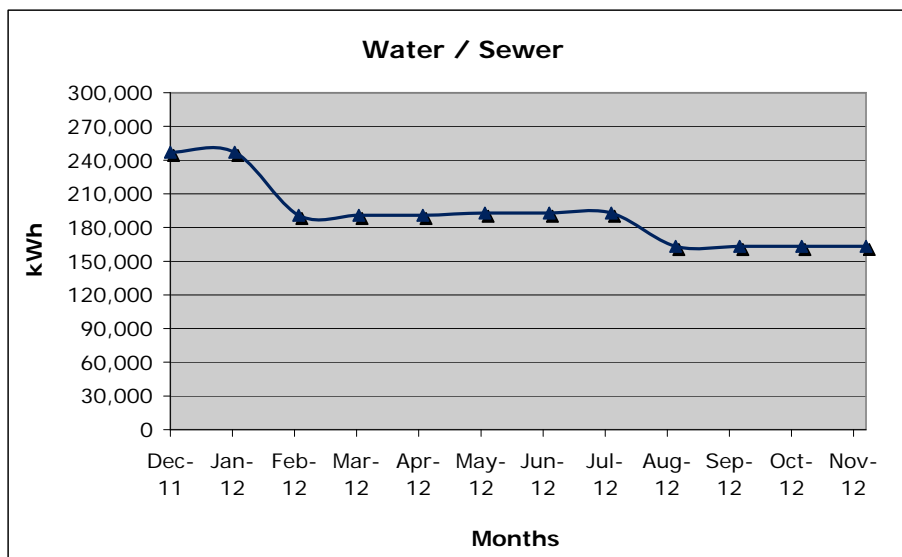
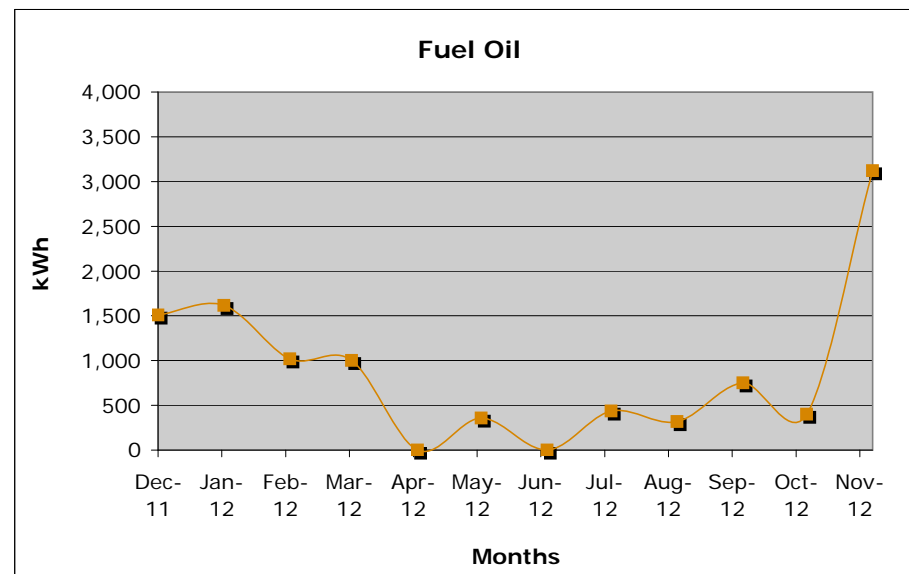
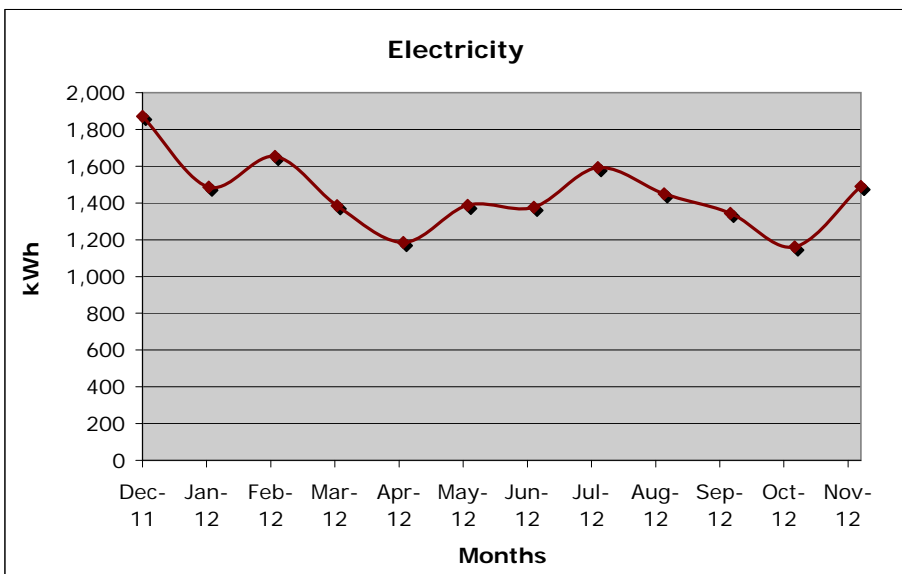


Energy Analysis

Utility Usage, By Type

River Mill Village

Below are graphic presentations of annual usage by utility type for the property.



Energy Analysis

Notes

River Mill Village

Below are notes regarding the property metering schedule, general billing information, and specific usage details by utility type.

General

The property is master metered for natural gas, water and sewer, and common area electricity (hallways, office, community spaces). The dwelling units are individually metered for electricity consumption.

Fuel Oil

Fuel oil usage follows a normal consumption pattern, with spikes during the heating season since the property utilizes fuel oil for heating purposes.

Electricity

The electric usage is based on the common (general) billing, which includes the office and common areas of the Office/Residence building. The average cost per kWh is significantly higher than the expected average for a residential property, which indicates that there are different rates (street lighting) and costs (possible light post/fixture rentals, etc.) included in the overall cost.

Water and Sewer

Water and sewer is billed quarterly and reflects typical apartment living usage (i.e. washing, cooking, bathing). The water/sewer usage has been averaged in each quarter to estimate daily usage as opposed to quarterly billing.

Energy Assumptions Table

Below are the energy assumptions by category that were used as inputs for the TREAT model for the property.

These energy assumptions are based on the following:

1. The physical inspection of the property
2. Diagnostic testing conducted during the inspection
3. The historic utility billing information
4. The building blueprints/plans
5. Information provided by site management and maintenance staff

General

Property Type (Family, Elderly, Commercial): **Family**
Resident Population Persons: **212**

Space Types

Units, Common Areas	Square Footage:	47,760	Conditioned:	Yes
Basement	Square Footage:	11,940	Conditioned:	No
Basement	Square Footage:		Conditioned:	

Utility Metering

Common Spaces	Utility Type:	Electricity	Individual, Master:	Individual
Whole Building	Utility Type:	Fuel Oil	Individual, Master:	Individual
Whole Building	Utility Type:	Water/Sewer	Individual, Master:	Master
Dwelling Units	Utility Type:	Electricity	Individual, Master:	Individual

Infiltration

Infiltration Condition	Tight, Leaky:	Leaky
Infiltration Rate	ACH:	0.8

Architectural

Wall Insulation	Type:	Batt	R-Value:	R-15
Roof Insulation	Type:	Cellulose	R-Value:	R-30
Exterior Doors 1	Type:	Flush Wood	R-Value:	< R-5
Exterior Doors 2	Type:	Metal/Glass	R-Value:	< R-5
Windows 1	Type:	Aluminum	U-Factor:	1
Windows 2	Type:	Wood	U-Factor:	0.87

Heating and Cooling

Temperature Control:

Occupied Heating Temp	Degrees F:	72
Occupied Cooling Temp	Degrees F:	N/A
Unoccupied ¹ Heating Temp	Degrees F:	68
Unoccupied ¹ Heating Time	Hours / Day:	4-6

Boilers / DHW Generation:

Boiler 1	Type:	Fuel Oil, Water	Capacity:	300 MBH	Efficiency:	80%
Domestic Hot Water 1	Type:	Electric-heated	Capacity:	30717 BTU	Efficiency:	99%

¹Unoccupied temps/times based on opportunity for savings based on programmable thermostats

Water & Sewer

Domestic Hot Water:

DHW Daily Usage	Gallons/Resident:	22
DHW Delivery Temp	Degrees F:	120

Domestic Cold Water:

Showerheads	Gallons / Minute:	2
Toilets	Gallons / Flush:	1.6
Irrigation	Gallons / Year:	None

Lighting Loads

Hallway	Type:	Fluorescent	Wattage:	26-56	Hours per Day:	24
Storage	Type:	T8	Wattage:	32	Hours per Day:	10
Common Kitchen	Type:	T8	Wattage:	60	Hours per Day:	1
Exit Lighting	Type:	LED	Wattage:	4	Hours per Day:	24
Community / Office	Type:	Fluorescent	Wattage:	26-50	Hours per Day:	4-8
Exterior	Type:	Metal Halide	Wattage:	100	Hours per Day:	12

Appliances, Miscellaneous Loads

Range	Energy Star (Y/N):	No	Usage per Year:	150 therms
Refrigerator	Energy Star (Y/N):	No	Usage per Year:	650 kWh
Laundry	Energy Star (Y/N):	No	Usage per Year:	450 kWh
Miscellaneous Load			Usage per Year:	6920 kWh

Simple Payback Analysis

EWCM #1 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	\$72,900.00
B. Proposed Green:	High Efficiency Motors	\$74,790.00
C. Incremental Cost Between Proposed Conventional and Proposed Green:		\$1,890.00

Utility Cost

Electricity: \$0.21

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	54	0.25	.746	0.1865	3500	100%	80.0%	44,061	\$9,229
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			.746	0.0000		100%		0	\$0
DHW P2			.746	0.0000		100%		0	\$0
DHW P3			.746	0.0000		100%		0	\$0
Totals:								44,061	\$9,229

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	54	0.25	.746	0.1865	3500	100%	82.5%	42,725	\$8,949
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			.746	0.0000		100%		0	\$0
DHW P2			.746	0.0000		100%		0	\$0
DHW P3			.746	0.0000		100%		0	\$0
Totals:								42,725	\$8,949

Annual Savings: Existing to Proposed Green

Savings = \$9,228.74 - \$8,949.09 = \$279.66 / yr

Simple Payback: Existing to Proposed Green

\$1,890.00 / \$279.66 = 6.8 yrs

Simple Payback Analysis

EWCM #2 Install High Efficiency Toilets

Replacement Costs

A. Proposed Conventional	\$34,850.00
B. Proposed Green	\$37,463.75
C. Incremental Cost Between Proposed Conventional and Proposed Green	\$2,613.75

Existing Conditions

A. Total number of existing toilets	85	
B. Average gallons per flush:	1.6	
C. Estimated total number of flushes per day:	7.0	
D. Estimated total daily usage per toilet:	11	gal/day
E. Estimated number of days per year facility in use:	365	
F. Cost of water and sewer:	\$0.0148	(\$/gal)

Proposed Conditions: Conventional Models

A. Total number of toilets	85	
B. Average gallons per flush:	1.6	
C. Estimated total number of flushes per day:	7.0	
D. Estimated total daily usage per toilet:	11	gal/day
E. Estimated number of days per year facility in use:	365	
F. Cost of water and sewer:	\$0.0148	(\$/gal)

Proposed Conditions: Green Models

A. Total number of toilets	85	
B. Average gallons per flush:	1.28	
C. Estimated total number of flushes per day:	7.0	
D. Estimated total daily usage per toilet:	9	gal/day
E. Estimated number of days per year facility in use:	365	
F. Cost of water and sewer:	\$0.0148	(\$/gal)

Annual Water Use: Existing Models

$$85 \times 11 \times 365 = 347,480 \text{ gal/yr}$$

Annual Water Use: Proposed Conventional Models

$$85 \times 11 \times 365 = 347,480 \text{ gal/yr}$$

Annual Water Use: Proposed Green Models

$$85 \times 9 \times 365 = 277,984 \text{ gal/yr}$$

Annual Savings: Existing to Proposed Conventional Models

$$347,480 - 347,480 \times \$0.01 = \$0.00 \text{ \$/yr}$$

Annual Savings: Proposed Conventional to Proposed Green Models

$$347,480 - 277,984 \times \$0.01 = \$1,027.29 \text{ \$/yr}$$

Annual Savings: Existing to Proposed Green Models

$$\$0.00 + \$1,027.29 = \$1,027.29 \text{ \$/yr}$$

Simple Payback: Conventional

$$\$34,850.00 / \$0.00 = \text{n/a} \text{ yrs}$$

Simple Payback: Green

$$\$37,463.75 / \$1,027.29 = 36.47 \text{ yrs}$$

Incremental Payback: Proposed Conventional to Proposed Green Models

$$\$2,613.75 / \$1,027.29 = 2.54 \text{ yrs}$$

Additional Notes/Comments: This worksheet assumes that the pair of public restrooms are available for use throughout the entire year.

Simple Payback Analysis

EWCM #3 Replace Refrigerators - Dwelling Units

Replacement Costs

A. Proposed Conventional	\$35,510.00
B. Proposed Green	\$38,173.25
C. Incremental Cost Between Proposed Conventional and Proposed Green	\$2,663.25

Electricity:	\$0.21
Fuel Oil:	\$0.00

Existing Conditions

A. Existing refrigerator type	Frost-free
B. Number of refrigerators	53
C. Average annual energy use per refrigerator	650 kWh / Year
D. Total annual energy use	34,450.00 kWh / Year
E. Total annual operational cost	\$7,215.74 \$ / Year

Proposed Conventional Conditions

A. Proposed standard refrigerator type	Frost-free
B. Number of refrigerators	53
C. Average annual energy use per refrigerator	650 kWh / Year
D. Total annual energy use	34,450.00 kWh / Year
E. Total annual operational cost	\$7,215.74 \$ / Year

Proposed Green Conditions

A. Proposed green refrigerator type	Energy Star FF
B. Number of refrigerators	53
C. Average annual energy use per refrigerator	515 kWh / Year
D. Total annual energy use	27,295.00 kWh / Year
E. Total annual operational cost	\$5,717.09 \$ / Year

Annual Savings: Existing to Proposed Conventional

Electricity:	\$0.21	x	0.00	=	\$0.00	\$ / Year
Fuel Oil ¹ :	\$0.00	x		=	\$0.00	\$ / Year
Total:				=	\$0.00	\$ / Year

Annual Savings: Proposed Conventional to Proposed Green

Electricity:	\$0.21	x	7,155.00	=	\$1,498.65	\$ / Year
Natural Gas ¹ :	\$0.00	x		=	\$0.00	\$ / Year
Total:				=	\$1,498.65	\$ / Year

Annual Savings: Existing to Proposed Green

Electricity:	\$0.21	x	7,155.00	=	\$1,498.65	\$ / Year
Natural Gas ¹ :	\$0.00	x	0.00	=	\$0.00	\$ / Year
Total:				=	\$1,498.65	\$ / Year

Simple Payback: Conventional

1B	\$35,510.00	/	10	\$0.00	=	n/a	yrs
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Simple Payback: Green

	\$38,173.25	/		\$1,498.65	=	25.47	yrs
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Incremental Payback: Proposed Conventional to Proposed Green

	\$2,663.25	/		\$1,498.65	=	1.78	yrs
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Additional Notes/Comments:

¹No heating penalty included because no TREAT model was produced for the River Mills Village development.

Life Cycle Cost Analysis

Energy and Water Conservation Measure (EWCM): # 1

High Efficiency Motors

Standard Efficiency Pump Motors

vs.

High Efficiency Pump Motors

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term 25

Conventional Product:

Standard Efficiency Pump Motors

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	Std Efficiency Motors	54	ea	\$1,350.00	\$72,900	25	1	1.0	\$72,900	\$72,900
Utility Cost	Electric Usage	44,061	kWh	\$0.21	\$9,229	1	1	25.0	\$336,473	\$138,397
Total Life Cycle Cost									\$409,373	\$211,297

Energy Savings

Net Life Cycle Cost after Energy Savings									\$409,373	\$211,297

Green Product:

High Efficiency Pump Motors

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	High Efficiency Motors	54	ea	\$1,385.00	\$74,790	25	1	1.0	\$74,790	\$74,790
Utility Cost	Electric Usage	42,725	kWh	\$0.21	\$8,949	1	1	25.0	\$326,277	\$134,203
Total Life Cycle Cost									\$401,067	\$208,993

Energy Savings

Net Life Cycle Cost after Energy Savings									\$401,067	\$208,993

ECONOMIC RETURN ANALYSIS

Green NPV	\$2,304
Green IRR	20.5%

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Green Product: High Efficiency Pump Motors

Override with Green Product? No

Final Product Choice

Green Product: High Efficiency Pump 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): # 1

High Efficiency Motors

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product	3
Replacement Year	4

Final Product Choice	
Green Product:	High Efficiency Pump 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	High Efficiency Motors	54	ea	\$1,385.00	\$74,790	25	1	1.0	\$74,790	\$74,790		
Utility Cost	Electric Usage	42,725	kWh	\$0.21	\$8,949	1	1	25.0	\$326,277	\$134,203		
Total Life Cycle Cost										\$401,067	\$208,993	
<i>Energy Savings</i>												
Net Life Cycle Cost after Energy Savings										\$401,067	\$208,993	

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	High Efficiency Motors	54	ea	\$1,385.00	\$74,790	25	4	0.9	\$63,481	\$61,999		
Utility Cost	Electric Usage	42,725	kWh	\$0.21	\$8,949	1	4	22.0	\$298,616	\$108,579		
Total Life Cycle Cost										\$390,623	\$197,002	
<i>Expenses for Current Product Through Useful Life</i>												
Utility Cost	Current Electric Usage	44,061	kWh	\$0.21	\$9,229	1	1	3.0	\$28,525	\$26,424		
Total Life Cycle Cost										\$390,623	\$197,002	
<i>Energy Savings</i>												
Net Life Cycle Cost after Energy Savings										\$390,623	\$197,002	

ECONOMIC RETURN ANALYSIS

Timing NPV	(\$11,990)
Timing IRR	n/a

TIMING RECOMMENDATION

Replacement Year:	4
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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 Toilets

Low Flush Toilets (1.6 gpf)

vs.

High Efficient Toilets (1.28 gpf)

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term

30

Conventional Product:

Low Flush Toilets (1.6 gpf)

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	Low Flush Toilets	85	ea	\$410.00	\$34,850	30	1	1.0	\$34,850	\$34,850
Utility Cost	Water/Sewer Usage	347,480	gals	\$0.0148	\$5,136	1	1	30.0	\$244,368	\$84,185
Total Life Cycle Cost									\$279,218	\$119,035

Energy Savings

Net Life Cycle Cost after Energy Savings									\$279,218	\$119,035

Green Product:

High Efficient Toilets (1.28 gpf)

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	High Efficiency Toilets	85	ea	\$440.75	\$37,464	30	1	1.0	\$37,464	\$37,464
Utility Cost	Water/Sewer Usage	277,984	gals	\$0.0148	\$4,109	1	1	30.0	\$195,494	\$67,348
Total Life Cycle Cost									\$232,958	\$104,812

Energy Savings

Net Life Cycle Cost after Energy Savings									\$232,958	\$104,812

ECONOMIC RETURN ANALYSIS

Green NPV	\$14,223
Green IRR	69.7%

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Green Product: High Efficient Toilets (1.28 gpf)

Override with Green Product? No

Final Product Choice

Green Product: High Efficient Toilets (1.28 gpf)

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 Toilets

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product	8
Replacement Year	9

Final Product Choice	High Efficient Toilets (1.28 gpf)
Green Product:	

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	High Efficiency Toilets	85	ea	\$440.75	\$37,464	30	1	1.0	\$37,464	\$37,464		
Utility Cost	Water/Sewer Usage	277,984	gals	\$0.01	\$4,109	1	1	30.0	\$195,494	\$67,348		
Total Life Cycle Cost										\$232,958	\$104,812	
<i>Energy Savings</i>												
Net Life Cycle Cost after Energy Savings										\$232,958	\$104,812	

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	High Efficiency Toilets	85	ea	\$440.75	\$37,464	30	9	0.7	\$23,915	\$23,113		
Utility Cost	Water/Sewer Usage	277,984	gals	\$0.01	\$4,109	1	9	22.0	\$158,954	\$39,336		

<i>Expenses for Current Product Through Useful Life</i>												
Utility Cost	Water/Sewer Usage	347,480	gals	\$0.0148	\$5,136	1	1	8.0	\$45,675	\$35,015		
Total Life Cycle Cost										\$228,544	\$97,464	
<i>Energy Savings</i>												
Net Life Cycle Cost after Energy Savings										\$228,544	\$97,464	

ECONOMIC RETURN ANALYSIS

Timing NPV	(\$7,347)
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

Energy and Water Conservation Measure (EWCM): # 3

Energy Star Refrigerators

Frost-Free Refrigerators

vs.

Energy Star Refrigerators

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term 15

Conventional Product:

Frost-Free Refrigerators

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 Refrigerators	53	ea	\$670.00	\$35,510	15	1	1.0	\$35,510	\$35,510
Utility Cost	Electric Usage	34,450	kWh	\$0.21	\$7,216	1	1	15.0	\$134,205	\$79,312
Total Life Cycle Cost									\$169,715	\$114,822

Energy Savings

Net Life Cycle Cost after Energy Savings									\$169,715	\$114,822

Green Product:

Energy Star Refrigerators

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 Refrigerators	53	ea	\$720.25	\$38,173	15	1	1.0	\$38,173	\$38,173
Utility Cost	Electric Usage	27,295	kWh	\$0.21	\$5,717	1	1	15.0	\$106,332	\$62,839
Total Life Cycle Cost									\$144,505	\$101,012

Energy Savings

Net Life Cycle Cost after Energy Savings									\$144,505	\$101,012

ECONOMIC RETURN ANALYSIS

Green NPV	\$13,809
Green IRR	135.5%

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Green Product: Energy Star Refrigerators

Override with Green Product? No

Final Product Choice

Green Product: Energy Star Refrigerators

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 Refrigerators

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product

Final Product Choice

Green Product:

Immediate Replacement

									Cost over Life Cycle (EUL)	
Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	Energy Star Refrigerators	53	ea	\$720.25	\$38,173	15	1	1.0	\$38,173	\$38,173
Utility Cost	Electric Usage	27,295	kWh	\$0.21	\$5,717	1	1	15.0	\$106,332	\$62,839
Total Life Cycle Cost									\$144,505	\$101,012
<i>Energy Savings</i>										
Net Life Cycle Cost after Energy Savings									\$144,505	\$101,012

ECONOMIC RETURN ANALYSIS

Timing NPV	n/a
Timing IRR	n/a

TIMING RECOMMENDATION

Replacement Year:

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

Install Alternative Fencing

Stockade Fencing

vs.

Alternative Fencing

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term

30

Conventional Product:

Stockade Fencing

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	Stockade Fencing	250	If	\$21.00	\$5,250	20	1	1.5	\$8,546	\$6,620

Total Life Cycle Cost

\$8,546

\$6,620

Energy Savings

Net Life Cycle Cost after Energy Savings									\$8,546	\$6,620

Green Product:

Alternative Fencing

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	Alternative Fencing	250	If	\$30.00	\$7,500	30	1	1.0	\$7,500	\$7,500

Total Life Cycle Cost

\$7,500

\$7,500

Energy Savings

Net Life Cycle Cost after Energy Savings									\$7,500	\$7,500

ECONOMIC RETURN ANALYSIS

Green NPV	(\$880)
Green IRR	4.3%

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Conventional Product:	Stockade Fencing
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Override with Green Product? No

Final Product Choice

Conventional Product:	Stockade Fencing
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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):

1

Install Alternative Fencing

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product

0

Final Product Choice

Conventional Product:

Stockade Fencing

Immediate Replacement

									Cost over Life Cycle (EUL)	
Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	Stockade Fencing	250	lf	\$21.00	\$5,250	20	1	1.5	\$8,546	\$6,620
Total Life Cycle Cost									\$8,546	\$6,620
<i>Energy Savings</i>										
Net Life Cycle Cost after Energy Savings									\$8,546	\$6,620

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):

2

Cement Fiberboard Siding

Vinyl and Wood Siding

vs.

Cement Fiberboard Siding

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term

50

Conventional Product:

Vinyl and Wood 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	69,260	sf	\$6.50	\$450,190	40	1	1.3	\$481,646	\$484,697
Install/Replace	Wood Siding	5,025	sf	\$3.77	\$18,944	45	1	1.1	\$18,912	\$19,538

Total Life Cycle Cost

\$500,558

\$504,235

Energy Savings

Net Life Cycle Cost after Energy Savings									\$500,558	\$504,235

Green Product:

Cement Fiberboard 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	Cement Fiberboard Siding	69,260	sf	\$8.50	\$588,710	50	1	1.0	\$588,710	\$588,710
Install/Replace	Cement Fiberboard Siding	5,025	sf	\$8.50	\$42,712	50	1	1.0	\$42,712	\$42,712

Total Life Cycle Cost

\$631,422

\$631,422

Energy Savings

Net Life Cycle Cost after Energy Savings									\$631,422	\$631,422

ECONOMIC RETURN ANALYSIS

Green NPV	(\$127,188)
Green IRR	n/a

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Conventional Product:	Vinyl and Wood Siding
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Override with Green Product? No

Final Product Choice

Conventional Product:	Vinyl and Wood Siding
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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

Cement Fiberboard Siding

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product
Replacement Year

18
19

Final Product Choice

Conventional Product: Vinyl and Wood 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	69,260	sf	\$6.50	\$450,190	40	1	1.3	\$481,646	\$484,697
Install/Replace	Wood Siding	5,025	sf	\$3.77	\$18,944	45	1	1.1	\$18,912	\$19,538
Total Life Cycle Cost									\$500,558	\$504,235

Energy Savings

Net Life Cycle Cost after Energy Savings									\$500,558	\$504,235

Replacement at End of Remaining Useful Life

Year

19

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	Vinyl Siding	69,260	sf	\$6.50	\$450,190	40	19	0.8	\$383,197	\$182,971
Install/Replace	Wood Siding	5,025	sf	\$3.77	\$18,944	45	19	0.7	\$8,958	\$7,534

Expenses for Current Product Through Useful Life

Total Life Cycle Cost									\$392,155	\$190,505

Energy Savings

Net Life Cycle Cost after Energy Savings									\$392,155	\$190,505

ECONOMIC RETURN ANALYSIS

Timing NPV	(\$313,729)
Timing IRR	(1.12%)

TIMING RECOMMENDATION

Replacement Year: 19

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

Metal Roofs

Asphalt Shingle Roofing

vs.

Metal Roofing

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term

40

Conventional Product:

Asphalt Shingle Roofing

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	Asphalt Shingles	30,725	sf	\$4.00	\$122,902	20	1	2.0	\$344,876	\$170,526

Total Life Cycle Cost

\$344,876

\$170,526

Energy Savings

Net Life Cycle Cost after Energy Savings									\$344,876	\$170,526

Green Product:

Metal Roofing

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	Metal Roofing	30,725	sf	\$7.75	\$238,122	40	1	1.0	\$238,122	\$238,122

Total Life Cycle Cost

\$238,122

\$238,122

Energy Savings

Net Life Cycle Cost after Energy Savings									\$238,122	\$238,122

ECONOMIC RETURN ANALYSIS

Green NPV	(\$67,596)
Green IRR	3.3%

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Conventional Product: Asphalt Shingle Roofing

Override with Green Product? No

Final Product Choice

Conventional Product: Asphalt Shingle Roofing

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

Metal Roofs

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product
Replacement Year

1
2

Final Product Choice

Conventional Product: Asphalt Shingle Roofing

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	Asphalt Shingles	30,725	sf	\$4.00	\$122,902	20	1	2.0	\$344,876	\$170,526
Total Life Cycle Cost									\$344,876	\$170,526

Energy Savings

Net Life Cycle Cost after Energy Savings									\$344,876	\$170,526

Replacement at End of Remaining Useful Life

Year

2

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	Asphalt Shingles	30,725	sf	\$4.00	\$122,902	20	2	2.0	\$335,761	\$161,664

Expenses for Current Product Through Useful Life

Total Life Cycle Cost									\$335,761	\$161,664

Energy Savings

Net Life Cycle Cost after Energy Savings									\$335,761	\$161,664

ECONOMIC RETURN ANALYSIS

Timing NPV	(\$8,862)
Timing IRR	n/a

TIMING RECOMMENDATION

Replacement Year: 2

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

Linoleum Flooring in the Common Areas

Common Area Carpeting and VCT

vs.

Common Area Linoleum

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term

25

Conventional Product:

Common Area Carpeting and VCT

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	Stairs Floors - Carpeted	323	sf	\$3.00	\$968	10	1	2.5	\$3,032	\$1,790
Install/Replace	Common Areas-Carpeting	907	sf	\$3.00	\$2,720	10	1	2.5	\$8,524	\$5,031
Install/Replace	Laundry/Restrms - VCT	307	sf	\$5.00	\$1,537	15	1	1.7	\$2,890	\$2,127

Total Life Cycle Cost

\$14,445

\$8,948

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$14,445

\$8,948

Green Product:

Common Area Linoleum

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	Stairs - Linoleum	323	sf	\$5.50	\$1,774	25	1	1.0	\$1,774	\$1,774
Install/Replace	Common Area- Linoleum	907	sf	\$5.50	\$4,987	25	1	1.0	\$4,987	\$4,987
Install/Replace	Laundry/RR-Linoleum	307	sf	\$5.50	\$1,690	25	1	1.0	\$1,690	\$1,690

Total Life Cycle Cost

\$8,451

\$8,451

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$8,451

\$8,451

ECONOMIC RETURN ANALYSIS

Green NPV	\$497
Green IRR	9.3%

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Green Product: Common Area Linoleum

Override with Green Product? No

Final Product Choice

Green Product: Common Area Linoleum

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

Linoleum Flooring in the Common Areas

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product
Replacement Year

5
6

Final Product Choice

Green Product:

Common Area Linoleum

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	Stairs - Linoleum	323	sf	\$5.50	\$1,774	25	1	1.0	\$1,774	\$1,774
Install/Replace	Common Area- Linoleum	907	sf	\$5.50	\$4,987	25	1	1.0	\$4,987	\$4,987
Install/Replace	Laundry/RR-Linoleum	307	sf	\$5.50	\$1,690	25	1	1.0	\$1,690	\$1,690
Total Life Cycle Cost									\$8,451	\$8,451

Energy Savings

Net Life Cycle Cost after Energy Savings									\$8,451	\$8,451

Replacement at End of Remaining Useful Life

Year

6

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	Stairs - Linoleum	323	sf	\$5.50	\$1,774	25	6	0.8	\$1,335	\$1,286
Install/Replace	Common Area- Linoleum	907	sf	\$5.50	\$4,987	25	6	0.8	\$3,754	\$3,615
Install/Replace	Laundry/RR-Linoleum	307	sf	\$5.50	\$1,690	25	6	0.8	\$1,272	\$1,225

Expenses for Current Product Through Useful Life

Total Life Cycle Cost									\$6,361	\$6,126

Energy Savings

Net Life Cycle Cost after Energy Savings									\$6,361	\$6,126

ECONOMIC RETURN ANALYSIS

Timing NPV	(\$2,325)
Timing IRR	n/a

TIMING RECOMMENDATION

Replacement Year:	6
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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

Linoleum Flooring in Apartments

Carpeting and VCT

vs.

Linoleum

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term

49

Conventional Product:

Carpeting and VCT

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 Carpeting	40,189	sf	\$3.00	\$120,567	12	1	4.1	\$928,505	\$250,396
Install/Replace	Bathroom VCT	4,925	sf	\$5.00	\$24,625	15	1	3.3	\$141,262	\$43,721
Install/Replace	Kitchen VCT	7,262	sf	\$5.00	\$36,312	15	1	3.3	\$208,303	\$64,470

Total Life Cycle Cost

\$1,278,069

\$358,586

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$1,278,069

\$358,586

Green Product:

Linoleum

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	40,189	sf	\$5.50	\$221,039	25	1	2.0	\$647,309	\$287,708
Install/Replace	Bathroom Linoleum	4,925	sf	\$5.50	\$27,088	25	1	2.0	\$79,325	\$35,258
Install/Replace	Kitchen Linoleum	7,262	sf	\$5.50	\$39,943	25	25	1.0	\$81,196	\$12,805

Total Life Cycle Cost

\$807,830

\$335,770

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$807,830

\$335,770

ECONOMIC RETURN ANALYSIS

Green NPV	\$22,816
Green IRR	10.2%

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Green Product:	Linoleum
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Override with Green Product?

No

Final Product Choice

Green Product:	Linoleum
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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):

5

Linoleum Flooring in Apartments

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product

0

Final Product Choice

Green Product:

Linoleum

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	40,189	sf	\$5.50	\$221,039	25	1	2.0	\$647,309	\$287,708
Install/Replace	Bathroom Linoleum	4,925	sf	\$5.50	\$27,088	25	1	2.0	\$79,325	\$35,258
Install/Replace	Kitchen Linoleum	7,262	sf	\$5.50	\$39,943	25	25	1.0	\$81,196	\$12,805
Total Life Cycle Cost									\$807,830	\$335,770
<i>Energy Savings</i>										
Net Life Cycle Cost after Energy Savings									\$807,830	\$335,770

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):

6

FSC-Certified Wood Vanities and Cabinets

Plywood Base Vanities and Cabinets

vs.

FSC-Certified Wood Vanities and Cabinets

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term

25

Conventional Product:

Plywood Base Vanities and 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	Vanities	77	ea	\$410.00	\$31,570	20	1	1.3	\$40,457	\$36,213
Install/Replace	Kitchen Cabinets	53	ea	\$2,700.00	\$143,100	20	1	1.3	\$183,385	\$164,146

Total Life Cycle Cost

\$223,842

\$200,359

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$223,842

\$200,359

Green Product:

FSC-Certified Wood Vanities and 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	Vanities-FSC Wood	77	ea	\$440.75	\$33,938	25	1	1.0	\$33,938	\$33,938
Install/Replace	Cabinets-FSC Wood	53	ea	\$2,902.50	\$153,833	25	1	1.0	\$153,833	\$153,833

Total Life Cycle Cost

\$187,770

\$187,770

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$187,770

\$187,770

ECONOMIC RETURN ANALYSIS

Green NPV	\$12,589
Green IRR	13.1%

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Green Product: FSC-Certified Wood Vanities and Cabinets

Override with Green Product?

No

Final Product Choice

Green Product: FSC-Certified Wood Vanities and 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):

6

FSC-Certified Wood Vanities and Cabinets

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product

0

Final Product Choice

Green Product:

FSC-Certified Wood Vanities and Cabinets

Immediate Replacement

									Cost over Life Cycle (EUL)	
Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	Vanities-FSC Wood	77	ea	\$440.75	\$33,938	25	1	1.0	\$33,938	\$33,938
Install/Replace	Cabinets-FSC Wood	53	ea	\$2,902.50	\$153,833	25	1	1.0	\$153,833	\$153,833
Total Life Cycle Cost									\$187,770	\$187,770
<i>Energy Savings</i>										
Net Life Cycle Cost after Energy Savings									\$187,770	\$187,770

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):

7

Stone Countertops

Laminated Particleboard (LPB) Countertops

vs.

Solid Stone Countertops

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term

30

Conventional Product:

Laminated Particleboard (LPB) 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	LPB Countertops	53	ea	\$474.72	\$25,160	12	1	2.5	\$82,532	\$44,289

Total Life Cycle Cost

\$82,532

\$44,289

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$82,532

\$44,289

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	53	ea	\$975.00	\$51,675	30	1	1.0	\$51,675	\$51,675

Total Life Cycle Cost

\$51,675

\$51,675

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$51,675

\$51,675

ECONOMIC RETURN ANALYSIS

Green NPV	(\$7,386)
Green IRR	5.6%

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Conventional Product: Laminated Particleboard (LPB) Countertops

Override with Green Product?

No

Final Product Choice

Conventional Product: Laminated Particleboard (LPB) Countertops

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):

7

Stone Countertops

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product
Replacement Year

11
12

Final Product Choice

Conventional Product: Laminated Particleboard (LPB) Countertops

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	53	ea	\$474.72	\$25,160	12	1	2.5	\$82,532	\$44,289
Total Life Cycle Cost									\$82,532	\$44,289

Energy Savings

Net Life Cycle Cost after Energy Savings									\$82,532	\$44,289

Replacement at End of Remaining Useful Life

Year

12

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	LPB Countertops	53	ea	\$474.72	\$25,160	12	12	1.6	\$59,778	\$20,743

Expenses for Current Product Through Useful Life

Total Life Cycle Cost									\$59,778	\$20,743

Energy Savings

Net Life Cycle Cost after Energy Savings									\$59,778	\$20,743

ECONOMIC RETURN ANALYSIS

Timing NPV	(\$23,547)
Timing IRR	(12.92%)

TIMING RECOMMENDATION

Replacement Year:	12
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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.

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