

Green Capital Needs Assessment and Replacement Reserve Analysis

Prepared for:

Connecticut Housing Finance Authority

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Hillside Terrace

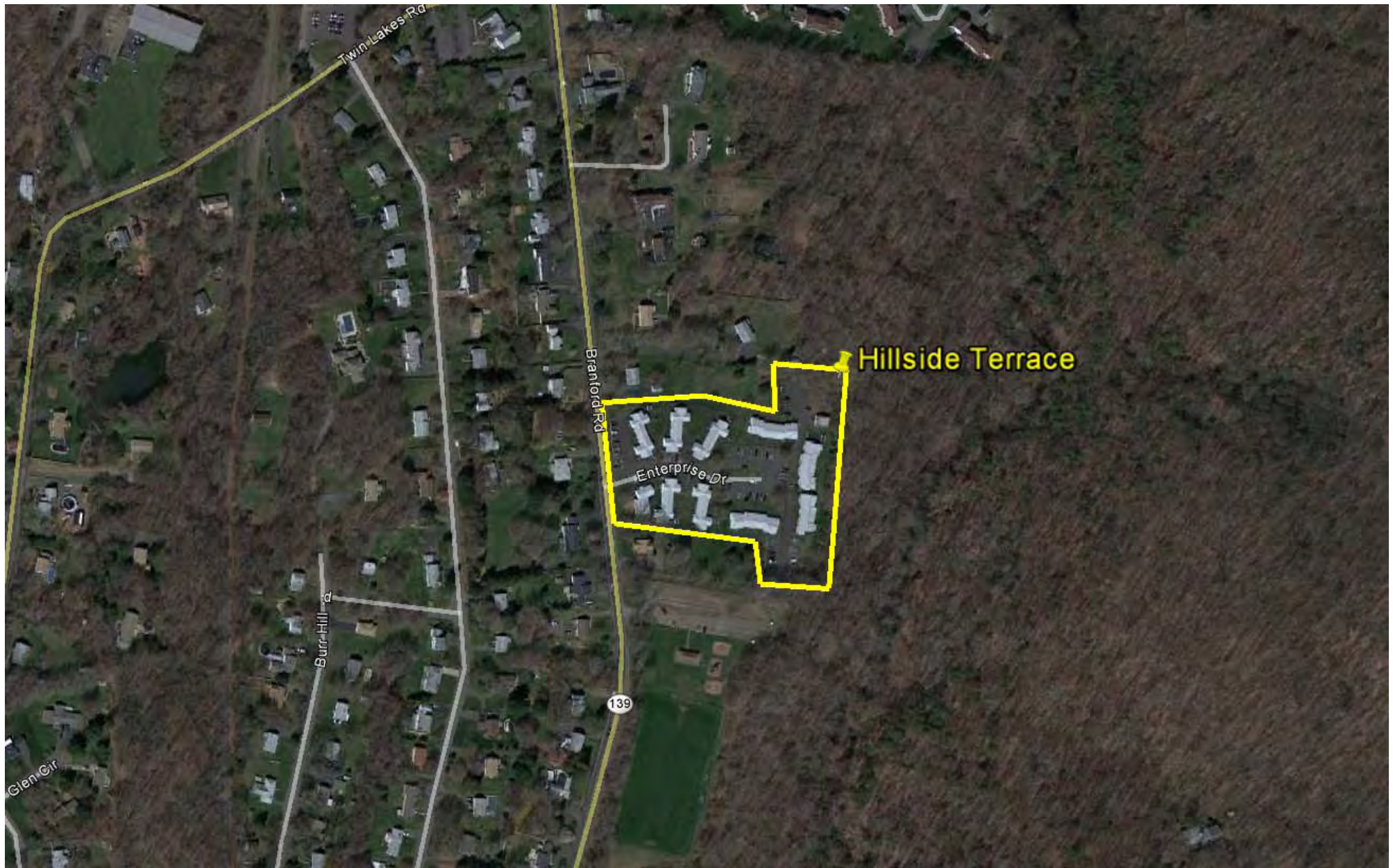
CHFA # 85132D

Merit Properties

North Branford, CT

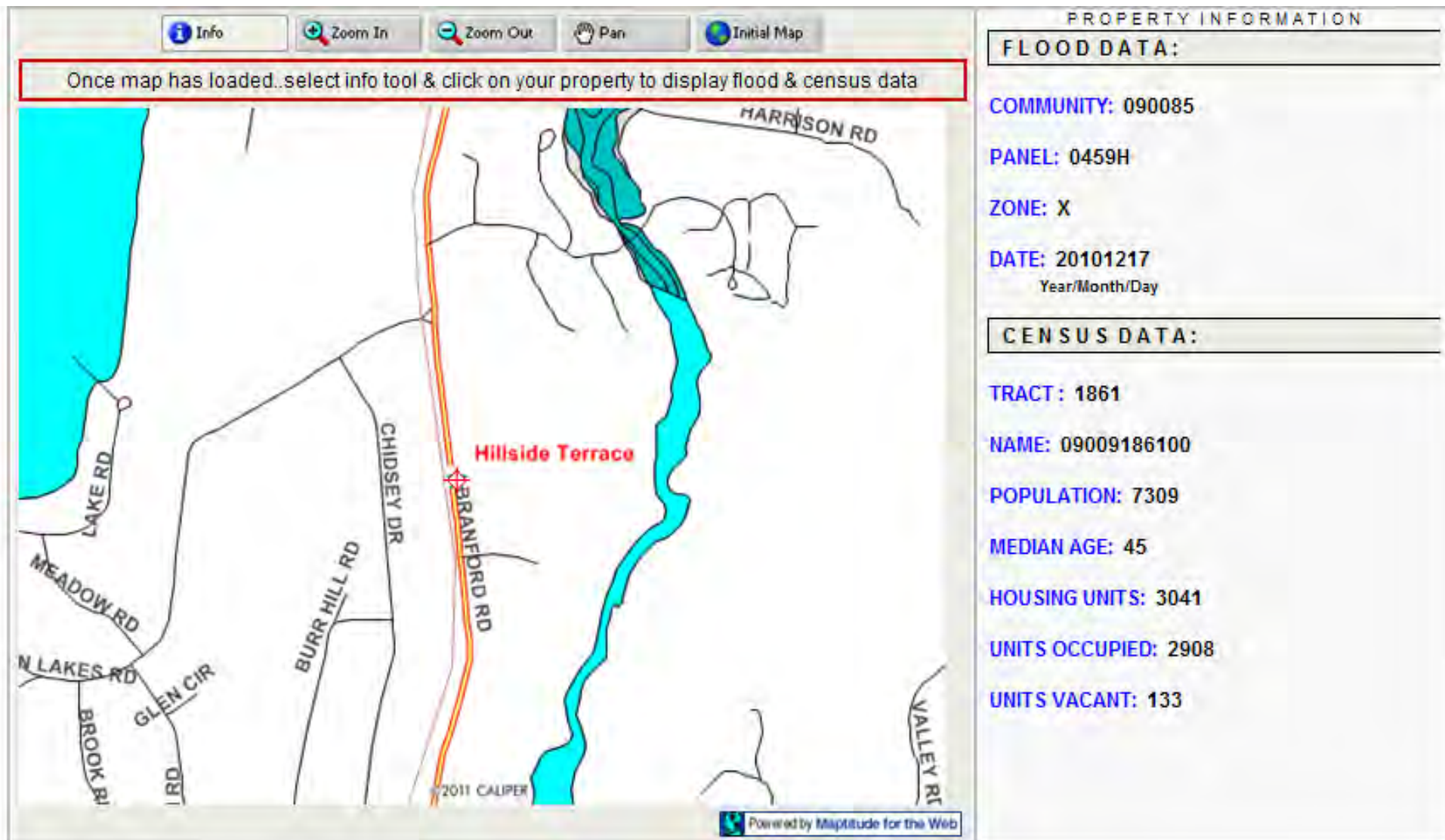
May 8, 2013

Final Report



Hillside Terrace

167 Branford Road
North Branford, CT 06471



Hillside Terrace

167 Branford Road
North Branford, CT 06405

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

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HOW TO READ THIS REPORT

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

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

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

Executive Summary

Overview and Goals

This Green Capital Needs Assessment (GCNA) has been undertaken on behalf of Connecticut Housing and 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.

In this case, Hillside Terrace CHFA #8513D, only common area (owner paid) utilities were provided. No unit level utility data was made available for an energy analysis in this report. Therefore no analysis could be undertaken for the dwelling units. Remarks and energy efficient suggestions made in this report relating to dwelling unit equipment upgrades are, from OSI's experience, considered good Green operating practices and will provide the residents with significant reductions in energy consumption and utility costs.

Executive Summary

Conventional Summary

Future capital actions are based on useful life expectations and assume continued effective maintenance and physical management. The timing of actions by system (including quantities and costs) is also presented in the Capital Needs Worksheet. Costs for the twenty-year plan total \$1,841,266 in current dollars (\$30,688/unit), or \$ 2,384,027 (\$39,734/unit) in inflated dollars.

Current reserves would be outpaced by needs in all years of the plan. However an infusion of \$1,245,000 in Year 1 would fully fund the plan.

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 plan total \$1,890,181 (\$31,503/unit) in current dollars, or \$2,400,962 (\$40,016/unit) in inflated dollars.

Current reserves would be outpaced by needs in all years of the plan. However an infusion of \$1,290,000 in Year 1 would fully fund the plan.

Green Overview

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

Executive Summary

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, 6 Energy and Water Conservation Measures (EWCMs) are identified. Energy and water conservation measures are upgrades and improvements to existing mechanical and electrical systems that have a direct impact on utility consumption, and therefore potential utility (electric, gas, oil, water, sewer) savings if implemented appropriately. As part of the inspection process, the property's utility data was analyzed. This information is then used as part of the EWCM recommendation and calculation process.

Certain EWCMs are interactive. In order to achieve the projected annual energy savings for an interactive group, the EWCMs must be implemented in concert with one another. If any of the interactive EWCMs are deferred or foregone, there may be a significant impact on the utility savings outlook. For example, replacement of an inefficient boiler system may not achieve projected utility savings associated with that system if inefficient windows remain in place.

The energy conservation measure specifications (i.e. boiler efficiencies, R-values, U-values) presented in this plan are mostly derived from the International Energy Code and the American Society of Heating, Refrigeration and Air-Conditioning (ASHRAE) Handbook. These measures represent one conceptual option; various alternatives may yield different results. It must be noted that a number of factors may affect the estimated annual energy savings and simple payback periods, and therefore the figures outlined in this report are not guaranteed.

Executive Summary

Green Measures (GMs)

The report identifies 8 Green Measures (GMs). Green measures are replacements of existing materials and systems that do not have a direct impact on energy consumption; however, they represent opportunities to reduce capital and operational expenditures in the future due to increased durability, enhanced performance, and increased expected useful life (EUL) potential. Additionally, if implemented properly, GMs can improve indoor environmental quality and can benefit resident and staff health, safety, and well-being.

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

Building Modeling Methodology

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

Using the SUNREL™ energy simulation software developed by the National Renewable Energy Laboratory (NREL), TREAT calculates energy uses on an hourly basis (again factoring in weather/climate, existing HVAC systems, and internal gains) for an entire year. The result

Executive Summary

produces calculated energy use for the property, and proposed energy savings for identified measures. The energy savings are shown both independently and with full interaction of all measures.

Additional measures such as water usage, which is currently not modeled in TREAT, has been presented using OSI's existing utility models. Also, since TREAT evaluates the building as a whole, it is possible that measures which reduce electric consumption could also create an increase in heating requirements (i.e. lighting reduction reduces heat typically produced by the original lighting system and in turn would require an increase to the heating load). The calculated loads (electricity, natural gas) are reconciled against billed utility loads within a 10% margin.

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.

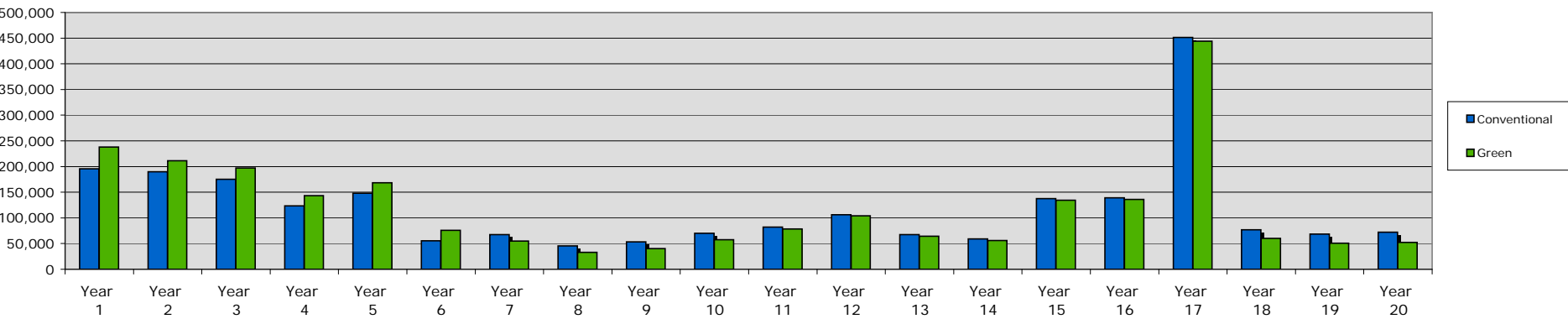
Executive Summary

Dashboard

Property Data

Location:	N. Branford, CT
Year Built:	1972
Number of Units:	60
Number of Buildings:	10

Comparison of Capital Needs - Conventional vs. Green



Environmental Impact

(Total Carbon Release Based on Current Annual Energy Usage)

Building Square Footage:	31,558
Resident Population (estimated):	120

	BTUs/yr	Conversion	lbs CO ₂	lbs CO ₂ / Res
Gas	0	x 11.023100	0	0
Oil	0	x 11.023100	0	0
Electricity	215,907,948	x 1.582917	100,136	834
Total	215,907,948		100,136	834

Replacement Reserve Analysis

Conventional

Plan #1: Capital costs exceed reserves in All years of the plan
Plan #2: Infusion of \$1,245,000 in Year 1

Green

Plan #1: Capital costs exceed reserves in all years of the plan
Plan #2: Infusion of \$1,290,000 in Year 1.

Health and Safety

Hazardous Materials

	Identified	Location / Notes
Lead Based Paint (LBP):	Note Tested	
Asbestos Containing Materials (ACMs):	Note Tested	
Mold:	None Observed	

Indoor Ventilation

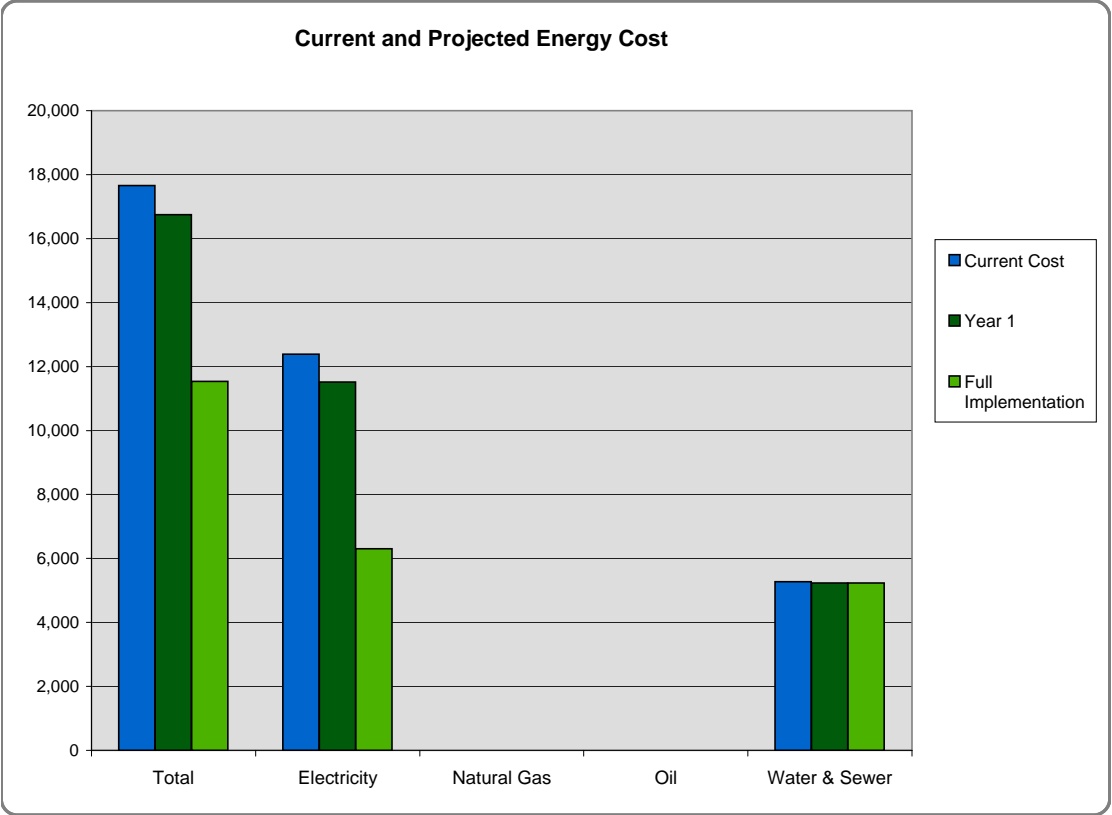
No automatic mechanical ventilation.

Indoor Air Quality (IAQ)

	Design Specification	Actual Read	Notes
Air Flow Rate			Operable Windows
Thermal Comfort	68	72	
Carbon Monoxide			Not Tested
Carbon Dioxide	<1000	≈1100-PPM	Operable Windows

Executive Summary

Energy Savings



Energy Intensity / Benchmarking Data

TREAT Modeled Data

Building Square Footage: **31,558**
Heating Degree Days: 5,122

TREAT Model

	Amount	Units	BTUs/yr	Energy Intensity (BTUs/(HDDs x SF))
Heating	24,886	kWh	84,910,250	1
Cooling		kWh		
DHW	16,581	kWh	56,575,831	0
Electricity	21,812	kWh	74,422,544	0
Total			215,908,625	1

	Gallons/yr	Gallons/sf/yr
Water	1,151,249	36

Energy Usage Summary

Billing Data

Utility	Current Usage	Current Cost	Projected Usage	Projected Cost	% Savings
Electricity	63,279 kWh	\$12,390	32,213 kWh	\$6,307	49.1%
Natural Gas	0 therms	\$0	0 therms	\$0	n/a
Oil	0 gallons	\$0	0 gallons	\$0	n/a
Water & Sewer	1,151,249 gallons	\$5,270	1,142,511 gallons	\$5,230	0.8%
Total		\$17,660		\$11,537	34.7%

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 1 Site Lighting	82,883	20	1.24	5,783	72,757	26,306	5,151							5,151	Year 17
EWCM 2 Common Area DHW	1,828	10	0.30	128	325	283	55							55	Year 5
EWCM 3 Com Area Ext Doors	1,113	35	3.98	78	2,435	646	126							126	Immediate
EWCM 4 Com Area Windows	5,528	35	3.46	385	10,542	2,791	546							546	Immediate
EWCM 5 Com Area Int Lighting	448	10	9.25	448	2,931	2,116	414							414	Immediate
EWCM 6 Washing Mach	0	10		0	96	287	56					8,740	40	96	Immediate
Interactive Group Total ⁵	91,800			6,822			6,083						40	6,123	
EWCM Subtotal	91,800			6,822		0	6,083	0	0	0	0	0	40	6,123	

Recommended GMs (Based on Financial Analysis)

GM 2 Com Area Flooring	4,148	25		293	1,188	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Immediate
GM 3 Com Area Cabinets	1,209	30		84	209	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Immediate
GM 4 DU Living Area Flooring	168,455	40		114,173	9,176	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Immediate
GM 5 DU Cabinetry	155,736	30		10,866	26,951	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Immediate
GM 7 DU Kitchen Flooring	19,330	25		1,365	5,538	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Immediate
GM Subtotal	348,878			126,781		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	

Total	440,678			133,603		0	6,083	0	0	0	0	0	40	6,123	
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Optional Actions

GM 1 Parking Roadways	171,266	35	0.00	99,498	(75,267)									0	Immediate
GM 6 Bathroom Exhaust Fans	11,940	20	0.00	4,440	(4,440)									0	Immediate
GM 8 DU Countertops	48,000	35	0.00	26,640	(2,045)									0	Immediate

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

Hillside Terrace is a development designed for occupancy by the elderly that is comprised of nine residential buildings and one community building. The building contains a total of 60 units, all of which are one-bedroom units and have direct entry access. The buildings were originally constructed between 1970 and 1975. For the purposes of this report an average age of 41 years has been used. No unit level utility data was available for this report. Therefore no energy analysis could be undertaken for the dwelling units. Remarks and energy efficient suggestions related to dwelling unit equipment are, from OSI's experience, considered good Green operating practices.

Site & Handicap Accessibility

Site Surface

Hillside Terrace is located on a large, gently sloping parcel of land in a residential neighborhood of North Branford, CT. The site is attractively landscaped with mature lawn areas, plantings, and trees, most of which was covered by a recent snow fall and could not be visually assessed. No capital costs are carried for landscaping improvements, as they are understood to be handled from operations. If, at some future date, management contemplates re-landscaping, OSI recommends attention to sustainable design.

Conventional landscaping relies on large lawns, non-native species, extensive irrigation, and heavy use of fertilizers and pesticides. This type of landscaping also tends to be labor-intensive. There are design features that can enhance soil quality, reduce storm water run-off and pollution, and encourage beneficial insects and wildlife. Such measures can also minimize water usage, maintenance costs, and green waste.

Narrative

Roadways and Parking Areas

The access roadway and various parking areas are asphalt paved. Full resurfacing was accomplished three years ago. However, management reported that drainage was a problem in the lower roadway/parking areas during and after heavy rain events.

Existing conditions	Capital needs	Green alternative
All areas were recently resurfaced and are in good condition	Future resurfacing costs are shown in Year 17	(GM 1) When resurfacing install permeable pavers to facilitate proper drainage. <i>Due to a negative net present value (NPV) generated by the Life Cycle Cost analysis (LCC), this option is not financially recommended.</i>
Surface maintenance	Periodic cycles of crack filling, sealcoating are restriping shown throughout the report.	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.

Narrative

Walkways

The walkways are asphalt paved and were resurfaced concurrent with the roadway and parking area work.

Existing conditions	Capital needs	Green alternative
Good conditions observed throughout.	Future resurfacing costs are shown concurrent with the roadway and parking area costs.	No Green alternative is suggested.
Handrail systems are present at several grade change locations. These do not appear to have been upgraded at the time of the paving work.	Replacement costs are shown in Year 5.	No Green alternative is suggested.

Site Lighting

The site is illuminated by recently replaced pole-mounted gooseneck type high intensity discharge (HID) fixtures

Existing conditions	Capital needs	Green alternative
No problems were observed or reported concerning this equipment during the assessment.	Future replacement costs are shown in Year 17 of the report.	(EWCM 1) Upgrade fixtures with high efficiency, long life LED fixtures to reduce energy usage as well as utility and operating costs.

Narrative

Retaining Walls

Poured concrete retaining wall were observed at several locations where grade changes occur.

Existing conditions	Capital needs	Green alternative
No problems were observed or reported concerning these elements during the assessment.	Monitor	No Green alternative is suggested.

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). The development's common areas are partially compliant with UFAS, however, deficiencies were noted at several locations. Costs for handicap accessibility modifications and/or improvements at these locations are shown in Year 1 unless otherwise noted. No Deficiencies were observed in those accessible dwelling units that were assessed.

Circulation

Several sections of walkways exceed grade limits and require redesign to comply with accessible ramp and handrail guidelines.

Existing conditions	Capital needs	Green alternative
Walkways at several grade changes exceed limitations.	Redesign and/or regrade non-compliant sections.	No Green alternative is suggested.

Interior Common Areas

The laundry room at the community building does not comply with accessible width requirements and there is no front load washer.

Existing conditions	Capital needs	Green alternative
Laundry: Space requirement are non compliant with accessible guidelines.	Redesign space, possible using stackable laundry equipment. Install front-load washer.	No Green alternative is suggested.

Narrative

Mechanical Room

Hillside Terrace is an all electric development. The common areas and dwelling units are heated by electric baseboard radiation strips. Domestic hot water is produced by electric storage tank type water heaters. Dwelling unit cooling is the responsibility of the residents.

Common Area Domestic Hot Water

Two electric 40-gallon storage tank water heaters provide domestic hot water to the laundry rooms and community building.

Existing conditions	Capital needs	Green alternative
No problems were observed or reported concerning this equipment during the assessment.	Replacement costs are shown starting in Years 5 and 15	(EWCM 2) Upgrade the water heaters to high efficiency electric 50-gallon heat pump models to reduce energy usage and utility costs.

Narrative

Building Mechanical and Electrical Systems

The major building systems include distribution piping systems for domestic hot and cold water, sanitary wastewater, electric services, and fire detection. No problems were observed or reported concerning the various distribution systems. These systems should be monitored going forward.

Community/Office Building Air Conditioning

Two thru-wall type air conditioners are used for seasonal cooling of the community room and office areas.

Existing conditions	Capital needs	Green alternative
No problems were observed or reported concerning this equipment during the assessment.	Replacement costs are shown in Years 5 and 15 of the report.	Upgrade to models with SEER ratings of 15 or greater. Due to minimal usage indicated by the TREAT energy modeling software a usage analysis was not possible for this equipment.

Fire and Smoke Detection

The location of the fire alarm control panel and emergency call alert system is in an auxiliary room of the community building. On the day of the assessment the access to this room was blocked by snow. Access for a visual inspection was not provided. Costs and recommendations are based on information provided by the management company.

Existing conditions	Capital needs	Green alternative
Central system connected to each building that controls the fire alarm system and emergency call system.	Replacement costs are shown in Year 5 of the report.	No Green alternative is suggested.

Narrative

Building Architectural Systems

Building Exterior

Hillside Terrace consists of ten wood framed, single story buildings. The buildings are constructed on poured concrete foundations. No issues were observed or reported with regard to the building framing and it should be monitored going forward. Recently five of the buildings underwent upgrades that added bedroom additions to original end-unit efficiency apartments.

Doors

Common area entry doors are metal with half glass lights, exterior unit entry doors are metal raised panel models, and service doors are flush plane metal types. All dwelling unit entries have aluminum storm doors

Existing conditions	Capital needs	Green alternative
Common area entry and service doors were reported to be original.	Replacement costs are shown in Year 1 of the report.	(EWCM 3) Upgrade the common area entry 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.

Narrative

Existing conditions	Capital needs	Green alternative
Dwelling unit entry doors were reported as being original.	Replacement costs are shown in Years 1-6.	It is recommended that these doors be upgraded with fiberglass doors similar to those suggested for the common area doors.
Storm doors are replaced on an as needed basis.	Replacement costs are shown throughout the course of the report.	<i>However, due to the unavailability of unit-level utility data no financial analysis could be undertaken.</i>

Siding

All of the buildings are clad with clapboard profile vinyl siding. All trim elements are aluminum wrapped and soffits are vented vinyl.

Existing conditions	Capital needs	Green alternative
With the exception of the additions, the siding, trim, and soffits was reported to be original.	Replacement costs are shown starting in Year 1	No Green alternative is suggested.

Narrative

Windows

Windows are wood casement types with double glazing. Most are understood to be twenty years old. The community building windows are understood to be original and the windows in the additions are new.

Existing conditions	Capital needs	Green alternative
Original community building casement windows.	Replacement costs are shown in Year 1.	(EWCM 4) Upgrade of the windows with fiberglass framed double-glazed models with a low-E (low emissivity) coating, a thermal break, 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 thermal break includes an element of low thermal conductivity, between the inner and exterior frames to reduce thermal transfer. A gas fill (such as argon) between the glazing layers will reduce heat transfer through the glass similar to the low-e coating.

Narrative

Existing conditions	Capital needs	Green alternative
Dwelling unit windows.	Future replacement costs are shown starting in Year 15.	<p>It is recommended that these windows be upgraded with fiberglass models similar to those suggested for the common area windows.</p> <p><i>However, due to the unavailability of unit-level utility data no financial analysis could be undertaken.</i></p>

Exterior Lighting

Each dwelling unit entry (front and rear) has a wall mounted entry light fixture

Existing conditions	Capital needs	Green alternative
No problems were observed or reported concerning this equipment during the assessment.	Replacement costs are shown in Years 1-3 for these fixtures.	<p>It is recommended that these fixtures be upgraded with LED models. This type of fixture will reduce energy usage and resident utility costs.</p> <p><i>However, due to the unavailability of unit-level utility data no financial analysis could be undertaken.</i></p>

Narrative

Roof

Roofs are wood framed and sheathed. No problems were observed or reported concerning the roof structures during the assessment. The roofs are covered with standard (light colored) three-tab asphalt shingles.

Existing conditions	Capital needs	Green alternative
Roof coverings were reported to be twenty years old.	Replacement costs are shown starting in Year 1.	It is recommended that the development continue to use the light colored shingles to reduce warm weather interior heat load as well as exterior heat island effect caused by the use of dark colored roofing materials.

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 Community building interior includes a community rooms, management office, public laundry facility, and a set of public restrooms. An additional laundry room is located at Building-E. 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

Community room flooring is standard olefin carpet, laundry and restroom flooring is vinyl composite tile (VCT)

Existing conditions	Capital needs	Green alternative
Community room carpet was reported to be over ten years old.	Costs to replace the carpet are shown in Years 1 and 11 of the report.	(GM 2) Upgrade the community room, laundry, and restroom flooring with natural linoleum flooring. Linoleum is a natural product (containing linseed oil, powdered wood or cork, ground limestone, resin binders, natural jute backing), which has been found to be more durable than its vinyl tile counterpart. Linoleum tile hardens over time, and therefore becomes less susceptible to scratching and cracking. Installation of linoleum has a lower annual life cycle cost than vinyl and keeps the vinyl product out of our landfills in the future.
Laundry and restroom VCT flooring was observed to be in good to fair condition.	Replacement costs are shown in Years 5 and 20.	

Narrative

Community Room Cabinetry

Laminated particleboard (LPB) cabinets

Existing conditions	Capital needs	Green alternative
The cabinets were reported to be approximately twenty years old.	Replacement costs are shown in Year 1.	(GM 3) Upgrade the LPB cabinets with all wood models certified by the Forestry Stewardship Council (FSC) as manufactured from sustainable forests. These types of cabinets are environmentally friendly as well as using much less VOC content material in construction. Thereby improving indoor air quality (IAQ).

Common Area Lighting

The community room, laundry and restrooms use recessed or surface mounted lighting fixtures. These have been improved with replacement compact fluorescent lamps (CFLs). The office lighting consists of two, four foot fluorescent tube fixtures that use T-12 fluorescent lamps.

Existing conditions	Capital needs	Green alternative
CFL and 4' T-12 lamps	Replacement costs are seen as an operating expense.	(EWCM 5) Upgrade lamp replacements with LED replacement lamps throughout to reduce energy usage and utility costs.

Narrative

Restrooms

Restrooms are equipped with 1.6-GPF toilets and low flow-faucets

Existing conditions	Capital needs	Green alternative
All components in good condition.	Monitor/maintain from operating.	1.6-GPF toilets are considered low-flow models. As an upgrade the development could consider models with a flush rate of 1.28 when replacement is needed.

Laundry room

The laundries feature four top-load washers and four electric dryers (two sets in each laundry). The laundry equipment is leased.

Existing conditions	Capital needs	Green alternative
This equipment was operating as designed on the day of the assessment.	Leased equipment, no capital costs shown.	(EWCM 6) Replace the standard washing machines with high-efficiency models (specifically, models with an Energy Star rating). The high-efficiency washing machines utilize less water (as much as 40% less) than traditional washing machines and the lower demand for hot water also has an energy-savings component. No green recommendation is included for the dryers, since no high-efficiency models are available.

Narrative

Dwelling Units

During the course of the assessment we inspected 4 units. These were distributed among all unit types. 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 assessments and additional capital history forms submitted by management.

Dwelling units feature painted gypsum wallboard walls and ceilings, Wall and ceiling surfaces are painted throughout (as a green measure, the plan specifies low-VOC or recycled-content paint for painting cycles) hollow-core interior passage door, bi-fold and by-pass closet doors, carpeted living area flooring, VCT kitchen flooring, and bathrooms have ceramic tile flooring. Bathrooms feature; LPB bath vanities with one-piece solid surface sink-tops, enameled steel bath tubs with ceramic tile shower surrounds and low-flow showerheads, 1.6-GPF toilets, and manually operated ceiling exhaust fans. Kitchens feature; wood fronted cabinets with LPB casework, plastic laminate countertops, twenty inch electric ranges, frost free refrigerators with top freezers, ceiling exhaust fans, and garbage disposals. Unit environmental equipment features; electric baseboard radiation controlled by manually operated thermostats and individual electric 40-gallon storage water heaters. Unit electrical service features; original circuit breaker panels, living area and bedroom smoke detectors, and several surface mounted lighting fixtures. Water saving devices and efficient lamps were recently provided by the local utilities.

Interior Doors

Passage doors are hollow-core types, closets doors are a mix of bi-fold and by-pass types.

Existing conditions	Capital needs	Green alternative
Doors vary in condition and age.	Allowances are shown throughout the course of the report for as needed door replacements.	No Green alternative is suggested.

Narrative

Flooring

Living area floors are covered with standard olefin carpet, kitchens floors are covered with resilient vinyl flooring, and bathrooms have ceramic tile flooring.

Existing conditions	Capital needs	Green alternative
Living area and kitchen flooring varies in age and condition.	Replacement cycles for the carpet flooring are shown on a six year cycle starting in Years 1, 7, 13, and 19.	(GM 4) Upgrade living area flooring with Wood flooring certified as manufactured from sustainable forests by the Forestry Stewardship Council (FSC). Wood flooring is attractive and has a long expected useful life which reduces replacement and operating costs. In addition the wood flooring option improves IAQ by reducing air borne contaminants. Installation of wood has a lower annual life cycle cost than carpet and keeps the petroleum based carpet product out of landfills reducing recycling costs.
	Costs to replace the vinyl flooring are shown on a fifteen year cycle starting in Years 1 and 16.	(GM 7) Replacement of the VCT with linoleum tile. Linoleum is a natural product (containing linseed oil, powdered wood or cork, ground limestone, resin binders, natural jute backing), which has been found to be more durable than its vinyl tile counterpart.

Narrative

Existing conditions	Capital needs	Green alternative
		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 vinyl and keeps the vinyl product out of our landfills in the future.

Bathrooms

Enameled steel tubs with ceramic tile surround and low-flow showerheads, 1.6-GPF toilets, LPB vanities with solid surface one-piece sink tops, and ceramic tile flooring.

Existing conditions	Capital needs	Green alternative
Tubs and surrounds vary in condition.	Allowances to re-glaze the tubs and/or repair the surrounds are shown, on an as needed basis, throughout the report.	It is suggested that, when replacing the toilets, 1.28-GPF models be used.
Vanities are in good condition.	Future replacement costs are shown starting in Year 10.	(GM 5) Upgrade the LPB vanities with all wood models certified by the Forestry Stewardship Council (FSC) as manufactured from sustainable forests. These types of cabinets are environmentally friendly as well as using much less VOC content material in construction. Thereby improving indoor air quality (IAQ).

Narrative

Existing conditions	Capital needs	Green alternative
Bathroom exhaust fans: This equipment was operating as designed on the day of the assessment.	Replacement costs are shown starting in Year 10	<p>(GM 6) Upgrade the exhaust fans with models operated by a humidistat to reduce moisture and reduce the possibility of organic growth in the bathrooms.</p> <p><i>Due to a negative NPV generated by the LCC analysis, this option is not financially recommended.</i></p>

Kitchens

Wood fronted LPB casework cabinets, plastic laminate countertops, twenty inch electric ranges, frost free refrigerators with top freezers, ceiling exhaust fans, and garbage disposals.

Existing conditions	Capital needs	Green alternative
Cabinets are a mix of original and twenty year old models.	Replacement costs are shown starting in Year 1.	<p>(GM 5) Upgrade the cabinets with all wood models certified by the Forestry Stewardship Council (FSC) as manufactured from sustainable forests. These types of cabinets are environmentally friendly as well as using much less VOC content material in construction. Thereby improving indoor air quality (IAQ).</p>

Narrative

Existing conditions	Capital needs	Green alternative
Plastic laminate countertops on LPB.	Replacement cycles are shown starting in Year 1 and 11.	<p>(GM 8) Upgrade the countertops with solid surface models. Increased health benefits, long service life.</p> <p><i>Due to a negative NPV generated by the LCC analysis, this option is not financially recommended.</i></p>
Electric ranges vary in age and condition.	Replacement costs are shown starting in Year 1.	No Green alternative is suggested.
Refrigerators are replaced on an as needed basis.	The report continues this replacement policy throughout its course.	<p>It is suggested that refrigerators should be replaced with Energy Star models to reduce energy usage and resident utility costs.</p> <p><i>However, due to the unavailability of unit-level utility data no financial analysis could be undertaken.</i></p>
Kitchen Exhaust Fans and garbage disposals are replaced on an as needed basis.	The report continues this replacement policy throughout its course.	No Green alternative is suggested.

Narrative

Unit Mechanical and Electrical

Each unit is equipped with a thermostatic temperature control, electric baseboard radiation, electric domestic hot water heater, circuit breaker panel, living area and bedroom smoke detectors, and several surface mounted lighting fixtures.

Existing conditions	Capital needs	Green alternative
Manually operated temperature controller (thermostat).	Replacement costs are shown starting in Year 15.	It is suggested, that when replacing the thermostats, programmable models be installed to help reduce energy usage and resident utility costs. <i>However, due to the unavailability of unit-level utility data no financial analysis could be undertaken.</i>
Baseboard electric radiation strips vary in condition.	Allowance to replace the baseboard strips are shown in Years 1-10.	No Green alternative is suggested.
DHW storage water heaters are replaced on an as needed basis.	The report continues this replacement policy throughout its course.	No Green alternative is suggested.
Circuit breaker panels. This equipment was operating as designed on the day of the assessment.	Given the age of the panels costs are shown starting in Year 9 for their replacement.	No Green alternative is suggested.

Narrative

Existing conditions	Capital needs	Green alternative
Unit Fire and smoke detectors.	Allowances are shown throughout the report for as needed replacements.	No Green alternative is suggested.
The surface mounted in-unit lighting was recently upgraded by the local utility with replacement CFL bulbs.	Resident responsibility to replace bulbs.	It is suggested that, when fixtures are replaced, that dedicated CFL fixtures be used to insure that only CFL lamps can be installed.

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 ranging from 108°F to 120°F. DHW temperatures should be in the range of 110°F to 130°F; at temperatures of 140°F, burns (scalding) can occur.

Indoor Air Quality

Ventilation (Common Areas and Apartments):

This building does not have any mechanically supplied fresh air; instead each occupied space has a series of operable windows to provide fresh air. There is a series of in-unit exhaust fans used to remove stale air from kitchens and bathrooms. The exhaust fans are manually operated.

Temperature, Humidity, Carbon Dioxide (CO₂)

Narrative

Space temperature and humidity are the key components for comfort level. Temperature and relative humidity was measured in all assessed conditioned spaces (management office, dwelling unit, common areas). The temperature of the conditioned spaces ranged between 68-78°F db, and the humidity ranged from 35-58% rH.

Carbon dioxide levels were measured during the assessment, and are included in Table B below. Carbon Monoxide was not tested during the assessment.

Mold and airborne concerns:

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

Reporting:

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

Table A. Flow Rate:

Conditioned Space	Actual Read	Design Specification	Notes
Hallways / Stairwells			N/A No automatic mechanical ventilation
Community Room			N/A No automatic mechanical ventilation
Office			N/A No automatic mechanical ventilation
Apartment			N/A No automatic mechanical ventilation

Narrative

Table B. Carbon Dioxide:

Space	Actual Read	Design Specification	Notes
Hallways / Stairwells		< 1,000 ppm	N/A
Community Room	950-PPM	< 1,000 ppm	Operable windows
Office	925-PPM	< 1,000 ppm	Operable windows
Apartment	1205-PPM	< 1,000 ppm	Operable windows
Apartment	1113-PPM	< 1,000 ppm	Operable windows.
Apartment	1095-PPM	< 1,000 ppm	Operable windows
Apartment	850-PPM	< 1,000 ppm	Operable windows

Table C. Carbon Monoxide:

Conditioned Space	Actual Read	Design Specification	Notes
Hallways / Stairwells		≈0 ppm	Not Tested
Community Room		≈0 ppm	Not Tested
Office		≈0 ppm	Not Tested
Apartment		≈0 ppm	Not Tested
Apartment		≈0 ppm	Not Tested

Narrative

Capital Needs Summary, Replacement Reserve Analysis - *Conventional*

Future capital actions are based on useful life expectations and assume continued effective maintenance and physical management. The timing of actions by system (including quantities and costs) is also presented in the Capital Needs Worksheet. Costs for the twenty-year plan total \$1,841,266 in current dollars (\$30,688/unit), or \$2,384,027 (\$39,734/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 \$37,139 on December 31, 2012. Annual contributions are currently \$29,404 per year, or \$490 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 all years 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. Contributions are then indexed at 3%. The plan calls for an infusion of \$1,245,000 in outside capital in Year 1 to help fund all capital needs. This is one hypothetical option, and is included for illustrative purposes only. No assumptions are made about its viability; various alternatives might achieve similar results.

Narrative

Capital Needs Summary, Replacement Reserve Analysis - *Green*

Future capital actions are based on useful life expectations and assume continued effective maintenance and physical management. The timing of actions by system (including quantities and costs) is also presented in the Capital Needs Worksheet. Costs for the twenty-year plan total \$1,890,181 (\$31,503/unit) in current dollars, or \$2,400,962 (\$40,016/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 \$37,139 on December 31, 2012. Annual contributions are currently \$29,404 per year, or \$490 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 all years 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. Contributions are then indexed at 3%. The plan calls for an infusion of \$1,290,000 in outside capital in Year 1 to fund the green rehabilitation scenario. 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 February 26th, 2013. Members of the management 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 Robert Labadini. Mr. Labadini is a Building Performance Institute (BPI)-certified energy auditor, and LEED Green Associate accredited. Mr. Labadini 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.



Main access roadway



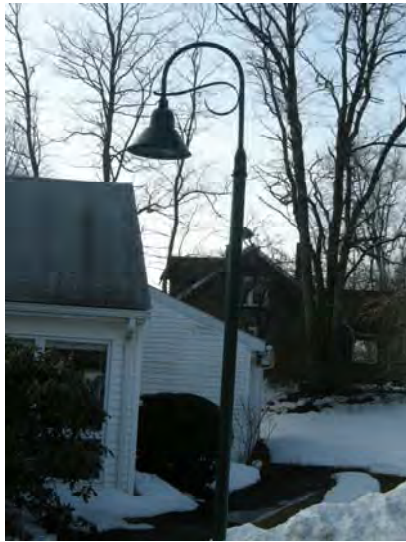
Typical parking area



Typical walkway area at grade change



Parking/roadway area reported to be a drainage concern



Typical gooseneck HID site lighting fixture



The office community building



Typical Phase I building with addition at right



Typical Phase II building



Typical rear of a Phase I building



Typical rear of a Phase II building



Typical Phase I unit entry door



Typical Phase II entry doors



Typical roof section



Typical poured concrete retaining wall at grade change



Typical dwelling unit living room



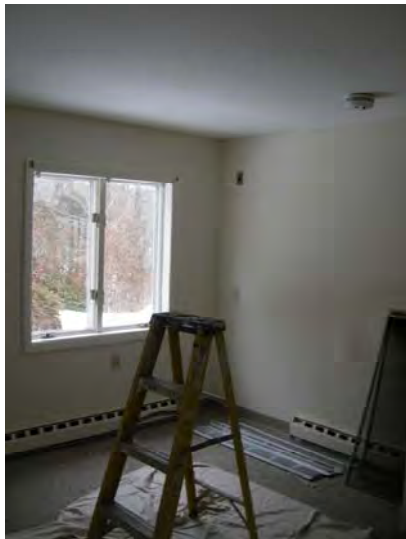
Typical dwelling unit dining area



Typical dwelling unit kitchen



Typical dwelling unit bathroom
toilet and vanity area



Typical dwelling unit bedroom



Typical accessible unit kitchen
sink and counter area



Typical accessible unit front control range



Typical accessible unit toilet and sink area

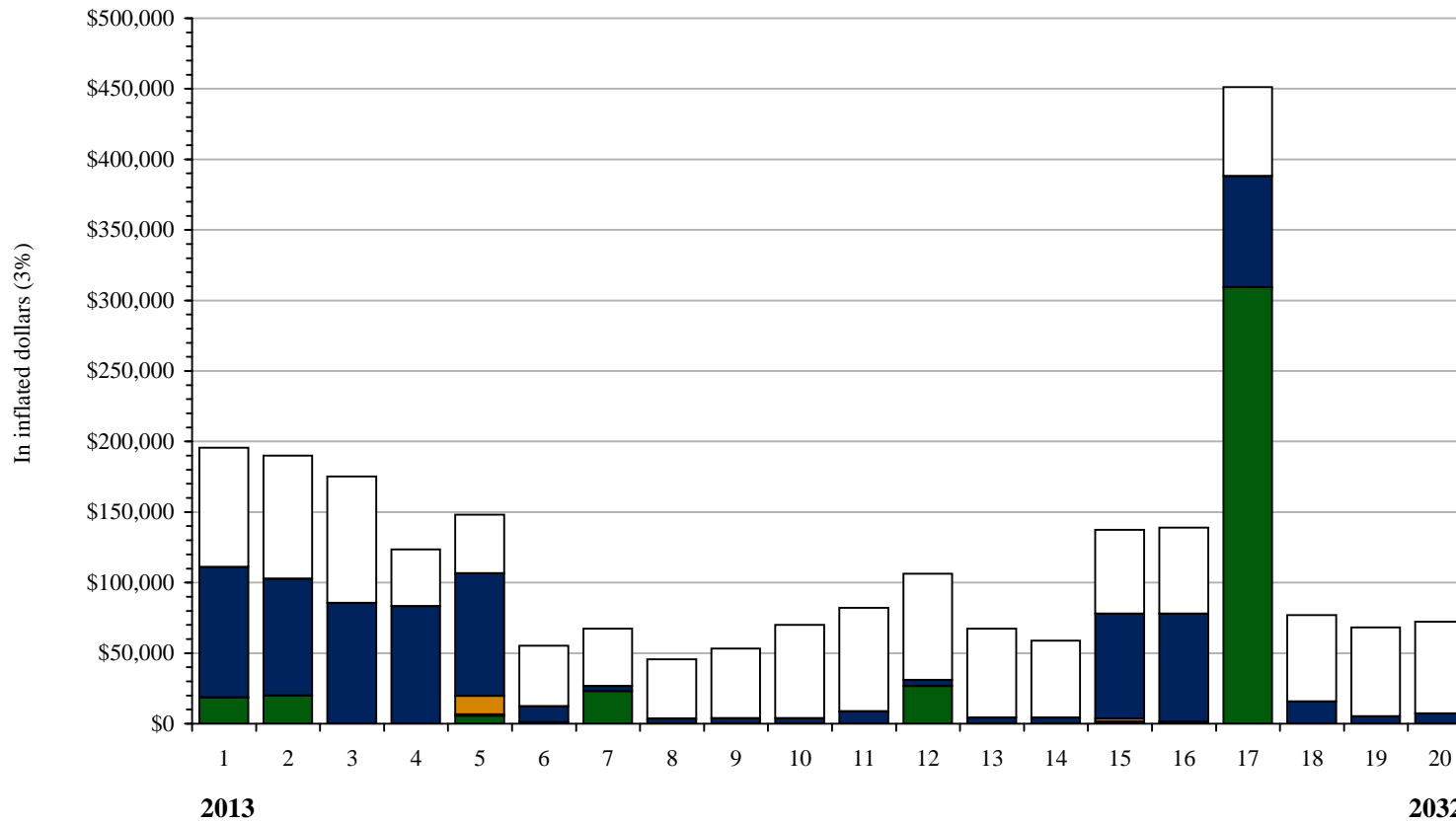


Typical accessible unit
roll-in shower stall

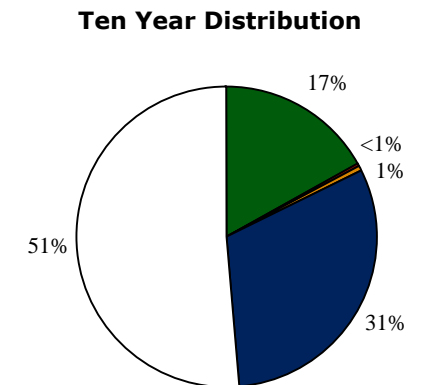
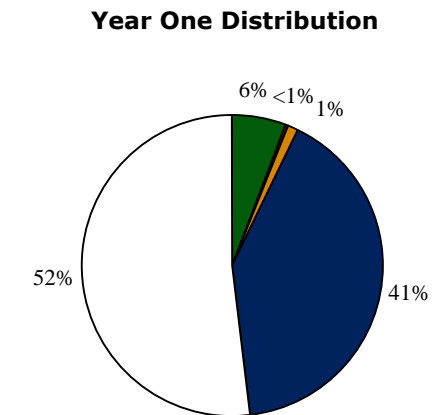
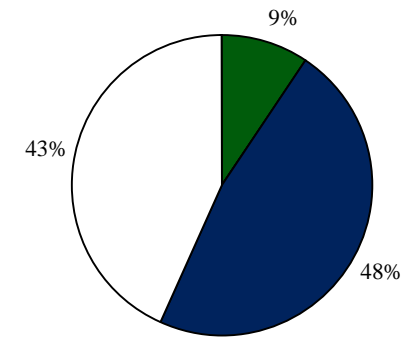


Typical dwelling unit domestic
hot water heater

Capital Needs Summary - *Conventional*



Hillside Terrace



Total Costs by Building System (inflated dollars)

	Year 1	Years 1-10	Years 1-20
Site Systems & Accessibility	\$18,500 or \$308/unit	\$67,007 or \$1,117/unit	\$403,052 or \$6,718/unit
Mechanical Room		\$1,942 or \$32/unit	\$4,552 or \$76/unit
Building Mech. & Elec.		\$13,045 or \$217/unit	\$15,450 or \$257/unit
Building Architectural	\$92,436 or \$1,541/unit	\$457,129 or \$7,619/unit	\$735,800 or \$12,263/unit
Dwelling Units	\$84,589 or \$1,410/unit	\$584,851 or \$9,748/unit	\$1,225,174 or \$20,420/unit
In inflated dollars:	\$195,525 or \$3,259/unit	\$1,123,975 or \$18,733/unit	\$2,384,027 or \$39,734/unit
In current dollars:	\$195,525 or \$3,259/unit	\$1,026,726 or \$17,112/unit	\$1,841,266 or \$30,688/unit

Capital Needs Summary - *Conventional*

OSI Ref: **13095**
 Property Age: **41 Years**
 Financing: **PHA**

Residential Buildings: **10**
 Total Number of Units: **60**
 Occupancy: **Elderly**

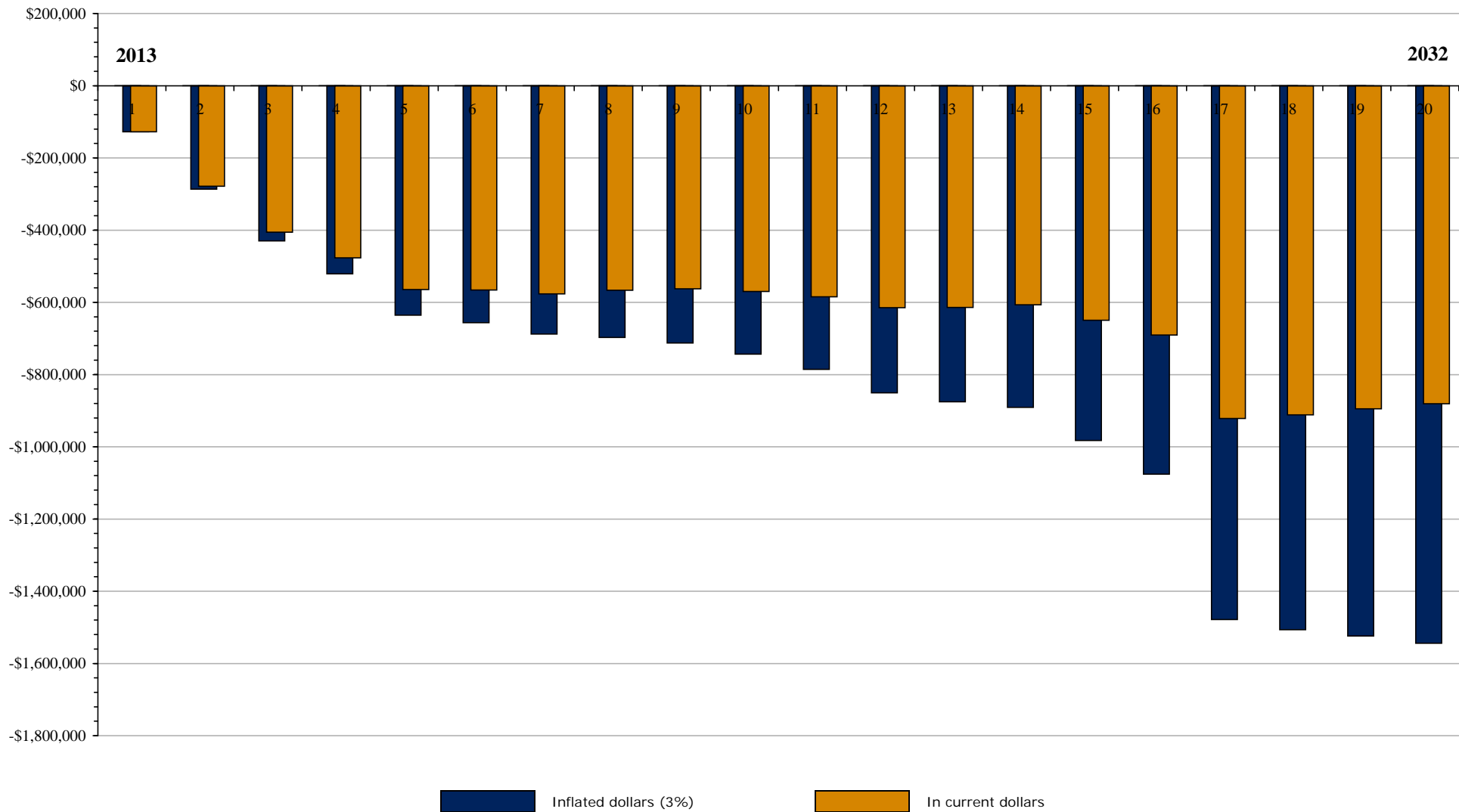
	2013 Year 1	2014 Year 2	2015 Year 3	2016 Year 4	2017 Year 5	2018 Year 6	2019 Year 7	2020 Year 8	2021 Year 9	2022 Year 10
Site Systems & Accessibility										
Surface	\$18,500	\$19,859	\$0	\$0	\$5,628	\$0	\$23,021	\$0	\$0	\$0
Accessibility	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Site Sub-Total	\$18,500	\$19,859	\$0	\$0	\$5,628	\$0	\$23,021	\$0	\$0	\$0
Mechanical Room										
Boilers	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Boiler Room Systems	\$0	\$0	\$0	\$0	\$957	\$985	\$0	\$0	\$0	\$0
Mechanical Sub-Total	\$0	\$0	\$0	\$0	\$957	\$985	\$0	\$0	\$0	\$0
Building Mech. & Electrical										
Mechanical	\$0	\$0	\$0	\$0	\$1,790	\$0	\$0	\$0	\$0	\$0
Electrical	\$0	\$0	\$0	\$0	\$11,255	\$0	\$0	\$0	\$0	\$0
Elevators	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Mechanical & Electrical Sub-Total	\$0	\$0	\$0	\$0	\$13,045	\$0	\$0	\$0	\$0	\$0
Building Architectural										
Structural and Exterior	\$60,534	\$54,926	\$56,574	\$53,478	\$55,082	\$11,435	\$3,539	\$3,645	\$3,755	\$3,867
Roof Systems	\$27,195	\$28,011	\$28,851	\$29,717	\$30,608	\$0	\$0	\$0	\$0	\$0
Halls, Stairs, Lobbies	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Community Spaces	\$4,707	\$0	\$0	\$0	\$1,203	\$0	\$0	\$0	\$0	\$0
Building Architectural Sub-Total	\$92,436	\$82,937	\$85,426	\$83,194	\$86,894	\$11,435	\$3,539	\$3,645	\$3,755	\$3,867
Dwelling Units										
Living Areas	\$13,682	\$14,092	\$14,515	\$14,950	\$15,399	\$15,861	\$16,337	\$16,827	\$17,332	\$17,851
Bathrooms	\$3,479	\$3,584	\$3,691	\$3,802	\$3,916	\$4,033	\$851	\$876	\$903	\$16,000
Kitchens	\$54,573	\$56,210	\$57,896	\$7,597	\$7,825	\$8,060	\$8,302	\$8,551	\$8,807	\$9,072
Mechanical & Electrical	\$12,856	\$13,242	\$13,639	\$14,048	\$14,470	\$14,904	\$15,351	\$15,811	\$22,493	\$23,168
Dwelling Units Sub-Total	\$84,589	\$87,127	\$89,741	\$40,397	\$41,609	\$42,858	\$40,840	\$42,065	\$49,534	\$66,090
Total Capital Costs	\$195,525	\$189,923	\$175,166	\$123,592	\$148,132	\$55,278	\$67,400	\$45,710	\$53,289	\$69,958

Hillside Terrace

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	
\$0	\$26,688	\$0	\$0	\$0	\$0	\$309,356	\$0	\$0	\$0	Site Systems & Accessibility
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Surface Accessibility
\$0	\$26,688	\$0	\$0	\$0	\$0	\$309,356	\$0	\$0	\$0	Site Sub-Total
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Mechanical Room
\$0	\$0	\$0	\$0	\$1,286	\$1,324	\$0	\$0	\$0	\$0	Boilers Boiler Room Systems
\$0	\$0	\$0	\$0	\$1,286	\$1,324	\$0	\$0	\$0	\$0	Mechanical Sub-Total
\$0	\$0	\$0	\$0	\$2,405	\$0	\$0	\$0	\$0	\$0	Building Mech. & Electrical
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Mechanical Electrical Elevators
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
\$0	\$0	\$0	\$0	\$2,405	\$0	\$0	\$0	\$0	\$0	Mechanical & Electrical Sub-Total
\$3,983	\$4,103	\$4,226	\$4,353	\$74,254	\$76,482	\$78,776	\$4,899	\$5,046	\$5,197	Building Architectural
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$10,663	\$0	\$0	Structural and Exterior Roof Systems
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	Halls, Stairs, Lobbies
\$4,814	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,875	Community Spaces
\$8,797	\$4,103	\$4,226	\$4,353	\$74,254	\$76,482	\$78,776	\$15,562	\$5,046	\$7,072	Building Architectural Sub-Total
\$18,387	\$18,939	\$19,507	\$20,092	\$20,695	\$21,316	\$21,955	\$22,614	\$23,292	\$23,991	Dwelling Units
\$14,786	\$15,230	\$1,016	\$1,046	\$1,078	\$1,110	\$1,143	\$1,178	\$1,213	\$1,249	Living Areas Bathrooms
\$18,912	\$19,480	\$20,064	\$10,210	\$10,516	\$10,832	\$11,157	\$11,492	\$11,836	\$12,191	Kitchens
\$21,282	\$21,921	\$22,578	\$23,256	\$27,130	\$27,944	\$28,782	\$26,174	\$26,960	\$27,769	Mechanical & Electrical
\$73,368	\$75,569	\$63,165	\$54,604	\$59,419	\$61,201	\$63,037	\$61,457	\$63,301	\$65,200	Dwelling Units Sub-Total
\$82,165	\$106,360	\$67,391	\$58,957	\$137,363	\$139,007	\$451,170	\$77,019	\$68,347	\$72,273	Total Capital Costs

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



Current Replacement Reserve Balance: **\$0**

Adjusted Replacement Reserve Balance: **\$37,139**

Current annual contributions to reserve accounts: **\$29,404**

At the end of Year One, Reserve Balances are projected to be: **(\$127,427)**

At the end of Year 20, Reserve Balances are projected to be: **(\$1,543,826)**

Unmet needs projected in all years of the plan

- 1. The development is estimated to have a replacement reserve balance of \$37,139 on December 31, 2012.
- 2. Contributions are currently \$29,404 per year, or \$490 per unit.
- 3. Under this scenario, the property's needs exceed reserves in all years of the plan.

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

Reserve Funding In Year 1										
Starting Balance:		Replacement Reserve (RR) analysis starts here with the starting RR balance reported, or imputed, to have been on hand at the start of Year 1, and current annual RR contributions. The projections below reflect Starting RR Balance (Line A), plus the Total Annual RR Contributions (Line D) and Interest Earnings on RR (Line E), minus Total Annual Capital Costs (Line F), taken from the CNS above. This is expressed arithmetically as (A+D+E)-F=G, Year-End Balances, then carries forward to Line A of the following Year.								
Contributions to Reserves:										
	2013 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	\$37,139	(\$127,427)	(\$286,610)	(\$430,114)	(\$521,093)	(\$635,634)	(\$656,314)	(\$688,078)	(\$697,082)	(\$712,565)
(B) Annual Funding										
Contributions Indexed at 3%	\$490	\$505	\$520	\$536	\$552	\$568	\$585	\$603	\$621	\$639
(C) Additional Unit Contributions										
(D) Total Annual Reserve Funding	\$29,404	\$30,286	\$31,195	\$32,131	\$33,094	\$34,087	\$35,110	\$36,163	\$37,248	\$38,366
(E) Interest on Reserves at 3%	\$1,555	\$454	\$468	\$482	\$496	\$511	\$527	\$542	\$559	\$575
Total Funds Available	\$68,098	(\$96,687)	(\$254,947)	(\$397,501)	(\$487,502)	(\$601,036)	(\$620,677)	(\$651,372)	(\$659,276)	(\$673,623)
(F) Total Capital Cost	\$195,525	\$189,923	\$175,166	\$123,592	\$148,132	\$55,278	\$67,400	\$45,710	\$53,289	\$69,958
(G) Reserve Balances	(\$127,427)	(\$286,610)	(\$430,114)	(\$521,093)	(\$635,634)	(\$656,314)	(\$688,078)	(\$697,082)	(\$712,565)	(\$743,581)
Outside Capital:										
Adjusted Reserve Balances	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Notes:

1. The development is estimated to have a replacement reserve balance of \$37,139 on December 31, 2012.
2. Contributions are currently \$29,404 per year, or \$490 per unit.
3. Under this scenario, the property's needs exceed reserves in all years of the plan.

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

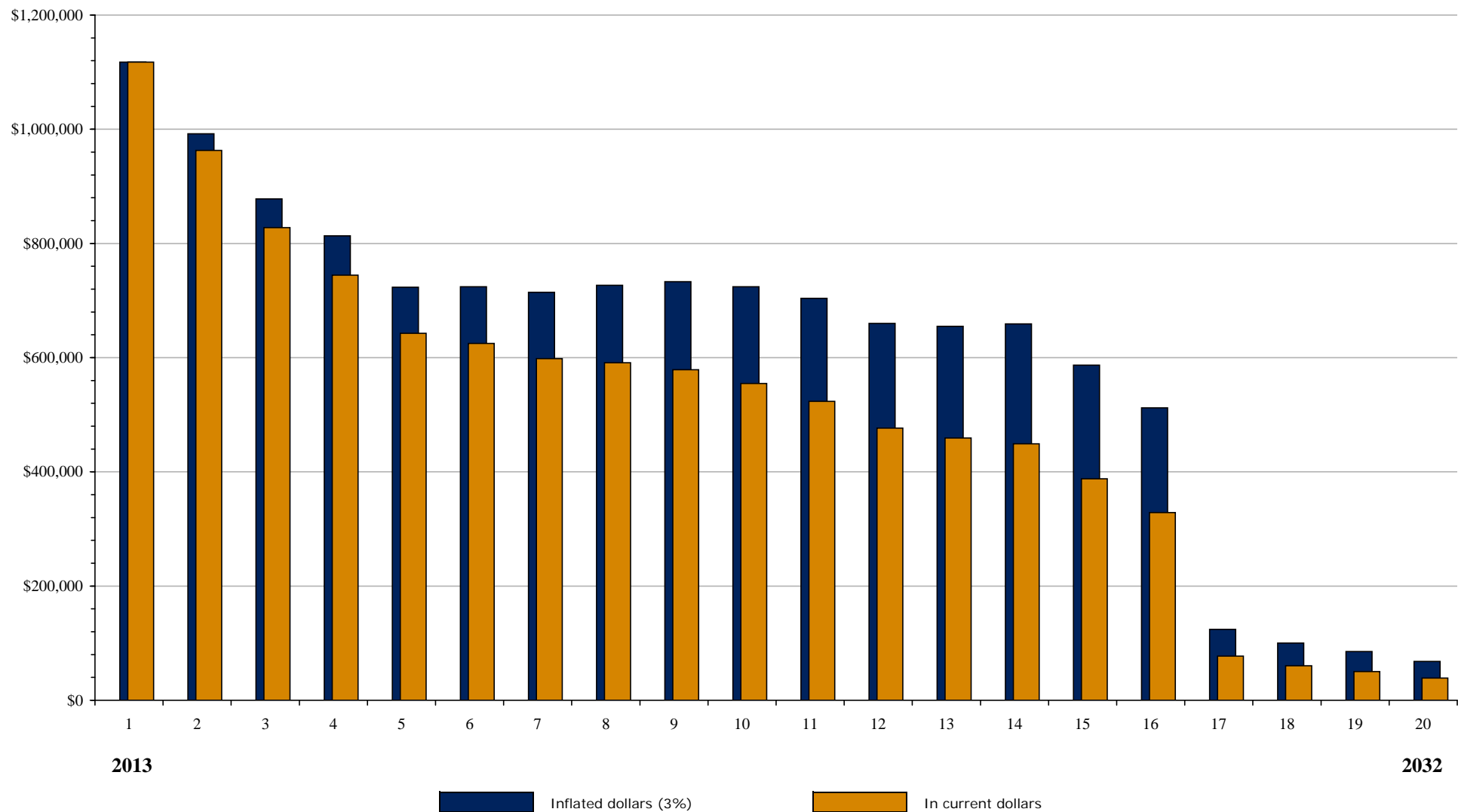
Line C, Additional Contributions allows for material adjustments in annual RR funding that would enable the property to meet all projected needs out of reserves through Year 20.

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

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

Reserve Funding In Year 20									
Projected replacement reserve balance is (\$1,543,826)					This is (\$25,730)per unit in inflated dollars or (\$14,674) per unit in uninflated dollars				
Projected annual funding to reserves is \$51,560					This is \$859 per unit in inflated dollars or \$490 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
(743,581)	(785,637)	(850,685)	(875,524)	(890,652)	(982,872)	(\$1,075,382)	(\$1,478,659)	(\$1,506,349)	(\$1,523,887)
\$659	\$678	\$699	\$720	\$741	\$764	\$786	\$810	\$834	\$859
\$39,517	\$40,702	\$41,923	\$43,181	\$44,476	\$45,810	\$47,185	\$48,600	\$50,058	\$51,560
\$593	\$611	\$629	\$648	\$667	\$687	\$708	\$729	\$751	\$773
(\$703,472)	(\$744,325)	(\$808,133)	(\$831,695)	(\$845,509)	(\$936,375)	(\$1,027,489)	(\$1,429,330)	(\$1,455,540)	(\$1,471,553)
\$82,165	\$106,360	\$67,391	\$58,957	\$137,363	\$139,007	\$451,170	\$77,019	\$68,347	\$72,273
(\$785,637)	(\$850,685)	(\$875,524)	(\$890,652)	(\$982,872)	(\$1,075,382)	(\$1,478,659)	(\$1,506,349)	(\$1,523,887)	(\$1,543,826)
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

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



Current Replacement Reserve Balance: **\$0**
Adjusted Replacement Reserve Balance: **\$37,139**
Current annual contributions to reserve accounts: **\$29,404**

At the end of Year One, Reserve Balances are projected to be: **\$1,117,573**
At the end of Year 20, Reserve Balances are projected to be: **\$68,190**
All projected capital needs are met throughout the plan

The plan calls for an infusion of \$1,245,000 in outside capital in Year 1

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:										
	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	\$37,139	\$1,117,573	\$991,917	\$878,171	\$813,537	\$723,402	\$724,424	\$714,393	\$726,820	\$733,143
(B) Annual Funding										
Contributions Indexed at 3%	\$490	\$505	\$520	\$536	\$552	\$568	\$585	\$603	\$621	\$639
(C) Additional Unit Contributions										
(D) Total Annual Reserve Funding	\$29,404	\$30,286	\$31,195	\$32,131	\$33,094	\$34,087	\$35,110	\$36,163	\$37,248	\$38,366
(E) Interest on Reserves at 3%	\$1,555	\$33,981	\$30,225	\$26,827	\$24,903	\$22,213	\$22,259	\$21,974	\$22,363	\$22,570
Total Funds Available	\$68,098	\$1,181,840	\$1,053,338	\$937,129	\$871,534	\$779,702	\$781,794	\$772,530	\$786,432	\$794,078
(F) Total Capital Cost	\$195,525	\$189,923	\$175,166	\$123,592	\$148,132	\$55,278	\$67,400	\$45,710	\$53,289	\$69,958
(G) Reserve Balances	(\$127,427)	\$991,917	\$878,171	\$813,537	\$723,402	\$724,424	\$714,393	\$726,820	\$733,143	\$724,120
Outside Capital:	\$1,245,000									
Adjusted Reserve Balances	\$1,117,573	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Notes:

The plan calls for an infusion of \$1,245,000 in outside capital in Year 1

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

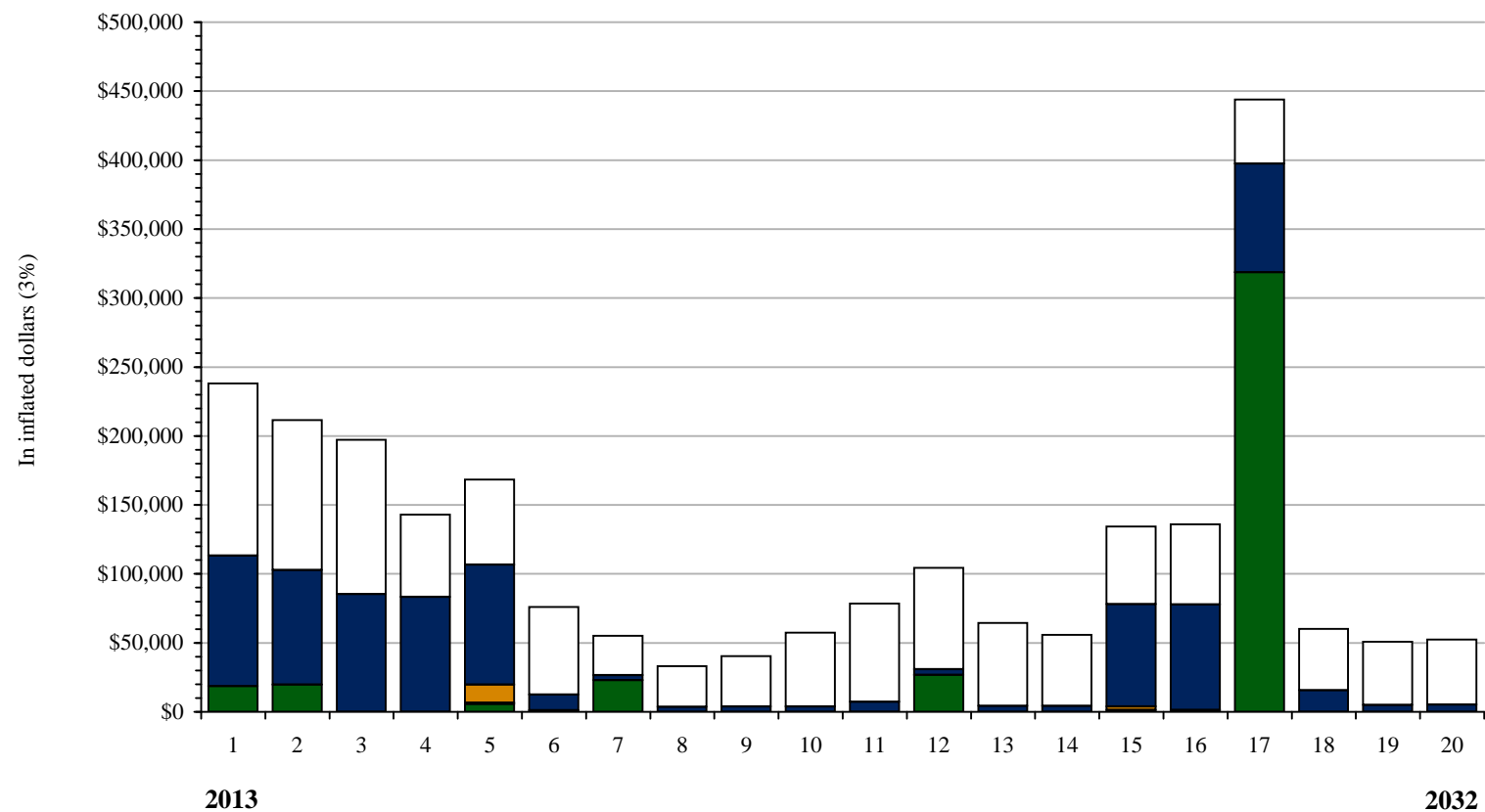
Line C, Additional Contributions allows for material adjustments in annual RR funding that would enable the property to meet all projected needs out of reserves through Year 20.

**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

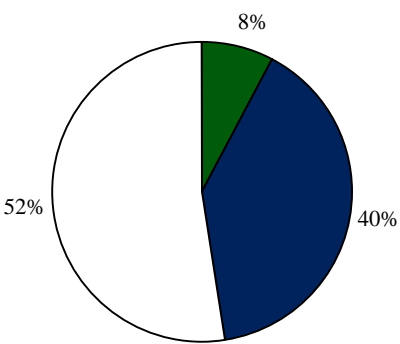
Replacement Reserve (RR) Analysis: *Plan Two - Conventional*

Reserve Funding In Year 20										
Projected replacement reserve balance is \$68,190					This is \$1,137 per unit in inflated dollars or \$648 per unit in uninflated dollars					
Projected annual funding to reserves is \$51,560					This is \$859 per unit in inflated dollars or \$490 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)
\$724,120	\$703,788	\$659,854	\$654,810	\$659,326	\$586,886	\$511,983	\$124,065	\$100,097	\$85,562	Starting Replacement Reserves
										Annual Funding (B)
\$659	\$678	\$699	\$720	\$741	\$764	\$786	\$810	\$834	\$859	Contributions Indexed at 3%
										Additional Unit Contributions (C)
\$39,517	\$40,702	\$41,923	\$43,181	\$44,476	\$45,810	\$47,185	\$48,600	\$50,058	\$51,560	Total Annual Reserve Funding (D)
\$22,316	\$21,724	\$20,424	\$20,292	\$20,447	\$18,294	\$16,067	\$4,451	\$3,754	\$3,340	Interest on Reserves at 3% (E)
\$785,953	\$766,214	\$722,201	\$718,283	\$724,249	\$650,990	\$575,235	\$177,117	\$153,910	\$140,463	Total Funds Available
\$82,165	\$106,360	\$67,391	\$58,957	\$137,363	\$139,007	\$451,170	\$77,019	\$68,347	\$72,273	Total Capital Cost (F)
\$703,788	\$659,854	\$654,810	\$659,326	\$586,886	\$511,983	\$124,065	\$100,097	\$85,562	\$68,190	Reserve Balances (G)
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	

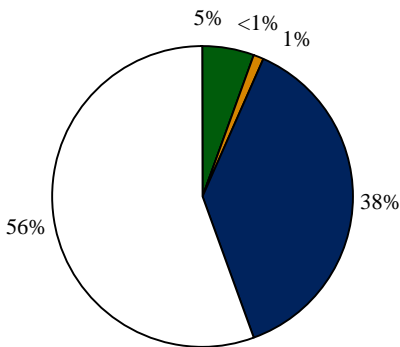
Capital Needs Summary - Green



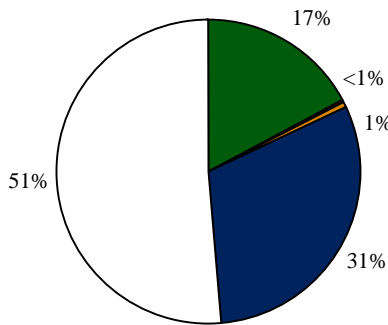
Hillside Terrace



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	\$18,500 or \$308/unit	\$67,007 or \$1,117/unit	\$412,331 or \$6,872/unit
Mechanical Room		\$2,088 or \$35/unit	\$4,893 or \$82/unit
Building Mech. & Elec.		\$13,045 or \$217/unit	\$15,450 or \$257/unit
Building Architectural	\$94,753 or \$1,579/unit	\$459,537 or \$7,659/unit	\$734,686 or \$12,245/unit
Dwelling Units	\$124,770 or \$2,080/unit	\$678,477 or \$11,308/unit	\$1,233,601 or \$20,560/unit
In inflated dollars:	\$238,023 or \$3,967/unit	\$1,220,153 or \$20,336/unit	\$2,400,962 or \$40,016/unit
In current dollars:	\$238,023 or \$3,967/unit	\$1,124,268 or \$18,738/unit	\$1,890,181 or \$31,503/unit

Capital Needs Summary - Green

OSI Ref: **13095**
 Property Age: **41 Years**
 Financing: **PHA**

Residential Buildings: **10**
 Total Number of Units: **60**
 Occupancy: **Elderly**

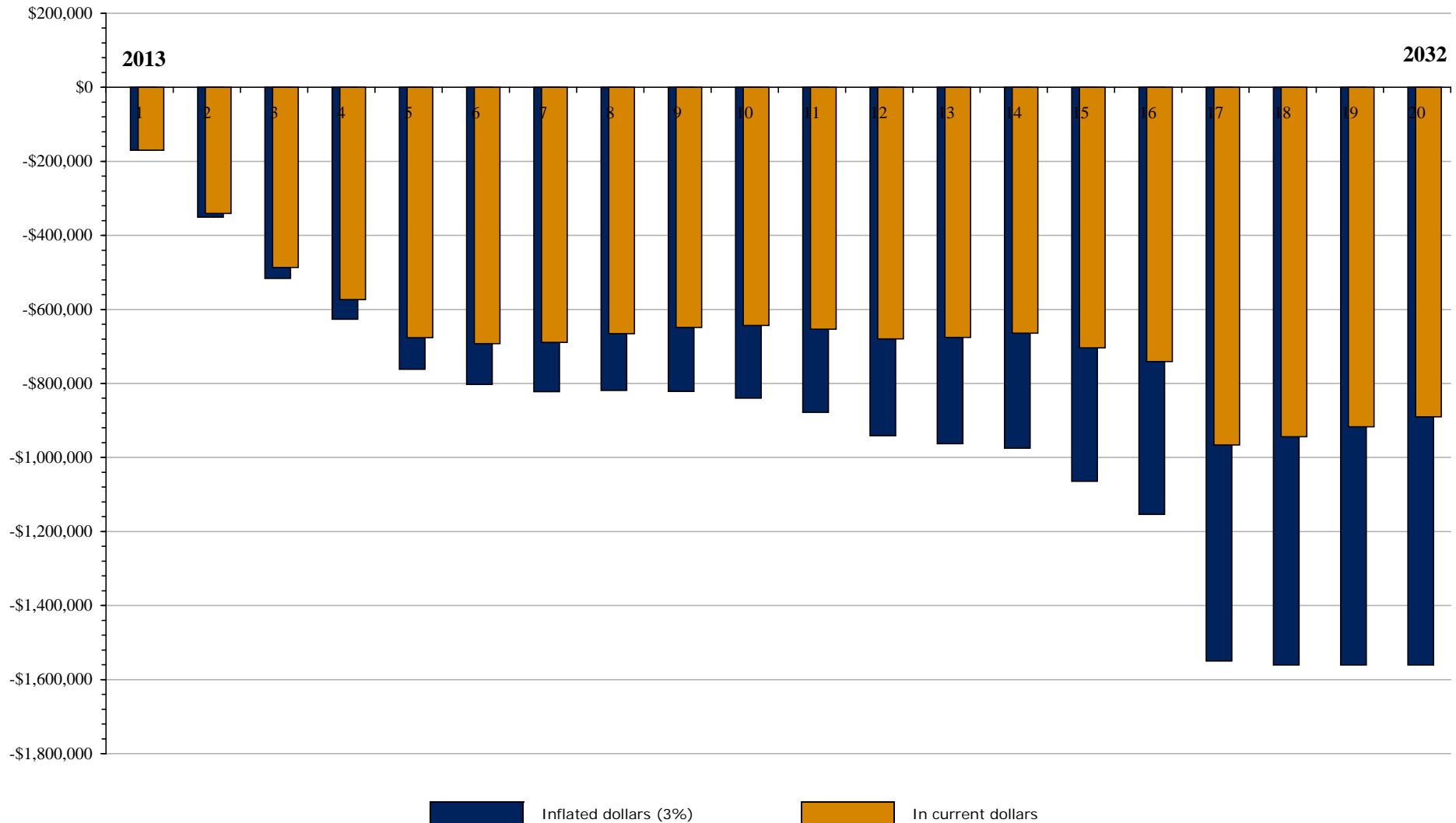
	2013 Year 1	2014 Year 2	2015 Year 3	2016 Year 4	2017 Year 5	2018 Year 6	2019 Year 7	2020 Year 8	2021 Year 9	2022 Year 10
Site Systems & Accessibility										
Surface	\$18,500	\$19,859	\$0	\$0	\$5,628	\$0	\$23,021	\$0	\$0	\$0
Accessibility	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Site Sub-Total	\$18,500	\$19,859	\$0	\$0	\$5,628	\$0	\$23,021	\$0	\$0	\$0
Mechanical Room										
Boilers	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Boiler Room Systems	\$0	\$0	\$0	\$0	\$1,028	\$1,059	\$0	\$0	\$0	\$0
Mechanical Sub-Total	\$0	\$0	\$0	\$0	\$1,028	\$1,059	\$0	\$0	\$0	\$0
Building Mech. & Electrical										
Mechanical	\$0	\$0	\$0	\$0	\$1,790	\$0	\$0	\$0	\$0	\$0
Electrical	\$0	\$0	\$0	\$0	\$11,255	\$0	\$0	\$0	\$0	\$0
Elevators	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Mechanical & Electrical Sub-Total	\$0	\$0	\$0	\$0	\$13,045	\$0	\$0	\$0	\$0	\$0
Building Architectural										
Structural and Exterior	\$60,997	\$54,926	\$56,574	\$53,478	\$55,082	\$11,435	\$3,539	\$3,645	\$3,755	\$3,867
Roof Systems	\$27,195	\$28,011	\$28,851	\$29,717	\$30,608	\$0	\$0	\$0	\$0	\$0
Halls, Stairs, Lobbies	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Community Spaces	\$6,560	\$0	\$0	\$0	\$1,295	\$0	\$0	\$0	\$0	\$0
Building Architectural Sub-Total	\$94,753	\$82,937	\$85,426	\$83,194	\$86,985	\$11,435	\$3,539	\$3,645	\$3,755	\$3,867
Dwelling Units										
Living Areas	\$32,710	\$33,692	\$34,702	\$35,744	\$36,816	\$37,920	\$5,534	\$5,700	\$5,871	\$6,047
Bathrooms	\$3,479	\$3,584	\$3,691	\$3,802	\$3,916	\$4,033	\$851	\$876	\$903	\$16,762
Kitchens	\$75,725	\$58,105	\$59,848	\$6,289	\$6,477	\$6,672	\$6,872	\$7,078	\$7,290	\$7,509
Mechanical & Electrical	\$12,856	\$13,242	\$13,639	\$14,048	\$14,470	\$14,904	\$15,351	\$15,811	\$22,493	\$23,168
Dwelling Units Sub-Total	\$124,770	\$108,622	\$111,880	\$59,882	\$61,678	\$63,529	\$28,607	\$29,465	\$36,556	\$53,486
Total Capital Costs	\$238,023	\$211,418	\$197,306	\$143,077	\$168,364	\$76,023	\$55,168	\$33,111	\$40,311	\$57,353

Hillside Terrace

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	
\$0	\$26,688	\$0	\$0	\$0	\$0	\$318,635	\$0	\$0	\$0	Site Systems & Accessibility Surface Accessibility
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
\$0	\$26,688	\$0	\$0	\$0	\$0	\$318,635	\$0	\$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	\$1,382	\$1,424	\$0	\$0	\$0	\$0	
\$0	\$0	\$0	\$0	\$1,382	\$1,424	\$0	\$0	\$0	\$0	Mechanical Sub-Total
\$0	\$0	\$0	\$0	\$2,405	\$0	\$0	\$0	\$0	\$0	Building Mech. & Electrical Mechanical Electrical Elevators
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
\$0	\$0	\$0	\$0	\$2,405	\$0	\$0	\$0	\$0	\$0	Mechanical & Electrical Sub-Total
\$3,983	\$4,103	\$4,226	\$4,353	\$74,254	\$76,482	\$78,776	\$4,899	\$5,046	\$5,197	Building Architectural Structural and Exterior Roof Systems Halls, Stairs, Lobbies Community Spaces
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$10,663	\$0	\$0	
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
\$3,168	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
\$7,151	\$4,103	\$4,226	\$4,353	\$74,254	\$76,482	\$78,776	\$15,562	\$5,046	\$5,197	Building Architectural Sub-Total
\$17,212	\$17,728	\$18,260	\$18,807	\$19,372	\$19,953	\$7,437	\$7,660	\$7,890	\$8,127	Dwelling Units Living Areas Bathrooms Kitchens Mechanical & Electrical
\$15,572	\$16,039	\$1,016	\$1,046	\$1,078	\$1,110	\$1,143	\$1,178	\$1,213	\$1,249	
\$17,303	\$17,822	\$18,357	\$8,451	\$8,705	\$8,966	\$9,235	\$9,512	\$9,798	\$10,091	
\$21,282	\$21,921	\$22,578	\$23,256	\$27,130	\$27,944	\$28,782	\$26,174	\$26,960	\$27,769	
\$71,368	\$73,509	\$60,211	\$51,561	\$56,284	\$57,973	\$46,598	\$44,524	\$45,860	\$47,236	Dwelling Units Sub-Total
\$78,519	\$104,300	\$64,437	\$55,914	\$134,325	\$135,878	\$444,009	\$60,086	\$50,906	\$52,433	Total Capital Costs

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



Current Replacement Reserve Balance: **\$0**
 Adjusted Replacement Reserve Balance: **\$37,139**
 Current annual contributions to reserve accounts: **\$29,404**

At the end of Year One, Reserve Balances are projected to be: **(\$169,925)**
 At the end of Year 20, Reserve Balances are projected to be: **(\$1,560,761)**
 Unmet needs projected in all years of the plan

- 1. The development is estimated to have a replacement reserve balance of \$37,139 on December 31, 2012.**
- 2. Contributions are currently \$29,404 per year, or \$490 per unit.**
- 3. Under this scenario, the property's needs exceed reserves in all 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	2014	2015	2016	2017	2018	2019	2020	2021	2022
		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
(A) Reserve Balances											
Starting Replacement Reserves		\$37,139	(\$169,925)	(\$350,602)	(\$516,246)	(\$626,710)	(\$761,483)	(\$802,907)	(\$822,439)	(\$818,844)	(\$821,348)
(B) Annual Funding											
Contributions Indexed at 3%		\$490	\$505	\$520	\$536	\$552	\$568	\$585	\$603	\$621	\$639
(C) Additional Unit Contributions											
(D) Total Annual Reserve Funding		\$29,404	\$30,286	\$31,195	\$32,131	\$33,094	\$34,087	\$35,110	\$36,163	\$37,248	\$38,366
(E) Interest on Reserves at 3%		\$1,555	\$454	\$468	\$482	\$496	\$511	\$527	\$542	\$559	\$575
Total Funds Available		\$68,098	(\$139,185)	(\$318,940)	(\$483,633)	(\$593,119)	(\$726,884)	(\$767,271)	(\$785,733)	(\$781,037)	(\$782,407)
(F) Total Capital Cost		\$238,023	\$211,418	\$197,306	\$143,077	\$168,364	\$76,023	\$55,168	\$33,111	\$40,311	\$57,353
(G) Reserve Balances		(\$169,925)	(\$350,602)	(\$516,246)	(\$626,710)	(\$761,483)	(\$802,907)	(\$822,439)	(\$818,844)	(\$821,348)	(\$839,760)
Outside Capital:											
Adjusted Reserve Balances		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Notes:

1. The development is estimated to have a replacement reserve balance of \$37,139 on December 31, 2012.
2. Contributions are currently \$29,404 per year, or \$490 per unit.
3. Under this scenario, the property's needs exceed reserves in all years of the plan.

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

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

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

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

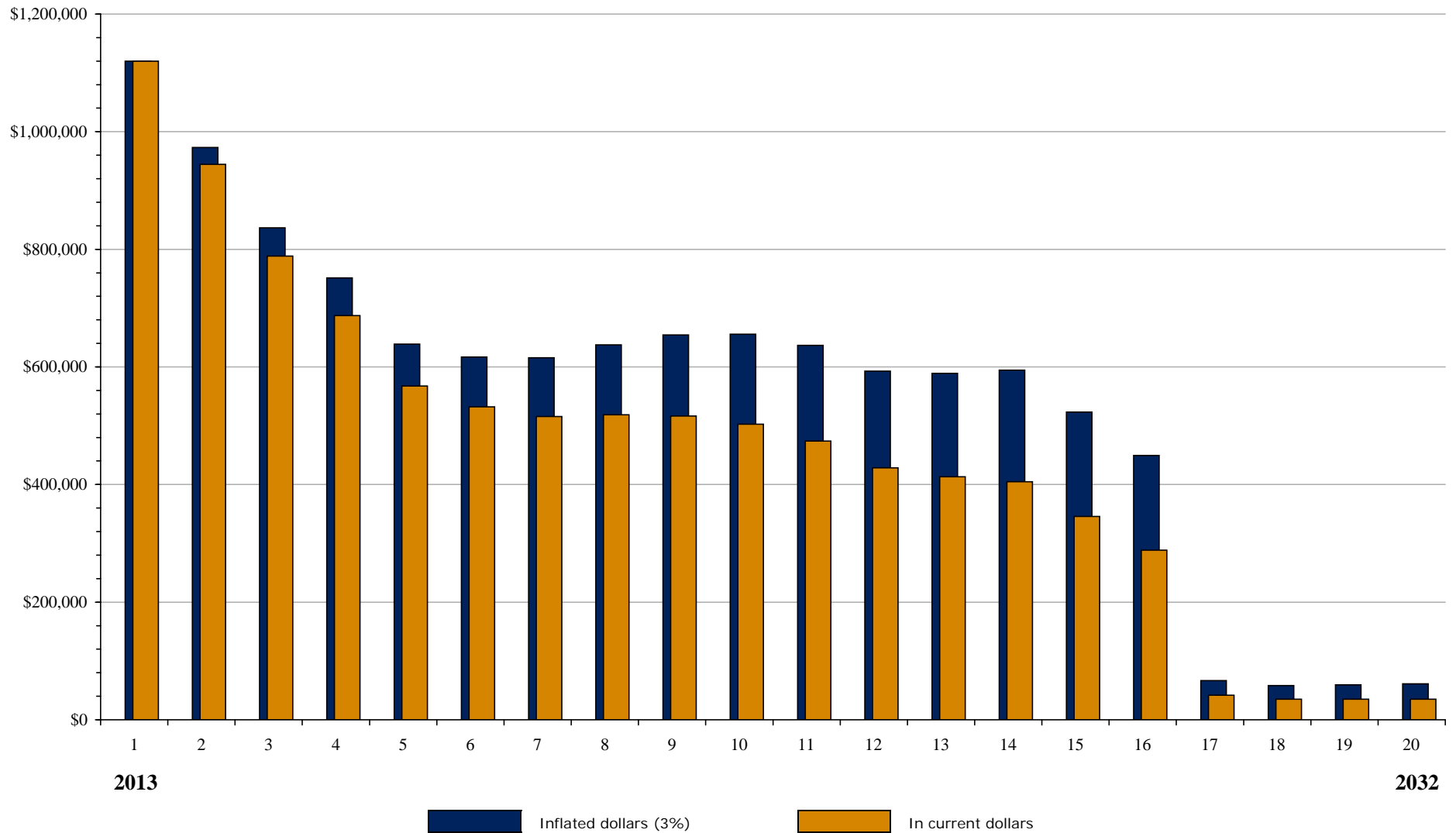
Reserve Funding In Year 20

Projected replacement reserve balance is **(\$1,560,761)** This is (\$26,013)per unit in inflated dollars or (\$14,835) per unit in uninflated dollars

Projected annual funding to reserves is **\$51,560** This is \$859 per unit in inflated dollars or \$490 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)
(\$839,760)	(\$878,170)	(\$941,158)	(\$963,042)	(\$975,128)	(\$1,064,310)	(\$1,153,690)	(\$1,549,807)	(\$1,560,564)	(\$1,560,661)	Starting Replacement Reserves
										Annual Funding (B)
\$659	\$678	\$699	\$720	\$741	\$764	\$786	\$810	\$834	\$859	Contributions Indexed at 3%
										Additional Unit Contributions (C)
\$39,517	\$40,702	\$41,923	\$43,181	\$44,476	\$45,810	\$47,185	\$48,600	\$50,058	\$51,560	Total Annual Reserve Funding (D)
\$593	\$611	\$629	\$648	\$667	\$687	\$708	\$729	\$751	\$773	Interest on Reserves at 3% (E)
(\$799,651)	(\$836,857)	(\$898,606)	(\$919,214)	(\$929,984)	(\$1,017,812)	(\$1,105,797)	(\$1,500,477)	(\$1,509,754)	(\$1,508,327)	Total Funds Available
\$78,519	\$104,300	\$64,437	\$55,914	\$134,325	\$135,878	\$444,009	\$60,086	\$50,906	\$52,433	Total Capital Cost (F)
(\$878,170)	(\$941,158)	(\$963,042)	(\$975,128)	(\$1,064,310)	(\$1,153,690)	(\$1,549,807)	(\$1,560,564)	(\$1,560,661)	(\$1,560,761)	Reserve Balances (G)
\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	

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



Current Replacement Reserve Balance: **\$0**
 Adjusted Replacement Reserve Balance: **\$37,139**
 Current annual contributions to reserve accounts: **\$29,404**

At the end of Year One, Reserve Balances are projected to be: **\$1,120,075**
 At the end of Year 20, Reserve Balances are projected to be: **\$61,327**
 All projected capital needs are met throughout the plan

The plan calls for an infusion of \$1,290,000 in outside capital in Year 1

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

		Reserve Funding In Year 1									
		Starting Balance: \$37,139 or \$619/unit Contributions to Reserves: \$29,404 or \$490/unit									
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
(A)	Reserve Balances										
	Starting Replacement Reserves	\$37,139	\$1,120,075	\$973,000	\$836,547	\$751,179	\$638,941	\$616,685	\$615,654	\$637,719	\$654,346
(B)	Annual Funding										
	Contributions Indexed at 3%	\$490	\$505	\$520	\$536	\$552	\$568	\$585	\$603	\$621	\$639
(C)	Additional Unit Contributions										
(D)	Total Annual Reserve Funding	\$29,404	\$30,286	\$31,195	\$32,131	\$33,094	\$34,087	\$35,110	\$36,163	\$37,248	\$38,366
(E)	Interest on Reserves at 3%	\$1,555	\$34,057	\$29,658	\$25,578	\$23,032	\$19,680	\$19,027	\$19,012	\$19,690	\$20,206
	Total Funds Available	\$68,098	\$1,184,418	\$1,033,853	\$894,256	\$807,305	\$692,708	\$670,822	\$670,830	\$694,657	\$712,917
(F)	Total Capital Cost	\$238,023	\$211,418	\$197,306	\$143,077	\$168,364	\$76,023	\$55,168	\$33,111	\$40,311	\$57,353
(G)	Reserve Balances	(\$169,925)	\$973,000	\$836,547	\$751,179	\$638,941	\$616,685	\$615,654	\$637,719	\$654,346	\$655,564
	Outside Capital:	\$1,290,000									
	Adjusted Reserve Balances	\$1,120,075	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Notes:

The plan calls for an infusion of **\$1,290,000** in outside capital in Year 1

*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 **\$61,327**

This is \$1,022 per unit in inflated dollars or \$583 per unit in uninflated dollars

Projected annual funding to reserves is **\$51,560**

This is \$859 per unit in inflated dollars or \$490 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)
\$655,564	\$636,821	\$592,938	\$588,842	\$594,422	\$523,072	\$449,384	\$66,749	\$57,995	\$59,637	Starting Replacement Reserves
										Annual Funding (B)
\$659	\$678	\$699	\$720	\$741	\$764	\$786	\$810	\$834	\$859	Contributions Indexed at 3%
										Additional Unit Contributions (C)
\$39,517	\$40,702	\$41,923	\$43,181	\$44,476	\$45,810	\$47,185	\$48,600	\$50,058	\$51,560	Total Annual Reserve Funding (D)
\$20,260	\$19,715	\$18,417	\$18,313	\$18,500	\$16,379	\$14,189	\$2,731	\$2,491	\$2,563	Interest on Reserves at 3% (E)
\$715,341	\$697,239	\$653,278	\$650,335	\$657,398	\$585,262	\$510,758	\$118,081	\$110,544	\$113,760	Total Funds Available
\$78,519	\$104,300	\$64,437	\$55,914	\$134,325	\$135,878	\$444,009	\$60,086	\$50,906	\$52,433	Total Capital Cost (F)
\$636,821	\$592,938	\$588,842	\$594,422	\$523,072	\$449,384	\$66,749	\$57,995	\$59,637	\$61,327	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	16,820 sf	2.10	\$35,322		3	20	17	in	1 Year	Asphalt paved Future resurfacing costs
Roadways (Green)	16,820 sf	5.25	\$88,305	\$52,983	3	20				G1 Reported poor drainage Install permeable pavers <i>Neg NPV, option financially not recommended</i>
Parking	15,802 sf	2.10	\$33,184		3	20	17	in	1 Year	Asphalt paved Future resurfacing costs
Parking (Green)	15,802 sf	5.25	\$82,961	\$49,776	3	20				G1 Reported poor drainage Install permeable pavers <i>Neg NPV, option financially not recommended</i>
Crack-Fill and Sealcoat	55,086 sf	0.35	\$19,280		3	5	2 /7 /12	in	1 Year	Surface maintenance Allowances to crack fill and sealcoat
Pedestrian Paving	22,464 sf	2.10	\$47,174		3	20	17	in	1 Year	Asphalt paved Future resurfacing costs
Pedestrian Paving (Green)	sf									
Hand Rail Systems	200 lf	25.00	\$5,000		varies	20	5	in	1 Year	Hand rails at various grade change locations Costs to replace
Hand Rail Systems (Green)	lf									
Site Lighting	30 ea	2570.00	\$77,100		3	20	17	in	1 Year	Gooseneck HID fixtures 150-W ea Costs to replace
Site Lighting (Green)	30 lf	2762.75	\$82,883	\$5,783	3	20	17	in	1 Year	E1 Upgrade to high efficiency/long life LED fixtures Costs to upgrade
Retaining Walls	300 lf				41	65				Poured concrete retaining walls at grade changes Monitor
Landscaping	1 ls				41	20				Large open lawn areas nad mature plantings Operating
Landscaping (Green)	ea									
ACCESSIBILITY										
Circulation	1 ls	8500.00	\$8,500		41	10	1	in	1 Year	Several walkway grade changes qualify as ramps and require appropriate hand rail systems
Circulation (Green)	ls									
Common Areas	1 ea	10000.00	\$10,000		41	20	1	in	1 Year	Laudry rm width under five feet, top load washers Redesign space, replace washers
Common Areas (Green)	ea									
Dwelling Units	ea									
Dwelling Units (Green)	ea									
Miscellaneous	ls									

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	\$56,681	\$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	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$53,251	\$0	\$0	\$0
Parking (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Crack-Fill and Sealcoat	\$0	\$19,859	\$0	\$0	\$0	\$0	\$23,021	\$0	\$0	\$0	\$0	\$26,688	\$0	\$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	\$75,701	\$0	\$0	\$0
Pedestrian Paving (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Hand Rail Systems	\$0	\$0	\$0	\$0	\$5,628	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Hand Rail Systems (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	\$123,723	\$0	\$0	\$0
Site Lighting (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$133,002	\$0	\$0	\$0
Retaining Walls	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Landscaping	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Landscaping (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ACCESSIBILITY																				
Circulation	\$8,500	\$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	\$10,000	\$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--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	2 ea	850.00	\$1,700		5	10	5	15	over	2	Years	Electric 40-gallon models Costs to replace
DHW Generation (Green)	2 ea	913.75	\$1,828	\$128	5	10	5	15	over	2	Years	E2 Upgrade with 50-Gallon Heat pump water heaters Costs to upgrade
DHW Generation	ea											
DHW Generation (Green)	ea											
DHW Storage	ea											
DHW Storage (Green)	ea											
DHW Storage	ea											
DHW Storage (Green)	ea											
Domestic Hot Water Pumps	ea											
Domestic Hot Water Pumps (Green)	ea											
Domestic Hot Water Pumps	ea											
Domestic Hot Water Pumps (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	\$0	\$0	\$0	\$0	\$957	\$985	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,286	\$1,324	\$0	\$0	\$0	\$0
DHW Generation (Green)	\$0	\$0	\$0	\$0	\$1,028	\$1,059	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,382	\$1,424	\$0	\$0	\$0	\$0
DHW Generation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
DHW Generation (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
DHW Storage	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
DHW Storage (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
DHW Storage	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
DHW Storage (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Domestic Hot Water Pumps	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Domestic Hot Water Pumps (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Domestic Hot Water Pumps	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Domestic Hot Water Pumps (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Miscellaneous	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Miscellaneous (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Miscellaneous	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Projected Capital Needs Over Twenty Years

BUILDING MECHANICAL AND ELECTRICAL

Replacement Items	Quantity	Cost / Unit in 2013 \$	Total Cost in 2013 \$	Total Premium	AGE (Years)	EUL (Years)	Replacement Schedule (Year of action AND duration of project)				Notes
BUILDING MECHANICAL											
Compactors	_____ ea	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
Building Fire Suppression	_____ ls	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
Building Distribution Systems	_____ 1 ls	_____	_____	_____	41	50	_____	_____	_____	_____	_____
Com/Office Bldg. AC	_____ 2 ea	795.00	\$1,590	_____	varies	10	5	15	_____	in 1 Year	Thru-Wall air conditioners Costs to replace
Com/Office Bldg. AC (Green)	_____ 2 ea	854.63	\$1,709	\$119	varies	10	_____	_____	_____	_____	Upgrade to models with a SEER rating of 15 Minimal usage indic. by energy model analysis Analysis not possible
Building HVAC Systems	_____ ea	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
Building HVAC Systems (Green)	_____ ea	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
Building HVAC Systems	_____ ea	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
Building HVAC Systems (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	_____	_____	_____	41	99	_____	_____	_____	_____	Individual meter boxes and disconnects
Emergency Generator	_____ ea	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
Emergency Lights	_____ 1 ls	_____	_____	_____	41	10	_____	_____	_____	_____	Com Bldg and Lower laundry Operating
Smoke / Fire Detection	_____ 1 ls	10000.00	\$10,000	_____	15	20	5	_____	in 1 Year	_____	Community building system connected to ECAS Costs to replace
Signaling / Communication	_____ ls	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
BUILDING ELEVATORS											
Shafts and Doorways	_____ ea	_____	_____	_____	_____	_____	_____	_____	_____	_____	N/A
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
Com/Office Bldg. AC	\$0	\$0	\$0	\$0	\$1,790	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,405	\$0	\$0	\$0	\$0	\$0
Com/Office Bldg. AC (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building HVAC Systems	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building HVAC Systems (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building HVAC Systems	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Building HVAC Systems (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	\$11,255	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Signaling / Communication	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Shafts and Doorways	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Cabs	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Controller/Dispatcher	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Machine Room Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Projected Capital Needs Over Twenty Years

BUILDING ARCHITECTURE

Replacement Items	Quantity	Cost / Unit in 2013 \$	Total Cost in 2013 \$	Total Premium	AGE (Years)	EUL (Years)	Replacement Schedule (Year of action AND duration of project)			Notes
STRUCTURE										
Foundation	3,340 lf				41	50				Poured concrete Monitor
Framing	1 ls				41	70				Wood framed single story Monitor
Slab	sf									
Miscellaneous	ea									
BUILDING EXTERIOR										
Exterior Common Doors	3 ea	345.00	\$1,035		41	35	1	in 1 Year		Metal w/half lite, reported as original Costs to replace
Exterior Common Doors (Green)	3 ea	370.88	\$1,113	\$78	41	45	1	in 1 Year	E3	Upgrade w/fiberglass doors with low U-value Costs to upgrade
Exterior Unit Doors	120 ea	345.00	\$41,400		41	35	1	over 6 Years		Raised panel metal, reported as original Costs to replace
Exterior Unit Doors (Green)	120 ea	370.88	\$44,505	\$3,105	41	35				Upgrade w/fiberglass doors with low U-value <i>Not analysis due to lack of unit utility data</i>
Glass Sliding Doors	ea									
Glass Sliding Doors (Green)	ea									
Service Doors	2 ea	515.00	\$1,030		41	25	1	in 1 Year		Flush panel metal, reported as original Costs to replace
Storm Doors	120 ea	247.00	\$29,640		varies	10	1 11	over 10 Years		Aluminum with half glass/screen As needed replacement costs
Exterior Walls	30,058 sf	6.50	\$195,378		41	40	1	over 5 Years		Clapboard profile vinyl siding Costs to replace
Exterior Walls (Green)	sf									
Exterior Walls	3,240 sf				2	40				New additions siding Monitor
Exterior Walls (Green)	sf									
Exterior Walls	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	\$1,035	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Exterior Common Doors (Green)	\$1,113	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Exterior Unit Doors	\$6,900	\$7,107	\$7,320	\$7,540	\$7,766	\$7,999	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Exterior Unit Doors (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Glass Sliding Doors	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Glass Sliding Doors (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Service Doors	\$1,030	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Storm Doors	\$2,964	\$3,053	\$3,145	\$3,239	\$3,336	\$3,436	\$3,539	\$3,645	\$3,755	\$3,867	\$3,983	\$4,103	\$4,226	\$4,353	\$4,483	\$4,618	\$4,756	\$4,899	\$5,046	\$5,197
Exterior Walls	\$39,076	\$40,248	\$41,455	\$42,699	\$43,980	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Exterior Walls (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Exterior Walls	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Exterior Walls (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Exterior Walls	\$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 Dwelling units	296 ea	467.50	\$138,380		20	35	15	over	3 Years	Casement type windows Costs to replace
Windows Dwelling units (Green)	296 ea	502.56	\$148,759	\$10,379	20	45				Upgrade to fiberglass framed, low-E, argon filled <i>No analysis due to lack of data</i>
Windows Commom Bldg	11 ea	467.50	\$5,143		41	35	1	in	1 Year	Original casement type windows Costs to replace
Windows Commom Bldg (Green)	11 ea	502.56	\$5,528	\$386	41	45	1	in	1 Year	Upgrade to fiberglass framed, low-E, argon filled Costs to upgrade
Windows Dwelling units	30 ea				2	35				Windows at new additions Monitor
Windows Dwelling units (Green)	ea									
Window Lintels	ea									
Unit Balconies	ea									
Unit Balconies (Green)	ea									
Unit Patios	ea									
Unit Patios (Green)	ea									
Building Mounted Lighting	123 ea	107.00	\$13,161		20	20	1	over	3 Years	Standard exterior wall-mounted incandescent Costs to replace
Building Mounted Lighting (Green)	123 ea	115.03	\$14,148	\$987	20	20				Upgrade to high efficiency/long life LED fixtures <i>Not analysis due to lack of unit utility data</i>
ROOF SYSTEMS										
Structure	35,607 sf				41	75				Wood framed and sheathed Monitor
Roof Covering	33,994 sf	4.00	\$135,976		20	20	1	over	5 Years	Asphalt shingle roof covering Costs to replace
Roof Covering (Green)	sf									
Roof Covering	1,613 sf	4.00	\$6,451		2	20	18	in	1 Year	Asphalt shingle roof covering new additions Costs to replace
Roof Covering (Green)	sf									
Roof Covering	0 sf									
Skylights	ea									
Penthouses	ea									

Costs projected at 3%

Replacement Items	Year 1 2013	Year 2 2014	Year 3 2015	Year 4 2016	Year 5 2017	Year 6 2018	Year 7 2019	Year 8 2020	Year 9 2021	Year 10 2022	Year 11 2023	Year 12 2024	Year 13 2025	Year 14 2026	Year 15 2027	Year 16 2028	Year 17 2029	Year 18 2030	Year 19 2031	Year 20 2032
BUILDING EXTERIORS (cont.)																				
Windows Dwelling units	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$69,771	\$71,864	\$74,020	\$0	\$0	\$0
Windows Dwelling units (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Windows Commom Bldg	\$5,143	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Windows Commom Bldg (Green)	\$5,528	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Windows Dwelling units	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Windows Dwelling units (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	\$4,387	\$4,519	\$4,654	\$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	\$27,195	\$28,011	\$28,851	\$29,717	\$30,608	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Roof Covering (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Roof Covering	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$10,663	\$0	\$0
Roof Covering (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Roof Covering	\$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	
LOBBIES / MAIL FACILITIES												
Lobby Walls & Ceilings	sf										N/A	
Lobby Walls & Ceilings (Green)	sf											
Lobby Floors	sf											
Lobby Floors (Green)	sf											
COMMUNITY ROOM / OFFICE												
Walls and Ceilings	2,078 sf	0.62	\$1,289		10	10	1	11	in	1	Year	Painted surfaces Repainting cycles
Walls and Ceilings (Green)	2,078 sf	0.62	\$1,288	\$0	10	10	1	11	in	1	Year	Specify low-VOC paint
Floor Covering	557 sf	3.00	\$1,672		10	10	1	11	in	1	Year	Carpet Replacement cycles
Floor Covering (Green)	557 sf	5.38	\$2,994	\$1,321	10	25	1		in	1	Year	G2 Upgrade flooring to natural linoleum Costs to upgrade
Community Kitchen Cabinets	1 ea	1125.00	\$1,125		20	20	1		in	1	Year	Laminated particleboard, plastic laminate Costs to replace
Community Kitchen Cabinets (Green)	1 ea	1209.38	\$1,209	\$84	20	30	1		in	1	Year	G3 Upgrade cabinets with FSC all wood cabinets Costs to upgrade
Miscellaneous	ea											
Miscellaneous (Green)	ea											
PUBLIC LAUNDRY / RESTROOMS												
Walls and Ceilings	1,001 sf	0.62	\$621		10	10	1	11	in	1	Year	Painted surfaces Costs to repaint
Walls and Ceilings (Green)	1,001 sf	0.62	\$621	\$0	10	10	1	11	in	1	Year	Specify low-VOC content paint
Floor Covering	214 sf	5.00	\$1,069		10	15	5	20	in	1	Year	Resilient vinyl flooring Costs to replace
Floor Covering (Green)	214 sf	5.38	\$1,150	\$81	10	25	5		in	1	Year	G2 Upgrade flooring to natural linoleum Costs to upgrade
Laundry Equipment	1 ls				10	10						4 top-load washers/4 stacked electric dryers Leased
Laundry Equipment (Green)	1 ls				10	10						E6 Upgrade washers to front-load Energy Star rated Leased
Restroom Fixtures / Accessories	2 ea				10	35						1.6-GPF toilets, wall hung sinks Operating
Common Area Lighting	1 ls				varies	10						Fifteen recessed, two 4' fluorescent fixtures Operating
Common Area Lighting (Green)	1 ea	448.00	\$448	\$448	41	10	1	11	in	1	Year	E5 Upgrade incandescent to LED/ repl tube FLs w/ LED repl tubes. Costs to upgrade

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 ROOM / OFFICE																				
Walls and Ceilings	\$1,289	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,732	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Walls and Ceilings (Green)	\$1,288	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,731	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Floor Covering	\$1,672	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,248	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Floor Covering (Green)	\$2,994	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Community Kitchen Cabinets	\$1,125	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Community Kitchen Cabinets (Green)	\$1,209	\$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
PUBLIC LAUNDRY / RESTROOMS																				
Walls and Ceilings	\$621	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$834	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Walls and Ceilings (Green)	\$621	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$834	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Floor Covering	\$0	\$0	\$0	\$0	\$1,203	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,875
Floor Covering (Green)	\$0	\$0	\$0	\$0	\$1,295	\$0	\$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
Common Area Lighting	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Common Area Lighting (Green)	\$448	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$602	\$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	_____ ea	_____	_____	_____	_____	_____	_____	_____	_____	_____	Hollow-core passage doors
Unit Interior Doors	_____ 120 ea	_____ 110.00	_____ \$13,200	_____	_____ varies	_____ 30	_____ 1	_____	_____ over	_____ 30 Years	Annual allowances to replace as needed
Unit Closet Doors	_____ 386 ea	_____ 326.00	_____ \$125,836	_____	_____ varies	_____ 30	_____ 1	_____	_____ over	_____ 30 Years	Mix of by-pass and bi-fold Annual allowances to replace as needed
Unit Walls and Ceilings	_____ 101,274 sf	_____	_____	_____	_____ varies	_____ 5	_____	_____	_____	_____	Painted surfaces Operating
Unit Walls and Ceilings (Green)	_____ 101,274 sf	_____	_____	_____	_____ varies	_____ 5	_____	_____	_____	_____	Painted surfaces Specify low-VOC content paint
Living Area Floors	_____ 18,094 sf	_____ 3.00	_____ \$54,283	_____	_____ varies	_____ 6	_____ 1	_____ 7 13 19	_____ over	_____ 6 Years	Carpeted areas Replacement cycles
Living Area Floors (Green)	_____ 18,094 sf	_____ 9.31	_____ \$168,455	_____ \$114,172	_____ varies	_____ 40	_____ 1	_____	_____ over	_____ 6 Years	G4 Upgrade to FSC long life wood flooring Costs to upgrade
Living Area Floors	_____ sf	_____	_____	_____	_____	_____	_____	_____	_____	_____	Wood floor maintenance costs
Living Area Floors (Green)	_____ 18,094 sf	_____ 2.71	_____ \$49,035	_____	_____ 0	_____ 10	_____ 11	_____	_____ over	_____ 6 Years	G4 Costs to refinish wood flooring
BATHROOMS											
Bathroom Floors	_____ 2,007 ttl _____ 1,806 sf	_____ 9.19	_____ \$16,600	_____	_____ varies	_____ 40	_____ 1	_____	_____ over	_____ 6 Years	Resilient vinyl being replaced with ceramic tile Costs to complete upgrade
Bathroom Floors (Green)	_____ sf	_____	_____	_____	_____	_____	_____	_____	_____	_____	
Bathtub and Shower	_____ 60 ttl _____ 57 ea	_____ 375.00	_____ \$21,375	_____	_____ 41 _____ 41	_____ 40	_____ 1	_____	_____ over	_____ 30 Years	Steel tubs w/CT surrounds, low-flow shower Annual allowances to reglaz/repair as needed
Bathtub and Shower (Green)	_____ ea	_____	_____	_____	_____	_____	_____	_____	_____	_____	
Bathroom Vanity	_____ 57 ea	_____ 410.00	_____ \$23,370	_____	_____ 10	_____ 20	_____ 10	_____	_____ over	_____ 3 Years	LPB vanities w/one-piece tops Costs to replace
Bathroom Vanity (Green)	_____ 57 ea	_____ 440.75	_____ \$25,123	_____ \$1,753	_____ 10	_____ 30	_____ 10	_____	_____ over	_____ 3 Years	G5 Upgrade to FSC all wood vanities Costs to upgrade
Bathroom Sinks	_____ 3 ea	_____ 420.00	_____ \$1,260	_____	_____ 10	_____ 20	_____ 10	_____	_____ in	_____ 1 Year	Accessible units Costs to replace
Bathroom Toilets	_____ 60 ea	_____	_____	_____	_____ 10	_____ 35	_____	_____	_____	_____	1.6-GPF models Operating
Bathroom Toilets (Green)	_____ ea	_____	_____	_____	_____	_____	_____	_____	_____	_____	
Ventilation & Exhaust	_____ 60 ea	_____ 125.00	_____ \$7,500	_____	_____ 10	_____ 20	_____ 10	_____	_____ over	_____ 3 Years	Ceiling, manually operated, exhaust fans Costs to replace
Ventilation & Exhaust (Green)	_____ 60 ea	_____ 199.00	_____ \$11,940	_____ \$4,440	_____ 10	_____ 20	_____	_____	_____ over	_____ 3 Years	G6 Upgrade with humidistat controlled fans Neg NPV, option not financially recommended
Accessories	_____ 60 ea	_____	_____	_____	_____ varies	_____ 10	_____	_____	_____	_____	Standard residential grade accessories 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
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	\$440	\$453	\$467	\$481	\$495	\$510	\$525	\$541	\$557	\$574	\$591	\$609	\$627	\$646	\$666	\$686	\$706	\$727	\$749	\$772
Unit Closet Doors	\$4,195	\$4,320	\$4,450	\$4,583	\$4,721	\$4,863	\$5,008	\$5,159	\$5,314	\$5,473	\$5,637	\$5,806	\$5,980	\$6,160	\$6,345	\$6,535	\$6,731	\$6,933	\$7,141	\$7,355
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	\$9,047	\$9,319	\$9,598	\$9,886	\$10,183	\$10,488	\$10,803	\$11,127	\$11,461	\$11,804	\$12,159	\$12,523	\$12,899	\$13,286	\$13,685	\$14,095	\$14,518	\$14,954	\$15,402	\$15,864
Living Area Floors (Green)	\$28,076	\$28,918	\$29,786	\$30,679	\$31,600	\$32,548	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Living Area Floors	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Living Area Floors (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$10,983	\$11,313	\$11,652	\$12,002	\$12,362	\$12,732	\$0	\$0	\$0	\$0
BATHROOMS																				
Bathroom Floors	\$2,767	\$2,850	\$2,935	\$3,023	\$3,114	\$3,207	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bathroom Floors (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bathtub and Shower	\$713	\$734	\$756	\$779	\$802	\$826	\$851	\$876	\$903	\$930	\$958	\$986	\$1,016	\$1,046	\$1,078	\$1,110	\$1,143	\$1,178	\$1,213	\$1,249
Bathtub and Shower (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bathroom Vanity	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$10,164	\$10,469	\$10,783	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bathroom Vanity (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$10,926	\$11,254	\$11,592	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bathroom Sinks	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,644	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bathroom Toilets	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bathroom Toilets (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Ventilation & Exhaust	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,262	\$3,360	\$3,461	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Ventilation & Exhaust (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Accessories	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Projected Capital Needs Over Twenty Years

DWELLING UNITS--continued

Replacement Items	Quantity	Cost / Unit in 2013 \$	Total Cost in 2013 \$	Total Premium	AGE (Years)	EUL (Years)	Replacement Schedule (Year of action AND duration of project)				Notes
KITCHENS											
Kitchen Floors	3,593 sf	5.00	\$17,964		varies	15	1	16	over 15 Years	Resilient vinyl flooring Replacement cycles	
Kitchen Floors (Green)	3,593 sf	5.38	\$19,312	\$1,349	varies	25	1		in 1 Year	Upgrade with natural linoleum Costs to upgrade	
Kitchen Cabinets	30 ea	2025.00	\$60,750		20	20	1		over 3 Years	Wood fronted/LPB casework Costs to replace	
Kitchen Cabinets (Green)	30 ea	2176.88	\$65,306	\$4,556	20	30	1		over 3 Years	Upgrade to FSC cert. all wood cabinets Costs to upgrade	
Kitchen Cabinets	30 ea	2025.00	\$60,750		41	20	1		over 3 Years	Wood fronted/plywood casework Costs to replace	
Kitchen Cabinets (Green)	30 ea	2176.88	\$65,306	\$4,556	41	30	1		over 3 Years	Upgrade to FSC cert. all wood cabinets Costs to upgrade	
Kitchen Countertops	60 ea	356.00	\$21,360		10	10	1	11	over 3 Years	Plastic laminate on LPB base Replacenment cycles	
Kitchen Countertops (Green)	60 ea	800.00	\$48,000	\$26,640	10	35			over 3 Years	Upgrade to long life solid surface contertops Neg NPV, option not financially recommended	
Range	60 ea	500.00	\$30,000		varies	20	1		over 20 Years	Twenty inch electric ranges Annual allowances to replace as needed	
Range (Green)	ea										
Range	ea										
Range (Green)	ea										
Refrigerator	60 ea	670.00	\$40,200		varies	15	1	16	over 15 Years	Frost free non-Energy Star models Costs to replace as needed	
Refrigerator (Green)	60 ea	720.25	\$43,215	\$3,015	varies	15				Upgrade with Energy Star rated refrigerators No analysis due to lack of unit utility data	
Refrigerator	ea										
Refrigerator (Green)	ea										
Dishwasher	ea										
Dishwasher (Green)	ea										
Kitchen Exhaust	60 ea	125.00	\$7,500		varies	20	1		over 20 Years	Ceiling exhaust fans Costs to replace as needed	
Disposals	60 ea	200.00	\$12,000		varies	10	1	11	over 10 Years	In-sink, fractional horsepower models Costs to replace as needed	
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	\$1,198	\$1,234	\$1,271	\$1,309	\$1,348	\$1,388	\$1,430	\$1,473	\$1,517	\$1,563	\$1,609	\$1,658	\$1,707	\$1,759	\$1,811	\$1,866	\$1,922	\$1,979	\$2,039	\$2,100
Kitchen Floors (Green)	\$19,312	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Kitchen Cabinets	\$20,250	\$20,858	\$21,483	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Kitchen Cabinets (Green)	\$21,769	\$22,422	\$23,094	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Kitchen Cabinets	\$20,250	\$20,858	\$21,483	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Kitchen Cabinets (Green)	\$21,769	\$22,422	\$23,094	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Kitchen Countertops	\$7,120	\$7,334	\$7,554	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$9,569	\$9,856	\$10,151	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Kitchen Countertops (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Range	\$1,500	\$1,545	\$1,591	\$1,639	\$1,688	\$1,739	\$1,791	\$1,845	\$1,900	\$1,957	\$2,016	\$2,076	\$2,139	\$2,203	\$2,269	\$2,337	\$2,407	\$2,479	\$2,554	\$2,630
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	\$2,680	\$2,760	\$2,843	\$2,929	\$3,016	\$3,107	\$3,200	\$3,296	\$3,395	\$3,497	\$3,602	\$3,710	\$3,821	\$3,936	\$4,054	\$4,175	\$4,301	\$4,430	\$4,563	\$4,699
Refrigerator (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
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
Kitchen Exhaust	\$375	\$386	\$398	\$410	\$422	\$435	\$448	\$461	\$475	\$489	\$504	\$519	\$535	\$551	\$567	\$584	\$602	\$620	\$638	\$658
Disposals	\$1,200	\$1,236	\$1,273	\$1,311	\$1,351	\$1,391	\$1,433	\$1,476	\$1,520	\$1,566	\$1,613	\$1,661	\$1,711	\$1,762	\$1,815	\$1,870	\$1,926	\$1,983	\$2,043	\$2,104
Miscellaneous	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Miscellaneous (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Projected Capital Needs Over Twenty Years

DWELLING UNITS--*continued*

Replacement Items	Quantity	Cost / Unit in 2013 \$	Total Cost in 2013 \$	Total Premium	AGE (Years)	EUL (Years)	Replacement Schedule (Year of action AND duration of project)			Notes
IN-UNIT MECHANICAL										
Unit Warm Air Furnaces	ea									
Unit Warm Air Furnaces (Green)	ea									
Unit Thermostats	60 ea	105.00	\$6,300		5	20	15	over 3	Years	Manually controlled thermostats Costs to replace
Unit Thermostats (Green)	60 ea	202.00	\$12,120	\$5,820	5	20				Upgrade with programable models <i>No analysis due to lack of unit utility data</i>
Unit Air Conditioning	If									
Unit Air Conditioning (Green)	If									
Unit Radiation	≈1200 If 1 ls	19200.00	\$19,200		varies	30	1	over 10	Years	Electric baseboard radiation strips Allowances to replace as needed
Unit Radiation (Green)	60 ea	2650.00	\$159,000	\$139,800	ADD	15				Upgrade with Energy Star rated heat pumps <i>No analysis due to lack of unit utility data</i>
Unit Domestic Hot Water	60 ea	850.00	\$51,000		varies	10	1 11	over 10	Years	40-gallon electric storage tank water heaters Allowances to replace as needed
Unit Domestic Hot Water (Green)	60 ea	913.75	\$54,825	\$3,825	varies	10				Upgrade to Energy Star rated models <i>No analysis due to lack of unit utility data</i>
Miscellaneous	ea									
Miscellaneous (Green)	ea									
IN-UNIT ELECTRICAL										
Unit Electrical Panel	60 ea	1225.00	\$73,500		41	50	9	over 15	Years	Circuit breaker panels Allowances for future replacements
Unit Wiring	ea									
Unit Security Call System	ea									
Unit Smoke/Fire Detection	120 ea	190.00	\$22,800		varies	10	1 11	over 10	Years	Detectors in living & bedroom areas Allowances to replace as needed
Unit Lighting	420 ea	127.00	\$53,340		varies	15	1 16	over 15	Years	Ceiling, wall, & pendent fixtures Allowances to replace as needed
Unit Lighting (Green)	420 If	136.53	\$57,341	\$4,001	varies	15				Upgrade to dedicated CFL fixtures <i>No analysis due to lack of unit utility data</i>
Unit Lighting	ea									
Unit Lighting (Green)	ea									
Miscellaneous	ea									

Costs projected at 3%

Replacement Items	Year 1 2013	Year 2 2014	Year 3 2015	Year 4 2016	Year 5 2017	Year 6 2018	Year 7 2019	Year 8 2020	Year 9 2021	Year 10 2022	Year 11 2023	Year 12 2024	Year 13 2025	Year 14 2026	Year 15 2027	Year 16 2028	Year 17 2029	Year 18 2030	Year 19 2031	Year 20 2032
IN-UNIT MECHANICAL																				
Unit Warm Air Furnaces	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Warm Air Furnaces (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Thermostats	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,176	\$3,272	\$3,370	\$0	\$0	\$0
Unit Thermostats (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Air Conditioning	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Air Conditioning (Green)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unit Radiation	\$1,920	\$1,978	\$2,037	\$2,098	\$2,161	\$2,226	\$2,293	\$2,361	\$2,432	\$2,505	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
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	\$5,100	\$5,253	\$5,411	\$5,573	\$5,740	\$5,912	\$6,090	\$6,272	\$6,461	\$6,654	\$6,854	\$7,060	\$7,271	\$7,490	\$7,714	\$7,946	\$8,184	\$8,430	\$8,682	\$8,943
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	\$6,207	\$6,393	\$6,585	\$6,783	\$6,986	\$7,196	\$7,412	\$7,634	\$7,863	\$8,099	\$8,342	\$8,592
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	\$2,280	\$2,348	\$2,419	\$2,491	\$2,566	\$2,643	\$2,722	\$2,804	\$2,888	\$2,975	\$3,064	\$3,156	\$3,251	\$3,348	\$3,449	\$3,552	\$3,659	\$3,768	\$3,882	\$3,998
Unit Lighting	\$3,556	\$3,663	\$3,773	\$3,886	\$4,002	\$4,122	\$4,246	\$4,373	\$4,505	\$4,640	\$4,779	\$4,922	\$5,070	\$5,222	\$5,379	\$5,540	\$5,706	\$5,878	\$6,054	\$6,235
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

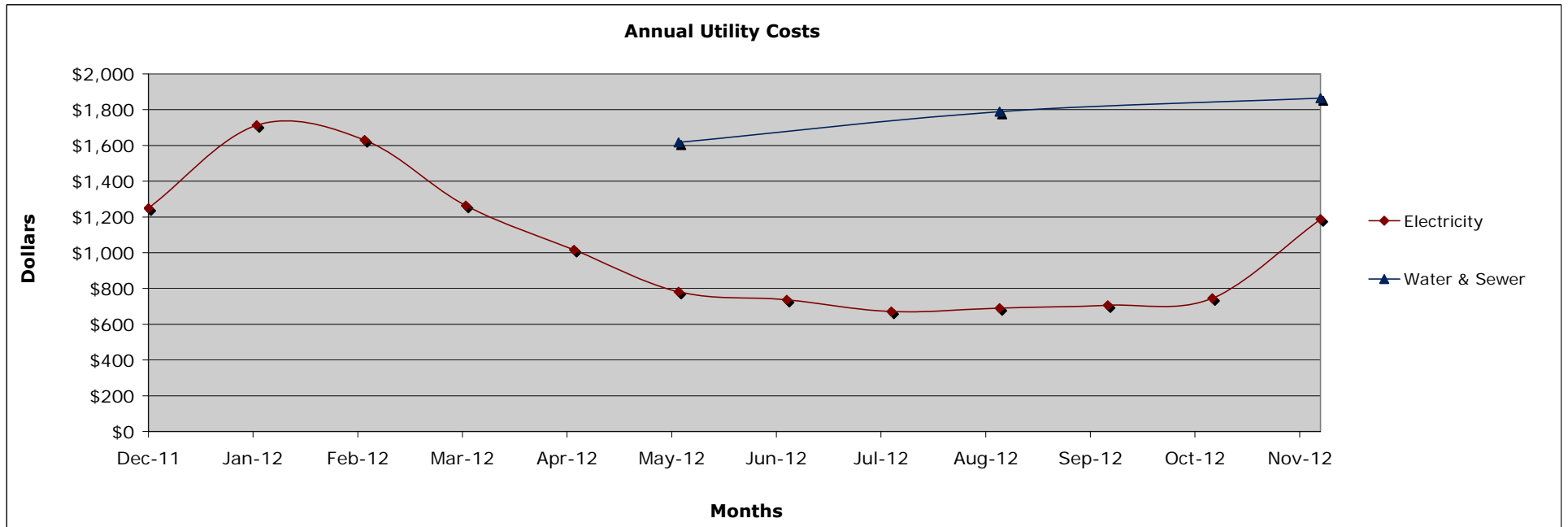
Energy Analysis

Utility Usage

Hillside Terrace

The energy analysis portion of this GCNA examines utility bills for the most recent 12 months to summarize at electricity, natural gas, and water/sewer use. The following table and charts show the utility information by utility source, and by mon

	ELECTRICITY		NATURAL GAS		WATER / SEWER			OIL		TOTAL
	kWh	\$	Therms	\$	Gallons	Water \$	Sewer \$	Total \$	Gallons	\$
Nov-12	5,835	\$1,188			409,183	\$1,865		\$1,865		\$3,053
Oct-12	3,669	\$746								\$746
Sep-12	3,446	\$707								\$707
Aug-12	3,372	\$690			391,230	\$1,788		\$1,788		\$2,478
Jul-12	3,429	\$671								\$671
Jun-12	3,672	\$736								\$736
May-12	3,972	\$782			350,835	\$1,617		\$1,617		\$2,399
Apr-12	5,219	\$1,016								\$1,016
Mar-12	6,622	\$1,263								\$1,263
Feb-12	8,565	\$1,630								\$1,630
Jan-12	8,946	\$1,713								\$1,713
Dec-11	6,532	\$1,248								\$1,248
Total	63,279	\$12,390			1,151,249	\$5,270		\$5,270		\$17,660
<i>Unit Cost</i>		<i>\$0.196</i>						<i>\$0.00458</i>		

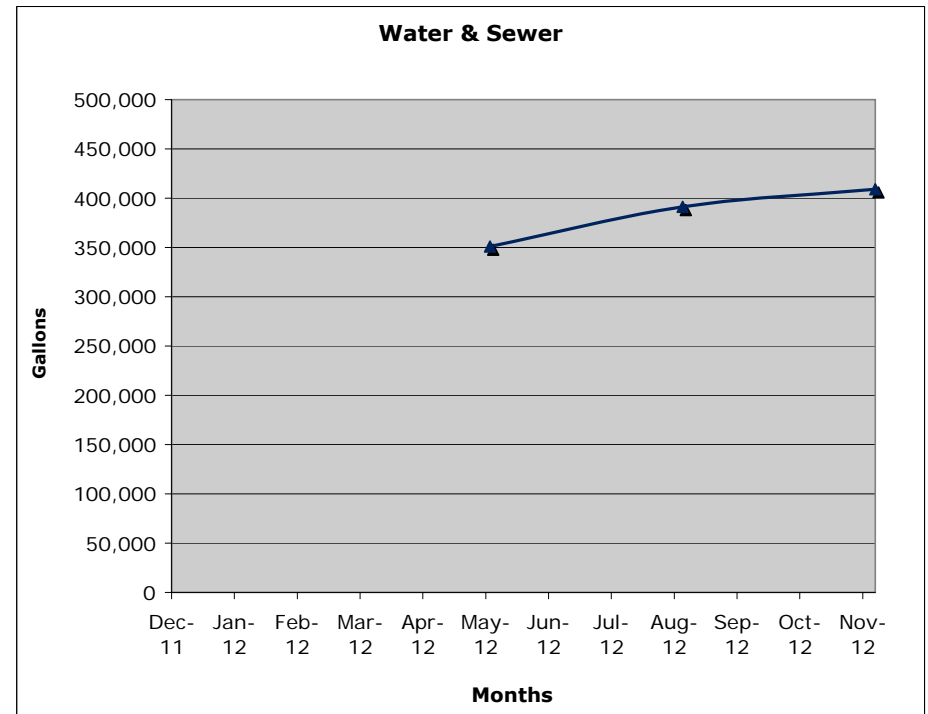
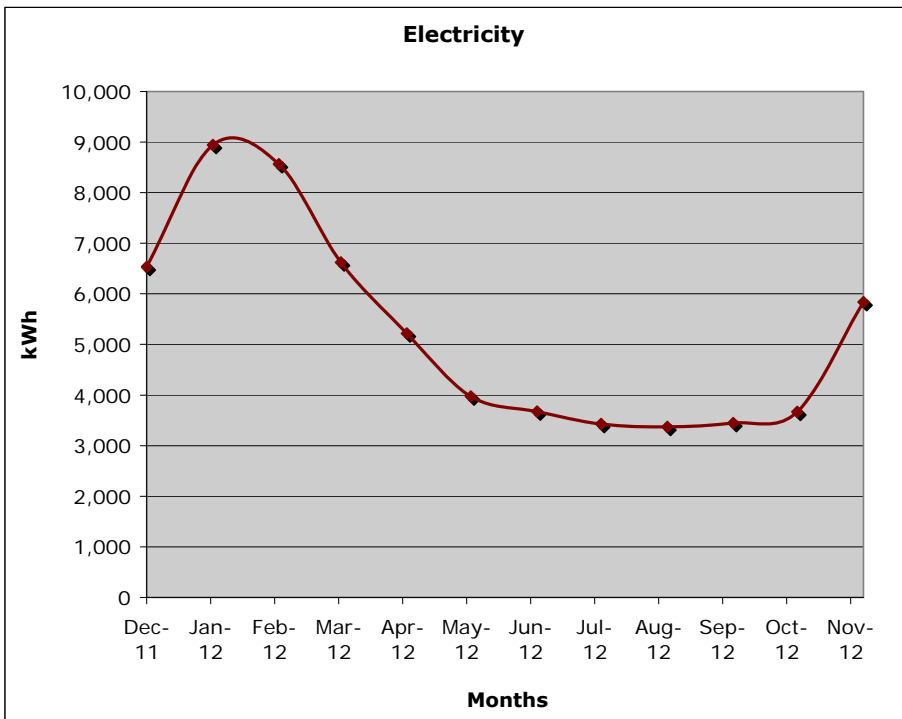


Energy Analysis

Utility Usage, By Type

Hillside Terrace

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



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): **Elderly**
 Resident Population Persons: **120**

Space Types

Units, Common Areas Square Footage: **31,558** Conditioned: **Yes**
 Basement Square Footage: **N/A** Conditioned:

Utility Metering

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

Infiltration

Infiltration Condition Tight, Leaky: **Average**
 Infiltration Rate ACH: **1**

Architectural

Wall Insulation Type: **None** R-Value: **R-19**
 Roof Insulation Type: **Cellulose** R-Value: **R-38**
 Exterior Doors 1 Type: **Flush Metal** U-Factor: **< U-.60**
 Exterior Doors 2 Type: **Metal/Glass** U-Factor: **< U-.60**
 Windows 2 Type: **Wood** U-Factor: **0.80**

Heating and Cooling

Temperature Control:

Occupied Heating Temp	Degrees F:	≈72
Occupied Cooling Temp	Degrees F:	N/A

Boilers / DHW Generation:

Electric Baseboard	Type:	Electric	Capacity:	Efficiency:	96%
Domestic Hot Water 1	Type:	Electric	Capacity:	Efficiency:	96%

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

Water & Sewer

Domestic Hot Water:

DHW Daily Usage	Gallons/Resident:	39
DHW Delivery Temp	Degrees F:	120

Domestic Cold Water:

Showerheads	Gallons / Minute:	<2.0
Toilets	Gallons / Flush:	1.6
Irrigation	Gallons / Year:	None

Lighting Loads

Common Kitchen	Type:	Fluorescent	Wattage:	60	Hours per Day:	1
Exit Lighting	Type:	Fluorescent	Wattage:	18	Hours per Day:	24
Community / Office	Type:	Fluorescent	Wattage:	26-50	Hours per Day:	4-8
Exterior	Type:	Metal Halide	Wattage:	250	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:	944 kWh
Laundry	Energy Star (Y/N):	No	Usage per Year:	450 kWh

Simple Payback Analysis

EWCM #1 Exterior Site Lighting

Replacement Costs

A. Total cost to convert HID fixtures to LED fixtures:

\$82,883.00

Utility Cost

Electricity: \$0.196
Natural Gas: \$0.00

Existing Types / Usage

Description	Wattage per Fixture	Number of Fixtures	Lighting Hours/Day	Usage Days/Year	Usage kWh/Year	Usage \$/Year
Type 1: HID 150-W Goosenecks	250	30	12	365	32,850	\$6,438.60
Type 2:					0	\$0.00
Type 3:					0	\$0.00
Type 4:					0	\$0.00
Type 5:					0	\$0.00
Total:					32,850	\$6,438.60

Proposed Green Types / Usage

Description	Wattage per Fixture	Number of Fixtures	Lighting Hours/Day	Usage Days/Year	Usage kWh/Year	Usage \$/Year
Type 1: LED 80-W Goosenecks	50	30	12	365	6,570	\$1,287.72
Type 2:					0	\$0.00
Type 3:					0	\$0.00
Type 4:					0	\$0.00
Type 5:					0	\$0.00
Total:					6,570	\$1,287.72

Annual Electric Savings

89,667,360 BTUs
26,280.00 kWh
Savings = 26,280.00 x \$0.20 = \$5,150.88/yr

Annual Natural Gas Savings¹

0 BTUs
0.00 therms
Savings = 0.00 x \$0.00 = \$0.00/yr

Annual Net Cost Savings

\$5,150.88 + \$0.00 = \$5,150.88

5. Simple Payback

\$82,883.00 / \$5,150.88 = 16.09 yrs

Simple Payback Analysis

EWCM #2 Upgrade Domestic Hot Water Boilers

Replace existing electric 40-gallon standard models with high efficiency electric 50-gallon heat pump models

Replacement Costs		Type	Cost
A. Proposed Conventional:		Existing 40-gall electric models	\$1,700.00
B. Proposed Green:		50-gallon heat pump models	\$1,828.00
C. Incremental Cost Between Proposed Conventional and Proposed Green:			\$128.00

Boiler Efficiencies		
A. Existing Efficiency:		96%
B. Conventional Efficiency:		96%
C. Green Efficiency:		99%

Annual Utility Cost		Existing	Conventional	Green
		56,575,831 btus	56,575,831 btus	28,290,045 btus
		565.76 kWh	565.76 kWh	282.90 kWh
Utility Cost		\$0.20 /kWh	\$0.20 /kWh	\$0.20 /kWh
Heating Cost		\$110.89	\$110.89	\$55.45

Annual Savings: Existing to Conventional				
Savings =	\$110.89	-	\$110.89	= \$0.00 /yr

Annual Savings: Conventional to Green				
Savings =	\$110.89	-	\$55.45	= \$55.44 /yr

Annual Savings: Existing to Green				
Savings =	\$0.00	+	\$55.44	= \$55.44 /yr

Simple Payback: Conventional				
	\$1,700.00	/	\$0.00	= #DIV/0! yrs
Simple Payback: Green				
	\$1,828.00	/	\$55.44	= 33.0 yrs
Incremental Payback: Conventional to Green				
	\$128.00	/	\$55.44	= 2.3 yrs

Simple Payback Analysis

EWCM

Replace Exterior Doors

Replacement Costs	Type	Cost
A. Proposed Conventional	Existing	\$1,035.00
B. Proposed Green	Insulated fiberglass with thermal break	\$1,113.00
C. Incremental Cost Between Proposed Conventional and Proposed Green		\$78.00

Existing Conditions	
General: Existing doors are flush metal models. Insulating quality of existing doors estimated at no greater than R-5.	
A. Door Type:	Metal/Glass
B. Total Area of Doors:	63 sf
C. Utility Cost:	\$0.20 kWh

R-Value	
A. Existing:	0.60
B. Conventional:	0.60
C. Green:	0.20

Annual Savings: Existing to Conventional	
	0 BTUs
	0.00 kWh
Savings =	\$0.20 x 0.00 = \$0.00 /yr

Annual Savings: Conventional to Green	
	2,200,740 BTUs
	645.00 kWh
Savings =	\$0.20 x 645.00 = \$126.42 /yr

Annual Savings: Existing to Green	
	64,500,000 BTUs
	645.00 kWh
Savings =	\$0.00 + \$126.42 = \$126.42 /yr

Simple Payback: Conventional	
\$1,035.00	/ \$0.00 = N/A yrs
Simple Payback: Green	
\$1,113.00	/ \$126.42 = 8.8 yrs
Incremental Payback: Conventional to Green	
\$78.00	/ \$126.42 = 0.6 yrs

Additional Notes:

Simple Payback Analysis

EWCM #4 Replace Common Area Windows

Replacement Costs	Type	Cost
A. Proposed Conventional:	Wood framed Dble glazed Operable	\$5,143.00
B. Proposed Green:	Fiberglass frame, Dble Glazed, low-E, argon	\$5,528.00
C. Incremental Cost Between Proposed Conventional and Proposed Green:		\$385.00

Existing Conditions	
General: Casement type wood framed with early double glazing and no thermal break	
A. Window Type:	Wood operable
B. Total Area of Windows:	165 sf
C. Utility Cost:	Electricity \$0.20 /kWh

U-Factor ¹	
A. Existing:	0.82
B. Conventional:	0.82
C. Green:	0.36

Annual Savings: Existing to Conventional	
	0 BTUs
	0.00 kWh
Savings =	\$0.20 x 0.00 = \$0.00 /yr

Annual Savings: Conventional to Green	
	278,800,000 BTUs
	2788.00 kWh
Savings =	\$0.20 x 2788.00 = \$546.45 /yr

Annual Savings: Existing to Green	
	278,800,000 BTUs
	2788.00 kWh
Savings =	\$0.00 + \$546.45 = \$546.45 /yr

Simple Payback: Conventional				
\$5,143.00	/	\$0.00	=	N/A yrs
Simple Payback: Green				
\$5,528.00	/	\$546.45	=	10.1 yrs
Incremental Payback: Conventional to Green				
\$385.00	/	\$546.45	=	0.7 yrs

Additional Notes:
1 The U-factors were derived from the 2001 ASHRAE Fundamentals Handbook, based on the specifications in the plan

Simple Payback Analysis

EWCM #5 Community Room Lighting

Replacement Costs

A. Total cost to convert 60-W Incandescent & office FL tube fixtures to LED fixtures:

\$448.00

Utility Cost

Electricity: \$0.196
Natural Gas: \$0.00

Existing Types / Usage

	Description	Wattage per Fixture	Number of Fixtures	Lighting Hours/Day	Usage Days/Year	Usage kWh/Year	Usage \$/Year
Type 1:	Recessed Can Fixtures	60	12	8	365	2,102	\$412.07
Type 2:	Fluorescent 4' tubes	170	2	8	365	993	\$194.59
Type 3:						0	\$0.00
Type 4:						0	\$0.00
Type 5:						0	\$0.00
Total:					3,095	\$606.66	

Proposed Green Types / Usage

	Description	Wattage per Fixture	Number of Fixtures	Lighting Hours/Day	Usage Days/Year	Usage kWh/Year	Usage \$/Year
Type 1:	LED PAR 38 Lamps	20	12	8	365	701	\$137.36
Type 2:	4' LED replacement tubes	48	2	8	365	280	\$54.94
Type 3:						0	\$0.00
Type 4:						0	\$0.00
Type 5:						0	\$0.00
Total:					981	\$192.30	

Annual Electric Savings

7,213,241 BTUs
2,114.08 kWh
Savings = 2,114.08 x \$0.20 = \$414.36/yr

Annual Natural Gas Savings¹

0 BTUs
0.00 therms
Savings = 0.00 x \$0.00 = \$0.00/yr

Annual Net Cost Savings

\$414.36 + \$0.00 = \$414.36

5. Simple Payback

\$448.00 / \$414.36 = 1.08 yrs

Simple Payback Analysis

EWCM #6 Replace Washing Machines - Common Area

1. Replacement Costs

A. Proposed Conventional	\$0.00
B. Proposed Green	\$0.00
C. Incremental Cost Between Proposed Conventional and Proposed Green	\$0.00

2. Existing Conditions

A. Total number of inefficient washing machines	4
B. Estimated number of total annual cycles/washer ¹	3120

3. Annual Energy and Water Use Existing Models

Annual energy use ²		Utility cost		Total annual cost
Gas (therms):		x	\$0.00	= \$0.00
Electric (kWh):	480	x	\$0.20	= \$94.08
Water/Sewer (gal):	18,564.00	x	\$0.00458	= \$85.02
				3
				\$179.10

4. Annual Energy and Water Use Proposed Conventional Models

Annual energy use ²		Utility cost		Total annual cost
Gas (therms):		x	\$0.00	= \$0.00
Electric (kWh):	480.00	x	\$0.20	= \$94.08
Water/Sewer (gal):	18,564.00	x	\$0.0046	= \$85.02
				4
				\$179.10

5. Annual Energy and Water Use Proposed Green Models

Annual energy use ²		Utility cost		Total annual cost
Gas (therms):		x	\$0.00	= \$0.00
Electric (kWh):	193.00	x	\$0.20	= \$37.83
Water/Sewer (gal):	9,828.00	x	\$0.0046	= \$45.01
				5
				\$82.84

6. Annual Savings: Existing to Proposed Conventional

3	4	6
\$179.10	\$179.10	\$0.00
	-	/yr

7. Annual Savings: Proposed Conventional to Proposed Green

4	5	7
\$179.10	\$82.84	\$96.26
	-	/yr

8. Annual Natural Gas Savings²

Cost/therm	x	therms	=	\$0.00	/yr
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9. Simple Payback: Existing to Proposed Green

\$0.00	/	(\$0.00 + \$96.26)	=	N/A	yrs
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Incremental Payback: Proposed Conventional to Proposed Green

\$0.00	/	\$96.26	=	N/A	yrs
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Additional Notes/Comments:

¹ This worksheet assumes that on average, residents use the washing machines 1-2 times per week (≈2,000 loads per year, or 1,000 loads per machine)

Costs are not carried for washing machine replacement, since the laundry equipment is maintained under the terms of a leasing agreement; the efficacy of this measure depends on the availability of Energy Star rated equipment from the lessor.

Life Cycle Cost Analysis

Energy and Water Conservation Measure (EWCM): # 1

Exterior Site Lighting

Gooseneck 250-W HID fixtures

vs.

Gooseneck 50-W LED fixtures

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term 20

Conventional Product:

Gooseneck 250-W HID fixtures

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	HID fixtures	30	ea	\$2,570.00	\$77,100	20	1	1.0	\$77,100	\$77,100
Maintain	Bulb/Ballast Repl	30	ea	\$125.00	\$3,750	4	4	4.3	\$21,387	\$10,393
Utility Cost	Electricity	32,850	kWh	\$0.196	\$6,439	1	1	20.0	\$173,008	\$85,183
Total Life Cycle Cost									\$271,495	\$172,676

Energy Savings

Net Life Cycle Cost after Energy Savings									\$271,495	\$172,676

Green Product:

Gooseneck 50-W LED fixtures

Cost over Life Cycle (EUL)

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

Life Cycle Costs

Install/Replace	LED fixtures	30	ea	\$2,762.75	\$82,883	20	1	1.0	\$82,883	\$82,883
Maintain	N/A									
Utility Cost	Electricity	6,570	kWh	\$0.196	\$1,288	1	1	20.0	\$34,602	\$17,037
Total Life Cycle Cost									\$117,484	\$99,919

Energy Savings

Net Life Cycle Cost after Energy Savings									\$117,484	\$99,919

ECONOMIC RETURN ANALYSIS

Green NPV	\$72,757
Green IRR	849.4%

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Green Product: Gooseneck 50-W LED fixtures

Override with Green Product? No

Final Product Choice

Green Product: Gooseneck 50-W LED fixtures

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

Exterior Site Lighting

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product

16

Replacement Year

17

Final Product Choice

Green Product:

Gooseneck 50-W LED fixtures

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	LED fixtures	30	ea	\$2,762.75	\$82,883	20	1	1.0	\$82,883	\$82,883		
Maintain	N/A											
Utility Cost	Electricity	6,570	kWh	\$0.20	\$1,288	1	1	20.0	\$34,602	\$17,037		
Total Life Cycle Cost										\$117,484	\$99,919	

Energy Savings

Net Life Cycle Cost after Energy Savings										\$117,484	\$99,919	

Replacement at End of Remaining Useful Life				Year	17							
Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted		
Install/Replace	LED fixtures	30	ea	\$2,762.75	\$82,883	20	17	0.2	\$16,734	\$11,881		
Maintain	N/A											
Utility Cost	Electricity	6,570	kWh	\$0.20	\$1,288	1	17	4.0	\$8,645	\$2,250		

Expenses for Current Product Through Useful Life

Maintain	Bulb/Ballast Repl	30	ea	\$125.00	\$3,750	4	4	4.0	\$19,743	\$10,012		
Utility Cost	Electricity	32,850	kWh	\$0.196	\$6,439	1	1	16.0	\$129,782	\$73,932		
Total Life Cycle Cost										\$174,904	\$98,075	

Energy Savings

Net Life Cycle Cost after Energy Savings										\$174,904	\$98,075	

ECONOMIC RETURN ANALYSIS

Timing NPV	(\$1,844)
Timing IRR	7.66%

TIMING RECOMMENDATION

Replacement Year:	17
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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

Common Area Domestic Hot Water

Standard Grade Electric Storage Water Heaters

vs.

High Efficient Electric Heat Pump Storage Water Heaters

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term 10

Conventional Product:

Standard Grade Electric Storage Water Heaters

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	Electric Water Heaters	2	ea	\$850.00	\$1,700	10	1	1.0	\$1,700	\$1,700
Utility Cost	Electricity	566	kWh	\$0.196	\$111	1	1	10.0	\$1,271	\$904
Total Life Cycle Cost									\$2,971	\$2,604

Energy Savings

Net Life Cycle Cost after Energy Savings									\$2,971	\$2,604

Green Product:

High Efficient Electric Heat Pump Storage Water Heaters

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	Heat Pump Models	2	ea	\$913.75	\$1,828	10	1	1.0	\$1,828	\$1,828
Utility Cost	Electricity	283	kWh	\$0.196	\$55	1	1	10.0	\$636	\$452
Total Life Cycle Cost									\$2,463	\$2,280

Energy Savings

Net Life Cycle Cost after Energy Savings									\$2,463	\$2,280

ECONOMIC RETURN ANALYSIS

Green NPV	\$325
Green IRR	81.8%

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Green Product: High Efficient Electric Heat Pump Storage Water Heaters

Override with Green Product? No

Final Product Choice

Green Product: High Efficient Electric Heat Pump Storage Water Heaters

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.

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product
Replacement Year

4
5

Final Product Choice

Green Product: High Efficient Electric Heat Pump Storage Water Heaters

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	Heat Pump Models	2	ea	\$913.75	\$1,828	10	1	1.0	\$1,828	\$1,828
Utility Cost	Electricity	283	kWh	\$0.20	\$55	1	1	10.0	\$636	\$452
Total Life Cycle Cost									\$2,463	\$2,280

Energy Savings

Net Life Cycle Cost after Energy Savings									\$2,463	\$2,280

Replacement at End of Remaining Useful Life

Year

5

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	Heat Pump Models	2	ea	\$913.75	\$1,828	10	5	0.6	\$1,103	\$1,035
Utility Cost	Electricity	283	kWh	\$0.20	\$55	1	5	6.0	\$404	\$245

Expenses for Current Product Through Useful Life

Utility Cost	Electricity	566	kWh	\$0.196	\$111	1	1	4.0	\$464	\$414
Total Life Cycle Cost									\$1,971	\$1,694

Energy Savings

Net Life Cycle Cost after Energy Savings									\$1,971	\$1,694

ECONOMIC RETURN ANALYSIS

Timing NPV	(\$586)
Timing IRR	n/a

TIMING RECOMMENDATION

Replacement Year:	5
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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

Upgrade Common Area Exterior Entry Doors

Metal and Glass Doors \approx U-.60

vs.

Insulated Fiberglass and Glass Doors U-.20

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term 45

Conventional Product:

Metal and Glass Doors \approx U-.60

Cost over Life Cycle (EUL)

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

Life Cycle Costs

Install/Replace	Metal/Glass Doors	3	ea	\$345.00	\$1,035	35	1	1.3	\$1,233	\$1,140
Total Life Cycle Cost									\$1,233	\$1,140

Energy Savings

Net Life Cycle Cost after Energy Savings									\$1,233	\$1,140

Green Product:

Insulated Fiberglass and Glass Doors U-.20

Cost over Life Cycle (EUL)

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

Life Cycle Costs

Install/Replace	Fiberglass/Glass Doors	3	ea	\$370.88	\$1,113	45	1	1.0	\$1,113	\$1,113
Total Life Cycle Cost									\$1,113	\$1,113

Energy Savings

Utility Cost	Electricity	645	kWh	\$0.196	(\$126)	1	1	45.0	(\$11,722)	(\$2,407)
Net Life Cycle Cost after Energy Savings									(\$10,609)	(\$1,295)

ECONOMIC RETURN ANALYSIS

Green NPV	\$2,435
Green IRR	n/a

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Green Product: Insulated Fiberglass and Glass Doors U-.20

Override with Green Product? No

Final Product Choice

Green Product: Insulated Fiberglass and Glass Doors U-.20

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

Upgrade Common Area Exterior Entry Doors

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product

Final Product Choice

Green Product: Insulated Fiberglass and Glass Doors U-.20

Immediate Replacement

									Cost over Life Cycle (EUL)	
Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	Fiberglass/Glass Doors	3	ea	\$370.88	\$1,113	45	1	1.0	\$1,113	\$1,113
Total Life Cycle Cost									\$1,113	\$1,113
Energy Savings										
Utility Cost	Electricity	645	kWh	\$0.20	(\$126)	1	1	45.0	(\$11,722)	(\$2,407)
Net Life Cycle Cost after Energy Savings									(\$10,609)	(\$1,295)

ECONOMIC RETURN ANALYSIS

Timing NPV	n/a
Timing IRR	n/a

TIMING RECOMMENDATION

Replacement Year: 1

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): # 4

Community Building Windows

Wood Framed Dble Glazed Casement Types

vs.

Insulated Fiberglass Framed, Dble Glazed, low-E, Argon Filled Casement Types

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term 45

Conventional Product:

Wood Framed Dble Glazed Casement Types

Cost over Life Cycle (EUL)

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

Life Cycle Costs

Install/Replace	Replace In-kind	11	ea	\$467.50	\$5,143	35	1	1.3	\$6,127	\$5,665
Total Life Cycle Cost									\$6,127	\$5,665

Energy Savings

Net Life Cycle Cost after Energy Savings									\$6,127	\$5,665

Green Product:

Insulated Fiberglass Framed, Dble Glazed, low-E, Argon Filled Casement Typ

Cost over Life Cycle (EUL)

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

Life Cycle Costs

Install/Replace	Fiberglass Models	11	ea	\$502.56	\$5,528	45	1	1.0	\$5,528	\$5,528
Total Life Cycle Cost									\$5,528	\$5,528

Energy Savings

Utility Cost	Electricity	2,788	kWh	\$0.196	(\$546)	1	1	45.0	(\$50,667)	(\$10,405)
Net Life Cycle Cost after Energy Savings									(\$45,138)	(\$4,877)

ECONOMIC RETURN ANALYSIS

Green NPV	\$10,542
Green IRR	n/a

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Green Product Insulated Fiberglass Framed, Dble Glazed, low-E, Argon Filled Casement Types

Override with Green Product? No

Final Product Choice

Green Product Insulated Fiberglass Framed, Dble Glazed, low-E, Argon Filled Casement Types

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): # 4

Community Building Windows

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product

0

Final Product Choice

Green Product Glass Framed, Dble Glazed, low-E, Argon Filled Casement Types

Immediate Replacement

									Cost over Life Cycle (EUL)	
Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	Fiberglass Models	11	ea	\$502.56	\$5,528	45	1	1.0	\$5,528	\$5,528
Total Life Cycle Cost									\$5,528	\$5,528
Energy Savings										
Utility Cost	Electricity	2,788	kWh	\$0.20	(\$546)	1	1	45.0	(\$50,667)	(\$10,405)
Net Life Cycle Cost after Energy Savings									(\$45,138)	(\$4,877)

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

Energy and Water Conservation Measure (EWCM): # 5

Community Building Interior Lighting

Existing Incandescent and Fluorescent Tube Fixtures

vs.

Upgrade To LED lamps In All Fixtures

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term

10

Conventional Product:

Existing Incandescent and Fluorescent Tube Fixtures

Cost over Life Cycle (EUL)

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

Life Cycle Costs

Maintain	Operating									
Utility Cost	Electricity	3,095	kWh	\$0.196	\$607	1	1	10.0	\$6,954	\$4,946
Total Life Cycle Cost									\$6,954	\$4,946

Energy Savings

Net Life Cycle Cost after Energy Savings									\$6,954	\$4,946

Green Product:

Upgrade To LED lamps In All Fixtures

Cost over Life Cycle (EUL)

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

Life Cycle Costs

Install/Replace	Install All LED Lamps	1	Is	\$448.00	\$448	10	1	1.0	\$448	\$448
Utility Cost	Electricity	981	kWh	\$0.196	\$192	1	1	10.0	\$2,204	\$1,568
Total Life Cycle Cost									\$2,652	\$2,016

Energy Savings

Net Life Cycle Cost after Energy Savings									\$2,652	\$2,016

ECONOMIC RETURN ANALYSIS

Green NPV	\$2,931
Green IRR	1271.0%

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Green Product: Upgrade To LED lamps In All Fixtures

Override with Green Product? No

Final Product Choice

Green Product: Upgrade To LED lamps In All Fixtures

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): # 5

Community Building Interior Lighting

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product

Final Product Choice

Green Product: Upgrade To LED lamps In All Fixtures

Immediate Replacement

									Cost over Life Cycle (EUL)	
Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	Install All LED Lamps	1	ls	\$448.00	\$448	10	1	1.0	\$448	\$448
Utility Cost	Electricity	981	kWh	\$0.20	\$192	1	1	10.0	\$2,204	\$1,568
Total Life Cycle Cost									\$2,652	\$2,016
<i>Energy Savings</i>										
Net Life Cycle Cost after Energy Savings									\$2,652	\$2,016

ECONOMIC RETURN ANALYSIS

Timing NPV	n/a
Timing IRR	n/a

TIMING RECOMMENDATION

Replacement Year: 1

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): # 6

Upgrade Washing Machines

Conventional Top-load Non-Energy Star

vs.

High Efficiency Front-load Energy Star

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term 1

Conventional Product:

Conventional Top-load Non-Energy Star

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	N/A Leased									
Utility Cost	Electricity	480	kWh	\$0.196	\$94	1	1	1.0	\$94	\$94
Utility Cost	Water/Sewer	18,564	Gallons	\$0.00458	\$85	1	1	1.0	\$85	\$85
Total Life Cycle Cost									\$179	\$179

Energy Savings

Net Life Cycle Cost after Energy Savings									\$179	\$179

Green Product:

High Efficiency Front-load Energy Star

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	N/A Leased									
Utility Cost	Electricity	193	kWh	\$0.196	\$38	1	1	1.0	\$38	\$38
Utility Cost	Water/Sewer	9,828	Gallons	\$0.00458	\$45	1	1	1.0	\$45	\$45
Total Life Cycle Cost									\$83	\$83

Energy Savings

Net Life Cycle Cost after Energy Savings									\$83	\$83

ECONOMIC RETURN ANALYSIS

Green NPV	\$96
Green IRR	n/a

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Green Product: High Efficiency Front-load Energy Star

Override with Green Product? No

Final Product Choice

Green Product: High Efficiency Front-load Energy Star

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): # 6

Upgrade Washing Machines

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product

0

Final Product Choice

Green Product:

High Efficiency Front-load Energy Star

Immediate Replacement

									Cost over Life Cycle (EUL)	
Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	N/A Leased									
Utility Cost	Electricity	193	kWh	\$0.20	\$38	1	1	1.0	\$38	\$38
Utility Cost	Water/Sewer	9,828	Gallons	\$0.00	\$45	1	1	1.0	\$45	\$45
Total Life Cycle Cost									\$83	\$83
<i>Energy Savings</i>										
Net Life Cycle Cost after Energy Savings									\$83	\$83

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):

1

Upgrade Roadways and Parking Areas with Permeable Pavers

Standard Asphalt Paving System

vs.

Permeable Pavers To Promote Better Drainage

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term

35

Conventional Product:

Standard Asphalt Paving System

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 Pavement	32,622	sf	\$2.20	\$71,768	20	1	1.8	\$152,374	\$95,998

Total Life Cycle Cost

\$152,374

\$95,998

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$152,374

\$95,998

Green Product:

Permeable Pavers To Promote Better Drainage

Cost over Life Cycle (EUL)

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

Life Cycle Costs

Install/Replace	Permeable Pavers	32,622	sf	\$5.25	\$171,266	35	1	1.0	\$171,266	\$171,266

Total Life Cycle Cost

\$171,266

\$171,266

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$171,266

\$171,266

ECONOMIC RETURN ANALYSIS

Green NPV	(\$75,267)
Green IRR	(3.6%)

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Conventional Product: Standard Asphalt Paving System

Override with Green Product?

No

Final Product Choice

Conventional Product: Standard Asphalt Paving System

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

Upgrade Roadways and Parking Areas with Permeable Pavers

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product

0

Final Product Choice

Conventional Product:

Standard Asphalt Paving System

Immediate Replacement

									Cost over Life Cycle (EUL)	
Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	Asphalt Pavement	32,622	sf	\$2.20	\$71,768	20	1	1.8	\$152,374	\$95,998
Total Life Cycle Cost									\$152,374	\$95,998
<i>Energy Savings</i>										
Net Life Cycle Cost after Energy Savings									\$152,374	\$95,998

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

Upgrade Common Area Flooring

Community Rm., Laundries, and Restroom Resilient Vinyl Flooring

vs.

Natural Linoleum Flooring

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term

25

Conventional Product:

Community Rm., Laundries, and Restroom Resilient Vinyl Flooring

Cost over Life Cycle (EUL)

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

Install/Replace	Vinyl Flooring	771	sf	\$5.00	\$3,855	15	1	1.7	\$7,249	\$5,336

Total Life Cycle Cost

\$7,249

\$5,336

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$7,249

\$5,336

Green Product:

Natural Linoleum Flooring

Cost over Life Cycle (EUL)

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

Install/Replace	Natural Linoleum Flooring	771	sf	\$5.38	\$4,148	25	1	1.0	\$4,148	\$4,148

Total Life Cycle Cost

\$4,148

\$4,148

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$4,148

\$4,148

ECONOMIC RETURN ANALYSIS

Green NPV	\$1,188
Green IRR	21.7%

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Green Product: Natural Linoleum Flooring

Override with Green Product? No

Final Product Choice

Green Product: Natural Linoleum Flooring

Notes:

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

Green Measure (GM):

2

Upgrade Common Area Flooring

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product
Replacement Year

4
5

Final Product Choice

Green Product: Natural Linoleum Flooring

Immediate Replacement

Year

1

Cost over Life Cycle (EUL)

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	Natural Linoleum Flooring	771	sf	\$5.38	\$4,148	25	1	1.0	\$4,148	\$4,148
Total Life Cycle Cost									\$4,148	\$4,148

Energy Savings

Net Life Cycle Cost after Energy Savings									\$4,148	\$4,148

Replacement at End of Remaining Useful Life

Year

5

Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	Natural Linoleum Flooring	771	sf	\$5.38	\$4,148	25	5	0.8	\$3,319	\$3,219

Expenses for Current Product Through Useful Life

Total Life Cycle Cost									\$3,319	\$3,219

Energy Savings

Net Life Cycle Cost after Energy Savings									\$3,319	\$3,219

ECONOMIC RETURN ANALYSIS

Timing NPV	(\$929)
Timing IRR	n/a

TIMING RECOMMENDATION

Replacement Year: 5

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

Upgrade Community Room Kitchen Cabinets

Laminated Particleboard (LPB) Models

vs.

Forsetry Stewardship Council (FSC) Certified All Wood Models

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term

30

Conventional Product:

Laminated Particleboard (LPB) Models

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 Models	1	ea	\$1,125.00	\$1,125	20	1	1.5	\$1,831	\$1,419

Total Life Cycle Cost

\$1,831

\$1,419

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$1,831

\$1,419

Green Product:

Forsetry Stewardship Council (FSC) Certified All Wood Models

Cost over Life Cycle (EUL)

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

Install/Replace	FSC Models	1	ea	\$1,209.38	\$1,209	30	1	1.0	\$1,209	\$1,209

Total Life Cycle Cost

\$1,209

\$1,209

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$1,209

\$1,209

ECONOMIC RETURN ANALYSIS

Green NPV	\$209
Green IRR	16.2%

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Green Product Forsetry Stewardship Council (FSC) Certified All Wood Models

Override with Green Product?

No

Final Product Choice

Green Product Forsetry Stewardship Council (FSC) Certified All Wood Models

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

Upgrade Community Room Kitchen Cabinets

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product

Final Product Choice

Green Product for Forestry Stewardship Council (FSC) Certified All Wood Models

Immediate Replacement

									Cost over Life Cycle (EUL)	
Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	FSC Models	1	ea	\$1,209.38	\$1,209	30	1	1.0	\$1,209	\$1,209
Total Life Cycle Cost									\$1,209	\$1,209
<i>Energy Savings</i>										
Net Life Cycle Cost after Energy Savings									\$1,209	\$1,209

ECONOMIC RETURN ANALYSIS

Timing NPV	n/a
Timing IRR	n/a

TIMING RECOMMENDATION

Replacement Year:	1
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Notes:

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

Life Cycle Cost Analysis

Green Measure (GM):

4

Upgrade Dwelling Unit Living Area Flooring

Olefin (Petroleum Based) Carpet

(Conventional Product)

vs.

Forestry Stewardship Council Certified
(Harvested from Sustainable Forests) Wood
Flooring

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term

40

Conventional Product:

Olefin (Petroleum Based) Carpet

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	Olefin Carpet	18,094	sf	\$3.00	\$54,282	6	1	6.7	\$631,023	\$186,485
Maintain	Shampoo/Repair	18,094	sf	\$0.35	\$6,333	2	2	19.5	\$232,254	\$56,250

Total Life Cycle Cost

\$863,278

\$242,734

Energy Savings

Net Life Cycle Cost after Energy Savings									\$863,278	\$242,734

Green Product:

Forestry Stewardship Council Certified (Harvested from Sustainable Forests)

Cost over Life Cycle (EUL)

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

Install/Replace	FSC Wood	18,094	sf	\$9.31	\$168,455	40	1	1.0	\$168,455	\$168,455
Maintain	Refinish	18,094	sf	\$2.71	\$49,035	10	10	3.1	\$281,045	\$65,103

Total Life Cycle Cost

\$449,500

\$233,558

Energy Savings

Net Life Cycle Cost after Energy Savings									\$449,500	\$233,558

ECONOMIC RETURN ANALYSIS

Green NPV	\$9,176
Green IRR	8.6%

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Green Product Certified (Harvested from Sustainable Forests) Wood Flooring

Override with Green Product?

No

Final Product Choice

Green Product Certified (Harvested from Sustainable Forests) Wood Flooring

Notes:

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

Green Measure (GM):

4

Upgrade Dwelling Unit Living Area Flooring

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product

0

Final Product Choice

Green Product Certified (Harvested from Sustainable Forests) Wood Flooring

Immediate Replacement

									Cost over Life Cycle (EUL)	
Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	FSC Wood	18,094	sf	\$9.31	\$168,455	40	1	1.0	\$168,455	\$168,455
Maintain	Refinish	18,094	sf	\$2.71	\$49,035	10	10	3.1	\$281,045	\$65,103
Total Life Cycle Cost									\$449,500	\$233,558
<i>Energy Savings</i>										
Net Life Cycle Cost after Energy Savings									\$449,500	\$233,558

ECONOMIC RETURN ANALYSIS

Timing NPV	n/a
Timing IRR	n/a

TIMING RECOMMENDATION

Replacement Year:	1
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Notes:

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

Life Cycle Cost Analysis

Green Measure (GM):

5

Upgrade Dwelling Unit Cabinetry

LPB Vanities and Wood Fronted LPB Kitchen Cabinets

vs.

FSC Certified All Wood Vanities and Cabinets

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term

30

Conventional Product:

LPB Vanities and Wood Fronted LPB Kitchen 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	LPB Vanities	57	ea	\$410.00	\$23,370	20	1	1.5	\$38,042	\$29,470
Install/Replace	Wood/LPB Cabinets	60	ea	\$2,025.00	\$121,500	20	1	1.5	\$197,781	\$153,216

Total Life Cycle Cost

\$235,824

\$182,686

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$235,824

\$182,686

Green Product:

FSC Certified All 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	FSC Vanities	57	ea	\$440.75	\$25,123	30	1	1.0	\$25,123	\$25,123
Install/Replace	FSC Cabinets	60	ea	\$2,176.88	\$130,613	30	1	1.0	\$130,613	\$130,613

Total Life Cycle Cost

\$155,736

\$155,736

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$155,736

\$155,736

ECONOMIC RETURN ANALYSIS

Green NPV	\$26,951
Green IRR	16.2%

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Green Product: FSC Certified All Wood Vanities and Cabinets

Override with Green Product?

No

Final Product Choice

Green Product: FSC Certified All 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):

5

Upgrade Dwelling Unit Cabinetry

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product

0

Final Product Choice

Green Product:

FSC Certified All 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	FSC Vanities	57	ea	\$440.75	\$25,123	30	1	1.0	\$25,123	\$25,123
Install/Replace	FSC Cabinets	60	ea	\$2,176.88	\$130,613	30	1	1.0	\$130,613	\$130,613
Total Life Cycle Cost									\$155,736	\$155,736
<i>Energy Savings</i>										
Net Life Cycle Cost after Energy Savings									\$155,736	\$155,736

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

Upgrade Bathroom Exhaust Fans

Manually Controlled Models

vs.

Humidistat Controlled Models

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term

20

Conventional Product:

Manually Controlled Models

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	Manually Controlled	60	ea	\$125.00	\$7,500	20	1	1.0	\$7,500	\$7,500

Total Life Cycle Cost

\$7,500

\$7,500

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$7,500

\$7,500

Green Product:

Humidistat Controlled Models

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	Humidistat Controlled	60	ea	\$199.00	\$11,940	20	1	1.0	\$11,940	\$11,940

Total Life Cycle Cost

\$11,940

\$11,940

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$11,940

\$11,940

ECONOMIC RETURN ANALYSIS

Green NPV	(\$4,440)
Green IRR	n/a

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Conventional Product: Manually Controlled Models

Override with Green Product?

No

Final Product Choice

Conventional Product: Manually Controlled Models

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

Upgrade Bathroom Exhaust Fans

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product

0

Final Product Choice

Conventional Product:

Manually Controlled Models

Immediate Replacement

									Cost over Life Cycle (EUL)	
Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	Manually Controlled	60	ea	\$125.00	\$7,500	20	1	1.0	\$7,500	\$7,500
Total Life Cycle Cost									\$7,500	\$7,500
<i>Energy Savings</i>										
Net Life Cycle Cost after Energy Savings									\$7,500	\$7,500

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

Upgrade Dwelling Unit Kitchen Flooring

Resilient Vinyl Flooring

vs.

Natural Linoleum Flooring

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term

25

Conventional Product:

Resilient Vinyl Flooring

Cost over Life Cycle (EUL)

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

Install/Replace	Resilient Vinyl	3,593	sf	\$5.00	\$17,965	15	1	1.7	\$33,781	\$24,869

Total Life Cycle Cost

\$33,781

\$24,869

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$33,781

\$24,869

Green Product:

Natural Linoleum Flooring

Cost over Life Cycle (EUL)

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

Install/Replace	Natural Linoleum	3,593	sf	\$5.38	\$19,330	25	1	1.0	\$19,330	\$19,330

Total Life Cycle Cost

\$19,330

\$19,330

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$19,330

\$19,330

ECONOMIC RETURN ANALYSIS

Green NPV	\$5,538
Green IRR	21.7%

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Green Product:	Natural Linoleum Flooring
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Override with Green Product?

No

Final Product Choice

Green Product:	Natural Linoleum Flooring
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Notes:

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

Green Measure (GM):

7

Upgrade Dwelling Unit Kitchen Flooring

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product

0

Final Product Choice

Green Product:

Natural Linoleum Flooring

Immediate Replacement

									Cost over Life Cycle (EUL)	
Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	Natural Linoleum	3,593	sf	\$5.38	\$19,330	25	1	1.0	\$19,330	\$19,330
Total Life Cycle Cost									\$19,330	\$19,330
<i>Energy Savings</i>										
Net Life Cycle Cost after Energy Savings									\$19,330	\$19,330

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):

8

Upgrade Dwelling Unit Kitchen Countertops

Plastic Laminate on Laminated Particleboard

vs.

Solid Surface Material Countertops

(Conventional Product)

(Green Product)

STEP ONE: PRODUCT COMPARISON

Calculated Life Cycle Term

35

Conventional Product:

Plastic Laminate on Laminated Particleboard

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	Plastic Laminate Models	60	ea	\$356.00	\$21,360	10	1	3.5	\$111,314	\$45,955

Total Life Cycle Cost

\$111,314

\$45,955

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$111,314

\$45,955

Green Product:

Solid Surface Material 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	Solid Surface Models	60	ea	\$800.00	\$48,000	35	1	1.0	\$48,000	\$48,000

Total Life Cycle Cost

\$48,000

\$48,000

Energy Savings

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Net Life Cycle Cost after Energy Savings

\$48,000

\$48,000

ECONOMIC RETURN ANALYSIS

Green NPV	(\$2,045)
Green IRR	7.4%

PRODUCT RECOMMENDATION

Recommendation based on Economic Return Analysis

Conventional Product: Plastic Laminate on Laminated Particleboard

Override with Green Product?

No

Final Product Choice

Conventional Product: Plastic Laminate on Laminated Particleboard

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):

8

Upgrade Dwelling Unit Kitchen Countertops

STEP TWO: REPLACEMENT TIMING

Remaining Useful Life of Existing Product

Final Product Choice

Conventional Product:

Plastic Laminate on Laminated Particleboard

Immediate Replacement

									Cost over Life Cycle (EUL)	
Action	Description	Quantity	Unit	Unit Cost	Total Cost	EUL	First Year	Cycles	Inflated	Discounted
Install/Replace	Plastic Laminate Models	60	ea	\$356.00	\$21,360	10	1	3.5	\$111,314	\$45,955
Total Life Cycle Cost									\$111,314	\$45,955
<i>Energy Savings</i>										
Net Life Cycle Cost after Energy Savings									\$111,314	\$45,955

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.


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

Bob Labadini

Name

Senior Associate/Mechanical Specialist

Title

January 28, 2011

Date