

PHYSICAL NEEDS ASSESSMENT AND ENERGY AUDIT

HOUSING AUTHORITY OF BERGEN COUNTY

One Bergen County Plaza, Floor 2
Hackensack, NJ 07601
George Stavrou



PHYSICAL NEEDS ASSESSMENT AND ENERGY AUDIT

of

LEHMANN GARDENS

12-14 Sulak Lane
Park Ridge, New Jersey 07656

PREPARED BY:

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EMG Project #: 107534.13R -008.308
Date of Report: July 25, 2014
On site Date: April 8, 2014

Replacement Reserves Report

Bergen-Lehmann Gardens-GPNA
5/31/2014



Report Section	ID	Cost Description	Lifespan (EUL)	E	Age	RUL	Quantity	Unit	Unit Cost	Subtotal	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	Deficiency Repair Estimate
3.2	240600	G2025A ADA - Install signage indicating Van Accessible Parking, pole mounted	0	0	0	1	Sign		\$280.00	\$280	\$280																				\$280
3.2	240599	G2025A ADA - Install signage indicating Accessible Parking, pole mounted	0	0	0	19	Each		\$280.00	\$5,320	\$5,320																				\$5,320
5.2	240601	G2012 Asphalt- overlay 1"	25	17	8	62695	SF		\$0.92	\$57,679									\$57,679												\$57,679
6.3	244129	B3011 Asphalt shingles, removal and replacement with premium grade	30	19	11	468	SQ		\$430.00	\$201,240												\$201,240									\$201,240
6.8	240654	C3011 Paint and patch interior walls, drywall	7	4	3	11456	SF		\$0.84	\$9,623				\$9,623							\$9,623							\$9,623			\$28,869
6.8	240655	C3024 Replace 2x2 ceramic tile	30	22	8	2	CSF		\$1,700.00	\$3,400									\$3,400												\$3,400
6.8	240652	C3024 Replace Vinyl tile	18	12	6	583	SY		\$67.75	\$39,498						\$39,498															\$39,498
6.8	240653	C3031 Paint ceilings	20	13	7	5480	SF		\$1.79	\$9,809							\$9,809														\$9,809
6.8	248938	E1016 Coin operated washer, front load, Accessible, install	15	8	7	3	EA		\$4,000.00	\$12,000							\$12,000														\$12,000
6.8	240637	E1016 Coin operated dryer 30lb	15	10	5	3	EA		\$3,966.00	\$11,898						\$11,898															\$11,898
7.1	240641	D3041 Replace air handler 2500-3000 CFM	15	12	3	1	EA		\$7,400.00	\$7,400				\$7,400															\$7,400		\$14,800
7.1	240642	D3052 Pad-Mounted Condenser 5-ton	15	12	3	1	EA		\$4,691.00	\$4,691				\$4,691															\$4,691		\$9,382
7.4	241562	D5092 Replace Diesel Generator 75kW to 90 kW	25	13	12	1	Each		\$36,595.00	\$36,595													\$36,595								\$36,595
7.6	240648	D4013 Air compressor for dry pipe system 520 gal, 1HP	20	13	7	1	EA		\$1,365.00	\$1,365							\$1,365														\$1,365
7.6	248939	D5037 Fire alarm panel	15	5	10	1	EA		\$8,906.00	\$8,906											\$8,906										\$8,906
8.1	240659	C3011 Paint and patch interior walls, drywall	7	3	4	56704	SF		\$0.84	\$47,631				\$47,631								\$47,631							\$47,631		\$142,894
8.1	240657	C3024 Replace 2x2 ceramic tile	30	22	8	23	CSF		\$1,700.00	\$39,100									\$39,100												\$39,100
8.1	240656	C3024 Replace Vinyl tile	18	12	6	1897	SY		\$67.75	\$128,522						\$128,522															\$128,522
8.1	240658	C3031 Paint ceilings	20	11	9	19364	SF		\$1.79	\$34,662									\$34,662												\$34,662
8.2	240649	E1094 Range	20	12	8	36	EA		\$630.50	\$22,698									\$22,698												\$22,698
8.2	240650	E1094 Refrigerator	15	9	6	36	EA		\$661.00	\$23,796						\$23,796															\$23,796
8.4	240651	D2011 Replace Commercial Grade water closet with 1.6 GPF unit	25	24	1	136	EA		\$606.00	\$82,416		\$82,416																			\$82,416
9	244130	B3011 Asphalt shingles, removal and replacement with premium grade	30	19	11	3	SQ		\$430.00	\$1,290												\$1,290									\$1,290
10	240660	D2014 Install low flow sink aerator	12	12	0	72	EA		\$31.28	\$2,252	\$2,252												\$2,252								\$4,504
10	240661	D2017 Install low flow shower head	10	10	0	36	Each		\$47.28	\$1,702	\$1,702										\$1,702										\$3,404
Totals, Unescalated											\$9,554	\$82,416	\$0	\$21,714	\$47,631	\$11,898	\$191,816	\$23,174	\$122,877	\$34,662	\$20,231	\$250,161	\$38,847	\$0	\$0	\$0	\$0	\$9,623	\$59,722	\$0	\$924,328
Location Factor (1.00)											\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Totals, Escalated (3.0% inflation, compounded annually)											\$9,554	\$84,888	\$0	\$23,728	\$53,610	\$13,793	\$229,038	\$28,501	\$155,657	\$45,225	\$27,189	\$346,282	\$55,387	\$0	\$0	\$0	\$0	\$15,905	\$101,673	\$0	\$1,190,432

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CERTIFICATION

EMG has completed a Physical Needs Assessment (PNA) and an Energy Audit of the subject property, Lehmann Gardens, located at 12-14 Sulak Lane in Park Ridge, New Jersey. The PNA and Energy Audit were performed on April 8, 2014.

The PNA and Energy Audit were performed at the Housing Authority's request using methods and procedures consistent with good commercial and customary practice conforming to ASTM E2018-08, *Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process*. Within this Physical Needs Assessment Report, EMG's follows the ASTM guide's definition of User, that is, the party that retains EMG for the preparation of a baseline PNA of the subject property. A User may include, without limitation, a purchaser, potential tenant, owner, existing or potential mortgagee, lender, or property manager of the subject property.

This report is exclusively for the use and benefit of the Client identified on the first page of this report. The purpose for which this report shall be used shall be limited to the use as stated in the contract between the client and EMG.

This report is not for the use or benefit of, nor may it be relied upon by, any other person or entity without the advance written consent of EMG.

The opinions EMG expresses in this report were formed utilizing the degree of skill and care ordinarily exercised by any prudent architect or engineer in the same community under similar circumstances. EMG assumes no responsibility or liability for the accuracy of information contained in this report which has been obtained from the Client or the Client's representatives, from other interested parties, or from the public domain. The conclusions presented represent EMG's professional judgment based on information obtained during the course of this assignment. EMG's evaluations, analyses and opinions are not representations regarding the building design or actual value of the property. Factual information regarding operations, conditions and test data provided by the Client or their representative has been assumed to be correct and complete. The conclusions presented are based on the data provided, observations made, and conditions that existed specifically on the date of the assessment.

EMG certifies that EMG has no undisclosed interest in the subject property, EMG's relationship with the Client is at arm's-length, and that EMG's employment and compensation are not contingent upon the findings or estimated costs to remedy any deficiencies due to deferred maintenance and any noted component or system replacements.

EMG's PNA cannot wholly eliminate the uncertainty regarding the presence of physical deficiencies and the performance of a subject property's building systems. Preparation of a PNA in accordance with Public Housing Modernization Standards Handbooks 7485.2 is intended to reduce, but not eliminate, the uncertainty regarding the potential for component or system failure and to reduce the potential that such component or system may not be initially observed. This PNA was prepared recognizing the inherent subjective nature of EMG's opinions as to such issues as workmanship, quality of original installation, and estimating the remaining useful life of any given component or system. It should be understood that EMG's suggested remedy may be determined under time constraints, formed without the aid of engineering calculations, testing, exploratory probing, the removal of materials, or design. Furthermore, there may be other alternate or more appropriate schemes or methods to remedy the physical deficiency. EMG's opinions are generally formed without detailed knowledge from individuals familiar with the component's or system's performance.

Any questions regarding this report should be directed to Edward Beeghly at ebeeghly@emgcorp.com or at 800.733.0660, x7607.

Prepared by: David Jacques, Field Observer

Reviewed by:



Brett Byers, PNA Reviewer for
Edward Beeghly
Program Manager

1. EXECUTIVE SUMMARY

1.1. SUMMARY OF FINDINGS

The Housing Authority of Bergen County contracted with EMG to conduct a Physical Needs Assessment (PNA) and Energy Audit of the subject property, Lehmann Gardens, located at 12-14 Sulak Lane in Bergen County, Park Ridge, New Jersey. The PNA was performed on April 8, 2014.

The multi-family property has two 1-story apartment buildings containing 36 apartment units. The building area is approximately 29,979 square feet. The site area is approximately 4.1 acres. Construction of the property was completed in 1979.

Summary of Physical Needs Assessment:

On site amenities include basketball court, screen gazebo, and a laundry room.

Generally, the property appears to have been constructed within industry standards in force at the time of construction, to have been well maintained during recent years, and is in good overall condition.

There are a number of Priority Deficiency Costs that have been identified during the evaluation period. These needs are identified in the various sections of this report and are summarized in the attached Replacement Reserves Report.

Summary of Energy Audit:

EMG has conducted an Energy Audit on the Lehmann Gardens. The study included a review of the building's construction features, historical energy and water consumption and costs, review of the building envelope, HVAC equipment, heat distribution systems, lighting, and the building's operational and maintenance practices.

EMG has identified five Energy Conservation Measures (ECMs) for this property. The savings for each measure are calculated using standard engineering methods followed in the industry, and detailed calculations for ECM are provided in Appendix H for reference. A 10% discount in energy savings was applied to account for the interactive effects amongst the ECMs. In addition to the consideration of the interactive effects, EMG has applied a 15% contingency to the implementation costs to account for potential cost overruns during the implementation of the ECMs

Summary of Financial Information for Recommended Energy Conservation Measures

Item	Estimate
Total Projected Initial ECM Investment	\$48,921 (In Current Dollars)
Estimated Annual Cost Savings Related to ECMs	\$5,935 (In Current Dollars)
Net Effective ECM Payback	8.24 years
Estimated Annual Energy Savings	8.63%
Estimated Annual Cost Savings	15%

1.2. FOLLOW UP RECOMMENDATIONS

No additional evaluation is necessary.

1.3. OPINIONS OF PROBABLE COST

This section provides estimates for the repair and capital reserves items noted within this Physical Needs Assessment (PNA).

These estimates are based on invoice or bid documents provided either by the Owner/facility and construction costs developed from construction resources such as *R.S. Means* and *Marshall & Swift*, EMG's experience with past costs for similar properties, city cost indexes, and assumptions regarding future economic conditions.

1.4. METHODOLOGY

Physical Needs Assessment:

Based upon site observations, research, and judgment, along with referencing Expected Useful Life (EUL) tables from various industry sources, EMG opines as to when a system or component will most probably necessitate replacement. Accurate historical replacement records, if provided, are typically the best source of information. Exposure to the elements, initial quality and installation, extent of use, the quality and amount of preventive maintenance exercised, etc., are all factors that impact the effective age of a system or component. As a result, a system or component may have an effective age that is greater or less than its actual chronological age. The Remaining Useful Life (RUL) of a component or system equals the EUL less its effective age. Projections of Remaining Useful Life (RUL) are based on continued use of the Property similar to the reported past use. Significant changes in tenants and/or usage may affect the service life of some systems or components.

The evaluation period identified in this report is defined as 20 years.

The physical condition of building component to be repaired is typically defined as being in one of five categories: Priority One through Five. For the purposes of this report, the following definitions are used:

Priority One - These items are to be addressed as Immediate. Items in this category require immediate action and include corrective measures to:

1. Correct life safety and/or code hazards
2. Repair item permitting water leaks into the building or structure
3. Repair mold or mildew conditions
4. Down unit repairs
5. Further study investigations

Priority Two - These items are to be addressed within the next 1 year. Items in this category require corrective measures to:

1. Return a system to normal operation
2. Stop deterioration to other systems
3. Stop accelerated deterioration
4. Replace items that have reached or exceeded their useful service life
5. ADA/UFAS deficiencies

Priority Three - These items are to be addressed within the next 2-3 years. Items in this category, if not corrected expeditiously, will become critical in the next several years. Items in this category include corrective measures to:

1. Stop intermittent interruptions
2. Correct rapid deterioration
3. Replace items that will reach or exceed their useful service life
4. Correct functionality and/or aesthetic issues that are not critical

Priority Four - These items are to be addressed within the next 3-5 years. Items in this category include conditions requiring appropriate attention to preclude predictable deterioration or potential downtime and the associated damage or higher costs if deferred further.

Priority Five - These items are to be addressed within 6-20 years. Items in this category represent a sensible improvement to the existing conditions. These are not required for the most basic function of the facility; however, Priority 5 projects will improve overall usability and/or reduce long-term maintenance costs.

Energy Audit:

All the ECMs are broken into two major categories:

1. **No/Low Cost Recommendations:** No/Low cost is defined as any project with initial investment of less than \$1000.
2. **Capital Cost Recommendations:** Capital cost defined as any project with initial investment greater than or equal to \$1000.

EMG screens ECMs based on the payback criteria.

Simple Payback Period –The number of years required for the cumulative value of energy or water cost savings less future non-fuel or non-water costs to equal the investment costs of the building energy or water system, without consideration of discount rates. ECMs with a payback period greater than the Expected Useful Life (EUL) of the project are not typically recommended, as the cost of the project will not be recovered during the lifespan of the equipment. These ECMs are recommended for implementation during future system replacement. At that time, replacement may be evaluated based on the premium cost of installing energy efficient equipment.

$$\text{Simple Payback} = \frac{\text{Initial Cost}}{\text{Annual Savings}}$$

2. PHYSICAL NEEDS ASSESSEMENT - PURPOSE AND SCOPE

2.1. PURPOSE

The purpose of this Physical Needs Assessment (PNA) is to assist the Client in evaluating the physical aspects of this property and how its condition may affect the soundness of the Client's financial decisions over time. For this PNA, representative samples of the major independent building components were observed and their physical conditions were evaluated. This included site and building exteriors, representative interior common areas, and a representative sample of the apartment units. Apartment unit observations include a minimum of 50 percent of the vacant units and all of the down units.

The property management staff and code enforcement agencies were interviewed for specific information relating to the physical property, code compliance, available maintenance procedures, available drawings, and other documentation. The property's systems and components were observed and evaluated for their present condition. EMG completed the *Systems and Conditions Table*, which lists the current physical condition and estimated remaining useful life of each system and component present on the property, as observed on the day of the site visit. The estimated costs for repairs and/or capital reserves are included in the enclosed cost tables. All findings relating to these opinions of probable costs are included in the narrative sections of this report.

The physical condition of building systems and related components are typically defined as being in one of three conditions: Good, Fair, or Poor, or a combination thereof. For the purposes of this report, the following definitions are used:

- Good = Satisfactory as-is. Requires only routine maintenance over the evaluation period. Repair or replacement may be required due to a system's estimated useful life.
- Fair = Satisfactory as-is. Repair or replacement is required due to current physical condition and/or estimated remaining useful life.
- Poor = Immediate repair, replacement, or significant maintenance is required.

2.2. DEVIATIONS FROM THE ASTM E2018-08 GUIDE

ASTM E2018-01, *Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process* requires that any deviations from the Guide be so stated within the report. EMG's probable cost threshold limitation is reduced from the Guide's \$3,000 to \$2,000, thus allowing for a more comprehensive assessment on smaller scale properties. Therefore, EMG's opinions of probable costs that are individually less than a threshold amount of \$2,000 are omitted from this PNA. However, comments and estimated costs regarding identified deficiencies relating to life/safety or accessibility items are included regardless of this cost threshold.

In lieu of providing written record of communication forms, personnel interviewed from the facility and government agencies are identified in Section 2.5. Relevant information based on these interviews is included in Sections 2.5, 3.1, and other applicable report sections.

2.3. ADDITIONAL SCOPE CONSIDERATIONS

Items required by ASTM E2018-08 and Fannie Mae's *Exhibit III Specific Guidance to the Property Evaluator* are included within the Physical Needs Assessment (PNA). Additional "non-scope" considerations were addressed at the recommendation of EMG and subsequent contract with the Client. These additional items are identified as follows:

- Property disclosure information was obtained from the EMG's Pre-Survey Questionnaire
- An assessment of accessibility utilizing EMG's Accessibility Checklist.
- A limited visual assessment and review of the property for mold growth, conditions conducive to mold growth, and evidence of moisture in accessible areas of the property
- Provide a statement on the property's Remaining Useful Life
- Provide cross reference indexing between cost tables and report text
- Determination of FEMA Flood Plain Zone for single address properties

2.4. PROPERTY'S REMAINING USEFUL LIFE ESTIMATE

Subject to the qualifications stated in this paragraph and elsewhere in this report, the Remaining Useful Life (RUL) of the property is estimated to be not less than 35 years. The Remaining Useful Life estimate is an expression of a professional opinion and is not a guarantee or warranty, expressed or implied. This estimate is based upon the observed physical condition of the property at the time of EMG's visit and is subject to the possible effect of concealed conditions or the occurrence of extraordinary events such as natural disasters or other "acts of God" that may occur subsequent to the date of EMG's site visit.

The Remaining Useful Life for the property is further based on the assumption that: (a) the immediate repairs, short term repairs, and future repairs for which replacement reserve funds are recommended are completed in a timely and workman-like manner, and (b) a comprehensive program of preventive and remedial property maintenance is continuously implemented using an acceptable standard of care. The Remaining Useful Life estimate is made only with regard to the expected physical or structural integrity of the improvements on the property, and no opinion regarding economic or market conditions, the present or future appraised value of the property, or its present or future economic utility, is expressed by EMG.

2.5. PERSONNEL INTERVIEWED

The following personnel from the facility and government agencies were interviewed in the process of conducting the PNA:

Name and Title	Organization	Phone Number
Jason Rooney Property Manager	Housing Authority of Bergen County	201.954.4577
David Moody Housing Inspections Specialist	Bureau of Housing Inspection	609.633.6225

The PNA was performed with the assistance of Jason Rooney, Property Manager, The Housing Authority of Bergen County, the on site Point of Contact (POC), who was cooperative and provided information that appeared to be accurate based upon subsequent site observations. The on site contact is somewhat knowledgeable about the subject property and answered most questions posed during the interview process. The POC's management involvement at the property has been for the past 3 months.

2.6. DOCUMENTATION REVIEWED

Prior to the PNA, relevant documentation was requested that could aid in the knowledge of the subject property's physical improvements, extent and type of use, and/or assist in identifying material discrepancies between reported information and observed conditions. The review of submitted documents does not include comment on the accuracy of such documents or their preparation, methodology, or protocol. The following documents were provided for review while performing the PNA:

- Site plan
- Blueprints
- Utility Bills

No other documents were available for review. The Documentation Request Form is provided in Appendix E.

2.7. PRE-SURVEY QUESTIONNAIRE

A Pre-Survey Questionnaire was sent to the POC prior to the site visit. The questionnaire was not provided at the time of the site visit. Information obtained from interviewing site personnel has been used in preparation of this PNA.

2.8. WEATHER CONDITIONS

Weather conditions at the time of the site visit were clear, with temperatures in the 60s (°F) and light winds.

3. CODE INFORMATION, ACCESSIBILITY, AND MOLD

3.1. CODE INFORMATION, FLOOD ZONE AND SEISMIC ZONE

According to David Moody of the Bureau of Housing Inspection, there are no outstanding building code violations on file. The Building Department does not have an annual inspection program. They only inspect new construction, work that requires a building permit, and citizen complaints. A copy of the original Certificate of Occupancy was requested but was not available.

According to David Moody of the Bureau of Housing Inspection, there are no outstanding fire code violations on file. The most recent inspection was conducted by the Fire Department on May, 2013. The Fire Department inspects the property on an annual basis.

According to the Flood Insurance Rate Map Number 34003C0093G, published by the Federal Emergency Management Agency (FEMA) and dated September 30, 2005, the property is located in Zone X, defined as an area outside the 500-year flood plain with less than 0.2% annual probability of flooding. Annual Probability of Flooding of Less than one percent. The eastern edge of the property borders Zone AE but it does not appear to be in the marked zone.

3.2. ADA ACCESSIBILITY

Section 504 of the Rehabilitation Act of 1973 is a Federal accessibility law that was enacted on June 2, 1988. Section 504 applies to multi-family properties that have 15 or more units. The property must have a minimum of five percent mobility accessible units and two percent of the units for visual / audio hearing impairments. Exceptions can be considered due to undue financial burdens or structural restrictions. However, the exceptions do not relieve the recipients from compliance utilizing other units/buildings or other methods to achieve reasonable accommodations.

Reasonable Accommodations as described in 24 CFR 8.4(b)(i), 8.24 and 8.33 are described as follows: When a family member requires an accessible feature(s) or policy modification to accommodate a disability, property owners must provide such feature(s) or policy modification unless doing so would result in a fundamental alteration in the nature of its program or result in a financial and administrative burden.

The Uniform Federal Accessibility Standard (UFAS) 24 CFR part 40 was adopted by HUD and made effective October 4, 1984. The UFAS applies only to new construction or to alterations to the existing buildings. Alterations are defined as work that costs 50 percent or more of the building's value when the work performed occurs within a twelve month period. Apartments modified for mobility impaired residents are to comply with UFAS.

Generally, Title III of the Americans with Disabilities Act (ADA) prohibits discrimination by entities to access and use of "areas of public accommodations" on the basis of disability. Generally the rental office and access from the site to the rental office must be maintained and operated to comply with the Americans with Disabilities Act Accessibility Guidelines (ADAAG). Buildings completed and occupied after January 26, 1992 are required to comply fully with ADAAG. Existing facilities constructed prior to this date are held to the lesser standard of complying to the extent allowed by structural feasibility and the financial resources available; otherwise a reasonable accommodation must be made.

During the PNA, observations and sample measurements for accessibility were conducted. The scope of the observations is set forth in the EMG Accessibility Checklist provided in Appendix D. It is understood by the Client that the observations described herein does not comprise an Accessibility Compliance Survey of every unit and only those units where access was provided by the client were reviewed. Only a representative sample of areas were observed and, other than as shown on the accessibility checklist, actual measurements were not taken to verify compliance.

The accessibility standards that apply to the Property are Section 504, UFAS and where applicable, the ADA for access to the rental office. However, as the property is not new construction, or completing substantial rehabilitation or other rehabilitation, the property is only required to complete reasonable accommodations. Property management stated that Section 504 requests are completed on an individual case-by-case basis. Based on EMG's observations and interview of the Property Manager, the property is generally compliant with Section 504. Presently, 100 percent of the units are defined as accessible for individuals with mobility impairments according to property management. There are four units at present which have visual / audio modifications, thus exceeding the two percent accessible requirements of Section 504.

Based on EMG's assessment, the property is in general compliance with the requirements of Section 504 and the ADA.

Based on EMG's assessment, an additional zero units should be made accessible to residents with mobility impairments and zero units should be modified for residents who have visual / audio impairments.

In addition, although defined as accessible, non-compliant components and features were observed throughout the designated accessible units, accessible routes, general site, and common areas. Consideration should be given to correcting these features and components to comply 24 CFR 8.23 (b) *Other Alternations*. It is recommended that the Housing Authority modify their Barrier Removal Plan / Transition Plan to incorporate EMG's findings noted in the following categories.

Based on EMG's observations, the facility generally appeared to be accessible as stated within the defined priorities of Section 504, UFAS and the ADA.

Parking

- Signage indicating accessible parking spaces for cars and vans are not provided. There are 19 ADA car stalls that require pole-mounted signage to be installed. One pole-mounted van accessible sign is also needed.

3.3. MOLD

As part of the PNA, EMG completed a limited, visual assessment for the presence of visible mold growth, conditions conducive to mold growth, or evidence of moisture in readily accessible areas of the property. EMG interviewed property personnel concerning any known or suspected mold contamination, water infiltration, or mildew-like odor problems.

This assessment does not constitute a comprehensive mold survey of the property. The reported observations and conclusions are based solely on interviews with property personnel and conditions observed in readily accessible areas of the property at the time of the assessment. Sampling was not conducted as part of the assessment.

EMG did not note any visual indications of the presence of visible mold growth, conditions conducive to mold growth, or evidence of moisture in any readily accessible areas of the property.

4. EXISTING BUILDING EVALUATION

4.1. APARTMENT UNIT TYPES AND UNIT MIX

The appendices contain floor plan illustrations, which graphically represent the various unit types. The gross area measurements in the chart below are an approximation, are based on information provided by on site personnel, and are not based on actual measurements. Due to the varying methods that could be utilized by others to derive square footage, the area calculations in the chart below do not warrant, represent, or guarantee the accuracy of the measurements.

Apartment Unit Types and Mix		
Quantity	Type	Floor Area
31	1 Bedroom/1 Bathroom	525 SF
5	2 Bedrooms/1 Bathroom	761 SF
There are currently 0 vacant units.		
There are currently 0 down units.		
36	TOTAL	

4.2. APARTMENT UNITS OBSERVED

Over twenty percent of the apartment units were observed in order to establish a representative sample and to gain a clear understanding of the property's overall condition. Other areas accessed included the exterior of the property, a representative sample of the roofs, and the interior common areas. The following apartments were observed.

Apartment Units Observed		
Unit/Floor	Type	Comments
Unit 26	2 Bedroom/1 Bathroom	Occupied. Good condition.
Unit 31	1 Bedroom/1 Bathroom	Occupied. Good condition.
Unit 36	2 Bedroom/1 Bathroom	Occupied. Good condition.
Unit 21	1 Bedroom/1 Bathroom	Occupied. Good condition.
Unit 20	1 Bedroom/1 Bathroom	Occupied. Good condition.
Unit 19	1 Bedroom/1 Bathroom	Occupied. Good condition.
Unit 11	1 Bedroom/1 Bathroom	Occupied. Good condition.
Unit 10	1 Bedroom/1 Bathroom	Occupied. Good condition.
Unit 7	1 Bedroom/1 Bathroom	Occupied. Good condition.
Unit 5	1 Bedroom/1 Bathroom	Occupied. Good condition.

All areas of the property were available for observation during the site visit.

A “down unit” is a term used to describe a non-rentable apartment unit due to poor conditions such as fire damage, water damage, missing appliances, damaged floor, wall or ceiling surfaces, or other significant deficiencies. According to the POC, there are no down units.

5. SITE IMPROVEMENTS

5.1. UTILITIES

The following table identifies the utility suppliers and the condition and adequacy of the services.

Site Utilities		
Utility	Supplier	Condition & Adequacy
Sanitary sewer	Park Ridge Department of Public Utilities	Good
Storm sewer	Park Ridge Department of Public Utilities	Good
Domestic water	Park Ridge Department of Public Utilities	Good
Electric service	Park Ridge Department of Public Utilities	Good
Natural gas service	PSEG	Good

Observations/Comments:

- According to the POC, the utilities provided are adequate for the property. There are no special utility systems such as septic systems, waste water treatment systems, wells, or water treatment systems on the site.
- Refer to Section 7.4 for discussion regarding the site's emergency electrical generator.

5.2. PARKING, PAVING, AND SIDEWALKS

The main entrance drive is located along Sulak Lane on the north side of the property. The parking areas, and drive aisles are paved with asphaltic concrete. The entrance driveway aprons are paved with asphaltic concrete.

Based on a physical count, parking is provided for 54 cars. The parking ratio is 1.5 spaces per apartment unit. All of the parking stalls are located in open lots. Twenty handicapped-accessible parking stalls are located throughout parking lot, one of which is reserved for vans.

Type Space	Number of Spaces
Open Self Park	34
Handicapped-accessible	20
Total	54

The sidewalks throughout the property are constructed of cast-in-place concrete. Cast-in-place concrete steps with metal handrails are located at grade changes.

The curbs are constructed of stone pavers with mortared joints placed at the edge of the pavement. Surface runoff is directed to swales along the drive aisles and landscaped areas, which border the paved areas.

Observations/Comments:

- The asphalt pavement is in fair condition. There are notable areas of failure and deterioration, such as alligator cracking and localized depressions throughout the property. All of the paving must be overlaid with new asphalt paving in order to maintain the integrity of the overall pavement system. The estimated cost of this work is included in the Replacement Reserves Report.
- The concrete sidewalks throughout the property are in good condition. There are no significant signs of cracks or surface deterioration. Epoxy sealing of minor cracks will be required over the assessment period as part of the property management's routine maintenance program.
- The stone curbs throughout the property are in good condition. Routine cleaning and maintenance will be required over the assessment period.

5.3. DRAINAGE SYSTEMS AND EROSION CONTROL

Storm water from the roofs, landscaped areas, and paved areas flows into on site inlets and catch basins with underground piping connected to the municipal storm water management system.

Observations/Comments:

- There is no evidence of storm water runoff from adjacent properties. The storm water system appears to provide adequate runoff capacity. There is no evidence of major ponding or erosion.

5.4. TOPOGRAPHY AND LANDSCAPING

The property slopes gently down from the west side of the property to the east property line.

The landscaping consists of trees, shrubs, and grasses. Flower beds are located throughout the site.

Surrounding properties include a graveyard, residential houses, a school, and DPW.

Observations/Comments:

- The topography and adjacent uses do not appear to present conditions detrimental to the property.
- The landscape materials are in good condition and will require routine maintenance over the assessment period.

5.5. GENERAL SITE IMPROVEMENTS

Property identification is provided by a wood sign mounted on a post adjacent to the main entrance drive. Street address numbers are displayed on the exterior elevations.

Site lighting is provided by metal street light standards. The light standards are spaced along the drive aisles throughout the parking areas. Bollard lights are located along walkways and pole-mounted lights along drive aisles throughout the property.

Exterior building illumination is provided by light fixtures surface-mounted on the exterior walls. A wall-mounted light fixture is located adjacent to each apartment unit's entrance door and patio or balcony door.

A basketball court is located at the rear of the buildings.

Dumpsters are located in the parking area and are placed on a concrete pad. The dumpsters are enclosed by a combination of concrete masonry unit fence, brick masonry unit fence, and chain link fence and are accessed by chain link gates.

Observations/Comments:

- The property identification signs are in good condition. Routine maintenance will be required over the assessment period.
- The exterior site and building light fixtures are in good condition. Routine maintenance will be required over the assessment period.
- The dumpsters are owned and maintained by the property owner. The dumpster enclosure, slab, and gates are in good condition and will require routine maintenance over the assessment period.

6. BUILDING ARCHITECTURAL AND STRUCTURAL SYSTEMS

6.1. FOUNDATIONS

According to the structural drawings, the foundations consist of conventional reinforced concrete spread footings which support wall and column loads.

Observations/Comments:

- The foundations and footings could not be directly observed during the site visit. There is no evidence of movement that would indicate excessive settlement.

6.2. SUPERSTRUCTURE

Each building has concrete masonry unit (CMU) exterior and interior bearing walls, which support the upper floor and roof diaphragms. The roofs are sheathed with plywood over wood trusses.

Observations/Comments:

- The superstructure is exposed in some locations, allowing for limited observation. Walls and floors appear to be plumb, level, and stable. There are no significant signs of deflection or movement.

6.3. ROOFING

The primary roofs are classified as gabled. The roofs are finished with asphalt shingles over asphalt-saturated paper. The roofs have sheet metal flashing elements. The roofs are insulated with fiberglass batts.

The roofs drain over the eaves to sheet metal gutters and downspouts, which are connected by underground piping to the storm drainage system.

The attics are ventilated by soffit vents and roof vents. The attics have draft stops. Attic access is provided by a scuttle hole and through exterior access doors located in the common areas and through exterior access doors.

Observations/Comments:

- The roof finishes are approximately nine years old. Information regarding roof warranties or bonds is not available. The roofs are maintained by an outside contractor.
- The fields of the roofs appear to be in good condition. Based on the estimated Remaining Useful Life (RUL), the shingles will require replacement over the assessment period. Replacement with 30-year shingles is recommended when required. The cost of this work is included in the Replacement Reserves Report.
- According to the POC, there are no active roof leaks. There is no evidence of active roof leaks.
- There is no evidence of roof deck or insulation deterioration. The roof substrate and insulation should be inspected during any future roof repair or replacement work.

- There is no evidence of fire retardant treated plywood (FRT) and, according to the POC, FRT plywood is not used.
- The roof flashings are in good condition and will require routine maintenance over the assessment period.
- Roof drainage appears to be adequate. Clearing and minor repair of drain system components should be performed regularly as part of the property management's routine maintenance program.
- The roof vents are in good condition and will require routine maintenance over the assessment period.
- There is no evidence of moisture, water intrusion, or excessive daylight in the attics. The insulation in the attics appears to be adequate.

6.4. EXTERIOR WALLS

The exterior walls are finished with vinyl siding. The soffits are concealed.

Building sealants (caulking) are located between dissimilar materials, at joints, and around window and door openings.

Observations/Comments:

- The vinyl siding is in good condition and will require routine maintenance over the assessment period.
- The sealant is flexible, smooth, and in good condition and will require routine maintenance over the assessment period.

6.5. EXTERIOR AND INTERIOR STAIRS

Not applicable. There are no exterior or interior stairs.

6.6. WINDOWS AND DOORS

The windows are Low-E double-glazed vinyl-clad metal sliding units with exterior screens.

The apartment unit hallway entrance doors are painted solid-core wood doors set in wood frames. Exterior entrance doors to the apartments contain lever handle hardware, keyed deadbolts, spy-eyes and door knockers.

Apartment unit exterior entrance doors are painted solid-core wood doors set in wood frames. Exterior entrance doors to the apartments contain lever handle hardware, keyed deadbolts, spy-eyes and door knockers. Doors have an aluminum framed screen doors at exterior entrance.

Observations/Comments:

- According to the POC, the property does not experience a significant number of complaints regarding window leaks or window condensation. There is no evidence of window leaks or condensation. The windows and screens all appear to be in good condition and will require routine maintenance over the assessment period.
- The exterior doors and door hardware appear to be in good condition and will require routine maintenance over the assessment period.

6.7. PATIO, TERRACE, AND BALCONY

Not applicable. There are no patios, terraces, or balconies.

6.8. COMMON AREAS, ENTRANCES, AND CORRIDORS

Community room furnishings include chairs, tables, a television, and wall decorations. The common area kitchen is equipped with residential-style appliances, including a refrigerator, coffee maker, microwave, and range.

Apartment unit entrances are accessed from corridors.

Two common area restrooms are located in the main building adjacent to main lobby.

A laundry room is located in the main building. There are a total of three washing machines and three clothes dryers. Laundry sinks and utility sinks are provided in the laundry room.

The following table identifies the interior common areas and generally describes the finishes in each common area.

Common Area	Floors	Walls	Ceilings
Lobby	Vinyl tile	Painted drywall and carpet wainscot	Painted drywall
Community room	Vinyl tile	Painted drywall	Painted drywall / Suspend T-Bar with acoustic tiles
Corridor	Vinyl tile	Painted drywall and carpet wainscot	Painted drywall
Laundry Room	Vinyl tile	Painted drywall	Painted drywall
Common Area Kitchen	Vinyl tile	Painted drywall	Painted drywall
Common Area Restroom	Ceramic tile	Ceramic tile wainscots and painted drywall	Painted drywall

Observations/Comments:

- The common areas were last renovated approximately 12 years ago.
- The interior finishes in the common areas are in fair to good condition. Based on the estimated Remaining Useful Life (RUL), the common area vinyl tile and ceramic tile will require replacement over the assessment period. The common area walls and ceilings will require painting over the assessment period. The cost of this work is included in the Replacement Reserves Report.
- The common areas kitchen appliances are in good condition. Based on the estimated Remaining Useful Life (RUL), the kitchen appliances will require replacement over the assessment period. The cost of this work is relatively insignificant and may be included in the operations budget.
- The washers and dryers are in good to fair condition. Based on the estimated Remaining Useful Life (RUL), some of the washers and dryers will require replacement over the assessment period. The cost of this work is included in the Replacement Reserves Report.

7. BUILDING MECHANICAL AND ELECTRICAL SYSTEMS

7.1. BUILDING HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)

Hot water for the central heating system is supplied by two Munchkin gas-fired high efficiency hot water boilers. Each boiler has a rated input capacity of 399,000 BTUH and is located in the boiler room.

Circulating pumps provide hot water to each temperature-controlled space by a two-pipe distribution system. The hot water supplies baseboard fin tube heaters.

Cooling and heating in the community center are provided by a high-capacity Trane air handling unit equipped with cooling coils. The air handling unit is located in a mechanical closet and is supplied by a pad-mounted Trane condensing unit with a 5-ton nominal cooling capacity. The cooling equipment uses R-22 as a refrigerant.

Through-the wall, air-conditioning units are located in each tenant space. The air conditioner units are tenant supplied, air condenser sleeves are provided by owner.

Air distribution in the common areas is provided to supply air registers via ducts concealed above the ceilings. Return air grilles are located in each space.

Natural ventilation is provided by operable windows. Mechanical ventilation is provided in the bathrooms by ceiling exhaust fans.

Heating at entrance vestibules is provided by radiators supplied by boilers.

Observations/Comments:

- The property utilizes Reiner HVAC as their repair and maintenance contractor.
- Records of the installation, maintenance, upgrades, and replacement of the HVAC equipment have been maintained since the property was first occupied.
- The HVAC equipment varies in age. HVAC equipment is reportedly replaced on an "as-needed" basis.
- The boilers appear to be in good condition and will require routine maintenance during the evaluation period. The boilers were installed in 2012.
- The air handler unit was manufactured in 2002 appears to be in fair condition. Based on its estimated Remaining Useful Life (RUL), the air handler unit will require replacement during the assessment period. The cost of this work is included in the Replacement Reserves Report.
- The condenser was manufactured in 2002 and appears to be in fair condition. Based on its estimated Remaining Useful Life (RUL), the condenser will require replacement during the assessment period. The cost of this work is included in the Replacement Reserves Report.
- The mechanical ventilation system and equipment appear to be in good condition and will require routine maintenance during the assessment period. Equipment or component replacements can be performed as part of the property management's routine maintenance program.

7.2. BUILDING PLUMBING

The plumbing systems include the incoming water service, the cold water piping system, and the sanitary sewer and vent system. The risers and the horizontal distribution piping are copper. The soil and vent systems are PVC and cast iron.

The water meters are located in the boiler room.

Domestic hot water is supplied by one Laars gas-fired condensing boiler. The boiler has a rated input capacity of 600,000 BTUH and is located in the boiler room.

The boiler feeds two Armstrong brazed plate heat exchangers which, in turn supplies heated domestic to a 120-gallon storage tank and the building. Cartridge type circulating pumps ensure that heated water is available at all taps throughout the building upon demand.

The restrooms have commercial-grade fixtures and accessories including water closets and lavatories.

Observations/Comments:

- The plumbing systems appear to be well maintained and in good condition. The water pressure appears to be adequate. The plumbing systems will require routine maintenance during the assessment period.
- There is no evidence that the property uses polybutylene piping for the domestic water distribution system.
- The pressure and quantity of hot water appear to be adequate.
- The boilers appear to be in good condition and will require routine maintenance during the evaluation period. The boiler was installed in 2013.
- The hot water storage tank appears to be in good condition and will require routine maintenance during the evaluation period. The water heater was installed in 2013.
- The accessories and fixtures in the common area restrooms are in good condition and will require routine maintenance during the assessment period.

7.3. BUILDING GAS DISTRIBUTION

Gas service is supplied from the gas main on the adjacent public street. The gas meters and regulators are located in the boiler room. The gas distribution piping within the building is malleable steel (black iron).

Observations/Comments:

- The pressure and quantity of gas appear to be adequate.
- The gas meters and regulators appear to be in good condition and will require routine maintenance during the assessment period.
- Only limited observation of the gas distribution piping can be made due to hidden conditions. The gas piping appears to be in good condition.

7.4. BUILDING ELECTRICAL

The electrical supply lines run underground from a pad-mounted transformer, which feed interior-mounted electrical meters.

The main electrical service size is 1200 amps, 120/208-volt three-phase four-wire alternating current (AC). The electrical wiring is copper, installed in non-metallic sheathed cable. Circuit breaker panels are located throughout the building.

A diesel-powered 90 KVA emergency electrical generator is located outside at the southern elevation of the property. The generator provides back-up power for elements of the fire and life safety systems. Fuel is stored in a double-wall 500-gallon above ground tank attached to the bottom of the generator.

Observations/Comments:

- The on site electrical systems up to the primary transformer are owned and maintained by the respective utility company.

- The electrical service and capacity appear to be adequate for the property's demands.
- The switchgear, circuit breaker panels, and electrical meters appear to be in good condition and will require routine maintenance during the assessment period.
- The generator dates to 2001 and appears to be in fair condition. It is reportedly tested on a weekly basis and serviced by a contractor. Based on its estimated Remaining Useful Life (RUL), the generator will require replacement during the assessment period. The cost of this work is included in the Replacement Reserves Report.

7.5. BUILDING ELEVATORS AND CONVEYING SYSTEMS

Not applicable. There are no elevators or conveying systems.

7.6. FIRE PROTECTION SYSTEMS

The fire protection systems consist of a dry-pipe sprinkler system for the common areas, portable fire extinguishers, smoke detectors, pull stations, and alarm horns. Hardwired smoke detectors are located throughout the common areas and in each apartment unit. The nearest fire hydrants are located along the property's drive aisles and are approximately 40 feet from the building.

Fire sprinkler risers are located in a fire protection equipment room.

Common areas and corridors are equipped with battery back-up exit lights, illuminated exit signs, pull stations, alarm horns, and strobe light alarms.

A central fire alarm panel is located in the main office and monitors the pull stations, smoke detectors, and flow switches. The alarm panel also sounds the alarm and automatically notifies the monitoring service or the fire department in the event of trouble.

Observations/Comments:

- Information regarding fire department inspections is included in Section 3.1.
- The fire extinguishers are serviced annually and appear to be in good condition. The fire extinguishers were serviced and inspected within the last year.
- The pull stations and alarm horns appear to be in good condition and will require routine maintenance over the assessment period.
- The pull stations and alarm horns appear to be in good condition. The alarm horns are not equipped with strobe lights. See Section 3.2. for comments and cost requirements regarding strobe light alarms.
- Smoke detector replacement is considered to be routine maintenance.
- Exit sign and emergency light replacement is considered to be routine maintenance.
- According to the POC, the central alarm panel is in good condition and is serviced regularly by a qualified fire equipment contractor. Equipment testing is not within the scope of a Physical Needs Assessment.
- Fire alarm control panels contain sophisticated electronic circuits that may continue to function long past their expected useful life estimates. However, the technology is constantly improving which makes the older equipment obsolete and at times unable to function with new end devices. Based on estimated Remaining Useful Life, the fire alarm control panel is recommended for replacement during the assessment period. The cost of this work is included in the Replacement Reserves Report.
- The dry-pipe sprinkler air compressor is in good condition. Based on its estimated Remaining Useful Life (RUL), the air compressor will require replacement during the assessment period. The cost of this work is included in the Replacement Reserves Report.

8. DWELLING UNITS

8.1. INTERIOR FINISHES

The following table generally describes the interior finishes in the apartment units:

Typical Apartment Finishes			
Room	Floor	Walls	Ceiling
Living room	Vinyl tile	Painted drywall	Painted drywall
Kitchen	Vinyl tile	Painted drywall	Painted drywall
Bedroom	Vinyl tile	Painted drywall	Painted drywall
Bathroom	Ceramic tile	Painted drywall, ceramic tile shower surround, and ceramic wainscot	Painted drywall

The interior doors in each apartment unit are painted hollow-core wood doors set in wood frames.

Observations/Comments:

- The residential units are typically renovated upon tenant turnover. The renovation generally consists of floor finish cleaning or replacement, interior painting, general cleaning, and repair or replacement of any damaged items.
- The interior finishes in the apartment units are in good condition. Based on the estimated Remaining Useful Life (RUL), the vinyl flooring and ceramic tile will require replacement over the assessment period. The cost of this work is included in the Replacement Reserves Report.
- The interior finishes in the apartment units are in good condition. Based on the estimated Remaining Useful Life (RUL), wall and ceiling painting will be required over the assessment period. The cost of this work is included in the Replacement Reserves Report.
- The interior doors and door hardware are in good condition and will require routine maintenance.

8.2. DWELLING APPLIANCES

Each apartment unit kitchen typically includes the following appliances:

Appliance	Comment
Refrigerator	Defrosting
Range	Electric
Hood	Ducted
Dishwasher	Not provided
Disposal	Not provided

The kitchen cabinets are constructed of wood. The countertops are wood and have a plastic-laminated finish.

Observations/Comments:

- According to the POC, apartment appliances are reportedly replaced on an "as needed" basis.
- The kitchen appliances appear to be in fair to good condition. Based on their estimated Remaining Useful Life (RUL), the kitchen appliances will require replacement over the assessment period. The cost of this work is included in the Replacement Reserves Report.
- The kitchen cabinets vary in age and are in fair condition. Some cabinets will require refinishing or replacement over the assessment period. This work is considered to be routine maintenance.
- The kitchen countertops vary in age and are in fair condition. Some countertops will require refinishing or replacement over the assessment period. This work is considered to be routine maintenance.

8.3. HVAC

Heating is provided by hot water baseboard heaters, which are supplied by the central hot water system. The radiant units are individually controlled by integral thermostats.

Air-conditioning equipment is not provided. Most tenants have through-the wall air-conditioning units, housing provides the air conditioner sleeves.

Natural ventilation is provided by operable windows. Mechanical ventilation is provided in the bathrooms by ceiling exhaust fans.

Observations/Comments:

- The baseboard heaters appear to be in good condition and will require routine maintenance over the assessment period.

8.4. PLUMBING

The bathrooms include a water closet, a ceramic surrounded shower, a vanity, and a lavatory.

Domestic hot water is supplied by the central system described in Section 7.1

Plumbing is described in Section 7.2

Observations/Comments:

- The bathroom fixtures are in good condition and will require minor replacements routine maintenance over the assessment period.
- The water closets appear to be in fair to good condition. Based on their estimated Remaining Useful Life (RUL), the water closets will require replacement with 1.6 GPF units over the assessment period. The cost of this work is included in the Replacement Reserves Report.
- The shower surrounds are in good condition and will require routine maintenance.
- The bathroom sinks are in good condition and will require routine maintenance.
- Although not tested, there is no indication through observations or discussions with staff and residents that the pressure and quantity of hot water are inadequate.
- According to the Facility Staff Representative, apartment unit water heaters are reportedly replaced on an "as needed" basis.

8.5. ELECTRICAL

The electrical service to each apartment unit is approximately 125 amps fed to a main lug only Cutler-Hammer flush mounted load center. A circuit breaker panel inside each unit supplies the HVAC system, appliances, receptacles and light fixtures.

The apartment units have incandescent and fluorescent light fixtures. Each apartment unit has at least one cable television outlet and telephone jack.

Observations/Comments:

- The apartment unit light fixtures are in good condition. Light fixture replacement is considered to be routine maintenance.

8.6. FURNITURE, FIXTURES AND EQUIPMENT (FF&E)

Not applicable. There are no furnished apartments.

9. OTHER STRUCTURES

A storage shed is located at the east side of the property. The storage shed is a pre-manufactured wood structure set on a concrete slab. See Section 6. for exterior cladding descriptions and comments.

Observations/Comments:

- The storage shed is in good condition. Based on their estimated Remaining Useful Life (RUL), the asphalt shingles will require replacement over the assessment period. The cost of this work is included in the Replacement Reserves Report.

10. ENERGY AUDIT - PURPOSE AND SCOPE

The purpose of this Energy Audit is to provide Lehmann Gardens with a baseline of energy usage, the relative energy efficiency of the facility, and specific recommendations for Energy Conservation Measures. Information obtained from these analyses may be used to support a future application to an Energy Conservation Program, Federal and Utility grants towards energy conservation, as well as support performance contracting, justify a municipal bond-funded improvement program, or as a basis for replacement of equipment or systems

The energy audit consisted of an on site visual assessment to determine current conditions, itemize the energy consuming equipment (i.e. Boilers, Make-Up Air Units, DHW equipment); review lighting systems both exterior and interior; and review efficiency of all such equipment. The study also included interviews and consultation with operational and maintenance personnel. The following is a summary of the tasks and reporting that make up the Energy Audit portion of the report.

The following is a summary of the tasks and reporting that make up the Energy Audit portion of the report.

ENERGY AND WATER USING EQUIPMENT

- EMG has surveyed the common areas, office areas, maintenance facilities and mechanical rooms to document utility-related equipment, including heating systems, cooling systems, air handling systems and lighting systems.

BUILDING ENVELOPE

- EMG has reviewed the characteristics and conditions of the building envelope, checking insulation values and conditions. This review also includes an inspection of the condition of walls, windows, doors, roof areas, insulation and special use areas. Where we anticipated significant losses, we utilized infrared thermographs to analyze heat loss across the envelope.

RECOMMENDATIONS FOR ENERGY SAVINGS OPPORTUNITIES

- Based on the information gathered during the on site assessment, the utility rates, as well as recent consumption data and engineering analysis, EMG has identified opportunities to save energy and provide probable construction costs, projected energy/utility savings and provide a simple payback analysis.

ANALYSIS OF ENERGY CONSUMPTION

- Based on the information gathered during the on site assessment and a minimum of one year of utility billing history, EMG has conducted an analysis of the energy usage of all equipment, and identified which equipment is using the most energy and what equipment upgrades may be necessary. As a result, equipment upgrades or replacements are identified that may provide a reasonable return on the investment and improve maintenance reliability.

ENERGY AUDIT PROCESS

- Interviewing staff and review plans and past upgrades
- Performing an energy audit for each use type
- Performing a preliminary evaluation of the utility system
- Analyzing findings, utilizing ECM cost-benefit worksheets
- Making preliminary recommendations for system energy improvements and measures
- Estimating initial cost and changes in operating and maintenance costs based on implementation of energy efficiency measures
- Ranking recommended cost measures, based on the criticality of the project and the largest payback

11. ENERGY CONSERVATION MEASURES

EMG has identified five Energy Conservation Measures (ECMs) for this property.

List of Recommended Energy Conservation Measures For Lehmann Gardens								
ECM #	Description of ECM	Projected Initial Investment	Estimated Annual Energy Savings		Estimated Annual Water Savings	Total Estimated Annual Cost Savings	Simple Payback	Expected Useful Life (EUL)
			Natural Gas	Electricity				
		\$	Therms	kWh	kgal	\$	Years	Years
Totals for No/Low Cost Items		\$0	0	0	0	\$0	#DIV/0!	
Capital Cost Recommendations								
1	Replace Existing Refrigerator(s) With Energy Star Certified Refrigerator(s) Details: All Apartments	\$19,580	0	19,611	0	\$2,671	7.33	15
2	Install Low Flow Shower Heads Details: All Apartments	\$1,702	684	0	98	\$662	2.57	10
3	Install Low Flow Faucet Aerators Details: Apartment Interiors	\$2,252	195	0	52	\$291	7.74	10
4	Replace Incandescent & Halogen Lamps Details: All Units And Common Areas	\$10,336	0	14,972	0	\$2,039	5.07	20
5	Replace Inefficient Linear Fluorescent Lamps Details: Unit Kitchens And Common Areas	\$8,670	0	6,833	0	\$931	9.32	20
Total For Capital Cost		\$42,540	879	41,416	150	\$6,594	6.45	
	Interactive Savings Discount @ 10%		-88	-4,142	-15	-\$659		
	Total Contingency Expenses @ 15%	\$6,381						
Total for Improvements		\$48,921	791	37,274	135	\$5,935	8.24	

12. UTILITY ANALYSIS

Establishing the energy baseline begins with an analysis of the utility cost and consumption of the building. Utilizing the historical energy data and local weather information, we evaluate the existing utility consumption and assign it to the various end-uses throughout the buildings. The Historical Data Analysis breaks down utilities by consumption, cost and annual profile.

This data is analyzed, using standard engineering assumptions and practices. The analysis serves the following functions:

- Allows our engineers to benchmark the energy and water consumption of the facilities against consumption of efficient buildings of similar construction, use and occupancy.
- Generates the historical and current unit costs for energy and water
- Provides an indication of how well changes in energy consumption correlate to changes in weather.
- Reveals potential opportunities for energy consumption and/or cost reduction. For example, the analysis may indicate that there is excessive, simultaneous heating and cooling, which may mean that there is an opportunity to improve the control of the heating and cooling systems.

By performing this analysis and leveraging our experience, our engineers prioritize buildings and pinpoint systems for additional investigation during the site visit, thereby maximizing the benefit of their time spent on site and minimizing time and effort by the customer's personnel. Based on the utility data provided, the estimated rates are:

Utility Rates used for Cost Analysis

Electricity (Blended Rate)	Natural Gas	Water / Sewer
\$0.14/kWh	\$0.37/therm	\$ 4.20/kGal

The data analyzed provides the following information: 1) breakdown of utilities by consumption, 2) cost and annual profile, 3) baseline consumption in terms of energy/utility at the facility, 4) the Energy Use Index, or Btu/sq ft, and cost/sq ft. For multiple water meters, the utility data is combined to illustrate annual consumption for each utility type.

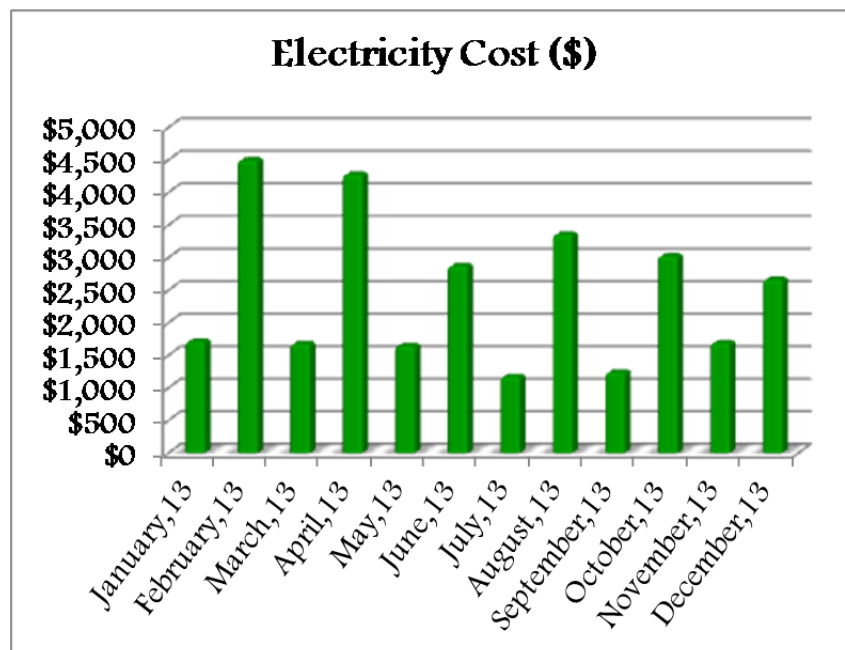
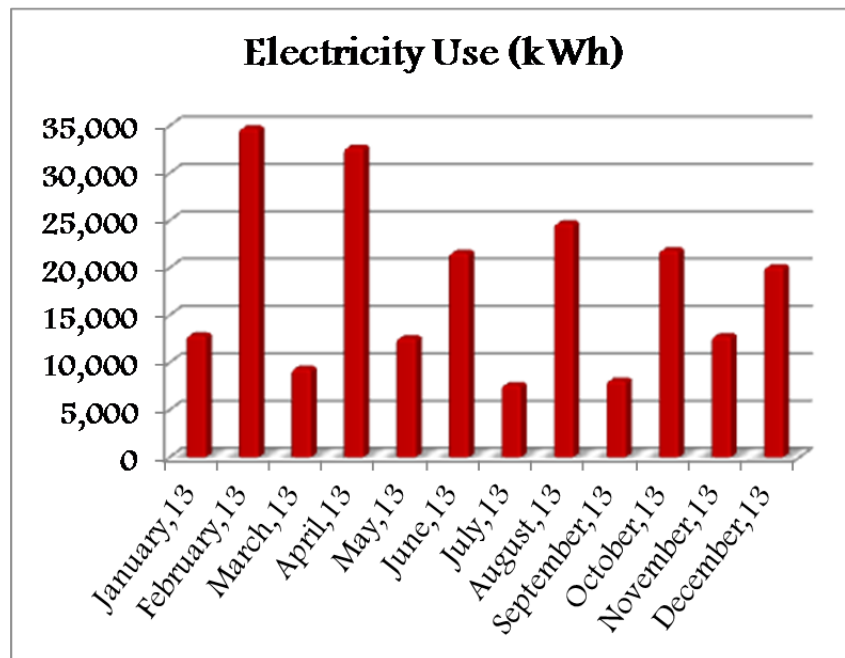
12.1. ELECTRICITY

Park Ridge Department of Public Utilities satisfies the electricity requirements of the facility

Based on the 2013 electric usage & costs, the average price paid during the year was \$0.14 per kWh. The total annual electricity consumption for the 12-month period analyzed is 219,202 for a total cost of \$29,292.17.

Electricity Consumption and Cost Data

Billing Month	Consumption (kWh)	Unit Cost	Total Cost
January	12,880	\$0.13	\$1,716
February	34,757	\$0.13	\$4,502
March	9,386	\$0.18	\$1,679
April	32,717	\$0.13	\$4,278
May	12,600	\$0.13	\$1,649
June	21,606	\$0.13	\$2,877
July	7,640	\$0.15	\$1,174
August	24,711	\$0.14	\$3,359
September	8,120	\$0.15	\$1,240
October	21,882	\$0.14	\$3,028
November	12,800	\$0.13	\$1,691
December	20,102	\$0.13	\$2,666
Total	219,202	\$0.14	\$29,859



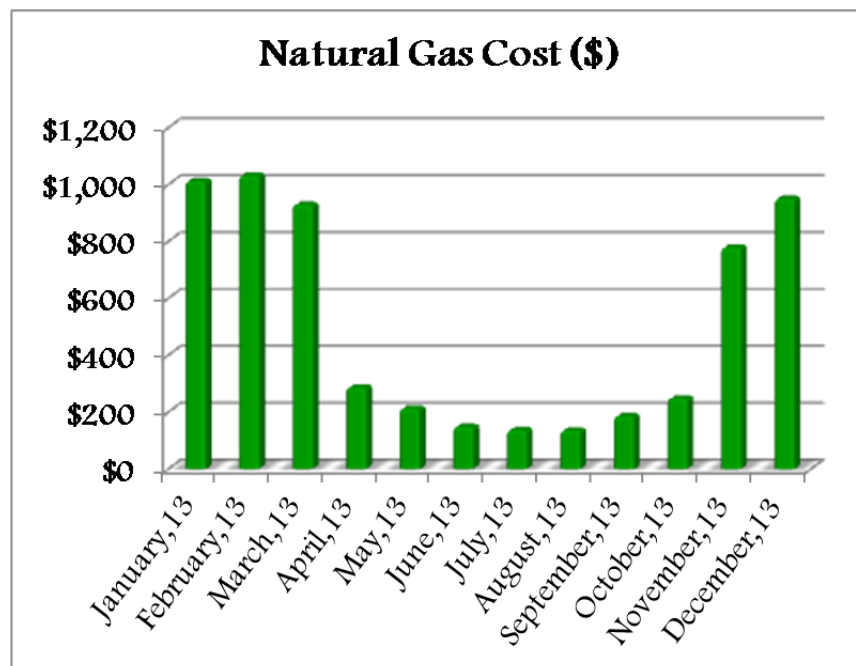
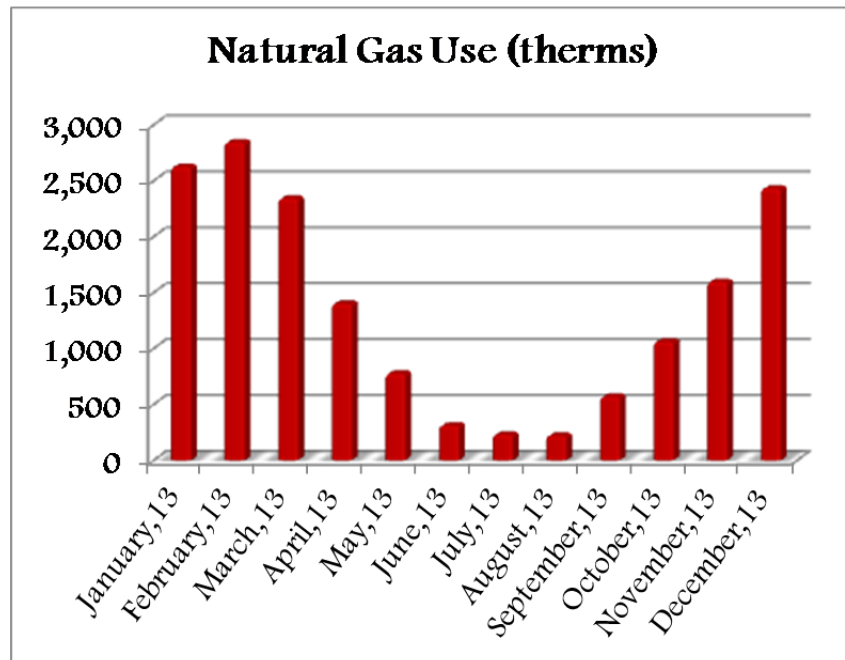
12.2. NATURAL GAS

PSEG satisfies the natural gas requirements of the facility.

Based on the 2013 natural gas usage & costs, the average price paid during the year was \$0.37 per therm. The total annual natural gas consumption for the 12-month period analyzed is 16,440 therms for a total cost of \$6,065.

Natural Gas Consumption and Cost Data

Billing Month	Natural gas Consumption (Therms)	Unit Cost/therm	Total Cost
January,13	2,628	\$0.39	\$1,013
February,13	2,847	\$0.36	\$1,033
March,13	2,345	\$0.40	\$930
April,13	1,403	\$0.20	\$287
May,13	779	\$0.27	\$214
June,13	313	\$0.48	\$149
July,13	232	\$0.59	\$138
August,13	224	\$0.61	\$136
September,13	572	\$0.33	\$186
October,13	1,064	\$0.23	\$249
November,13	1,599	\$0.49	\$779
December,13	2,434	\$0.39	\$951
Total	16,440	\$0.37	\$6,065



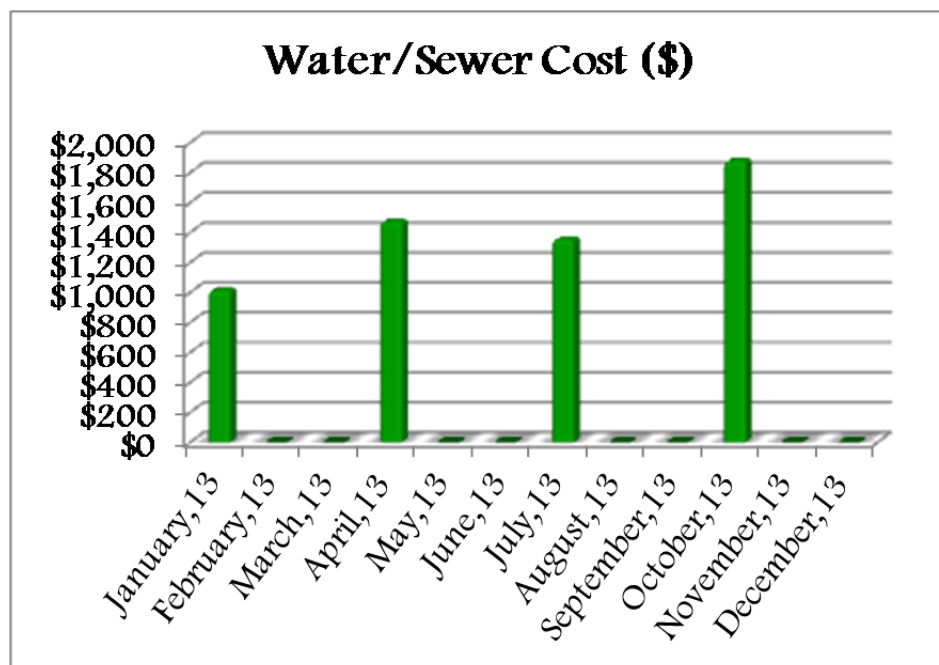
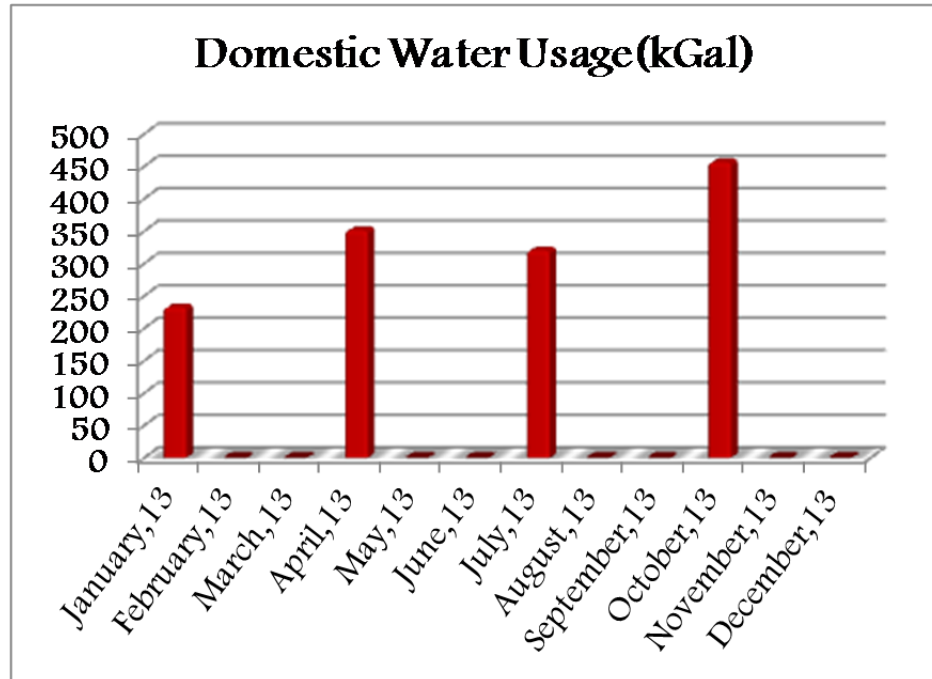
12.3. WATER AND SEWER

Park Ridge Department of Public Utilities satisfies the Water and Sewer requirements of the facility.

Based on the 2013 water and sewer usage & costs, the average price paid during the year was \$4.78 per-gallon. The total annual water and sewer consumption for the 12-month period analyzed is 1,363 for a total cost of \$6,513.00.

Water and Sewer Consumption and Cost Data

Billing Month	Consumption (kGal)	Unit Cost	Total Cost
January,13	233	\$4.35	\$1,014
February,13	0	0	\$0
March,13	0	0	\$0
April,13	352	\$4.19	\$1,474
May,13	0	0	\$0
June,13	0	0	\$0
July,13	321	\$4.22	\$1,354
August,13	0	0	\$0
September,13	0	0	\$0
October,13	457	\$4.11	\$1,879
November,13	0	0	\$0
December,13	0	0	\$0
Total	1,363	\$4.20	\$5,721



13. HUD BENCHMARKING

The HUD Benchmarking tools provide a comparison of the energy and water consumption at multi-family properties against HUD's portfolio. The benchmarking tools take into account the property location, size, and configuration to rank the subject property amongst similar building. The result is a percentile score which indicates the percentage properties that the building performing better than. A score of 50 indicates average performance, while a score of 75 would indicate that the property is performing better than 75% of peer buildings.

The results from the utility analysis and the HUD Water Benchmarking Tool indicate that the subject property is slightly above the average benchmark for water consumption with 66 out of 100 as scored against peers.

HUD Residential Water Use Benchmarking Tool
For single-family, semi-detached, row/townhouse, multi-family walk-up and elevator buildings.

The HUD Residential Water Use Benchmarking Tool quantifies the performance of a user-defined building relative to the family of HUD residential buildings. A score of 75 denotes performance at the top 25th percentile of HUD residential buildings. A score of 50 denotes performance at the 50th percentile (in the middle) of HUD residential buildings. For definitions or help on the terms below, simply click on any underlined text. Click on "Return" text to come back to this page.

Directions: Provide entries in the gray spaces below with your building description and annual water consumption.

Building Description ORNL 8/22/2007

Building Name: (optional entry)

5-digit Zip Code:

Mapping Location: Hackensack, NJ

<u>Gross Floor Area of Building(s) (ft2)</u>	<u>Building(s) is Single-Family Detached or Semi-Detached? (Y/N)</u>	<u>Is Residents Water Use Paid Directly by the PHA? (Y/N)</u>	<u>Number of Units in Building(s)</u>	<u>Number of Units in Building(s) with In-Unit Laundry Hookups or Central Laundry Access?</u>	<u>How Many Buildings share this Water Meter?</u>
29,979	Y	Y	36	36	1

Building Description: 29,979 Y Y 36 36 1

Annual Consumption

Building Annual Water Use: (gallons/year)

Building Annual Water Use Cost: (\$/year)

Average Annual Water Cost: \$0.5 (\$/100 gallons)

Results

	Your Building	HUD Typical
Score Against Peers	66	50
Annual Water Use (gal/year)	1,363,000	1,849,324
Annual Water Use Intensity (gal/ft2-year)	45.5	61.7
Annual Water Cost Intensity (\$/ft2-year)	0.22	0.29
Total Annual Water Cost (\$/year)	6,517	8,842

The results from the utility analysis and the HUD Energy Benchmarking Tool indicate that the subject property is slightly below average for energy consumption with 19 out of 100 as scored against peers.

HUD Residential Energy Use Benchmarking Tool

For single-family, semi-detached, row/townhouse, multi-family walk-up, and elevator buildings.

The HUD Residential Energy Use Benchmarking Tool quantifies the performance of a user-defined building relative to the family of HUD residential buildings. A score of 75 denotes performance at the top 25th percentile of HUD residential buildings. A score of 50 denotes performance at the 50th percentile (in the middle) of HUD residential buildings. For definitions or help on the terms below, simply click on any underlined text. Click on "Return" to come back to this page.

Directions: Provide entries in ALL the grey spaces that apply for your **Building Description** and **Annual Energy Consumption**.

Building Description

Preliminary: 9/17/07

Building Name: (optional entry)

5-digit Zip Code: Heating Degree Days:

Mapping Location: Hackensack, NJ Cooling Degree Days:

	<u>Gross Floor Area (ft²)</u>	<u>Total Number of Units</u>	<u>Is This a Multifamily Building with Central Laundry? (Y/N)</u>	<u>Is this a Multi-Family Walkup Building? (Y/N)</u>	<u>Heated Floor Area (ft²)</u>	<u>Year Built</u>
Building Description:	29,979	36	Y	Y	29,979	1979

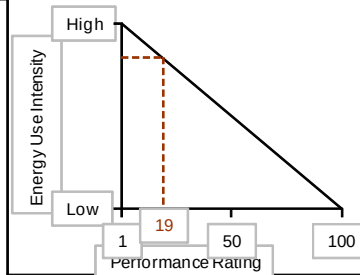
Annual Consumption

Select Units: Electricity Gas #2 Fuel Oil #4 Fuel Oil District Steam District Hot Water Propane

Energy	219,202	16,440					
Cost (\$)	29,859	6,065					
Calculated unit cost:	\$0.14 \$/kWh	\$0.37 \$/CCF					

Results

	Your Building	HUD Typical
Score Against Peers	19	50
Building Site Energy Use (kBtu/year)	2,391,917	1,719,883
Site Energy Use Intensity (kBtu/ft ² -year)	79.8	57.4
Energy Cost Intensity (\$/ft ² -year)	1.20	0.86
Total Annual Energy Cost (\$/year)	35,924	25,831



The graph shows Energy Use Intensity on the y-axis (Low to High) and Performance Rating on the x-axis (1 to 100). A diagonal line represents the benchmark. Your building's performance is marked at a rating of 19, which is below the 50th percentile (HUD Typical) and above the 1st percentile.

14. RECOMMENDED OPERATIONS AND MAINTENANCE PLAN

The quality of the maintenance and the operation of the facility's energy systems have a direct effect on its overall energy efficiency. Energy-efficiency needs to be a consideration when implementing facility modifications, equipment replacements, and general corrective actions. The following is a list of activities that should be performed as part of the routine maintenance program for the property. These actions, which have been divided into specific and general recommendations, will insure that the energy conservation measures identified in this report will remain effective. The following general recommendations should be continued or implemented.

Building Envelope

1. Caulking and weather stripping functional and effective at all times
2. Walls observed periodically and holes patched in the building envelope as required
3. Windows inspected periodically for damaged panes and failed thermal seals
4. Automatic door closing mechanisms repaired and adjusted as needed

Heating and Cooling

1. Air filters inspected periodically and replaced prior to excessive visual buildup (May increase filter costs, but will reduce fan energy costs)
2. Boiler tubes inspected and cleaned annually
3. Temperature settings reduced in unoccupied areas and set points seasonally adjusted.
4. Control valves and dampers checked for functionality monthly and repaired, when needed
5. Equipment inspected for worn or damaged parts as part of a monthly maintenance check
6. Ductwork visually inspected and checked for leaks or damaged insulation as part of a monthly maintenance check
7. Hot air registers and return air ductwork clean and unobstructed
8. Air dampers operating correctly

Domestic Hot Water

1. Domestic hot water heater temperature set to the minimum temperature required
2. Hot water piping checked routinely for damaged insulated and leaks
3. Tank-type water heaters flushed monthly

Lighting

1. Over-lit areas managed by bi-level switching or photocell controls
2. Only energy-efficient replacement lamps used and in-stock for replacement
3. Lighting fixture reflective surfaces and translucent covers clean
4. Walls clean and bright to maximize lighting effectiveness
5. Timers and/or photocells operating correctly on exterior lighting

Existing Equipment and Replacements

1. Refrigerator and freezer doors close and seal correctly
2. Office/ computer equipment either in the "sleep" or "off" mode when not used
3. All other recommended equipment specific preventive maintenance actions conducted

15. APPENDICES

APPENDIX A: Photographic Record

APPENDIX B: Site Plans

APPENDIX C: Supporting Documentation

APPENDIX D: EMG Accessibility Checklist

APPENDIX E: Pre-Survey Questionnaire

APPENDIX F: Acronyms

APPENDIX G: Glossary of Terms-Energy Audits

APPENDIX H: Energy Conservation Measures

APPENDIX A:
PHOTOGRAPHIC RECORD

EMG PHOTOGRAPHIC RECORD

Project No.: 107534.13R-008.308

Project Name: Lehmann Gardens



Photo #1: Front view, eastern elevation



Photo #2: Left side, southern elevation



Photo #3: Rear view, western elevation



Photo #4: Right side, northern elevation



Photo #5: Site parking



Photo #6: Twenty year, three tab shingles throughout property

EMG PHOTOGRAPHIC RECORD

Project No.: 107534.13R-008.308

Project Name: Lehmann Gardens



Photo #7: ADA parking throughout site does not have signage



Photo #8: Asphalt paving shows signs of cracking throughout site



Photo #9: Concrete throughout site is in good condition



Photo #10: Catch basins throughout site collect water runoff



Photo #11: Small basketball area at rear of building



Photo #12: Vinyl siding covers all aspects of buildings

EMG PHOTOGRAPHIC RECORD

Project No.: 107534.13R-008.308

Project Name: Lehmann Gardens



Photo #13: Site signage is located off of main road



Photo #14: Roofs are in fair condition



Photo #15: Windows throughout site are sliding double glazed



Photo #16: Both doors that provide access to tenant units are solid core wood doors



Photo #17: Hallways throughout buildings have identical finishes



Photo #18: Community room located in main building

EMG PHOTOGRAPHIC RECORD

Project No.: 107534.13R-008.308

Project Name: Lehmann Gardens



Photo #19: Common area bathroom



Photo #20: Heating boilers



Photo #21: Condensing unit for community room



Photo #22: Air handler provides air conditioning for community room



Photo #23: Domestic hot water boiler



Photo #24: Indirect-fired water heater connected to domestic hot water boiler

EMG PHOTOGRAPHIC RECORD

Project No.: 107534.13R-008.308

Project Name: Lehmann Gardens



Photo #25: Backup generator



Photo #26: Dry-pipe sprinkler system



Photo #27: Strobes throughout buildings



Photo #28: Resident unit bathrooms with roll in showers

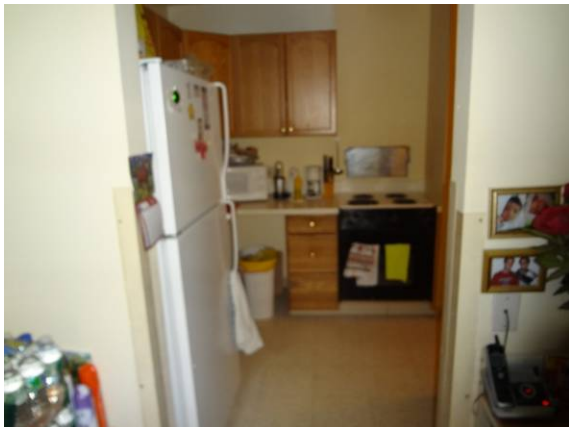


Photo #29: Tenant kitchen



Photo #30: Tenant living room

EMG PHOTOGRAPHIC RECORD

Project No.: 107534.13R-008.308

Project Name: Lehmann Gardens



Photo #31: Tenant bedroom

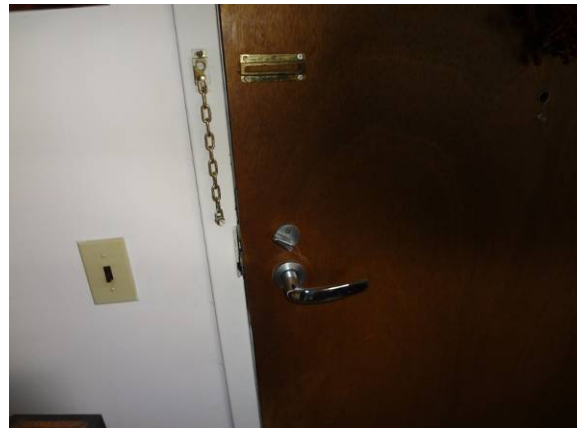


Photo #32: Units have lever action door hardware throughout



Photo #33: Electric ranges located in every tenant kitchen



Photo #34: Baseboard heaters provide heat throughout building



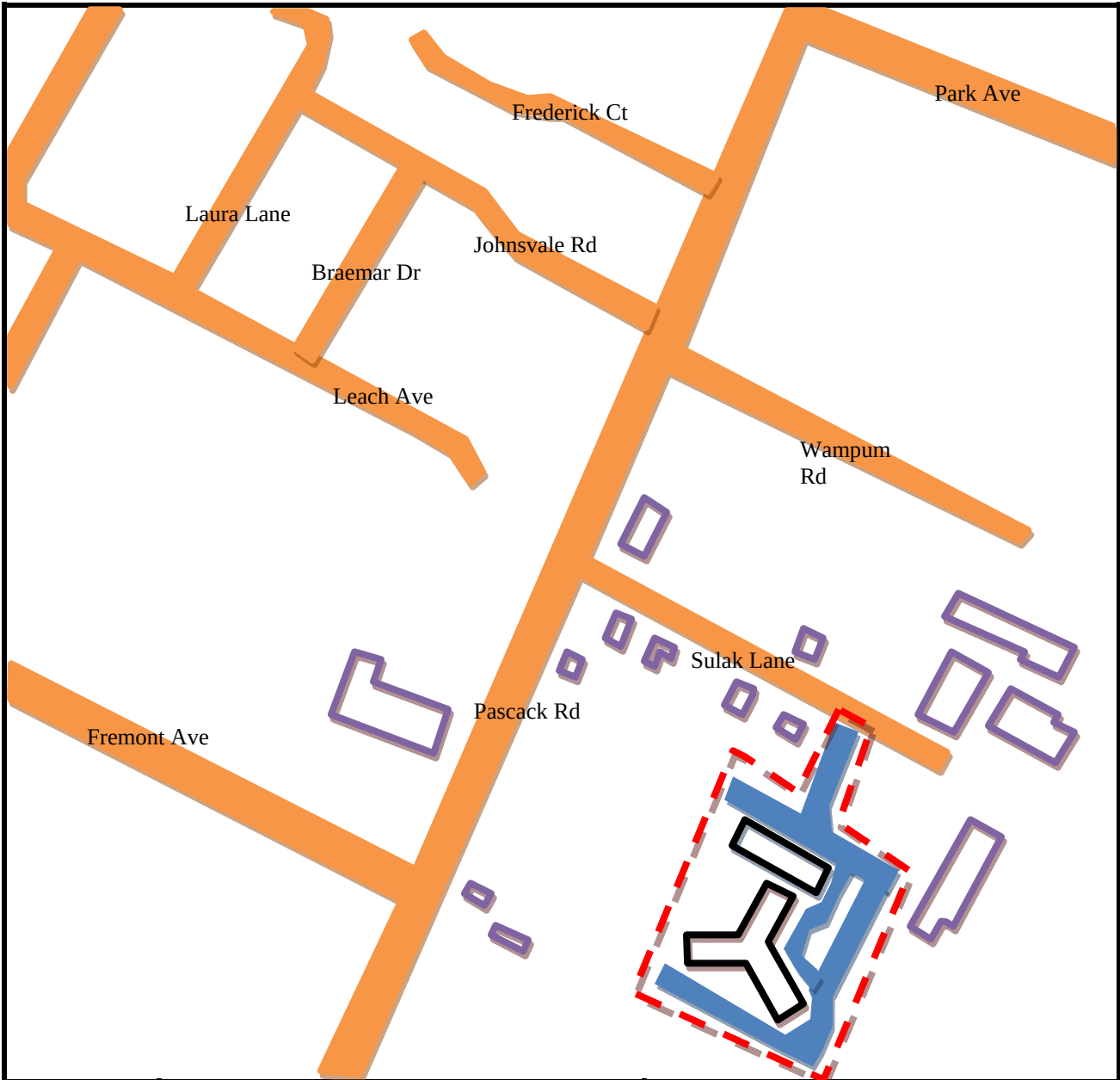
Photo #35: Water closet in tenant unit



Photo #36: Roll in showers in every tenant bathroom

APPENDIX B:
SITE PLANS

Site Plan



Key:

Red-Property border
Black-Property buildings
Purple-Surrounding buildings

Blue-Parking and drive lanes
Orange-Main roads



Not drawn to scale.
The north arrow indicator is an approximation of 0° North.

Project Number:

107534.13R-008.308

Project Name:

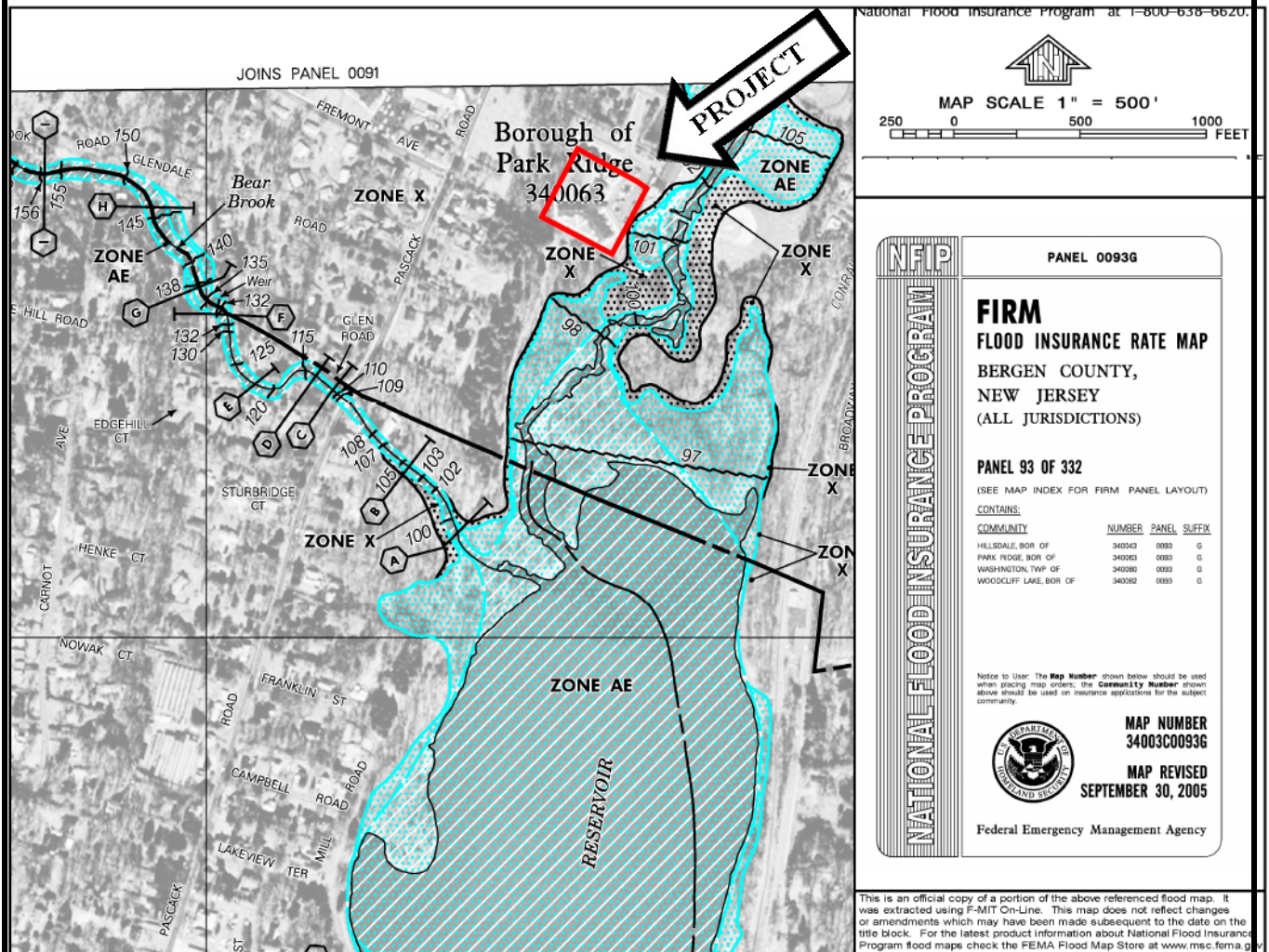
Lehmann Gardens

On-Site Date:

April 8, 2014

APPENDIX C:
SUPPORTING DOCUMENTATION

Flood Map



Source:

FEMA Map Number: 34003C0093G
Dated: September 30, 2005

Project Number:

107534.13R-008.308



Project Name:

Lehmann Gardens

Not drawn to scale. The north arrow indicator is an approximation of 0° North.

On-Site Date:

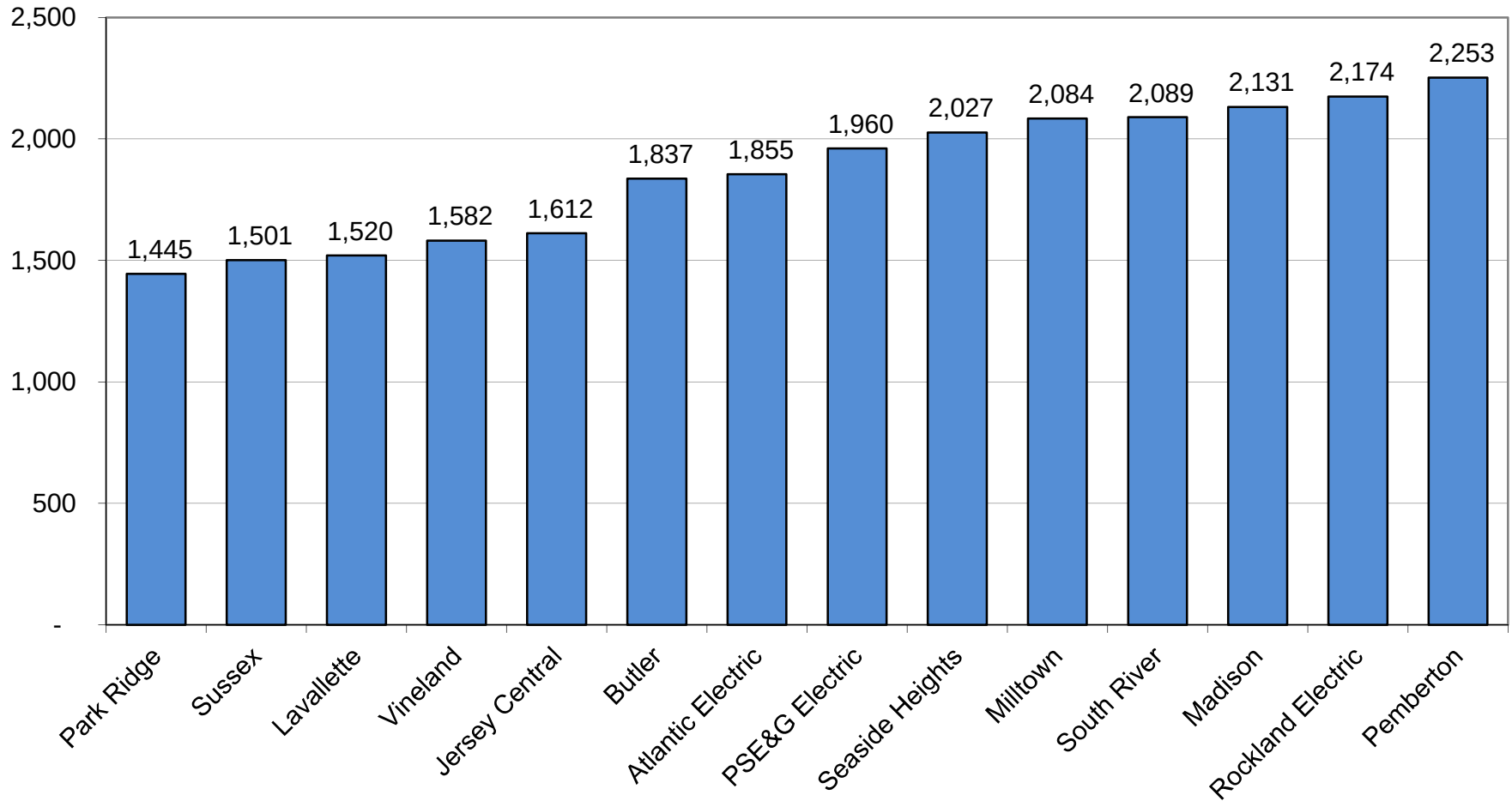
April 8, 2014

2013 Statewide Residential Electric Rate Comparison (as of 11/7/13)

		All NJ Municipal Electric Utilities									REC	** NJ Investor-Owned Electric Utilities			
	Average KWHS	Madison	Butler	Park Ridge	Pemberton	Vineland	Lavallette	Seaside Heights	Milltown	South River	Sussex	PSE&G Electric	Atlantic Electric	Jersey Central	Rockland Electric
Jan	750	\$ 151	\$ 132	\$ 104	\$ 160	\$ 110	\$ 101	\$ 143	\$ 149	\$ 150	\$ 109	\$ 138	\$ 117	\$ 112	\$ 131
Feb	879	177	153	120	183	124	116	169	173	174	125	161	137	131	152
Mar	605	122	108	85	133	94	85	114	122	122	92	112	95	91	106
Apr	730	147	129	101	156	108	99	139	145	146	107	135	114	109	127
May	597	120	107	84	132	93	84	112	120	121	91	111	94	90	105
Jun	897	181	156	123	193	138	143	172	177	177	127	167	178	134	158
Jul	1,050	212	181	143	225	162	164	203	206	206	146	197	210	162	185
Aug	1,516	307	258	203	323	233	231	296	295	294	202	286	307	249	272
Sep	1,128	228	194	153	242	174	175	219	221	221	155	212	226	177	200
Oct	970	196	168	132	199	135	127	187	191	191	136	178	151	144	168
Nov	564	114	101	79	126	89	80	106	114	115	87	105	89	85	99
Dec	867	175	151	119	181	123	115	166	171	172	124	159	135	129	150
Totals	10,554	2,131	1,837	1,445	2,253	1,582	1,520	2,027	2,084	2,089	1,501	1,960	1,855	1,612	2,174
Avg	879	178	153	120	188	132	127	169	174	174	125	163	155	134	154
Unit cost (cents/kwh)		20.196	17.408	13.689	21.346	14.985	14.402	19.204	19.748	19.795	14.224	18.576	17.576	15.272	20.601

Rates as of 11/7/13 and based on the average load profile in 2010 for a typical Park Ridge residential customer

Annual Residential Electric Cost Comparison (based on typical Park Ridge residential load)



**APPENDIX D:
EMG ACCESSIBILITY CHECKLIST**

EMG ACCESSIBILITY CHECKLIST

Property Name: Lehmann Gardens
Date: 4/8/14
Project Number: 107534.13R-008.308

EMG Accessibility Checklist						
UFAS/ADA Accessibility						
	Building History	Yes	No	N/A	Unk	Comments
1.	Has the management previously completed an accessibility review?	√				
2.	Does an accessibility compliance plan exist for the property?	√				
3.	Has the plan been reviewed/approved by outside agencies (engineering firms, building department, other agencies)?			√		
4.	Have any accessibility related complaints been received in the past?		√			
	Building Access	Yes	No	N/A		Comments
1.	Are there an adequate number (per regulation) of wheelchair accessible parking spaces available at the rental office (96" wide/ 60" aisle)	√				
2.	Is there at least one wheelchair accessible van parking space (96" wide/ 96" aisle) for every 8 standard accessible spaces?	√				
3.	Are accessible parking spaces located on the shortest accessible route of travel from an accessible building entrance?	√				
4.	Does signage exist directing you to wheelchair accessible parking and an accessible building entrance?	√				
5.	Is there a ramp from the parking to an accessible building entrance (1:12 slope or less)	√				
6.	If the main entrance is inaccessible, are there alternate accessible entrances?	√				
7.	Is the accessible entrance doorway at least 32" wide?	√				
8.	Is the door handle easy to open? (lever/push type knob, no twisting required, no higher than 48" above floor)	√				
9.	Are entry doors other than revolving doors available?	√				

EMG Accessibility Checklist					
	Rental office	Yes	No	N/A	Comments
1.	Is the entry door to the rental office 3'wide with no step or threshold over ½" tall?			√	Rental Office is off site.
2.	Is there a counter or table at 30" high for wheelchair access to fill out a rental application?			√	
3.	Is there clearance behind the counter for an employee in a wheelchair?			√	
	Building Corridors and Elevators	Yes	No	N/A	Comments
1.	Is the path of travel free of obstructions and wide enough for a wheelchair (at least 60" wide)?	√			
2.	Are floor surfaces firm, stable and slip resistant (carpets wheelchair friendly)?	√			
3.	Do obstacles (phones, fountains, etc.) protrude no more than 4" into walkways or corridor?		√		
4.	Are elevators controls low enough to be reached from a wheelchair (48" front approach/54" side approach)?			√	
5.	Are there raised elevator markings in Braille and standard alphabet for the blind?			√	
6.	Are there audible signals inside cars indicating floor changes?			√	
7.	Do elevator lobbies have visual and audible indicators of the cars arrival?			√	
8.	Does the elevator interior provide sufficient wheelchair turning area (51" x 68" minimum)?			√	
9.	Is at least one wheelchair accessible public phone available?			√	
10	Are wheelchair accessible facilities (restrooms, exits, etc.) identified with signage?	√			
	Common Area Restrooms	Yes	No	N/A	Comments
1.	Are common area public restrooms located on an accessible route?	√			
2.	Are pull handles push/pull or lever type?	√			
3.	Are access doors wheelchair accessible (at least 32" wide)?	√			
4.	Are public restrooms large enough for wheelchair turnaround (60" turning diameter)?	√			

EMG Accessibility Checklist					
	Common Area Restrooms	Yes	No	N/A	Comments
5.	Are stall doors wheelchair accessible (at least 32" wide)?	√			
6.	If stalls are too narrow can the toilet room be converted to a single occupant toilet room?			√	
7.	Are grab bars provided in toilet stalls (33"-36" above floor)?	√			
8.	Do sinks provide clearance for a wheelchair to roll under (29" clearance)?	√			
9.	Are sink handles operable with one hand without grasping, pinching or twisting?	√			
10.	Are exposed pipes under sink sufficiently insulated against contact?	√			
11.	Are soap dispensers, towel, etc. reachable (48" from floor for frontal approach, 54" for side approach)?	√			
12.	Is the base of the mirror no more than 40" off floor?	√			
	Common Area Kitchen	Yes	No	N/A	Comments
1.	In a "U"-shaped kitchen is there 60" clear floor space width?			√	
2.	In a "U"-shaped kitchen with base cabinet removed from beneath sink, is there a minimum of 40" width?			√	
3.	In a "L"-shaped kitchen, is there a 40" width minimum maintained?	√			
4.	Are countertops a maximum of 24" deep and 36" high?	√			
5.	Knee space beneath cabinetry is 30" wide and 27" high.	√			
6.	Is insulation installed below sinks on piping?	√			
7.	Are adaptable units equipped with removable or retractable cabinetry fronts beneath sink or stove?	√			
	Common Area Laundry rooms	Yes	No	N/A	Comments
1.	Are the laundry rooms located on an accessible route?	√			
2.	Are the door handles push/pull or lever type?	√			
3.	Are the access doors wheelchair accessible (at least 32" clear width)?	√			

EMG Accessibility Checklist					
	Common Area Laundry rooms	Yes	No	N/A	Comments
4.	Are laundry rooms large enough for wheelchair turnaround (60" turning diameter)?	√			
5.	Is there a front load washing machine	√			
6.	If clothes folding tables are provided is one section at 32" high with a clear area below the table?			√	
Fair Housing Accessibility / Section 504					
	Access to Unit	Yes	No	N/A	Comments
1.	Property management reports that the number of units currently accessible and those adaptable meet FHA requirements of all ground floor units or 100% for a high rise.	√			
2.	Are 5% of the units fully accessible to those individuals with mobility impairments and 2% of units accessible to those individuals with audio / visual impairments?	√			
3.	Are there any barriers or structural restrictions preventing access to the building?		√		
4.	Are the accessible units on an accessible route?	√			
5.	Is the apartment entry corridor 36" wide, door 32" wide (frame to frame), threshold height less than ½", and appropriate door hardware present?	√			
	Unit Living Space	Yes	No	N/A	Comments
1.	Is there access throughout unit?	√			
2.	Are electrical outlets 15" minimum above floor minimum?	√			
3.	Are environmental controls and switches 48" maximum above floor or lower?	√			
	Unit Bathroom	Yes	No	N/A	Comments
1.	Is entry door at least 32" wide frame-to-frame?	√			
2.	Are switches & outlets in accessible locations?	√			
3.	Are bathroom walls around the toilet and tub/shower reinforced?	√			
4.	Is there a 30" x 48" clear floor space outside of door swing area?	√			

EMG Accessibility Checklist					
	Unit Bathroom	Yes	No	N/A	Comments
5.	Is there a 56" x 48" clear floor space in front of toilet (48" out from wall toilet is hung against)?	√			
6.	Is there a 30" x 48" clear floor space in front of lavatories (30" deep from front of counter)?	√			
7.	Is there a 30" x 48" clear floor space in front of tub/shower (30" out from tub/shower)?	√			
8.	Is vanity a maximum of 24" deep and 36" high?	√			
9.	Knee space beneath sink is 30" wide and 27" high.	√			
10.	Is shower stall 36"x 42" minimum with small lip?	√			
11.	Is insulation installed below sinks on piping?	√			
	Unit Kitchen	Yes	No	N/A	Comments
1.	In a "U"-shaped kitchen is there 60" clear floor space width?			√	
2.	In a "U"-shaped kitchen with base cabinet removed from beneath sink, is there a minimum of 40" width?			√	
3.	In a "L"-shaped kitchen, is there a 40" width minimum maintained?	√			
4.	Are countertops a maximum of 24" deep and 36" high?	√			
5.	Knee space beneath cabinetry is 30" wide and 27" high.	√			
6.	Is insulation installed below sinks on piping?	√			Required in adaptable unit regardless of occupancy.
7.	Are adaptable units equipped with removable or retractable cabinetry fronts beneath sink or stove?	√			

It is understood by the Client that the limited observation described herein does not comprise a full ADA Compliance Survey, and that such a survey is beyond the scope of EMG's Physical Condition Assessment. Only a representative sample of areas was observed and, other than as shown on the accessibility checklist, actual measurements were not taken to verify compliance.

ADAAG CRITERIA

Total Parking in Lot	Required Minimum Number of Accessible Spaces
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1000	2% of total
1001 and over	20 plus 1 for each 100 over 1000

For further information or a copy of the Americans with Disabilities Act Accessibility Guidelines contact 1-800-949-4ADA

APPENDIX E:
PRE-SURVEY QUESTIONNAIRE



ENERGY AUDIT : PRE-SURVEY QUESTIONNAIRE

This questionnaire must be completed by the property owner, management point of contact or other person knowledgeable about the subject property.

The completed form must be presented to EMG's Field Observer on or before the site visit.

If the form is not completed, EMG's Project Manager will require additional time during the on-site visit in order to complete the questionnaire. During the site visit, EMG's Field Observer may ask for details associated with selected questions. This questionnaire will be utilized as an exhibit in EMG's final report.

Housing Authority: Bergen County	Address: 1 Bergen County Plaza, 2 nd Floor Hackensack, NJ 07601
Owner, if other than Authority:	Address:
Name of Subject Site: Lehmann Gardens	Residential Buildings: 2 Common Buildings: Other Buildings:
Address: 12-14 Sulak Lane	City, State, Zip: Park Ridge, NJ 07656
Building Manager : Vincent M. Bufis	Phone: (201) 206-9413
Maintenance Manager: Vincent M. Bufis	Phone: (201) 206-9413
Energy Management Coordinator:	Phone
Building Description (circle all that apply) Masonry - <u>Wood framed</u> - Steel framed - Curtain wall Detached - Townhouse - <u>Low-rise</u> - Mid-rise - High-rise Basement - Crawl Space - <u>Attic</u> - Flat Roof - <u>Slope Roof</u> Number of: ___ Efficiencies <u>31</u> One BR <u>5</u> Two BR ___ Three BR ___ Four BR ___ Five BR ___ Six BR ___ SRO Date of original completion: 1993 Dates of significant renovations: 4/16/13 New domestic hot water tank and boiler system. Describe: Other uses on this site ___ Rental Office ___ Community Service Offices <u>x</u> ___ Common Laundry ___ Common Meeting-Activity <u>x</u> ___ Common Kitchen ___ Residential or Commercial ___ Daycare ___ Training Education ___ Gym Fitness Recreation <u>x</u> ___ Maintenance Storage <u>x</u> ___ Other, Specify: Office, Sheds, Gazebo, Basketball hoop	
Anticipated Modifications or Changes In Use in the next 15 yrs: Roof replacement, driveway milling and resurfacing.	
Have there been previous Energy Audits or Retrofit Programs? ___Yes <u>X</u> No Date _____ Agency _____ Scope _____ Are related Energy Audit or Retrofit documents available? Any additional Energy Investment Programs? _____	

Does the Institution Have an ongoing energy management program? ___Yes ___X___No

Utilities			
	Utility Supplier to the Site	Master Metered	Tenant Metered
Electric	Park Ridge Utilities		X
Natural/LP Gas	PSE&G	X	
Fuel Oil	Rachles/Michele's Oil Company Inc		
Other _____			
Domestic Water	Park Ridge Utilities	X	
Sewer	Park Ridge Utilities		

- Utility data is required for the most recent available 12 month period. EMG can provide you with Excel form to assist you in supplying this data. Request this form from your Program Manager.
- Tenant paid data is required for best evaluation results. At minimum a representative sample of actual tenant consumption and cost is required for the 12 month period.

Tenant Utility Cost Paid By		
	Landlord or Housing Authority	Tenant
Heating	x	
Cooling		x
Domestic Hot Water	x	
Water Supply	x	
Sewer	x	

Unk = Unknown, NA = Not Applicable	Yes	No	Unk	NA	Comments
1. Does the boiler or furnaces seem to be oversized for the property (i.e. – cycles on and off often)?		X			
2. Do any of the gas fired boilers, furnaces, or water heaters have vent or flue dampers?		X			
3. Does the boiler have outdoor reset controls?	X				The heating boilers operate off of a temperature sensor on the side of the building.
4. Does the County pay for the tenant gas or oil consumption?			X		The gas is paid by the Housing Authority of Bergen County.
5. Are low-flow faucet aerators and shower heads installed on all or most faucets and showers?	X				

Unk = Unknown, NA = Not Applicable	Yes	No	Unk	NA	Comments
6. Are the water closets low-flow (1.6 gpf)?			X		
7. Are the motors used for the elevators high-efficiency motors?				X	
8. Are the motors used for the ventilation systems (i.e. - air handlers, fan coils, etc.) high-efficiency motors?			X		
9. Are the motors used for the hydronic heating system (i.e. - pumps) high-efficiency motors?			X		
10. Are the motors used for the hydronic cooling system (i.e. - pumps, chillers, cooling tower fan) high-efficiency motors?			X		
11. Is there any uninsulated heating water, chilled water, or domestic hot water piping in unconditioned spaces such as mechanical rooms, basements, or storage areas?		X			
12. Is a booster pump required to maintain water pressure at the property?		X			
13. Are laundry room washing machines fixed to cold rinse only?		X			
14. Are there any wall or window leaks?		X			
15. Are there any poorly insulated areas?		X			
16. Do the utilities (electric, gas, sewer, water) provide adequate service?	X				
17. Are HVAC systems at the property inspected and maintained, at a minimum, annually?	X				
18. Is the HVAC equipment more than ten years old?		X			Community room air handler system is, but not the boilers
19. Are the water heaters/boilers more than ten years old?		X			
20. Are there any leaks or pressure problems with natural gas service?		X			
21. Is the electrical service adequate?	X				
22. Are there any emergency electrical generators?	X				
23. Are there any large UPS battery systems?	X				

Unk = Unknown, NA = Not Applicable	Yes	No	Unk	NA	Comments
24. Are there any vacant buildings or significant building areas?		X			
					Lehmann Gardens was developed to house those with physical disabilities.
25. Is there anything else that EMG should know about when assessing this property? If so, what?	X				Therefore, most of the residents here are wheelchair bound. Some permanently confined other part time users. The apartments all have VCT tile throughout which is laid on top of the concrete sub floor.



PROPERTY CONDITION ASSESSMENT: PRE-SURVEY QUESTIONNAIRE

This questionnaire must be completed by the property owner, the owner's designated representative, or someone knowledgeable about the subject property. **The completed form must be presented to EMG's Field Observer on the day of the site visit.** If the form is not completed, EMG's Project Manager will require **additional time** during the on-site visit with such a knowledgeable person in order to complete the questionnaire. During the site visit, EMG's Field Observer may ask for details associated with selected questions. This questionnaire will be utilized as an exhibit in EMG's final Property Condition Report.

Name of person completing questionnaire: **Vincent M. Bufis**

Association with property: **Property Manager**

Length of association with property: **2 years – September 2011**

Date Completed: **January 2, 2014**

Phone Number: **(201) 206-9413**

Property Name: **Lehmann Gardens**

EMG Project Number: **107534.13R-008.308**

Directions: Please answer all questions to the best of your knowledge and in good faith. Please provide additional details in the Comments column, or add backup documentation for any Yes responses.

INSPECTIONS		DATE LAST INSPECTED	LIST ANY OUTSTANDING REPAIRS REQUIRED
1	Elevators	N/A	N/A – There are no elevators in this property.
2	HVAC, Mechanical, Electric, Plumbing	4/16/13	Heating in community room – Thermostat and air handler need repair.
3	Life-Safety/Fire	1/2/14 – inspected monthly	N/A – There are no outstanding repairs required at this time.
4	Roofs	11/2013	N/A – There are no outstanding repairs required at this time.
QUESTION		RESPONSE	
5	List any major capital improvement within the last three years.	Domestic Hot Water – Boiler and tank system replaced Bollard Lights – Replaced with new LED bollards Landscape of site – Removal of undesirable trees, bushes, vines, weeds, etc.	
6	List any major capital expenditures planned for the next year.	Landscape– Including adding new bushes, trees, and repairing parts of the lawn irrigation system.	
7	What is the age of the roof(s)?	11 years	
8	What building systems (HVAC, roof, interior/exterior finishes, paving, etc.) are the responsibilities of the tenant to maintain and replace?	None of the building systems are the responsibility of the tenants to maintain and replace. They must pay their electric bill, keep their apartments in a neat manner, and, if they so choose, have up their cable provider through Verizon or Optimum.	

Mark the column corresponding to the appropriate response. Please provide additional details in the Comments column, or backup documentation for any Yes responses. (NA indicates "Not Applicable", Unk indicates "Unknown")

QUESTION		RESPONSE				COMMENTS
		Y	N	Unk	NA	
9	Are there any unresolved building, fire, or zoning code issues?		X			
10	Are there any "down" or unusable units?		X			
11	Are there any problems with erosion, stormwater drainage or areas of paving that do not drain?	X				Some of the grass areas around the site need improved drainage. All paved areas drain properly.
12	Is the property served by a private water well?		X			
13	Is the property served by a private septic system or other waste treatment systems?		X			
14	Are there any problems with foundations or structures?		X			
15	Is there any water infiltration in basements or crawl spaces?		X			
16	Are there any wall, or window leaks?		X			
17	Are there any roof leaks?		X			
18	Is the roofing covered by a warranty or bond?			X		
19	Are there any poorly insulated areas?		X			
20	Is Fire Retardant Treated (FRT) plywood used?			X		
21	Is exterior insulation and finish system (EIFS) or a synthetic stucco finish used?		X			
22	Are there any problems with the utilities, such as inadequate capacities?		X			
23	Are there any problems with the landscape irrigation systems?	X				Some of the sprinklers need adjusting or replacing. Some of the lines are pinched and need replacing to provide more adequate water flow.
24	Has a termite/wood boring insect inspection been performed within the last year?		X			
25	Do any of the HVAC systems use R-11, 12, or 22 refrigerants?			X		

Mark the column corresponding to the appropriate response. Please provide additional details in the Comments column, or backup documentation for any Yes responses. (**NA** indicates "Not Applicable", **Unk** indicates "Unknown")

QUESTION		RESPONSE				COMMENTS
		Y	N	Unk	NA	
26	Has any part of the property ever contained visible suspect mold growth?		X			
27	Is there a mold Operations and Maintenance Plan?		X			
28	Have there been indoor air quality or mold related complaints from tenants?	X				The tenants have issues with the heating and air conditioning of the hallways. Being that there are only heaters located near the entry doors and no real circulation of air.
29	Is polybutylene piping used?		X			
30	Are there any plumbing leaks or water pressure problems?		X			
31	Are there any leaks or pressure problems with natural gas service?		X			
32	Does any part of the electrical system use aluminum wiring?		X			
33	Do Residential units have a less than 60-Amp service?		X			
34	Do Commercial units have less than 200-Amp service?				X	
35	Are there any recalled fire sprinkler heads (Star, GEM, Central, Omega)?		X			
36	Is there any pending litigation concerning the property?		X			
37	Has the management previously completed an ADA review?			X		
38	Have any ADA improvements been made to the property?		X			
39	Does a Barrier Removal Plan exist for the property?		X			
40	Has the Barrier Removal Plan been approved by an arms-length third party?		X			
41	Has building ownership or management received any ADA related complaints?		X			
42	Does elevator equipment require upgrades to meet ADA standards?				X	

Mark the column corresponding to the appropriate response. Please provide additional details in the Comments column, or backup documentation for any Yes responses. (NA indicates "Not Applicable", Unk indicates "Unknown")						
QUESTION		RESPONSE				COMMENTS
		Y	N	Unk	NA	
43	Are there any problems with exterior lighting?		X			
44	Are there any other significant issues/hazards with the property?		X			
45	Are there any unresolved construction defects at the property?		X			

Vincent M. Bufis

January 2, 2014

Signature of person Interviewed or completing form

Date

On the day of the site visit, provide EMG's Field Observer access to all of the available documents listed below. Provide copies if possible.

INFORMATION REQUIRED	
1. All available construction documents (blueprints) for the original construction of the building or for any tenant improvement work or other recent construction work.	8. The company name, phone number, and contact person of all outside vendors who serve the property, such as mechanical contractors, roof contractors, fire sprinkler or fire extinguisher testing contractors, and elevator contractors.
2. A site plan, preferably 8 1/2" X 11", which depicts the arrangement of buildings, roads, parking stalls, and other site features.	9. A summary of recent (over the last 5 years) capital improvement work which describes the scope of the work and the estimated cost of the improvements. Executed contracts or proposals for improvements. Historical costs for repairs, improvements, and replacements.
3. For commercial properties, provide a tenant list which identifies the names of each tenant, vacant tenant units, the floor area of each tenant space, and the gross and net leasable area of the building(s).	10. Records of system & material ages (roof, MEP, paving, finishes, furnishings).
4. For apartment properties, provide a summary of the apartment unit types and apartment unit type quantities, including the floor area of each apartment unit as measured in square feet.	11. Any brochures or marketing information.
5. For hotel or nursing home properties, provide a summary of the room types and room type quantities.	12. Appraisal, either current or previously prepared.
6. Copies of Certificates of Occupancy, building permits, fire or health department inspection reports, elevator inspection certificates, roof or HVAC warranties, or any other similar, relevant documents.	13. Current occupancy percentage and typical turnover rate records (for commercial and apartment properties).
7. The names of the local utility companies which serve the property, including the water, sewer, electric, gas, and phone companies.	14. Previous reports pertaining to the physical condition of property.
	15. ADA survey and status of improvements implemented.
	16. Current / pending litigation related to property condition.

Your timely compliance with this request is greatly appreciated.

APPENDIX F: ACRONYMS

ASTM E2018-01 ACRONYMS

ADA - The Americans with Disabilities Act

ASTM - American Society for Testing and Materials

BOMA - Building Owners & Managers Association

BUR - Built-up Roofing

DWV – Drainage, Waste, Ventilation

EIFS - Exterior Insulation and Finish System

EMF – Electro Magnetic Fields

EMS - Energy Management System

EUL - Expected Useful Life

FEMA - Federal Emergency Management Agency

FFHA - Federal Fair Housing Act

FIRMS - Flood Insurance Rate Maps

FRT- Fire Retardant Treated

FOIA - U.S. Freedom of Information Act (5 USC 552 et seq.) and similar state statutes.

FOIL - Freedom of Information Letter

FM - Factory Mutual

HVAC - Heating, Ventilating and Air Conditioning

IAQ - Indoor Air Quality

MEP – Mechanical, Electrical & Plumbing

NFPA - National Fire Protection Association

PNA – Capital Needs Assessment

PCR - Property Condition Report

PML - Probable Maximum Loss

RTU - Rooftop Unit

RUL - Remaining Useful Life

STC – Sound Transmission Class

UBC – Uniform Building Code

APPENDIX G: GLOSSARY OF TERMS-ENERGY AUDITS

Glossary of Terms and Acronyms-Energy Audit

ECM – Energy Conservation Measures are projects recommended to reduce energy consumption. These can be No/Low cost items implemented as part of routine maintenance or Capital Cost items to be implemented as a capital improvement project.

Initial Investment – The estimated cost of implementing an ECM project. Estimates typically are based on R.S. Means Construction cost data and Industry Standards.

Annual Energy Savings – The reduction in energy consumption attributable to the implementation of a particular ECM. These savings values do not include the interactive effects of other ECMs.

Cost Savings – The expected reduction in utility or energy costs achieved through the corresponding reduction in energy consumption by implementation of an ECM.

Simple Payback Period –The number of years required for the cumulative value of energy or water cost savings less future non-fuel or non-water costs to equal the investment costs of the building energy or water system, without consideration of discount rates.

EUL – Expected Useful Life is the estimated lifespan of a typical piece of equipment based on industry accepted standards.

RUL – Remaining Useful Life is the EUL minus the effective age of the equipment and reflects the estimated number of operating years remaining for the item.

SIR - The savings-to-investment ratio is the ratio of the present value savings to the present value costs of an energy or water conservation measure. The numerator of the ratio is the present value of net savings in energy or water and non-fuel or non-water operation and maintenance costs attributable to the proposed energy or water conservation measure. The denominator of the ratio is the present value of the net increase in investment and replacement costs less salvage value attributable to the proposed energy or water conservation measure. It is recommended that energy-efficiency recommendations be based on a calculated SIR, with larger SIRs receiving a higher priority. A project typically is recommended only if the SIR is greater than or equal to 1.0, unless other factors outweigh the financial benefit.

Life Cycle Cost - The sum of the present values of (a) Investment costs, less salvage values at the end of the study period; (b) Non-fuel operation and maintenance costs; (c) Replacement costs less salvage costs of replaced building systems; and (d) Energy and/or water costs.

Life Cycle Savings – The sum of the estimated annual cost savings over the EUL of the recommended ECM, expressed in present value dollars.

Building Site Energy Use Intensity - The sum of the total site energy use in thousand of Btu per unit of gross building area. Site energy accounts for all energy consumed at the building location only not the energy consumed during generation and transmission of the energy to the site.

Building Source Energy Use Intensity – The sum of the total source energy use in thousand of Btu per unit of gross building area. Source energy is the energy consumed during generation and transmission in supplying the energy to your site.

Building Cost Intensity - This metric is the sum of all energy use costs in dollars per unit of gross building area.

Greenhouse Gas Emissions - Although there are numerous gases that are classified as contributors to the total for Greenhouse Emissions, the scope of this energy audit focuses on carbon dioxide (CO₂). Carbon dioxide enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and also as a result of other chemical reactions (e.g., manufacture of cement).

APPENDIX H: ENERGY CONSERVATION MEASURES

UIC	Install Low Flow Shower Heads	
EAP1	Details: All Apartments	
Total Number of Shower Heads To Be Replaced	36	
No. of Shower Days/Year	365	
No. of Residents	44	
Estimated Time Per Shower	8.10	Mins
GPM of Existing Shower Head	2.5 GPM	
GPM of Proposed Shower Head *	(Select) 1.75	GPM
*(Federal Law Requires all new shower heads to have a max flow rate of 2.5 GPM)		
Water & Energy Savings Calculations		
Property Location in United States	Northern Localities	
Select Type of Water Heater Fuel	(Select) Natural Gas	
Average Hot Water Discharge Temperature	120.00	°F
Annual Water Savings (Assuming 1 shower/day/person for 365 days a year)	98	kGal
Energy Factor of Domesitc Hot Water Heater:	0.95	EF
Equivalent Heating Fuel Energy savings:	68,439	kBtu
Cost Savings Calculations		
Equivalent Heating Fuel Savings	Natural Gas 684	Therms
Water Tariff (\$/1000 Gal)	\$4.20	\$/kGal
Annual Cost Savings In Form of Water	\$410	\$\$
Annual Energy Savings From Water Heater	\$253	\$\$
Estimated Total Annual Cost Savings	\$662	\$\$
Estimated Installation Costs		
Estimated Total Installation Cost	\$1,702	\$\$
Simple Payback Period	2.57	Years
Type of Recommendation	Capital Cost ECM Recommendation	

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ECM EXPLANATION:

By reducing the flow of water coming off the shower heads, savings can be generated in the form of reduced water and sewer costs. Additional savings can be realized via reduction in the demand for hot water. Currently Federal law requires all new shower heads to have a maximum flow rate of 2.5 GPM.

EMG recommends replacing the existing shower heads with new low flow shower heads as mentioned above. The proposed ECM shall also result in an annual energy saving in form of reduction in water heating bills.

Summary:

Initial Investment:	\$1,702	Simple Payback:	2.57
Annual Cost Savings:	\$662		

UIC	Replace Existing Refrigerator(s) With Energy Star Certified Refrigerator(s)		
EEA1	Details: All apartments		
Number of Refrigerators To Be Replaced		36	Qty
Details of Existing Refrigerator:		1993-2000 Top Freezer 7.5-16.4 CuFt -893.75 kWh	
Estimated Annual Energy Consumption By The Existing Refrigerator:		894	kWh/Year
Proposed New Refrigerator:		2010 -2012 Top Freezer 12.0-15.0 CuFt-349 kWh/Yr	
Estimated Proposed Annual Energy Consumption of The New Refrigerator:		349	kWh/Year
Annual Kwh Savings Per Unit (Kwh/year)		545	kWh
Total Annual Kwh Savings (Kwh/year)		19,611	kWh
Current Electrical Tariff (\$/kWh)		\$0.14	\$/kWh
Annual Cost Savings From All Refrigerators (\$\$)		\$2,671	\$\$
Total Installation Cost Including, Eco Friendly Disposal Of Existing Refrigerator (\$\$)			
36	\$50	\$494	\$19,580
No. of Units	Disposal Tax	Unit Cost	Total Cost
Simple Return on Investment		7.33	Yrs
Note- Average Life of a Refrigerator is 15 Years			
Type of Recommendation		Capital Cost ECM Recommendation	

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ECM DESCRIPTION:

One of the highest 'silent' energy consuming devices in any home/office is the refrigerator, which runs all year long. Having a low energy consuming refrigerator thus results in a considerable reduction in the annual energy costs. On an average a useful life of any refrigerator is approximately 19 years and hence EMG recommends replacing the current refrigerator at the end of its useful life with a new energy star certified low energy

EMG strongly recommends replacing the existing older non energy star refrigerators with new energy efficient Energy Star Certified refrigerators of the appropriate type.

The expected useful life of new refrigerators is approximately 15 years.

Summary:

Initial Investment:	\$19,580	Simple Payback:	7.33
Annual Cost Savings:	\$2,671		

UIC	Replace Inefficient Linear Fluorescent Lamps			
EAL2-S	Details: Unit Kitchens and Common Areas			
Existing Lighting System				
	Apartment Kitchens	Common Areas	Insert Location here	Insert Location here
Current Type of Lamp: <i>(Select)</i>	F42T12	F42T12	-	-
Current Annual Avg Hrs of Operation:	2,920 hrs	4,380 hrs	0 hrs	0 hrs
Existing Number of Fixtures:	72	30	0	0
Proposed Lighting System				
Proposed Lamp Replacement: <i>(Select)</i>	F42T8N	F42T8N	-	-
Proposed Annual Avg. Hours of Operation	2,920 hrs	4,380 hrs	0 hrs	0 hrs
Proposed Number of Fixtures:	72	30	0	0
Proposed Lighting Control: <i>(Select)</i>	Light Switch	Light Switch	Light Switch	Light Switch
No. of Lighting Controls:	0 Qty	0 Qty	0 Qty	0 Qty
Energy Saving Calculation				
Estimated Annual Energy Savings	4204.80 kWh	2628.00 kWh	0.00 kWh	0.00 kWh
Are The Ballast's Being Replaced: <i>(Select)</i>	Yes	Yes	Yes	Yes
Estimated Material Cost:	\$3,240 \$\$	\$1,350 \$\$	\$0 \$\$	\$0 \$\$
Estimated Labor Cost:	\$2,880 \$\$	\$1,200 \$\$	\$0 \$\$	\$0 \$\$
Estimated Total Material Cost:	\$4,590 \$\$	Estimated Total Labor Cost:		\$4,080
Electric Rate:	\$0.14 \$\$	Total kWh Saving		6,833 kWh
Total Initial Investment For Retrofit	\$8,670 \$\$	Estimated Annual Cost Savings		\$931 \$\$
Simple Pay back Period	9.32 Yrs			
Type of Recommendation		Capital Cost ECM Recommendation		

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ECM DESCRIPTION:

Fluorescent lighting is recommended for areas where color sensitivity is an important criterion (e.g., offices or small parts assembly rooms). Fluorescent tubes are currently available that produce a higher light output (more lumens per watt) than standard fluorescent tubes. There are efficient 40-watt lamps that produce 8% to 10% more light than standard lamps. The 34-watt fluorescent tubes use 15% less power than standard lamps, while producing about 8% less light. Since the human eye responds to light exponen-tially, rather than linearly, the difference is often unnoticeable. "T8" fluorescent lamps use only 32 watts, but existing fixtures must be replaced.

It is important to replace all lamps when re-lamping a fluorescent fixture, never mix energy-efficient and standard lamps with the same ballast. Ensure that the fluorescent ballast is compatible with the energy-efficient lamps. It must be noted that when switching from T-12 magnetic ballast to T8 lamps, the ballasts should be replaced with instant start electrical ballast. Also it should be noted that when installing an occupancy sensor/motion sensor, rapid start electronic ballast should be used.

SUMMARY:

Initial Investment:	\$4,590	Simple Payback:	9.32	Years
Annual Cost Savings:	\$931			

UIC	Replace Incandescent & Halogen Lamps			
EAL1B-S	Details: All Units and common areas			
	Apartments	Common Areas	Apartment Entrances	Insert Location here
Current Type of Lamp: (Select)	I60	I60	I100	I60
Proposed Replacement Type:	CFL	CFL	LED	LED
Number of Lamps to Be Replaced :	72	22	18	0
Install New Fixture?	Flush Mount Fixture	Flush Mount Fixture	Industrial Type Fixtures	-
Number of Fixtures to Be Replaced :	36	22	18	0
Current Annual Usage:	1,095 hrs	4,380 hrs	4,380 hrs	0 hrs
Proposed Annual Avg. Hours of Operation	1,095 hrs	4,380 hrs	4,380 hrs	0 hrs
Proposed Lamp Replacement: (Select)	CFL15	CFL15	LED10	LED11
Estimated Annual Energy Savings	3,548 kWh	4,336 kWh	7,088 kWh	0 kWh
Total labor Cost For Retrofit	\$3,154 \$	\$1,840 \$	\$1,505 \$	\$0 \$
Estimated Cost Per Lamp	\$5.15 \$	\$5.15 \$	\$50.69 \$	\$13.75 \$
Cost For Retrofit	\$4,425 \$	\$2,503 \$	\$3,408 \$	\$0 \$
Total Initial Investment For Retrofit	\$10,336 \$	Total kWh Saving		14972 kWh
Electric Rate:	\$0.14 \$			
Estimated Annual Cost Savings	\$2,039 \$			
Simple Pay back Period	5.07 Yrs			
Type of Recommendation		Capital Cost ECM Recommendation		

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ECM DESCRIPTION:

The existing incandescent lamps can be replaced with screw-in compact fluorescent lamps. The result of the replacement is a direct energy savings up to 60%. In case of the incandescent lamps approximately 80% of the energy consumed by it is lost in the form of heat radiated by them when lit where as only 20% is actually converted into light. In addition to this the commercially available incandescent lamp have an annual life expectancy of 5000 hrs, whereas a CFL can last for nearly 10,000-12,000 hrs, which is more than twice the life expectancy of the incandescent lamps. Not all, screw-in fluorescent lamps are generally compatible with dimmers.

EMG recommends replacing all the incandescent lamps with compact fluorescent lamps as detailed in the calculator above.

SUMMARY;

Initial Investment: \$10,336 Simple Payback Period: 5.07
Annual Cost Savings: \$2,039

UIC	Install Low Flow Faucet Aerators			
EAP2	Details: Apartment interiors			
Property Type:	Residential	Estimated No. of Operational Weeks	52	
No. of Occupants	44	Number of Occupied Days/Week (Max 7)	7	
KITCHEN FAUCETS		BATHROOM FAUCETS		
Do You Want To Replace Kitchen Faucets Aerators	Yes (Select)	Do You Want To Replace Bathroom Faucets Aerators	Yes (Select)	
Total Number of Faucet Aerators To Be Replaced	36	Total Number of Faucet Aerators To Be Replaced	36	
Total Number of Faucets To Be Replaced:	0	Total Number of Faucets To Be Replaced:	0	
GPM of Existing Faucet Aerators	2 GPM	GPM of Existing Faucet Aerators	2 GPM	
GPM of Proposed Faucet Aerator	1.5 GPM	GPM of Proposed Faucet Aerator	1 GPM	
Estimated Number of Uses Per Day	4	Estimated Number of Uses Per Day	6	
Estimated Time Per Faucet Use 8.1 Min/Person/day @AWWA	0.49 Mins	Estimated Time Per Faucet Use 8.1 Min/Person/day @AWWA	0.74 Mins	
Annual Water Savings From Kitchen Faucets	9.49 kGal	Annual Water Savings From Bathroom Faucets	42.71 kGal	
WATER & ENERGY SAVING CALCULATION		COST SAVING CALCULATION		
Select Type of Water Heater Fuel:	Natural Gas (Select)	Property Location in United States	Southern Localities	
Energy Factor of Domestic Hot Water Heater:	0.95 EF	Heating Fuel Tariff	\$0.37 \$/Therm	
Hot Water Discharge Temperature at Faucet	120.00 °F	Water Tariff (\$/1000 Gal)	\$4.20 \$/kGal	
Equivalent Heating Fuel Savings: Savings Discounted by 15% to Account For Cold Water Use	195 Therms	Annual Cost Savings In Form of Water	\$219 \$	
Annual Water Savings	52.20 kGal	Annual Energy Savings From Water Heater	\$72 \$	
COST BENEFIT ANALYSIS				
Estimated Total Annual Cost Savings	\$291 \$\$	Estimated Total Installation Cost	\$2,252 \$\$	
Simple Payback Period	7.74 Years	Type of Recommendation	Capital Cost ECM Recommendation	

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ECM EXPLANATION:

By reducing the flow of water coming from the restroom faucets, aerators can generate energy savings at low cost and with easy installation. The savings generated would be in the form of reduced water and sewer costs and at the same time aerators would save energy by reducing the demand for hot water. The average faucet has a flow rate of about 2 to 4 GPM. Adding a screw-in faucet aerator reduces the flow to 0.5 to 1.5 GPM in the bathroom and 2.2 GPM in the kitchen. In addition to saving energy and water, the "foamier" water that comes from faucet aerators wets objects better than water from a faucet with no aerator, which tends to bounce off the object rather than thoroughly wetting it.

EMG recommends replacing the proposed faucet aerators with new low flow aerators as mentioned above. The proposed ECM shall also result in an annual energy saving in form of reduction in water heating bills.

Summary:

Initial Investment:	\$2,252	Estimated Annual Cost Savings:	\$291	Simple Payback Period (Yrs):	7.74
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