CITY OF NOVI CITY COUNCIL
NOVEMBER 25, 2024

SUBJECT: Consideration of approval of a grant agreement with the Department of Environment, Great Lakes and Energy (EGLE) in connection with the Community Energy Management Program (CEM) in the amount of $100,000.

SUBMITTING DEPARTMENT: Integrated Solutions Team – Facilities Management Division

KEY HIGHLIGHTS:

- CEMS grant funding for energy-related products is available through EGLE.
- Novi grant application approved through EGLE for the amount of $100,000.
- Grant funds utilized for an energy audit on six Novi facilities.
- The remaining grant funds are used to implement suggested changes from the audit.
- The City will pay the project cost upfront with full reimbursement of up to $100,000 from EGLE.

FINANCIAL IMPACT

	FY 24/25
REVENUE REQUIRED BUDGET	**$ 100,000**
EXPENDITURE REQUIRED BUDGET 1. CEM Expenditure	**$100,000**
APPROPRIATION REQUIRED	**$100,000**
FUND BALANCE IMPACT	**$0**
The 2nd quarter budget amendment will include an increase of $100,000 for the grant revenue and $100,000 increase in expenditures related to the grant.	

BACKGROUND INFORMATION:

The Department of Environment, Great Lakes, and Energy (EGLE) announced financial assistance to improve energy management, energy efficiency, and renewable energy through the Community Energy Management Program (CEM) earlier this year. Grant funding was made available to local governments for energy-related projects with a maximum award of $100,000 per applicant. Eligible expenditures included contractual services, supplies, materials, and equipment items. Grant awards will be distributed on a reimbursement basis only, meaning grantees must pay project costs in full prior to receiving funds from EGLE and after proper invoices, receipts, and proof of payments have been reviewed. The end date for these project submissions is August 31, 2025, with payment submissions ending on September 30, 2025. The agreement does allow for (2) one-year extensions with approval.

In June of 2024, City Staff submitted a grant application to EGLE based on the following scope of work:

Phase I: Conduct American Society of Heating, Refrigeration, and Air-Conditioning (ASHRAE) Level II Audits at six municipal facilities.

Phase II: Utilize the findings of the above audits to implement energy efficiency upgrades at these facilities with the remaining grant funds.

An ASHRAE Level II Audit aims to identify possible areas where energy and water may be conserved. The Novi Civic Center, Public Safety Building, DPW, Fire Station 4, Firearms Training Center, and Novi Ice Arena buildings will benefit the most from these energy audits. The amount of HVAC equipment, lighting, domestic water heating, appliances, roofing, insulation, bathroom fixtures, and miscellaneous equipment in these structures makes them an ideal choice for immediate energy savings. Once the energy audit has been completed, the City will receive a comprehensive report on each building showing where energy can be conserved through repairs, upgrades, or best practices. The remaining funds left in the grant after the costs of performing the audits will be utilized to implement the suggested changes to these facilities.

RECOMMENDED ACTION: Consideration of approval of a grant agreement with the Department of Environment, Great Lakes and Energy (EGLE) in connection with the Community Energy Management Program (CEM) in the amount of $100,000.

COMMUNITY ENERGY MANAGEMENT GRANT AGREEMENT

BETWEEN THE

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

AND **CITY OF NOVI**

This Grant Agreement ("Agreement") is made between the Michigan Department of Environment, Great Lakes, and Energy (EGLE), **Materials Management Division** ("State"), and **City of Novi** ("Grantee").

The purpose of this Agreement is to provide funding in exchange for work to be performed for the project named below. Legislative appropriation of Funds for grant assistance is set forth in **Public Act No. 0166 of 2022** This Agreement is subject to the terms and conditions specified herein.

PROJECT INFORMATION:

Project Name: Energy Audits and Energy Efficiency Upgrades Project #: MEO-24-038

Amount of grant: $100,000 % of grant state 0 / % of grant federal 100

Amount of match: $0 = 0% PROJECT TOTAL: $100,000 (grant plus match)

Start Date (executed by EGLE): _____ End Date: 8/31/2026

GRANTEE CONTACT INFORMATION:

Name/Title: Danielle Mahoney, Assistant City Manager

Organization: City of Novi

Address: 45175 W 10 Mile Rd

City, State, ZIP: Novi, MI 48375

Phone Number: 248-347-0420

Fax Number: N/A

E-Mail Address: dmahoney@cityofnovi.org

Federal ID Number (Required for Federal Funding): 386032551

Grantee DUNs/UEI Number (Required for Federal Funding): HSCJU29TX894

SIGMA Vendor Number: CV0048776

STATE'S CONTACT INFORMATION:

Name/Title: Cody Evans, Departmental Analyst

Division/Bureau/Office: Materials Management Division (MMD)

Address: Constitution Hall, 525 W Allegan St

City, State, ZIP: Lansing, MI 48909

Phone Number: 517-930-4755

Fax Number: N/A

E-Mail Address: evansc26@michigan.gov

The individuals signing below certify by their signatures that they are authorized to sign this Agreement on behalf of their agencies and that the parties will fulfill the terms of this Agreement, including any attached appendices, as set forth herein.

FOR THE GRANTEE:

	Danielle Mahoney, Assistant City Manager	
Signature	Name/Title	Date

FOR THE STATE:

	Elizabeth M. Browne, Director, MMD	
Signature	Name/Title	Date

klg 10/23/24

I. PROJECT SCOPE

This Agreement and its appendices constitute the entire Agreement between the State and the Grantee and may be modified only by written agreement between the State and the Grantee.

(A) The scope of this project is limited to the activities specified in Appendix A and such activities as are authorized by the State under this Agreement. Any change in project scope requires prior written approval in accordance with Section III, Changes, in this Agreement.

(B) By acceptance of this Agreement, the Grantee commits to complete the project identified in Appendix A within the time period allowed for in this Agreement and in accordance with the terms and conditions of this Agreement.

II. AGREEMENT PERIOD

Upon signature by the State, the Agreement shall be effective from the Start Date until the End Date on page 1. The State shall have no responsibility to provide funding to the Grantee for project work performed except between the Start Date and the End Date specified on page 1. Expenditures made by the Grantee prior to the Start Date or after the End Date of this Agreement are not eligible for payment under this Agreement.

III. CHANGES

Any changes to this Agreement other than budget line-item revisions less than five percent of the budget line item shall be requested by the Grantee or the State in writing and implemented only upon approval in writing by the State. The State reserves the right to deny requests for changes to the Agreement or to the appendices. No changes can be implemented without approval by the State.

IV. GRANTEE DELIVERABLES AND REPORTING REQUIREMENTS

The Grantee shall submit deliverables and follow reporting requirements specified in Appendix A of this Agreement.

(A) The Grantee must complete and submit financial and progress reports according to a form and format prescribed by the State and must include supporting documentation of eligible project expenses. These reports shall be due according to the following:

Reporting Period	Due Date
January	Feb 28 or 29
February	March 31
March	April 30
April	May 31
May	June 30
June	July 31

July	August 31
August	Sept 30
September	Before October 15*
October	November 30
November	December 31
December	January 31

*Due to the State's year-end closing procedures, there will be an accelerated due date for the report covering July 1 – September 30. Advance notification regarding the due date for the quarter ending September 30 will be sent to the Grantee. If the Grantee is unable to submit a report in early October for the quarter ending September 30, an estimate of expenditures through September 30 must be submitted to allow the State to complete its accounting for that fiscal year.

The forms provided by the State shall be submitted to the State's contact at the address on page 1. All required supporting documentation (invoices, proof of payment, etc.) for expenses must be included with the report.

(B) The Grantee shall provide a final project report in a format prescribed by the State. The Grantee shall submit the final status report, including all supporting documentation for expenses, along with the final project report and any other outstanding products within 30 days from the End Date of the Agreement.

V. GRANTEE RESPONSIBILITIES

(A) The Grantee agrees to abide by all applicable local, state, and federal laws, rules, ordinances, and regulations in the performance of this grant.

(B) All local, state, and federal permits, if required, are the responsibility of the Grantee. Award of this grant is not a guarantee of permit approval by the State.

(C) The Grantee shall be solely responsible to pay all applicable taxes and fees, if any, that arise from the Grantee's receipt or execution of this grant.

(D) The Grantee is responsible for the professional quality, technical accuracy, timely completion, and coordination of all designs, drawings, specifications, reports, and other services submitted to the State under this Agreement. The Grantee shall, without additional compensation, correct or revise any errors, omissions, or other deficiencies in drawings, designs, specifications, reports, or other services.

(E) The State's approval of drawings, designs, specifications, reports, and incidental work or materials furnished hereunder shall not in any way relieve the Grantee of responsibility for the technical adequacy of the work. The State's review, approval, acceptance, or payment for any of the services shall not be construed as a waiver of any rights under this Agreement or of any cause of action arising out of the performance of this Agreement.

(F) The Grantee acknowledges that it is a crime to knowingly and willingly file false information with the State for the purpose of obtaining this Agreement or any payment under the Agreement, and that any such filing may subject the Grantee, its agents, and/or employees to criminal and civil prosecution and/or termination of the grant.

VI. USE OF MATERIAL

Unless otherwise specified in this Agreement, the Grantee may release information or material developed under this Agreement, provided it is acknowledged that the State funded all or a portion of its development.

The State, and federal awarding agency, if applicable, retains a royalty-free, nonexclusive, and irrevocable right to reproduce, publish, and use in whole or in part, and authorize others to do so, any copyrightable material or research data submitted under this grant whether or not the material is copyrighted by the Grantee or another person. The Grantee will only submit materials that the State can use in accordance with this paragraph.

VII. ASSIGNABILITY

The Grantee shall not assign this Agreement or assign or delegate any of its duties or obligations under this Agreement to any other party without the prior written consent of the State. The State does not assume responsibility regarding the contractual relationships between the Grantee and any subcontractor.

VIII. SUBCONTRACTS

The State reserves the right to deny the use of any consultant, contractor, associate, or other personnel to perform any portion of the project. The Grantee is solely responsible for all contractual activities performed under this Agreement. Further, the State will consider the Grantee to be the sole point of contact with regard to contractual matters, including payment of any and all charges resulting from the anticipated Grant. All subcontractors used by the Grantee in performing the project shall be subject to the provisions of this Agreement and shall be qualified to perform the duties required.

IX. NON-DISCRIMINATION

The Grantee shall comply with the Elliott Larsen Civil Rights Act, 1976 PA 453, as amended, MCL 37.2101 *et seq.*, the Persons with Disabilities Civil Rights Act, 1976 PA 220, as amended, MCL 37.1101 *et seq.*, and all other federal, state, and local fair employment practices and equal opportunity laws and covenants that it shall not discriminate against any employee or applicant for employment, to be employed in the performance of this Agreement, with respect to his or her hire, tenure, terms, conditions, or privileges of employment, or any matter directly or indirectly related to employment, because of his or her race, religion, color, national origin, age, sex, height, weight, marital status, or physical or mental disability that is unrelated to the individual's ability to perform the duties of a particular job or position. The Grantee agrees to include in every subcontract entered into for the performance of this Agreement this covenant not to discriminate in employment. A breach of this covenant is a material breach of this Agreement.

X. UNFAIR LABOR PRACTICES

The Grantee shall comply with the Employers Engaging in Unfair Labor Practices Act, 1980 PA 278, as amended, MCL 423.321 *et seq*.

XI. LIABILITY

(A) The Grantee, not the State, is responsible for all liabilities as a result of claims, judgments, or costs arising out of activities to be carried out by the Grantee under this Agreement, if the liability is caused by the Grantee, or any employee or agent of the Grantee acting within the scope of their employment or agency.

(B) Nothing in this Agreement should be construed as a waiver of any governmental immunity by the Grantee, the State, its agencies, or their employees as provided by statute or court decisions.

XII. CONFLICT OF INTEREST

No government employee, or member of the legislative, judicial, or executive branches, or member of the Grantee's Board of Directors, its employees, partner agencies, or their families shall benefit financially from any part of this Agreement.

XIII. ANTI-LOBBYING

If all or a portion of this Agreement is funded with federal funds, then in accordance with 2 CFR 200, as appropriate, the Grantee shall comply with the Anti-Lobbying Act, which prohibits the use of all project funds regardless of source, to engage in lobbying the state or federal government or in litigation against the State. Further, the Grantee shall require that the language of this assurance be included in the award documents of all subawards at all tiers.

If all or a portion of this Agreement is funded with state funds, then the Grantee shall not use any of the grant funds awarded in this Agreement for the purpose of lobbying as defined in the State of Michigan's lobbying statute, MCL 4.415(2). "'Lobbying' means communicating directly with an official of the executive branch of state government or an official in the legislative branch of state government for the purpose of influencing legislative or administrative action." The Grantee shall not use any of the grant funds awarded in this Agreement for the purpose of litigation against the State. Further, the Grantee shall require that language of this assurance be included in the award documents of all subawards at all tiers.

XIV. DEBARMENT AND SUSPENSION

By signing this Agreement, the Grantee certifies that it has checked the federal debarment/suspension list at www.SAM.gov to verify that its agents, and its subcontractors:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any federal department or the state.

(2) Have not within a three-year period preceding this Agreement been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state, or local) transaction or contract under a public transaction, as defined in 45 CFR 1185; violation of federal or state antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property.

(3) Are not presently indicted or otherwise criminally or civilly charged by a government entity (federal, state, or local) with commission of any of the offenses enumerated in subsection (2).

(4) Have not within a three-year period preceding this Agreement had one or more public transactions (federal, state, or local) terminated for cause or default.

(5) Will comply with all applicable requirements of all other state or federal laws, executive orders, regulations, and policies governing this program.

Each eligible applicant must obtain a Unique Entity Identifier (UEI) and maintain an active registration with the Federal System for Award Management (SAM). The SAM website is: www.SAM.gov.

XV. AUDIT AND ACCESS TO RECORDS

The State reserves the right to conduct a programmatic and financial audit of the project, and the State may withhold payment until the audit is satisfactorily completed. The Grantee will be required to maintain all pertinent records and evidence pertaining to this Agreement, including grant and any required matching funds, in accordance with generally accepted accounting principles and other procedures specified by the State. The State or any of its duly authorized representatives must have access, upon reasonable notice, to such books, records, documents, and other evidence for the purpose of inspection, audit, and copying. The Grantee will provide proper facilities for such access and inspection. All records must be maintained for a minimum of seven years after the final payment has been issued to the Grantee by the State.

XVI. INSURANCE

(A) The Grantee must maintain insurance or self-insurance that will protect it from claims that may arise from the Grantee's actions under this Agreement.

(B) The Grantee must comply with applicable workers' compensation laws while engaging in activities authorized under this Agreement.

XVII. OTHER SOURCES OF FUNDING

The Grantee guarantees that any claims for reimbursement made to the State under this Agreement must not be financed by any source other than the State under the terms of this Agreement. If funding is received through any other source, the Grantee agrees to delete from Grantee's billings, or to immediately refund to the State, the total amount representing such duplication of funding.

XVIII. COMPENSATION

(A) A breakdown of costs allowed under this Agreement is identified in Appendix A. The State will pay the Grantee a total amount not to exceed the amount on page 1 of this Agreement, in accordance with Appendix A, and only for expenses incurred and paid. All other costs necessary to complete the project are the sole responsibility of the Grantee.

(B) Expenses incurred by the Grantee prior to the Start Date or after the End Date of this Agreement are not allowed under the Agreement.

(C) The State will approve payment requests after approval of reports and related documentation as required under this Agreement.

(D) The State reserves the right to request additional information necessary to substantiate payment requests.

(E) Payments under this Agreement may be processed by Electronic Funds Transfer (EFT). The Grantee may register to receive payments by EFT at the SIGMA Vendor Self Service web site (https://sigma.michigan.gov/webapp/PRDVSS2X1/AltSelfService).

XIX. CLOSEOUT

(A) A determination of project completion, which may include a site inspection and an audit, shall be made by the State after the Grantee has met any match obligations, satisfactorily completed the activities, and provided products and deliverables described in Appendix A.

(B) Upon issuance of final payment from the State, the Grantee releases the State of all claims against the State arising under this Agreement. Unless otherwise provided in this Agreement or by State law, final payment under this Agreement shall not constitute a waiver of the State's claims against the Grantee.

(C) The Grantee shall immediately refund to the State any payments in excess of the costs allowed by this Agreement.

XX. CANCELLATION

This Agreement may be canceled by the State, upon 30 days written notice, due to Executive Order, budgetary reduction, other lack of funding, upon request by the Grantee, or upon mutual agreement by the State and Grantee. The State may honor requests for just and equitable compensation to the Grantee for all satisfactory and eligible work completed under this Agreement up until 30 days after written notice, upon which time all outstanding reports and documents are due to the State and the State will no longer be liable to pay the grantee for any further charges to the grant.

XXI. TERMINATION

(A) This Agreement may be terminated by the State as follows.

(1) Upon 30 days written notice to the Grantee:

a. If the Grantee fails to comply with the terms and conditions of the Agreement, or with the requirements of the authorizing legislation cited on page 1, or the rules promulgated thereunder, or other applicable law or rules.
b. If the Grantee knowingly and willingly presents false information to the State for the purpose of obtaining this Agreement or any payment under this Agreement.
c. If the State finds that the Grantee, or any of the Grantee's agents or representatives, offered or gave gratuities, favors, or gifts of monetary value to any official, employee, or agent of the State in an attempt to secure a subcontract or favorable treatment in awarding, amending, or making any determinations related to the performance of this Agreement.

d. If the Grantee or any subcontractor, manufacturer, or supplier of the Grantee appears in the register of persons engaging in unfair labor practices that is compiled by the Michigan Department of Licensing and Regulatory Affairs or its successor.
e. During the 30-day written notice period, the State shall withhold payment for any findings under subparagraphs a through d, above and the Grantee will immediately cease charging to the grant and stop earning match for the project (if applicable).

(2) Immediately and without further liability to the State if the Grantee, or any agent of the Grantee, or any agent of any subcontract is:

a. Convicted of a criminal offense incident to the application for or performance of a State, public, or private contract or subcontract;
b. Convicted of a criminal offense, including but not limited to any of the following: embezzlement, theft, forgery, bribery, falsification or destruction of records, receiving stolen property, or attempting to influence a public employee to breach the ethical conduct standards for State of Michigan employees;
c. Convicted under State or federal antitrust statutes; or
d. Convicted of any other criminal offense that, in the sole discretion of the State, reflects on the Grantee's business integrity.
e. Added to the federal or state Suspension and Debarment list.

(B) If a grant is terminated, the State reserves the right to require the Grantee to repay all or a portion of funds received under this Agreement.

XXII. IRAN SANCTIONS ACT

By signing this Agreement, the Grantee is certifying that it is not an Iran linked business, and that its contractors are not Iran linked businesses, as defined in MCL 129.312.

XXIII. PREVAILING WAGE

This project is subject to the Davis-Bacon Act, 40 U S C 276a, *et seq*, which requires that prevailing wages and fringe benefits be paid to contractors and subcontractors performing on federally funded projects over $2,000 for the construction, alteration, repair (including painting and decorating) of public buildings or works.

PROJECT-SPECIFIC REQUIREMENTS – APPENDIX A

GRANTEE: City of Novi PROJECT NUMBER: MEO-24-038

FEDERAL GRANT AWARD #: DE-EE0010079

FEDERAL GRANT DETAIL: Community Energy Management Program

CFDA Name and #: State Energy Program BIL 81.041

Federal Award Project Description: The State Energy Program (SEP) provides grants to states and directs funding to state energy offices from technology programs in DOE's Office of Energy Efficiency and Renewable Energy. States use grants to address their energy priorities and program funding to adopt emerging renewable energy and energy efficiency programs.

1. Statement of Purpose

The Michigan Department of Environment, Great Lakes, and Energy is responsible for carrying-out the U.S. Department of Energy's State Energy Programs. These programs focus on the adoption and implementation of energy waste reduction and renewable energy activities. Energy Services, on behalf of the Grantor, will serve as the grantee's primary contact and will negotiate all conditions of this grant.

1.1. Statement of Work

The Grantee agrees to undertake, perform, and complete the following project: The City of Novi will conduct American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE) Level II Audits on six of its municipal facilities. With the remaining funds, the second phase will utilize the findings of these audits to implement high priority energy efficiency upgrades at these facilities.

A. Phase I: Conduct ASHRAE Level II Audits at six of the City's municipal facilities.
B. Phase II: Utilize the findings of these audits to implement high priority energy efficiency upgrades at these facilities with the remaining grant funds.

1.2. Detailed Budget

Changes in Budget of less than 5% of the total line-item amount do not require prior written approval, but Grantee must provide notice to the Grant Manager.

Changes in Budget equal to or greater than 5% of the total line-item amount will be allowed only upon prior review and written approval by the Grant Manager. A formal grant amendment must be signed by both the Grantor and Grantee.

A. If applicable, travel expenses will not be reimbursed at rates greater than the State Travel Rates, Attachment B, without prior written consent of the Grant Administrator.
B. Attachment A is the Project Budget. The grantee agrees that all funds shown in the Budget are to be spent as detailed in the Budget.
C. The Indirect Cost Rate applicable for this grant award is 0%.
D. Any single piece of equipment over $5,000 will require a Lien or Uniform Commercial Code (UCC).

1.3. Reporting and Payment Requests

A. **Progress Reports** – The Grantee shall monitor performance to assure that time schedules are being met and projected work by time period is being accomplished.
   i. The Grantee shall submit Monthly progress reports using the reporting form provided by the Grant Manager.
   ii. These reports shall be due according to the table in **Part IV** of this Agreement.

B. **Final Report** – The Final Report will include the following information:
   i. A summary of the project, including activities, outcomes, metrics, the implementation plan and any deviations from the original project as proposed, as well as any relevant next steps.
   ii. Coordinated efforts with other organizations to complete the project.
   iii. Financial expenditures of grant money and other contributions to the project, in-kind and/or direct funding.
   iv. Submission of signed closeout documents, provided by Grantor.

C. Payment Requests
   i. The Grantee shall submit project expenses monthly for reimbursement.
   ii. The following documentation must be submitted in order for the Grantee to receive their reimbursement:
      a) **Financial Status Report (FSR)** – a Financial Status Report document will be provided at the start of the grant project. The Grantee shall use this document to track the spending of grant and match funds, and to summarize their reimbursement request. In order to receive a reimbursement, the grantee will be required to sign the FSR document.
      b) **Personnel and Fringe Expenses** – an internal Payroll report detailing the employee's name or classification, hours, payrate, and fringe benefit details if applicable. If no internal payroll report is available, a spreadsheet detailing the above information.
      c) **Contractual, Supplies & Materials, Other Direct Costs** – An itemized invoice or receipt from the vendor/contractor and proof of payment of the expense. Proof of payment shall be in the form of a cancelled check, bank statement, or other ACH payment.

      For more information regarding proof of payment documentation, contact your Grant Manager.

      d) **Equipment Expenses** – Any equipment expenses more than $5,000 will require The Michigan Department of Environment Great Lakes and Energy (EGLE) be listed on a Lien or Uniform Commercial Code (UCC) for 5 years, or until the equipment depreciates to less than $5,000, whichever comes first.
      e) **Travel Expenses** – Travel Expenses must follow the State of Michigan Travel Rates outlined in Attachment B of this document. Any reduced reimbursement due to the State of Michigan Travel Rates may be used toward the Match Requirement if applicable.
   iii. If 15% or more of the grant is expended in a single quarter, payment requests may be submitted monthly instead of quarterly.
   iv. The Grantee must be up to date on all Progress Reporting Requirements to receive reimbursement.

1.4. Option to Renew

This Agreement may be renewed for up to two (2) additional one-year periods. Renewal must be by written agreement, signed by the Grantor and Grantee, and will automatically extend the Term of this Agreement.

2. General Provisions

2.1. Project Income

To the extent that it can be determined that interest was earned on advances of funds, such interest shall be remitted to the Grantor. All other program income shall either be added to the project budget and used to further eligible program objectives or deducted from the total program budget for the purpose of determining the amount of reimbursable costs. The final determination shall be made by the Grant Administrator.

2.2. Share-in-savings

The Grantor expects to share in any cost savings realized by the Grantee. Therefore, final Grantee reimbursement will be based on actual expenditures. Additional exceptions must be approved in writing by the Grant Administrator.

2.3. Purchase of Equipment

The purchases of equipment not specifically listed in the Budget, Attachment A, must have prior written approval of the Grant Administrator. Equipment is defined as non-expendable personal property having a useful life of more than one year and a true value of $5,000 or more. Such equipment shall be retained by the Grantee unless otherwise specified at the time of approval. All equipment purchased with grant funds shall comply with applicable law, including regulations contained in 2 CFR Part 200 as amended by 2 CFR Part 910, 10 CFR Part 420 and other procedures applicable to this regulation as DOE may, from time-to-time, prescribe for the administration of financial assistance. To the greatest extent practicable, all equipment and products purchased with funds made available under this award should be Michigan-made as a first choice, or American-made.

2.4. Accounting

The Grantee shall adhere to the Generally Accepted Accounting Principles and maintain records which will allow, at a minimum, for the comparison of actual outlays with budgeted amounts. The Grantee’s overall financial management system must ensure effective control over and accountability for all funds received. Accounting records must be supported by source documentation including, but not limited to, balance sheets, general ledgers, time sheets and invoices. The expenditure of state funds shall be reported by line item and compared to the Budget.

2.5. Competitive Bidding

The Grantee agrees that all procurement transactions involving the use of state funds shall be conducted in a manner that provides maximum open and free competition. When competitive selection is not feasible or practical, the Grantee agrees to obtain written approval of the Grant Administrator before making a sole source selection. Sole source contracts should be negotiated to the extent that negotiation is possible.

3. Materials and Information

3.1. Intellectual Property

License to Grantor

Grantee grants to the Grantor a non-exclusive, royalty-free, site-wide, irrevocable, transferable license to use the Deliverables and related documentation according to the terms and conditions of this Agreement. For the purposes of this license, "site-wide" includes any State of Michigan office regardless of its physical location.
The Grantor may modify the Deliverable and may combine the Deliverable with other programs or materials to form a derivative work. The Grantor will own and hold all copyright, trademarks, patent, and other intellectual property rights in any derivative work, excluding any rights or interest in Deliverable other than those granted in this Agreement.

The Grantor may copy each Deliverable to multiple hard drives or networks unless otherwise agreed by the parties.

The Grantor will make and maintain no more than one archival copy of each Deliverable, and each copy will contain all legends and notices and will be subject to the same conditions and restrictions as the original. The Grantor may also make copies of the Deliverable in the course of routine backups for the purpose of recovery of contents.

3.2. Media Releases and Publications

New releases (including promotional literature and commercial advertisements) pertaining to the Grant or project to which it relates must not be made without prior written State approval, and then only in accordance with the explicit written instructions of the State. An acknowledgement of DOE and Energy Services support and a disclaimer must appear in the publication of any material, whether copyrighted or not, based on or developed under this project, as follows:

Acknowledgement: "This material is based upon work supported by the Department of Energy and the Michigan Department of Environment, Great Lakes and Energy under Award Number(s) DE-EE0010079."

Disclaimer: "This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumed any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trad name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof."

3.3. Website Incorporation

The State is not bound by any content on the Grantee's website unless expressly incorporated directly into this Grant Agreement.

4. Other Provisions

4.1. Safety

The Grantee, and all subgrantees are responsible for ensuring that all precautions are exercised at all times for the protection of persons and property. Safety provisions of all Applicable Laws and building and construction codes shall be observed. The Grantee, and every subgrantee, are responsible for compliance with all federal, state and local laws and regulations in any manner affecting the work or performance of this Agreement and shall at all times carefully observe and comply with all rules, ordinances, and regulations. The Grantee, and all subgrantees, shall secure all necessary certificates and permits from municipal or other public authorities as may be required in connection with the performance of this agreement.

4.2. General Indemnification

Inasmuch as each party to this grant is a governmental entity of the State of Michigan, each party to this grant must seek its own legal representation and bear its own costs; including judgments, in any litigation which may arise from the performance of this grant. It is specifically understood and agreed that neither party will indemnify the other party in such litigation.

4.3. Force Majeure

Neither party will be in breach of this Grant because of any failure arising from any disaster or acts of god that are beyond their control and without their fault or negligence. Each party will use commercially reasonable efforts to resume performance. Grantee will not be relieved of a breach or delay caused by its subgrantees. If immediate performance is necessary to ensure public health and safety, the State may immediately Grant with a third party.

4.4. Governing Law

This Grant is governed, construed, and enforced in accordance with Michigan law, excluding choice-of-law principles, and all claims relating to or arising out of this Grant are governed by Michigan law, excluding choice-of-law principles. Any dispute arising from this Grant must be resolved in Michigan Court of Claims. Grantee consents to venue in Ingham County, and waives any objections, such as lack of personal jurisdiction or forum non conveniens. Grantee must appoint agents in Michigan to receive service of process.

4.5. Disclosure of Litigation, or Other Proceeding

Grantee must notify the State within 14 calendar days of receiving notice of any litigation, investigation, arbitration, or other proceeding (collectively, “Proceeding”) involving Grantee, a subgrantee, or an officer or director of Grantee or subgrantee, that arises during the term of the Grant, including: (a) a criminal Proceeding; (b) a parole or probation Proceeding; (c) a Proceeding under the Sarbanes-Oxley Act; (d) a civil Proceeding involving: (1) a claim that might reasonably be expected to adversely affect Grantee’s viability or financial stability; or (2) a governmental or public entity’s claim or written allegation of fraud; or (e) a Proceeding involving any license that Grantee is required to possess in order to perform under this Grant.

4.6. Dispute Resolution

The parties will endeavor to resolve any Grant dispute in accordance with this provision. The dispute will be referred to the parties' respective Grant Administrators or Program Managers. Such referral must include a description of the issues and all supporting documentation. The parties must submit

the dispute to a senior executive if unable to resolve the dispute within 15 business days. The parties will continue performing while a dispute is being resolved unless the dispute precludes performance. A dispute involving payment does not preclude performance.

Litigation to resolve the dispute will not be instituted until after the dispute has been elevated to the parties' senior executive and either concludes that resolution is unlikely or fails to respond within 15 business days. The parties are not prohibited from instituting formal proceedings: (a) to avoid the expiration of statute of limitations period; (b) to preserve a superior position with respect to creditors; or (c) where a party makes a determination that a temporary restraining order or other injunctive relief is the only adequate remedy. This Section does not limit the State's right to terminate the Grant.

4.7. Recapture

The Grantee is hereby notified and hereby acknowledges that the Grant is subject to recapture and that the Grantee will incur an Obligation to repay the Grant (the "Recapture Obligation") immediately, in full, if:

A. It fails to comply with the Statement of work specifically described in **Part 1.1** of this Appendix A.
B. It sells, exchanges, or disposes of any equipment greater than $5,000 described in Attachment A of this Agreement without the Grantor's written approval; or
C. The U.S. Department of Energy determines that there has been a default under the Agreement and seeks reimbursement from the Grantor. In the event that the Grantee becomes liable for a Recapture Obligation, it shall satisfy the Recapture Obligation within the time specified in the written notice thereof to the Grantee by the Grantor.
D. The Grantee's obligation under this Section shall survive the term of this Agreement.

5. Severability

If any part of this Grant is held invalid or unenforceable, by any court of competent jurisdiction, that part will be deemed deleted from this Grant and the severed part will be replaced by agreed upon language that achieves the same or similar objectives. The remaining Grant will continue in full force and effect.

5.1. Waiver

Failure to enforce any provision of this Grant will not constitute a waiver.

5.2. Grant of Security Interest

The Grantee hereby grants the Grantor, for the benefit of the Grantor, a security interest in and continuing Lien on all Grantee's right, title, and interest in, to and under all personal property, equipment, and assets listed in Attachment A.

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Addendum to Part II – General Provisions
HISTORIC PRESERVATION

Prior to the expenditure of Federal funds to alter any structure or site, the Recipient is required to comply with the requirements of Section 106 of the National Historic Preservation Act (NHPA), consistent with DOE's 2009 letter of delegation of authority regarding the NHPA. Section 106 applies to historic properties that are listed in or eligible for listing in the National Register of Historic Places. In order to fulfill the requirements of Section 106, the recipient must contact the State Historic Preservation Officer (SHPO), and, if applicable, the Tribal Historic Preservation Officer (THPO), to coordinate the Section 106 review outlined in 36 CFR Part 800. SHPO contact information is available at the following link: http://www.ncshpo.org/find/index.htm. THPO contact information is available at the following link: http://www.nathpo.org/map.html.

Section 110(k) of the NHPA applies to DOE funded activities. Recipients shall avoid taking any action that results in an adverse effect to historic properties pending compliance with Section 106.

Recipients should be aware that the DOE Contracting Officer will consider the recipient in compliance with Section 106 of the NHPA only after the Recipient has submitted adequate background documentation to the SHPO/THPO for its review, and the SHPO/THPO has provided written concurrence to the Recipient that it does not object to its Section 106 finding or determination. Recipient shall provide a copy of this concurrence to the Contracting Officer.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) REQUIREMENTS

The Michigan Energy Office (MEO) must comply with the National Environmental Policy Act (NEPA) prior to authorizing the use of federal funds. The bounded categories categorically excluded, listed below, require no further NEPA review, absent extraordinary circumstances, cumulative impacts, or connected actions that may lead to significant impacts on the environment, or any inconsistency with "integral elements" (as contained in 10 C.F.R. Part 1021, Appendix B) as they relate to a particular project. The Recipient is thereby authorized to use federal funds for the defined project activities.

If the Recipient later intends to add to or modify activities not included in the bounded categories below, those new activities or modified activities are subject to additional NEPA review and are not authorized for federal funding until the Contracting Officer provides approval on those additions or modifications. Recipients are restricted from taking any action using federal funds, which would have an adverse effect on the environment or limit the choice of reasonable alternatives prior to authorization from the Contracting Officer. Should the Recipient elect to undertake activities prior to authorization from the Contracting Officer, the Recipient does so at risk of not receiving federal funding and such costs may not be recognized as allowable.

These are the bounded categories that have been categorically excluded, and require no additional NEPA review:

1. Administrative activities associated with management of the designated State Energy Office and management of programs and strategies to encourage energy waste reduction and renewable energy.
2. Development and implementation of programs and strategies to encourage energy waste reduction and renewable energy
3. Funding energy efficiency retrofits, provided that projects are limited to:

a) installation of insulation;

b) installation of energy efficient lighting;

c) HVAC upgrades;

d) weather sealing;

e) purchase and installation of ENERGY STAR appliances;

f) replacement of windows and doors;

g) high efficiency shower/faucet upgrades; and

h) installation of solar powered appliances with improved efficiency.

4. Development, implementation, and installation of onsite renewable energy technology that generates electricity from renewable resources, provided that projects are limited to:

   a) Solar Electricity/Photovoltaic - appropriately sized system or unit on existing rooftops and parking shade structures; or a 60 kW system or smaller unit installed on the ground within the boundaries of an existing facility.

   b) Wind Turbine - 20 kW or smaller.

   c) Solar Thermal - system must be 20 kW or smaller.

   d) Solar Thermal Hot Water - appropriately sized for residences or small commercial buildings.

   e) Ground Source Heat Pump - 5.5 tons of capacity or smaller, horizontal/vertical, ground, closed-loop system.

   f) Combined Heat and Power System - boilers sized appropriately for the buildings in which they are located.

   g) Biomass Thermal - 3 MMBTUs per hour or smaller system with appropriate Best Available Control Technologies (BACT) installed and operated.

5. Development, implementation and installation of energy efficient or renewable energy-powered emergency systems (lighting, cooling, heat, shelter) installed in existing buildings and facilities.

6. Installation of alternative fueling pumps and systems (but not storage tanks) installed on existing facilities (other than a large biorefinery); purchase of alternative fuel vehicles.

7. Development and implementation of training programs.

8. Development and implementation of building codes and inspection services, and associated training and enforcement of such codes in order to support code compliance and promote building energy waste reduction.

Implementing financial incentive programs such as rebates and energy savings performance contracts for existing facilities or for energy efficient equipment, provided that the incentives are not so large that they would be deemed to be grants that create projects that would not otherwise exist. (For example, giving a wind farm that cost $100 million a sum of $50 million and calling it a rebate would not fall within this Bounded Category).

BUILD AMERICA, BUY AMERICA ACT REQUIREMENTS

The Build America, Buy America Act (BABA), enacted as part of the Infrastructure Investment and Jobs Act, established a domestic content procurement preference for all federal financial assistance obligated for infrastructure projects after May 14, 2022.

Recipients of an award of Federal financial assistance from a program for infrastructure are hereby notified that none of the funds provided under this award may be used for a project for infrastructure unless:

1. All iron and steel used in the project are produced in the United States--this means all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States;
2. All manufactured products used in the project are produced in the United States—this means the manufactured product was manufactured in the United States; and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured product, unless another standard for determining the minimum amount of domestic content of the manufactured product has been established under applicable law or regulation; and
3. All construction materials[1] are manufactured in the United States—this means that all manufacturing processes for the construction material occurred in the United States.

The Buy America preference only applies to articles, materials, and supplies that are consumed in, incorporated into, or affixed to an infrastructure project. As such, it does not apply to tools, equipment, and supplies, such as temporary scaffolding, brought to the construction site and removed at or before the completion of the infrastructure project. Nor does a Buy America preference apply to equipment and furnishings, such as movable chairs, desks, and portable computer equipment, that are used at or within the finished infrastructure project, but are not an integral part of the structure or permanently affixed to the infrastructure project.

“Construction materials” includes an article, material, or supply—other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives—that is or consists primarily of:

- Non-ferrous metals;
- Plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables);
- Glass (including optic glass);
- Lumber; or
- Drywall.

“Domestic content procurement preference’’ means all iron and steel used in the project are produced in the United States; the manufactured products used in the project are produced in the United States; or the construction materials used in the project are produced in the United States.

“Infrastructure” includes, at a minimum, the structures, facilities, and equipment for, in the United States, roads, highways, and bridges; public transportation; dams, ports, harbors, and other maritime

[1] Excludes cement and cementitious materials, aggregates such as stone, sand, or gravel, or aggregate binding agents or additives.

facilities; intercity passenger and freight railroads; freight and intermodal facilities; airports; water systems, including drinking water and wastewater systems; electrical transmission facilities and systems; utilities; broadband infrastructure; and buildings and real property. Infrastructure includes facilities that generate, transport, and distribute energy.

‘‘Project’’ means the construction, alteration, maintenance, or repair of infrastructure in the United States.

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Attachment A: Project Budget

FY25 Community Energy Management Program

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

MATERIALS MANAGEMENT DIVISION

STATE ENERGY PROGRAM

FINANCIAL STATUS REPORT

Grantee / Vendor Name: City of Novi

Vendor Number: CV0048776

Project Name: Energy Audits and Energy Efficiency Upgrades

Grant Given Number:

Contract Date **From:** **To:** 8/31/2026

Contact Name: Danielle Mahoney, Assistant City Manager **Contact Number:** 248-347-0420

Contact Email: dmahoney@cityofnovi.org

Category	Category Number	Amount
Salary and Benefits	1	
Contractual	2	$100,000
Equipment	3	
Supplies	4	
Travel	5	
Category Subtotal		**$ 100,000**

INDIRECT BUDGET	Percentage		
		$	-
PROJECT BUDGET			
Total		$	-

MATCH BUDGET	Percentage		
Total		$	-
GRANT BUDGET			
Total		$	100,000

Retention Rate: 0%

Attachment B: State of Michigan Travel Rates

DEPARTMENT OF TECHNOLOGY, MANAGEMENT & BUDGET,
VEHICLE AND TRAVEL SERVICES
SCHEDULE OF TRAVEL RATES FOR CLASSIFIED AND UNCLASSIFIED EMPLOYEES
Effective January 1, 2024

MICHIGAN SELECT CITIES*

	Individual	Group Meeting (pre-arranged and approved)
Lodging**	$85.00	
Breakfast	$11.75	$14.75
Lunch	$11.75	$14.75
Dinner	$28.00	$31.00

MICHIGAN IN-STATE ALL OTHER

	Individual	Group Meeting (pre-arranged and approved)
Lodging**	$85.00	
Breakfast	$9.75	$12.75
Lunch	$9.75	$12.75
Dinner	$22.00	$25.00

Lodging	$51.00
Breakfast	$9.75
Lunch	$9.75
Dinner	$22.00
Per Diem Total	**$92.50**

OUT-OF-STATE SELECT CITIES*

	Individual	Group Meeting (pre-arranged and approved)
Lodging**	Contact Conlin Travel	
Breakfast	$15.00	$18.00
Lunch	$15.00	$18.00
Dinner	$29.00	$32.00

OUT-OF-STATE ALL OTHER

	Individual	Group Meeting (pre-arranged and approved)
Lodging**	Contact Conlin Travel	
Breakfast	$11.75	$14.75
Lunch	$11.75	$14.75
Dinner	$27.00	$30.00

Lodging	$51.00
Breakfast	$11.75
Lunch	$11.75
Dinner	$27.00
Per Diem Total	**$101.50**

Incidental Costs Per Day (with overnight stay) $5.00

Mileage Rates	**Current**
Premium Rate	$0.67 per mile
Standard Rate	$0.440 per mile

* See Select Cities Listing
** Lodging available at State rate, or call Conlin Travel at 877-654-2179 or www.conlintravelhub.com/som

SELECT CITY LIST
SCHEDULE OF TRAVEL RATES FOR CLASSIFIED AND UNCLASSIFIED EMPLOYEES
Effective October 1, 2023

Michigan Select Cities/Counties		
	CITIES	**COUNTIES**
	Ann Arbor, Auburn Hills, Beaver Island, Detroit, Grand Rapids, Holland, Leland, Mackinac Island, Petoskey, Pontiac, South Haven, Traverse City	Grand Traverse, Oakland, Wayne
Out of State Select Cities/Counties		
STATE	**CITIES**	**COUNTIES**
Alaska	All locations	
Arizona	Phoenix, Scottsdale, Sedona	
California	Arcata, Edwards AFB, Eureka, Los Angeles, Mammoth Lakes, McKinleyville, Mill Valley, Monterey, Novato, Palm Springs, San Diego, San Francisco, San Rafael, Santa Barbara, Santa Monica, South Lake Tahoe, Truckee, Yosemite National Park	Los Angeles, Mendocino, Orange, Ventura
Colorado	Aspen, Breckenridge, Grand Lake, Silverthorne, Steamboat Springs, Telluride, Vail	
Connecticut	Bridgeport, Danbury	
District of Columbia	Washington DC (See also Maryland & Virginia)	
Florida	Boca Raton, Delray Beach, Ft Lauderdale, Jupiter, Key West, Miami	
Georgia	Brunswick, Jekyll Island	
Hawaii	All locations	
Idaho	Ketchum, Sun Valley	
Illinois	Chicago	Cook, Lake
Kentucky	Kenton	
Louisiana	New Orleans	
Maine	Bar Harbor, Kennebunk, Kittery, Rockport, Sandford	
Maryland	Baltimore City, Ocean City	Montgomery, Prince George
Massachusetts	Boston, Burlington, Cambridge, Martha's Vineyard, Woburn	Suffolk
Minnesota	Duluth, Minneapolis, St. Paul	Hennepin, Ramsey
Nevada	Las Vegas	
New Mexico	Santa Fe	
New York	Bronx, Brooklyn, Lake Placid, Manhattan, Melville, New Rochelle, Queens, Riverhead, Ronkonkoma, Staten Island, Tarrytown, White Plaines	Suffolk
Ohio	Cincinnati	
Pennsylvania	Pittsburgh	Bucks
Puerto Rico	All locations	
Rhode Island	Bristol, Jamestown, Middletown, Newport, Providence	Newport
Texas	Austin, Dallas, Houston, L.B. Johnson Space Center	
Utah	Park City	Summit
Vermont	Manchester, Montpelier, Stowe	Lamoille
Virginia	Alexandria, Fairfax, Falls Church	Arlington, Fairfax
Washington	Port Angeles, Port Townsend, Seattle	
Wyoming	Jackson, Pinedale	

If you need this information in an alternate format, contact EGLE-Accessibility@Michigan.gov or call 800-662-9278.

EGLE does not discriminate on the basis of race, sex, religion, age, national origin, color, marital status, disability, political beliefs, height, weight, genetic information, or sexual orientation in the administration of any of its programs or activities, and prohibits intimidation and retaliation, as required by applicable laws and regulations. Questions or concerns should be directed to the Nondiscrimination Compliance Coordinator at EGLE-NondiscriminationCC@Michigan.gov or 517-249-0906.

This form and its contents are subject to the Freedom of Information Act and may be released to the public.

Energy Audit Report

REPORT DATE: Date

PROPERTY INFORMATION:
Client Project Name
Property Address
City, County County, State Zip

PROJECT INFORMATION:
AEI Project No. Sample Project
Site Assessment Date: Date

PREPARED FOR:
Client Name
Client Address
Client City, State Zip Code

PREPARED BY:
AEI Consultants - Corporate Headquarters
2500 Camino Diablo
Walnut Creek, California 94597

1.800.801.3224
www.aeiconsultants.com

Date

Client Contact Name
Client Name
Client Address
Client City, State Zip Code

Subject: **Energy Audit Report**
Client Project Name
Property Address
City, State Zip
AEI Project No. Sample Project

Dear Client Contact Name:

AEI Consultants is pleased to provide the *Energy Audit Report* of the above referenced property. This assessment was authorized and performed in accordance with the scope of services engaged.

We appreciate the opportunity to provide services to you. If you have any questions concerning this report, or if we can assist you in any other matter, please contact me at Phone Number or Email Address.

Sincerely,

Brian Morgan

AEI Contact
AEI Consultants

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1.0 CERTIFICATION/DISCLAIMER

AEI has completed an Energy Audit for the Property located at Property Address, City, County County, State (the "Property"). AEI visited the site on Date.

The energy conservation opportunities contained in this report have been reviewed for technical accuracy. The reader is reminded that energy savings ultimately depend on variable factors including occupant behavior, weather, and quality of installation. Estimated installation costs are based on a variety of sources, including our own experience at similar facilities, our own pricing research using local contractors and vendors, and cost handbooks such as those produced by RS Means. The cost estimates represent the best judgment of the auditors for the proposed action. The Owner is encouraged to confirm these cost estimates independently since actual installed costs can vary widely for a particular installation. AEI does not guarantee installed cost estimates and shall in no event be liable should actual installed costs vary from the estimated costs herein.

AEI does not guarantee the costs savings estimated in this report. AEI shall in no event be liable should the actual energy savings vary from the savings estimated herein.

AEI certifies that it has no undisclosed interest in the Property and that AEI’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.

2.0 EXECUTIVE SUMMARY

AEI Consultants (AEI) was retained by Client Name to conduct an ASHRAE Level II Energy Audit, in conformance with the scope and limitations of ASHRAE *Procedures for Commercial Building Energy Audits*, Second Edition (2011), and ANSI/ASHRAE/ACCA Standard 211-2018, *Standard for Commercial Building Energy Audits* for the Property located at Property Address, City, County County, State (the "Property"). The Energy Efficiency Measures (EEMs) from the audit will be used to prepare a Statement of Energy Design Intent showing the effect of energy use reduction on the energy performance score.

2.1 Energy Audit - Purpose and Scope

AEI has performed a comprehensive analysis of the Property to identify possible areas where Energy and Water may be conserved. The areas being considered include HVAC equipment, lighting, domestic water heating, appliances, fenestrations, insulation, roofing, bathroom fixtures, and miscellaneous equipment. AEI may also use infrared thermography to identify areas that may be losing energy.

Utility Analysis

AEI has performed a comprehensive utility analysis to determine the Energy and Water consumption of the buildings. The analysis utilizes at least 12 months of common area utility bills and as many tenant utility bills as possible. By observing peak loads during the year, a baseline for energy and water consumption can be determined.

Energy Audit Process

Where possible, in addition to the Site Survey, AEI has utilized construction drawings, interviews, repair records, etc. to determine the actual current efficiency of the Property's building envelopes and equipment.

Accuracy of Analysis

AEI used energy use simulation tools and spreadsheet calculations that base estimated savings on the as-built facility and energy consuming equipment's current operating condition. The simple payback calculations are based on the labor and material cost of the new equipment divided by the cost savings per year. AEI shall not be responsible for equipment that may not reach the end of its useful life or costs more to operate than noted in the EEMs.

Current Energy Code

The energy code adopted by State at the time of this report is 2021 International Energy Conservation Code (2021 IECC) or equivalent for Residential//Commercial construction. [https://www.energycodes.gov/status-state-energy-code-adoption]

2.2 Summary of Energy Efficiency Measures (EEMs)

The following table presents the ASHRAE Energy Efficiency Measure table from *Procedures for Commercial Building Energy Audits*. Note that the water savings do not register in the tables. We have included our Energy and Water Efficiency Measure tables later in this report.

EEM Summary

		ANNUAL ENERGY & COST SAVINGS			PAYBACK WITH INCENTIVE				
Measure Number	Measure Description	Electricity Savings (kWh)	Gas/Fuel Savings (Therms)	Total Cost Savings	Measure Cost	Potential Utility Incentive	Net Measure Cost	NPV*	Simple Payback (Year)
EEM-1	Program Supply Temperature Reset (approximately 2.5 F) from 48 F to 50.5 F for the LAB AHU's at Building 1	102,261	20,450	$26,770	$5,500		$5,500	$176,903	0.2
EEM-2	Program Supply Temperature Reset (approximately 3 F) from 55 F to 58 F for the three Packaged Rooftop Units at Building 1	108,137	11,772	$19,984	$7,500		$7,500	$128,666	0.4
EEM-3	Program Demand Control Ventilation for the three Packaged Rooftop Units at Building 1, and install CO2 sensors at the office spaces	29,350	-	$2,725	$7,500		$7,500	$11,065	2.8
EEM-4	Provide Daylight Controls Near Skylights and Exterior Glass	3,264	-	$303	$720		$720	$1,142	2.4
EEM-5	Install 35 kW DC Solar PV system on available roof area-Since roof area is limited, a ground mount or placement at parking garage roof is possible. (Approximately 100 modules.) Note that a 30% Federal Investment Tax Credit is available for commercial systems, or a production credit of $0.026/kWh of production credit for commercial systems, if the systems meet labor requirements issued by the Treasury Department, but neither are included in the pricing.	50,315	-	$4,671	$113,750	$34,125	$79,625	($39,859)	17.0
TOTALS (Recommended Measures)		293,327	32,222	$54,453	$134,970	$34,125	$100,845	$277,916	1.9

2.3 Energy and Water Efficiency Measures (EWEM) Table

The following EWEMs have been analyzed using calculations based on occupant usage, localized climate conditions, HVAC and ventilation operating hours, and lighting hours. The HVAC operating hours are approximations and may vary depending on the severity of the weather. Water consumption is based on the number of occupants and assumed running times for water consuming devices. The Property has been carefully evaluated for the EWEMs. The chart shows the initial investment, utility savings, utility cost savings, and paybacks for each EWEM. The utility cost increase over the life of the EWEMs implemented was not considered as a factor in the cost savings calculations.

EWEM Summary

EWEM Summary Description	Initial Cost	Electric Savings kWh	Gas Savings Therm	Water/ Sewer Savings kGal	Annual Utility $ Savings	Simple Pay Back (Years)	Owner % Energy Savings	Owner % Water Savings	Projected GHG Emissions Reduction MTCO2e
Program Supply Temperature Reset (approximately 2.5 F) from 48 F to 50.5 F for the LAB AHU's at Building 1801	$5,500	102,261	20,450	0	$26,770	0.2	4.42%	0.00%	140.16
Program Supply Temperature Reset (approximately 3 F) from 55 F to 58 F for the Packaged Rooftop Units at Building 1	$7,500	108,137	11,772	0	$19,927	0.4	2.85%	0.00%	96.30
Program Demand Control Ventilation for the three Packaged Rooftop Units at Building 1, and install CO2 sensors at the office spaces	$7,500	29,350	0	0	$2,725	2.8	0.18%	0.00%	9.30
Provide Daylight Controls Near Skylights and Exterior Glass	$720	3,264	0	0	$303	2.4	0.02%	0.00%	1.03
Install 35 kW DC Solar PV system on available roof area- Since roof area is limited, a ground mount or placement at parking garage roof is possible. (Approximately 100 modules.) Note that a 30% Federal Investment Tax Credit is available for commercial systems, or a production credit of $0.026/kWh of production credit for commercial systems, if the systems meet labor requirements issued by the Treasury Department, but neither are included in the pricing.	$113,750	50,315	0	0	$4,670	24.4	0.32%	0.00%	15.94
Totals	$134,970	293,327	32,222	0	$27,229	4.96	7.79%	0.00%	262.73

2.4 ENERGY BENCHMARKING

The owner obtained whole Property utility data from the utility company. The campus' energy use was input into Energy Star Portfolio Manager to produce a baseline year Statement of Energy Performance (SEP) score. However, for this property type, a SEP score cannot be produced. The site energy use intensity (EUI) is calculated to be 278 kBtu/ft^2 and the National Median site EUI is 175 kBtu/ft^2.

3.0 BACKGROUND

3.1 PROPERTY DESCRIPTION

The Property is a parcel totaling approximately 20.38 acres and is located at Property Address in a commercial area of City, State. The Property is improved with One commercial building with lab in One two story building with other stories added recently in the major renovation. The older portion of the building was previously operated as department store in the early 1950's.
The net rentable area of all the combined units is 195,000 square feet and the gross building area of the Property is 195,000 square feet. The Property was originally developed in 1950 and underwent a substantial renovation in 2014.

The facility description is as follows: Property. follows the science, to find new ways to manage rare and often hard-to-treat diseases. By deciphering new pathways, and to discover first-of-their-kind treatments.

Since their start in 2002 with a small number of scientists, chemists and biologists in City, State, Client Name has grown into a global organization with a robust portfolio of treatments across Oncology and Inflammation & Autoimmunity. Today this passion for innovation is stronger than ever with a team of more than 2,000 employees.

The company takes a comprehensive approach to identifying new treatments for patients with cancer, enabling the company to explore both single agents and combinations of targeted and immuno-therapies from both within and beyond their portfolio. The company appears to collaborate with major universities and other companies to bring additional discovery platforms and therapeutics forward. Incyte's targeted therapy discovery efforts focus on identifying therapeutic intervention points within interdependent pathways that drive tumor growth, enabling them to leverage cross-program knowledge. Complementary to that is their immuno-therapy discovery strategy, which is built on a deep understanding of functional genomics, pharmacodynamics and state-of-the-art bioinformatics. Insights into the nuances of immune surveillance in health and disease are leading us to new opportunities to harness the immune system to fight cancer. The facility has world-class chemistry and biology groups to apply these learnings to develop small molecule, monoclonal antibody and bispecific antibody drug candidates for clinical testing.

As a result of the vast research several process systems (mainly industrial lab ventilation systems) are used for scientific and biologic research into various diseases including cancer. Several hundred lab fume hoods are used in conjunction with conducting research and clinical trials.

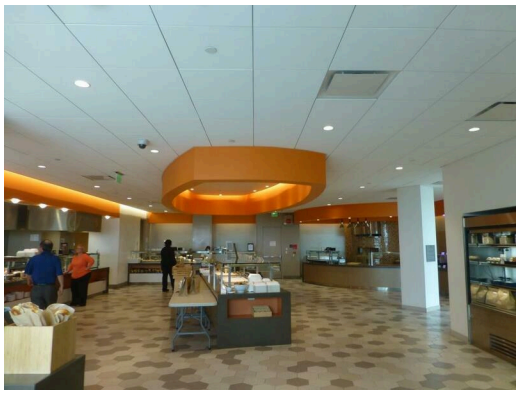
Amenities include a central cafeteria room with kitchen which is quite large in floor space. The Property does have an in-ground automatic sprinkler system.

The Project Team assessed a representative sample of the tenant spaces. The assessment also included the roof, parking areas and structures, building operational and structural components, and all exterior and common areas.

The site contact was Key Site Manager Name; phone: (215) 917-5226

Photographs

Side Elevation at the Building



LED Lights Lunch Area

Office LED Lighting-Typical

Rooftop at Bldg 1

Existing Energy and Water Efficiency Measures at the Property

The following existing energy and water efficiency improvements were observed at the subject property:

1. High efficiency LED lighting for most areas
2. Double glazed metal framed windows
3. High efficiency air handling units with integrated variable speed drives
4. Occupancy sensors for all major lighting zones in the corridor and private offices
5. Occupancy sensor camera devices as part of the phoenix control valves at all lab spaces
6. CHW and HHW pumps equipped programmed for variable flow and variable speed drives
7. Programmable thermostats and Central EMS system which controls all the Lab exhaust fans, air handling units, and the three large packaged rooftop units.

3.2 Occupancy and Use Schedules

The facility consists of several office spaces and lab spaces which emcompass a large percentage of building 1. The estimated occupancy schedule is shown below.

Occupancy Schedule

Space	# of Occupants	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Leasing Office	800	9 hours	9 hours	9 hours	9 hours	9 hours	0	0
Lab Spaces	1000	24/7	24/7	24/7	24/7	24/7	24/7	24/7
Facility office	15 (Estimated)	8 hours	8 hours	8 hours	8 hours	8 hours	4 hours-estimated	0
Cafeteria	200-depending on lunch and breakfast schedules	4 hours	4 hours	4 hours	4 hours	4 hours	0	0

3.3 Utility Analysis

The utility analysis covers the period of September 2022 to August 2023 and is based on bills obtained from the property owner. In the case of tenant bills a sample is normally used to establish an average energy consumption for the different size units. Both the electric and gas utilities are then converted to a common unit (kBtu's) so that the total energy can be examined and project an Energy Use and Cost Intensity for the property. The EUI can then be used to compare the property against similar properties to determine how efficiently the building is being operated.

EEM Summary Table		
Current Building Energy Usage	54,203,297	kBtu
Current Building Energy Cost	$904,650	$$$
Proposed Energy Savings	4,223,318	kBtu
Proposed Energy Cost Savings	$27,229	$$$
Energy Savings	7.8%	%
Energy Cost Savings	3.0%	%
Investment for ECM's	$134,970	$$$
Payback for Investments	4.96	Years
Site Energy Use		
Current Electric Site Energy	23,813,240	kBtu
Current Natural Gas Site Energy	30,390,056	kBtu
Total Building Area	185,000	SF
Proposed Electric Savings (kBtu)	1,001,125	kBtu
Proposed Gas Savings (kBtu)	3,222,193	kBtu
Site Energy Use Intensity		
Current Site Energy Use Intensity	277.97	kBtu/SF
Proposed Site Energy Use Intensity	256.31	kBtu/SF
Site Greenhouse Gas Emissions		
Current Site GHG Emissions	3812.69	MTCO2e/Yr
Proposed Site GHG Emissions	3549.96	MTCO2e/Yr
Source Energy Use Intensity		
Current Source Energy Use Intensity	505.57	kBtu/SF
Proposed Source Energy Use Intensity	473.85	kBtu/SF

3.3.1 Utility Providers

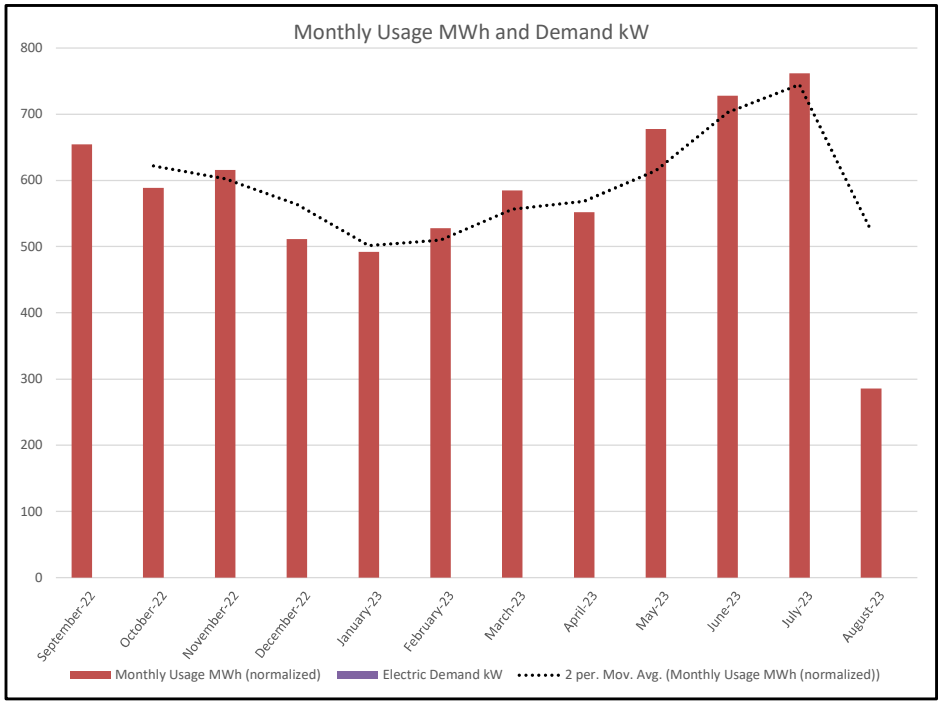
Utility Type	Utility Provider Name
Electricity	Utility Provider
Natural Gas	Utility Provider
Water	Utility Provider
Sewage Disposal/Treatment	Utility Provider

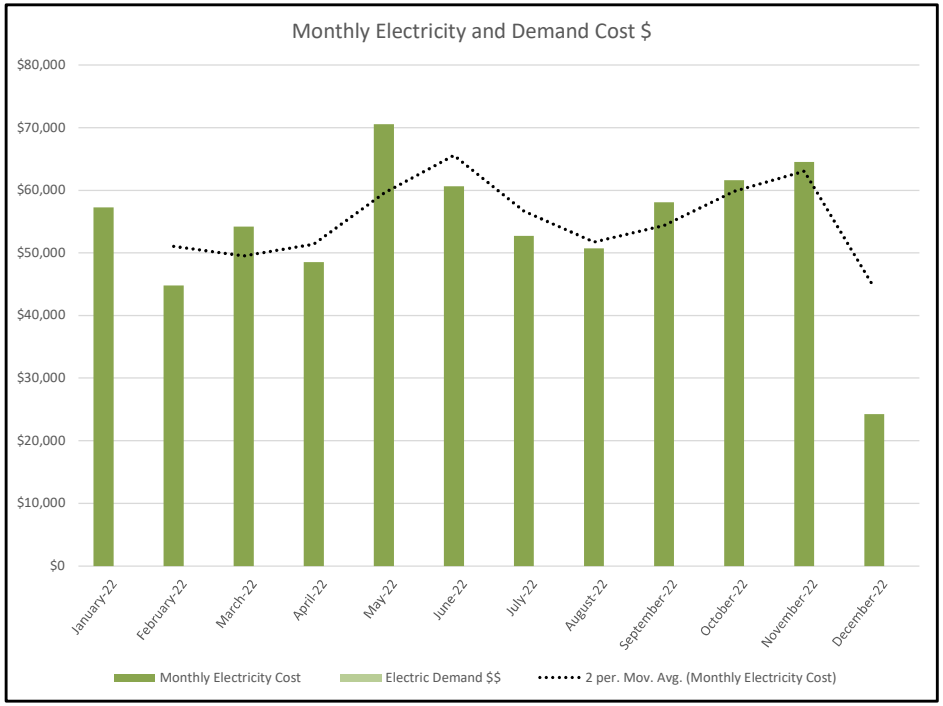
3.3.2 Electricity

The chart below shows the monthly consumption and cost of electric power for the Property. The cost per kWh is calculated in the fourth column. The bottom row shows the annual electrical power consumption and cost for the Property.

Electricity Chart

Billing Month & Year	Monthly Electricity Usage (kWh)	Monthly Electricity Cost	Cost per kWh	kBTU Usage (kWh x 3.41)
September-22	654,630	$57,271	$0.09	2,233,598
October-22	588,902	$44,821	$0.08	2,009,334
November-22	615,968	$54,232	$0.09	2,101,683
December-22	511,272	$48,552	$0.09	1,744,460
January-23	491,712	$70,517	$0.14	1,677,721
February-23	527,684	$60,612	$0.11	1,800,456
March-23	584,849	$52,721	$0.09	1,995,505
April-23	551,960	$50,730	$0.09	1,883,288
May-23	677,398	$58,043	$0.09	2,311,282
June-23	727,726	$61,600	$0.08	2,483,001
July-23	761,546	$64,518	$0.08	2,598,395
August-23	285,615	$24,286	$0.09	974,518
Annual Electricity Usage & Cost:	6,979,262	$647,902	$0.09	23,813,240

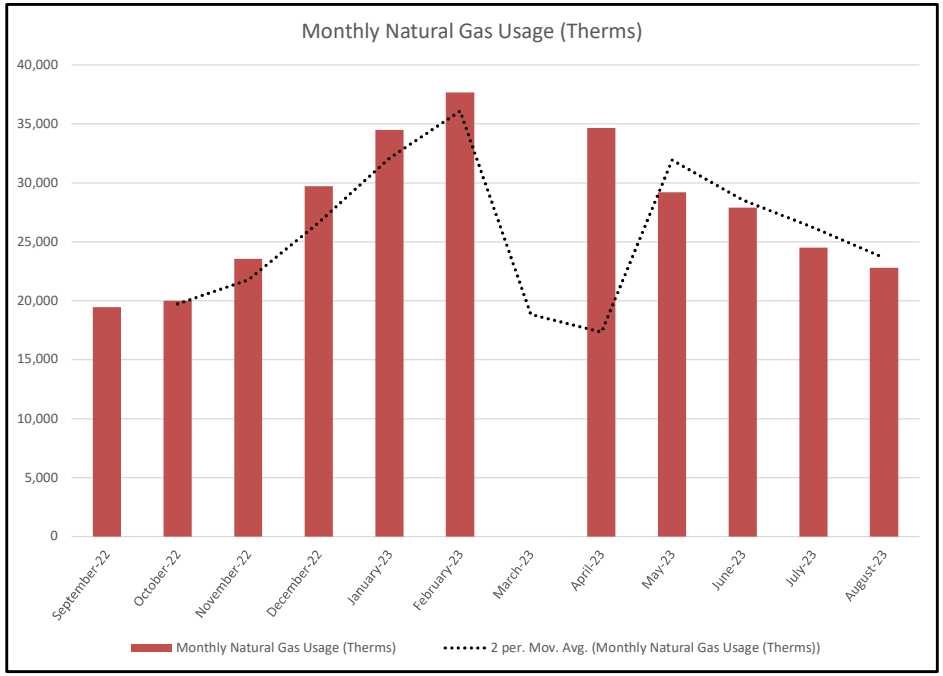

Monthly Usage MWh and Demand kW
800
700
600
500
400
300
200
100
0
September-22
October-22
November-22
December-22
January-23
February-23
March-23
April-23
May-23
June-23
July-23
August-23
Monthly Usage MWh (normalized)
Electric Demand kW
2 per. Mov. Avg. (Monthly Usage MWh (normalized))

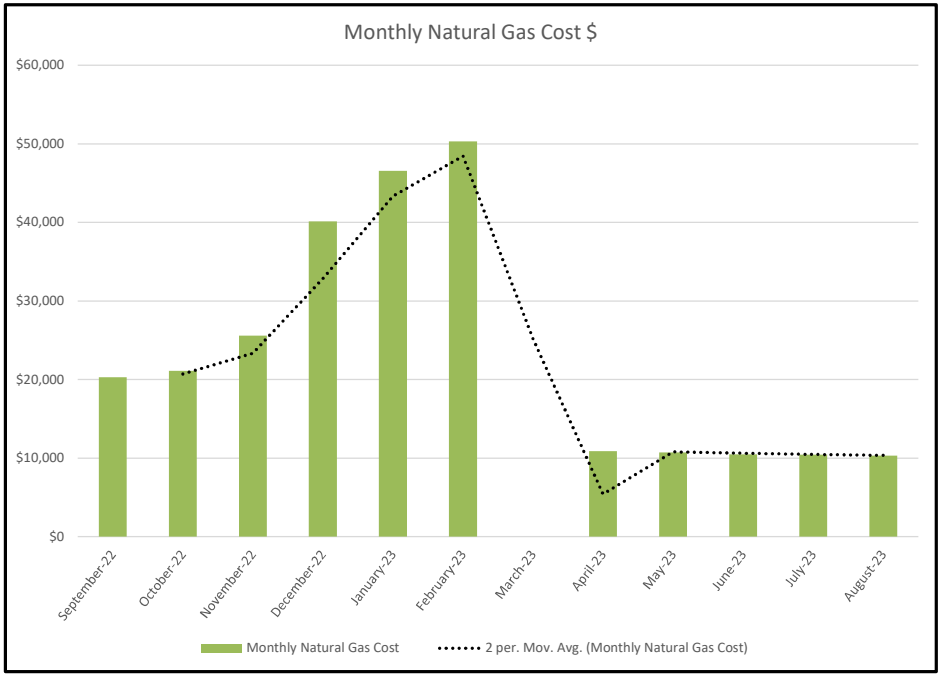

Monthly Electricity and Demand Cost $
$80,000
$70,000
$60,000
$50,000
$40,000
$30,000
$20,000
$10,000
$0
January-22
February-22
March-22
April-22
May-22
June-22
July-22
August-22
September-22
October-22
November-22
December-22
Monthly Electricity Cost
Electric Demand $$
2 per. Mov. Avg. (Monthly Electricity Cost)

3.3.3 NATURAL GAS

The chart below shows the monthly consumption and cost of the natural gas for the Property. The cost per Therm is calculated in the fourth column. The bottom row shows the annual natural gas consumption and cost for the Property.

Billing Month & Year	Monthly Natural Gas Usage (Therms)	Monthly Natural Gas Cost	Cost per Therm	kBTU Usage (Therms x 100)
September-22	19,466	$20,296	$1.04	1,946,564
October-22	19,986	$21,104	$1.06	1,998,635
November-22	23,550	$25,577	$1.09	2,355,048
December-22	29,706	$40,115	$1.35	2,970,587
January-23	34,489	$46,565	$1.35	3,448,942
February-23	37,677	$50,295	$1.33	3,767,709
March-23	0	$0	$0.00	0
April-23	34,659	$10,859	$0.31	3,465,924
May-23	29,196	$10,723	$0.37	2,919,642
June-23	27,887	$10,500	$0.38	2,788,698
July-23	24,501	$10,426	$0.43	2,450,085
August-23	22,782	$10,287	$0.45	2,278,221
Annual Natural Gas Usage & Cost:	303,901	$256,748	$0.84	30,390,056


Monthly Natural Gas Usage (Therms)
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
September-22
October-22
November-22
December-22
January-23
February-23
March-23
April-23
May-23
June-23
July-23
August-23
Monthly Natural Gas Usage (Therms)
2 per. Mov. Avg. (Monthly Natural Gas Usage (Therms))


Monthly Natural Gas Cost $
$60,000
$50,000
$40,000
$30,000
$20,000
$10,000
$0
September-22
October-22
November-22
December-22
January-23
February-23
March-23
April-23
May-23
June-23
July-23
August-23
Monthly Natural Gas Cost
2 per. Mov. Avg. (Monthly Natural Gas Cost)

3.3.4 Water and Sewer

Water consumption and cost data were not provided.

3.4 End Use Analysis

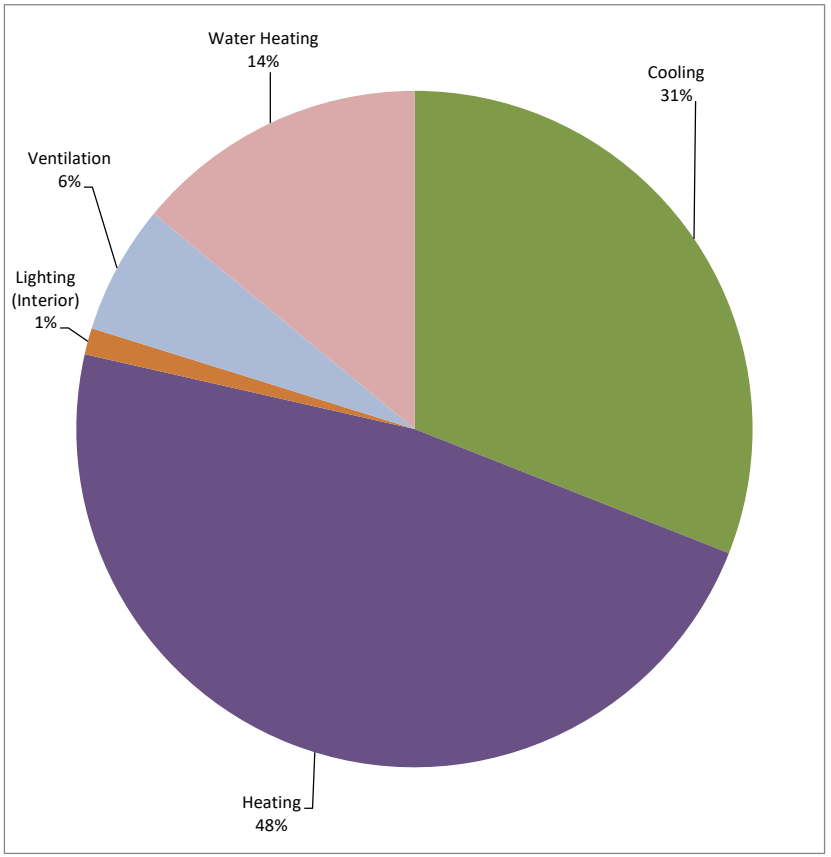
The following table presents the approximate end use analysis for all energy utilities on the Property:

Conversion Factor to kBtu

Input Unit 1	kWh	3.412142
Input Unit 2	therms	100
Input Unit 3	gallons (propane)	91.33
Combined Output Units	kBtu	1
Building Gross Floor Area	195,000	
Floor Area Units	ft^2	

	Input Energy Units			Combined Energy Use	
End Use	kWh	therms	gallons (propane)	kBtu	%
Air Compressors	-	-		-	0%
Cooking	-	-	-	-	0%
Cooling	4,922,667	-		16,796,838	31%
Heating	875,000	227,926		25,778,255	48%
Lighting (Exterior)	-	-		-	0%
Lighting (Interior)	200,665	-		684,697	1%
Miscellaneous	-	-	-	-	0%
Office Equipment	-	-		-	0%
Other Plug Loads	-	-		-	0%
Process	-	-		-	0%
Pumps	-	-		-	0%
Refrigeration	-	-		-	0%
Ventilation	980,930	-		3,347,072	6%
Water Heating	-	75,975		7,597,514	14%
Total Estimated	**6,979,262**	**303,901**	**-**	**54,204,377**	**100%**
Historical Billing	**6,979,262**	**303,901**	**-**	**54,204,288**	
Percent of Actual	**100.0%**	**100.0%**	**0.0%**	**100.0%**	
Total per ft^2	**35.8**	**1.6**	**-**	**278.0**	

Combined Fuel End-Use Breakdown



4.0 BUILDING SYSTEMS

4.1 OCCUPANCY

AEI visited approximately 80% of the building and 100% of all common areas which include all exterior common areas, observed the central BAS system, and conducted surveys on all of the mechanical equipment.

4.2 BUILDING ENVELOPE

4.2.1 FOUNDATION

The lab and corporate office buildings appear to be a steel braced frame structure and consists of a shallow foundation (thickened and reinforced concrete slab). The ground floor has standard concrete slab-on-grade construction that span to concrete beams, columns, and bearing walls. The foundations appeared to be in good condition.

4.2.2 FLOOR

4.2.3 STRUCTURE

The structures appears to be metal wood framed with wood truss joists and wood load bearing beams and columns.

4.2.4 EXTERIOR WALLS

The primary cladding on the exterior appears to be high end stucco with smooth brick and metal framing, with R-15 insulation (estimated). The exterior cladding appears to be in good condition.

Photographs

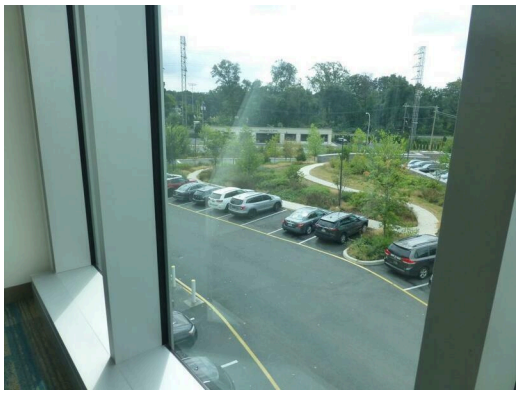
Side Elevation at the LAB Bldg 1801

4.2.5 DOORS AND WINDOWS

The entry doors into the buildings are metal framed. The weather stripping on each observed door appeared to be in good condition.

Glazing systems at the property consist of aluminum framed curtain wall ribbon window systems. The high curtain wall systems appear to be mostly doubel pane windows with metal frames, but the windows do not appear to be storm rated.
Flashing at the building appears to be in good condition.

Photographs



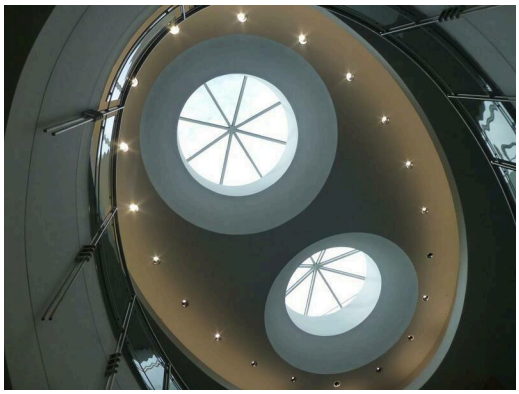
Dual Pane Metal Framed Window

4.2.6 ROOF

The roof type is a standard TPO (Thermoplastic Polyolefin). No roof warranty was provided for our review. Roof accessories consist of mechanical equipment, plumbing vents, roof hatch, metal platform, limited telecommunication arrays and utility lines. No mechanical screen walls appear to be on the roof structure. The low-slope roof areas drain to internal roof drains oriented at structural low spots. Overflow drainage is provided by secondary drains adjacent to the primary drains. Internal roof drains appear to discharge to a subgrade drainage system. Skylight structures were observed on the roof which provide daylight to atrium areas on the lower floors.
Low roofs only have primary drains with no secondary drains. Consideration should be made to include secondary drains with next roof replacement. According to estimates, the insulation consists of R-15 rigid insulation.

Photographs

Rooftop at Bldg XXXX

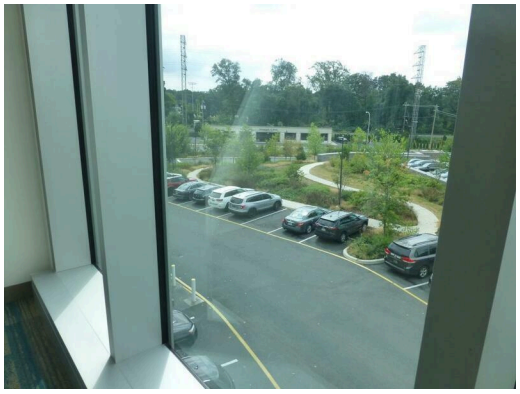


Skylights with LED Lights

4.2.7 Insulation Summary

Envelope Component	U-Factor	Insulation R-Value
Exterior Walls	0.065	R-15
Rigid Roof Insulation (Polyurethane-Estimated)	0.045	R-25
Windows	0.55	R-1.81
Doors	0.65	R-1.5
Ground Floor	0.35	R-2.85
Between Floors	0.07	R-14 (Estimated)

Photographs



Dual Pane Metal Framed Window

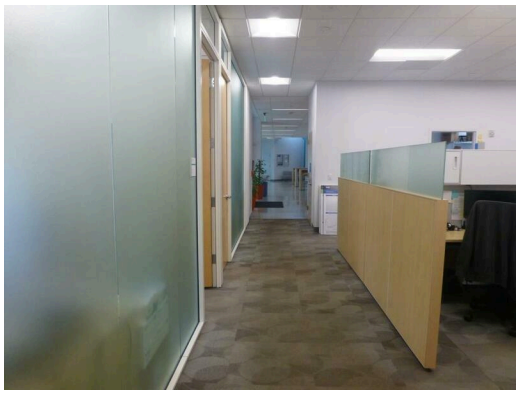
4.2.8 Lighting

The following tables provide an inventory of observed lighting fixtures, lamp type, and wattage.

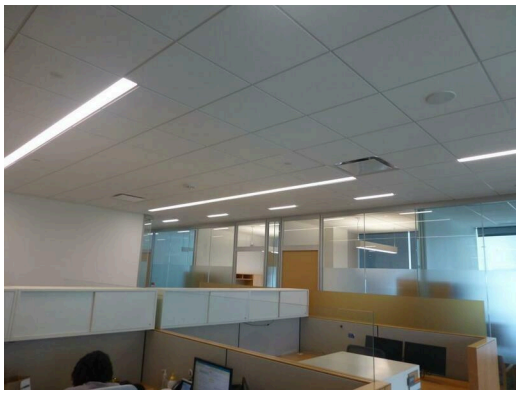
Lighting Audit (Common Area)

Area of Building	Existing Fixture	Total # Fixtures	Lamps Per Fixture	Total # of Lamps	LED Equivalent Wattage	Current kWh Usage	kWh Usage w/ LED	kWh Saved Per Year	Cost Per kWh	Current Annual Op Cost	Annual Cost Using LEDs	Savings	Cost to Install Lighting	Payback
Exterior Pole Lighting	1B 60W LED	50	1	50	0	13140	0	0	0.09	$1,220	$0	$0	$0	-
Wall Packs	1B 22W LED	80	1	80	0	7709	0	0	0.09	$716	$0	$0	$0	-
Parking Garage Lighting	1B 50W LED	20	1	20	0	8760	0	0	0.09	$813	$0	$0	$0	-
Office Recessed Can	1B 15W LED	120	1	120	0	5616	0	0	0.09	$521	$0	$0	$0	-
Common Corridor	1B 20W LED	150	1	150	0	9600	0	0	0.09	$891	$0	$0	$0	-
Office Linear Fixtures	2B 30W LED	550	2	1100	0	105600	0	0	0.09	$9,803	$0	$0	$0	-
Stairwells	2B 20W LED	350	2	700	0	44800	0	0	0.09	$4,159	$0	$0	$0	-
Common Corridor with Glass-Near Daylight	1B 20W LED	80	1	80	0	5,440	2,176	3,264	$0.09	$505	$202	$303	$720	2.4

Photographs



2nd View Office LED Lighting



Corporate Office LED Lighting

Corridor LED Lighting

LED Lighting At Restroom

4.2.9 Building Mechanical Systems

The heating and cooling systems consist of three large rooftop packaged AC units which serve the general occupied areas at various sections of the building. Additionally there are five large air handling units (AHU's) which primarily serve the lab spaces in the building on most floors of the building. There are three large exhaust lab hood fans which simultaneously exhaust air from the lab spaces and associated areas that need to be continuously exhausted from the areas that undergo biological and chemical processes in the building.

The ductwork from the lab units contains several zones which contain heating hot water reheat coils supplied by the central boilers for the heating source. The tonnages of the packaged rooftop units range from 60 to 80 tons. The supply fans on each of these large RTU's are equipped with VFD's. The rated efficiency of these units is approximately 9.5 to 10 EER.

The building is heavily centered on the function of laboratory fume hoods utilizing phoenix controls and occupancy camera sensors which can affect the sash opening levels. There are approximately 250 lab hoods in the building and are monitored by the building automation system. The AHU's serving the Lab areas have a supply temperature of 48°F to maintain

approximately 70ºF in all the lab zones. Two 500 ton variable speed water cooled chillers provide chilled water to the five air handling units and utilize a variable chilled water pumping system, in which the chilled water pumps are equipped with VFD's.

The heating and cooling systems throughout Building 1 are controlled by the central BMS system. The front end is located in the facility manager's office however it appears the facility manager indicated the system can be controlled remotely as the system is web based and can be accessed at any location.

Domestic hot water is produced by four large natural gas water heaters that provide comfort and process domestic hot water throughout the building.

HVAC Equipment

Location or Unit Address	Description	Manufacturer	Model No.	Year of Manufacture	RUL	Quantity	Heating Fuel	Heating Capacity	Heating Efficiency (AFUE, TE, COP, HSPF)	Cooling Capacity (Tons)	Efficiency
Rooftop	Lab Exhaust Fans with VFD's	Strobic	TS4L750 Series	2014	12	3	N/A	N/A	0.9	1.1	11 EER (Est)
Rooftop-RTU's	Gas fired RTU	Daikin	MPS075E	2014	12	3	Gas	800 MBH	0.8	72	9.2 EER
Rooftop-LABs	AHU's	Aerofin	W12OAW	2014	12	5	HHW	11.2 MBH	N/A	120	N/A
Mechanical Room	Water Cooled Chiller	York	YKH3F3P8	2014	16	2	N/A	N/A	N/A	500	11 EER
Zone Level	VAVs with hydronic reheat	Envirotech	SDR	2014	16	35	HHW	6 to 25 MBH	0.8	N/A	N/A
Mechanical Room	Steam Boiler	Triad High Press	Ser. 2000	2014	20	3	Gas	1513 lbs	0.7	N/A	N/A

Domestic Water Heating

Location of Unit Address	Manufacturer	Model No.	Year of Manufacture	Storage Capacity (Gal)	Input Capacity	Input Units of Measure (kW, BTUH, MBH)	Fuel (e.g., electric, natural gas)	Quantity	RUL	Efficiency (TE, AFUE, Energy Factor, etc.)
Mechanical Room	PVI	Unknown	2016	100	150	MBH	natural gas	4	12	96% TE

Photographs

Domestic Water Heater for LAB Areas

Strobic Fans and Rooftop

2nd set of Strobic Fans

Typical LAB Hood with Sash Control

4.2.10 Appliances

There are no major appliances at the property.

4.2.11 Laundry Equipment

There are no central laundry systems on the Property.

5.0 RECOMMENDED EEMS

The EEMs in the chart at the beginning of the report have been analyzed using calculations based on occupant usage, localized climate conditions, HVAC and ventilation operating hours, and lighting hours. The HVAC operating hours are approximations and may vary depending on the severity of the weather. Water consumption is based on the number of occupants and assumed running times for water consuming devices. The Property has been carefully evaluated for the EEMs. The chart shows the initial investment, utility savings, utility cost savings, and paybacks for each EEM. The utility cost increase over the life of the EEM implemented was not considered as a factor in the cost savings calculations.

5.1 NO-COST/LOW-COST MEASURES

There were no low cost measures identified for this site. Capital measures have been identified in the Capital Projects section.

5.2 CAPITAL COST MEASURES

EEM #1- Program Supply Temperature Reset (approximately 2.5°F) from 48°F to 50.5°F for the LAB AHU's at Building 1

The existing EMS control system operating the five Lab air handling units appear to be currently at constant temperature setpoint of 48°F providing conditioned air to all the Lab spaces. It is proposed to provide a supply temperature discharge air temperature reset strategy which is selectable by the operator with an option for a fixed supply air temperature setpoint as well. All reset strategies shall be stepwise and reset every five (5) minutes (adj.). All reset values shall be adjustable and available to the operator.

The measure will include installation and is estimated at approximately $5,500.

Increasing the setpoint will reduce energy consumption on the LAB air handling units and Strobic exhaust fans as well as decrease the cooling load on the existing VFD chillers. One concern is that the process equipment could increase in heat load however a mild reset (at approximately 2°F) is still recommended which may not cause a heavy impact to the work spaces. The discharge air temperature setpoint is selected by the operator and set to a fixed value.

Some control adjustments from the facility manager and or contracted controls contractor may be required

Potential O&M savings: the long term O&M savings will result from operating fans at lower RPM and power, generating less wear on fan belts, housing, and motors. Installation and commissioning of this control measure can be installed with little impact on occupants and personnel.

There may be custom rebates available thru Delmarva Power, however an inquiry needs to be made as to the dollar amount per kWh saved for which the measure will qualify. The following is the weblink for applying for custom rebates thru Delmarva Power, which is the link for custom incentives:

website.com

EEM #2- Program Supply Temperature Reset (approximately 3°F) from 55°F to 58°F for the three Packaged Rooftop Units at Building 1

The existing EMS control system operating the three main packaged units appear to be currently at constant temperature setpoint of 48°F providing conditioned air to all the Lab spaces

The measure will include installation and is estimated at approximately $7,500 based on an average cost of $2,500 per control point that would need to be adjusted.

Increasing the setpoint will reduce energy consumption on the supply fans as well as decrease the cooling load on the existing Packaged RTU compressors This will also interactively reduce the heating required by the gas furnaces at the units and will save natural gas energy.

There should be no concerns on this measure as this resets the supply temperature by approximately 3°F during lower load conditions and appears to serve non-lab or non-critical areas of the building.

Some control adjustments from the facility manager and or contracted controls contractor may be required

Potential O&M savings: the long term O&M savings will result from operating fans at lower RPM and power, generating less wear on fan belts, housing, and motors. Installation and commissioning of this control measure can be installed with little impact on occupants and personnel.

There may be custom rebates available thru Delmarva Power, however an inquiry needs to be made as to the dollar amount per hp for which the measure will qualify.

The following is the weblink for applying for custom rebates through utility company, which is the link for custom incentives : website.com

EEM #3-Provide Demand Control Ventilation to three Packaged Rooftop Units with CO_2 sensor controls

The three existing Packaged Rooftop Units do not appear to be equipped with demand control ventilation

Measure will be installed at the unit with demand controls and CO2 sensors to detect occupancy in some limited office spaces inside the building at office and limited corridor spaces.

Demand-controlled ventilation (DCV) is an energy-saving control strategy that reduces the rate at which outdoor air is delivered to a zone during periods of partial occupancy, which does appear to occur in the office portions of the building

The measure will include installation and is estimated at approximately $7,500 based on an average cost of $2,500 per control point that would need to be adjusted to re-program supply temperature setpoints. Assumes a constant supply temperature of approximately 55 F and some modulation of the outside air dampers but does not appear to be occupancy based, but rather temperature based.

Provide Demand Control Ventilation internal controls to three Packaged Rooftop Units with CO2 sensor controls. A sample case study is shown in the appendices.

Some control adjustments from the facility manager and or contracted controls contractor may be required

Potential O&M savings: the long term O&M savings will result from operating fans at lower RPM and power, generating less wear on fan belts, housing, and motors. Installation and commissioning of this control measure can be installed with little impact on occupants and personnel.

There may be custom rebates available thru Delmarva Power, however an inquiry needs to be made as to the dollar amount per hp for which the measure will qualify.

The following is the weblink for applying for custom rebates through Utility company which is the link for custom incentives : Delmarva Power | Delmarva Power - An Exelon Company (programprocessing.com)

EEM #4- Provide Daylight Controls Near Skylights and Exterior Glass at Building 1

Existing LED interior lighting have areas at the building that could be controlled by day light controls.

AEI recommends: Installing daylight controls in some glass areas and skylit areas of the building to provide day light harvesting and reduce lighting power when sufficient daylight is available.

Basis for how the measure will save energy: Installing high-efficiency day light sensor controls will significantly reduce the property's electrical consumption while maintaining equivalent or better light levels. In addition, many of the recommended bulbs and fixtures have longer lifespans, which will reduce the number of bulbs replaced at the property.

The measure is expected to cost approximately $720.

Key analytical assumptions: Lighting without day light controls uses more energy as verified by nameplate and heat output

The selected LED lamps should have a color temperature around 2,700K to 3,000K to provide the same "feel" as incandescent lighting.

Energy usage will decrease and lamp replacement frequencies will be less frequent.

Rebates/Incentives available from utility company or municipality: Possible incentives are available through Utility Company Generally an account executive is assigned to the property and a custom rebate may be available. No prescriptive rebates were found for this measure.

EEM #5

Install 35 kW Solar PV system on available roof area. (Approximately 100 modules.). Note that a 30% Federal Investment Tax Credit is available for commercial systems, or a production credit of $0.026/kWh of production credit for commercial systems, if the systems meet labor requirements issued by the Treasury Department, but neither are included in the pricing.

The building has a high electricity baseload, installation of a solar PV array would offset a percentage of the load.

There is ample space on the south flat roof sections to install a solar PV system. The property is located in a region with a significant solar days.

The estimated cost of this measure is $113,750. A 30% Federal tax rebate is available, but is not accounted for the in the proposed cost.

Solar modules not only generate electricity but also provide shading to the roof membrane and partly protect it from weather.

The installation of the system will not affect any facility operation.

EEM Simulation Results

Input parameters in each modeled building were changed to reflect the proposed changes in conditions then a simulation was run to predict the results. The simulation tool considers the interactive effects on all systems such as increased heating requirements from retrofitting high wattage lighting with lower wattage LED lighting. The following tables provide a summary of the EWEMs evaluated and the simulation results showing projected use per building type, subtotal for all buildings by type, total for all buildings, and the projected reduction in consumption.

Note that EEM #1 thru 3 was not modeled, but rather was the result of lighting calculations based on an inventory of common area and site lighting. Modeling was not necessary as consumption for lighting is included in the owner-paid utilities.

Energy Model Assumptions

The following assumptions were made in building the building energy model:

An approximation was made on the following based on observations during the site visit and plan drawings

- Local Vegetation/shading
- Interior conditions and HVAC set points
- Air infiltration goals
- Building orientation (should rotate the model to 4 compass points and average the modeled usage).
- Lighting loads W/SF
- Plug loads W/SF
- Schedules (lighting, plug loads)
- HVAC equipment types and efficiencies
- Economizers and heat recovery
- Water heating systems
- Specialty Systems
- Renewable energy systems

6.0 SIGNATURES OF PARTICIPATING PROFESSIONALS

AEI Consultants performed this ASHRAE Level II Energy Audit for the Property located at Property Address, City, County County, State, in conformance with the scope and limitations of ASHRAE *Procedures for Commercial Building Energy Audits, Second Edition*, ANSI/ASHRAE/ ACCA Standard 211-2018, *Standard for Commercial Building Energy Audits*.

Prepared By: Project Manager	Reviewed By: Vice President

APPENDIX B

SUPPORTING DOCUMENTATION

ASHRAE Equipment Life Expectancy chart

ASHRAE is the industry organization that sets the standards and guidelines for most all HVAC-R equipment. For additional info about ASHRAE the website is www.ashrae.org .

Equipment Item	Median Years
Air conditioners	
Window unit	10
Residential single or Split Package	15
Commercial through-the wall	15
Water-cooled package	15
Heat Pumps	
Residential air-to-air	15
Commercial air-to-air	15
Commercial water-to-air	19
Roof-top air conditioners	
Single-zone	15
Multi-zone	15
Boilers, hot water (steam)	
Steel water-tube	24 (30)
Steel fire-tube	25 (25)
Cast iron	35 (30)
Electric	15
Burners	21
Furnaces	
Gas- or oil-fired	18
Unit heaters	
Gas or electric	13
Hot water or steam	20
Radiant Heaters	
Electric	10
Hot water or steam	25

Equipment Item	Median Years
Air terminals	
Diffusers, grilles, and registers	27
Induction and fan coil units	20
VAV and double-duct boxes	20
Air washers	17
Ductwork	30
Dampers	20
Fans	
Centrifugal	25
Axial	20
Propeller	15
Ventilating roof-mounted	20
Coils	
DX, water, or steam	20
Electric	15
Heat Exchangers	
Shell-and-tube	24
Reciprocating compressors	20
Packaged chillers	
Reciprocating	20
Centrifugal	23
Absorption	23
Cooling towers	
Galvanized metal	20
Wood	20
Ceramic	34

Equipment Item	Median Years
Air-cooled condensers	20
Evaporative condensers	20
Insulation	
Molded	20
Blanket	24
Pumps	
Base-mounted	20
Pipe-mounted	10
Sump and well	10
Condensate 15	
Reciprocating engines	20
Steam turbines	30
Electric motors	18
Motor starters	17
Electric transformers	30
Controls	
Pneumatic	20
Electric	16
Electronic	15
Valve actuators	
Hydraulic	15
Pneumatic	20
Self-contained	10

NREL
NATIONAL RENEWABLE ENERGY LABORATORY

Caution: Photovoltaic system performance predictions calculated by PVWatts® include many inherent assumptions and uncertainties and do not reflect variations between PV technologies nor site-specific characteristics except as represented by PVWatts® inputs. For example, PV modules with better performance are not differentiated within PVWatts® from lesser performing modules. Both NREL and private companies provide more sophisticated PV modeling tools (such as the System Advisor Model at //sam.nrel.gov) that allow for more precise and complex modeling of PV systems.

The expected range is based on 30 years of actual weather data at the given location and is intended to provide an indication of the variation you might see. For more information, please refer to this NREL report: The Error Report.

The energy output range is based on analysis of 30 years of historical weather data, and is intended to provide an indication of the possible interannual variability in generation for a Fixed (open rack) PV system at this location.

RESULTS

50,315 kWh/Year*

System output may range from 47,830 to 52,147 kWh per year near this location.

Month	Solar Radiation (kWh / m^2 / day)	AC Energy (kWh)
January	3.12	3,092
February	3.92	3,432
March	4.99	4,707
April	5.75	5,060
May	5.72	5,033
June	6.14	5,188
July	6.13	5,248
August	5.71	4,941
September	4.99	4,222
October	4.20	3,882
November	3.38	3,144
December	2.41	2,365
Annual	**4.71**	**50,314**

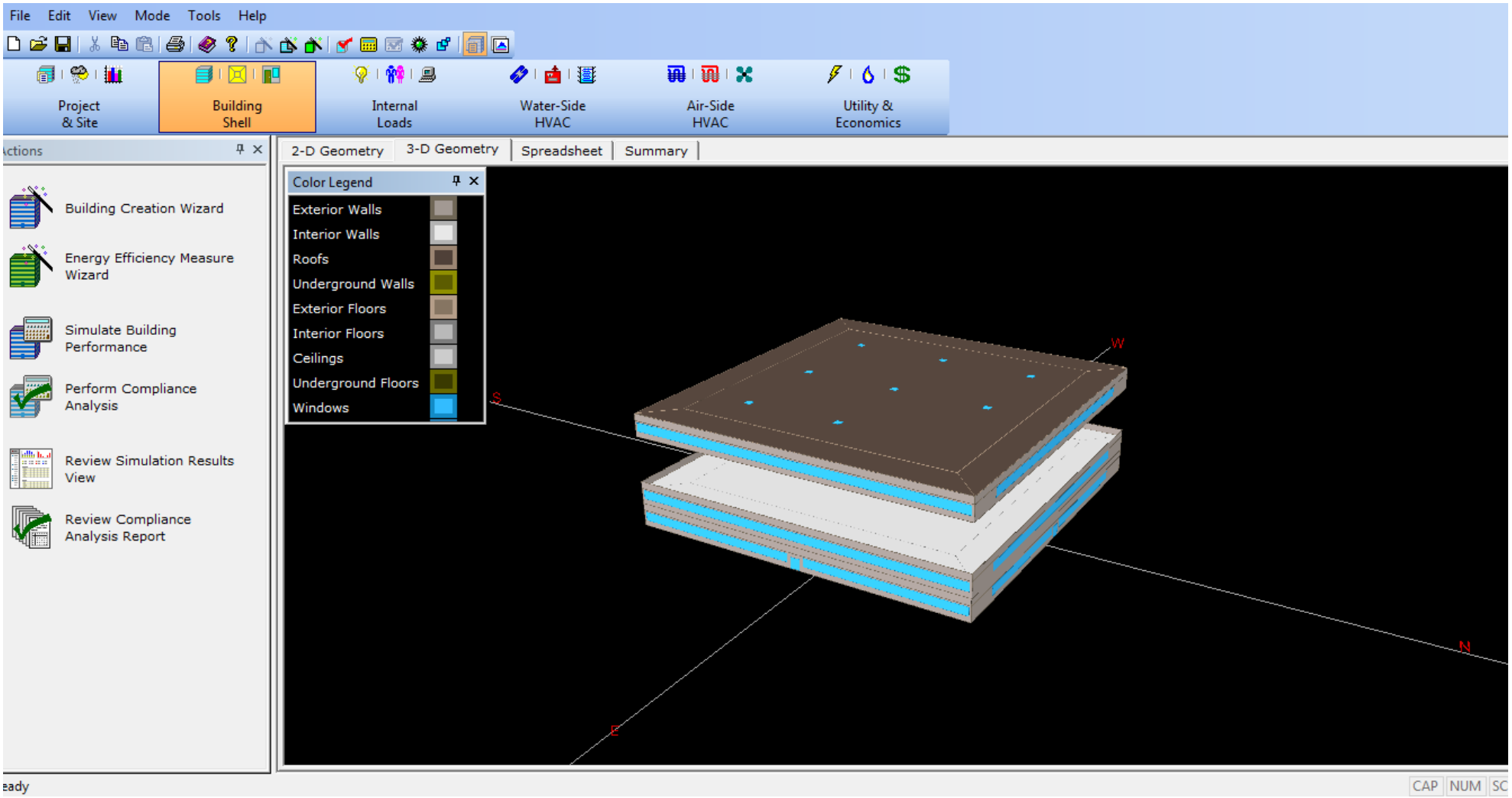
Location and Station Identification

Requested Location	wilmington, de
Weather Data Source	Lat, Lng: 39.93, -75.06 29 mi
Latitude	39.93° N
Longitude	75.06° W

PV System Specifications

DC System Size	35 kW
Module Type	Standard
Array Type	Fixed (open rack)
System Losses	8%
Array Tilt	20°
Array Azimuth	180°
DC to AC Size Ratio	1.2
Inverter Efficiency	96%
Ground Coverage Ratio	0.4
Albedo	*From weather file*
Bifacial	No (0)
Monthly Irradiance Loss	Jan 0% Feb 0% Mar 0% Apr 0% May 0% June 0% July 0% Aug 0% Sept 0% Oct 0% Nov 0% Dec 0%

Performance Metrics	
DC Capacity Factor	16.4%


File
Edit
View
Mode
Tools
Help
Project & Site
Building Shell
Internal Loads
Water-Side HVAC
Air-Side HVAC
Utility & Economics
Actions
Building Creation Wizard
Energy Efficiency Measure Wizard
Simulate Building Performance
Perform Compliance Analysis
Review Simulation Results View
Review Compliance Analysis Report
2-D Geometry
3-D Geometry
Spreadsheet
Summary
Color Legend
Exterior Walls
Interior Walls
Roofs
Underground Walls
Exterior Floors
Interior Floors
Ceilings
Underground Floors
Windows
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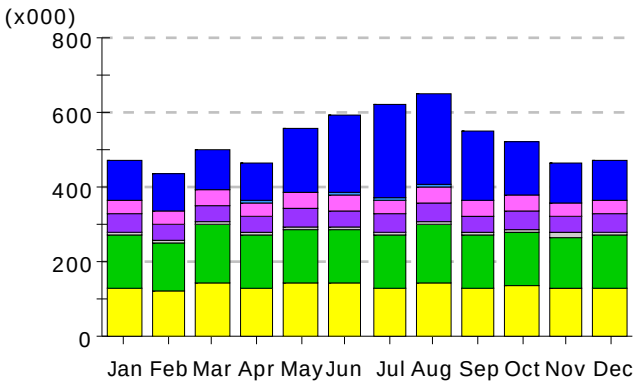
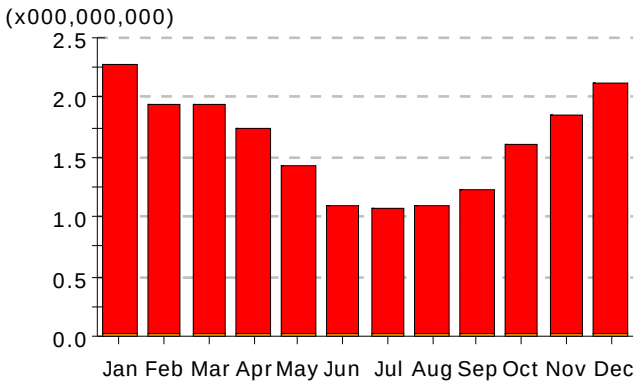
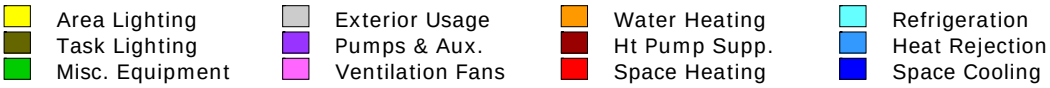
CAP
NUM
SC

Electric Consumption (kWh)



Gas Consumption (Btu)





Electric Consumption (kWh x000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	103.1	95.2	106.3	103.7	170.3	209.7	248.9	243.1	180.0	142.6	107.2	104.1	1,814.5
Heat Reject.	0.4	0.4	0.8	1.0	3.6	5.3	6.8	6.3	4.2	2.5	1.1	0.6	33.1
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	-	-	-	-	-	-	-	-	-	-	-	-	-
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	-	-	-	-	-	-	-	-	-	-	-	-	-
Vent. Fans	38.9	35.6	40.4	38.2	40.7	40.2	40.4	42.0	39.0	39.8	37.8	38.7	471.8
Pumps & Aux.	47.5	42.7	47.0	45.2	47.6	46.8	48.3	48.6	46.2	47.1	45.1	46.7	558.8
Ext. Usage	9.3	7.2	7.9	7.7	5.5	5.3	5.5	8.9	8.6	8.9	9.0	9.3	93.3
Misc. Equip.	140.9	131.2	152.6	139.7	148.7	146.8	141.7	152.6	139.7	144.8	138.9	141.6	1,719.4
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	129.1	122.1	145.4	129.7	139.9	139.3	130.2	145.4	129.5	134.6	128.5	130.2	1,603.9
Total	469.3	434.4	500.4	465.3	556.4	593.5	621.9	646.9	547.2	520.4	467.7	471.2	6,294.7

Gas Consumption (Btu x000,000,000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	-	-	-	-	-	-	-	-	-	-	-	-	-
Heat Reject.	-	-	-	-	-	-	-	-	-	-	-	-	-
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	2.24	1.92	1.92	1.71	1.41	1.08	1.05	1.07	1.22	1.59	1.84	2.09	19.13
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	0.02	0.02	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.28
Vent. Fans	-	-	-	-	-	-	-	-	-	-	-	-	-
Pumps & Aux.	-	-	-	-	-	-	-	-	-	-	-	-	-
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	-	-	-	-	-	-	-	-	-	-	-	-	-
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	2.27	1.95	1.95	1.73	1.43	1.10	1.07	1.09	1.24	1.61	1.86	2.11	19.41

ABBREVIATIONS AND ACRONYMS

AC	Air Conditioning	**kBTU**	Kilo-British Thermal Unit
AEI	AEI Consultants	**kGal**	Kilogallons
ALTA	American Land Title Association	**kW**	Kilowatt
APN	Assessor's Parcel Number	**kWh**	Kilowatt hour
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers	**LED**	Light Emitting Diode
BTU	British Thermal Unit	**M**	Model
CH	Clubhouse	**MBH**	1,000 BTUs/hour
DHW	Domestic Hot Water	**O**	Occupied
ECM	Energy Conservation Measure	**OFC**	Office
EEM	Energy Efficiency Measures	**OSHA**	Occupational Safety and Health Administration
EUI	Energy Use Intensity	**PCA**	Property Condition Assessment
EUL	Estimated Useful Life	**PCR**	Property Condition Report
EWEM	Energy and Water Efficiency Measures	**ROI**	Return On Investment
F	Fahrenheit	**RP**	Responsible Party
FCU	Fan Coil Unit	**SEDI**	Statement of Energy Design Intent
Gal	Gallon	**SF**	Square Footage/Square Feet
GFA	Gross Floor Area	**SIR**	Savings to Investment Ratio
GPF	Gallons Per Flush	**SP**	Subject Property
GPM	Gallons Per Minute	**SEP**	Statement of Energy Performance
HUD	Department of Housing and Urban Development	**V**	Vacant
HVAC	Heating, Ventilation and Air Conditioning	**▫AR**	Zoning Analysis Report