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VILLAGE OF LINCOLNWOOD
PRESIDENT AND BOARD OF TRUSTEES
COMMITTEE OF THE WHOLE MEETING
VILLAGE HALL GERALD C. TURRY VILLAGE BOARD ROOM
6:00 PM, MARCH 3, 2026

AGENDA

I. Call to Order

II. Roll Call

III. Approval of Minutes

1. Minutes of the Committee of the Whole Meeting of February 18, 2026

IV. Regular Business

1. Illinois Environmental Protection Agency Energy Efficiency and Conservation Block Grant Program Phase 1 Update: Strategic Energy Plan (Natalie Benner)
2. Lead Service Line Replacement Program (John Welch)

V. Closed Session

VI. Adjournment

DATE POSTED: February 27, 2026

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VILLAGE OF LINCOLNWOOD
PRESIDENT AND BOARD OF TRUSTEES
MEETING OF THE COMMITTEE OF THE WHOLE
GERALD C. TURRY BOARD ROOM
FEBRUARY 18, 2026

DRAFT

Call to Order

Mayor Patel called the Committee of the Whole meeting of the Lincolnwood Board of Trustees to order at 6:47 P.M., Wednesday, February 18, 2026, in the Gerald C. Turry Village Board Room of the Municipal Complex at 6900 N. Lincoln Avenue, Village of Lincolnwood, County of Cook, and State of Illinois.

Upon roll call by Village Clerk Sokol Delisi, the following were:
PRESENT: Mayor Patel, Trustees Klatzco, Diaz Herrera, Sargon, Gussis, Ikezoe-Halevi
PRESENT REMOTELY: Trustee Martel
ABSENT: None

Trustee Martel joined the meeting remotely. The board acknowledged and raised no objection to remote participation under board rules.

A quorum was present.

Also present: Village Attorney Steve Elrod, Village Manager Anne Marie Gaura, Police Chief Jay Parrott, Finance Director Elizabeth Holleb, Public Works Director John Welch, and Human Relations Manager Lamar Jones.

Approval of Minutes

The February 3, 2026 Committee of the Whole meeting minutes were presented for approval.

Trustee Sargon moved to approve the minutes of the February 3, 2026 Committee of the Whole meeting minutes. Trustee Klatzco seconded the motion.

Upon Roll Call, the results were:
AYES: Trustees Klatzco, Diaz Herrera, Sargon, Gussis, Ikezoe-Halevi, Martel
NAYS: None
ABSENT: None

The motion passed.

Regular Business

1. Vehicle Stickers

Presenter: Finance Director Elizabeth Holleb

Background:

Director Holleb presented recommendations to improve vehicle license compliance and update enforcement procedures before launching the 2026–2027 licensing season.

Key points:

- Current Vehicle License Program:
  - Annual cycle: July 1 – June 30.
  - Revenue: $420,000 in FY2025, covering ~16% of the $2.6M Public Works street maintenance operating budget.
  - Compliance rate: 62.4% (7,697 stickers issued vs. 12,340 registered vehicles).
- Current Code Issues:
  - Language references residency, business operation, and vehicle use on village streets, creating enforcement challenges.
  - Examples: Vehicles registered in Lincolnwood but located elsewhere (e.g., trucking fleets, college students, second homes).
- Proposed Code Amendment:
  - Simplified requirement:
    "Owner of a vehicle registered with the State of Illinois to an address within Lincolnwood must obtain a village license for that vehicle."
  - Removes ambiguity and eases enforcement.
- Enforcement Timeline:
  - March 16: Code amendment for Board approval.
  - May–June: Newsletter outreach and application mailings.
  - July 1: Current licenses expire.
  - Late Fees: $25 after July 15; $50 after Sept 1.
  - September: Second mailing to non-compliant addresses with warning of administrative hearing.
  - October–December: Issue summons for code violations.
- Special Cases:
  - Businesses & Fleets: Enforcement impractical for employee vehicles; consider addressing via business license fees.
  - Trucking Companies & Hotels: Vehicles registered to Lincolnwood addresses would require stickers under new language.
  - Auto Dealers: Current code silent; staff recommends separate language or alternative approach (e.g., fee tied to dealer plates or business license).

Board Discussion:

- General Agreement:
  - Enforcement posture will shift from reactive to proactive.
  - Messaging must emphasize this is not a new requirement, only stricter enforcement.
- Auto Dealers:
  - Complex scenarios (loaner cars, dealer plates, inventory vehicles).
  - Board directed staff to research practices in other communities and consider:

        - Separate treatment for dealers and rental fleets.
        - Possible inclusion in business license fees for simplicity.
- Communication Strategy:
    - Newsletter articles, social media updates, and clear explanation of how revenue supports street maintenance.
    - Highlight fairness and community responsibility.
- Additional Suggestions:
    - Include late fee timeline on renewal notices.
    - Explore adding pet registration reminders to vehicle license mailings.
    - Consider future review of fleet vehicles and rental car compliance.

Adjournment

Trustee Klatzco moved to adjourn the Committee of the Whole at 7:23 P.M., seconded by Trustee Sargon.

The meeting was adjourned by voice vote.

Meeting Adjourned.

Respectfully Submitted,

_____

Sokol Delisi
Village Clerk

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MEMORANDUM

TO: President Patel and Members of the Village Board

FROM: Anne Marie Gaura, Village Manager

DATE: February 27, 2026

SUBJECT: March 3, 2026 Meeting of the Committee of the Whole

The Committee of the Whole (COTW) meeting is scheduled for 6:00 P.M. on Tuesday evening. Please find below a summary of the items for discussion.

1. Illinois Environmental Protection Agency Energy Efficiency and Conservation Block Grant Program Phase 1 Update: Strategic Energy Plan (6:00 – 6:30 P.M.)

In January 2024, the Village applied for and was awarded the maximum allocation of $240,000 through the Illinois Environmental Protection Agency (IEPA) Energy Efficiency and Conservation Block Grant (EECBG) Program. The program is federally funded through the U.S. Department of Energy and is designed to support local governments in reducing energy consumption, lowering greenhouse gas emissions, improving energy infrastructure, and advancing long-term sustainability and resiliency goals. The Village Board formally authorized participation in the program on August 20, 2024, through adoption of Resolution R2024-2591. Attached is a memo from Management Analyst Natalie Benner outlining the grant and the phases for completing the program.

2. Lead Service Line Replacement Program (6:30 – 7:30 P.M.)

As part of the FY2026 budget discussions, staff was asked to provide information regarding lead service line replacements from other communities. In November, staff sent a request to the Northwest Municipal Conference to solicit water system and lead service information. Eighteen communities responded to the survey. Attached is a memo from Public Works Director John Welch with an update on the project as well as summarizing the survey results. The memo recommends no changes to the 2026 lead service line program.

If you should have any questions concerning these matters, please feel free to contact me.

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MEMORANDUM

TO: Anne Marie Gaura, Village Manager

FROM: Natalie Benner, Management Analyst

DATE: March 3, 2026

SUBJECT: Illinois Environmental Protection Agency Energy Efficiency and Conservation Block Grant Program Phase 1 Update: Strategic Energy Plan

Background

In January 2024, the Village applied for and was awarded the maximum allocation of $240,000 through the Illinois Environmental Protection Agency (IEPA) Energy Efficiency and Conservation Block Grant (EECBG) Program. The program is federally funded through the U.S. Department of Energy and is designed to support local governments in reducing energy consumption, lowering greenhouse gas emissions, improving energy infrastructure, and advancing long-term sustainability and resiliency goals. The Village Board formally authorized participation in the program on August 20, 2024, through adoption of Resolution R2024-2591.

This grant award is structured in two phases:

1. Development of a comprehensive Strategic Energy Plan (Phase 1)
2. Infrastructure Updating (Phase 2)

To complete Phase 1, the Village issued a RFQ in 2025 seeking professional services for municipal energy benchmarking, data analysis, and strategic energy planning. Following a competitive evaluation process, Slipstream Inc. (Slipstream) was selected for Phase 1. Slipstream is a nonprofit with experience working with municipal governments across Illinois and Wisconsin to improve energy efficiency, policy, and planning.

Slipstream completed a comprehensive evaluation of energy use across Village facilities and operations, including benchmarking of municipal buildings, analysis of energy consumption trends, and identification of opportunities to improve efficiency. This work was built upon the Village's established carbon footprint baseline and the 2023-2025 Sustainability Plan. Slipstream has drafted the Strategic Energy Plan for the Village. The draft plan was presented at the February 23, 2026 Environmental Commission meeting.

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Discussion
This plan will assist the Village in understanding how and where we are consuming energy and offer methods to reduce energy waste. It establishes baseline benchmarks across building operations and prioritizes projects with the greatest potential to reduce consumption and cost. The plan also sets measurable reduction targets and outlines implementation strategies that support long-term sustainability objectives while strengthening operational reliability.

The Village's ComEd franchise agreement covers the cost of electricity for Village Hall, the Police Department, the Fire Department, and the Public Works Facility, but it is important for the Village to be responsible consumers. Lower energy use reduces strain on building electrical systems, and decreases maintenance and replacement demands on aging infrastructure.

Strategic energy planning, a relatively new tool for many municipal governments, has become increasingly important as communities confront rising utility costs, aging building infrastructure, and growing demands on the electric grid. A data-driven approach to energy management enables the Village to make informed facility improvement decisions, prioritize funding, and reduce long-term operating risk. Proactively managing energy use strengthens building resiliency, reduces greenhouse gas emissions, and improves reliability.

Acceptance of the Strategic Energy Plan will fulfill the Phase 1 planning requirement under the IEPA EECBG Program. While Phase 1 final review is underway, staff have initiated Phase 2 by advancing grant-funded facility improvements, including the LED lighting retrofit project. The Village has until June 30, 2026 to utilize all remaining funds.

Financial Impact
Development of the Strategic Energy Plan was funded through the IEPA EECBG grant. All associated costs are reimbursable through the grant, and there is no local matching requirement.

Grant Award Summary	
Awarded	$240,00
Strategic Energy Planning	$96,500
LED Retrofit	$71,343.96
Remaining Funding	**$72,156.04**

Recommendation
The Environmental Commission and staff recommend the Village Board adopt the Strategic Energy Plan at a future board meeting.

Documents Attached
1. PowerPoint Presentation
2. Final Draft Strategic Energy Plan

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Strategic Energy Plan Presentation

The Village was awarded the maximum $240,000 allocation through the Illinois Environmental Protection Agency's Energy Efficiency and Conservation Block Grant (EECBG) Program, funded by the U.S. Department of Energy.

The grant is structured in two phases:

- Phase 1: Development of a Strategic Energy Plan (tonight)
- Phase 2: Implementation of energy efficiency infrastructure upgrades (current phase)
  - Project 1: LED Retrofit: Village Hall, Police & Fire, and Public Works

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Lincolnwood Energy Plan

Village Board

Dan Streit | Slipstream

March 3, 2026

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slipstream

Climate + Clean Energy Solutions for everyone.

The knowledge, people, and resources to solve our biggest energy challenges.

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Project Team

Village of Lincolnwood

Natalie Benner – Project Manager

Slipstream Staff

Otto Anson
Engineer I

Gabi Kim
Engineer II

Dan Streit
Associate Principal

Justin Sharer
Researcher II

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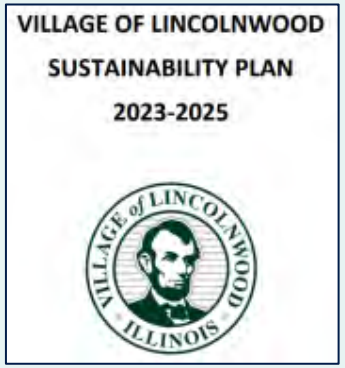
Energy Plan Project Background

Lincolnwood awarded IL EPA Grant

- $240,000 award
  - Part 1: Energy Plan Development
  - Part 2: Implement near-term facility improvements
- Energy Plan builds on 2023 – 2025 Sustainability Plan and GHG inventory

Slipstream selected as Technical Assistance provider



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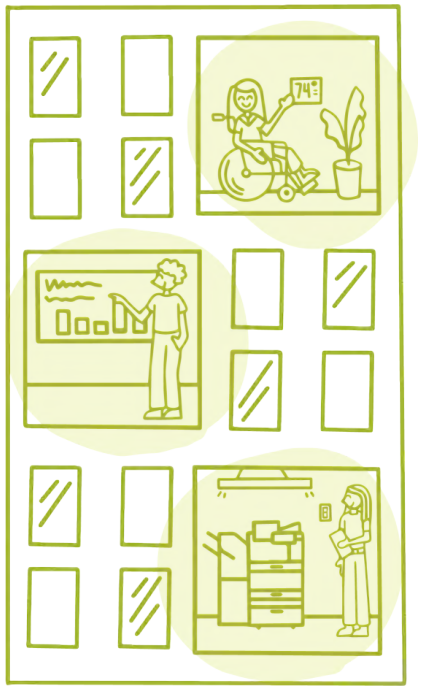
Energy Plan Objectives



Identify immediate building improvements

- Install by Summer 2026
- Fund with IL EPA grant award

Create 5-10 year energy efficiency roadmap

- Medium- and long-term facility improvements
- Complementary policy recommendations

Support 2026-2030 Village Sustainability Planning

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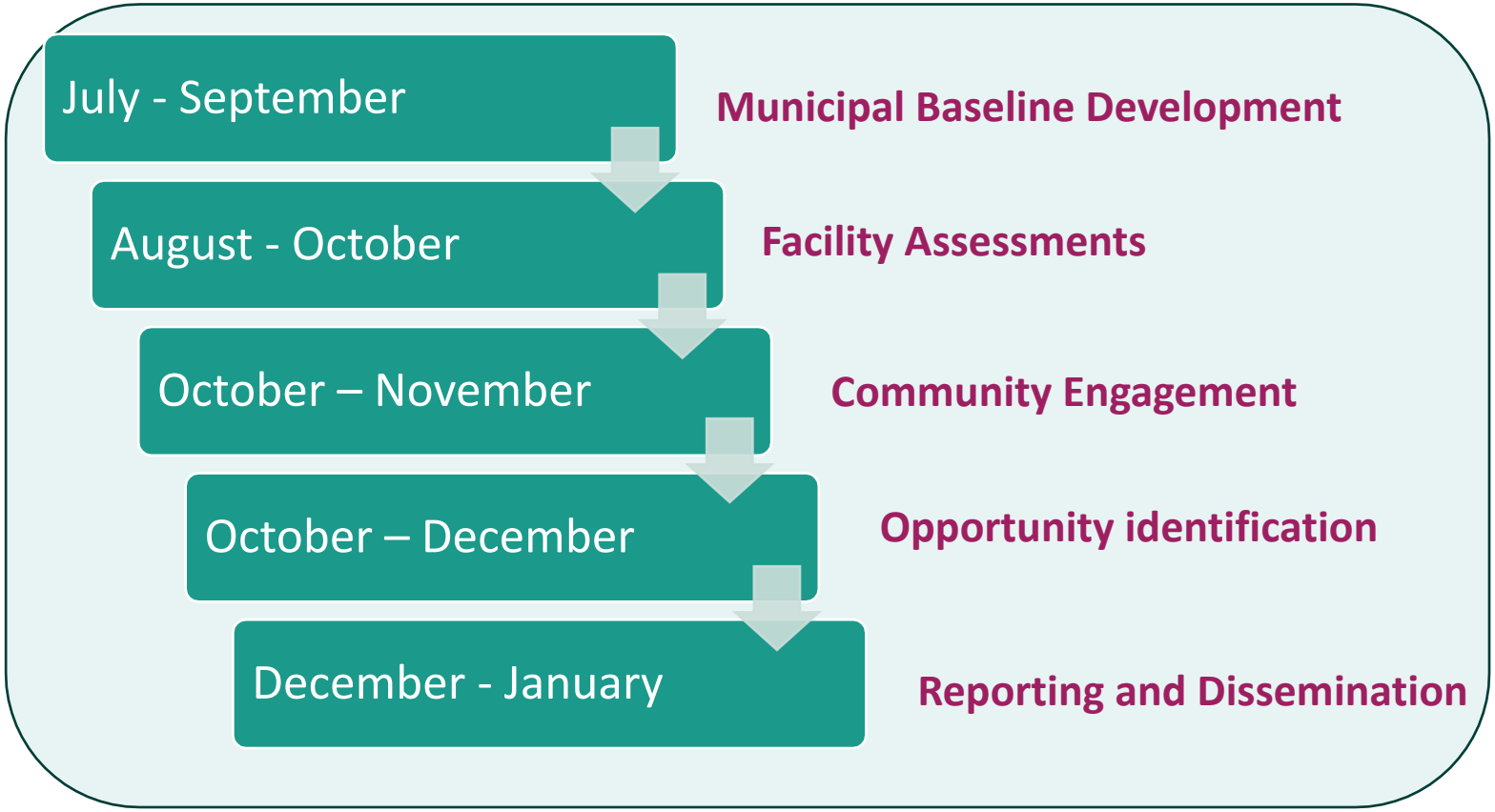
Project Scope and Timeline



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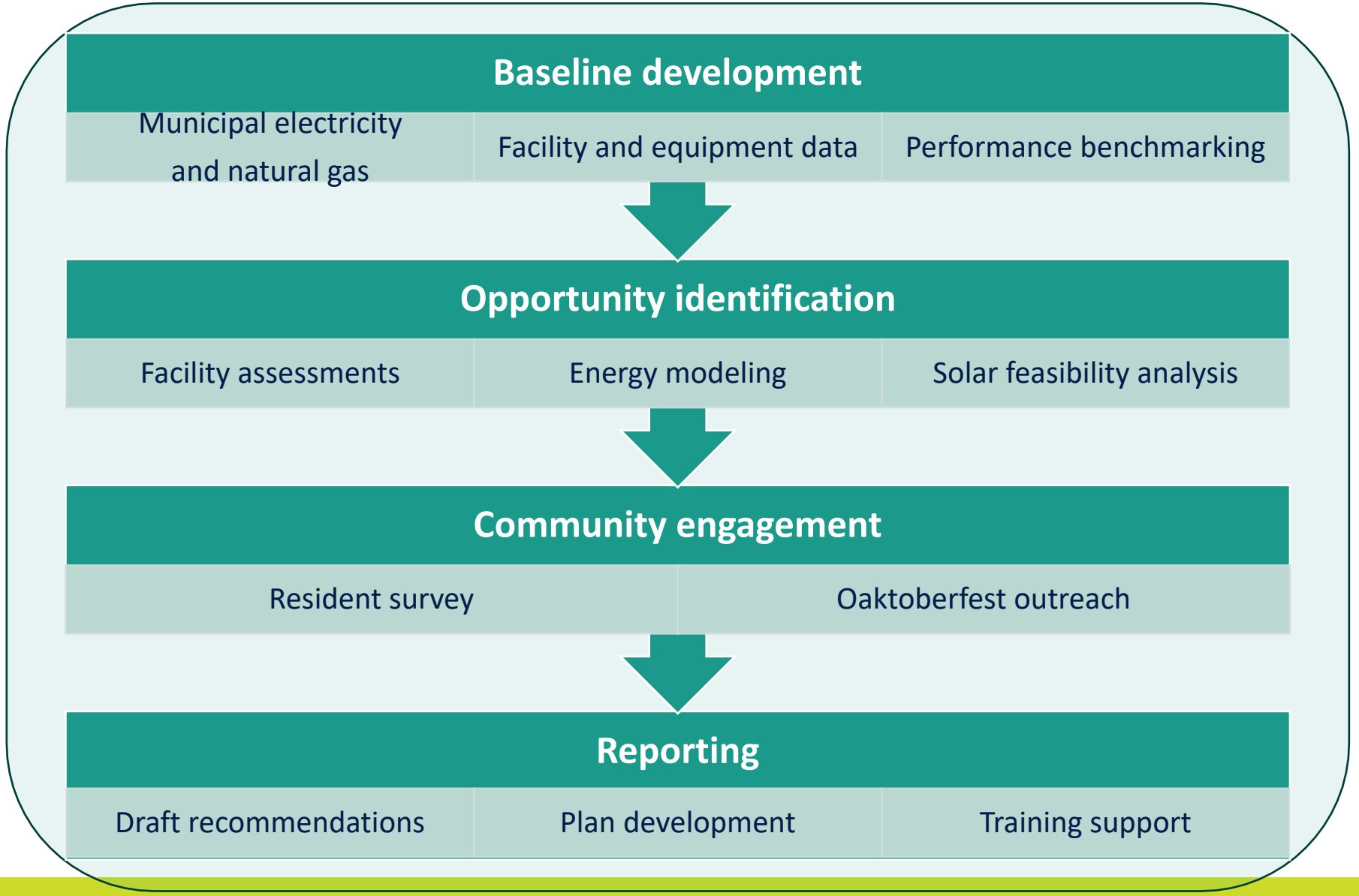
Energy Planning Activities



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Recommendations: Facility Energy Efficiency

Continue benchmarking energy use by municipal facilities

Use ENERGY STAR Portfolio Manager to monitor energy use and identify opportunities for improvement

Implement recommended measures to achieve significant energy savings in each building

Use IL EPA grant funding to support short term measures. Incorporate long term measures into planned capital improvements

Adopt standard energy-related operating procedures for each building

Establish standards for set points and equipment scheduling to maintain efficient operations

Adopt standard equipment purchasing policies for all buildings

Institutionalize use of high-efficiency performance standards as guidelines for equipment purchases

Analyze process energy use at the Pump House

Monitor and manage energy performance of municipal pumping equipment.

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Recommended upgrades to municipal buildings

Category	Upgrades for Village Hall, Public Safety, and Public Works Buildings
Immediate Action	Retro-commissioning
	Install low-flow plumbing fixtures
	Add hot water pipe insulation [Public Safety only]
	Efficient interior lighting upgrades, supported by smart controls
Long term/ End of Life	Upgrade roof and wall insulation during roof replacement or façade renovations
	Facility air sealing
	Install building automation system (BAS) and replace VAV* boxes
	Upgrade DHW system efficiency at end of service life
	Upgrade HVAC system efficiency at end of service life

*VAV: Variable Air Volume box – a component of a building's HVAC system that regulates air flow to a room or zone
Note: The Energy Plan provides additional details regarding application of measures to each building.

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Recommendations: Municipal Solar

Install 500 kW-DC rooftop solar capacity on Village facilities

	Capacity		Annual Savings		Cost		
Site	kW DC	% Renewable electricity	CO_2 (MT)	Energy Cost	Total	Incentives	Net Cost
Public Safety	165.6	34%	68.8	$14,300	$496,900	$41,400	$455,500
Public Works	136.9	85%	60.6	$16,400	$513,600	$42,800	$470,800
Village Hall	75.3	53%	31.3	$6,500	$225,900	$18,800	$207,100
Aquatic Center	51.3	22%	21.5	$7,500	$154,000	$12,800	$141,200
Community Center	45.6	65%	19.4	$9,300	$136,800	$11,400	$125,400
Pump House	24.7	13%	9.3	$2,000	$74,200	$6,200	$68,000
Total	**499.4**	**40%**	**210.9**	**$56,000**	**$1,601,400**	**$133,400**	**$1,468,000**

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Key Survey Findings

Average monthly electricity and natural gas cost	
Less than $100	6%
$101 - $200	40%
$201 - $300	25%
$301 - $400	13%
More than $400	3%

Months per year it is difficulty to pay utility bills	
Rarely or never	59%
1 -2 months	11%
3 – 5 months	14%
6 or more months	3%

Months per year your household must choose between paying utilities and paying other expenses	
Rarely or never	73%
1 – 2 months	14%
3 or more months	0%

Household energy saving actions completed	
Replaced old lightbulbs with LEDs	75%
Adjust thermostat setpoints to save energy	70%
Installed extra insulation and/or energy efficient windows	52%
Installed a smart thermostat	41%
Upgraded to high-efficiency heating, cooling, and/or water heating equipment	33%
Installed solar panels or other renewable energy systems.	17%

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Recommendations: Policies and Programs

Offer *Sustainability at Home* informational resources to residents

Build awareness of energy saving strategies and resources

Support access to energy affordability assistance for Village residents

Reduce energy insecurity through navigation assistance

Support community adoption of renewable energy

Achieve SolSmart certification and facilitate solar group buy to reduce barriers

Improve communitywide energy performance of buildings

Adopt Illinois Stretch Energy Code, energy benchmarking ordinance, and building performance standards

Implement sustainable lifecycle cost assessment-based purchasing policy

Value efficiency by incorporating estimation of lifetime energy and operational costs into purchasing decisions

Renewable energy policy recommendations

Lead community solar access initiative

Evaluate savings opportunities through Municipal Aggregation agreement

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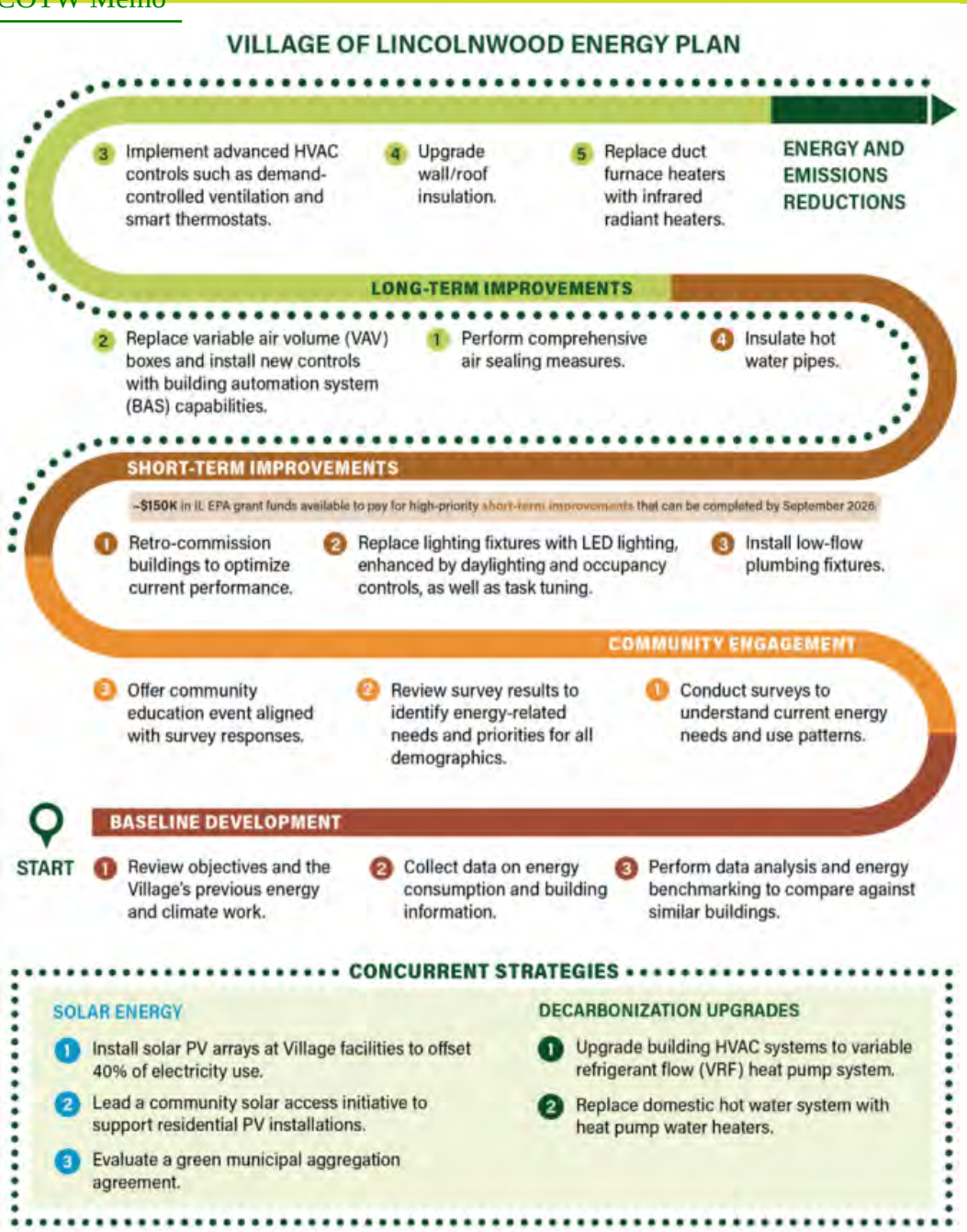
Lincolnwood Energy Roadmap



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Questions?

Dan Streit | Slipstream

dstreit@slipstreaminc.org 608.729.6954

Slipstreaminc.org

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VILLAGE OF LINCOLNWOOD ENERGY PLAN

2026–2035

Figure 1. Village of Lincolnwood municipal logo.

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ACKNOWLEDGMENTS

The project team thanks the Village of Lincolnwood staff who guided and facilitated the development of the Lincolnwood Energy Plan, as well as to the Village of Lincolnwood Board of Trustees and Mayor Jesal Patel, for their support of the project. We are also grateful to all Lincolnwood community members who completed surveys or provided input on the Energy Plan, as well as to Verde Energy Efficiency Experts for sharing their expertise regarding the current costs of the recommended energy improvements. The Village expresses its appreciation to the Illinois Environmental Protection Agency and to the Energy Efficiency Community Block Grant program for funding for the project.

Key contributors to the Energy Plan are listed below:

Village of Lincolnwood

- *Natalie Benner, Management Analyst*
- *Jason Brianas, Superintendent*
- *Zilvinas 'Zig' Gucius, Buildings Foreman*

Verde Energy Efficiency Experts

- *Beth Holaday, Senior Sales Manager*
- *Jamie Johnson, Founder*

Slipstream staff

- *Otto Anson, Engineer I*
- *Kevin Frost, Senior Engineer*
- *Gabi Kim, Engineer II*
- *Justin Sharer, Researcher II*
- *Dan Streit, Associate Principal*

Illinois Environmental Protection Agency, Funder

EXECUTIVE SUMMARY

Figure 2 Touhy Avenue bridge, in Lincolnwood

The Village of Lincolnwood has demonstrated a strong commitment to sustainability through its adoption of the Greenest Region Compact in 2016, followed by the development and implementation of its 2023-2025 Sustainability Plan. This Village of Lincolnwood Energy Plan builds upon those commitments by providing a roadmap to reduce its energy use, greenhouse gas emissions, and operational costs across municipal facilities. Developed with funding provided by the Illinois Environmental Protection Agency (IL EPA) and in partnership with Slipstream, the plan is grounded in a comprehensive process of baseline analysis, community engagement, facility energy assessments, and opportunity identification.

In addition to supporting the development of the Energy Plan, the grant from the IL EPA provides funding to pay for energy efficiency improvements recommended in the plan which can be implemented by early Fall 2026.

The Village selected Slipstream, a non-profit organization, through a competitive RFP process as the technical assistance provider to work with the Village to develop the Energy Plan. The planning process started in July 2025 and the Energy Plan will be presented to the Village Board on January 20, 2026.

The project team completed four key steps in the process of developing the Energy Plan:

1. Baseline development
2. Community engagement
3. Opportunity identification
4. Reporting

The team started by developing an energy baseline for the municipality. The Village can use this baseline as a starting point from which to assess progress toward achieving energy saving goals in future years. Table 1 shows current annual energy use at each municipal facility, as well as the annual greenhouse gas (GHG) emissions that energy use at each facility generates. In the baseline year, the Village used 1,580 MWh of electricity and 94,216 therms of natural gas. Currently, none of the Village's facilities receive electricity from on-site solar arrays. Together, in the baseline year, Village facilities used 1,579 MWh of electricity and 94,216 therms of natural gas and generated 1,149.75 MT CO2e of GHG emissions.

Table 1. Baseline weather-normalized annual energy and emissions in municipal facilities.

Facility	Electricity Use *(kWh)*	Natural Gas Use *(Therms)*	GHG Emissions *(MT CO_2e)*
Public Safety	560,847	23,068	354.41
Aquatic Center	226,462	25,422	235.28
Public Works	185,032	25,728	205.26
Pump House	364,277	4,956	177.68
Village Hall	162,826	11,505	126.29
Community Center	80,277	3,537	50.83

Total	**1,579,721**	**94,216**	**1,149.75**

Per guidance from municipal staff, recommendations for energy improvements focused on Village Hall, the Public Safety building, and the Public Works building. Heating, cooling, water heating and plug loads for these buildings consume significant amounts of energy and the Village intends to continue to operate these facilities for at least the next decade.

Slipstream's engineers conducted energy assessments at the three facilities, from which they developed energy models to guide the team's recommendations for the most effective energy efficiency improvements to the buildings. The recommendations serve as initial items for consideration to save energy and reduce municipal CO2 emissions. Funding and financing resources are available to implement these recommendations. Funding options for the recommendations are detailed in the full report through local utility rebates and state funding.

The Energy Plan also offers policy and program recommendations that will complement the building energy efficiency opportunities that the plan describes. Policy and program recommendations reflect the input provided by Lincolnwood residents regarding their informational and financial support needs, as well as their goals for the Energy Plan.

Figure 3. Summary of energy recommendations

Building and Facility Energy Efficiency

- Continue benchmarking energy use by municipal facilities.
- Implement recommended measures to achieve significant energy savings in each building.
- Analyze process energy use at the Pump House.
- Adopt standard energy-related operating procedures.
- Adopt standard equipment purchase policies.

Municipal Solar

- Install 500 kW of solar at Village facilities to offset 40% of electricity use.
- Lead community solar access initiatives.
- Evaluate savings opportunities through Renewable Municipal Aggregation agreement.

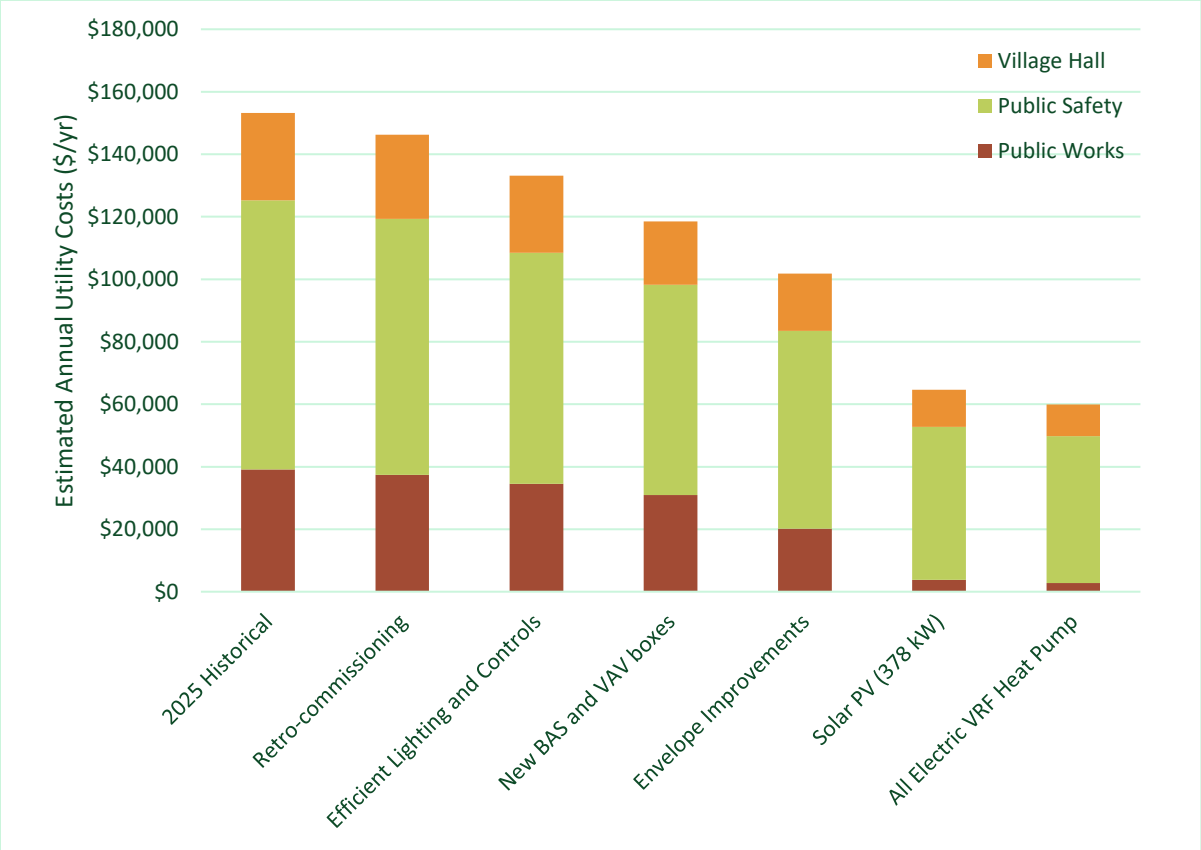
Policy

- Support access to energy affordability resources for residents.
- Improve energy performance of residential and commercial buildings.
- Implement sustainable lifecycle cost assessment-based purchasing policy.
- Support community adoption of renewable energy.
- Offer *Sustainability at Home* informational resources to residents.

Figure 5 illustrates the estimated cumulative reductions in energy cost savings from implementing the recommended measures from this plan. The 2025 Historical bar represents current energy costs and each subsequent bar to the right estimates how implementing that measure in the three buildings would affect total costs. The cost estimate for each bar assumes that the Village completed the preceding recommended measures prior to completing that measure.

The measures modeled quantitatively include implementing 1) the near-term energy efficiency measures that the project team recommends the Village use the IL EPA grant funds to install; 2) all of the energy efficiency measures that were recommended for the three assessed buildings; and 3) installing all of the recommended rooftop PV arrays at Village facilities. Appendix 1 includes charts and tables showing the energy savings produced by each measure for individual buildings.

Figure 4. Cumulative potential energy cost impacts enabled by implementing recommended measures (est.)



The estimated emissions reduction should be considered conservative, since not all aspects of recommended measures were quantitatively modeled. Likewise, implementing the policy recommendations would catalyze additional community-wide energy and emissions reductions that are not included in the estimated total savings.

Three additional strategies could lead to further reductions in CO_2 emissions from municipal buildings:

- **Full electrification of buildings.** Strategies for achieving deeper emissions reductions by converting fossil-fuel powered equipment to electric alternatives are included in the descriptions of recommended building upgrades in Appendix 1.

- **Investing in on-site renewable energy systems.** Solar Recommendation 1 includes details about the rooftop solar arrays that are recommended for each Village facility.

- **Renewable Municipal Aggregation Agreement.** Solar Recommendation 3 introduces a policy-based strategy to procure renewable electricity for all municipal buildings and for residential and commercial buildings that choose to participate.

To achieve its goals for reducing energy use and emissions from the Village's municipal buildings and throughout the community, the Village will need to continue to invest in facility improvements and policy development throughout the next decade.

Figure 6 is a roadmap showing the short term and long-term improvements that the Village can implement to achieve significant reductions in energy use and emissions.

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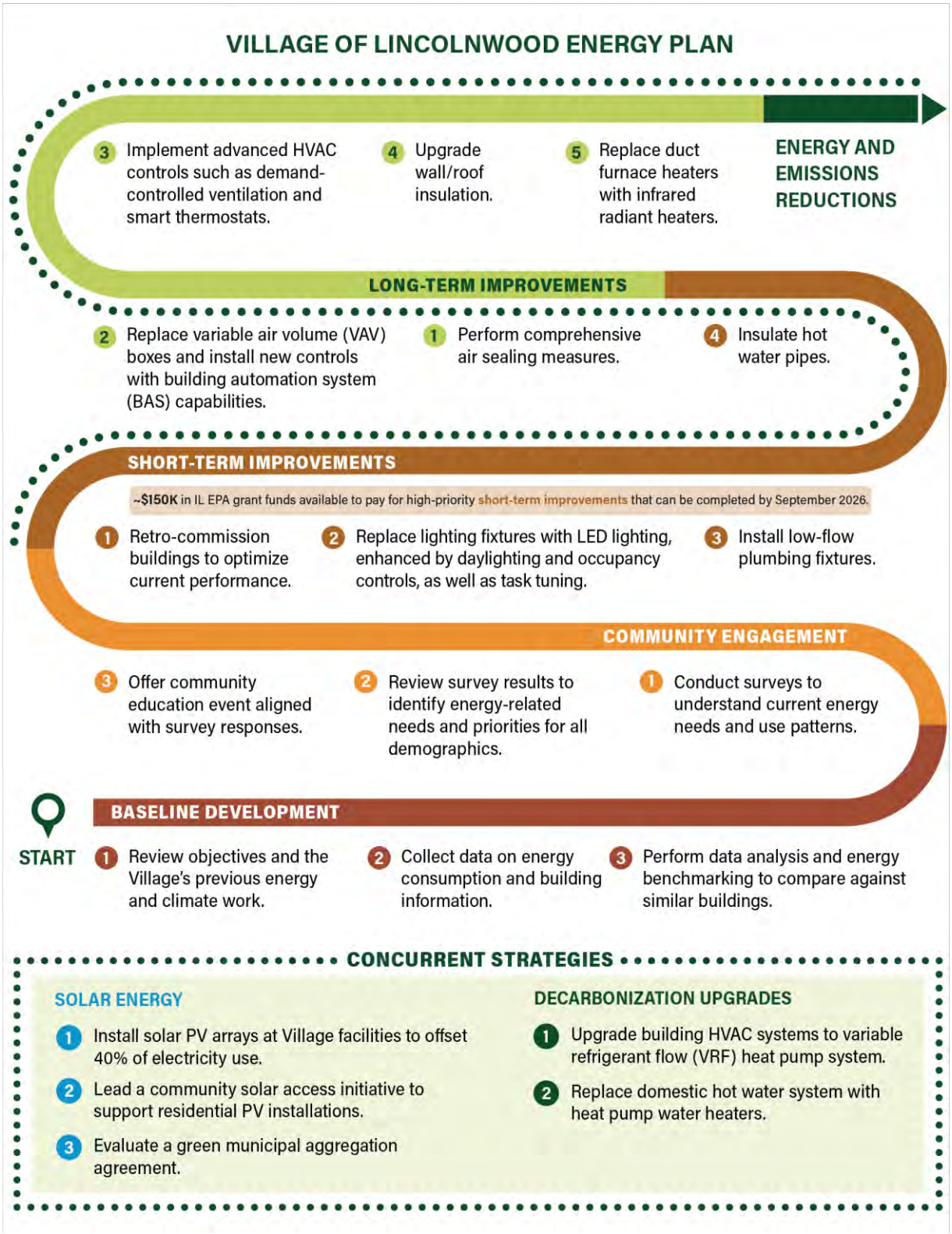
Figure 5. Village of Lincolnwood Energy Roadmap



GLOSSARY OF TERMS

Air Source Heat pump (ASHP): A heat pump replaces both furnace or boiler and an air conditioner; fueled only by electricity and very efficient.

Building envelope: The exterior walls, windows, doors, and roof of a building, which surround the occupied spaces. The insulation levels and air tightness of the building envelope affect the amount of energy needed to heat and cool the interior.

Energy assessment (or Energy audit): On-site study of how a building currently uses energy and which identifies opportunities to reduce the building's energy consumption.

Energy use intensity (EUI): Site EUI is calculated as the total energy use at a building, measured in thousand British thermal units (kBtu) divided by the total square feet of the building. Source EUI expands upon this metric to consider total energy used in producing the electricity used at the site (ex. Energy used to generate the electricity that a building uses), as well as energy losses during transmission from generation to the site.

To enable the clearest assessment of the efficiency of each building, the Energy Plan uses site EUI for benchmarking. The purpose of the metric is to enable meaningful comparison of energy efficiency among buildings of different sizes.

Franchise Agreement: Contract between the Village of Lincolnwood and ComEd that establishes terms and conditions under which ComEd may operate and maintain infrastructure in the Village, including rights given to ComEd and the compensation that the Village receives for the rights that are granted.

Greenhouse Gas (GHG) Emissions: A category of gases that absorb heat energy emitted from the earth's surface, and which remain in the atmosphere for decades or centuries[1]. Carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (NO_2) are greenhouse gases that are emitted from combustion of various types of fossil fuels during the production of energy, and which are the primary types of GHG emissions referenced in this document.

Illinois Climate Bank: A division of the Illinois Finance Authority, which provides funding and financing to support projects that reduce GHG emissions in Illinois.

Illinois Environmental Protection Agency (IL EPA): The State of Illinois Agency that awarded Energy Efficient Community Block Grant (EECBG) funding to the Village of Lincolnwood to support its energy planning and subsequent energy efficiency efforts.

Municipal aggregation: A mechanism created by Illinois law that enables a local government to establish an agreement with an electricity provider through the terms of which the residential and commercial customers within its jurisdiction may choose to purchase electricity. Municipal aggregation agreements may set rates for customer classes and may optionally provide that the electricity that participating customers purchase is generated by renewable sources.

Net metering: Billing mechanism that credits solar energy owners for electricity added to grid.

Photovoltaic (PV): The conversion of light into electricity. Used in this Energy Plan in reference to the use of renewable electricity by solar panels.

[1] https://www.climate.gov/ghg/what-are-greenhouse-gases-and-why-do-they-matter

Renewable energy: Energy that is generated from a naturally replenishing resource that does not release carbon dioxide or other greenhouse gases into the atmosphere. Commonly used sources of renewable energy include solar, wind, and geothermal.

Total cost of ownership (TCO): Total cost of owning equipment, including purchase cost and operating costs, including energy and maintenance, less anticipated salvage or resale value.

Weather-normalized EUI: The energy use intensity of a building adjusted to account for differences in outdoor temperatures between the study period and 30-year average temperatures during the same time-period.

INTRODUCTION

The Village of Lincolnwood made its first commitment to supporting environmental sustainability by joining the Greenest Region Compact, administered by the Metropolitan Mayors Caucus, in 2016. In 2021, the Village created its Environmental Commission, which has guided the community's work toward improving the natural environment and reducing pollution.

In 2023, Lincolnwood adopted a municipal Sustainability Plan that outlines steps the Village would undertake from 2023 to 2025 to improve environmental sustainability for residents and businesses. As directed by the sustainability plan, in 2024 the Village conducted a study that quantified the greenhouse gas (GHG) emissions generated by its facilities and vehicles. To establish first steps toward reducing energy use and GHG emissions, in 2025 the Village applied for a grant from the Illinois Environmental Protection Agency (IL EPA) to develop a municipal energy plan and to fund an initial set of energy saving building improvements that the energy plan would identify.

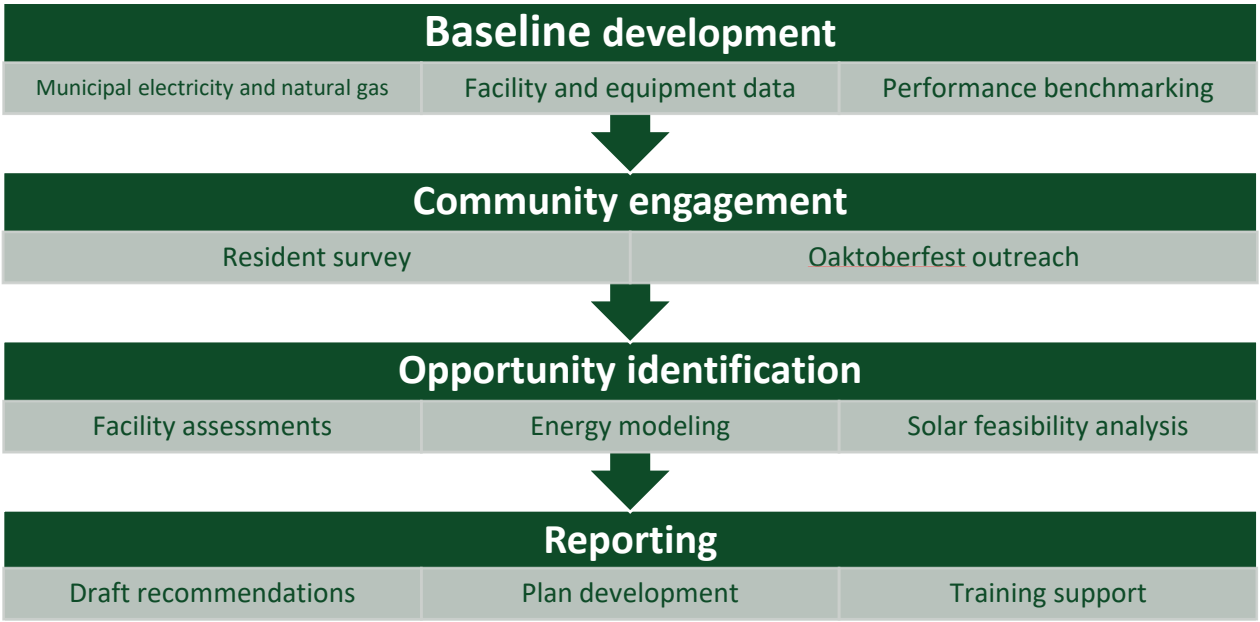
Through a competitive request for proposal, the Village contracted with Slipstream, a non-profit organization with a mission to *Accelerate Climate Solutions. For everyone* to lead development of the Energy Plan.

Village staff intend to use the building energy efficiency recommendations in the Energy Plan to prioritize energy efficiency improvements to municipal facilities, and to plan for adding rooftop solar arrays to municipal buildings. Staff members and the community will also use the Energy Plan to inform development of internal operating policies that will institutionalize energy saving practices in municipal processes and to develop policies and programs that will equip residents and businesses in Lincolnwood to reduce their energy use.

METHODOLOGY AND ENERGY PLANNING PROCESS

The plan begins with a summary of the baseline energy profile for the Village of Lincolnwood's municipal buildings and operations. We then provide recommendations for building and equipment efficiency upgrades, solar installations on Village facilities and community policies. Figure 7 highlights the four steps in developing the Energy Plan, as well as key activities completed during each step.

Figure 6. Overview of planning process



Baseline Development

The project team developed an energy and community baseline upon which to develop the Energy Plan. There were four key components of establishing the Village's energy baseline.

Community context. The project team met with municipal staff to understand the Village's top objectives for the Energy Plan. The team reviewed relevant documentation of the Village's past energy and climate work, including the 2023–2025 Sustainability Plan and its previous GHG emissions inventory.

Data collection. Village staff provided electricity consumption data for all Village facilities for the period of 2022–2025 (partial), as well as natural gas consumption data for 2023 and 2024. Village staff also shared information about the Village's buildings, including HVAC and DHW equipment lists, facility profiles, and the Village's most recent facility needs assessment. Blueprints and design drawings for the Village Hall, Public Safety building, and Public Works building were also provided.

Analysis. The project team analyzed the energy and building information to assess current energy performance of the buildings. ENERGY STAR Portfolio Manager was used to support the analysis. The team weather-normalized the energy consumption data to account for effects of year-over-year differences in temperatures on energy consumption. The weather normalized energy use was used to calculate the site energy use intensity (EUI) for each building. The site EUI metric normalizes energy use among buildings of varying sizes to better enable comparison of efficiency levels between different buildings.

Benchmarking. To evaluate the current energy performance of the buildings, the team compared the site EUI of each building to national median values for buildings that have the same use type. Additionally, we compared the current site EUI to the target value set for the applicable building type in Climate Zone 5A in the ASHRAE 100 – 2024 Energy and Emissions Building Performance Standard for Existing Buildings ("ASHRAE 100")[2].

Community Engagement

Village staff and the project team collaborated to engage Lincolnwood community stakeholders in the planning process so that the Energy Plan would align with the priorities and objectives of the community. The team used online and print surveys to understand current energy needs, including energy affordability and household energy use patterns. It also solicited input regarding information that residents need about energy topics and their views on the Village's progress in implementing its sustainability plan. Looking ahead, the survey requested feedback on priorities on which the Village should focus in its 2025–2030 Energy Plan, as well as input on potential climate goals.

Village and Slipstream staff launched the survey to residents at the October 26, 2025, Oaktoberfest celebration and distributed the online survey through the Village's website and newsletter. Paper copies were available to all visitors to Village Hall. The survey remained open for residents to complete until November 24, 2025.

Survey results were analyzed to identify overall energy related needs and priorities of community members. Responses were also cross tabulated to assess differences between respondents in differing demographic groups. The survey included questions about what information is still needed

[2] https://www.ashrae.org/file%20library/about/government%20affairs/advocacy%20toolkit/virtual%20packet/standard-100-2024-fact-sheet.pdf

about certain energy topics to identify potential training and workshop topics that the Village could offer to residents.

Energy Recommendations

Village staff selected the Public Safety building, the Public Works building, and Village Hall as the three facilities for which the project team's engineers would complete energy assessments. The assessments were completed on August 25, 2025, during which engineers collected information about current conditions and equipment at each facility. Assessments focused on the lighting, HVAC equipment, DHW equipment, and building envelope for each facility. Team members also spoke with building users and facility staff to identify potential thermal comfort concerns and building use patterns related to energy use.

Slipstream staff used the baseline energy data, the building drawings, and the information collected during the energy assessments to create Sketchbox[3] energy models of each facility. These energy models were used to estimate the energy savings that could be generated by installing different combinations of energy efficiency measures at each building.

The team used the outputs from the energy models to identify preliminary recommendations for upgrades that the Village could complete to achieve its energy saving goals. Measures were selected based on financial payback, total GHG emissions reduction potential, and opportunities for energy saving improvements to also resolve occupant comfort concerns. For measures that will require larger investments, the project team sought to identify measure recommendations that could be completed as energy saving enhancements to already planned building improvements.

To support the financial payback analysis and to help identify the near-term measures that would achieve the greatest impact, for which the Village could use grant award from IL EPA to fund, the project team engaged Verde Energy Efficiency Experts, a qualified third-party energy efficiency measure installer to provide more specific cost estimates for the recommended measures. Verde Energy Efficiency Experts' staff collaborated with project team members to visit the three facilities and then they prepared detailed cost estimates for the recommended lighting and HVAC measures, as well as guidance on potential utility energy efficiency incentives that may be available to the Village to offset a portion of the costs of these measures.

Results

The project team identified a combination of near-term energy improvements to municipal facilities, which would achieve the greatest energy savings and which the Village can fund primarily with the IL EPA grant award. The project team also identified the most cost-effective and highest impact long-term measure that the Village can install during the next 5–10 years to work toward its energy savings objectives.

In addition to measure recommendations, the project team outlined policy and program opportunities that will help institutionalize energy saving practices for the Village and that the Village can implement to provide the information and support needs that Lincolnwood residents identified.

[3] Sketchbox is an energy modeling software that leverages the Department of Energy DOE-2 modeling engine and local weather data to quantify energy consumption and potential savings. Learn more at https://slipstreaminc.org/sketchbox

ENERGY BASELINE

Lincolnwood has six municipal buildings, which includes an aquatic center and a pump house. Village Hall and the Public Safety building, which houses both the Police Department and the Fire Department, are separate facilities, but they are co-located on a municipal campus, and they share electricity accounts. Currently, there are no solar PV installations on municipal buildings.

The energy use across municipal operations generates 1,149.75 metric tons of carbon dioxide (CO_2) and costs the Village approximately $261,000 per year. Table 2 illustrates the breakdown of use and energy costs among the Village's facilities. and CO_2 across categories. The Site EUI column shows the combined electricity and natural gas consumed at the building in comparison to the size of the building. To calculate site EUI, the kilowatt hours (kWh) of electricity and therms of natural gas consumed are converted to a common unit of thousand British thermal units (kBtu) and divided by the total square feet of space at each facility.

As described in the Introduction, the energy planning process started in July 2025 and concluded in January 2026. One of the initial tasks was for the Village to share electricity and natural gas consumption data for municipal facilities with Slipstream. The most recent energy data that was available at the time of the data transfer was through May 2025. For this reason, the baseline year for the Energy Plan is 6/1/2024 – 5/31/2025, which is referenced for convenience as a 2025 baseline year.

Table 2. Annual energy use and costs by source (2025 data)

Facility	Weather normalized energy use (kBtu)	Site EUI[4] (kBtu/SF)	Annual Energy Cost	Percent of Total Cost
Public Safety	4,220,503	127.6	$86,106	33%
Aquatic Center	3,314,877	246.4	$46,147	18%
Public Works	3,204,166	118.7	$39,180	15%
Pumphouse	1,738,512	1738.5	$49,351	19%
Village Hall	1,706,070	133.4	$27,922	11%
Community Center	627,634	99.6	$12,362	5%
Total	**14,811,762**		**$261,068**	

Village Hall and the Public Safety building receive electricity service through shared accounts, so the project team was unable to determine the exact distribution of electricity consumption between the two buildings. The project team estimated the electricity consumption for each facility in order to establish the Village's baseline and to benchmark each facility against applicable national median site EUI values and the ASHRAE 100 – 2024 target for efficient buildings.

The Public Safety building and Village Hall differ significantly in size, as well as in their use types. The Public Safety building is 33,065 square feet and is occupied and active 24 hours a day. Village Hall is 12,790 square feet and is occupied primarily during the daytime Monday – Friday, while meeting space is also frequently used in the evenings. The project team developed an algorithm that accounted for both the size difference and the relative typical EUI values of the use types in the two buildings to estimate the proportion of total electricity used by each building. These calculations estimated that Public Safety uses 77.5 percent of the total electricity provided under the shared electricity account and Village Hall uses the remaining 22.5 percent.

Figure 8 shows the relative energy use and distribution of costs among Lincolnwood's buildings.

[4] Weather-normalized site EUI

Figure 7. Municipal energy use and cost.

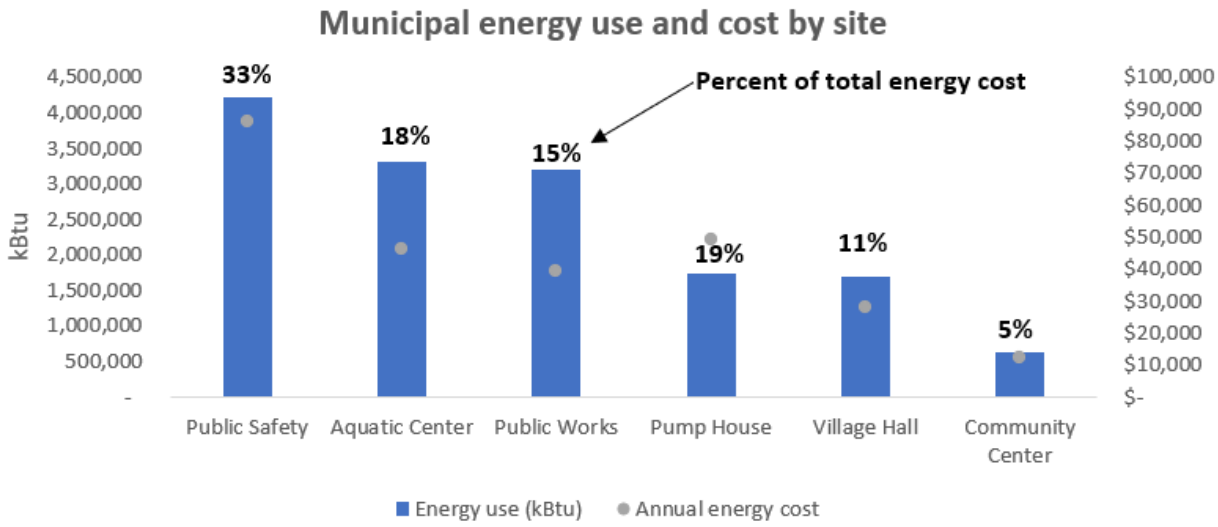
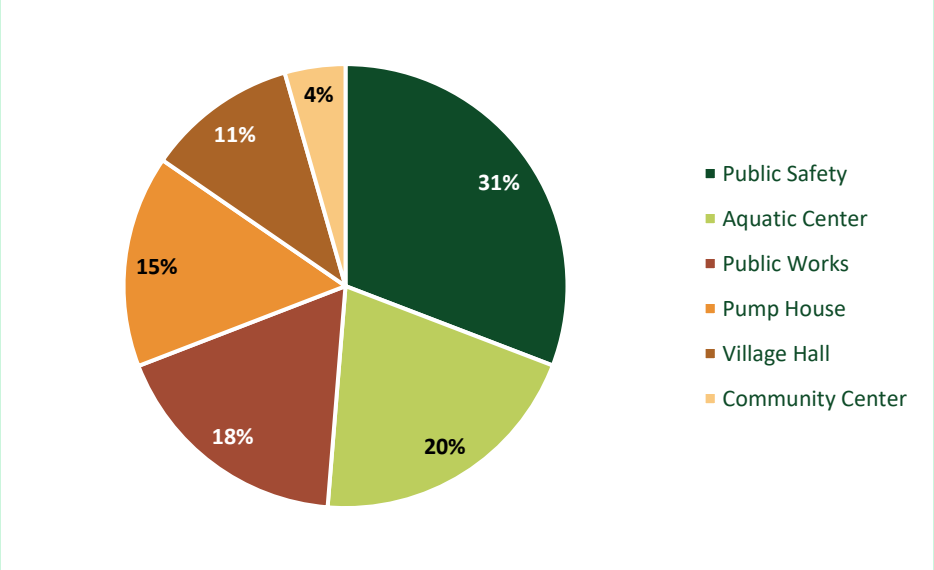


Table 3 shows the amount of GHG emissions that are generated from fossil fuels consumed to power each facility and Figure 8 visually displays the relative emissions from each facility.

Table 3. Annual emissions and costs by source (2025 data)

Facility	CO_2 Emissions (metric tons)	Percent of Total CO_2 Emissions
Public Safety	354.41	31%
Aquatic Center	235.28	20%
Public Works	205.26	18%
Pumphouse	177.68	15%
Village Hall	126.29	11%
Community Center	50.83	4%
Total	**1,149.75**	

Figure 8. Distribution of municipal GHG emissions



The preceding tables and figures show that, together, the Public Safety building, Public Works building, and Village Hall represent 59% of the Village's total energy use and generate 60% of total emissions. The Aquatic Center and Pump House are also significant energy users; however (as described below), energy used by these facilities is primarily for process loads, which may be reduced through alternative strategies (see Facility Recommendation 5).

In consideration of the baseline findings and of the Village's intention to continue operating Village Hall, Public Safety, and Public Works for the foreseeable future, Village Staff requested that recommendations for energy saving improvements focus on opportunities for these three buildings.

COMED FRANCISE AGREEMENT

In 1992, the Village of Lincolnwood negotiated its current Franchise Agreement with ComEd, its electricity utility. The franchise agreement authorizes ComEd to operate within the Village; provides rights of way for ComEd's electrical infrastructure; and grants certain rights to ComEd, as well as many other privileges and authorizations. Importantly, the Franchise Agreement also enables ComEd to provide electrical service to residential, commercial, and industrial buildings in Lincolnwood. In exchange for receiving the rights and authorizations described in the agreement, ComEd agrees to provide electricity free of charge to certain municipal buildings throughout the 50-year duration of the agreement: Village Hall, Public Safety, and the Public Works building. As the Village considers energy upgrades that would replace existing HVAC and water heating systems that are fueled by natural gas with heat pumps, variable refrigerant flow (VRF) equipment, and heat pump water heaters, it should be noted that the Franchise Agreement specifies that if the Village replaces natural gas systems with electric equipment, electricity used by the new electric equipment is outside the scope of the agreement.

While the Village does not pay directly for electricity costs for the three buildings, the Franchise Agreement authorizes ComEd to recoup its lost revenue related to the 'free' electricity for the Village by adding a surcharge to the electric bills of non-Village accounts in Lincolnwood. ComEd negotiates separate franchise agreements with most municipalities in its service territory and the terms of Lincolnwood's franchise agreement are similar to terms to which other municipalities have also agreed.

Nicor Gas provides natural gas service to Lincolnwood. The Village receives regular monthly bills for natural gas service and associated charges and does not have a franchise agreement with Nicor.

Community Engagement

The people who live, work, and run businesses and organizations in the Village of Lincolnwood are key stakeholders of the Lincolnwood Energy Plan. They have diverse reasons for being parts of the Lincolnwood community, but all have interests in how Lincolnwood saving energy can benefit municipal operations, and all benefit from living in a community that has lower emissions and cleaner air. Additionally, residents have spearheaded development of the Village's sustainability plan. Engaging community members in the planning process was essential to ensure that Lincolnwood's Energy Plan creates a roadmap that meets the hopes and needs of Lincolnwood's residents and businesses.

Between October 26th and November 24th, 2025, the project team surveyed Lincolnwood residents to better understand the six topics listed below.

- Energy affordability
- Household energy use patterns
- Information needed about energy topics

- Views on progress in implementing the Village's 2023 – 2025 sustainability plan
- Priorities for the Village's 2026 – 2030 Energy Plan
- Input on potential climate goals

Figure 9. Proesel Park Family Aquatic Center

Sixty-three residents completed the survey, which represents approximately 1.35 percent of Lincolnwood households. As described in the Methodology section above, the survey was initially deployed through outreach at Oaktoberfest and the large co-located "Trunk or Treat" community event. Following the launch, the Village used multiple communication channels to try to obtain responses from a representative cross section of the community. The responses and the information about the respondents enabled a more holistic understanding of the energy-related hopes and concerns of Lincolnwood residents. Table 4 compares demographic information provided by survey respondents to the demographic composition of all Village residents. When considering the survey results, it should be noted that the survey under-sampled younger residents, households with annual income less than $100,000 and households that rent, rather than own, their housing.

Table 4. Demographic comparison of Lincolnwood population to survey respondents

Lincolnwood Population[5]		**Survey respondents[6]**	
Age			
0 - 19 years	25.7%	**0 - 18 Years**	0%
20 – 34 years	9.5%	**19 – 30 years**	6%
35 – 49 years	21.3%	**31 – 45 years**	19%
50 – 64 years	15.2%	**46 – 65 years**	35%
65 years and older	28.4%	**66 years and older**	38%
Annual Household Income			
Less than $50,000	21.0%	**Less than $50,000**	3.2%
$50,000 - $74,999	11.7%	**$50,000 - $74,999**	9.5%

[5] https://www.lincolnwoodil.org/DocumentCenter/View/4111/2024-Lincolnwood-Community-Data-Snapshot

[6] The sum of percentages of survey respondents in each category may be less than 100% due to some respondents choosing not to respond to the corresponding question.

Lincolnwood Population[5]		Survey respondents[6]	
$75,000 - $99,999	17.7%	**$75,000 - $99,999**	7.9%
$100,000 - $149,999	17.3%	**$100,000 - $149,999**	17.5%
$150,000 and above	32.2%	**$150,000 and above**	36.5%
Housing type			
Owner occupied	82.1%	**Own and reside in 1–4-unit building** **Own a condo unit in a multi-unit building**	84.1% 7.9%
Renter occupied	17.9%	**Rent an apartment or house**	4.8%
Household Size			
1 person	21.7%	**1 person**	15.9%
2 people	32.2%	**2 people**	33.3%
3 people	17.0%	**3 people**	12.7%
4 or more people	29.0%	**4 or more people**	34.9%

Table 5 summarizes findings from survey responses which informed the assessment of the municipal and community energy baselines. Additional survey results provided input on the facility energy efficiency, solar, and policy recommendations that the Energy Plan provides. Appendix 3 provides the full list of survey questions, as well as additional response data.

Table 5. Survey results informing community energy baseline

Topic	Results
Average monthly electricity and natural gas cost	
Less than $100	6%
$101 - $200	40%
$201 - $300	25%
$301 - $400	13%
More than $400	3%
Months per year it is difficult to afford utility bills	
Rarely or never	59%
1 -2 months	11%
3 – 5 months	14%
6 or more months	3%

Topic	Results
Months per year household must choose between paying utility bills and paying other expenses	
Rarely or never	73%
1 – 2 months	14%
3 or more months	0%
Household energy saving actions completed with highest responses	
Replaced old lightbulbs with LED bulbs	75%
Adjust thermostat setpoints to save energy	70%
Installed extra insulation and/or energy efficient windows	52%
Installed a smart thermostat	41%
Upgraded to high-efficiency heating, cooling, and/or water heating equipment	33%
Installed solar panels or other renewable energy systems.	17%

The understanding of stakeholder views that was collected through the engagement process influenced the contents of the Lincolnwood Energy Plan, as well as the process that was used to develop the plan.

Municipal Facility Improvements. The Lincolnwood community's support for improving the Village's environmental sustainability led the Village to create its 2023–2025 Sustainability Plan and to apply for the grant funding that enabled development of this Energy Plan. While community support laid the groundwork for the Energy Plan, survey responses did not directly influence the selection of energy measures that the Energy Plan recommends for each facility. Instead, financial return on investment, incremental investment costs, ease of implementation, and magnitude of impact all guide the Energy Plan's recommendations for energy upgrades to municipal facilities.

2025–2030 Sustainability Plan strategies. Most Lincolnwood residents indicated that the cost of monthly utility bills did not create significant hardships for them. However, some residents did identify energy affordability as a concern. Therefore, the Energy Plan recommends strategies to address informational, financial, and technical barriers to residents and businesses completing energy upgrades that will improve energy affordability, strengthen the local economy, and achieve communitywide emissions reductions. Certain strategies in the Energy Plan seek to address specific barriers that respondents identified.

Lincolnwood Climate Goals. Survey participants were asked to indicate their level of support for, or opposition to, the Village setting a climate change mitigation goal that would guide its energy and emissions reduction strategy. Those respondents who indicated support for the Village adopting a GHG emissions reduction goal were asked for additional input on the timeframe and level of emissions reduction that the goal should target. Forty percent of respondents support the Village setting an emissions reduction goal and only six percent opposed setting a goal. However, 54 percent were unsure or did not respond to the question.

The input obtained through these survey responses, combined with the improved understanding of the municipality's energy use, and of energy use in the community will enable the Village to make grounded and well-informed decisions about a potential community emission reduction goal.

Community Education. The surveys asked residents and businesses to identify energy topics about which they would like more information. The surveys also assessed the impacts of several informational barriers to residential energy efficiency. Based on this information, the Village recognized that connecting residents with more information about accessing incentives and programs offered by ComEd and Nicor to complete home energy savings improvements could enable more energy efficiency improvements to homes and businesses in the community and could also foster ongoing community engagement on energy topics. In response to this opportunity, the Village and Slipstream will offer a unique in-person and online learning opportunity on this topic to community stakeholders.

Key Themes. Several notable trends emerged from the community engagement that supported development of the Energy Plan. These themes have been incorporated into the Energy Plan's recommendations for the Village's next steps.

- **Affordability**. Energy affordability is a concern for a significant minority of Lincolnwood's residents. To mitigate this issue, the Village can take steps to help residents reduce energy use in their homes and access utility payment assistance programs.

- **Education**. Many residents have taken first steps to improve energy efficiency in their homes. They are seeking support from the Village and other sources in identifying, and paying for, improvements that will deepen energy savings and will help them access renewable energy.

- **Contractors**. Confidently selecting a qualified contractor to install energy efficiency improvements or rooftop solar arrays can be a barrier to completing these projects. The Village can catalyze home upgrades by providing resources to residents to help them find reliable and cost-competitive contractors.

RECOMMENDATION OVERVIEW

The project team identified specific building upgrades, solar installations, as well as recommendations for policies that institutionalize progress and encourage community-wide energy savings and emissions reductions.

The recommendations are divided into three primary categories—energy-efficiency upgrades, solar upgrades, and policy recommendations. The first two categories are focused only on municipal operations while the policy recommendations cover how to encourage emissions reductions by Lincolnwood's residents and businesses.

Figure 11 provides an overview of the recommendations by category and lists the recommendations in each section in descending order of priority for the Village to achieve. The following sections of the report offer detailed strategy recommendations within these three categories. This section concludes with an overview of funding opportunities that the Village, and Village stakeholders, may be able to leverage to fund projects that will reduce energy use and emissions throughout the community.

Figure 10. Energy recommendations for Village of Lincolnwood. In each category, the measures are listed in order from highest to lowest estimated impact.

Building and Facility Energy Efficiency

- Continue benchmarking energy use by municipal facilities.
- Implement recommended measures to achieve significant energy savings in each building.
- Analyze process energy use at the Pump House.
- Adopt standard equipment purchase policies.
- Adopt standard energy-related operating procedures.

Municipal Solar

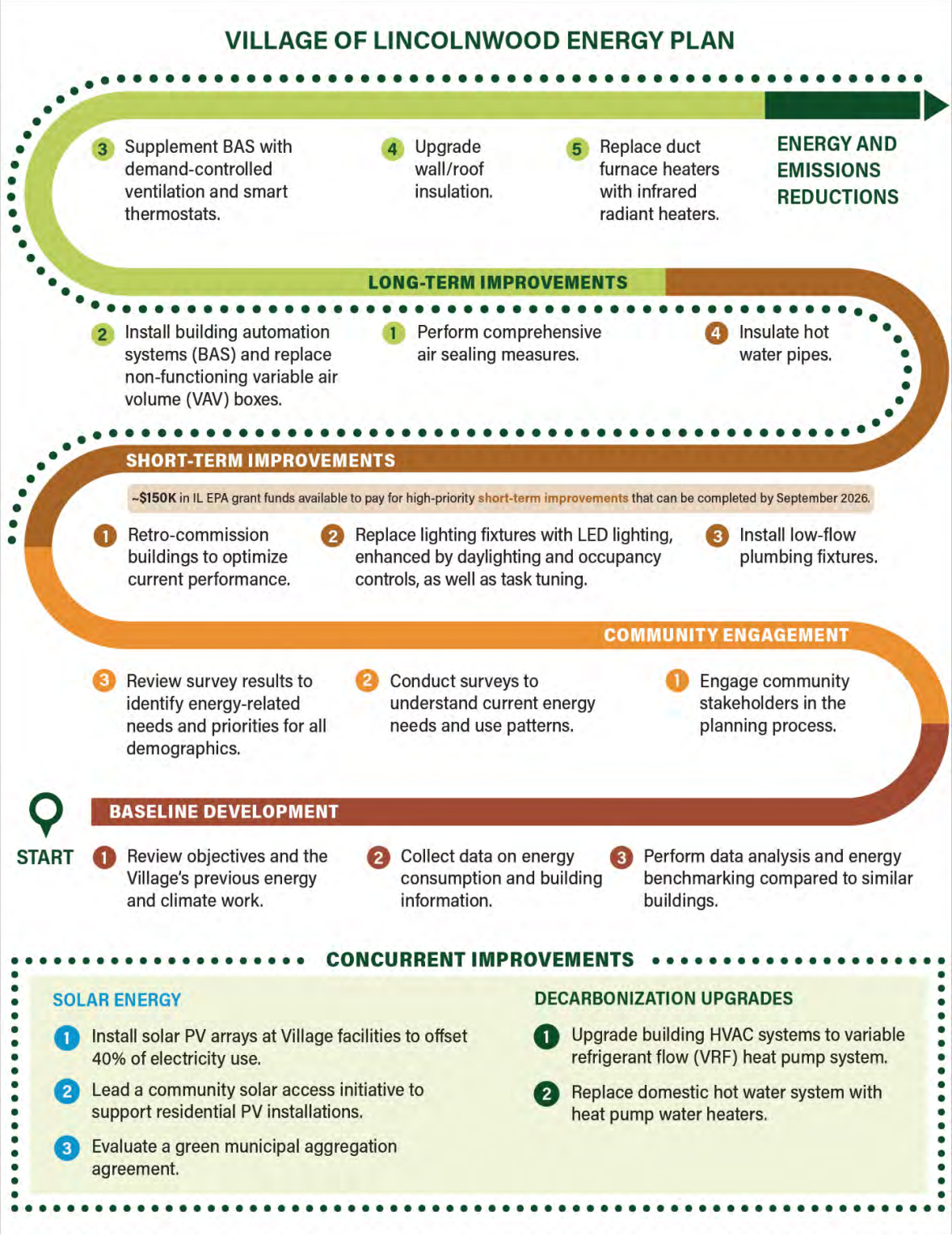
- Install 500 kW of solar at Village facilities offsetting 40% of electricity use.
- Lead community solar access initiative.
- Evaluate savings opportunities through Renewable Municipal Aggregation agreement.

Policy

- Support access to energy affordability resources
- Improve energy performance of residential and commercial buildings
- Implement sustainable lifecycle cost assessment-based purchasing policy.
- Support community adoption of renewable energy
- Offer *Sustainability at Home* informational resources to residents

To achieve its goals for reducing energy use and emissions from the Village's municipal buildings and throughout the community, the Village will need to continue to invest in facility improvements and policy development throughout the next decade. Figure 12 is a roadmap showing the short- and long-term improvements that the Village can implement to achieve significant reductions in energy use and emissions.

Figure 11. Village of Lincolnwood roadmap to energy savings.



The estimated energy and emissions reductions reflect the levels of savings that could be achieved by installing the recommended measures in the three buildings at which the project team completed energy assessments. In addition to describing cost-effective upgrade strategies for Village Hall, the Public Safety building, and the Public Works building, the Energy Plan recommends strategies through which the Village can reduce energy use in all of its facilities. The savings generated by completing these measures would be additional to the savings that are modeled in the figure above.

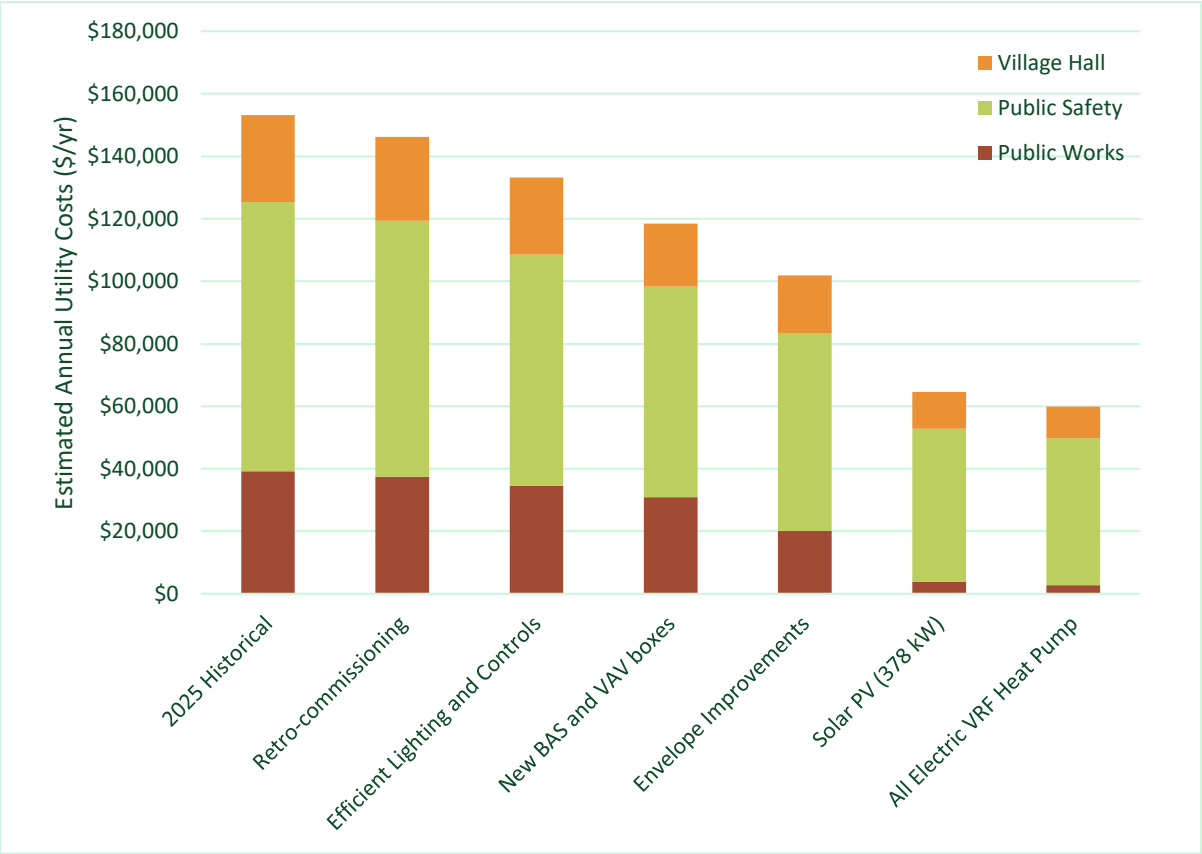
Figure 13 illustrates the estimated cumulative reductions in energy cost savings from implementing the recommended measures from this plan. The 2025 Historical bar represents current energy costs and each subsequent bar to the right estimates how implementing that measure in the three buildings would affect total costs. The cost estimate for each bar assumes that the Village completed the preceding recommended measures prior to completing that measure.

The measures modeled quantitatively include implementing 1) the near-term energy efficiency measures that the project team recommends the Village use the IL EPA grant funds to install; 2) all of the energy efficiency measures that were recommended for the three assessed buildings; and 3) installing all of the recommended rooftop PV arrays at Village facilities. Appendix 1 includes charts and tables showing the energy savings produced by each measure for each building.

These estimates are likely conservative; other recommendations which were not explicitly modeled may also yield cost savings. Energy efficiency investments and solar installations are estimated to result in annual savings of $53,400 and $56,000 respectively. This amounts to a 42% reduction in energy costs, or $109,400 in annual savings

As described above, due to the Village's franchise agreement with ComEd, the Village does not pay directly from its operating budget for electricity costs for some municipal buildings. Instead, the cost of the electricity for these buildings is distributed across residential and commercial customers in Lincolnwood. While the Village's operation budget may not directly recoup the financial benefits of reduced energy use, the net effect of these savings on the financial obligations of Lincolnwood residents and businesses (via property taxes and utility bills) is equivalent to the benefits that these stakeholders would realize by the Village directly reducing its operational energy costs.

Figure 12. Estimated energy cost savings from recommended improvements



BUILDING AND FACILITY RECOMMENDATIONS

Recommendations

1. Benchmark building energy use data.
2. Implement recommended measures to progress toward achieving ASHRAE 100 site EUI targets.
3. Conduct an evaluation of process energy use at the Pump House
4. Institute standard purchasing policies for building equipment.
5. Adopt standard operating procedures across buildings.

RECOMMENDATION 1: CONTINUE BENCHMARKING BUILDING PERFORMANCE

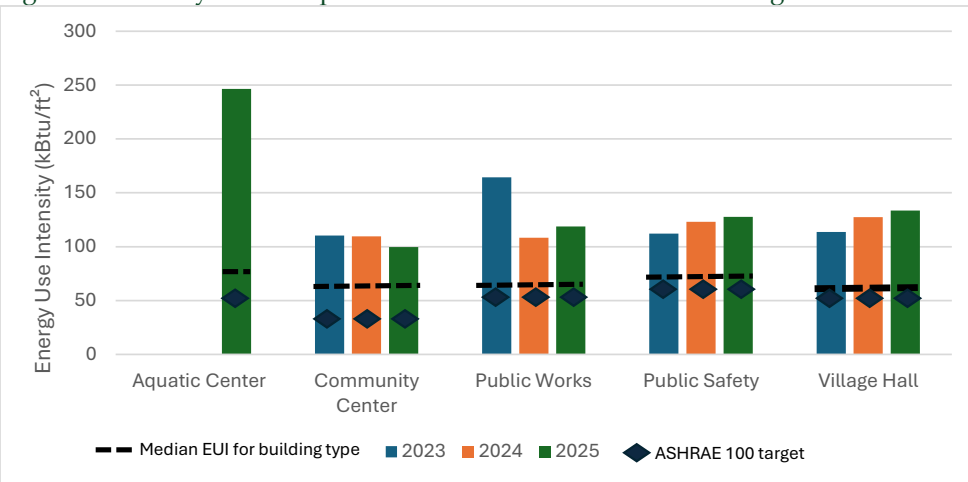
The energy performance of buildings can be tracked by examining energy use intensity (EUI) over time or by comparing the EUIs of the Village's buildings to similar buildings through a "benchmarking" process. Site EUI is calculated by dividing the building's total energy use by the size of the building in square feet. Using site EUI to normalize energy use between buildings with similar uses provides a standard approach to monitoring the energy performance of a building.

Figure 14 illustrates the site EUI of all Lincolnwood municipal buildings over time and compares those values to the national median EUI for the applicable building type (age, building type, and characteristics).[7] The figure also shows the ASHRAE 100 – 2024 target for each facility. ASHRAE 100 – 2024 is a widely accepted standard that identifies a "best practice" level of efficiency for specific building uses and climate zones. The national median EUI can be used to evaluate the current level of performance of its buildings and the ASHRAE 100 EUI can be used as a target to work toward when considering upgrades to its buildings.

As shown in Figure 14, the EUI of Lincolnwood's facilities is greater than both the target levels of energy efficiency established by ASHRAE 100 – 2024 and the median values for similar buildings. Implementing the recommended energy efficiency improvements will reduce each facility's EUI as the Village works toward achieving the ASHRAE 100 best practice efficiency targets.

[7] Natural gas consumption data prior to 2025 was not received for the Aquatic Center. Therefore, Figure 13 only shows an EUI value for the facility for 2025.

Figure 13. Facility EUI compared to median and ASHRAE 100 target levels



Continuing to track each facility's EUI in comparison to relevant benchmarks is a key strategy for measuring progress toward the Village's energy saving goals and for identifying unexpected changes in energy use that may be caused by system failure, or which may require maintenance or repairs.

ENERGY STAR Portfolio Manager is a free tool that provides an online platform for tracking energy use over time in all municipal facilities. The Project team created facility profiles in Portfolio Manager of all Lincolnwood facilities and uploaded energy data for these buildings into the tool for 2022–2025. At the conclusion of the project, the team will transfer management of these profiles to Village staff, which can use the platform to continue to track energy data. The site also enables the Village to measure its progress toward achieving energy saving targets and standards and to compare energy use in its buildings to energy use of similar buildings.

The project team recommends that the Village assign a staff person to track energy use for all facilities in Portfolio Manager and utilize the platform's analytical tools to provide regular reports to Village staff and leadership on the buildings' energy performance.

RECOMMENDATION 2: IMPLEMENT RECOMMENDED MEASURES FOR AUDITED BUILDINGS

The project team performed energy assessment walkthroughs at three facilities: Village Hall, the Public Safety building, and the Public Works building. Village staff selected these buildings because the Village intends to continue to operate these facilities without significant renovations for the foreseeable future, and the buildings have high baseline energy use.

Prior to the walkthroughs, the project team met with Village staff who are responsible for operating and maintaining the buildings to review current concerns and opportunities for improvement. This meeting surfaced opportunities for significant operational and energy savings that could be achieved by upgrading VAV box operations and HVAC controls at several buildings.

The walkthroughs included reviewing current heating and cooling systems, lighting equipment, and appliances and discussing comfort and operations with building staff. The team then developed energy models to quantify savings opportunities. Information about the existing equipment and condition of facilities, building energy code requirements at time of construction, and weather data were incorporated in the models. Then, the models were calibrated using historic energy consumption data.

The team engaged Verde Energy Efficiency Experts, which is a qualified ComEd trade ally to provide cost estimates for HVAC, HVAC controls, lighting, and lighting controls measures identified by the energy models as opportunities for significant energy savings. Upgrade cost estimates in this Energy Plan for measures in these categories are based on the contractor's bids.

Cost estimates for building envelope measures and other measures that are outside of Verde Energy Efficiency's area of expertise were based on secondary research, industry reference materials, and past project experience.

In the Energy Plan, estimates for measure costs and for energy savings are intended to help the Village prioritize improvement measures. Actual energy savings from the recommended improvements will be highly dependent on weather and actual building operation. Actual measure costs will vary depending on actual labor and material costs at the time of implementation. Further engineering and final pricing of all recommended measures will be required prior to implementation.

Table 6 illustrates the recommended measures for the assessed buildings. The measures are organized by short term and long-term categories. The short-term measures are items with shorter payback periods, significant savings, or potential to improve occupant comfort. The long-term measures may have longer payback periods but would improve building energy performance and occupant comfort. Some long-term measures are recommended to be implemented when equipment reaches its replacement age, as noted in Appendix 1.

Cost effectiveness and prioritization of energy improvements typically compare the reduction in energy costs that a measure will achieve with the installation cost for that measure by considering the simple payback period, return on investment, or net present value of the building upgrade. However, as described in the Energy Baseline section above, under the terms of its Franchise Agreement with ComEd, the Village does not pay electricity costs for these buildings from its operating budget. Therefore, reduced energy use, will not affect the Village's operating budget in the same way that energy cost reductions would benefit a household or a business.

While the Village does not pay directly for electricity consumption for the buildings, reducing electricity use at the facilities creates a parallel benefit for the Lincolnwood community. If the Village paid directly for electricity, reducing electricity use would reduce municipal expenses, and therefore would reduce the Village's operating budget and local tax burden. Under the Franchise Agreement, when the Village uses less electricity, ComEd can lower its surcharge rate for Lincolnwood customers.

Because reducing electricity use at municipal facilities creates similar benefits for Village stakeholders as they would obtain through reduced municipal electricity expenses, when recommending energy improvements to municipal buildings, the Energy Plan values energy reductions at standard commercial electricity rates.

Table 6. Overview of recommended measures

Category	Upgrades for Village Hall, Public Safety, and Public Works Buildings
Short Term	Retro-commissioning
	Install low flow plumbing fixtures
	Add hot water pipe insulation [Public Safety only]
	Efficient interior lighting upgrades, supported by smart controls
Long term	Upgrade roof and wall insulation during roof replacement or façade renovations

	Facility air sealing
	Install building automation system (BAS) and replace VAV boxes
	Upgrade DHW system efficiency at end of service life
	Upgrade HVAC system efficiency at end of service life

Table 7 details the upfront cost, annual cost savings, and annual CO_2 savings for short term and long-term measures in each building. The initial cost includes financial incentives from energy efficiency programs offered by ComEd and Nicor where known and applicable. The project team recommends that the Village discuss the recommended measures with a ComEd and Nicor energy program representative to understand potential financial incentive availability and measure or installation requirements. Appendix 1: Building Descriptions has a full description of each building.

Table 7. Cost and CO_2 savings from recommended measures

	Initial Cost ($)	Annual Energy Cost Savings ($)	Percent Cost Savings	Annual CO_2 Savings (MT)	Percent CO_2 Savings
Village Hall					
Short term	$24,800	$3,709	19%	19	17%
Long term	$135,700	$6,303	32%	39	35%
Total	**$160,500**	**$10,011**	**51%**	**58**	**52%**
Public Safety					
Short term	$53,900	$12,716	22%	57	19%
Long term	$324,500	$10,630	19%	70	30%
Total	**$378,400**	**$23,346**	**41%**	**127**	**49%**
Public Works					
Short term	$24,000	$4,662	13%	19	10%
Long term	$199,100	$15,383	43%	78	39%
Total	**$223,100**	**$20,045**	**56%**	**98**	**49%**

During the energy assessment walkthroughs, the project team spoke with building users to identify energy-related, comfort, functionality, and operational concerns at each building. Table 8 lists potential additional benefits to building users of completing selected energy upgrades.

Table 8. Non-energy benefits of recommended energy upgrades

Energy Upgrade		Additional Benefit
Building Envelope	Insulation	Reduced draftiness and improved thermal comfort for building occupants
	Air Sealing	
HVAC controls and settings	Building Automation System (BAS)	Less staff time required for manually adjusting set points and scheduling. Improved reliability of building control operations and occupant comfort.
	Retro-commissioning	
Lighting	Efficient Interior Lighting	Improved staff productivity and stress reductions.
	Task tuning	

Prioritized Near Term Energy Upgrades

The Village of Lincolnwood received a grant from the Illinois EPA that includes $144,500 for funding energy upgrades to municipal facilities. To access grant funding for these upgrades to the Village's facilities, measures must be installed and invoiced by September 30, 2026. The project team recommends that the Village use the IL EPA grant funding to pay for the high-priority measures listed below. Based on cost estimates provided by an independent third-party installation contractor, as well as on industry data, we anticipate that the total cost of these measures will align with the amount of grant funding that is available. Additionally, the measures in this list are proactive improvements, rather than measures that would be installed at the end of the service life of existing equipment, and they are measures that the Village can complete prior to the grant deadline.

1. Retro-commission all facilities to optimize current performance
2. Complete interior LED lighting retrofits supported by advanced controls
3. Install low-flow plumbing fixtures
4. Insulate hot water pipes

RECOMMENDATION 3: CONDUCT AN EVALUATION OF PROCESS ENERGY USE AT THE PUMP HOUSE

The site EUI of Lincolnwood's Pump House is very high in comparison to the EUIs of other municipal facilities. Because the Pump House has minimal occupancy, but houses the Village's municipal water pumping equipment, it is very likely that the high EUI is primarily due to the amount of electricity used for water pumping ("process loads"), rather than indicating that the facility has highly inefficient HVAC equipment or a leaky and uninsulated building envelope. Because process load is the primary component of the building's energy use, EUI is not an effective metric for assessing how efficiently energy is used there.

While EUI does not provide a meaningful metric for benchmarking the energy efficiency performance of the Pump House, the equipment at the Pump House does consume a significant amount of energy (approximately $50,000/year) and therefore we recommend that the Village take steps to assess current efficiency levels and implement efficiency improvements that are identified.

A detailed assessment of the energy efficiency of Lincolnwood's municipal water pumping equipment was outside the scope of this energy planning project. The opportunities described below highlight common strategies to reduce lift station energy use and improve reliability. However, the most effective pathway for Lincolnwood will depend on site-specific factors such as system design, pump sizing, flow patterns, and operational requirements. Detailed assessments by technical experts are needed to determine which approaches deliver the greatest benefit for the Village.

Establishing performance baseline

Establishing a performance baseline for wells and pumps is a critical step in identifying inefficiencies and prioritizing cost-effective improvements. Two primary ways to evaluate current performance are described below. The Village can use both preventative maintenance and reactive upgrades to manage energy use and enhance the operational efficiency of pumping equipment.

Energy intensity tracking.

Comparing electricity use with water flow [typically expressed as kilowatt-hours per million gallons pumped (kWh/MG)] provides a more meaningful metric than EUI for assessing operational efficiency. Tracking the metric over time can reveal reduced equipment performance and needed maintenance. Using the metric to

compare the energy performance of existing equipment with rated performance of prospective new equipment can inform decisions about the cost-effectiveness of investing in upgrading equipment. If Village staff do not currently have a monitoring system in place, we recommend implementing an energy intensity tracking protocol for pumping equipment.

Optimizing energy use

Beyond managing energy consumption through maintenance, electricity consumption by pumping equipment can be lowered through operational adjustments and equipment upgrades. Some common strategies include:

1. **Install variable frequency drives (VFDs**) (if not already in use): Installing VFDs allows pumps to adjust speeds to match system demand, which may reduce wasted energy.

2. **Impeller trimming**: If pumps deliver more pressure and flow than needed, the impeller can be machined to a smaller diameter, so the pump matches system requirements more closely. However, trimming can reduce the pump's hydraulic efficiency[8] thereby negatively affecting energy efficiency (energy use per gallon pumped). To maintain reliability and minimize efficiency losses, trimming should be performed within manufacturer-recommended limits and verified against updated pump performance curves.

3. **High-efficiency motors and pumps**: According to the Department of Energy's (DOE) Premium Efficiency Motor Selection and Application Guide, installing a premium efficiency motor for a pump can achieve energy savings between one percent and three percent; however the corresponding cost savings that are generated are likely to quickly surpass the incremental cost of the premium motor, in comparison to a business as usual motor. Premium efficiency motors may also improve system reliability.

Resources for efficient equipment transitions

As pumping equipment approaches the end of its service life, replacement presents a natural opportunity to improve efficiency. Prior to equipment failure, we recommend that the Village conduct a detailed study of motor and pump energy intensity. In conjunction with assessing current performance and identifying options to improve performance, we recommend that the Village contact representatives from ComEd, the Illinois Environmental Protection Agency, and other potential funding sources to understand incentive and grant funding opportunities that the Village could access to help pay for efficiency upgrades.

When determining its path forward, we recommend that the Village conduct a lifecycle cost analysis (see Policy Recommendation 5) to ensure that energy efficiency is effectively valued in the decision. Following any equipment upgrade, we recommend that the Village ensure that the equipment is commissioned, then follow an energy measurement and verification protocol to ensure that the upgrades are achieving the predicted improvements in energy efficiency.

RECOMMENDATION 4: INSTITUTE A STANDARD PURCHASING POLICY FOR FUTURE UPGRADES

Lincolnwood can reduce its energy use by setting energy efficiency standards that all appliances and equipment that it purchases must meet. We recommend that purchasing guidelines be adopted for Village operations, so all employees have a clear guideline as to what to target in purchases to meet the municipal energy goals.

[8] Hydraulic Institute, 2022. "Trimming Impellers to Reduce Energy Consumption." *Pumps.Org*, September 27. https://www.pumps.org/2022/09/27/trimming-impellers-to-reduce-energy-consumption/.

Table 9 summarizes the purchasing recommendations across HVAC, appliances, and lighting. Several of these items are implemented already, such as purchasing of LEDs and installing energy efficient equipment. Similar to the operating policy, it's important to institutionalize internal policies so that staff changes do not impact existing practices.

Table 9. Purchasing Policy examples

	Purchasing Policy Examples
Heating, ventilation, and air conditioning (HVAC) systems	Consider installation of air source or dual-fuel heat pumps
	When heat pump installation is not feasible, set minimum standard of purchasing a condensing furnace with efficiency greater than 95%.
	Install ENERGY STAR certified air conditioners and heat pumps. Refer to CEE Tiers for energy efficient targets for larger cooling equipment like RTUs.
	Install smart thermostats with occupancy sensors to setback temperatures.
	Consider installing or upgrading building automation system when replacing equipment.
Appliances and other equipment	Purchase ENERGY STAR certified equipment when office equipment and water heaters require replacement.
	New windows should meet or exceed ENERGY STAR requirements. Large commercial windows or store front windows should target U-value of 0.27 or lower and SHGC of 0.25 or higher.
	Consider replacing water heaters with heat pump water heaters.
Lighting	Consider addition of daylighting and occupancy controls for LED systems.
	Consider implementing task tuning to tune down the maximum output of LED lighting by adjusting the controls system settings.
	Continue purchasing LED bulbs for lighting replacements.

Electrification Considerations

Electrification is the process of phasing out equipment that uses fossil fuels (i.e., natural gas, propane, gasoline) with equipment that uses electricity. The main benefit of electrification is a reduction in CO_2 emissions. The amount of greenhouse gas (GHG) emissions released per unit of electricity generated will continue to drop as the electric grid turns to renewable energy while the level of emissions released by combusting natural gas will continue at a constant rate across time.

In many situations, heat pumps are still more expensive than a high-efficiency natural gas system. However, incentives and changing energy costs are causing heat pumps to become more cost competitive. During future HVAC and water heating equipment upgrade or replacement decisions, staff should compare costs and CO_2 emissions of conventional equipment and heat pumps. Table 10 lists the heat pump options for Lincolnwood's buildings.

Table 10. Heat pump system options for existing systems in Lincolnwood buildings

Existing System	Heat Pump System	Notes
Furnace and A/C Split System	Dual-Fuel Air-Source Heat Pump	A cost-effective electrification option that still uses gas but electrifies heating at temperatures above 25°F.
	Air-Source Heat Pump	Full electrification option.
VAV with hot water heat	Variable Refrigerant Flow (VRF)	Suitable for historic retrofits and buildings with many smaller rooms, such as offices, public assembly, and police/fire stations.
	Geothermal heat pump system	Requires land for geothermal bore field.
Single Zone RTU	Heat-Pump RTU	Emerging technology.

RECOMMENDATION 5: INSTITUTE A STANDARD OPERATING GUIDELINES AT ALL BUILDINGS

The operation of a building and the behavior of building occupants significantly impacts a building's energy use. Operational guidelines can save energy without requiring significant investment and have the potential to positively impact occupant comfort and productivity. We recommend that the Village develop a policy that defines clear guidelines for the operation of municipal buildings. The guidelines should specify building automation system (BAS) control schedules (following installation of BAS), frequency of BAS schedule reviews, and any situations in which schedule overrides are permitted. Operations guidelines should be written flexibly enough to account for each building's unique characteristics. Guidelines should also establish an acceptable balance between managing energy use and ensuring occupant comfort. The municipality should also set up the appropriate communications channels so that building occupants can provide ongoing feedback regarding thermal comfort issues, as well as opportunities for efficiency improvements through potential operational changes they identify.

Table 11 offers a list of items to consider in operating policies. The policies cover ongoing maintenance, HVAC system operation, plug load management, and lighting.

Table 11. Operating Policy examples

Potential Operational Policies	
Maintenance	Check window and door seals to ensure proper air sealing.
	Maintain air sealing in exterior walls, ceilings, and roof hatches.
	Change air filters on regular basis.
	Include regular checks of refrigerant charge levels on air conditioning and heat pump units in HVAC maintenance contracts.
Lighting	After the Village installs the recommended interior LED upgrades, supplemented by control packages, monitor interior occupancy and daylight sensing controls to ensure proper operation.
	Ensure dusk-to-dawn exterior lights are turning off during daylight hours, and clear photocells of debris to improve operation if needed.
Heating, ventilation, and air conditioning (HVAC) systems	Following installation of recommended building automation system (BAS), establish temperature setpoints and setbacks for occupied and unoccupied times. Ensure systems set the temperature back 5° to 10°F during unoccupied hours.
	Following installation of recommended building automation system (BAS), maintain centralized repository of operating parameters and BAS schedules for each building. In buildings where a BAS has not been installed, operating parameters include temperature set points and operating schedule for each piece of equipment. Locate information in visible locations to make sure equipment is programmed correctly.
	Post guidance on when operable windows can be opened based on room thermostat setpoints. For example, assuming thermostats are set from 70 degrees to 75 degrees, building occupants should have clear direction that windows should remain closed unless outdoor temperatures are between 68 degrees and 77 degrees.

	Create communication channels for building occupants to provide feedback on comfort or operational issues. A regularly administered survey can be useful to gather additional feedback on occupant comfort
Plug loads	Develop a policy that prohibits or limits the use of individual refrigerators, space heaters, printers, and other peripheral equipment at workstations. Consider ways to consolidate the number of refrigerators and printers across the building.
	Implement computer power management on employee computers using a 30 minute or less delay before putting computers to sleep.
	Implement TV sleep requirements to reduce energy used by screens that are not being watched.
Multi-function	Lead by example. Engage department leaders in consistently practicing energy saving behaviors, such as turning off lights and projectors when leaving a room.

SOLAR RECOMMENDATIONS

RECOMMENDATION 1: INSTALL SOLAR PV ON MUNICIPAL BUILDINGS

Installing on-site solar arrays can save money and reduce CO_2 emissions by leveraging existing roof or ground space near existing facilities. The analysis examined all Village facilities for solar installations. The analysis incorporated available space at each facility, monthly historical data for the building, and the utility rates.

Recommendations

1. Install 499.4 kW of solar to offset 40% of municipal electricity use.
2. Lead community solar access initiative
3. Evaluate green municipal aggregation agreement

Table 12 illustrates the solar array size recommendations, percent renewable electricity for each site, and the simple payback period. The solar array size is determined by examining roof space, monthly energy use of the building, and cost effectiveness. The payback period is calculated by dividing the net upfront cost by projected annual utility bill savings. The energy cost savings represent annual energy cost savings.

Table 12. Solar PV installation recommendations for Lincolnwood's facilities

Building	Size (kW-DC)	Percent Renewable Electricity	Payback (Years)	Annual CO_2 Savings (MT)	Annual Energy Cost Savings
Public Works	136.9	85%	23	60.6	$16,400
Public Safety	165.6	34%	>25	68.8	$14,300
Village Hall	75.3	53%	>25	31.3	$6,500
Aquatic Center	51.3	22%	19	21.5	$7,500
Community Center	45.6	65%	13.5	19.4	$9,300
Pump house	24.7	13%	>25	9.3	$2,000
Total	**499.4**	**40%**		**210.9**	**$56,000**

Table 13 includes costs for each array. The estimated upfront cost and ComEd incentives are based on the size (generating capacity) of the array.

Table 13. Cost details of solar PV installations for Lincolnwood facilities

Buildings	Upfront Cost	ComEd Incentives[9]	Net Cost
Public Works	$410,800	$34,200	$376,600
Public Safety	$496,900	$41,400	$455,500
Village Hall	$225,900	$18,800	$207,100
Aquatic Center	$154,000	$12,800	$141,200

[9] Cost and incentive values listed are estimates based on current equipment and labor rates and current ComEd incentive offerings. These are subject to change over time.

Community Center	$136,800	$11,400	$125,400
Pump house	$74,200	$6,200	$68,000
Total	**$1,498,600**	**$124,800**	**$1,373,800**

The full recommendations for each building are included in Appendix 2.

RECOMMENDATION 2: LEAD COMMUNITY SOLAR ACCESS INITIATIVE

Residents identified barriers to installing rooftop solar PV arrays on their homes. Primary barriers were the initial cost of investing in PV systems and concerns about finding a qualified and reputable installation contractor. Shading, sub-optimal roof orientation (ex. North facing slant), and deferred roof maintenance are additional barriers to PV installations for homeowners. Households that rent an apartment or house are also unable to install rooftop PV on their homes and many landlords are hesitant to install PV arrays on rental properties because the value of the electricity that the arrays generate accrues to the renters, who are responsible for paying for electricity use at the property, rather than to the property owner.

Community solar projects are structures and agreement frameworks that enable electricity customers to benefit from the reduced cost of renewable electricity without installing PV arrays at their homes. Illinois offers two primary categories of community solar projects. Illinois Shines and Illinois Solar for All. For both categories of offerings, an electricity customer agrees to purchase a portion of the electricity that they use from a commercial or utility scale solar array that is not located at their home. In some offerings, a customer agrees to purchase a percentage of the total electricity that is produced by the PV array, while other agreements specify that the customer will purchase a certain amount of electricity from the array each month, regardless of how much electricity the array generates. Specific financial terms offered by Community Solar projects vary and it is important for customers to carefully consider the terms and conditions of a community solar project before committing to purchase electricity through it.

Customers at all income levels may choose to participate in an Illinois Shines community solar project; however, Illinois Solar for All community solar projects are reserved for households with incomes that are less than 80 percent of the Area Median Income. The financial terms of Solar for All projects ensure that participating in the program reduces the monthly electricity costs for qualifying households.

The project team recommends that the Village of Lincolnwood takes steps to increase awareness of, and participation in, community solar projects. The Village can use the pathways described in Policy Recommendation 5 (Public Sustainability-At-Home Campaign) to educate residents and to help connect them to community solar offerings, thus helping them reduce electricity costs and supporting reductions in communitywide residential GHG emissions.

Additionally, we recommend that the Village evaluate opportunities to facilitate the development of a Community-Driven Community Solar (CDCS) project. These projects site PV arrays that are in, or close to, the participants that they serve. Siting the solar array in the community supports increased communitywide awareness of renewable energy, adds connection of participants to the project, and can create economic, employment, and other direct benefits for the community. First steps to developing a CDCS project in Lincolnwood include evaluating locations for arrays in Lincolnwood and engaging an approved Illinois Shines vendor to assess opportunities for building a CDCS in Lincolnwood.

RECOMMENDATION 3: EVALUATE POTENTIAL RENEWABLE ENERGY USE AND ENERGY COST SAVINGS THROUGH MUNICIPAL AGGREGATION.

Using Municipal Aggregation, Illinois municipalities can leverage the aggregated electricity demand of the residents and businesses within their jurisdiction to negotiate terms for electricity procurement for their residents and local businesses. Municipal Aggregation can be used to secure lower electricity rates for residents**. [Note: While Municipal Aggregation creates an opportunity to access lower electricity rates for**

residents, the actual rates under a Municipal Aggregation agreement are dependent on the terms negotiated between the parties (the municipality and the electricity provider) may be lower than, higher than, or the same as, standard electricity rates offered by the utility.]

In addition to establishing electricity rates for a municipality's residents, a Municipal Aggregation agreement can include terms that require the supplier to provide renewable electricity to customers within the jurisdiction. Including a provision requiring that a percentage, or all, of the electricity that is provided is generated by renewable sources will cause the electricity supplier to purchase and retire renewable energy credits (RECs) that are equal to the amount of electricity that the supplier provides to all customers in the community who are participating in the Municipal Aggregation rate. Therefore, engaging in a Municipal Aggregation agreement could significantly reduce communitywide GHG emissions generated through electricity generation.

Lincolnwood previously participated in a Municipal Aggregation agreement from 2011–2014. The Village can draw upon its past experience participating in a Municipal Aggregation agreement to optimize the value of the aggregation to Lincolnwood's residents and toward achieving the community's emissions reduction objectives.

POLICY RECOMMENDATIONS

This section of the Energy Plan recommends policy tools that Lincolnwood can use to achieve two objectives. Recommendations 1, 2, 4, and 5 identify policy mechanisms that Lincolnwood can adopt to advance energy savings for the Village's residents and businesses. Recommendation 3 proposes an internal policy that the Village can adopt to institutionalize energy savings and environmental sustainability within its municipal operations.

Recommendations

1. Energy assistance facilitation
2. Residential and commercial building efficiency policies
3. Sustainable lifecycle cost analysis purchasing policy
4. Support community adoption of solar energy.
5. Public sustainability-at-home educational programming.

RECOMMENDATION 1: SUPPORT ACCESS TO ENERGY AFFORDABILITY ASSISTANCE

A significant portion of survey respondents (29 percent) stated that it is difficult for them to afford to pay their utility bills at least once per year, and 18 percent indicated that ability to afford energy bills is a challenge at least three months per year.

The survey responses show that energy insecurity is an issue for some Lincolnwood residents. Therefore, the project team recommends that the Village take an active role in connecting residents with resources to help them manage and afford their energy bills.

There are several energy payment assistance programs that can help reduce energy insecurity for Lincolnwood residents.

LIHEAP (Low Income Home Energy Assistance Program). Households whose income is less than 60 percent of the state median income may qualify for utility bill payment assistance through LIHEAP. The Community and Economic Development Agency (CEDA) of Cook County is the regional LIHEAP intake agency that serves Lincolnwood.

ComEd Low Income Discount (LID). LID is a new offering in 2026 that serves households with incomes that are less than 300 percent of the Federal Poverty Level. Qualifying households can receive a discount credit on their ComEd bill that is designed to help reduce their energy costs to 3% - 6% of their household income (the U.S. Department of Energy's standard for energy affordability). Residents who qualify for LIHEAP are also eligible for LID. Households that do not receive assistance through LIHEAP may also contact CEDA to apply for LID.

Weatherization Assistance Program (WAP). Instead of providing direct utility payment assistance, WAP installs energy efficiency improvements in houses and apartments of low-income households. The energy efficiency improvements provide ongoing energy savings for the households. Households with income that is less than 200% of the Federal Poverty Level may be eligible for WAP. Households that qualify for LIHEAP and certain other safety net programs are categorically eligible for WAP. Residents may contact CEDA to apply for WAP.

The Village can consider several strategies to help energy insecure residents access these resources.

- Communicating utility payment assistance options on the Village's website and in its *Lincolnwood Connections* newsletter. Regularly sharing information in the late fall and winter months may be most effective, since residents may experience greater energy insecurity when needing to pay higher bills during the heating season.

- When residents are delinquent on their municipal water bill payments, they may also be struggling to pay their electricity and/or natural gas bills. When sending delinquency notices and service shut off warnings to residents, the Village can add information about payment assistance resources for electricity and natural gas bills.

- Incorporate screening clients for eligibility for energy assistance into the intake process for the Village's Social Services and Rescue Rangers programs. Residents who are encountering other challenges to their wellbeing may also face energy insecurity. Connecting eligible clients to energy payment assistance may create multiple stabilizing benefits for these residents.

RECOMMENDATION 2: IMPROVE ENERGY PERFORMANCE OF RESIDENTIAL AND COMMERCIAL BUILDINGS

Energy use by residential and commercial buildings in Lincolnwood greatly exceeds the amount of energy that is consumed at municipal facilities. The Project Team recommends that the Village engage community stakeholders in considering municipal policy options that will reduce energy use in privately owned buildings.

There are at least three categories of policy mechanisms available to the Village. Free technical assistance is available to municipalities in the Chicagoland area that are interested in considering whether they would consider adopting one, or more, of these policy options.

New Construction Guidelines

- ✓ Set an aggressive but feasible energy target
- ✓ Consider building certifications (LEED, PHIUS, etc.)
- ✓ Design solar ready building
- ✓ Design to be EV-ready or EV-capable

Stretch Energy Code

The Illinois Climate and Equitable Jobs Act (CEJA), which was signed into law in 2021, established the Illinois Stretch Energy Code ("Stretch Code") as an alternative to Illinois's statewide base residential and commercial energy codes.

The Stretch Code sets more advanced energy efficiency and emissions reduction requirements for new buildings than are mandated by the statewide base energy codes. Municipalities that decide to adopt the Stretch Code choose to enforce the requirements of the residential and/or commercial Stretch Code for new buildings and major renovation projects within their jurisdictions.

Requiring that new buildings in Lincolnwood achieve increased levels of energy efficiency performance will reduce energy costs for residents and businesses who occupy those buildings throughout the lifetimes of those structures. Additionally, mandating that new buildings use high performing building systems will mitigate the needs for owners of these buildings to conduct costly renovations in the future as conventional construction standards progress.

Before adopting the Stretch Code, we recommend that the Village engage with residents and community stakeholders to build awareness and obtain community input on this policy decision. Free trainings, technical assistance, stakeholder engagement support, and additional resources are available to municipalities in the ComEd service territory who are interested in considering adopting the stretch code.

Energy Benchmarking

Municipalities and states throughout the country have implemented energy benchmarking ("Benchmarking") policies as first steps toward reducing energy use in existing buildings in their communities.

Benchmarking policies require buildings that have gross floor area that exceeds a given threshold (ex. 20,000 sq. ft.) to annually report the amount of electricity, natural gas, district energy (steam and/or cooling), and water (optional) that the building consumed during the year. Requiring owners and managers of large buildings to report energy use achieves at least three objectives that support Lincolnwood's goals to help residents and businesses save energy.

1. **Awareness**. Reporting energy use annually requires building owners to track energy use over time. While energy is an operating expense for buildings, owners may not currently prioritize managing energy use and costs. By mandating reporting, a benchmarking ordinance will increase awareness of energy use and costs by building owners, which will prompt some building owners to implement energy efficiency measures to that will reduce their operating costs.

2. **Market Forces**. Most benchmarking ordinances enable a mechanism through which the energy information that is reported is made available to the public. Enabling households and businesses that are looking for an apartment or want to lease or purchase commercial space to compare energy use between different properties will increase demand for more energy efficient buildings. Increased marketability of efficient buildings will create a market-based incentive for building owners to invest in making their buildings more efficient.

3. **Community Progress**. The year-over-year energy data that building owners report to comply with a benchmarking ordinance provides a municipality with opportunities to monitor the progress that their community is making toward reduce energy use and emissions from buildings. Tracking whether buildings are improving their energy efficiency over time, as well as the rate at which savings are being achieved among different types of buildings and areas within the municipality. Insights from benchmarking data can guide decisions by municipalities on the ways in which it can achieve the greatest impact by offering increased assistance to building owners.

Building Performance Standards

A Building Performance Standards (BPS) policy can build upon an established benchmarking program. A BPS policy establishes energy and/or GHG emissions reduction targets for covered buildings in the jurisdiction. [The "covered" buildings that are subject to a BPS are the same set of larger commercial and multifamily buildings that are required to report energy consumption under a benchmarking ordinance.]

A municipality may create a BPS policy that addresses its specific energy and GHG emissions reduction goals, as well as the interests of stakeholders within the community. While each BPS policy is unique, most policies establish a long-term (ex. 50% energy use reduction by 2050) energy and/or emissions reduction target for all covered buildings. To ensure that building owners invest in ongoing energy efficiency improvements to work toward the long-term goal, BPS policies set increasingly aggressive interim targets every 3-5 years that buildings must meet to demonstrate progress toward the end-point goal. To respond to exceptional challenges that some buildings face in achieving energy saving targets, a BPS policy generally includes guidance for alternative compliance pathways (ACP) for which a building owner may apply. An ACP may offer a building owner an extended timeline for achieving the energy savings target, or a temporary exemption.

The municipality may fine buildings that do not meet energy performance targets or who fail to report their energy use.

RECOMMENDATION 3: IMPLEMENT SUSTAINABLE LCCA PURCHASING POLICY

The Village of Lincolnwood owns and maintains six buildings and manages a fleet of vehicles that it uses to provide services to residents. Managing and maintaining these assets requires regular investments in repairs and replacements of systems that use energy (ex. HVAC and vehicles) and that affect energy use (ex. Building shell). The decisions that the Village's leaders make when replacing and repairing these assets affect the Village's energy use, and therefore energy costs, throughout the lifetime of that asset.

The Village must manage capital and operational expenses in a way that is fiscally responsible to the Lincolnwood taxpayers who fund the Village's budget. Many units of government face pressure to select investment options that offer the lowest initial capital cost. However, selecting options that have the lowest first costs may cause the Village to incur higher long-term energy and maintenance costs than it would have had if it had invested in slightly more expensive energy efficient options. To optimize long term capital and operational efficiency for the Village, the project team recommends adopting a purchasing and new construction policy that applies a lifecycle cost analysis (LCCA) of each option to its process of selecting equipment to purchase and designing new buildings and building renovations.

To manage long term operational costs and to ensure overall cost-effectiveness of capital improvements, we recommend that the Village establish a purchasing policy for all building repairs, upgrades, and new construction that estimates lifecycle operational costs for each option that is being considered and recommends the option that offers the lowest overall cost (initial cost net of financial incentives + operational costs) while achieving the Village's functional requirements. The Village may further advance its environmental goals by also assessing the estimated GHG emissions for each option and applying a cost-factor to each option based on that option's projected lifetime emissions.

Implementing an LCCA will require the Village to forecast the energy and operational costs of different equipment and building system options. Efficiency ratings on HVAC and DHW equipment, as well as comparative wattage for lighting offers mechanisms for assessing the comparative energy cost of using the product throughout that product's lifetime. Additionally, tables in Appendix 1 project the energy savings that each of the recommended efficiency measures would generate. The Village may use this information as inputs to its LCCA. The Village can use online LCCA tools to support the measure costs comparisons.

RECOMMENDATION 4: SUPPORT COMMUNITY ADOPTION OF RENEWABLE ENERGY

There are policy and program mechanisms that the Village can use to advance development of renewable and energy efficient projects at homes and businesses in Lincolnwood

Action 1: Consider participating in SolSmart to accelerate private solar adoption

Figure 14. Ground-mounted solar panels

Local adoption of solar can be unintentionally hindered by local zoning or permitting requirements or lack of knowledge about the process. SolSmart is a free national program that helps local governments address existing solar barriers with the goal of accelerating private adoption.[10] The program provides free technical assistance to local governments pursuing certification and provides resources online for free for communities.

To pursue certification, a municipality must complete steps to earn points in each of five categories. Completing the steps required to earn points will create a policy, process, and program framework in

[10] For more information on SolSmart: https://solsmart.org/

Lincolnwood that is supportive to local renewable energy development. Participants must address *Permitting and Inspections, Planning and Zoning, Government Operations, Community Engagement,* and *Market Development*. Municipalities earn certifications of Bronze, Silver, Gold, or Platinum based on the number of points that they earn.

Examples of steps that a municipality may complete as part of its SolSmart designation include reviewing permitting requirements, creating an online permitting checklist, and providing education to community members. Technical advisors at SolSmart work with each community to understand the municipality's goals and to help them select from a menu of options to reach designation in a way that best fits the objectives of, and current challenges within, a given community. SolSmart also provides templates for many of the recommended actions and offers free online resources to communities, even if the municipality is not ready to pursue SolSmart designation.

Currently, 63 units of government in Illinois have earned SolSmart certification, including Winnetka, Evanston, Oak Park, Skokie, Chicago, and many other communities within the region. Lincolnwood's first steps in considering pursuing Solsmart designation are to contact a program representative through this site and to contact a nearby peer community that earned SolSmart designation to learn more about their experience with the program. A full list of SolSmart communities in Illinois is available here.

Action 2: Lead solar and ASHP group buy programs for residents and businesses

The Village can support reduction in communitywide GHG emissions by helping residents and businesses overcome barriers to completing emissions-reducing building improvements. Policy Recommendation 5 describes strategies that the Village can use to help residents access low-cost and low-effort home energy savings. In addition to supporting broader adoption of low-cost energy efficiency measures, the Project Team recommends that Lincolnwood lead group-buy programs that will facilitate broader investments in deep energy and emissions reducing projects throughout the community.

Broader implementation of rooftop solar arrays on homes and businesses would significantly reduce energy use and emissions in the community. Seventy-one percent of residential survey respondents either strongly agreed or somewhat agreed with the statement, "Using renewable energy is important to our household." However, only 17 percent of respondents said that they had installed solar on their home[11]. The gap between the stated values of residents and the share of residents who are currently using renewable energy reveals that many households face barriers in accessing renewable energy. Respondents identified barriers to using renewable energy which included installation costs (74%) and lack of knowledge in moving forward with installing on-site renewable energy systems (26%).

In addition to rooftop solar, residents and businesses can install air source heat pumps (ASHPs) when existing furnaces and boilers require replacement. ASHPs are extremely energy efficient and are powered by electricity (which can be produced by renewable energy) rather than by natural gas or fuel oil, thus enabling significant reductions in GHG emissions.

ASHPs are a newer, but proven, technology; are less established in the marketplace than furnaces and boilers; may cost more than like-for-like replacements of furnaces and boilers; and may add technical complexity to a replacement project. Lincolnwood residents who expressed their commitments to saving energy may value the opportunity to save energy and reduce emissions by installing an ASHP but may be deterred by these barriers.

[11] The percent of respondents who stated that they have installed on-site solar arrays or other renewable energy systems significantly exceeds the rate of residential PV use in the region. This result may reflect either a non-representative set of survey respondents or a misunderstanding of the question.

A Solar and/or ASHP group buy program could help residents and businesses overcome financial, technical, and information barriers to installing solar arrays and/or ASHPs at their homes and businesses. Important components of a group buy program are outlined below.

Contractor qualification. Village qualifies contractor. The municipality issues an RFP to residential and commercial installers that serve the village. The RFP outlines the framework of the group buy program and requests proposals from installers for the rate structure(s) that they would offer if selected as the sole provider, as well as examples of the information about recommended solar arrays and ASHPs that they would provide to participants, and references from previous clients who will attest to the quality and reliability of the contractor's work. From the proposals submitted, the Village selects the installer who offers the greatest value to participants within the program framework.

Sole sourcing. In exchange for offering the best value to participants, the contractor reduces its marketing and customer relations expenses by being the sole source installer for the program.

Reliability of pricing and forecasts. The Village's program implementer coordinates site visits and cost bids by the contractor and provides quality control for the energy production and cost savings forecasts that the contractor provides to participants.

Streamlined process. Both quality control by the Village's program implementer and the installer's pricing agreement with the Village eliminate the need for residents to obtain multiple and conflicting bids from contractors. Oversight by the Village's program implementer ensures that projects progress on a timely basis and that participants have access to a qualified third-party to address any questions or concerns that may arise during the project development and installation processes.

Because there may be multiple ways in which an ASHP system could be configured to serve a given house, different contractors may offer significantly different project proposals, which makes it difficult for residents who lack a trusted third-party resource who they can consult to confidently select one of the options. Sole sourcing ASHP installations to a single contractor, with technical support offered by a trusted third party can give participants confidence in moving ahead with an installation, thus reducing pipeline attrition.

RECOMMENDATION 5: PUBLIC *SUSTAINABILITY-AT-HOME* EDUCATIONAL PROGRAMING

The residential survey found that 85 percent of respondents agreed with the statement, "Saving energy is important to our household," and 71 percent agreed with, "Using renewable energy is important to our household." Most respondents had taken initial steps toward reducing their energy use by replacing incandescent lightbulbs with LEDs, adjusting heating and cooling setpoints or schedules, or installing extra insulation or energy saving windows, among other actions.

While many residents value energy efficiency and had made some progress toward saving energy in their homes, over 80 percent of respondents to questions about gauging interest in more information on energy topics indicated that they want to learn more about:

- Low-cost home energy saving tips
- Energy saving home improvements that can enhance comfort
- Whole home energy saving strategies
- Available incentives for energy efficiency and renewable energy improvements.

The project team recommends that the Village work with local environmental organizations and interest groups to provide information on these topics to residents and businesses.

Lincolnwood previously identified the opportunity to help residents overcome informational barriers to living in a more environmentally sustainable way. Goal 8.1 of its 2023–2025 Sustainability Plan directed the Village to *develop annual programming to promote sustainability and connect the community with resources that promote environmental sustainability.* While 18 percent of respondents had participated in programming on this topic, or were aware of the programming, but had not participated, there is opportunity and demand for the Village to use its position to deliver valuable and reliable information on energy efficiency and renewable energy strategies to residents.

In alignment with outreach and educational information that focuses on energy saving opportunities for homes, the Village can leverage the investments and facility improvements that it makes throughout the term of this Energy Plan. Communicating to community stakeholders about the energy efficiency and renewable energy measures that the Village is installing at its own facilities will demonstrate that the Village is "walking the talk" concerning its commitment to environmental sustainability. Measures that Lincolnwood residents would complete on their own homes would differ from those required for municipal facilities. However, the Village can create case studies on its website showing lessons learned from the projects that it completes and, within these case studies, describe how the project relates to the types of measures that a resident could make on their home.

If Village staff do not have capacity or expertise needed to educate residents on home energy saving strategies, we recommend that the Village leverage its involvement with the Metropolitan Mayors Caucus (MMC) Greenest Region Compact to identify trustworthy local and regional organizations that the Village could engage to provide educational opportunities for Lincolnwood residents.

Survey respondents did not express the same level of support for the Village working with ComEd and Nicor to help residents identify rebates and financial resources that can offset a portion of the cost of energy upgrades (57% supported) as they indicated for some other ways in which the Village could support them. However, the utilities that serve Lincolnwood offer financial resources that can help residents overcome cost barriers to saving energy and Lincolnwood residents already fund these incentives through charges on their utility bills. Therefore, the project team recommends that the Village work with its municipal representatives at ComEd and Nicor to develop opportunities for representatives of the utilities help residents learn about relevant available financial incentives.

FUNDING OPPORTUNITIES FOR RECOMMENDATIONS

The estimated cost of the upgrades identified in this energy plan is substantial and may be a barrier to implementing some of the recommended measures. This section is intended to provide an overview of funding opportunities for the various upgrades identified in the report.

Figure 15. View looking west towards Lincolnwood Public Works building

COMED AND NICOR ENERGY EFFICIENCY PROGRAMS

The electricity and natural gas utilities that serve Lincolnwood's municipal facilities offer financial incentives and free services that the Village can access to offset a portion of the cost of energy efficient building improvements. Both utilities offer incentive pathways that are specifically designed for public sector customers. ComEd and Nicor offer prescriptive rebates for specific types of equipment that meet certain energy performance standards. In addition to prescriptive rebates, the utilities offer custom incentive options, through which customers receive incentives that are based on the modeled energy savings of an efficiency measure.

We recommend that the Village contact its local government representative for Nicor and ComEd to discuss the recommendations in this Energy Plan that it is considering installing in the near future and to confirm the incentive amounts that are available, as well as the energy performance requirements that must be achieved to receive the incentives. When contacting the utility representatives, we recommend that the Village also discuss ways in which the utility's programs and educational offerings can support the Village's community outreach and education efforts.

REVOLVING MUNICIPAL ENERGY FUND

Lincolnwood's Energy Plan identifies opportunities for the Village to save money on its electricity and natural gas costs. To support future energy projects, the Village can deposit the energy cost savings from completed energy projects into a separate Revolving Municipal Energy Fund sub-account. Deposits can be made on a monthly or annual basis based on achieved savings, which will cause the fund balance to increase quickly.

The purpose of the Revolving Municipal Energy Fund is to supplement other municipal funding sources. It is not intended to replace the need for the Village to use capital funds, operating budgets, and third party grant funds to pay for the improvements recommended in this plan.

As Lincolnwood continues to move ahead with the recommendations in the Energy Plan, it may periodically encounter recommended projects that it is not able to include in its regular capital budget. In these cases, the Village can draw from its Revolving Municipal Energy Fund to supplement other municipal funding sources and obtain approval for these projects.

OTHER GRANTS AND OPPORTUNITIES

Other grants and opportunities through the state government or federal government also could potentially provide funding for installation of these projects. Two potential funding sources are the Illinois EPA and the Illinois Climate Bank, which is administered through the Illinois Finance Authority.

The Illinois EPA awarded Lincolnwood a grant to fund the development of this Energy Plan, as well as to pay for a limited amount of immediate term energy efficiency improvements to municipal buildings. One of the focus areas of the Illinois EPA's Office of Energy is support for energy programming for municipalities, and therefore this agency may be a source for funding for future municipal clean energy projects. We recommend that the Village register for the Illinois EPA Office of Energy Grant Opportunities listserv to ensure that it is aware of future funding opportunities.

The Illinois Climate Bank offers innovative funding and financing programs that support emissions reductions through reduced emissions from buildings, vehicles, and electricity generation. The Climate Bank is currently offering grants of up to $200,000 to municipalities that are considering adoption the Illinois Stretch Energy Code (see Policy Recommendation 2). If Lincolnwood chooses to move forward with evaluating whether to adopt the Stretch Code, we recommend that the Village apply for a grant from the Climate Bank to help fund staff time, training, and engagement efforts needed to support adoption and implementation of the Stretch Code.

Availability of Federal funding is dependent on policy priorities of the presidential administration and of Congress. Currently, Federal funding for energy efficiency and renewable energy projects for municipalities is very limited. However, we recommend that the Village continue to monitor funding availability from the U.S. Department of Energy, U.S. Environmental Protection Agency, and other relevant agencies so that it is aware of potential funding resources as policy priorities change over time.

APPENDIX 1: BUILDING DESCRIPTIONS

LINCOLNWOOD VILLAGE HALL

Size: 12,790 ft^2

Age: 1989

Existing heating and cooling system: Variable Air Volume (VAV) system in office and assembly spaces with hot water boiler heat and DX cooling; two wall-mounted unit heaters at building entrances; two mini-split air conditioners in server room.

Electricity Use: 162,800 kWh/yr

Natural Gas Use: 11,500 therms/yr

Weather-normalized Site EUI: 133.4 kBtu/ft^2

Figure 16. Lincolnwood Village Hall

Since 1989, Village Hall has undergone a partial LED retrofit in some office and hallway spaces and installed new windows in 2024 to reduce energy use. However, staff have significant complaints regarding the heating and cooling system, expressing that they are usually cold. The building is served by a VAV system with packaged direct expansion (DX) cooling and hot water boiler heat. The HVAC system is controlled by an outdated pneumatic system that has not been calibrated recently. Further, building staff estimate that about 30% of the VAV boxes are not working properly. The current issues with the HVAC system and presence of fluorescent lighting in the building provide ample opportunity for energy efficiency upgrades.

Distribution of Energy End-Use Today

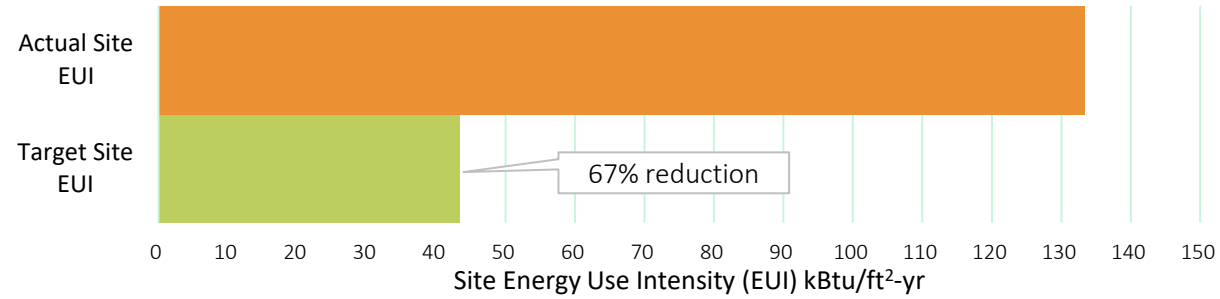
Figure 18 shows estimated proportions of energy use for each major end use in the building today. We recommend focusing on reducing the end uses that currently consume the most energy. A significant proportion of Village Hall's energy use is for heating, followed by cooling. Equipment, including computers, printers, appliances, and other plug loads contributes moderately to the total energy use, followed by domestic hot water (DHW) and interior lighting.

Figure 17. Approximate distribution of energy end use in Village Hall.

Actual vs. Target EUI

Figure 19 compares Village Hall's actual site EUI to the climate target for public safety buildings per the ASHRAE 100-2024 standard. This suggests that 67% energy savings are achievable with significant building operation and equipment efficiency improvements.

Figure 18. Village Hall EUI comparison to target



Recommended Energy Actions

Table 14 categorizes energy efficiency measure recommendations into short and long-term phases, where short-term measures are feasible in the next eight months and long-term measures are feasible in the next 10 years. This figure summarizes the potential cost, energy, and carbon savings. The costs highlighted in blue include estimated utility incentive savings[12].

Figure 20 that follows shows the measure-by-measure energy and cost reduction.

A single electricity account serves both Village Hall and the Public Safety building. The project team used the analytical process described in the Baseline section of this Energy Plan to estimate the relative proportions of electricity that each building uses; however, the exact distribution of electricity between the two building is not known. To enable Lincolnwood to better monitor the energy performance of each building, as well as the savings that the implemented measures generate, we recommend that the Village seek opportunities to establish separate electric metering for each building.

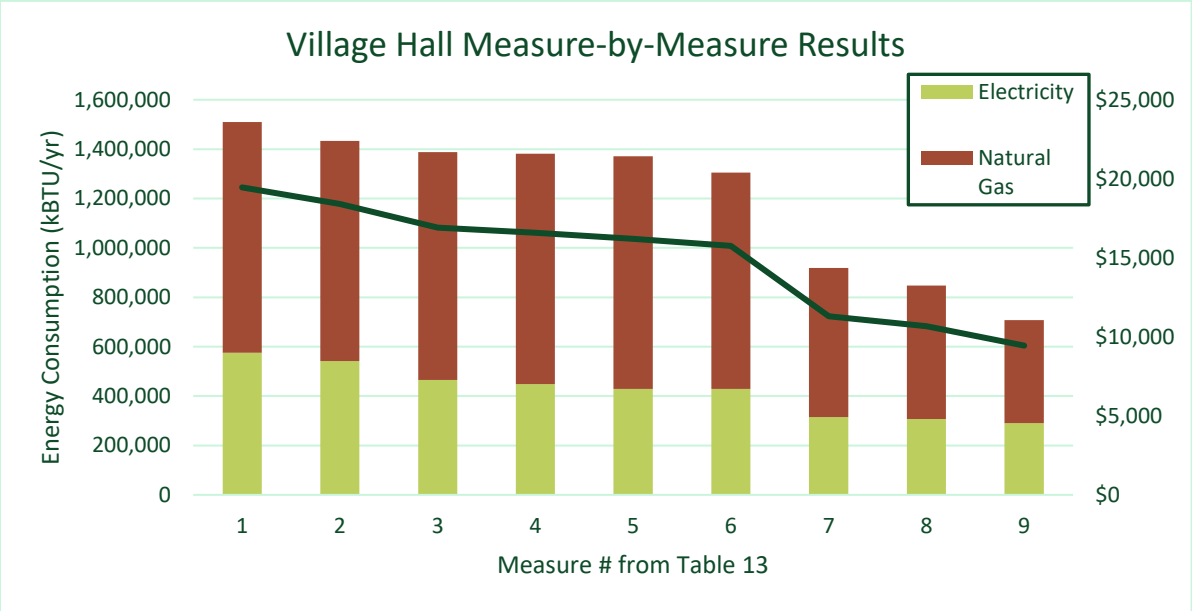
Estimated energy and cost savings assume that the measures are implemented in the order shown and account for the synergistic interactive effects of the measures on energy use in the building. The Village may choose to install the recommended measures in a different order and/or may not complete some of the recommended measures. This may affect total savings from each improvement. However, while installing some of the recommended measures in a different order will not create significant problems, we encourage the Village to "bundle" the lighting measures, because implementing these measures at the same time will reduce the Village's overall project costs.

[12] NOTE: Incentive amounts are **estimates.** Incentive values are based on information received from a third-party energy efficiency project installer that participates in ComEd incentive programs. The Project Team recommends that the Village contact a ComEd representative to confirm incentive amounts and project eligibility information.

Table 14. Energy upgrade recommendations for Lincolnwood Village Hall

	Measure	Phase	First Cost		Annual Utility Cost Savings		Annual Energy Savings				Annual Emission Reductions	
			$	Payback Period (years)	$	(%)	Electric (kWh)	(%)	Gas (therms)	(%)	MT CO_2e	(%)
1	Baseline	-	-		-	-	-	-	-	-	-	-
2	Retro-commissioning	Short	$5,800	6	$1,038	5%	9,593	6%	432	5%	6	5%
3	Efficient Interior Lighting	Short	$13,300	9	$1,510	8%	22,404	13%	-310	-3%	7	6%
4	Interior Lighting Task Tuning	Short	$600	2	$328	2%	5,213	3%	-106	-1%	1	1%
5	Interior Lighting Occupancy Controls	Short	$4,700	12	$378	2%	5,740	3%	-92	-1%	2	1%
6	Low Flow Plumbing Fixtures	Short	$400	1	$454	2%	0	0%	655	7%	3	3%
7	New BAS and VAV Boxes	Long	$67,400	15	$4,449	23%	33,169	20%	2,735	29%	27	24%
8	Air Sealing	Long	$13,800	22	$617	3%	2,351	1%	629	7%	4	4%
9	Upgrade Insulation	Long	$54,500	44	$1,236	6%	5,006	3%	1,228	13%	8	7%
Overall			**$160,500**		**$10,011**	**51%**	**83,476**	**50%**	**5,171**	**55%**	**58**	**52%**

Figure 19. Measure-by-measure representation of annual energy consumption and annual utility cost for Village Hall. Numbers on the x-axis correlate to the measure number in the previous table.



Key metrics, including energy and carbon emission reductions and cost savings are summarized and separated by timeline in Table 15. This shows that with an approximately $25,000 investment from the Village in the recommended short-term measures, electric usage can be decreased by 25%, annual utility cost can be decreased by 19%, and carbon emissions can be decreased by 17%. Most natural gas savings are achieved through the long-term measure recommendations. The short-term measures show a relatively small decrease in natural gas usage because of the recommended lighting upgrades, which would decrease waste heat emitted from lighting and thus increase the required heating load on the natural gas system.

Table 15. Energy, cost, and carbon savings associated with all short- and long-term measures for Village Hall

Timeline	First Cost	Savings			
		Electric (kWh)	Natural Gas (therms)	Cost ($)	C02e (MT)
Short Term	$24,800	42,950	579	$3,709	19
		25%	6%	19%	17%
Long Term	$135,700	40,526	4,592	$6,303	39
		24%	49%	32%	35%
Total	**$160,500**	**83,476**	**5,171**	**$10,011**	**58**
		50%	**55%**	**51%**	**52%**

Table 16 identifies the impacts of recommended "decarbonization measures," which replace existing fossil fuel space and water heating equipment in Village Hall with electricity-powered systems. The primary function of a decarbonization measure is to eliminate fossil fuel usage and reduce carbon emissions. Actual carbon emission reduction over the lifetime of the equipment is difficult to quantify because of fluctuations in the generation sources that supply Lincolnwood's regional electricity grid, and therefore the amount of GHG emissions that are generated by producing each unit of electricity. Lincolnwood should consider these measures if it is interested in working towards fully decarbonizing the energy used to power its buildings.

The table shows the estimated energy and cost impact of each improvement. The listed cost for the equipment is shown as incremental cost in comparison to a like-for-like system replacement. The percent reduction for each measure is relative to the current level of energy use. Because decarbonization measures power equipment with electricity, which currently uses natural gas, the table shows that these measures lead to decreased natural gas use, but increased electricity consumption.

Table 16. Suggested decarbonization measures for Village Hall

Measure		Incremental Cost	Annual Utility Cost Savings		Annual Energy Reduction			
		$	$	(%)	Electric kWh	% Savings	Gas therms	% Savings
1	VRF Heat Pump System	$410,000	$1,758	9%	-9,892	-6%	3,636	39%
2	Heat Pump Water Heater	$2,200	-$246	-1%	-8,052	-5%	540	6%

Short Term: Retro-Commissioning

We recommend that Village Hall undergo a retro-commissioning study and optimization project to address multiple HVAC issues that affect comfort and energy use. Retro-commissioning is a process of servicing and repairing existing heating and air conditioning equipment to restore it to nearly its original level of performance. Retro-commissioning for Village Hall may include boiler, rooftop unit, and VAV box operational checks and tune-ups, duct cleaning and sealing, ventilation system testing and rebalancing, economizer and damper functional checks, replacing air handler filters, and verifying thermostat operation. Advanced controls such as boiler supply water temperature reset based on outside air temperature are recommended

to be implemented as part of the tune-up process, if possible. These tune-ups may eliminate the need for space heaters in office areas and should mitigate occupant comfort concerns. However, given the limitations of the current HVAC system and controls, retro-commissioning will not entirely solve the current HVAC issues.

The retro-commissioning process would also generate a report that recommends additional system improvements, such as implementing a building automation system (BAS) to allow for more advanced control of the VAV system with smart thermostats and demand-controlled ventilation.

Next Step: ComEd provides incentives[13] and a list of qualified contractors for retro-commissioning or building tune-ups. Contact a representative to understand potential programs and to enroll.

Short Term: Install LED Lighting, Occupancy Controls, and Task Tuning

LEDs have a significant savings potential compared to compact fluorescent lights, and replacing fluorescent fixtures with LEDs at end-of-life will be mandatory in Illinois beginning in 2027. We recommend installation of LED fixtures that are DesignLights Consortium™ (DLC) qualified and include networked lighting controls. These allow for daylighting controls, occupancy controls, dimming, and task tuning. Daylighting controls maintain constant interior light levels and reduce energy consumption by automatically reducing light levels to account for natural daylight. Occupancy controls automatically power off lights if a space remains unoccupied for a given period of time. Controls are especially effective in spaces with long periods of non-occupancy like enclosed offices, storage rooms, and lavatories.

Task tuning, or high-end trim uses the lighting controls system to dim the maximum outputs of lights to recommended lighting levels. It has the potential to save electricity while improving occupant comfort since most commercial spaces are designed to be over-lit, which can cause glare and unpleasant lighting conditions. If photometric plans are available, designed light levels can be compared to the Illuminating Engineering Society recommended light levels to determine the appropriate lighting reduction. If no formal lighting design occurs, the reduction can be estimated initially and adjusted later based on desired brightness.

Task tuning is cost-effective to implement while setting up a new lighting controls system, as no additional equipment is needed. Implementing daylighting and occupancy controls during an LED installation leads to additional savings and is the most cost-effective time to add controls.

When the interior lights are being replaced, we also recommend ensuring exterior lights are LED fixtures, with timeclock and/or occupancy controls that reduce lighting use during unoccupied nighttime periods. When the current exterior light fixtures reach end of life, we recommend replacing them with higher efficacy fixtures, which would provide the same light levels while consuming less electricity.

Next Step: Receive quote for LED fixture replacements, including lighting controls and implement task tuning at the time of installation. Contact a ComEd representative to inquire about potential incentives.[14]

Short Term: Install Low-Flow Plumbing Fixtures

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[13] Estimated retro-commissioning incentives are calculated using the $/kWh and $/therm savings values found on ComEd's website and are subject to change: https://www.comed.com/ways-to-save/for-your-business/incentives/retro-commissioning.

[14] Lighting and occupancy controls incentives are estimated based on the ComEd Small Business offering and are subject to change. Currently there are no incentives for task tuning. For more information visit https://www.comed.com/ways-to-save/for-your-business/incentives/small-businesses-facilities.

We recommend using low flow plumbing fixtures to reduce the hot water consumption, either by replacing the fixtures or adding a low-flow faucet aerator. We suggest flow rates from 1.2 to 0.5 gallons per minute (gpm) for bathroom faucets and 1.8 to 1.5 gpm for kitchen faucets.

Next Step: Replace fixtures or add aerators to existing fixtures to reduce the flow rate at faucets.

Long Term: Implement New Building Automation System and Replace VAV Boxes

To address the aging VAV boxes and pneumatic controls system, we recommend replacing the VAV boxes and installing zone damper controls capable of advanced HVAC controls such as:

- **Demand-controlled ventilation (DCV):** DCV controls the ventilation rate in a space based on occupancy and/or CO_2 levels, allowing energy savings during periods of non-occupancy.
- **Smart thermostats:** Smart thermostats would allow for advanced setpoint scheduling, occupancy-based temperature setbacks, and remote access capabilities.
- **Supply-air temperature reset**: This adjusts the temperature of the air supplied to the duct system based on outside air temperature and damper positions. This may require additional controls for the packaged rooftop unit. We recommend resetting the supply air temperature from 55°F to 65°F.
- **Supply-air static pressure reset:** This optimizes the supply duct static pressure to reduce fan energy use. This may require additional controls for the packaged rooftop unit.

Replacing the VAV boxes and pneumatic controls has a high upfront cost but also a high savings potential, since we believe the current system is resulting in simultaneous heating and cooling and contributing to the high energy consumption of the building. This will also resolve any occupant discomfort that is not addressed in the retro-commissioning process.

This replacement option would allow the Village to replace a single VAV box initially to better estimate the full replacement cost.

Next Step: Consult an engineer, building control systems personnel, and/or qualified contractor to develop plans for replacement VAV boxes and a new controls system with Building Automation System (BAS) capabilities. Incentives[15] may be available for advanced HVAC controls, contact a ComEd representative for more information.

Long Term: Comprehensive Air Sealing

We recommend performing air sealing in the building to reduce unwanted air leakage. Air sealing can be done with caulk, spray foam, specialized tape, fully adhered roll membranes, fluid-applied sprays, and/or weather-stripping materials. This can significantly reduce heating and cooling loads and improve comfort for building occupants by reducing drafts. Key steps for comprehensive air sealing include:

- Check/replace exterior door seals, with special attention paid to those in the council chamber.
- Ensure windows operate and seal properly.

[15] HVAC controls incentives are estimated based on the ComEd Small Business offering and are subject to change. For more information visit https://www.comed.com/ways-to-save/for-your-business/incentives/small-businesses-facilities.

- Air seal exterior walls and ceilings around accessible plumbing, electrical, and HVAC penetrations.
- Air seal and insulate roof-access hatches if needed.
- Consider conducting blower door testing and/or infrared thermology testing to develop the air sealing plan.

Air sealing would be costly and would only produce moderate savings, leading to a long payback period. Note the estimated first cost for this measure includes the cost of blower door testing. We recommend this measure only be considered as part of a larger remodel of the building.

Next Step: Hire a consultant to perform building-wide, comprehensive air sealing, and consider including a blower door test or other air-barrier testing.

Long Term: Upgrade Wall and Roof Insulation

While adding wall and roof insulation is expensive, it can significantly reduce heating loads. We recommend improving the insulation to R-35 or better the next time the TPO roof membrane is replaced.

The building's exterior brick surface complicates wall insulation improvements. Interior insulation may not be feasible due to internal partition walls and finishes. In this case, over-cladding the brick exterior may be the only option for improving wall insulation. Consider this approach during a future deep remodel of the facility or when adding an addition. Consult an architect or engineer on a solution that blends the needs of energy efficiency and architecture.

Because adding insulation would be costly and would only generate moderate savings, this measure has a long payback period. We recommend this measure only be considered as part of a larger remodel of the building.

Next Step: Have weatherization staff, an engineer, or insulation contractor review current insulation and recommend an improvement plan. Contact a ComEd representative to learn about potential incentives.[16]

Decarbonization Recommendation: VRF Heat Pump System

If the Village is interested in pursuing an electrification or decarbonization strategy, we recommend replacing the current HVAC with a variable refrigerant flow (VRF) heat pump system when the existing system reaches the end of its service life. Replacement of the existing HVAC with a VRF heat pump system would be a major retrofit but would shift the heating loads from natural gas to electricity while allowing for individualized temperature control in the building and improving energy efficiency.

If the Village does not pursue an electrification strategy to replace heating and cooling equipment, we recommend new high efficiency condensing boilers and RTUs when the current system needs to be replaced. More details on each component are below:

Replacement boilers: If not pursuing an electrification option, we recommend replacing the boiler with a condensing boiler rated at 92% efficiency or higher. Have detailed heating load calculations performed to determine if the boiler can be downsized. Add outdoor air temperature reset controls on a trim-and-respond

[16] Wall and roof insulations incentives are estimated based on the ComEd Small Business offering and are subject to change. For more information visit https://www.comed.com/ways-to-save/for-your-business/incentives/small-businesses-facilities.

sequence to adjust the hot water temperature based on outdoor temperature. Variable speed hydronic pumps may be an option at this time as well.

High efficiency packaged rooftop equipment: Refer to CEE Tier 1 guidelines for minimum IEER cooling efficiency values.

Next Step: Consult a qualified HVAC contractor to replace the existing HVAC system with a VRF heat pump system if the Village wants to prioritize electrification.

Decarbonization Recommendation: Heat Pump Water Heater

If the Village wants to prioritize electrification, we recommend replacing the natural gas domestic hot water heater with a HPWH when the current water heater needs to be replaced. A HPWH is 2-4 times more efficient than a standard electric water heater by using electricity to move heat from the surroundings into the water, instead of generating heat directly through electric resistance.

Next Step: Consult a qualified plumbing contractor to replace the existing natural gas domestic water heater with a heat pump water heater (HPWH) for improved efficiency and carbon reductions.

PUBLIC SAFETY BUILDING

Size: 33,065 ft^2

Age: 1989

Existing heating and cooling system: Infrared radiant heaters in fire department garage; gas-fired unit heaters in fire department equipment room, maintenance room, and hallways; two mini-splits in the IT room; three wall-mounted unit heaters at building entrances; VAV system in fire department, police department, and office spaces with hot water boiler heat and packaged DX cooling.

Figure 20. Lincolnwood Public Safety building

Electricity Use: 560,800 kWh

Natural Gas Use: 23,100 therms

Weather-normalized Site EUI: 127.6 kBtu/ft^2

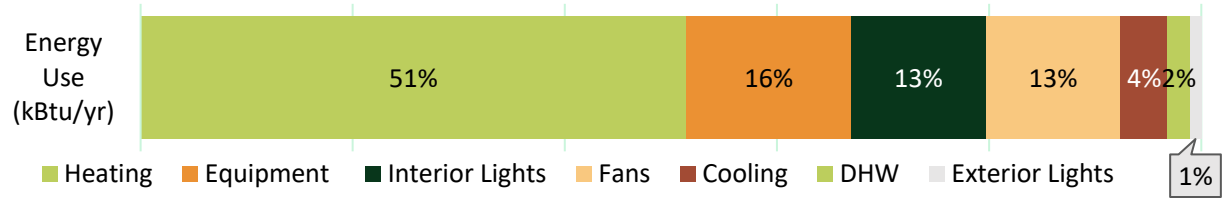
The Lincolnwood Public Safety Building is a well-maintained facility with opportunities for energy savings. The building hosts the villages police and fire departments, which consist of a variety of different space types including offices, holding cells, vehicle maintenance and storage garages, a firing range, sleeping quarters, and kitchens. Partial LED retrofits have been completed throughout the building, including in the fire department garage and in some office spaces and hallways. In 2022, a firing range with a new ventilation system was installed in the basement of the police department. Additionally, the hot water boiler was replaced in 2017 and still has over half its estimated useful life remaining.

Despite the previous building updates, there still exists ample opportunity for additional energy efficiency improvements. The building is currently operated by using a pneumatic controls system, which has likely not been calibrated within the past five years. The pneumatic controls decrease the efficiency of the heating and cooling systems and reduces occupant comfort. Like Village Hall, building staff estimate that about 30% of the VAV boxes are not working properly. From conversations with Village employees, we learned that the office spaces are often too cold. We have determined that the highest priority upgrades should be installing a building automation system (BAS) composed of a variety of individual HVAC control measures. Additionally, we recommend a comprehensive transition to LED lighting and long-term measures to be implemented when current equipment reaches its end-of-life.

Distribution of Energy End-Use Today

Figure 22 shows estimated proportions of energy use for each major end use in the building today. We recommend focusing on reducing the end uses that currently consume the most energy. A large proportion of the energy use in the public safety building is used for heating, followed by equipment usage, lighting, and fans. Equipment usage captures energy use from plug loads, the generator, servers in the IT room, telecommunications equipment, etc.

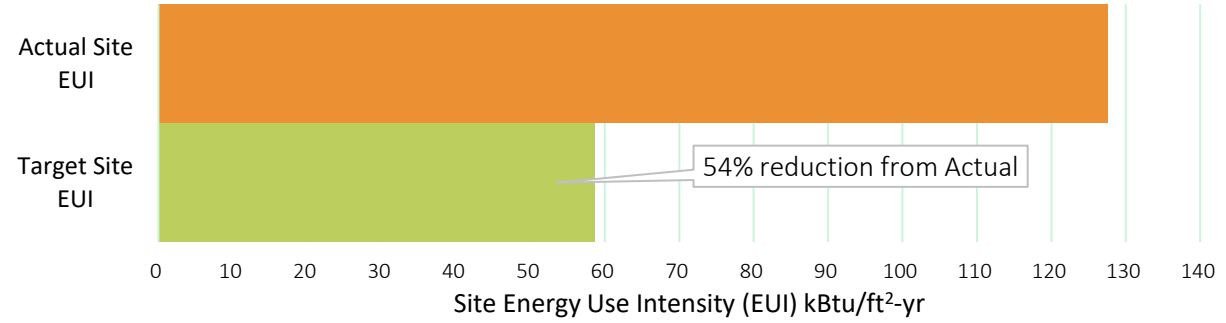
Figure 21. Categorization of Public Safety Building energy end uses (approximate)



Actual vs. Target EUI

Figure 23 compares the public safety building's site EUI, calculated from the provided utility data to the climate target for public safety buildings per the ASHRAE 100-2024 standard. This comparison suggests that a 54% reduction in energy usage is achievable with significant building operation and equipment efficiency improvements.

Figure 22. Public Safety Building EUI comparison to target.



Recommended Energy Actions

Table 17 categorizes the energy efficiency measure recommendations into short and long-term phases, where short-term measures are feasible in the next eight months and long-term measures are feasible in the next 10 years. First costs highlighted in blue include estimated utility incentive savings[17].

Figure 24 that follows shows the measure-by-measure energy and cost reduction.

A single electricity account serves both Village Hall and the Public Safety building. The project team used the analytical process described in the Baseline section to estimate the relative proportions of electricity that each building uses; however, the exact distribution of electricity between the two building is not known. To enable Lincolnwood to better monitor the energy performance of each building as well as the savings that the implemented measures generate, we recommend that the Village seek opportunities to establish separate electric metering for each building.

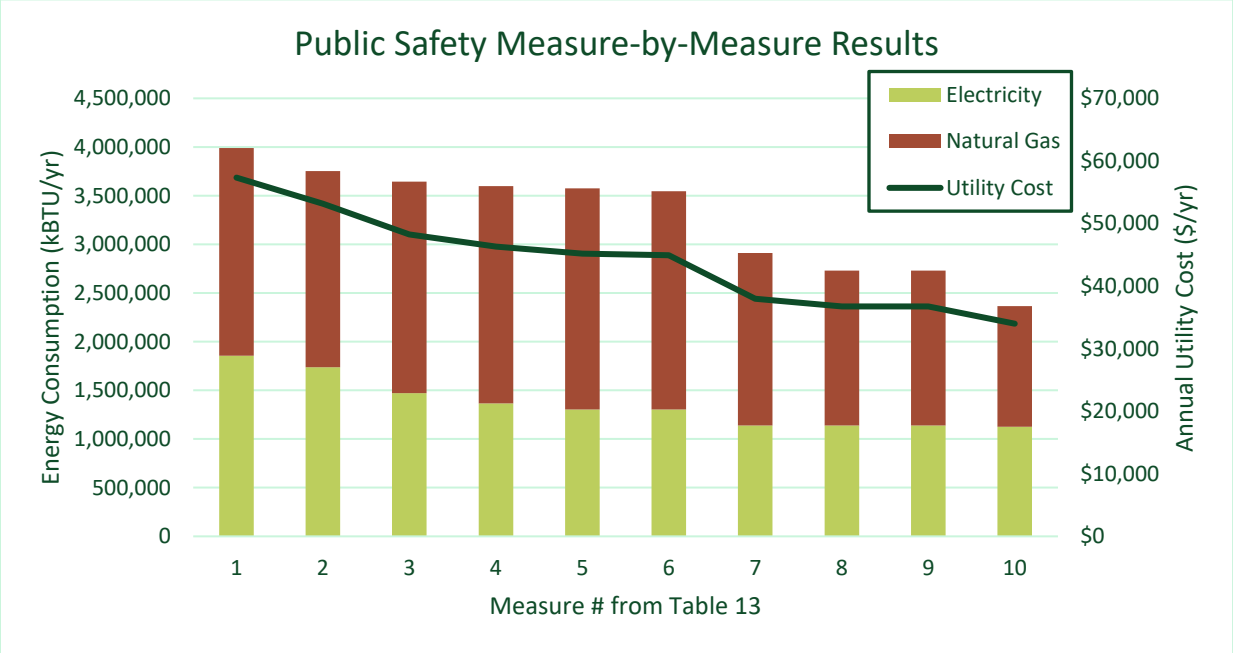
[17] NOTE: Incentive amounts are **estimates.** Incentive values are based on information received from a third-party energy efficiency project installer that participates in ComEd incentive programs. The Project Team recommends that the Village contact a ComEd representative to confirm incentive amounts and project eligibility information.

Estimated energy and cost savings assume that the measures are implemented in the order shown and account for the synergistic interactive effects of the measures on energy use in the building. The Village may choose to install the recommended measures in a different order and/or may not complete some of the recommended measures. This may affect total savings from each improvement. However, while installing some of the recommended measures in a different order will not create significant problems, we encourage the Village to "bundle" the lighting measures, because implementing these measures at the same time will reduce the Village's overall project costs.

Table 17. Energy upgrade recommendations for Public Safety building

	Measure	Phase	First Cost		Annual Utility Cost Savings		Annual Energy Savings				Annual Emission Reductions	
			$	Payback Period (years)	$	(%)	Electric (kWh)	(%)	Gas (therms)	(%)	MT CO_2e	(%)
1	Baseline	-	-	-	-	-	-	-	-	-	-	-
2	Retro-commissioning	Short	$15,200	4	$4,159	7%	34,247	6%	1,194	6%	19	6%
3	Efficient Interior Lighting	Short	$22,600	5	$4,906	9%	77,796	14%	-1,564	-7%	21	7%
4	Interior Lighting Task Tuning	Short	$1,500	1	$1,967	3%	31,156	6%	-624	-3%	8	3%
5	Interior Lighting Occupancy Controls	Short	$11,800	10	$1,140	2%	18,440	3%	-404	-2%	5	1%
6	Low Flow Plumbing Fixtures	Short	$1,300	6	$215	0%	0	0%	310	1%	2	1%
7	DHW Pipe Insulation	Short	$1,500	5	$329	1%	0	0%	475	2%	3	1%
8	New BAS and VAV Boxes	Long	$185,400	28	$6,631	12%	47,966	9%	4,239	20%	40	13%
9	Air Sealing	Long	$36,700	30	$1,232	2%	-215	0%	1,802	8%	9	3%
10	Upgrade Insulation	Long	$102,400	37	$2,767	5%	4,477	1%	3,495	16%	20	6%
Total			**$378,400**		**$23,346**	**41%**	**213,867**	**39%**	**8,923**	**42%**	**127**	**40%**

Figure 23: Measure-by-measure effect on annual energy consumption and annual utility cost for the Public Safety building. Numbers on the x-axis correlate to the numbers shown in the first column in Table 17.



Key metrics, including energy and carbon emission reductions and cost savings are summarized and separated by timeline in Table 18. The table shows that by investing approximately $54,000 in the recommended short-term measures, the Village can reduce electric usage by 30%, annual utility cost can be decreased by 22%, and carbon emissions can be decreased by 18%.

Most natural gas savings would be achieved through the long-term measure recommendations. For this reason, the short-term measures show a relatively small decrease in natural gas usage because of the recommended lighting upgrades, which would decrease waste heat emitted from lighting and thus increase the required heating load on the natural gas system.

Table 18: Energy, cost, and carbon savings associated with all short- and long-term measures for Public Safety.

Timeline	First Cost	Savings			
		Electric (kWh)	Natural Gas (therms)	Cost ($)	C02e (MT)
Short Term	$53,900	161,639	-613	$12,716	57
		30%	-3%	22%	18%
Long Term	$324,500	52,228	9,536	$10,630	70
		10%	45%	19%	22%
Total	**$378,400**	**213,867**	**8,923**	**$23,346**	**127**
		39%	**42%**	**41%**	**40%**

Table 19 identifies the impacts of recommended "decarbonization measures," which would replace existing fossil fuel space and water heating equipment in the Public Safety building with electricity-powered systems. The primary purposes of a decarbonization measure is to eliminate fossil fuel usage and reduce carbon emissions. Actual carbon emission reduction over the lifetime of the equipment is difficult to quantify because of fluctuations in the generation sources that supply Lincolnwood's regional electricity grid, and therefore the amount of GHG emissions that are generated by producing each unit of electricity. Lincolnwood should consider these measures if it is interested in working towards fully decarbonizing the energy used to power its buildings.

The table shows the estimated energy and cost impact of each improvement. The listed cost for the equipment is shown as incremental cost in comparison to a like-for-like system replacement. The percent reduction for each measure is relative to the current level of energy use. Because decarbonization measures use electricity to power equipment that currently uses natural gas, the table shows that these measures lead to decreased natural gas use, but increased electricity consumption.

Table 19. Suggested decarbonization measures for Public Safety.

Measure		Incremental Cost	Annual Utility Cost Savings		Annual Energy Reduction			
		$	$	(%)	Electric kWh	% Savings	Gas therms	% Savings
1	VRF Heat Pump System	$730,000	$1,992	3%	1,078	0%	2,754	13%
2	Heat Pump Water Heater	$3,100	-$228	0%	-7,627	-1%	519	2%

Short Term: Retro-Commissioning

We recommend that Public Safety undergo a retro-commissioning (RCx) study and optimization project to address multiple HVAC issues that affect comfort and energy use. Retro-commissioning is a process of servicing and repairing existing heating and air conditioning equipment to restore it to nearly its original level of performance. Retro-commissioning for Public Safety may include boiler, rooftop unit, and VAV box operational checks and tune-ups, duct cleaning and sealing, ventilation system testing and rebalancing, economizer and damper functional checks, replacing air handler filters, and verifying thermostat operation. Advanced controls such as boiler supply water temperature reset based on outside air temperature are

recommended to be implemented as part of the tune-up process if possible. These tune-ups will potentially eliminate the need for space heaters in office areas and should mitigate occupant comfort concerns. However, given the limitations of the current HVAC system and controls, retro-commissioning will not entirely solve the current HVAC issues.

The retro-commissioning process would also generate a report that recommends additional system improvements, such as implementing a building automation system (BAS) to allow for more advanced control of the VAV system with smart thermostats and demand-controlled ventilation.

Next Step: ComEd provides incentives[18] and a list of qualified contractors for retro-commissioning or building tune-ups. Contact a representative to understand potential programs and to enroll.

Short Term: Install LED Lighting, Occupancy Controls, and Task Tuning

LEDs have a significant savings potential compared to compact fluorescent lights, and replacing fluorescent fixtures with LEDs at end-of-life will be mandatory in Illinois beginning in 2027. We recommend installation of LED fixtures that are DesignLights Consortium™ (DLC) qualified and include networked lighting controls. These allow for daylighting controls, occupancy controls, dimming, and task tuning. Daylighting controls maintain constant interior light levels and reduce energy consumption by automatically reducing light levels to account for natural daylight. Occupancy controls automatically power off lights if a space remains unoccupied for a given period of time. Controls are especially effective in spaces with long periods of non-occupancy like enclosed offices, storage rooms, and lavatories.

Task tuning, or high-end trim uses the lighting controls system to dim the maximum outputs of lights to recommended lighting levels. It has the potential to save electricity while improving occupant comfort since most commercial spaces are designed to be over-lit, which can cause glare and unpleasant lighting conditions. If photometric plans are available, designed light levels can be compared to the Illuminating Engineering Society recommended light levels to determine the appropriate lighting reduction. If no formal lighting design occurs, the reduction can be estimated initially and adjusted later based on desired brightness.

Task tuning is cost-effective to implement while setting up a new lighting controls system, as no additional equipment is needed. Implementing daylighting and occupancy controls during an LED installation leads to additional savings and is the most cost-effective time to add controls.

When the interior lights are being replaced, we also recommend ensuring exterior lights are LED fixtures, with timeclock and/or occupancy controls that reduce lighting use during unoccupied nighttime periods. When the current exterior light fixtures reach end of life, we recommend replacing them with higher efficacy fixtures, which would provide the same light levels while consuming less electricity.

Next Step: Receive quote for LED fixture replacement, including lighting controls. Implement task tuning at the time of installation. Contact a ComEd representative to inquire about potential incentives.[19]

Short Term: Install Low-Flow Plumbing Fixtures

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[18] Estimated retro-commissioning incentives are calculated using the $/kWh and $/therm savings values found on ComEd's website and are subject to change: https://www.comed.com/ways-to-save/for-your-business/incentives/retro-commissioning.

[19] Lighting and occupancy controls incentives are estimated based on the ComEd Small Business offering and are subject to change. Currently there are no incentives for task tuning. For more information visit https://www.comed.com/ways-to-save/for-your-business/incentives/small-businesses-facilities.

We recommend using low flow plumbing fixtures to reduce the hot water consumption, either by replacing the fixtures or adding a low flow faucet aerator. We suggest flow rates from 1.2 to 0.5 gallons per minute (gpm) for bathroom faucets and 1.8 to 1.5 gpm for kitchen faucets.

Next Step: Replace fixtures or add aerators to existing fixtures to reduce the flow rate at faucets.

Short Term: Install Hot Water Pipe Insulation

During the site visit, we noticed uninsulated piping around the domestic hot water heater in the Public Safety building. We suggest installing at least 1 inch of continuous pipe wrap insulation to straight pipes, elbows, and tees to prevent heat loss into the space. Pay special attention to elbows and tees, securing corner cuts with tape or glue to ensure there are no gaps in the insulation. This will lower the energy required to bring the water to operating temperature.

Next Step: Install pipe wrap insulation to the hot water pipes connecting to the domestic hot water heater and storage tanks.

Long Term: Implement New Building Automation System and Replace VAV Boxes

To address the aging VAV boxes and pneumatic controls system, we recommend replacing the VAV boxes and installing zone damper controls capable of advanced HVAC controls such as:

- **Demand-controlled ventilation (DCV):** DCV controls the ventilation rate in a space based on occupancy and/or CO_2 levels, allowing energy savings during periods of non-occupancy.
- **Smart thermostats:** Smart thermostats would allow for advanced setpoint scheduling, occupancy-based temperature setbacks, and remote access capabilities.
- **Supply-air temperature reset**: This adjusts the temperature of the air supplied to the duct system based on outside air temperature and damper positions. This may require additional controls for the packaged rooftop unit. We recommend resetting the supply air temperature from 55°F to 65°F.
- **Supply-air static pressure reset**: This optimizes the supply duct static pressure to reduce fan energy use. This may require additional controls for the packaged rooftop unit.

Replacing the VAV boxes and pneumatic controls has a high upfront cost but also a high savings potential, since we believe the current system is resulting in simultaneous heating and cooling and contributing to the high energy consumption of the building. This will also resolve any occupant discomfort that is not addressed in the retro-commissioning process.

This replacement option would allow the Village to replace a single VAV box initially to better estimate the full replacement cost.

Next Step: Consult an engineer, building control systems personnel, and/or qualified contractor to develop plans for replacement VAV boxes and a new controls system with Building Automation System (BAS) capabilities. Incentives[20] may be available for advanced HVAC controls, contact a ComEd representative for more information.

Long Term: Comprehensive Air Sealing

[20] HVAC controls incentives are estimated based on the ComEd Small Business offering and are subject to change. For more information visit https://www.comed.com/ways-to-save/for-your-business/incentives/small-businesses-facilities.

We recommend performing air sealing in the building to reduce unwanted air leakage. Air sealing can be done with caulk, spray foam, specialized tape, fully adhered roll membranes, fluid-applied sprays, and/or weather-stripping materials. This can significantly reduce heating and cooling loads and increase comfort for building occupants by reducing drafts. Key steps for comprehensive air sealing include:

- Check/replace exterior door seals.
- Ensure windows operate and seal properly.
- Air seal exterior walls and ceilings around accessible plumbing, electrical, and HVAC penetrations.
- Air seal and insulate roof-access hatches if needed.
- Consider conducting blower door testing and/or infrared thermology testing to develop the air sealing plan.

Air sealing would be costly and would only produce moderate savings, leading to a long payback period. Note the estimated first cost for this measure includes the cost of blower door testing. We recommend this measure only be considered as part of a larger remodel of the building.

Next Step: Hire a consultant to perform building-wide, comprehensive air sealing, and consider including a blower door test or other air-barrier testing.

Long Term: Upgrade Wall and Roof Insulation

While adding wall and roof insulation is expensive, it can significantly reduce heating loads. We recommend improving the insulation to R-35 or better the next time the TPO roof membrane is replaced.

The building's exterior brick surface complicates wall insulation improvements. Interior insulation may not be feasible due to internal partition walls and finishes. In this case, over-cladding the brick exterior may be the only option for improving wall insulation. Consider this approach during a future deep remodel of the facility or when adding an addition. Consult an architect or engineer on a solution that blends the needs of energy efficiency and architecture.

Because adding insulation would be costly and would only generate moderate savings, this measure would have a long payback period. We recommend this measure only be considered as part of a larger remodel of the building.

Next Step: Have weatherization staff, an engineer, or insulation contractor review current insulation and recommend an improvement plan. Contact a ComEd representative to learn about potential incentives.[21]

Decarbonization Recommendation: VRF Heat Pump System

If the Village is interested in pursuing an electrification or decarbonization strategy, we recommend replacing the current HVAC with a variable refrigerant flow (VRF) heat pump system when the existing system reaches the end of its service life. Replacement of the current HVAC system with a VRF would be a major retrofit but

[21] Wall and roof insulations incentives are estimated based on the ComEd Small Business offering and are subject to change. For more information visit https://www.comed.com/ways-to-save/for-your-business/incentives/small-businesses-facilities.

would shift the heating loads from natural gas to electricity while allowing for individualized temperature control in the building and improving energy efficiency.

If the Village does not pursue an electrification strategy to replace heating and cooling equipment, we recommend new, high-efficiency condensing boilers and RTUs when the current system needs to be replaced. More details on each component are below:

Replacement boilers: If not pursuing an electrification option, we recommend replacing the current boiler with a condensing boiler rated at 92% efficiency or higher. Have detailed heating load calculations performed to determine if the boiler can be downsized. Add outdoor air temperature reset controls on a trim-and-respond sequence to adjust the hot water temperature based on outdoor temperature. Variable speed hydronic pumps may be an option at this time as well.

High efficiency packaged rooftop equipment: Refer to CEE Tier 1 guidelines for minimum IEER cooling efficiency values.

Next Step: Consult a qualified HVAC contractor to replace the existing HVAC system with a VRF heat pump system if the Village wants to prioritize electrification.

Decarbonization Recommendation: Heat Pump Water Heater

If the Village wants to prioritize electrification, we recommend replacing the natural gas domestic hot water heater with a HPWH when the current water heater needs to be replaced. A HPWH is 2-4 times more efficient than a standard electric water heater by using electricity to move heat from the surroundings into the water, instead of generating heat directly through electric resistance.

Additional Considerations

Other potential opportunities for energy savings are listed below. The anticipated energy savings from this measure was not estimated in the energy model but may prove to be a worthwhile investment.

- The Public Safety building has a generator to ensure critical systems stay online in emergencies. If the generator has an engine block heater to allow the generator to start in cold weather, we recommend installing hard-wired outlet or engine mounted controls that are thermostatically controlled. This will allow the block heater to be turned on less frequently using temperature sensors and timers, leading to energy savings.

PUBLIC WORKS BUILDING

Size: 26,995 ft^2

Age: 1989

Existing heating and cooling system: Gas-fired radiant unit heaters in vehicle storage, duct furnaces in maintenance garage; VAV system with hot water boiler and air-cooled chiller in office, hydronic unit heaters in corridor, one packaged terminal air conditioner in maintenance office.

Electricity Use: 185,000 kWh/yr

Natural Gas Use: 25,700 therms/yr

Weather-normalized Site EUI: 118.7 kBtu/ft^2-yr

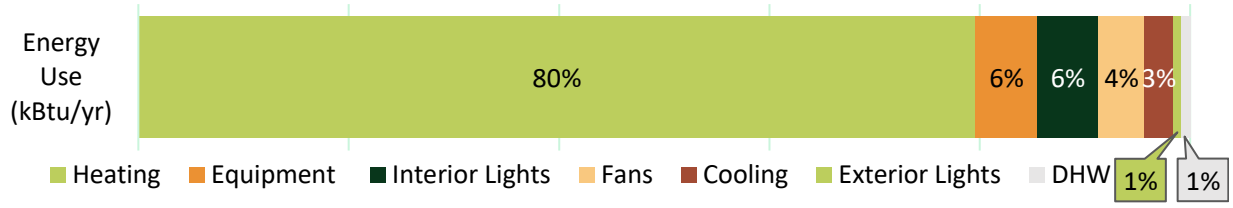
Figure 24. Lincolnwood Public Works building

The Lincolnwood Public Works building is a one-story office, vehicle storage, and vehicle maintenance facility with ample opportunity for improved energy efficiency and occupant satisfaction. The roof and windows were recently upgraded in 2019, LED lighting was added to the vehicle storage area, and hydronic fan coil units in the corridors were replaced in 2024.

Distribution of Energy End-Use Today

Figure 26 shows estimated proportions of energy use for each major end use in the building today. The recommendation is to focus on reducing the end uses that currently consume the most energy. Based on the high natural gas use, we estimate a large proportion of the energy use for the Public Works building is from heating.

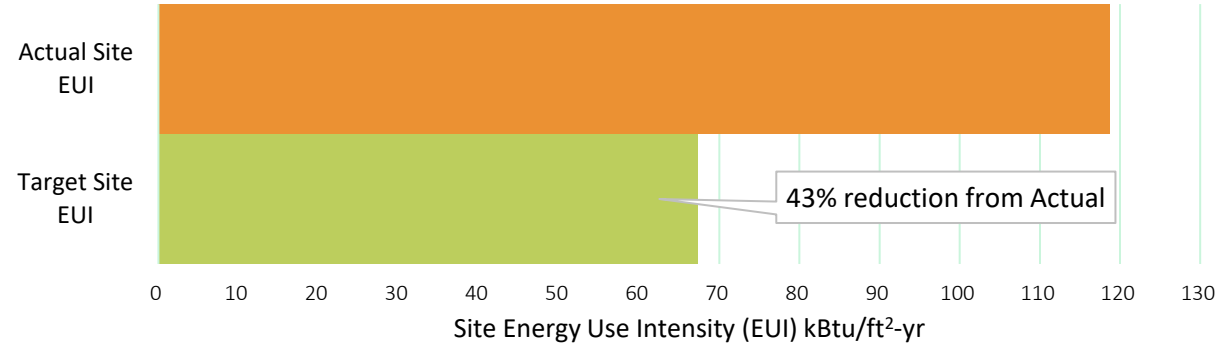
Figure 25. Distribution of energy end uses in Public Works building (approximate)



Actual vs. Target EUI

Figure 27 compares the Public Works building's actual weather normalized site EUI to the climate target per the ASHRAE 100-2024 standard. The target site EUI is based on an area weighted average of the vehicle storage, vehicle maintenance, and office ASHRAE 100 targets. This comparison suggests that 43% energy savings are achievable with significant building operation and equipment efficiency improvements.

Figure 26. Public Works Building EUI comparison



Recommended Energy Actions

Table 20 categorizes the recommended measures into short-term and long-term phases, where short term measures are feasible in the next eight months and long-term measures are feasible in the next 10 years. First costs highlighted in blue indicate that the value includes estimated incentives[22] for the measure.Figure 28 shows how annual energy consumption and carbon emissions would change as recommended measures are implemented.

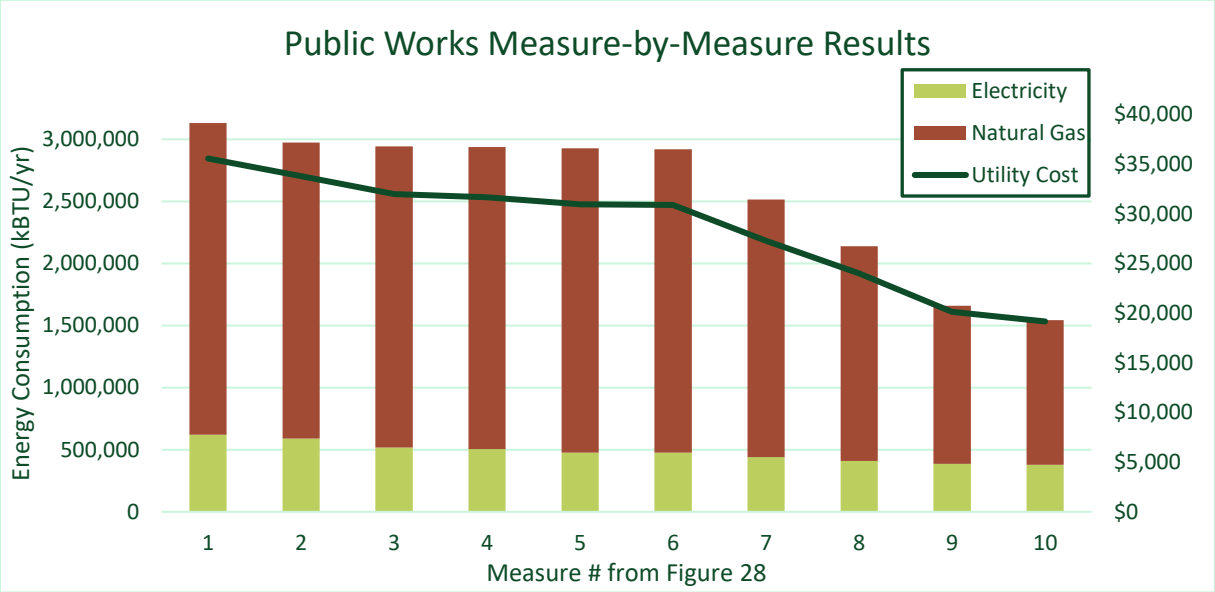
Estimated energy and cost savings assume that the measures are implemented in the order shown and account for the synergistic interactive effects of the measures on energy use in the building. The Village may choose to install the recommended measures in a different order and/or may not complete some of the recommended measures. This may affect total savings from each improvement. However, while installing some of the recommended measures in a different order will not create significant problems, we encourage the Village to "bundle" the lighting measures, because implementing these measures at the same time will reduce the Village's overall project costs.

Table 20. Energy upgrade recommendations for Lincolnwood Public Works building

Measure		Phase	First Cost		Annual Utility Cost Savings		Annual Energy Savings				Annual Emission Reductions	
			$	Paypack Period (Years)	$	(%)	Electric (kWh)	(%)	Gas (therms)	(%)	MT CO_2e	(%)
1	Baseline	-	-		-	-	-	-	-	-	-	-
2	Retro-commissioning	Short	$12,900	7	$1,779	5%	9,087	5%	1,255	5%	10	5%
3	Efficient Interior Lighting	Short	$6,900	4	$1,795	5%	20,651	11%	-390	-2%	6	3%
4	Interior Lighting Task Tuning	Short	$1,200	4	$342	1%	4,042	2%	-90	0%	1	1%
5	Interior Lighting Occupancy Controls	Short	$2,500	4	$695	2%	8,116	4%	-168	-1%	2	1%
6	Low Flow Plumbing Fixtures	Short	$500	10	$52	0%	0	0%	75	0%	0	0%
7	New BAS and VAV Boxes	Long	$34,600	10	$3,636	10%	10,962	6%	3,665	15%	23	12%
8	Air Sealing	Long	$29,100	4	$6,905	19%	8,634	5%	3,471	14%	22	11%
9	Improve Wall and Roof Insulation	Long	$119,200	31	$3,855	11%	7,039	4%	4,547	18%	27	13%
10	Maintenance Garage Radiant Heat	Long	$16,200	16	$986	3%	2,302	1%	1,091	4%	7	3%
Overall					**$20,045**	**56%**	**70,833**	**39%**	**13,457**	**54%**	**98**	**49%**

[22] NOTE: Incentive amounts are **estimates.** Incentive values are based on information received from a third-party energy efficiency project installer that participates in ComEd incentive programs. The Project Team recommends that the Village contact a ComEd representative to confirm incentive amounts and project eligibility information.

Figure 27. Measure-by-measure graphical representation of annual energy consumption and energy costs of the Public Works building, as shown in Table 20.



Key metrics, including energy and carbon emission reductions and cost savings are summarized and separated by timeline in Table 21. The table shows that by investing approximately $24,000 in the short-term measures, the Village can reduce electricity use by 23%, annual utility cost can be decreased by 13%, and carbon emissions can be decreased by 10%.

Most natural gas savings would be achieved through the long-term measure recommendations. For this reason, the short-term measures show a small decrease in natural gas usage because of the recommended lighting upgrades, which would decrease waste heat emitted from lighting and increase the required heating load on the natural gas system.

Table 21. Energy, cost, and carbon savings associated with all short- and long-term measures.

Timeline	First Cost	Savings			
		Electric (kWh)	Natural Gas (therms)	Cost ($)	C02e (MT)
Short Term	$24,000	41,896	682	$4,662	19
		23%	3%	13%	10%
Long Term	$199,100	28,937	12,774	$15,383	78
		16%	51%	43%	39%
Total	**$223,100**	**70,833**	**13,457**	**$20,045**	**98**
		39%	**54%**	**56%**	**49%**

Table 22 identifies the impacts of recommended “decarbonization measures,” which would replace existing fossil fuel space and water heating equipment in the Public Works building with electricity-powered systems. The primary purpose of a decarbonization measure is to eliminate fossil fuel usage and reduce carbon emissions. Actual carbon emission reduction over the lifetime of the equipment is difficult to quantify because of fluctuations in the generation sources that supply Lincolnwood’s regional electricity grid, and therefore the amount of GHG emissions that are generated by producing each unit of electricity.

Lincolnwood should consider these measures if it is interested in working towards fully decarbonizing the energy used to power its buildings.

The natural gas savings are low for these decarbonization measure since we did not include decarbonization strategies for the vehicle storage or vehicle maintenance garage areas. We estimate these spaces contribute significantly to overall natural gas use, however there were not reported issues with the current HVAC systems in these spaces. Instead of recommending a decarbonization system switch, we recommend the maintenance garage be switched to a more efficient radiant heat system like the vehicle storage garage, as shown in Table 20 and the section below.

Table 22 shows the estimated energy and cost impact of each decarbonization improvement. The listed cost for the equipment is shown as incremental cost in comparison to a like-for-like system replacement. The percent reduction for each measure is relative to the current level of energy use. Because decarbonization measures use electricity to power equipment that currently uses natural gas, the table shows that these measures lead to decreased natural gas use, but increased electricity consumption.

Table 22. Decarbonization recommendations for Public Works.

Measure		Incremental Cost	Annual Utility Cost Savings		Annual Energy Reduction			
		$	$	(%)	Electric kWh	% Savings	Gas therms	% Savings
1	VRF Heat Pump System	$330,000	$1,006	3%	3,161	2%	996	4%
2	Heat Pump Water Heater	$2,200	-$54	0%	-1,849	-1%	189	1%

Short Term: Retro-Commissioning

We recommend that Public Works undergo a retro-commissioning (RCx) study and optimization project to address multiple HVAC issues that affect comfort and energy use. Retro-commissioning is a process of servicing and repairing existing heating and air conditioning equipment to restore it to nearly its original level of performance. Retro-commissioning for the Public Works building may include boiler, chiller, rooftop unit, and VAV box operational checks and tune-ups, duct cleaning and sealing, ventilation system testing and rebalancing, economizer and damper functional checks, replacing air handler filters, and verifying thermostat operation. Advanced controls such as boiler supply water temperature reset based on outside air temperature are recommended to be implemented as part of the tune-up process if possible. These tune-ups will potentially eliminate the need for space heaters in office areas and should mitigate occupant comfort concerns. However, given the limitations of the current HVAC system and controls, retro-commissioning will not entirely solve the current HVAC issues.

In the vehicle storage garage, we recommend the retro-commissioning process include assessing and servicing the ceiling radiant (also known as infrared) unit heaters. This may include inspecting the pipes, checking system pressure, observing noise levels, cleaning all visible components, and inspecting and recalibrating the thermostats.

The retro-commissioning process would also generate a report that recommends additional system improvements, such as implementing a building automation system (BAS) to allow for more advanced control of the VAV system with smart thermostats and demand-controlled ventilation.

Next Step: ComEd provides incentives[23] and a list of qualified contractors for retro-commissioning or building tune-ups. Contact a representative to understand potential programs and to enroll.

Short Term: Install LED Lighting, Occupancy Controls, and Task Tuning

LEDs have a significant savings potential compared to compact fluorescent lights, and replacing fluorescent fixtures with LEDs at end-of-life will be mandatory in Illinois beginning in 2027. We recommend installation of LED fixtures that are DesignLights Consortium™ (DLC) qualified and include networked lighting controls. These allow for daylighting controls, occupancy controls, dimming, and task tuning. Daylighting controls maintain constant interior light levels and reduce energy consumption by automatically reducing light levels to account for natural daylight. Occupancy controls automatically power off lights if a space remains unoccupied for a given period of time. Controls are especially effective in spaces with long periods of non-occupancy like enclosed offices, storage rooms, and lavatories.

Task tuning, or high-end trim uses the lighting controls system to dim the maximum outputs of lights to recommended lighting levels. It has the potential to save electricity while improving occupant comfort since most commercial spaces are designed to be over-lit, which can cause glare and unpleasant lighting conditions. If photometric plans are available, designed light levels can be compared to the Illuminating Engineering Society recommended light levels to determine the appropriate lighting reduction. If no formal lighting design occurs, the reduction can be estimated initially and adjusted later based on desired brightness.

Task tuning is cost-effective to implement while setting up a new lighting controls system, as no additional equipment is needed. Implementing daylighting and occupancy controls during an LED installation leads to additional savings and is the most cost-effective time to add controls.

When the interior lights are being replaced, we also recommend ensuring exterior lights are LED fixtures, with timeclock and/or occupancy controls that reduce lighting use during unoccupied nighttime periods. When the current exterior light fixtures reach end of life, we recommend replacing them with higher efficacy fixtures, which would provide the same light levels while consuming less electricity.

Next Step: Receive quote for LED fixture replacement, including lighting controls. Implement task tuning at the time of installation. Contact a ComEd representative to inquire about potential incentives.[24]

Short Term: Install Low-Flow Plumbing Fixtures

We recommend using low flow plumbing fixtures to reduce the hot water consumption, either by replacing the fixtures or adding a low flow faucet aerator. We suggest flow rates from 1.2 to 0.5 gallons per minute (gpm) for bathroom faucets and 1.8 to 1.5 gpm for kitchen faucets.

Next Step: Replace fixtures or add aerators to existing fixtures to reduce the flow rate at faucets.

Long Term: New Building Automation System and Replace VAV Boxes

To address the aging VAV boxes and pneumatic controls system, we recommend replacing the VAV boxes and installing zone damper controls capable of advanced HVAC controls such as:

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[23] Estimated retro-commissioning incentives are calculated using the $/kWh and $/therm savings values found on ComEd's website and are subject to change: https://www.comed.com/ways-to-save/for-your-business/incentives/retro-commissioning.

[24] Lighting and occupancy controls incentives are estimated based on the ComEd Small Business offering and are subject to change. Currently there are no incentives for task tuning. For more information visit https://www.comed.com/ways-to-save/for-your-business/incentives/small-businesses-facilities.

- **Demand-controlled ventilation (DCV):** DCV controls the ventilation rate in a space based on occupancy and/or CO_2 levels, allowing energy savings during periods of non-occupancy.

- **Smart thermostats:** Smart thermostats would allow for advanced setpoint scheduling, occupancy-based temperature setbacks, and remote access capabilities.

- **Supply-air temperature reset:** This adjusts the temperature of the air supplied to the duct system based on outside air temperature and damper positions. This may require additional controls for the packaged rooftop unit. We recommend resetting the supply air temperature from 55°F to 65°F.

- **Supply-air static pressure reset:** This optimizes the supply duct static pressure to reduce fan energy use. This may require additional controls for the packaged rooftop unit.

Replacing the VAV boxes and pneumatic controls has a high upfront cost but also a high savings potential, since we believe the current system is resulting in simultaneous heating and cooling and contributing to the high energy consumption of the building. This will also resolve any occupant discomfort that is not addressed in the retro-commissioning process.

This replacement option would allow the Village to replace a single VAV box initially, to better estimate the full replacement cost.

Next Step: Consult an engineer, building control systems personnel, and/or qualified contractor to develop plans for replacement VAV boxes and a new controls system with Building Automation System (BAS) capabilities. Incentives[25] may be available for advanced HVAC controls, contact a ComEd representative for more information.

Long Term: Comprehensive Air Sealing

We recommend performing air sealing in the building to reduce unwanted air leakage. Air sealing can be done with caulk, spray foam, specialized tape, fully adhered roll membranes, fluid-applied sprays, and/or weather-stripping materials. This can significantly reduce heating and cooling loads and increase comfort for building occupants by reducing drafts. Key steps for comprehensive air sealing include:

- Check/replace exterior door seals.

- Ensure windows operate and seal properly.

- Air seal exterior walls and ceilings around accessible plumbing, electrical, and HVAC penetrations.

- Air seal and insulate roof-access hatches if needed.

- Consider conducting blower door testing and/or infrared thermology testing to develop the air sealing plan.

Air sealing would be costly and would only produce moderate savings, leading to a long payback period. Note the estimated first cost for this measure includes the cost of blower door testing. We recommend this measure only be considered as part of a larger remodel of the building.

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[25] HVAC controls incentives are estimated based on the ComEd Small Business offering and are subject to change. For more information visit https://www.comed.com/ways-to-save/for-your-business/incentives/small-businesses-facilities.

Next Step: Hire a consultant to perform building-wide, comprehensive air sealing, and consider including a blower door test or other air-barrier testing.

Long Term: Upgrade Wall and Roof Insulation

While adding wall and roof insulation is expensive, it can significantly reduce heating loads. The roof was upgraded in 2019, but when the roof membrane is next replaced, we recommend checking the current insulation levels and improving the insulation to R-35 or better depending on the state of the existing insulation.

Wall insulation improvements will depend on the existing wall assemblies and their limitations. Interior insulation may not be feasible in the office spaces due to internal partition walls and finishes. In this case, replacing the exterior finishing or over-cladding the exterior may be the only option for improving wall insulation. In the vehicle storage and maintenance garages, adding interior insulation may be more feasible. Consider this approach during a future deep remodel of the facility or when adding an addition. Consult an architect or engineer on a solution that blends the needs of energy efficiency and architecture.

While investigating wall and roof insulation, also consider replacing any overhead doors nearing end of life with R-15 or greater insulated overhead doors.

Because adding insulation would be costly and would only generate moderate savings, this measure would have a long payback period. We recommend this measure only be considered as part of a larger remodel of the building.

Next Step: Have weatherization staff, an engineer, or insulation contractor review current insulation and recommend an improvement plan. Contact a ComEd representative to learn about potential incentives.[26]

Long Term: Maintenance Garage Radiant Heat

Radiant, or infrared, heating systems save energy by heating objects in the space rather than the air in the space. This eliminates the duct losses that occur with a forced air system. Also, for spaces like the maintenance garage where large overhead doors do not insulate heat well or may be left open, radiant heat eliminates the heat loss through the doors. Radiant heat also has a quick response time, allowing occupants to adjust the temperature setting and be comfortable within minutes.

Switching to radiant heat in the maintenance garage would require a complicated retrofit and would have a moderate payback period. If the Village does not pursue this option, we recommend replacing the existing duct furnaces with high efficiency models if available. Current market availability of efficient models is limited to about 82% efficiency, but future availability might have models with efficiencies above 90%.

Next Step: At the current duct furnace heat system reaches the end of its service life, consult a qualified engineer or HVAC contractor to discuss replacing the existing system with radiant unit heaters.

Decarbonization Recommendation: VRF Heat Pump System

If the Village is interested in pursuing an electrification or decarbonization strategy, we recommend replacing the current office HVAC with a variable refrigerant flow (VRF) heat pump system when the existing system reaches the end of its service life. Replacement of the current HVAC system with a VRF would be a major

---

[26] Wall and roof insulations incentives are estimated based on the ComEd Small Business offering and are subject to change. For more information visit https://www.comed.com/ways-to-save/for-your-business/incentives/small-businesses-facilities.

retrofit but would shift the heating loads from natural gas to electricity while allowing for individualized temperature control in the building and improving energy efficiency.

If the Village does not pursue an electrification strategy to replace heating and cooling equipment, when the current system needs to be replaced, we recommend a new, high-efficiency condensing boiler, chiller, and RTU. More details on each component are below:

Replacement boiler: If not pursuing an electrification option, we recommend replacing the boiler with a condensing boiler rated at 92% efficiency or higher. Have detailed heating load calculations performed to determine if the boiler can be downsized. Add outdoor air temperature reset controls on a trim-and-respond sequence to adjust the hot water temperature based on outdoor temperature. Variable speed hydronic pumps may be an option at this time as well.

High efficiency chiller: Target an EER cooling efficiency that exceeds the current energy code requirement by at least 10%.

High efficiency packaged rooftop equipment: Refer to CEE Tier 1 guidelines for minimum IEER cooling efficiency values.

Next Step: Consult a qualified HVAC contractor to replace the existing HVAC system with a VRF heat pump system if the Village wants to prioritize electrification.

Decarbonization Recommendation: Heat Pump Water Heater (HPWH)

If the Village wants to prioritize electrification, we recommend replacing the natural gas domestic hot water heater with a HPWH when the current water heater needs to be replaced. A HPWH is 2-4 times more efficient than a standard electric water heater by using electricity to move heat from the surroundings into the water, instead of generating heat directly through electric resistance.

Next Step: Consult a qualified plumbing contractor to replace the existing natural gas domestic water heater with a heat pump water heater (HPWH) for improved efficiency and carbon reductions.

APPENDIX 2: SOLAR METHODOLOGY AND FULL RESULTS

SOLAR METHODOLOGY

We identified opportunities to install on-site solar PV arrays by reviewing energy use profiles for each facility, as well as the available roof space. As a next step, we recommend that the Village follow standard procurement procedures of soliciting bids from qualified installation contractors to determine project costs and to obtain more detailed recommendations regarding specifications for sizing and configurations of PV systems for each site.

We identified the space available by using Google satellite mapping to supplement data collected during site visits and to document roof space and equipment configurations. The satellite images informed the direction the array would face and degree tilt. South-facing arrays offer the most cost-effective opportunities for solar arrays, followed by east or west facing arrays. The degree tilt represents the angle of the panel placement. Generally, matching the degrees of panel tilt to the degrees latitude of the site produces the most electricity annually. If a building's roof is not pitched at an angle, panel mounting can apply a tilt; however, the amount of tilt must be balanced against shading effects created between rows of panels.

We used the National Renewable Energy Lab's (NREL's) PVWatts tool to determine the maximum photovoltaic (PV) array capacity that could be installed in the available space and the annual amount of electricity that the maximum array capacity would generate.

The electricity that on-site solar arrays produce is first used to supply the electrical demand from the facility where the array is located, thereby reducing the amount of electricity that is purchased from the electrical grid. Depending on the capacity of the array in comparison to the electrical demand profile of the facility, there may be times when a rooftop array generates more electricity than the facility needs. During these periods of "over-production" the excess electricity is exported to the electric grid and the electrical tariff through which the site receives service governs the terms under which the facility is compensated for the electricity that it supplies to the grid.

A net-metering structure for purchase of electricity from the facility, in which the utility credits customers for the overproduction of electricity that can be sent back to the grid by the site offers some of the best available terms for customers. Based on our analysis, we anticipate that periods of overproduction will be uncommon for most buildings during most months, unless the electric consumption is significantly reduced. Therefore, the analysis did not account for potential effects of net metering on the financial performance of each array. Even without the benefit of net metering, the solar arrays will significantly reduce the amount of electricity that the Village must purchase from its electric utility.

Key assumptions that contributed to the analysis include:

- The lifetime of the system is 25 years. This is a conservative estimate with estimates ranging from 25 to 50 years.
- The upfront cost of the system is $3,000/kW for roof systems.
- Roof loading and electrical panel space needs to be verified by a trained design professional.
- Operations and maintenance costs are low per year.
- Inverters will need to be replaced at year 15.

Table 23. Solar analysis output definitions

FULL RESULTS

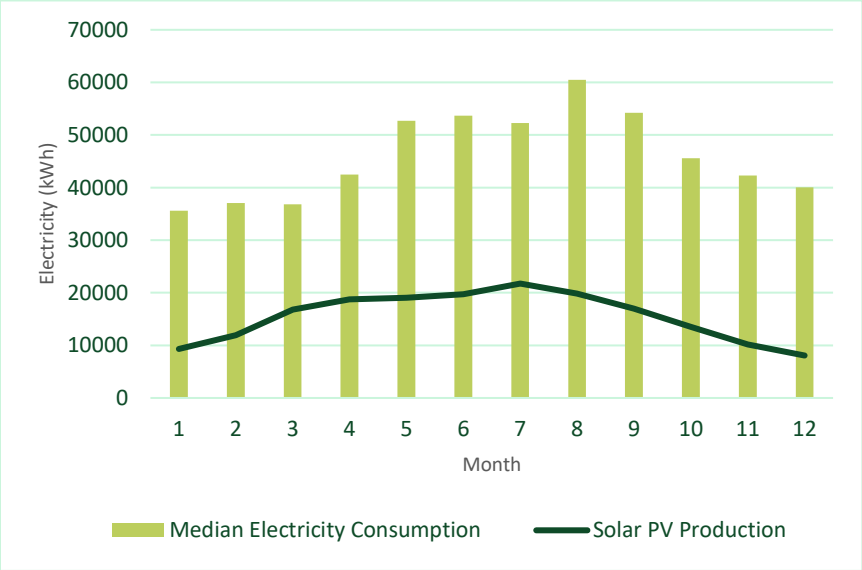
Output	Definition
System Size	Total solar photovoltaics size in kW DC
Payback (years)	Calculated as total upfront cost (after incentives) divided by first year cost savings. The financial payback period does not apply a discount rate to future production and does not consider the potential effects of changes in electricity prices.
Percent Renewable Electricity	Total electricity produced divided by total energy consumption
Lifetime CO_2 Savings (metric tons)	Avoided grid electricity use multiplied by a grid hourly emissions factor. Estimated using current grid emission factors for future years.
Upfront Cost	Total purchase and installation cost
ComEd Incentives	ComEd Distributed Generation rebates
Net Cost	Total initial upfront cost minus rebates and tax incentives

We compared the estimated monthly solar production for each array to historical electricity consumption for the corresponding building. Generally, the highest electricity consumption for a building during the year takes place during the summer cooling season, which is also when PV arrays generate the greatest amount of electricity. In most cases, roof size limits the ability to meet monthly electric loads for the building during most months.

Public Safety Solar Analysis

Figure 29 shows the results of the monthly solar analysis for Public Safety. Based on the historical electricity consumption and available roof area, we estimate about 34% of the electric consumption can be offset by rooftop solar. The proposed 166 kW solar array would occupy the available roof space, but the Village could consider adding solar panels in the parking lot to meet more of the electric demand with solar production.

Figure 28. Estimated solar PV production and historical electricity consumption for Public Safety.

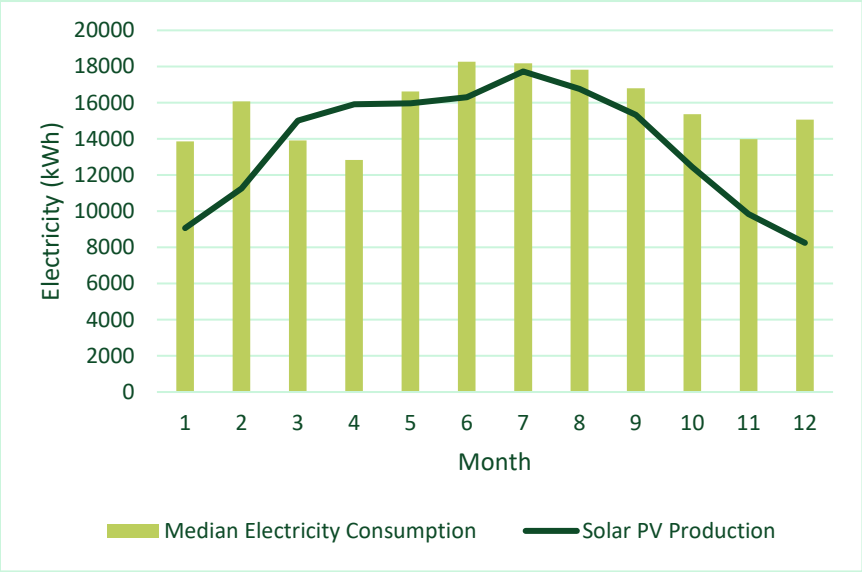


Public Works Solar Analysis

Figure 30 shows the results of the monthly solar analysis for Public Works. Based on our estimates, this is the only facility that has enough roof area to offset 100% of the electric consumption with rooftop solar

production. The proposed 137 kW solar array would only occupy 40% of the available roof space, which still offsets 85% of the electric use. We recommend installing a PV system with a generating capacity that does not exceed 85 percent of the electricity that the facility consumes annually because financial compensation to the Village is minimal during period of over production.

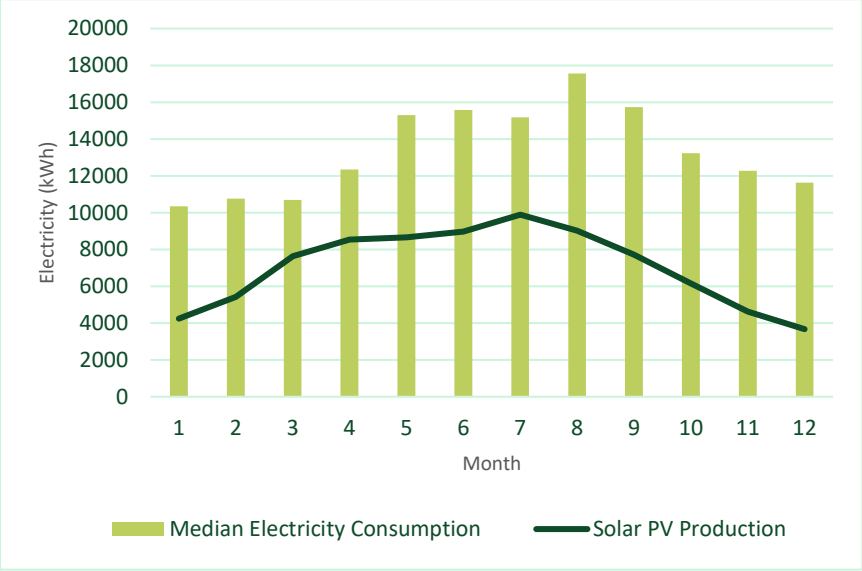
Figure 29. Estimated solar PV production and historical electricity consumption for Public Works.



Village Hall Solar Analysis

Figure 31 shows the results of the monthly solar analysis for Village Hall. We only considered the flat roof portions for solar installs, but the Village could also consider adding solar to the south facing portion of the pitched roof area. The proposed 75.3 kW array would be able to offset about 53% of the electric consumption.

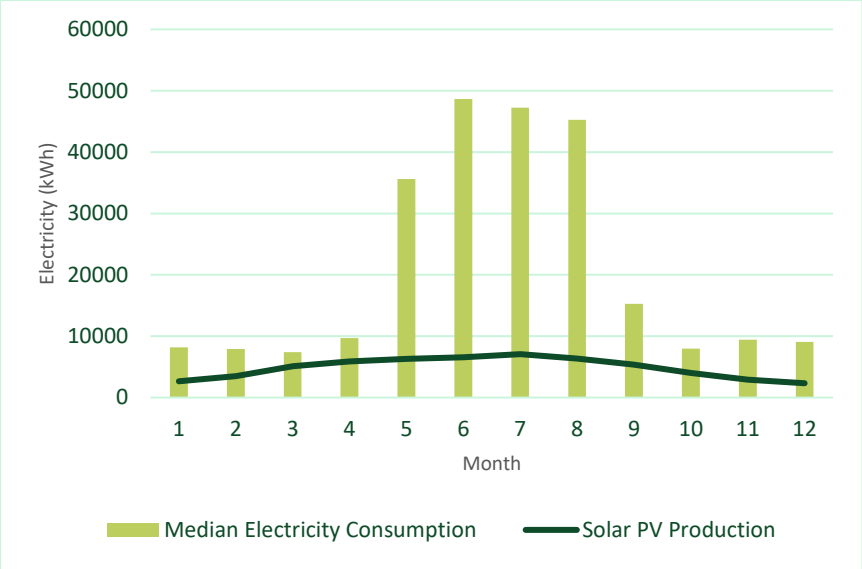
Figure 30. Estimated solar PV production and historical electricity consumption for Village Hall.



Aquatic Center Solar Analysis

Figure 32 shows the results of the monthly solar analysis for the Aquatic Center. Due to the limited roof size and large spike in electric consumption during the summer months, it would be difficult to offset the electric consumption year-round. The proposed 51.3 kW array could offset 22% of the electric consumption.

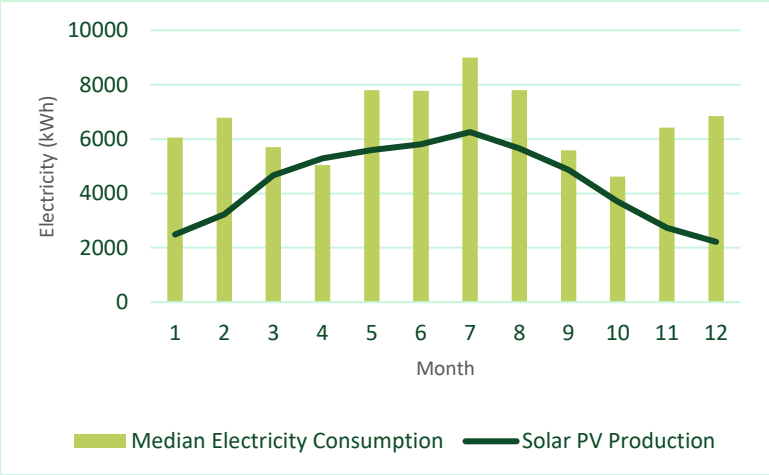
Figure 31. Estimated solar PV production and historical electricity consumption for the Aquatic Center.



Community Center Solar Analysis

Figure 33 shows the results of the monthly solar analysis for the Community Center. Utilizing the south facing portion of the pitched roof and the upper portion of the flat roof, we estimate a 45.6 kW array could offset roughly 65% of the electricity consumption. The system could potentially offset 100% of the electric use in the spring and fall months, when the energy demand for space conditioning is lowest.

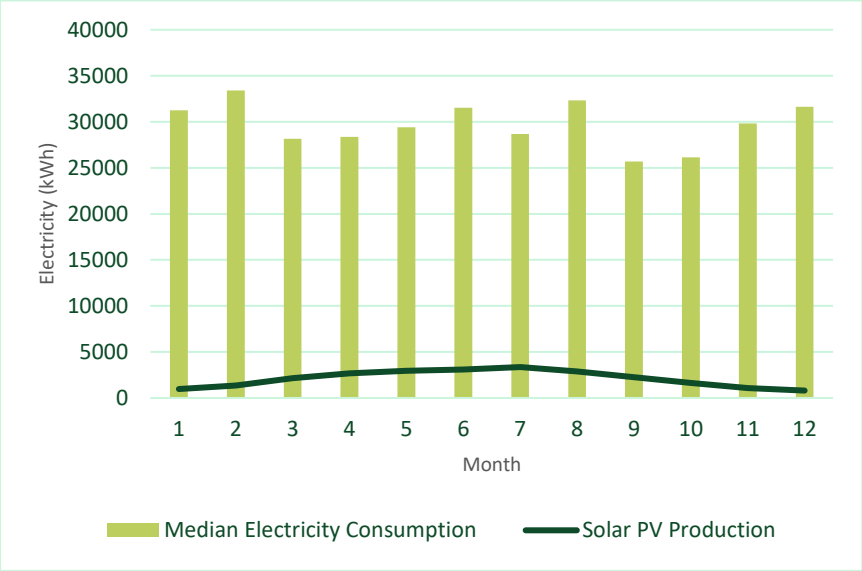
Figure 32. Estimated solar PV production and historical electricity consumption for the Community Center.



Pump House Solar Analysis

Figure 34 shows the results of the monthly solar analysis for the Pump House. The building has very high electric consumption and a small amount of roof area to work with. The proposed 24.7 kW solar array would offset about 13% of the electric consumption. If the Village is interested in offsetting more of the electricity use with solar arrays, we recommend using the adjacent clear areas for a ground mounted PV system.

Figure 33. Estimated solar PV production and historical electricity consumption for the Pump House.



LIMITATIONS

The scope of the Energy Plan project did not allow for solicitation of bids from solar installers to determine exact array configurations, capacities, and costs. The scope also did not include evaluations of roof load capacity for each facility to confirm that the roof structures at all facilities are sufficient to support the recommended solar arrays. Consult a qualified solar installer to develop a full solar installation plan.

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APPENDIX 3: RESIDENTIAL SURVEY

LINCOLNWOOD RESIDENTIAL SURVEY QUESTIONS

Please circle your response(s) to each of the questions in the survey.

Demographic Information

D1. What is your age?

- 13 - 18 years
- 19 - 30 years
- 31 - 45 years
- 46 - 65 years
- 66+ years
- Prefer not to share

D2. Including all income sources, which category best describes the gross combined income of all members of your household for the past year?

- Less than $50,000
- $50,000 - $75,000
- $75,001 - $100,000
- $100,001 - $150,000
- $150,001 - $250,000
- $250,001 - $500,000
- More than $500,000
- Unsure or prefer not to share

D3. Please select the option that best describes your current housing.

- I rent an apartment or a house.
- I own, and reside in, a single-family home or a 2-4 unit building.
- I own a condominium unit in a multi-unit building.
- I live in a senior community or housing with supportive services.
- I am unhoused.
- I stay in someone else's home.
- Other (please describe). _____

D4. How many people are in your household and reside with you regularly?

- 1 (I live alone)
- 2 people
- 3 people
- 4 people
- 5 people
- 6 people
- 7 people
- 8 people
- 9 or more people
- Prefer not to share

Energy Affordability

EA1. Which utility expenses does your household pay directly? [Select all that apply.]

Note: Please exclude expenses that are included in rent payments, but that are paid by a landlord.

- Electricity
- Natural gas
- Water
- Other

EA2. On average, about how much money does your household spend on electricity and natural gas each month?

- Less than $50
- $50 - $100
- $101 - $200
- $201 - $300
- $301 - $400
- $401 - $500
- More than $500
- Unsure

EA3. About how many months during a typical year is it difficult for your household to afford to pay its electricity and/or natural gas bills?

- Rarely or never
- 1 – 2 months
- 3 – 5 months
- 6 – 9 months
- Almost always

EA4. About how many months during a typical year does your household need to choose between paying its electricity and/or natural gas bills and paying other bills?

- Rarely or never
- 1 – 2 months
- 3 – 5 months
- 6 – 9 months
- Almost always

Personal Energy Use

PE1. Please check one box in each row to indicate your level of agreement with the following statements.

	Strongly Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
Saving energy is important to our household.					
Our household uses our utility bills or other sources to track the amount of energy that we use each month.					
Our household actively limits our energy use by turning off lights in unoccupied rooms.					
Our household actively limits our energy use by keeping our home cooler					

in the winter and/or warmer in the summer.					
Using renewable energy is important to our household.					
Our household has made changes to our home or lifestyle to reduce our energy use.					
Minimizing the amount of gasoline and/or diesel fuel that we use is a priority for our household.					

PE2. Which actions has your household <u>already</u> taken to save energy? [Circle all that apply]

- Replaced old lightbulbs with LED lightbulbs.
- Manually, or by using schedules, I/we adjust our thermostat to save energy.
- Installed a smart thermostat, which automatically changes indoor temperatures based on occupancy.
- More frequently choose to walk or ride a bike, rather than drive, to local destinations.
- More frequently shut off appliances and lights when we are not using them.
- Installed low-flow faucets, showers, or toilets.
- Installed extra insulation and/or energy efficient windows.
- Upgraded to high-efficiency heating, cooling, and/or water heating equipment.
- Installed solar panels or other renewable energy systems.
- Purchased a hybrid or electric vehicle.
- Purchased alternative sources of energy, like solar or wind energy, through ComEd
- Other (Please describe) _____

Energy Information Needed

EI1. Please indicate your level of interest in receiving more information about each of the following energy and climate topics. [You may select more than one option.]

- Available electricity provider options
- Available community solar programs
- How to obtain emergency assistance for energy bills

EI2. Please check one box in each row to indicate your level of interest in receiving more information about the following energy savings topics.

	Very Interested	Somewhat Interested	Not interested	Unsure
Low-cost home energy saving tips				
Energy saving home improvements that can improve comfort				
Whole home energy saving strategies				
Available incentives for energy efficiency and renewable energy home improvements from ComEd and Nicor Gas				
Process for installing a rooftop solar array				

EI3. About what other energy topics would you like to receive more information?

_____

EI4. What gets in the way of your household saving energy or using renewable energy? Please check one box in each row to indicate your level of agreement with each of the following statements.

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
I do not know how to save energy in my home.					
I do not know how to use renewable energy in my home.					
Home improvements that save energy are too expensive.					
Renewable energy systems (like solar panels) are too expensive.					
I am interested in energy efficiency and/or renewable energy, but I need to prioritize other goals.					
It is difficult to find contractors to make energy saving improvements to my home.					
My landlord does not want to spend money on making energy saving improvements to the building.					
Nothing holds me back! I am saving energy and have transitioned to using renewable energy.					
I am not interested in saving energy.					
I am not interested in renewable energy.					

EI5. Do other obstacles get in the way of your household saving energy or using renewable energy?

- No
- Yes
    - **If yes, please describe the obstacles.**

_____

Lincolnwood's progress toward 2023 – 2025 energy and climate actions

P1. During the past few years, what programs, infrastructure, informational resources, or other activities related to saving energy and/or reducing greenhouse gas emissions have you noticed?

_____

_____

P2. Which of the activities that you identified in the previous question do you feel have been most helpful for the community?

_____
_____

P3. Which of the activities that you identified in the previous question do you feel have been most helpful in saving energy and reducing GHG emissions?

_____
_____

P4. The 2023 – 2025 Sustainability Plan identified two actions to complete which would help residents save energy and money, while also reducing greenhouse gas emissions. Please circle one of the options for each goal to indicate whether you are aware of the Village's work on each action, and (if so) whether you have participated in the activity.

P4a. Goal 8.1. Develop annual programming to promote sustainability and connect the community with resources that promote the environment and sustainability

- I have participated in one, or more, events or activities.
- I am aware of programming, but I have not participated in any events or activities.
- I am not aware of programming related to this effort.
- Unsure

P4b. Goal 6.2. Educate residents about the benefits of walking, biking, and using public transit.

- I have learned about these topics from Village resources.
- I am aware that resources on this topic exist, but I have not used them.
- I am not aware of resources from the Village on this topic.
- Unsure

Ideas for 2025 – 2030 sustainability plan energy section

ID1. Below are several ways that the Village may be able to help residents and businesses save energy. Please mark one box in each row to rate your support for the ideas.

	Strongly support	Somewhat support	Neither support nor oppose	Somewhat oppose	Strongly oppose
Develop strategies to support energy audits and retro-commissioning studies of residential, commercial and public facilities					
Support the adoption of renewable energy technologies for use throughout the community					
Support procurement of renewable energy through alternate suppliers of electricity and community choice aggregation					
Collaborate with government partners, businesses, and nonprofits to develop, and provide access to, community solar installations					
Facilitate the adoption of renewable energy technologies by adapting building and zoning codes					

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	Strongly support	Somewhat support	Neither support nor oppose	Somewhat oppose	Strongly oppose
Promote the use of ENERGY STAR-certified appliances and equipment by residents					
Promote and recognize public and private buildings that achieve specific energy efficiency targets					
Purchase renewable energy to offset a larger portion of the Village's energy use					
Encourage residents and businesses to purchase additional renewable energy to offset emissions from electricity used in their homes and businesses					
Educate the community about easy and low-cost energy saving home improvement strategies					
Work with ComEd and Nicor energy efficiency programs to help residents identify rebates and other financial resources that reduce the cost of energy-saving home improvements.					
Run community energy saving contests and other activities to foster interest in energy savings.					
Support business owners in installing electric vehicle charging stations at their businesses					
Develop additional infrastructure for pedestrian and bicycle transportation.					
The Village should not help residents and businesses save energy.					

ID2. Please share any additional ideas that are not listed above.

_____
_____
_____

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Ideas for an Emissions Reduction goal

IC1. Do you think the Village of Lincolnwood should set a goal for reducing GHG emissions?

- Yes
- No
- Unsure

IC2. [if IC1 = Yes] Should the goal focus on reducing emissions from 1) municipal operations, 2) commercial and residential buildings in the Village; or 3) municipal operations AND emissions from commercial and residential buildings in the Village.

- Municipal operations only
- Commercial and residential buildings only
- Municipal operations AND commercial and residential buildings

Contact Information

CI1. Are you interested in receiving updates about the Village's Energy Plan and about opportunities to learn more about energy efficiency and renewable energy?

- Yes
- No

CI2. If so, please enter your email address so that we can send you updates about the energy plan and information about related learning opportunities.

_____
_____

Thank you for completing this survey! The information that you shared will provide valuable information to guide the Village of Lincolnwood's Energy Plan.

SURVEY RESPONSE SUMMARY

Demographics

- 66+ year olds were the largest respondent group, followed by respondents between the ages of 46 and 65 (combined 73% of respondents)
- 21% earned less than $100,000 per year, but it is likely that this income bracket is under-represented in the response pool
- 84% own and occupy a 1-4 unit building
- 86% are 1-4 person households

Energy affordability

- 81%+ pay all utilities (electricity, gas, water) for the property

Personal energy use

- Most people care about energy use and feel that they are doing something to save energy.
- Most common energy actions taken are installing LEDs, adjusting set points, and turning off lights/appliances when not in use.
- Over 50% of respondents had installed extra insulation or efficient windows and over 40% installed a smart thermostat

Key barriers to saving energy and using renewable energy

- Perceived costs of efficiency improvement and renewable energy, as well as lack of time/other priorities, are top barriers.
- Second tier barriers were lack of information about how to use renewable energy at home and challenges finding qualified contractors.

Views on 2023 -2025 Village sustainability activities

- 18% were aware of Village's sustainability programming
- 24% were aware of Village-provided information about sustainable transportation options.
- Respondents noted several sustainability-related projects the Village had completed that they viewed as benefiting the community and/or reducing emissions.
    - Installing EV charging stations
    - New street lights
    - Sustainability programs for residents at the community center
    - Creating green spaces and community gardens

- No mow May
- There was some discussion of solar, but it was unclear if the statement indicated that they thought the Village had installed solar on its buildings, or if they hope that the Village will install solar on its buildings
- Several entries that were unrelated to the question

Hopes for 2025 – 2030 Sustainability Plan

- Highest support for educating community about low-cost energy savings opportunities and for Village support for energy audits and retro-commissioning for existing buildings.
- Strong support for all recommended ideas except helping residents access ComEd and Nicor energy efficiency programs and for adding pedestrian and bicycle infrastructure (significant opposition).

Views on emissions reduction goal

- 71% of the 35 people who responded to the question of whether the Village should set an emissions reduction goal supported this idea.
- 75% of the 24 people who indicated a preference about which emissions sources the goal would cover indicated that the goal should seek to reduce emissions from residential and commercial buildings, as well as from Village operations. respondents to the question

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MEMORANDUM

TO: Anne Marie Gaura, Village Manager

FROM: John Welch, Public Works Director

DATE: March 3, 2026

SUBJECT: Lead Service Line Replacement Program

Background

As part of the FY2026 budget discussions, staff was asked to provide information regarding lead service line replacements from other communities. In November, staff sent a request to the Northwest Municipal Conference to solicit water system and lead service information. Eighteen communities responded to the survey.

The Lead Service Line Replacement and Notification Act, effective January 1, 2022, initially outlined a replacement deadline of 2042 (15 years after final inventory due in 2027), based on replacement rate criteria applicable to the Village. In October 2024, the Biden-Harris Administration issued a final rule, the Lead and Copper Improvements, requiring water systems to replace lead lines within 10 years; as of today, that deadline for the Village is 2037. The Village has taken advantage of the State Revolving Fund approving a $6.2 million, 0% interest loan for construction years 2024-2029 for the replacement of lead service lines. Prior to 2029, staff anticipates re-applying for another five-year loan to continue financing for replacements.

The table below outlines past expenses for lead service line replacements The 2021 program did not include any interior restoration and was solely a $5,000 per service Village contribution to the residents. The Village coordinated the hiring of a contractor on behalf of the residents, where they were responsible for the remaining costs.

Numbers for the 2025-26 program reflect work completed through December 31, 2025, and total monies paid for each portion of the service line replaced. The total number of 86 reflects the number of locations that had lead on any part of the service – public, private, or the entire length. Any part of the service line containing lead is counted as “1.”

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		CONSTRUCTION COSTS					
Year	**Number Complete**	**Main to B-Box ($); Qty**	**B-Box to Home ($); Qty**	**Interior Restoration Cost ($); Qty**	**Design & Oversight ($)**	**Total Cost ($)**	**Int Rest Unit Cost ($)**
2021	8	$0; 0	$40,000; 8	-	-	$40,000	-
2022	-	-	-	-	-	-	-
2023*	21	$0; 9	$82,160; 21	$17,120; 20	$54,116	$153,396	$856
2024 w/Infra**	3	$0; 0	$24,000; 3	-	-	$24,000	$500
2024 LSLR	22	$22,402; 2	$173,017; 20	$10,600; 20	$235,480	$441,499	$530
2025-26 LSLR***	86 (34 full)	$389,704; 44	$843,356; 76	$60,800; 76	$231,578	$1,525,438	$800

*2023 costs reflected are only for private side replacements, as all the public side services were replaced as part of the new water main, regardless of material type.
**2024 costs reflected are only for private side replacements, as all the public side services were replaced with the new water main, regardless of material type. Design and oversight costs were not differentiated between LSLR and Infrastructure Improvements.
***Costs and quantities are based on work completed through 12/31/25 and are not final.

With the current program, through December 2025, the Village has spent $904,156 on the private side replacements. Of that value, the interior restoration costs total $60,800 or 6.7%. In 2024, $10,600 of the $183,617 (5.8%) was spent on interior restoration and in 2023, $17,120 of the $99,280 (17.2%) was spent on interior restoration. Based on the low percentage of interior restoration costs, and those costs are included with the State Revolving Fund loan, staff does not propose a change to the program at this time.

Survey Information

Of the 18 responding municipalities and focusing on the closest communities to Lincolnwood – Morton Grove, Wilmette, and Kenilworth – and similar water distribution size and populations – Barrington, Fox Lake, and Northfield – the following information compares to Lincolnwood.

Annual lead service line replacements:

Barrington	140 of 422 identified	= 33%
Fox Lake	55 of 120 identified	= 46%
Kenilworth	N/A of 240 identified	= 0%
LINCOLNWOOD	100 of 988 identified	= 14%
Morton Grove	Developing a plan	= 0%
Northfield	Property owner	= 0%
Wilmette	220 of 2200 identified	= 10% beginning in 2027

Average anticipated cost per lead service line replacement:

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Barrington	$20,000
Fox Lake	$15,000
Kenilworth	Developing a plan
LINCOLNWOOD	$18,500
Morton Grove	$10,000 - $15,000
Northfield	$5,000 (50/50 cost share)
Wilmette	$16,000

Funding of lead service line replacements:

Barrington	Capital Funds
Fox Lake	IEPA Loan
Kenilworth	Developing a plan
LINCOLNWOOD	IEPA Loan
Morton Grove	Water/Sewer Fund public side; grants private side
Northfield	Capital Funds
Wilmette	Undetermined; seeking IEPA Loan

Anticipated timeline for replacement of all lead service lines:

Barrington	2028
Fox Lake	2027
Kenilworth	2045
LINCOLNWOOD	2037
Morton Grove	In development to comply with regulations (2037)
Northfield	Unknown
Wilmette	2037

Village-funded portion of service line with or without interior restoration:

Barrington	Public + private + interior restoration
Fox Lake	Public + private + interior restoration
Kenilworth	Developing a plan, currently no Village-funded portion
LINCOLNWOOD	Public + private + interior restoration
Morton Grove	Public, exploring financial assistance for private + interior restoration
Northfield	50/50 cost share
Wilmette	Public + private + interior restoration

Looking at all 18 respondents with respect to funding of the public portion, public + private portions, and interior restoration, 6 municipalities are funding either public only or cost-sharing the private portion. Three are funding public + private without interior restoration and three are funding public + private + interior restoration.

Discussion

The FY2026-2030 Five-Year Financial Forecast for the Water and Sewer Fund does not include water main replacements due to revenue limitations. The LSLR Program is reimbursed by the State Revolving Fund Loan, but only reimburses the expenditure made to the contractor. Loan proceeds cannot be diverted to funding water main replacements.

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Decreasing the pace of the LSLR program may increase the likelihood of homeowners taking on the responsibility of replacing the water service due to redevelopment or wanting to be ahead of the Village scheduled replacement.

Recommendation

Staff recommends continuing with the completion of the 2025 LSLR Program and does not recommend any changes for the upcoming 2026 program. Recent project bids from other municipalities have seen strong, competitive bidder turnout and the State Revolving Fund affords the Village the opportunity to continue the replacements. Water main replacements in 2026 and 2027 are planned within the Devon-Lincoln Tax Increment Financing district and will not impact the Water and Sewer Fund.

Documents Attached

1. PowerPoint Presentation

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Purpose

As a follow up to FY2026 budget discussions, a Northwest Municipal Conference (NWMC) survey was conducted in November, requesting lead service line information:

- Quantity
- Costs
- Funding
- Schedule
- Scope

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Water Service Diagram

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Program Highlights

- Replacing private services in conjunction with water main replacement
- Replacing private services with public side already copper
- Replacing public and/or private services in locations with upcoming projects – Pratt, Devon, Cicero
- No participants in cost-share to date

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Total Lead Service Line Replacement Program

	Number Complete	Main to B-Box ($); Qty	B-Box to Home ($); Qty	Int Rest Cost ($); Qty	Design & RE ($)	TOTAL ($)	Int Rest Unit Cost ($)
2021	8	$0; 0	$40,000; 8	$0	$0	$40,000	$0
2023*	21	0; 9	82,160; 21	17,120; 20	54,116	153,396	856
2024**	3	0; 0	24,000; 3	0; 0	0	24,000	500
2024	22	22,402; 2	173,017; 20	10,600; 20	235,480	441,499	530
2025***	86	389,704; 44	843,356; 76	60,800; 76	231,578	1,525,438	800

* Private side only
** Private side only; design and oversight costs not differentiated
*** Costs and quantities for work completed through 12/31/25 and are not final

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Private Side Costs

	B-Box to Home ($)	Interior Restoration Unit Cost ($)	Total Interior Restoration ($)	% of Total
2021	$40,000	$0	$0	0%
2023	82,160	856	17,120	20.8
2024 Infra	24,000	500	0	0
2024 LSLR	134,000	530	10,600	7.9
2025***	904,156	800	60,800	6.7

*** Costs and quantities for work completed through 12/31/25 and are not final

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Lead Services – Quantity & Expected Costs

NWMC Survey completed in November – 18 responses received

Quantity

- Municipalities with 0 – 9.9% of system: 13
- Municipalities with 10 – 19.9%: 2
- Municipalities with 20 – 20.9%: 3 (Lincolnwood)
- Municipalities > 30%: 1

Expected costs vary between municipalities, depending upon level of replacement and cost-shares.

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Lead Services – Funding & Schedule

Funding

- Municipalities using Capital/Water Rates: 6
- Municipalities using IEPA Loan Program: 5 (Lincolnwood)
- Municipalities using bonds: 1
- None needed: 7

Completion Schedule

- Within 5 years: 5
- Within 5 – 10 years: 2 (Lincolnwood)
- Municipalities greater than 10 years (or unknown): 6
- N/A: 6

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Lead Services – Scope

Scope

- Funding public side only or cost-sharing private: 6
- Funding public and private sides, but no interior restoration: 3
- Funding public and private and interior restoration: 3 (Lwd)
- No lead or completed all replacements: 6

State Revolving Fund Loans cannot be used if requiring resident financial participation. This does not apply to the $5,000 incentive.

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Discussion

- Five-Year Financial Forecast has no water main replacement
- State Revolving Fund Loan reimburses expenditures
- State Revolving Fund Loan cannot be used for water main
- Decreasing LSLR pace may allow for homeowners to replace on their own

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Recommendation

Staff recommends continuing with the status quo for the remainder of the 2025 program, with expected completion in late spring and the 2026 program.