

City of Allentown Energy Efficiency and Renewable Energy Strategy and Recommendations

On Behalf of Allentown Environmental Advisory Council (AEAC)

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Section 1: Executive Summary

The purpose of this white paper is to build upon the Allentown EAC's report titled "[Energy Equity-An Analysis of the Issues and Recommendations](#)" submitted and filed in 2022. In that report the Allentown EAC found that the average energy burden in Allentown was 5% of total annual income per household (higher than the national average of 3%), accounting for over \$2,700 a year in energy costs. That report made recommendations on potential actions the City could take to address the energy equity issue.

In this follow-up report, we offer recommendations on the next steps for the City to take to address energy equity and potential funding sources for those steps. We also make recommendations for actions that address energy efficiency and renewable energy that can be implemented for City-owned assets and Allentown's residents along with potential funding mechanisms for implementing these recommendations. Implementing our recommendations would move the City forward on reducing energy use while reducing overall costs for the City and residents and reducing its carbon footprint. In addition to reducing costs, Allentown can become a leader in the Lehigh Valley and the state of Pennsylvania and set an example for other governments in terms of energy, sustainability, and the environment.

Following are the three categories of actions addressed in this report:

- Energy Efficiency and Renewable Energy for City-owned (municipal) assets
- Energy Efficiency for Residents as a way to address Energy Equity
- Renewable Energy for Residents as a way to address Energy Equity

Section 2: Recommendations

The EAC has made significant progress in investigating the issues of energy efficiency and renewable energy and has developed several specific and actionable recommendations that the City can take in order to achieve the goals listed above as further discussed below.

General Recommendations

- Develop an overarching energy strategy covering all three categories of actions listed above, implementation of which would be the responsibility of an appointed sustainability manager. This can be accomplished with \$170,070 funding that has been allocated to the City by the Department of Energy's *Energy Efficiency and Conservation Block Grant Program*. The AEAC has been working with the City to apply for this funding and will continue to provide input to finish the application process by the January 2024 deadline. We are recommending that the City submit a voucher application for technical assistance to develop the City's energy strategy. See **Attachment A** for more detail.

- Use the [Environmental Protection Agency's toolkit](#) to evaluate financing options in addition to those described below.

Recommendations Specific to Energy Efficiency and Renewable Energy for City-Owned Assets

- Utilize federal, state, and private resources to maximize the energy efficiency and renewable energy of City-owned assets.
- Utilize funding from the PA Guaranteed Energy Saving Act (GESA), conduct a **free** energy assessment and implement recommended projects identified in the energy assessment to maximize energy efficiency and renewable energy of the evaluated City-owned assets **at no cost to the City**. See **Attachment B** for more information on GESA.
- See Sections 3 and 4 below for additional information on energy efficiency and renewable energy for City-owned assets.

Recommendations Specific to Residential Programs on Energy Efficiency

- Incorporate energy efficiency reviews into the City's existing lead abatement program. Homes inspected for lead could also be reviewed for energy efficiency opportunities and then funding under the PA Whole Homes Improvement Act could be used to address lead, energy efficiency, as well as mold, asbestos, leaking roofs, etc which often pose impediments to implementing energy efficiency measures such as weatherization.
- Collaborate with community-based organizations in conducting outreach to help raise awareness among homeowners, tenants and landlords on the economic benefits of energy efficiency and in developing step-by-step guidance documents and tool kits to assist them with energy efficiency measures. For example, CALV has excellent programs that could be leveraged in this effort.
- Evaluate establishing policies and programs to incentivize landlords and realty companies to create more energy-efficient rental units without pricing out their tenants within old and new rental properties. See **Attachment C** for more details on possible policies and programs.
- Leverage data (both qualitative and quantitative) to inform, improve, reflect, and iterate on energy programs, with the focus on identifying cost savings and improving energy equity within Allentown.
- See Section 5 below for additional information on energy efficiency for residents.

Recommendations Specific to Residential Programs on Renewable Energy

- Develop an outreach program to help raise awareness among homeowners on the economic benefits of renewable energy. See **Attachment D** for more detail on economic incentives for residents.
- Develop step-by-step guidance documents and tool kits to assist residents as further described in Section 6 below.
- Leverage data (both qualitative and quantitative) to inform, improve, reflect, and iterate on energy programs, with the focus to identify cost savings and improve energy equity within Allentown.
- See Section 6 below for additional information on renewable energy for residents.

Section 3: Further Detail on Energy Efficiency for City-Owned Assets

Improving energy efficiency of City-owned assets would have many benefits including the following:

- Energy efficiency upgrades can significantly reduce energy costs. By investing in energy-efficient technologies, such as LED lighting, HVAC upgrades, and insulation, Allentown can reduce energy consumption and save money on its utility bills, allowing the City to allocate funds to other important community initiatives.
- Energy efficiency upgrades can have a positive impact on the environment. By reducing energy consumption, Allentown can reduce its carbon footprint and contribute to a cleaner, more sustainable future.
- Energy-efficient upgrades can also improve the comfort of City-owned facilities. Upgraded HVAC systems can provide better temperature control, while improved insulation can reduce drafts and improve indoor air quality.
- Energy-efficient upgrades can increase the value of City-owned properties. Buildings with energy-efficient features are more attractive to potential buyers or renters and may command higher prices.
- Allentown can set an example by investing in energy-efficient technologies. This can inspire other organizations and individuals to follow suit and contribute to a more sustainable future.

Most importantly, the City can do this **at no cost to the City through the PA Guaranteed Energy Savings Act** under which Allentown can install upgrades to building components such as lighting, mechanical, and plumbing through a **Budget Neutral Process**. The concept of the GESA is that the cost savings arising from energy savings on an annual basis **are enough to pay for the project over time**. The original Act allowed for a 10-year cost-recovery/payback period, but the amended Act now allows up to a 20-year payback, depending on the City's preferred time frame.

The applicable energy conservation measures under GESA may include but are not limited to:

- Insulation of the building structure or systems within the building.
- Storm windows or doors, caulking or weather stripping, multi-glazed windows or doors, heat-absorbing or heat-reflective glazed and coated window or door systems, additional glazing, reductions in glass area or other window and door system modifications that reduce energy consumption.
- Automated or computerized energy control systems.
- Heating, ventilating or air-conditioning system modifications or replacements.
- Replacement or modification of lighting fixtures to increase the energy efficiency of the lighting system without increasing the overall illumination of a facility, unless an increase in illumination is necessary to conform to applicable State or local building codes for the lighting system after the proposed modifications are made.

More information on GESA is available in Attachment B.

Section 4: Further Detail on Renewable Energy for City-owned Assets

Renewable energy sources, particularly solar energy, have become very cost-effective and can be installed at no cost to the City under GESA as explained above. If the City installs renewable energy systems with energy storage as part of a micro-grid system, it could reduce its energy costs even further and possibly even have back-up power during grid outages. Renewable energy initiatives would have many benefits including:

- Renewable energy installations can significantly reduce energy costs, allowing the City to allocate funds to other important community initiatives.
- By installing renewable energy, Allentown can reduce its carbon footprint and contribute to a cleaner, more sustainable future.
- Adopting renewable energy can also provide educational opportunities for the community, showcasing the benefits of sustainable energy and promoting awareness and engagement in environmental issues.
- Allentown can set an example by investing in energy-efficient technologies. This can inspire other organizations and individuals to follow suit and contribute to a more sustainable future.

We recommend that the City primarily focus on the installation of solar panels as this is currently the most cost-effective renewable energy available. Just as with energy conservation, renewable energy projects can be undertaken under GESA, **allowing Allentown to undertake the project at no cost to the City**. See Attachment B for more information on GESA.

Section 5: Further Detail on Energy Efficiency for Residents

Overall, enhancing energy efficiency requires a comprehensive approach that includes both equipment upgrades and energy-saving practices. The technology and design of energy-efficient appliances, HVAC and weatherization processes continue to improve and can be used to help close the gap to reduce energy burdens. However, renters are often left behind because they do not own the property. This is a social justice issue because many renters are struggling to pay their energy bills under the lease of their landlords. More lower-income people rent and have higher energy burdens. The American Council for and Energy-Efficient Economy states, “Rentals consume 15% more energy on a per-square-foot basis and have 30% higher energy costs than other homes.”¹ This maintains the destructive pattern of lack of financial independence which compounds to prevent intergenerational wealth building in the form of home ownership assets.

By creating city-wide policies, the City can pave the way and set the foundation for justice, increased access, and the reduction of both carbon emissions and energy costs for residents and landlords. Attachment C contains detailed recommendations on possible City policies for renters and includes the following:

- Review potential policies to engage landlords in energy equity transformation and reduce the number of absentee landlords via mandating disclosure of energy costs either per year or per month as attached to the rental license.

¹ <https://www.aceee.org/blog-post/2021/08/energy-equity-renters-initiative-kicks-guide-cities>

- Develop a guideline reference on the standard amount of energy use per square foot for particular types of residential buildings and make this available to tenants so that they can determine whether their rental property exceeds the standard on energy use.
- Investigate policies to ease the permission process for renters to upgrade appliances and HVAC when they would like to pay for these improvements on their own.
- Prevent landlords from increasing rent after energy retrofits which could thereby displace low-income renters.
- Consider including a trained energy auditor to inspect rental properties on a rolling five year basis which could be done in combination with the current health and safety inspections conducted by the City.
- Consider implementing standards for new buildings so that all new buildings and in particular those that are intended for public housing or apartments that are subsidized by the government should be made with sustainability and energy efficiency integrated into the construction.
- For multi-unit buildings, require disclosure of building-level consolidated energy use data on a publicly available database.

Section 6: Further Detail on Renewable Energy for Residents

The primary renewable energy the City could promote for residents is installation of solar panels as this is the most cost-effective, particularly with federal tax incentives and solar renewable certificates that help to defray the costs. See Attachment D for more information on these financial incentives.

To help Allentown residents obtain these benefits, the City can develop outreach material explaining these benefits, with a step-by-step guide on how to install solar panels which would include the following:

- **Step 1: Energy Consumption Analysis:** Begin with calculating monthly energy consumption in order to understand the amount of energy to be offset.
- **Step 2: Property Assessment:** Conduct a property assessment that will indicate which type of solar installation is more suitable for the site. There are 3 types of solar panel systems for residents:
 - Grid-tied: Connected to the utility grid;
 - Stand-alone: Not connected to the utility grid. Requires battery bank;
 - Bimodal: Connected to the utility grid with an incorporated battery bank.

Choosing to install batteries on site depends on a person's particular energy needs, the value of power generation during grid outages, and the cost of batteries.

- **Step 3: Property Location:** When locating a solar panel system, important factors dictate the viability of the installation such as the amount of daylight, panels located (roof, ground, or pole), shading, and the direction the panels will face. The optimal position is true south (180° S).

Attachment A

EECBG and Energy Efficiency Strategy

The City can make progress on goals for a more energy-efficient future by utilizing the U.S Department of Energy's Energy Efficiency and Conservation Block Grant (EECBG) Program that is designed to assist states, local governments, and Tribes in implementing strategies to reduce energy use, to reduce fossil fuel emissions, and to improve energy efficiency. The City of Allentown has been allotted \$170,070 in formula funding from the DOE that can be used for any projects or endeavors relating to issues of energy efficiency or carbon emission reduction. The AEAC has dedicated much time and many resources reviewing the application process, and we have concluded that applying for a voucher for technical assistance in developing an overarching energy efficiency strategy to increase energy savings for the City and decrease energy burden for all Allentown residents is the most efficient pathway for obtaining this funding. According to the DOE website, this pathway would carry a lower administrative burden, allow the City quicker access to the funding, and overall is a simpler application process. The AEAC has made steps to begin applying for the EECBG and will continue to work on behalf of the City to finish the application process by the January 2024 deadline.

The EECBG application requirements include submission of a detailed Energy Efficiency and Conservation Strategy as part of the application. Currently, the City does not have a comprehensive Energy Efficiency Plan that contains specific actionable recommendations and strategies regarding issues of energy efficiency. However, the application leaves room for entities without such a plan, and instead allows for the opportunity for local governments to use the funds to develop an overarching strategy. This is the course of action that the EAC recommends (see General Recommendations section). By taking this route, the DOE allows for applicants to adopt general goals involving issues around energy efficiency and conservation. Of these goals, the most applicable to the City is to "Reduce energy use by 50% by 2050 or sooner."

The DOE also allows for applicants to opt-in to predetermined blueprints for various concentrations of Energy Efficiency. Here is a brief description of the blueprint concept from energy.gov: "Blueprints are step-by-step roadmaps of energy projects and programs that guide EECBG Program entities to success. By no means an exclusive list, the blueprints are a select list of high-impact projects and programs based on proven practices that entities can choose to follow. While entities may use their EECBG Program funds for a wide array of energy-related activities, those that choose to spend their EECBG Program funds exclusively on "key activities" listed in the blueprints should expect a streamlined and expedited application review because these key activities fall within the NEPA bounded categories. DOE will provide resources such as webinars, training, tools, and additional support along these topic areas.

The blueprints are designed to achieve several goals: 1) guide grantees towards high-impact and effective projects and programs; 2) focus DOE's technical assistance and support in key areas; 3) support grantees as they leverage other Inflation Reduction Act (IRA) investments; and 4) streamline the application review and approval process for eligible entities. The blueprints span a wide variety of topic areas: energy planning, energy efficiency, renewable energy, transportation infrastructure, workforce and economic development, and financing."

The DOE allows for these options under the broad title of "Energy Efficiency" blueprint initiatives:

- A. Energy Efficiency: Building Audits and Retrofits, including grid interactivity and electrification
- B. Energy Savings Performance Contracts for Efficiency & Electrification in Municipal Buildings
- C. Building Efficiency & Electrification Campaign
- D. Building Performance Standards for Existing Buildings and Stretch Codes for New Construction

More information on the EECBG can be found at <https://www.energy.gov/scep/eccbg-program-formula-grant-application-hub>

Attachment B

PA Guaranteed Energy Saving Act (GESA)

The Pennsylvania Guaranteed Energy Savings Act (GESA) is a state law established in 1998 by the Pennsylvania General Assembly. There is **no upfront cost** to perform energy reductions. The concept of GESA is that the savings coming from the energy savings on a yearly basis are enough to pay for the installation or implementation of the energy conservation measures themselves. As a result, the decreased utility spending is used to offset the project cost. The contract payment must be made in a period of time and cannot exceed a period of 20 years. GESA provides a funding source for these capital improvements, including installment payments or leases. Of particular significance is that the City's legal bond debt load is not increased when proceeding under GESA and any grants, subsidies, or other payments from the Commonwealth to the City cannot be reduced due to cost savings obtained from the guaranteed energy savings contract. However, Energy Information Administration's fundings can be combined.

In order to take advantage of GESA, the City should follow these steps:

1. Step One

GESA allows governmental entities at all levels to reduce energy consumption and cost in their facilities, or implement **energy conservation measures (ECMs)**, through a guaranteed energy savings contract, "a contract for the evaluation and recommendation of energy conservation measures and for implementation of one or more such measures" by means of a request for proposal process with energy service company (ESCOs).

Energy conservation measures are actions or upgrades taken to reduce the amount of energy, water, wastewater, or other consumption or operating costs consumed by a building. Operating costs on the other hand refer to reductions in expenses related to energy and water consuming equipment or the building envelope.

ECMs under GESA include:

1. ECMs that provide operating cost reductions based on life cycle cost analysis.
2. Automated, electronic or remotely controlled systems or measures that reduce operating costs.
3. Insulation of the building structure or systems within the building.
4. Window and door system modifications.
 - a. Storm windows or doors, caulking or weather stripping, heat-absorbing or heat-reflective glazed, multiglazed and coated windows or doors, additions or reductions in glass.
5. Automated or computerized energy control systems that monitor consumption, and manage energy-using equipment.
6. HVAC systems implementation, modification, or replacement.
7. Replacement or modification of lighting fixtures without increasing the overall illumination of a facility (only if necessary after proposal).
8. Energy recovery systems.
9. Steam systems that produce energy. e.g. heat and electricity for use within the facility.
10. Training program or facility alteration that reduces energy consumption or reduces operating costs, based on future reductions in labor and services costs.
11. Expenditures required to implement other energy conservation measures due to facility alteration.

12. Program to reduce energy costs through rate adjustments, load shifting to reduce peak demand, and/or use of alternative energy suppliers, including changes to more favorable rate schedules; auditing of energy service billing and meters.
13. Indoor air quality improvements or improved climate control systems.
14. Daylighting systems, such as skylights.
15. Renewable and/or on-site distributed power generation systems.
16. Water and sewer conservation measures. Includes without limitation plumbing fixtures and infrastructure.
17. Equipment upgrades that improve accuracy of billable revenue generating systems.
18. Other energy, water or wastewater measures, as they may provide measurable, long-term operating costs reductions or billable revenue increases.

An energy service company is a reputable and qualified energy solutions provider that designs, develops, and builds energy-saving projects, decreasing a facility's operations and maintenance costs. ESCOs are also responsible for the risks related to the project. The contract can be awarded by the City in accordance with the City's standard procurement processes. At no cost to the City, the ESCO would analyze relevant data (utility & operational) of City facilities, and with City staff input, would identify and prioritize energy efficiency and renewable energy investment opportunities for the City.

The Allentown EAC recommends that the City begin by identifying select City facilities that would be included in a no-cost preliminary assessment. It is estimated that this initial assessment would take a few months to complete. This approach should minimally impact City staff time and overall burden on City resources while furnishing the City with professional analysis and evaluation at no cost.

2. Step Two

Following the initial assessment, the City would proceed under GESA's iterative, phased process where the City would first select an ESCO following its standard procurement process and the ESCO would then proceed to first conduct a Preliminary Energy Assessment (PEA) with respect to potential projects and issue a publicly available report with the following information:

- Projected Installation;
- Projected Maintenance;
- Projected Repairs and debt service;
- Estimated amounts of energy or operating costs that will be reduced;
- List of contractors and subcontractors to be used by the ESCO

PEA findings are then presented to City stakeholders for feedback, which is then incorporated into the program scope.

A more detailed Investment Grade Audit is then conducted to advance engineering designs and finalize costs, savings and schedules of the GESA scope selected by the City. The ESCO would then award the energy savings contracts for the selected projects to the selected contractors and subcontractors.

Cost savings generated under a tailored GESA program can be utilized to fund new salaried positions for the City, such as a Certified Energy Manager (CEM); helping fill any budget shortfalls for such a position. As an option, the City can consider creating this new position as part of a future GESA program.

The following timeframes are estimated for GESA procurement, PEA and IGA phases. These projections will depend upon City schedules, its furnishing of required data, and number of facilities included. Note, some steps can be addressed in parallel with other steps, such as PEA & IGA processes and GSA contracting to Program Financing, helping condense the overall schedule:

Phase	Time Frame
City Issue GESA RFP to Selecting One (1) ESCO Partner	1-2 Months
Preliminary Energy Audit (PEA)	2-4 Months
Investment Grade Audit (IGA)	3-5 Months
Guaranteed Savings Act (GSA) Contracting	1-2 Months
GSA Program Financing	1-2 Months
Construction	12-18 Months

3. Step Three

In order to award the contract, the City of Allentown must be aware that the amount expended on energy conservation measures recommended in the proposal should not surpass the amount of energy, water or wastewater cost savings, operational cost savings or revenue increases resulting from the energy conservation measures within a period not to exceed 20 years from the date of final installation. For the energy conservation measure described in 2, 17, and 18 listed above, the City of Allentown should not consider savings that result from reductions in the size of its staff if the reductions are related to or generated by outsourcing or using contract workers to perform tasks previously performed by employees of the City.

The ESCO on the other hand is required to give a sufficient guarantee (bond) to the City of Allentown to ensure its faithful performance. The City of Allentown should obtain the bond in accordance with the Public Works Contractors' Bond Law of 1967. In addition, the contract must include a written guarantee that savings will meet or exceed the cost of the energy conservation measures to be evaluated, recommended, designed, implemented, or installed under the contract. Should the savings not be achieved, the ESCO partner would reimburse the City for the shortfall and/or work to remedy the cause of the shortfall throughout the contract term.

The contract can include improvements that are not related to an energy conservation measure if the following rules are met:

- The total value of the improvement does not exceed 15% of the total value of the guaranteed energy savings contract;

- The improvement is necessary to conform to a law, a rule or an ordinance or an analysis within the guaranteed energy savings contract demonstrates that there is an economic advantage to the City of Allentown implementing this improvement;
- Justification for the improvement is documented by industry engineering standards.

Other expenditures that require facility alteration to successfully implement other energy conservation measures can also be included in the contract. The installation of these additional measures should be supervised by the ESCO. Finally, the contract should expressly state, quantify and validate the budgetary sources of all energy-related cost savings and operating costs utilized.

4. Step Four

Following GESA program installations, guaranteed savings are monitored by the ESCO through a Measurement and Verification (M&V) program based upon International Performance Measurement and Verification Protocols (IPMVP) utilized by the U.S. Dept. of Energy, Federal Energy Management Program. The ESCO would continue to work with the City, its energy manager, representatives, or its identified advisors over the contract term, helping to identify future projects that enhance efficiency and sustainability for the City, evaluate any needed changes to the program, coordinate on community serving programs, etc.

Attachment C

Energy Efficiency for Residents as a way to address Energy Equity

Summary

Addressing underlying causes of energy equity can be improved through laws and government policies that promote accountability, sustainability, and economic development. As the third largest city in Pennsylvania, Allentown can set the example and standard of addressing energy efficiency within existing residential buildings. One of the greatest challenges the city faces is how to address energy equity in rental properties. According to Point2 Homes in 2023, renters take up 59% of Allentown, Pennsylvania real estate.² The equity issue is amplified because “Rentals consume 15% more energy on a per-square-foot basis and have 30% higher energy costs than other homes”.³ Renters are often left behind in improvements of energy efficiency because they lack the authority to make changes to their infrastructure or are unable to afford upgrades themselves.

Introduction

There is no current energy efficiency requirement for rental properties within the city. Below we discuss recommendations that can be considered to eliminate the barriers and reduce energy burdens from occurring within Allentown. By implementing these recommendations, the City could enable upgrading existing buildings to allow them to last longer and become more affordable. The recommendations include select policies and examples of case studies where other cities have found these programs to be successful. For additional information, please see the toolkit compiled by the American Council for an Energy Efficient Economy³ to be used as a guide for City and local government officials.

All recommended policies are focused on addressing gaps in current programs to help improve energy efficiency for renters. These include recommendations on establishing minimum energy efficiency standards, requiring energy audit assessments for all rental properties, disclosure of the results of those assessments to tenants, requiring landlords to allow tenants to make efficiency upgrades at their own expense, and prohibiting landlords from raising rental rates following energy efficiency upgrades. These policies can be embedded into landlord rental license applications. We also recommend the creation of a public city-wide database for energy efficiency metrics that will help with tracking progress and promoting transparency of these proposed initiatives.

Recommendations

I. Establish Minimum Energy Efficiency Standards for Rental Buildings

The City should establish minimum standards for rental properties similar to the City’s health and safety standards. The standards would need to be specific to the age and size of the building. The Environmental

² Point2Homes. 2023. “Allentown, Pennsylvania Rent Trends .” Point2Homes. 2023.
<https://www.point2homes.com/US/Average-Rent/PA/Lehigh-County/Allentown.html>.

³ Jarrah, A., and K. Tanabe. 2022. Energy Equity for Renters: A Toolkit to Expand Energy Efficiency and Preserve Affordable Housing. Washington, DC: American Council for an Energy-Efficient Economy.
aceee.org/toolkit/2022/11/energy-equity-renters-toolkit

Protection Agency has established a benchmarking tool called the ENERGY STAR® Portfolio Manager®⁴ which is used as a reference to evaluate the energy bill, and building size, type etc. against a national portfolio of buildings with similar features.

The City should work with existing stakeholders such as local utility companies, city departments, and outside energy development companies, to develop these minimum standards. The Allentown EAC could lead this effort.

II. Incorporate Energy Efficiency Assessments in Rental Property Inspections

The City inspects rental properties once every ten years unless there is an extenuating complaint against the property and inspections are conducted sooner. We recommend that on the same day that these properties are inspected for health and safety, a trained energy efficiency auditor accompanies them to run tests and record data. Energy audits are a process in which a trained contractor inspects the existing building envelopes (insulation and windows) HVAC, doors, duct pressure test, fireplaces, attics, basements, and more. This information would then be used to require the landlord to make upgrades to meet the minimum standards established by the City under Recommendation I above.

III. Collect energy efficiency data on properties when conducting lead abatement remediation.

The City's existing lead abatement program can be leveraged to obtain information on energy efficiency at the residences inspected for lead. This could be done for both rental properties and homeowners. This information would then be used to target energy efficiency upgrades in collaboration with community partners such as Community Action Lehigh Valley, a local community organization that provides a variety of services. Per their website, CALV hires contractors to make improvements to the homes of low-income people and educates them on comfort and conservation techniques to enable them to save money on heating costs. CALV also repairs and even replaces failing heating systems. However, CALV's weatherization program applies only to homeowners, not to rental properties. CALV could be a critical partner with the City by assisting in education and awareness at rental properties as it currently does for homeowners. Creating city-wide policies can pave the way and set the foundation for justice, increased access, and the reduction of energy costs for rental properties as well as homeowners.

IV. Require Energy Assessments and Condition License on Meeting Standards

Require landlords to have an energy assessment conducted prior to the City granting or renewing a license for rental of the property. The assessment needs to have been conducted no more than three years prior to the license application, and should meet assessment standards established by the City. In addition, the results of the assessment must show that the building meets energy efficiency standards established by the City for the type of building at issue under recommendation I above. The City can help these new landlords by offering them straightforward paperwork and documentation under a clear and streamlined process.

⁴ The Environmental Protection Agency ENERGY STAR® Program. n.d. "Benchmark Your Building Using ENERGY STAR® Portfolio Manager®." <https://www.energystar.gov/buildings/benchmark>.

V. Disclosure of energy efficiency assessment results at the time of rental.

Where the tenant is responsible for energy bills, require accurate disclosure to prospective tenants of the results of the required energy assessment (see IV above), including the energy star rating of the unit's appliances, and insulation levels in attic, wall, basement and crawlspace as applicable to the unit. Simply requiring these disclosures will motivate landlords to become involved in maintaining their properties, preventing absentee landlords and thus, reducing energy burdens. This is similar to the current process of requiring landlords to disclose damages before moving in and must be approved and processed by the designated city department.

VI. Disclosure of Energy Costs Prior to Rental

Where the tenant is responsible for paying energy bills, require landlords to provide an estimate of annual energy costs at the unit. This recommendation is based on Chicago's⁵ energy disclosure which is required for all first-time leases. The information must be incorporated into every written lease agreement. This mandated disclosure alerts residents of the inevitable costs they will incur if they decide to rent there, allowing them to choose more energy-efficient rentals. Although this does not require landlords to make any direct changes or improvements to the property, it could provide a powerful incentive to the landlord to do so.

Additional examples of mandatory energy disclosure can be found in Californian which includes useful worksheets for tracking energy audits in residential sectors⁶. The state also recently updated its energy code in 2022⁷ which includes additional mandatory requirements including energy performance standards.

VII. Create City-Wide database on energy efficiency audit results

The Creation of a City-wide Database for energy efficiency, would aid in informing both renters and city officials of areas within their jurisdiction that have the greatest need of improvement. The database can also be used to inform renters. Data would be entered into the platform on a rolling basis as energy efficiency inspections are being completed. This procedure has been adopted by The Center for Energy and the

⁵ Chicago City Government Rules. 1990. "HEATING COST DISCLOSURE RULES." 1990. <https://www.chicago.gov/content/dam/city/depts/dol/rulesandregs/HeatingCostDisclosureRules.pdf>.

⁶ Commission, California Energy. 2016. "2016 Building Energy Efficiency Standards." California Energy Commission. 2016. <https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2016-building-energy-efficiency>.

⁷ David Hochschild, Karen Douglas, J.D., Siva Gunda, J. Andrew McAllister, Ph.D., Patty Monahan, Payam Bozorgchami, P.E., Will Vicent, Michael J. Sokol, and Drew Bohan. 2022. "BUILDING ENERGY EFFICIENCY STANDARDS for RESIDENTIAL and NONRESIDENTIAL BUILDINGS for the 2022 BUILDING ENERGY EFFICIENCY STANDARDS TITLE 24, PART 6, and ASSOCIATED ADMINISTRATIVE REGULATIONS in PART 1." https://www.energy.ca.gov/sites/default/files/2022-12/CEC-400-2022-010_CMF.pdf.

Environment in Minneapolis, Minnesota⁸ which has made energy data for properties within the city available to the public. The data collected from their audits is displayed in an accessible way on a city-wide dashboard embedded into their city website. We recommend that the City of Allentown implements a similar dashboard system.

VIII. Allow Renters to Make Energy Efficiency Improvements

It is recommended that the city of Allentown investigates policies to ease the permission process for renters to upgrade appliances and HVAC systems who would like to pay for these improvements on their own. Renters are the ones who pay for energy and often move into spaces with outdated appliances. This “split incentive” of energy means that landlords have no incentive to upgrade existing properties beyond what is code mandated. This practice within residential properties creates unnecessary energy burdens for renters, which homeowners do not face. Our recommendation is to create an ordinance that allows residents to purchase, update, and install new energy star certified appliances and to replace inefficient appliances without legal repercussion from their landlords, as long as the landlord is notified of the action 30 days prior to the purchase and installation. The renters themselves would also agree to pay for all the costs associated with such actions. This will aid residents in being able to directly and immediately save costs and have improved thermal and cooling comfort in their spaces.

Below are some additional resources. For an overview of the ACEEE toolkits below, see [ACEEE Toolkit for Cities](#),

Tool Kit 1: [Responding to Renter Challenges with Integrated Energy Efficiency and Anti-Displacement Strategies](#).

Tool Kit 2: [Filling Gaps in Funding and Financing for Energy Efficiency Retrofits in Rental Housing](#)

Tool Kit 3: [Guidance on Marketing, Education, and Outreach Campaigns Targeting Energy Efficiency Improvements in Rental Housing](#)

Tool Kit 4: [Local Government Measures to Institutionalize Equity Accountability](#)

Tool Kit 5: [Mayor’s Tool Kit to Promote Energy Efficiency](#)

Urban Sustainability Directors Network: [A Guidebook on Equitable Clean Energy Program Design for Local Governments and Partners](#)

⁸ <https://www.mncee.org/energy-disclosure?find-energy-scores>

Solar Renewable Energy Financial Incentives for Residents

There are two primary incentives for residents to install solar panels: (1) the federal investment tax credit; and (2) solar renewable energy certificates. Each is further explained below.

Federal Tax Credit

Investment Tax Credit (ITC) is a dollar-for-dollar reduction of **30%** on the amount of tax a resident pay the U.S. Government. The 30% is applied to the **total cost** of the installed solar system and it is a reduction, not a refund, that can only be claimed once. Currently, the ITC qualifies for (1) Energy efficiency improvements installed during effective years (applies singularly for acquisition of battery), (2) Residential energy property expenditures; (3) Home energy audits. Both solar photovoltaic (PV) systems that convert the radiant energy from the sun into electricity and solar thermal systems used to heat water qualify for the tax credit.

In order to redeem the credit, the resident must comply with the following requisites:

- The householder must be the resident of which the system is being installed and they must own the system.
- Have a tax liability;
- The system must be installed in the U.S. regardless if the system is installed in a primary or vacation home;
- The system must be completely installed and new.

If the resident is not the homeowner, they can still be eligible. if they contribute to a collective solar system. The amount spent contributing to the cost of the solar system is the amount used to calculate the tax credit reduction.

The costs of a solar system applicable for the 30% credit include the following:

- Solar panels;
- Labor costs of the system preparation and installation including fees;
- Equipment (wiring, inverter, racking, etc.);
- Sales taxes of the expenses;
- Battery storage (applicable for at least 3kWh devices).

* Roof materials and structural components do not qualify

The ITC will follow the schedule in Table 1:

Table 1 – Schedule for Investment Tax Credit

[illegible]

After your system is installed, the resident should complete the file [IRS Form 5695](#) and attach it to their federal tax return with Form 1040 or Form 1040NR. Instructions on how to fill out the form can be found [here](#).

For instance, if the total cost of the solar system is \$18,000 the 30% is applicable to that cost, thus resulting in a \$5,400 tax credit deducted from the tax liability. If during the tax year one's own \$6,000, the actual amount paid will be \$400. If the taxes owed are less than the credit earned, the remaining amount will roll over to the following year.

Solar Renewable Energy Certificates

Solar Renewable Energy Certificates (SRECs), are a tradable commodity given to a homeowner for each megawatt-hour (1,000 kWh) of electricity generated from a solar energy system. They provide a means for individuals to earn additional income on top of the savings generated from using solar power.

If one has a system that generates 10,000 kW, it will result in 10 SRECs per year. When credited, the certificates can then be sold or traded on a market. It is an income received for owning solar. The SRECs are valued in an open market, such as a stock market, based on supply and demand. The demand is determined by each state that decides how much energy they want to generate from renewable energy. The more the state increases the requirement, the higher the SREC price goes. According to Pennsylvania's Alternative Energy Portfolio Standard (AEPS), "Act 213, requires that an increasing percentage of electricity sold to retail customers each year in the commonwealth is from alternative energy sources." For solar energy generation, a minimum threshold of 3% must be met by 2024.

In Pennsylvania, the SRECs market is managed and tracked within the PJM Generation Attribute Tracking System (GATS) and buyers include electric utilities, brokers, aggregators, environmental firms, and companies looking to neutralize their carbon footprint. Typically, utilities buy them from homeowners or aggregators in order to achieve their renewable energy requirements. According to SRECTrade, the latest market price for a SREC in PA is \$47.00 (March 2023). SRECs generated in Pennsylvania are also eligible for sale in Ohio.

To qualify for a SREC, the resident must own a solar system. Submit an application to the Pennsylvania Public Utility Commission's (PUC) Alternative Energy Credit Program and register on the GATS platform.

GLOSSARY

CALV - Community Action Lehigh Valley: A nonprofit organization in Lehigh Valley, Pennsylvania that works to reduce poverty and promote economic self-sufficiency by providing a range of services, including energy assistance and weatherization programs.

City-Owned Assets - All buildings, street lights, real estate and other property owned by the City. Note that the City does not own the Allentown library, court houses, County jail, or Allentown School District buildings or land.

DOE - Department of Energy: A U.S. federal government agency responsible for advancing the national, economic, and energy security of the United States through the development and implementation of policies regarding energy production, distribution, and consumption.

ECM - Energy Conservation Measure: Any technology or practice implemented to reduce energy consumption, such as upgrading insulation, installing energy-efficient lighting, or improving building automation systems.

EECBG - Energy Efficiency and Conservation Block Grant: A program funded by the U.S. Department of Energy that provides grants to local governments and communities to fund energy efficiency and conservation projects, such as installing energy-efficient lighting or upgrading heating and cooling systems.

ESCO - Energy Service Company: A company that provides energy efficiency and conservation services, including the implementation of ECMs, to commercial and public-sector clients. ESCOs typically use performance-based contracting to guarantee energy savings to their clients.

PA GESA - Pennsylvania Guaranteed Energy Savings Act: A law passed by the Pennsylvania state government that enables public agencies to enter into guaranteed energy savings contracts with energy service companies to reduce energy costs.

PEA - Preliminary Energy Assessment: An initial assessment conducted by an energy auditor or engineer to identify potential energy conservation measures and estimate their energy savings potential. A PEA typically includes a walk-through of the facility, a review of energy bills, and a preliminary cost-benefit analysis.