ILLUME

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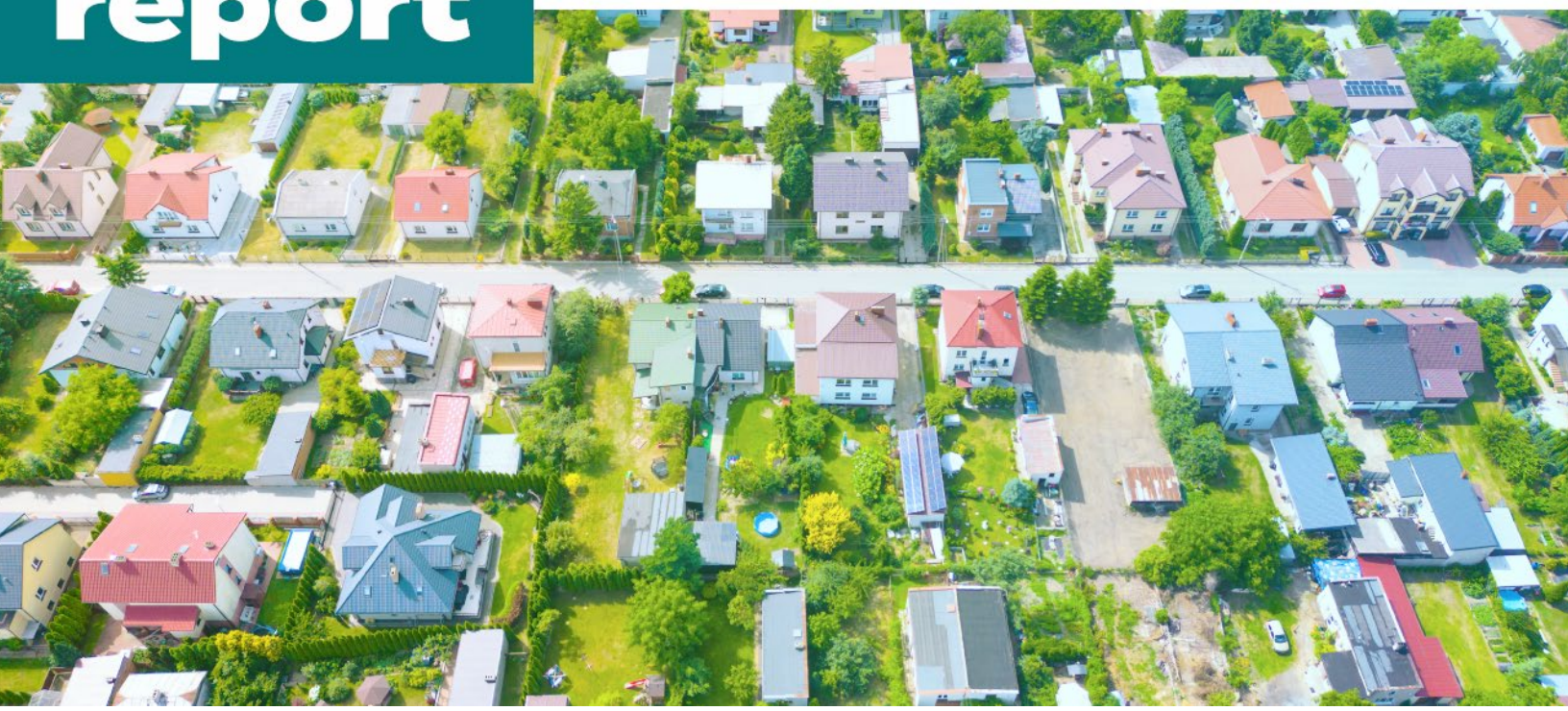
report



Illinois Solar for All:

Program Year Five (PY5) Annual Evaluation Report

Prepared for:	Prepared by:
Illinois Power Agency	ILLUME Advising, LLC

Acknowledgments

ILLUME Advising, LLC is a forward-thinking consulting company at the rare intersection of insight and execution. Founded in 2013, the company has quickly grown to include a deep bench of quantitative and qualitative research experts. ILLUME uses cutting edge research strategies to help build a resilient energy ecosystem to enrich lives, improve global health, and ensure a more secure and sustainable future.

For this effort, we would like to acknowledge, first and foremost, the Illinois Power Agency. We would also like to acknowledge Elevate Energy's support in providing information about this program. Additionally, we would like to recognize the dedicated work of Verdant Associates, LLC and Industrial Economics, Inc. Finally, we would like to acknowledge the ILLUME team members Julene Landaburu Ibarra, Miriam Stein, Arianna Zrzavy, Andie Gemme, Sergio Olalla Ubierna, Bahareh van Boekhold, and Eileen Hannigan.

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Table of Contents

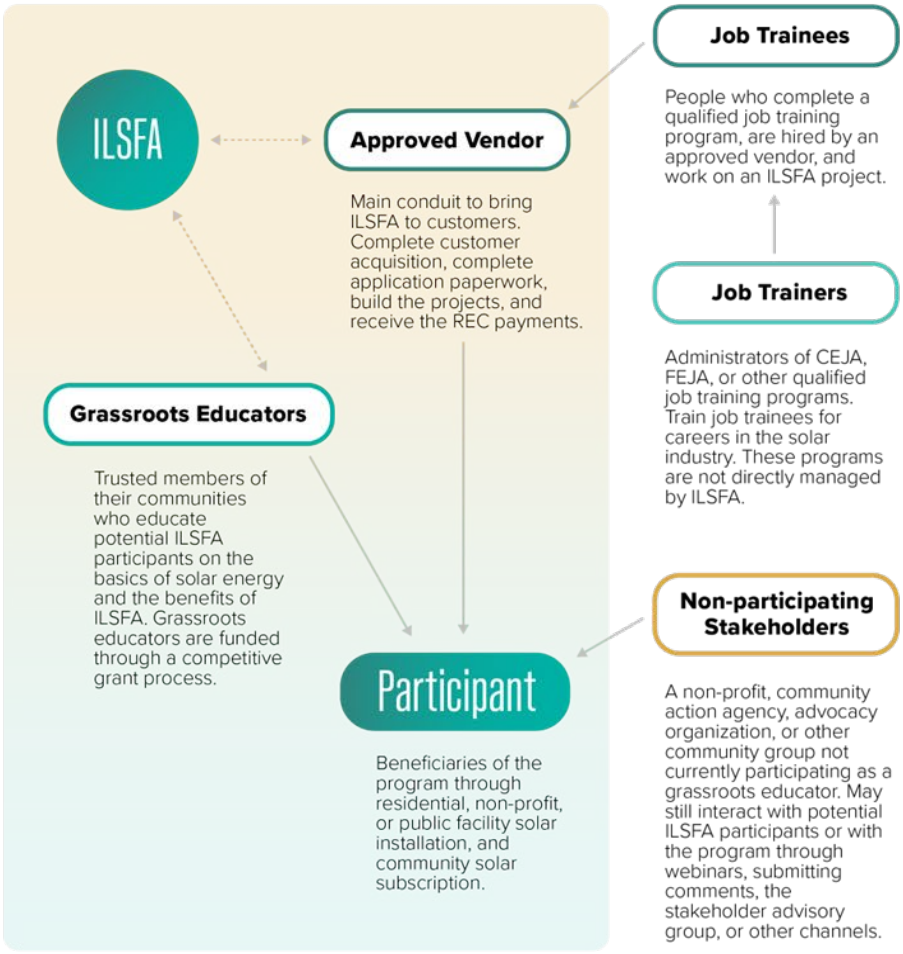
Executive Summary

This summary includes evaluated impacts and findings for Illinois Solar for All (ILSFA) program year 5 (PY5), which took place from June 1, 2022, to May 31, 2023. ILSFA is implemented by the Illinois Power Agency (IPA) and administered by Elevate.

The evaluation team examined and modeled impacts based on projects approved during PY5 or projects energized through the end of PY5, depending on the type of impact. ILSFA allocated funding to approved projects in PY5, but they may not have been constructed or energized by the end of the program year, so the approved project category represents projected impacts. By contrast, energized projects are fully constructed, connected to the grid, and delivering benefits, representing actual impacts that occurred by May 31, 2023. The date of project energization is determined based on when the project receives Part 2 approval through ILSFA – in other words, when the renewable energy credits (RECs) are paid out. The team analyzed different impacts based on available data and whether they occur once (e.g., construction costs) or over time (e.g., bill savings). We explain which set of impacts is being examined within each of the program impact sections.

The process assessment in PY5 was a key part of the program evaluation, aiming to understand the experiences of those involved in the ILSFA program and assess the performance of the program administrator, Elevate. Key stakeholders include households, property managers, non-profits, and public facilities who directly benefit from the program, as well as entities that facilitate participation: program administrators (IPA and Elevate), Approved Vendors (AVs) (who recruit participants and install projects), Grassroots Educators (GEs) (who educate communities about solar and ILSFA), job trainees (who deliver projects), and job training administrators (who provide training). Additional stakeholders, such as non-profits, community action agencies, and advocacy groups, may also engage with the program through partnerships, webinars, or community education.

For the PY5 evaluation report, we collected feedback from program administrators, GEs, nonparticipating stakeholders, job trainers, and job trainees to understand their experiences. Findings from AVs and program participants will be included in the PY6 analysis.



Electricity Impacts | Approved and Energized Projects

To assess electric energy impacts, our team looked at both PY5 approved projects and PY5 energized projects. PY5 approved projects are all projects that received Part 1 approval through ILSFA in PY5. These projects reflect recent program activity that will eventually lead to increased installed PV capacity. PY5 energized projects are all projects that have received Part 2 approval by the end of PY5. These projects are connected to the grid and generating electricity. We summarize the number of PY5 approved projects and their average capacity below. Average project cost includes PY5 energized projects only, as project costs are not always collected before a system has been energized.

Distributed Generation

1-4 Units

Number of Approved Projects: **223**

Total Approved PV Capacity (KW_{AC}): **1,550.6**

Average Energized Project Cost per KW_{AC} : **$3,377**

5+ Units

Number of Approved Projects: **0**

Total Approved PV Capacity (KW_{AC}): **N/A**

Average Energized Project Cost per KW_{AC} : **$2,908**

Non-Profit /Public Facilities

Number of Approved Projects: **33**

Total Approved PV Capacity (KW_{AC}): **7,151.9**

Average Energized Project Cost per KW_{AC} : **$2,936**

Community Solar

Number of Approved Projects: **5**

Total Approved PV Capacity (KW_{AC}): **8,750.0**

Average Energized Project Cost per KW_{AC} : **$2,667**

Key Findings

- PY5 approved projects will result in an estimated 33.1 GWh/year of solar energy produced.
- The evaluation team estimated how much PY5 approved projects would reduce peak demand in two independent system operator (ISO) regions in Illinois. ISO regions are different sections of the electric grid that control and monitor the operation of the electrical power system in that portion of the state. PY5 approved projects will provide an estimated 3.475 MW of peak-hour demand savings in the PJM-ComEd ISO region, covering the Chicago region and parts of northern Illinois, and 5.452 MW in the MISO-Illinois-Zone 4 region, covering central and southern Illinois and the parts of northern Illinois not covered by the PJM-ComEd region. Solar arrays installed through ILSFA help satisfy customer electricity demand on days when high temperatures may put excess strain on the electric grid in these regions.
- Three Community Solar (CS) projects were energized during the PY5 period. These new projects increased energized CS capacity to 5.75 MW, a total more than tenfold that of the previous year. The five CS projects energized to date provide affordable renewable energy to thousands of customers who otherwise might not be in a position to pursue renewable energy entirely on their own.
- Average per-kW costs (nominal $/kW-ac) of projects becoming energized during the past three program years exhibit a downward trend for 1–4 Units Distributed Generation, Nonprofit/Public Facilities (NP/PF) Distributed Generation, and CS.

Bill Impacts | Energized Projects

To assess bill impacts, our team looked PY5 energized projects. These projects received Part 2 approval by the end of PY5, meaning they are connected to the grid and generating electricity. Since bill impacts occur once projects are energized and continue over the life of the solar array, looking at energized projects is aligned with the timing when participants see bill impacts. The program also does not collect final project cost data until solar arrays are constructed, meaning the data needed to calculate bill impacts is more complete for energized projects.

Distributed Generation

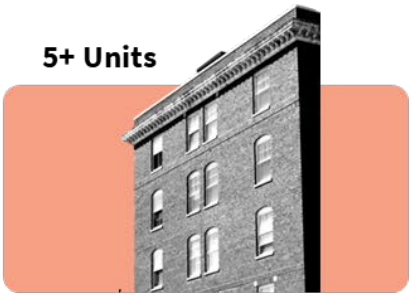
1-4 Units

Number of Energized Projects: **110**

Average Net Monthly Estimated Bill Savings per Customer: $**94.85**

Average Net Monthly Savings (% of Pre-Solar Utility Bill): **86%**

5+ Units



Number of Energized Projects: **2**

Average Monthly Estimated Bill Savings per Customer: $**46.68**

Average Net Monthly Savings (% of Pre-Solar Utility Bill): **68%**

Non-Profit /Public Facilities

Number of Energized Projects: **58**

Average Monthly Estimated Bill Savings per Customer: $**1,679.53**

Average Net Monthly Savings (% of Pre-Solar Utility Bill): **59%**

Community Solar

Number of Energized Projects: **5**

Average Net Monthly Estimated Bill Savings per Customer: $**72.63**

Average Net Monthly Savings (% of Pre-Solar Utility Bill): **50%**

Key Findings

- The total net present value (NPV) of lifetime net bill savings of energized projects is $38.8 million.
- In PY5, the Community Solar subprogram had the lowest percent bill savings because customers were only credited utility bill savings benefits based on the supply portion of electricity cost and not on the distribution or taxes/fees portion of electricity bills. By contrast, distributed generation customers received the full value of retail net metering, which credited both supply and distribution charges. ILSFA does not define how customer are credited for distributed generation or community solar on their bills. Rather Illinois law determines this, including the Climate and Equitable Jobs Act (CEJA). These findings reflect the billing structures in effect during the PY5 timeframe.

Environmental Impacts | Estimated First-Year Avoided Emissions for Approved Projects

To assess environmental impacts, our team looked at both PY5 approved and PY5 energized projects. We calculated environmental impacts based on the energy impacts—in other words, we assume energy generated by the solar arrays offsets energy that would otherwise be generated by other types of power plants connected to the electric grid. Therefore, our team looks at the same set of projects for environmental impacts as for energy impacts. We show impacts for approved projects below and include results for energized impacts in the detailed findings section of the report.

Distributed Generation

1-4 Units

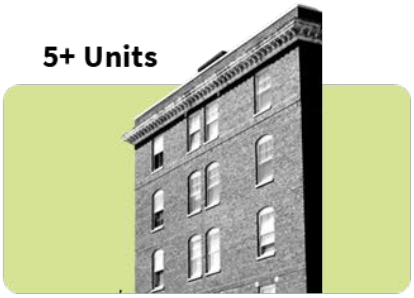
Number of Approved Projects: **223**

CO_2e lbs: **3,455,314**

NO_X lbs: **1,475**

SO_2 lbs: **1,670**

5+ Units



Number of Approved Projects: **0**

CO_2e lbs: **n/a**

NO_X lbs: **n/a**

SO_2 lbs: **n/a**

Non-Profit /Public Facilities

Number of Approved Projects: **33**

CO_2e lbs: **18,146,443**

NO_X lbs: **9,144**

SO_2 lbs: **10,491**

Community Solar

Number of Approved Projects: **5**

CO_2e lbs: **31,988,501**

NO_X lbs: **16,906**

SO_2 lbs: **19,462**

Key Findings

- First-year avoided emissions of PY5 approved projects are estimated equal to 53.6 million pounds CO_2e, 27.5 thousand pound of NOx, and 31.6 thousand pounds of SO_2.
- Total lifetime avoided emissions are estimated equal to 302 million pounds CO_2e, 316 thousand pounds of NOx, and 363 thousand pounds of SO_2.
- First-year avoided emissions of approved projects are equivalent to:

4,315 Homes Powered for a Year

3,496 Cars Taken Off the Road for a Year

Workforce and Economic Impacts | New PY5 Energized Projects

To assess workforce and economic impacts, our team looked at modeled impacts for new projects energized in PY5. For this analysis, we looked only at new energized projects, excluding projects energized in prior program years. Since economic impacts occur a single time when a solar array is constructed, we look at actual impacts to the economy occurring as a result of this construction.

Distributed Generation

1-4 Units

Number of New Energized Projects: **47**

Employee Compensation: **$480,000**

GDP Impacts: **$1,700,000**

5+ Units

Number of New Energized Projects: **1**

Employee Compensation: **$560,000**

GDP Impacts: **$1,990,000**

Non-Profit /Public Facilities

Number of New Energized Projects: **17**

Employee Compensation: **$1,490,000**

GDP Impacts: **$5,330,000**

Community Solar

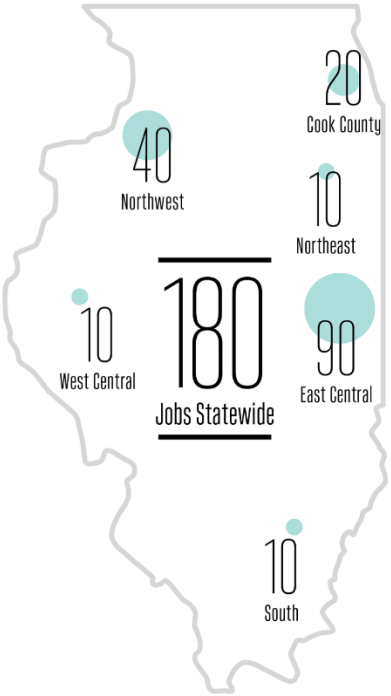
Number of New Energized Projects: **3**

Employee Compensation: **$5,760,000**

GDP Impacts: **$20,530,000**

Key Findings

- The modeled GDP impacts of PY5 energized projects totaled over $29.5 million, of which more than $12 millions came from investments in community solar projects.
- Community Solar projects generated the largest share of modeled spending, which occurred in East Central Illinois and supported large employment and GDP impacts in this area. However, the ripple of indirect impacts in Cook County and Northwest Illinois suggests the region was still somewhat reliant on other parts of the state for construction inputs.
- Across the ILSFA projects energized in PY5, approximately 30% of total project costs were modeled as going to hiring in-state labor related to project installations.
- Production and import taxes accounted for the majority of modeled state tax impacts, followed by employee compensation and income taxes from households earning over $100,000 annually, rather than participating households. This suggests that while participating households benefit from ILSFA, they do not bear the primary tax burden. For federal taxes, employee compensation taxes were the largest share of tax burden.
- Based on economic models of household spending patterns, new household spending following on-bill savings generated additional economic activity focused on the healthcare and housing sectors, indicating participants likely use money saved through the program to meet their basic needs.



Social Impacts | Approved Projects

Funding allocation targets for environmental justice communities (EJCs) and energy sovereignty (ES) are defined within the program for based on the budgets allocated to approved projects on an annual basis. Therefore, the team assessed the social impacts for PY5 approved projects.

Distributed Generation

1-4 Units

Total Funds Allocated to EJCs: **$6,834,432**

Approved Project Incentives Allocated to EJCs: **$1,342,542**

Approved Project Incentives Allocated to ES: **$112,492**

5+ Units

Total Funds Allocated to EJCs: **n/a**

Approved Project Incentives Allocated to EJCs : **n/a**

Total Funds Allocated to ES: **n/a**

Approved Project Incentives Allocated to ES : **n/a**

Non-Profit /Public Facilities

Total Funds Allocated to EJCs: **$4,205,533**

Approved Project Incentives Allocated to EJCs: **$7,203,172**

Total Funds Allocated to ES: **$4,205,533**

Approved Project Incentives Allocated to ES incentives: **$10,415,859**

Community Solar

Total Funds Allocated to EJCs : **$7,345,127**
Approved Project Incentives Allocated to EJCs: **$3,698,815**

Total Funds Allocated to ES: **$7,345,127**
Approved Project Incentives Allocated to ES: **$6,946,142**

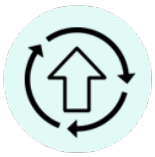
Key Findings

- In PY5, 26% of approved project incentives went to EJCs, down from 69% in PY4. The CS subprogram allocated only 15% of its approved project funds to EJCs, falling short of the 25% target. Since 25% of funding is reserved for EJCs in each subprogram, unused funds in the CS subprogram were rolled over to the next program year.
- While ComEd provides service to 70% of Illinois residents, most ILSFA projects (78%) are concentrated within ComEd's service territory, down from 88% in PY4. As in PY4, the Residential Solar (Small) subprogram drove this uneven distribution in PY5 with 86% of its projects located in ComEd's service territory. In contrast, the Community Solar (CS) and Non-Profit/Public Facility (NP/PF) programs had a smaller presence in the ComEd territory, with only 20% and 36% of their projects located in this region, respectively. It's important to note that while the Residential Solar (Small) subprogram drives the highest number of projects, CS and NP/PF tended to generate a higher magnitude of energy, billing, and environmental impacts at the subprogram level due to their larger average project size.
- Starting in PY5 and for each subsequent program year, 25% of each subprogram's funding is reserved for energy sovereignty projects for nine months, after which unused funds can be allocated to any qualifying projects. In PY5, the full budget set aside for energy sovereignty was allocated to ES projects within CS and NP/PF subprograms. However, only 2% of approved project funds were allocated to ES projects for Residential Solar (Small). We identified several reasons for this. First, under the current program design, participants get solar with no upfront cost and low monthly payments. An ownership model allows participants to receive the same benefits, but they also assume additional risks such as managing operations, maintenance, and finances. In addition, many customers are often focused on addressing immediate needs, limiting their capacity for long-term decisions.

Process Evaluation Findings

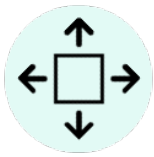
Through the process assessment, the evaluation team identified different categories of successes and barriers that impacted the operational effectiveness as well as program actors' experience with the program in PY5:

The team developed recommendations to address program barriers, ranging from process improvements that the IPA or Elevate can implement directly, to those requiring collaboration with Grassroots Educators (GEs) or Approved Vendors (AVs). Some recommendations may require the IPA to form new partnerships or pursue a major design change or program expansion, a few of which might require changes to legislation. Recommendations were categorized into three categories to distinguish near-term actions from longer-term efforts:



Process Improvement

Partnership



Program Design Expansion or Change

Process Evaluation Findings

Below we share the abbreviated findings and recommendations from our process evaluation. These primarily pertain to the Residential Solar (Small) and Community Solar (CS) subprograms, as the program actors interviewed had the most experience with these.

Administrative Spending

Program administrative costs comprised 5% of the total program budget

Program Administrative Costs | Program Year 5 (PY5) (June 1, 2022 – May 30, 2023)

Category	Entity	Total Spend
Program Implementation	IPA	$566,721
Program Administration	Elevate	$3,768,718
Evaluation	APPRISE	$86,034 [a]
Grassroots Educators	All PY5 Grassroots Educators	$496,167 [b]
Total Administrative Costs		**$4,917,640**

[a] The current evaluation cycle began in 2023 so costs incurred were from February 2023 – June 2023.
[b] Grassroots Educator costs were incurred from August 2022 – June 2023

Program Implementation Challenges

- PY5 program revisions to align with CEJA resulted in the delayed start of the program.

  Recommendation (Process Improvement): Ensure that the program clearly communicates any schedule changes and delays to all program actors.

- Key Elevate staff transition impacted program management.

  Recommendation (Process Improvement): Encourage the program administrator to build redundancy into roles to ensure that program operations can continue smoothly should there be staff turnover or leave of absence.

- The program struggled to operationalize the Energy Sovereignty (ES) policy directive.

  Evaluation next step: The evaluation team will conduct further analysis of ES projects as part of the PY6 social impacts analysis.

Process Evaluation Findings

Program Implementation Challenges

- For the program administrator, tracking and managing program data has been a challenge.

  Recommendations (Process Improvement): Implement enhanced data documentation and QA processes to ensure data accuracy and quality. Examples of potential improvements include reviewing and improving data governance protocols, creating create scripts that automatically flag potential data issues, creation of a data dictionary, and creation of a scorecard summarizing key program metrics.

- For GEs, unclear communication and slow response times from the Elevate team have been challenging. In addition, data tracking requirements are burdensome for GEs.

  Recommendations (Process Improvement): Enhance communication with GEs and support them by:

  1. Establishing a system for Elevate to track and document questions, feedback, or concerns from GEs;
  2. Providing GEs with a single point of contact at Elevate and the IPA for questions and inquiries;
  3. Developing a standard procedure for meetings with GEs, including scheduling meetings with appropriate advance notice and distributing agendas ahead of the meeting; and
  4. Offering additional training on Salesforce use and technical support.

Process Evaluation Findings

Program Education Successes and Challenges

GEs serve as trusted community partners to overcome skepticism of solar offerings. However, GEs and the ILSFA program lose trust with community members when they face barriers to participating.

GEs use tailored methods of outreach to connect with their communities and educate them about ILSFA. They had several suggestions for additional materials and information that would help them raise awareness about the program with potential participants.

Recommendations (Process Improvement):

1. Encourage Elevate staff attendance at GE events
2. Create more testimonials and program success stories that GEs can point to in their recruitment efforts.
3. Improve and update program marketing materials to make them simpler and easier to read. Tailor materials to communities served by ILSFA by including photos of a greater variety of households and translating materials into the most common languages spoken in Illinois; and
4. Offer additional ILSFA-branded materials for GEs to use at tabling events, including polos, tablecloths, posters, and handouts (tote bags, pens, magnets, etc.).

Participation Barriers

Residential Solar (Small) subprogram participation and documentation are time-consuming and can have a lengthy timeline.

Recommendations (Process Improvement):

1. Offer increased training for GEs, providing them with clearer guidance on program processes and their role in each stage;
2. Amend GE contracts to formalize their role in supporting potential participants through the program; and
3. Set clear expectations for the income verification timeline and aim to expedite the income verification process whenever possible and provide clear next steps to participants.

Process Evaluation Findings

Participation Barriers

- Some interested households are not able to participate in the Residential Solar (Small) program because of structural or electrical issues in their homes.

Recommendations (Program Design Expansion or Change):

1. Consider streamlining the Home Repairs Pilot to make participation easier and quicker for participants, either by exploring financing options for AVs to allow them to better support participants in accessing this pilot or simply through raising awareness of the pilot and encouraging AVs to support participation.
2. Consider allocating more funds to the CS subprogram to meet the demand and extend benefits to customers who can't participate in the Residential (Small) program due to structural or electrical issues.

- Interested households have difficulty finding AVs or CS subscriptions.

Recommendations (Partnerships):

1. Continue to address barriers that AVs face when participating in the Residential (Small) program, as discussed in the Residential (Small) Midyear report;
2. Create an AV directory that details which vendors are accepting new Residential (Small) projects;
3. Host networking opportunities for GEs and AVs to connect; and
4. Provide a database or live updates for GEs on solar farm subscription availability and a timeline for when new subscriptions will become available.

- General experiences with CS are positive.

Introduction

ILSFA Program Overview

In 2017, revisions to Section 1-56(b) of the Illinois Power Agency (IPA) Act contained in the Future Energy Jobs Act (also known as FEJA or Public Act 99-0906) created the Illinois Solar for All (ILSFA) program to "include incentives for low-income distributed generation and community solar projects." The program objectives are to "bring photovoltaics to low-income communities in this State in a manner that maximizes the development of new photovoltaic generating facilities, to create a long-term, low-income solar marketplace throughout this State, to integrate, through interaction with stakeholders, with existing energy efficiency initiatives, and to minimize administrative costs."

To accomplish this, FEJA originally created four subprograms, including:

- Low-Income Distributed Generation for on-site solar projects, which included incentives for small (1–4 unit) and large (5+ unit) residential projects.
- Low-Income Community Solar for off-site solar projects.
- Incentives for Non-Profits and Public facilities to do on-site projects.
- Low-Income Community Solar Pilot Projects, which have distinct rules and incentives.

In September 2021, the Climate and Equitable Jobs Act (also known as CEJA or Public Act 102-0662) took effect. Under CEJA, ILSFA includes the following subprograms:

- Low-Income Single-Family and Small Multifamily Solar (1–4 units), referred to in this report as the Residential Solar (Small) or Distributed Generation (1–4 units) subprogram.
- Low-income Large Multifamily solar (5+ units), referred to in this report as the Residential Solar (Large) or Distributed Generation (5+ units) subprogram.
- Incentives for Non-Profits and Public facilities, referred to in this report as the Non-Profit/Public Facilities (NP/PF) Distributed Generation subprogram.
- Low-Income Community Solar, referred to in this report as the Community Solar (CS) sub-program.

Key terms used in the ILSFA program:

Environmental Justice Community (EJC): A community area that has historically been affected by environmental health hazards and/or has been left out of dialogues that have direct impact on the quality of life of the community due to potential environmental and public health effects.

Income Eligible: Households whose income does not exceed 80% of the area median income (AMI).

Photovoltaic (PV): A renewable electricity generation technology that provides electricity by converting photons from sunlight into electrical potential.

Renewable Energy Credit (REC): The environmental value of energy generated by renewable sources, including solar. A REC is issued when one megawatt-hour of electricity from a renewable energy source is added to the electrical grid.

Energy Sovereignty: An eligible low-income household or community organization owning, or on a clear path to own, a majority or full share of a photovoltaic facility, or holding membership in a cooperative that owns it. Beginning in PY5, projects submitted to ILSFA could apply for energy sovereignty status.

Our evaluation covers program year five (PY5) of the ILSFA program, which ran from June 1, 2022, to May 31, 2023.

Changes Under CEJA

The passage of the CEJA brought significant updates to the ILSFA program, particularly in PY5 and PY6. These changes included an increase in funding and a clarification of the program's focus. We describe the changes that took effect in PY5 in more detail below:

- **Increases in funding:** While the program continues to be funded by both the Renewable Energy Resources Fund (RERF) and contributions from utilities, under CEJA, utility contributions grew significantly from approximately $11 million per year to $50 million per year.
- **Updates to program focus:** New language incorporated into CEJA aimed to refine the goals of the ILSFA by broadening its participation, expanding its local benefits, and improving its coordination. These changes included updates to:
    - **Geographic distribution of projects:** In the past, most solar projects were concentrated in urbanized areas of Illinois. CEJA addressed this by revising project selection criteria, particularly for the NP/PF and the CS subprograms, and by enhancing educational efforts to increase ILSFA's awareness throughout the state. These changes aim to promote a more even distribution of projects throughout the state with a particular emphasis on low-income and environmental justice communities (EJCs).
    - **Support for small and emerging businesses:** Large national solar developers have dominated ILSFA projects. CEJA introduced mechanisms to encourage participation from small and emerging businesses, especially those located in low-income and environmental justice areas. The program now includes additional reporting requirements to monitor the involvement of these businesses with the goal of identifying and addressing any barriers to their participation.
    - **Energy sovereignty:** CEJA introduced a new focus on energy sovereignty, aiming to increase local ownership of solar projects. This initiative seeks to ensure that low-income households, non-profits serving these communities, affordable housing owners, and community cooperatives have more control over solar projects and share in the benefits beyond lower energy bills. Under CEJA, a portion of ILSFA projects must meet these energy sovereignty criteria with the potential for higher renewable energy credit (REC) prices for qualifying projects.
    - **Program coordination:** CEJA also emphasized better coordination between ILSFA and other renewable energy programs, particularly Illinois Shines. The goal is to reduce barriers for approved vendors (AVs) to participate in both programs while maintaining the distinctive requirements and consumer protections of ILSFA. CEJA also encourages collaboration with other energy efficiency programs and allows parties to propose programs through the Long-Term Renewable Procurement Plan process, the primary mechanism by which the IPA makes updates to ILSFA's program design.

Program Year Five Summary

PY5 featured two separate initial project submission windows: 1) one for the Residential Solar (Small and Large) subprograms and the NP/PF subprograms and 2) one for the CS subprogram.

Both initial project submission windows remained open for two weeks. In the Residential Solar (Small and Large) subprograms, submissions during the initial project submission window did not exceed the available budget, so the program administrator opened a rolling submission window for the remainder of the program year in December 2022. The program administrator also opened a rolling project submission window for the NP/PF subprogram in January 2023 and for the CS subprogram in February 2023 for the same reason.

For the Residential Solar (Small and Large) and CS subprograms, the incentive values for the approved projects never reached the budgeted amount of funds available for this subprogram, so the remaining funds were rolled over to the PY6 subprogram budgets. A small number of unallocated incentives were also rolled into PY6 for the NP/PF subprogram, although the amount was too small for the program to have used these funds in PY5.

Figure 1 summarizes key dates in the PY5 timeline.

Figure 1. Key Dates in PY5

Source: Illinois Solar for All 2022-2023 Program Year Calendar. https://www.illinoissfa.com/announcements/2022/08/calendar-for-2022-2023-program-year-announced/. Accessed November 20, 2024.

Table 1, below, shows a breakdown of the overall budget for the ILSFA PY5 subprograms, as well as the total number of approved projects, their system capacity, and their total inventive value.

Table 1. ILSFA PY5 Budget and Approved Projects by Subprogram

SUBPROGRAM	BUDGET	TOTAL APPROVED PROJECTS	TOTAL SYSTEM CAPACITY (MW)	TOTAL APPROVED PROJECT INCENTIVE VALUE
Residential Solar (Small)	$27,337,726 [a]	224	1.557	$5,237,815
Residential Solar (Large)	$27,337,726 [a]	0	0.000	$0
Incentives for Non-Profits and Public Facilities	$16,822,130	33	7.137	$16,712,016
Community Solar	$29,380,509	5	8.750	$25,113,703
Total Year Five	$100,878,091	262	17.442	$46,063,534

[a]The budgets for the Residential Solar (Small) and Residential Solar (Large) subprograms were held separately for the first nine months of the program year then combined.
Sources: Illinois Solar for All Sub-Program Budgets for 2022-2023 Announced. https://www.illinoissfa.com/announcements/2022/10/illinois-solar-for-all-sub-program-budgets-for-2022-2023-announced/. Accessed October 18, 2024; Program Year 5 Tracking Data; Illinois Solar for All Project Dashboard: June 2022 – May 2023. https://www.illinoissfa.com/vendors/project-dashboard/?project_year=5 . Accessed October, 14, 2024.

Evaluation Objectives and Approach

Program Year Five Evaluation Approach

For the PY5 evaluation, which took place from June 2022 through May 2023, the program team conducted an impact assessment and a process assessment.

Assessments included in the PY5 evaluation are as follows:

Impact assessment: The impact assessment quantifies program participation, costs, and impacts. For the PY5 evaluation, the team evaluated the following impacts:

- **Electricity impacts:** Evaluating electric energy impacts and peak demand savings.
- **Bill impacts:** Evaluating participants' annual electric utility bill savings in dollars.
- **Environmental impacts:** Evaluating reduced pollutants, including greenhouse gases, NO_x, and SO_2.
- **Social impacts:** Evaluating the extent to which communities are directly benefiting from program investments.
- **Workforce and economic impacts:** Evaluating workforce and economic impacts, including but not limited to, total GDP impacts, employment demand created, tax impacts, and reduced energy burden.

Process assessment: The process assessment evaluated program operations and processes through research with program actors. The research team assessed the performance of Elevate as the program administrator and the experiences of various parties who help implement or interact with the ILSFA program.

Our evaluation consisted of primary data collection activities, program materials review, and tracking data review, which then supported our program impact and process assessments. The program tracking data includes information about participants and projects in the ILSFA program and is maintained by the ILSFA implementer, Elevate, in a Salesforce database. More information about the tracking data can be found in Appendix A. Methodologies. Table 2, below, presents the primary and secondary data sources that support our analyses.

Table 2. PY5 Data Collection Activities and Sources

DATA SOURCE	TARGET COMPLETES	ACTUAL COMPLETES	OBJECTIVE	ANALYSIS SUPPORTED
1.a. Program Materials	NA	NA	Understand ILSFA goals, design, and any recent changes made to the program that would impact our research activities.	All assessments
1.b. Program Tracking Data	NA	NA	Assess whether the information necessary to complete the evaluation was available, and evaluate it for completeness and accuracy.	All assessments
1.c. Program Administrator Interviews	Up to 6	6	Understand program design changes, delivery, and implementation successes and challenges.	Process assessment
1.d. Grassroots Educator Interviews	Census[a] (estimated 7-10 completes)	9	Learn about grassroots educators' experiences with the ILSFA program and their understanding of participants' experiences in the program, as well as collect their feedback to remove barriers to participation.	Process assessment
1.e. Nonparticipating Stakeholders (community-based organizations, non-profits, advocacy organizations, and community action agencies)	5-7	5	Speak with organizations who were not involved with ILSFA in PY5 or PY6 as grassroots educators to understand the key challenges and opportunities associated with the communities each stakeholder serves, and understand stakeholders' priorities as they relate to this evaluation.	Process assessment
1.f. Job Trainer Interviews	8-10	7	Understand job training program design changes, processes, implementation successes and challenges, and trainee outcomes.	Process assessment, workforce impacts assessment
1.g. Trainee Surveys	Census[b] (estimated 5 completes)	7	Understand key job trainee benefits from participation, satisfaction with the program, and any challenges experienced during the program or getting a job.	Process assessment, workforce impacts assessment

[a]The evaluation team reached out to the entire population of 17 PY5 and PY6 participating grassroots educators with the goal of speaking to 7-10 respondents

[b]The evaluation team reached out to the entire population of 64 job trainees who had participated in the job training program since its inception (PY2-PY6), with the goal of surveying 5 respondents.

We provide more detail on the methodologies for these activities in Appendix A.

Furthermore, we provide the objectives and approach as well as any limitations or considerations for the impact and processes analyses in the detailed results chapter, with any additional details included in Appendix A. For activities supporting the process assessment, we report both cross-cutting findings and those from individual data collection activities.

Participatory Evaluation

Stakeholders have expressed frustration in prior evaluation years, feeling like their feedback on the program hasn't been incorporated, which leads to decreased engagement with the program overall. To create an avenue for stakeholders to provide input on the evaluation, the evaluation team accepts comments about the ILSFA evaluation on an ongoing basis through an email inbox, ILSFAEvaluation@IllumeAdvising.com, and a form on the ILSFA website.[1] The evaluation team also held a webinar on July 18, 2024, to share results from the PY4 evaluation and to get feedback on the evaluation plan for PY5 and PY6. We will also share findings for PY5 and PY6 via webinars to be scheduled in 2025. Below we summarize the input received regarding the PY5 evaluation. The text in italics indicates how we incorporated the feedback into evaluation plans for PY5 and PY6.

- **Gathering more comprehensive feedback on Community Solar:** A stakeholder promoting the CS subprogram noted that it would be helpful to receive more information on how the adoption of this initiative was impacting communities as this would help them educate people on CS's benefits and encourage others to adopt it. Specifically, this stakeholder wanted to know more about the impacts of consolidated billing if that were to be adopted. *The evaluation team will estimate energy, bill, and environmental impacts associated with the CS subprogram in the PY4, PY5, and PY6 evaluations. We will also gather feedback from grassroots educators and nonparticipating stakeholders on their experiences specifically with participants in the CS subprogram. Finally, we will speak with CS participants in the PY6 evaluation focus groups on their experiences with the subprogram's billing. The PY4 evaluation findings can be found in the PY4 annual report[2], PY5 evaluation impacts and findings from the GE interviews can be found in this report, and PY6 evaluation findings and findings from the participant focus groups can be found in the next annual report, which will be published spring 2025.*
- **Understanding different individual decisions depending on the subprogram:** Stakeholders emphasized the importance of recognizing that Distributed Generation and CS represent different decisions for participants. *The evaluation team plans to conduct focus groups with participants from each subprogram in PY6 to integrate the different participant experiences into the analysis.*
- **Simplifying communication:** Stakeholders noted that presenting program impacts in simple language could encourage broader program adoption. *The evaluation team spoke with grassroots educators and nonparticipating stakeholders regarding how they educate their communities about solar and ILSFA. These findings are summarized in the Process Evaluation section of this report.*

[1] https://forms.office.com/pages/responsepage.aspx?id=AWKQWor8WUKuHaEwaqCh69vwt4ofGmBDu8BgnjApTb9UMVJNWjFGUkxFUjJaUFU1NTRXV00wWlVTOSQlQCN0PWcu

[2] https://www.illinoissfa.com/wp-content/uploads/2024/06/Illinois-Solar-for-All-Program-Year-4-Annual-Report.pdf

- **Raise awareness about the ability to stack rebates from different sources:** Stakeholders noted the opportunity to educate participants on opportunities to stack rebates from local, state, and federal sources. *The evaluation team spoke with AVs as part of our PY6 evaluation. We will include information on strategies vendors use to access different capital and financing resources and the barriers faced in accessing those resources to serve participants*.
- **Media advertising and awareness:** Stakeholders asked about using media advertising to raise overall awareness of the program, beyond grassroots educators. *The evaluation team did not receive information on the use of media advertising in PY5 but will explore this topic as part of the PY6 program administrator interviews.*
- **Comparing program advertising:** Stakeholders expressed interest in comparing the advertising strategies of ILSFA to those of other assistance programs like Supplemental Nutrition Assistance Program (SNAP) or the Low-Income Home Energy Assistance Program (LIHEAP). *The evaluation team will note this as a potential topic of interest for PY6 or a mid-year report.*
- **Evaluating job trainee requirements:** The ILSFA program requires AVs to staff job trainees on a certain number of project hours annually. Job trainees are only eligible to fulfill requirements for three years following completion of their training. Stakeholders expressed concerns about this program requirement, saying that it particularly poses challenges for small businesses that may be more limited than larger organizations in the staff time they can allocate to the time-consuming process of hiring candidates. Stakeholders proposed allowing small businesses flexibility to hire ILSFA trainees with more leniency in how long trainees were eligible to meet program requirements. *The evaluation team also received feedback from AVs participating in the Residential Solar (Small) subprogram that these requirements posed a challenge, particularly for smaller vendors. These findings are documented in the Illinois Solar for All Residential Solar (Small) Sub-Program – Barriers & Opportunities report.[3] A job trainer who we spoke to as part of our PY5 evaluation also expressed a desire to work with smaller vendors as smaller vendors were more likely to hire their trainees. The program team will collect feedback from AVs as part of the PY6 evaluation across subprograms.*
- **Improving the portal:** Stakeholders reported significant usability issues with the ILSFA portal, stating that it is not intuitive and presents challenges for uploading information. They requested a complete overhaul to enhance its functionality. Additionally, they expressed concerns about the current AV directory, which they found confusing, particularly regarding how to connect participants with AVs available in their area. *The evaluation team will collect feedback from AVs on the AV portal in the PY6 evaluation. The team will also speak to participants about their experience finding AVs in the PY6 evaluation. Finally, the team received feedback from grassroots educators about their experience connecting participants with AVs as part of the PY5 evaluation grassroots educator interviews. These findings are summarized in the process assessment section of the report.*

[3] https://www.illinoissfa.com/wp-content/uploads/2025/01/ILLUME-Advising-Illinois-Solar-for-All-2024-Mid-Year-Report-on-Income-Verification.pdf

Detailed Findings

This section summarizes detailed findings from the electricity impacts, bill impacts, environmental impacts, jobs and economic impacts, social impacts, and process analyses. All impacts examined through this report are based on modeled estimates except for added solar capacity and project costs, which are pulled directly from program tracking data.

For electricity and environmental impacts, we report impacts for all projects approved in program year five (PY5). PY5 approved projects are projects that applied for the Illinois Solar for All (ILSFA) program in PY5 and received Part I approval by May 31, 2023 (including all subsequent project stages). For bill impacts, we report impacts for all PY5 energized projects, which are projects that applied for the ILSFA program in PY1 through PY5 and received Part II approval by May 31, 2023. We also show impacts for PY5 energized projects for electricity and environmental impacts. For the jobs and economic analysis, we show projects energized from PY1 to PY4 and projects energized in PY5 separately. In PY5, two projects fell into both the PY5 approved and PY5 energized project analysis categories: one 1–4 unit Distributed Generation project and one Non-Profit/Public Facilities (NP/PF) project.

Key terms used to describe program impacts:

PY5 approved projects: Projects that applied for the ILSFA program in PY5 and have received Part I approval by May 31, 2023 (including all subsequent project stages).

PY5 energized projects: Projects that applied for the ILSFA program in PY1 through PY5 and have received Part II approval by May 31, 2023 (including all subsequent project stages).

Please note that there were updates to the calculation methodologies and data processing procedures that were applied between PY4 and PY5 for the bill impacts, environmental impacts, and workforce and economic impact sections. Therefore, results issued for these analyses for PY5 may not be comparable to prior years. The PY6 evaluation report will contain updated PY4 evaluation results using the latest calculation methodologies, as well as a comparison of evaluated metrics for the PY4-PY6 program years.

Electricity Impacts

The evaluation team estimated the electric savings and coincident demand savings of PY5 approved projects and PY5 energized projects. These values represent the electric energy generated by the solar systems installed through ILSFA. The research questions addressed by the electricity impact analysis are outlined in Table 3, below.

Table 3. Electric Impact Analysis Research Questions

CATEGORY	PRIMARY RESEARCH QUESTIONS
Project Summary	What is the total number of approved and energized projects? What is the total capacity (kW_{AC}) of approved and energized projects? What is the average system cost per kW_{AC} of project capacity (approved and energized)?
Electricity Savings	How much electricity would be produced in a typical meteorological year (TMY) [a] from approved and energized projects?
Demand Savings	How much peak load would be reduced by the energy generated by approved and energized projects?

[a] Typical meteorological year weather and solar radiation data is a widely used type of data that represents median weather conditions over a multiyear historical period.

Below, we summarize our key findings from this analysis.

Key Findings

FINDING 1

In PY5, ILSFA approved 261 projects totaling 17.5 MW in new solar capacity across the four subprograms (herein referred to as PY5 approved projects). The PY5 approved projects included 223 Residential Solar (Small) projects, 33 NP/PF projects, and five Community Solar (CS) projects. In PY5, two approved projects were energized in the same program year. The remaining PY5 projects remain under development and will be energized in subsequent years.

FINDING 2

Across all PY1 to PY5 projects, 175 projects with 15.5 MW in solar capacity achieved Part II approval ("energized" status) by the end of PY5 on May 31, 2023. This included two projects in the Residential Solar (Large) subprogram, 110 projects in the Residential Solar (Small) subprogram, 58 projects in the NP/PF subprogram, and three projects in the CS subprogram. These new CS projects increased energized CS capacity to 5.75 MW for a total capacity more than 10 times greater than the total capacity as of PY4. The average per-kW costs (nominal $/kW-ac) of projects becoming energized during the past three program years exhibited a downward trend for Residential Solar (Small), NP/PF, and CS subprograms, suggesting that system costs within the program are declining over time. It's important to exercise caution when interpreting these results as some subprograms, particularly CS, have a small number of projects.

FINDING 3

PY5 energized projects helped to satisfy participant electricity demand on a day when the high temperature was approximately 100°F and electric grid loads reached their annual maximum values. The estimated system peak hour demand impacts of PY5 energized projects were 4.3 MW (PJM-ComEd, 4:00-5:00 p.m.) and 2.3 MW (MISO-Illinois-Zone 4, 5:00-6:00 p.m.). While the peak hours of both independent system operator (ISO) regions occurred on the same day (August 24, 2023), each ISO region reached its maximum demand during a different hour of the day.

Project Summary

Table 4 and Table 5, below, summarize program participation by number of projects, total capacity (KW_{AC}), average capacity per project, and average project cost per kilowatt of system size for PY5 approved projects and energized projects, respectively. There are two projects that fall into both the PY5 approved and PY5 energized project analysis categories (one Residential Solar (Small) project and one NP/PF project). The evaluation team calculated these metrics from data provided in the program tracking data.

The PY5 approved project capacity was approximately 17.5 MW, split approximately evenly between CS and Distributed Generation projects, with notable differences in project sizes. CS projects are larger by design to serve many households. Among PY5 approved projects, CS projects, on average, have 250 times the capacity of 1–4 units Distributed Generation projects. Among Distributed Generation projects, the average size of NP/PF approved projects is approximately 30 times that of 1–4 units Distributed Generation projects.

Table 4. Total Capacity and Average Project Costs of PY5 Approved Projects

PROJECT TYPE		NUMBER OF PROJECTS	TOTAL PV CAPACITY (KW_{AC})	AVERAGE PV CAPACITY PER PROJECT (KW_{AC})
Distributed Generation	1–4 Units	223	1,550.6	7.0
	5+ Units	0	-	-
	Non-Profit/ Public Facilities	33	7,151.9	216.7
	Total	**256**	**8,702.5**	
Community Solar	**Total**	**5**	**8,750.0**	**1,750.0**
All Approved Projects		**261**	**17,452.5**	

Comparing PY5 approved projects to PY5 energized projects suggests that project sizes may be increasing. The average sizes of approved PY5 projects are larger than those of energized PY5 projects. The largest size difference is observed for NP/PF, where the average size of approved projects is nearly twice that of those energized during PY1 to PY5. This is partially driven by the 2022 Long Term Renewable Resource Procurement Plan increasing the maximum allowable project size increasing from 2MW to 5MW beginning in PY5.

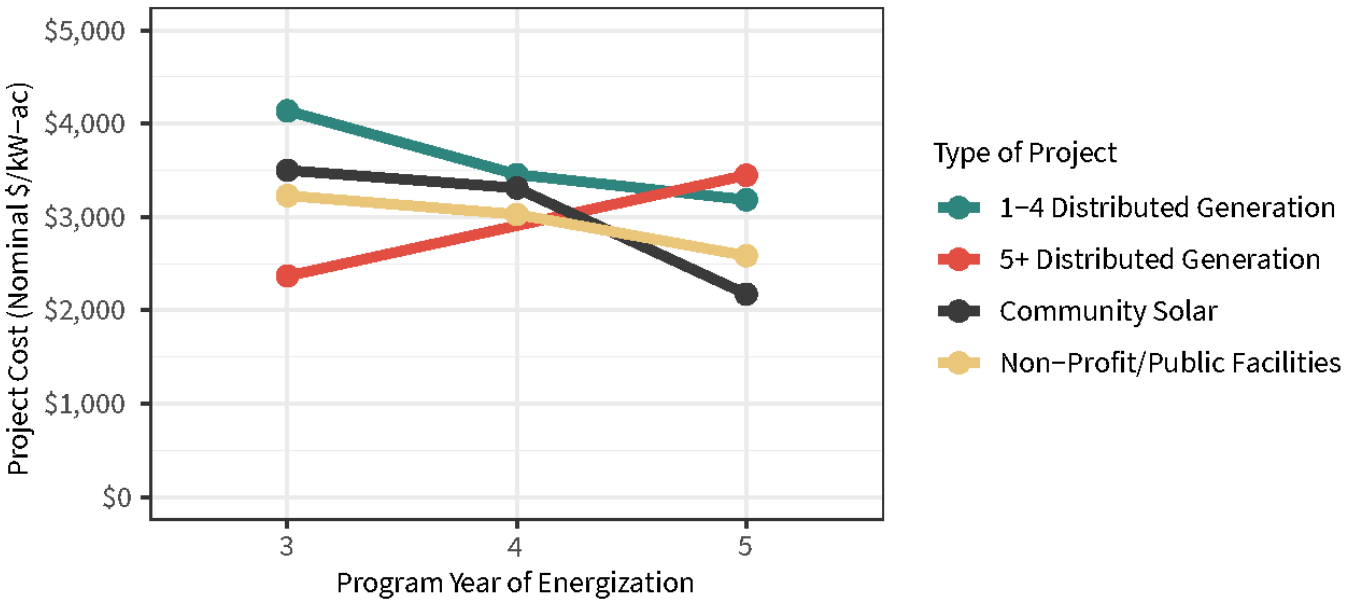
Table 5. Total Capacity and Average Project Costs of PY5 Energized Projects

PROJECT TYPE		NUMBER OF PROJECTS	TOTAL PV CAPACITY (KW_{AC})	AVERAGE PV AC CAPACITY PER PROJECT (KW)	AVERAGE PROJECT COST PER AC KW
Distributed Generation	1–4 Units	110	675.3	6.1	$3,377
	5+ Units	2	2,348.0	1,174.0	$2,908
	Non-Profit/ Public Facilities	58	6,746.1	116.3	$2,936
	Total	**170**	**9,769.4**		
Community Solar	**Total**	**5**	**5,753.3**	**1,150.7**	**$2,667**
All Energized Projects		**175**	**15,522.7**		

Figure 2, below, shows average project costs per kW-ac of capacity for each project type and program year of energization. Energization is the date when the project invoice is issued, while program years run from June through May (e.g., PY5 spans the period from June 2022 through May 2023). These project costs are expressed in nominal dollars.

For ILSFA projects, the average project costs per kW-ac of capacity generally decreased from PY3 to PY5. However, we should interpret this data cautiously. Each of the data points for 1–4 units Distributed Generation and NP/PF Distributed Generation projects is an average based on at least six projects. For PY3 and PY4, the CS data is based on only one project each. Similarly, each data point for 5+ unit Distributed Generation projects represents one project only, and the two energized projects are of markedly different sizes (2,000 kW in PY3 and 348 kW in PY5).

Figure 2. Project Cost per kW-ac by Project Type and Program Year of Energization



Electricity Savings

This section presents the estimated first-year and lifetime electricity savings by project type. Electric energy savings for photovoltaic (PV) systems are the kilowatt-hours generated by the PV systems installed through the program. Table 6 and Table 7, below, present the first-year estimated electrical generation by project type for PY5 approved projects and PY5 energized projects, respectively. These tables also include the average first-year estimated electric energy savings per project and an estimated capacity factor.

The total first-year electric energy savings from PY5 approved projects is 33.1 GWh. About 59% of the savings come from CS projects and 41% come from Distributed Generation projects. Among PY5 energized projects, that relationship is reversed with Distributed Generation projects accounting for 59% of the estimated first-year electric energy savings.

Overall estimated first-year capacity factors are in line with PV production expectations for fixed and tracking systems, respectively. Capacity factor is a metric of system utilization and is defined as the amount of electricity generated during a given period divided by the amount of electricity that would have been generated during that period assuming continuous output at the rated system size. Because PV systems do not generate electricity at night and daytime output varies with weather, annual capacity factors are expected to be approximately those presented in the table.

Table 6. First-Year Estimated Electric Energy Savings of PY5 Approved Projects

PROJECT TYPE		ESTIMATED FIRST-YEAR ELECTRIC ENERGY SAVINGS (MWH)	NUMBER OF PROJECTS	AVERAGE ANNUAL ESTIMATED ELECTRIC ENERGY SAVINGS PER PROJECT (MWH)	AVERAGE ESTIMATED ANNUAL CAPACITY FACTOR (AC)
Distributed Generation	**1–4 Units**	2,364.6	223	10.6	15.2%
	5+ Units	-	0	-	-
	Non-Profit/ Public Facilities	11,331.8	33	343.4	17.2%
	Total	**13,696.3**	**256**		
Community Solar	**Total**	**19,364.0**	**5**	**3,872.8**	**24.4%**
All Approved Projects		**33,060.3**	**261**		

Table 7. First-Year Estimated Electric Energy Savings of PY5 Energized Projects

PROJECT TYPE		ESTIMATED FIRST-YEAR ELECTRIC ENERGY SAVINGS (MWH)	NUMBER OF PROJECTS	AVERAGE ANNUAL ESTIMATED ELECTRIC ENERGY SAVINGS PER PROJECT (MWH)	AVERAGE ESTIMATED ANNUAL CAPACITY FACTOR (AC)
Distributed Generation	**1–4 Units**	983.7	110	8.9	16.7%
	5+ Units	4,719.4	2	2,359.7	20.3%
	Non-Profit/ Public Facilities	9,924.2	58	171.1	18.5%
	Total	**15,627.4**	**170**	**--**	**--**
Community Solar	**Total**	**11,024.0**	**5**	**2,204.8**	**22.2%**
All Energized Projects		**26,651.4**	**175**	**--**	**--**

The analysis presented here assumes no change in electricity consumption has taken place. However, if participants do increase their electricity consumption once the PV systems are installed, there will be a reduction in electricity (along with environmental and billing) savings impacts relative to the assumption of no change in participant electric energy consumption.

For reference, in 2022, the evaluation team analyzed household electric energy consumption outside of Illinois and found that many households increased their electric energy consumption following the installation of solar systems.[4] It is also important to note that the electric energy savings presented here are based on typical meteorological year weather estimates. If metered PV production data were available, more accurate estimates of electric energy savings (and related electric bill savings) would be possible.[5]

Demand Savings

Our team assessed demand savings to understand how the ILSFA program mitigates overall strain on the electric grid. Peak demand refers to the period of time when the strain on the grid is at its highest due to household demand for electric energy usage. Peak coincident demand savings measure the amount of that demand that is offset by solar energy generated by systems installed through ILSFA.

By coincidentally generating electricity during system peak hours, ILSFA projects allow the electric utility to avoid the purchase of high-cost wholesale energy. At the same time, the electric utility reduces its transmission and distribution losses during hours of high system congestion. The evaluation team estimated demand savings for two conditions: (1) the single hour of the year when grid loads reached their maximum value and (2) the savings coincident with the grid's top 100 peak hours.

Peak Hour Impacts

The evaluation team estimated impacts on the PJM-ComEd and MISO-Illinois-Zone 4 annual system peaks using simulated PV generation values. PJM-ComEd and MISO-Illinois-Zone 4 are the two ISO regions in Illinois. ISO regions are different sections of the electric grid that control and monitor the operation of the electrical power system in that portion of the state. The PJM-ComEd ISO region covers the Chicago region and parts of northern Illinois, and the MISO-Illinois-Zone 4 region covers central and southern Illinois and the parts of northern Illinois not covered by the PJM-ComEd region.

Table 8, below, shows peak hour impacts by ISO region for PY5 approved and energized projects. The 2023 annual peaks for both ISO regions occurred on August 24, 2023, a day when high temperatures in the Chicago area approached 100°F. The PJM-ComEd peak occurred during the hour between 4:00 to 5:00 p.m., while the MISO-Illinois-Zone 4 peak occurred an hour later, between 5:00 to 6:00 p.m. It is important to note that these are not the hours when ILSFA PV systems typically reach their highest output (i.e., during the middle of the day when irradiance peaks).

[4] https://verdantassoc.com/wp-content/uploads/IEPEC-2022_Residential-Solar-Consumption.pdf

[5] This information is not available for evaluation unless benefitting customer signs a release form of their data. For this reason, the data was not available for the PY5 evaluation. The evaluation team investigated whether annual REC reporting data could be used as a proxy for annual generation in the PY5 and PY6 evaluations. Due to possible misalignment of REC reporting and REC production this source of PV generation data was deemed unsuitable for impacts evaluation purposes.

Estimated peak hour impacts for PY5 approved projects are equivalent to 0.02% of the 2023 PJM-ComEd peak load and 0.04% of the 2023 MISO-Illinois-Zone 4 peak load. The estimated impacts for PY5 energized projects are very similar; small differences are attributable to small differences in the mix of PV system orientations. The estimated peak hour capacity factors for the MISO-Illinois-Zone 4 region are lower than those for the PJM-ComEd region because of the different timing of system peaks. The MISO-Illinois-Zone 4 peak occurred one hour later when solar radiation levels were lower than they had been during the previous hour.

Table 8. Estimated Peak Hour Generation for PY5 Approved and Energized Projects

PROJECT GROUP	ISO REGION	NUMBER OF PROJECTS	ESTIMATED PEAK HOUR GENERATION (MW)	ESTIMATED PEAK HOUR CAPACITY FACTOR
Approved Projects	PJM-ComEd	203	3.475	42.1%
	MISO-Illinois-Zone 4	58	5.452	32.3%
Energized Projects	PJM-ComEd	138	4.296	41.8%
	MISO-Illinois- Zone 4	37	2.292	30.9%

Top 100 Peak Hours

The estimated PJM-ComEd and MISO-Illinois-Zone 4 peak hour coincident generation is a snapshot of the program's beneficial impacts. Table 9, below, shows the total estimated generation coincident with PJM-ComEd and MISO-Illinois-Zone 4 2023 top 100 hours, alongside estimated capacity factors during the top 100 hours for PY5 approved and energized projects. Looking at the top 100 hours of generation shows how the program benefits the grid over a longer period of time. These results for the top 100 hours are very similar to those presented above for the top hours, signifying that the top 100 hours tend to occur at similar hours of the day as the top hour.

Table 9. Estimated Generation Coincident with Top 100 Hours for PY5 Approved and Energized Projects

PROJECT GROUP	REGION	NUMBER OF PROJECTS	ESTIMATED TOP 100 HOURS GENERATION (MWH)	ESTIMATED TOP 100 HOURS CAPACITY FACTOR
Approved Projects	PJM-ComEd	203	319.1	44.0%
	MISO-Illinois-Zone 4	58	469.5	34.0%
Energized Projects	PJM-ComEd	138	398.5	42.4%
	MISO-Illinois-Zone 4	37	250.2	34.5%

Bill Impacts

The evaluation team estimated two metrics to assess impacts to participant electric utility bills because of participating in Illinois Solar for All (ILSFA): first-year bill savings and lifetime bill savings compared to participant costs. Table 10 shows the research questions addressed by the bill impacts analysis.

Table 10. Bill Impact Analysis Research Questions

CATEGORY	PRIMARY RESEARCH QUESTIONS
Bill Impacts	How much electric utility bill savings can participants expect due to the energy produced by ILSFA projects? How do electric utility bill reductions compare to participants' cost to acquire solar (represented as the ratio of lifetime costs to lifetime bill savings)?

The evaluation team calculated electric bill savings from energized projects by estimating the difference between participant electric bills with and without PV benefits. See Appendix A for further details about the bill calculation methodology. For the lifetime view, we compared electric bill savings and the participant's costs to acquire solar photovoltaic (PV) (e.g., system costs, debt service payment, lease/PPA payments) over the 20-year estimated life of the system.

Below, we summarize our key findings from this analysis.

Key Findings

FINDING 1

On average, participants' first-year net electric bill savings (bill savings less participant PV costs) are 50% to 80% percent of utility bills (assuming no PV). Savings vary by subprogram: The average per-participant monthly net savings range from $47 to $95 for residential Distributed Generation participants. The Non-Profit/Public Facilities (NP/PF) participants save an estimated average of $1,680 per month on their electricity costs. Community Solar (CS) participants were on the lower end of the range of net savings ($72) because CS participants receive credits for reduced supply charges but not the delivery or taxes/fees portion of the bill (as intended by Illinois rate design). The terms of bill credit calculations for CS participants are defined in the Climate and Equitable Jobs Act (CEJA).

FINDING 2

The evaluation team estimated the total net present value (NPV) of lifetime net savings of energized projects at $38.8 million per year.

First-Year Electric Bill Savings

Table 11 shows the average first-year electric bill savings per participant by project type, distinguishing between electric utility bill savings and net savings after accounting for costs of PV paid to vendors by participants. We express the results in terms of monthly averages across the year and calculate the net savings percentage with respect to the participant's total electric bill without PV.

Project size strongly influences electric bill savings; the largest projects produce the greatest bill savings. Other factors affecting bill savings include capacity factor, utility electricity prices, and eligibility for full retail net metering benefits. Under full retail net metering, electricity generated by the PV system reduces several charges: supply, delivery, and taxes/fees. While Distributed Generation projects realize benefits of full retail net metering, CS bill credits are limited to the supply portion of electricity costs only and do not include the distribution or taxes/fees portion of electricity bills. As a result of this limitation, CS projects have the lowest average net savings percentage (50.4%).

Table 11. First-Year Estimated Average Monthly Electric Bill Savings per Participant

PROJECT TYPE		NUMBER OF PROJECTS	UTILITY ELECTRIC BILL SAVINGS	PV COSTS	NET SAVINGS	AVERAGE NET SAVINGS PERCENTAGE
Distributed Generation	**1–4 Units**	110	$97.69	$2.83	$94.85	86.2%
	5+ Units	2	$58.49	$11.81	$46.68	68.0%
	Non-Profit /Public Facilities	58	$2050.35	$370.82	$1679.53	58.5%
Community Solar		5	$91.28	$18.65	$72.63	50.4%

Results presented in Table 11, above, encompass all energized projects. Some projects were zero-cost PV loans or leases (107 of 175 total energized projects), while others (68 of 175 total energized projects) required participants to pay a variable or fixed monthly fee for their solar array. For the smaller group of projects that required participants to pay for their PV system (non-zero PV costs), net savings are substantially smaller. Due to the small numbers of 5+ units Distributed Generation projects and CS projects represented in Table 12, these results should be interpreted with caution.

Table 12. First-Year Estimated Average Monthly Bill Savings per Participant [Projects with Non-Zero PV Costs]

PROJECT TYPE		NUMBER OF PROJECTS	UTILITY BILL SAVINGS	PV COSTS	NET SAVINGS	AVERAGE NET SAVINGS PERCENTAGE
Distributed Generation	**1–4 Units**	11	$101.24	$28.32	$72.92	62.4%
	5+ Units	1	$58.61	$23.61	$35.00	51.0%
	Non-Profit /Public Facilities	54	$1,988.33	$38.29	$1,590.05	57.9%
Community Solar		2	$93.26	$46.63	$46.63	30.3% [a]

[a]Typical meteorological year weather and solar radiation data is a widely used type of data that represents median weather conditions over a multiyear historical period.

These electric bill savings estimates are approximate due to the limited information available regarding bills. While bills were available for Distributed Generation projects, the format (PDF files) necessitated manual extraction of data. While the evaluation team extracted data for a sample of projects, budget constraints necessitated a sampling approach.

We could improve the accuracy of the bill savings estimates if the following information were available all in a machine-readable format.: the individual's annual energy consumption prior to installation (monthly or hourly would be even better) and the individual's billing rate. Additionally, energy savings estimates based on metered PV performance would improve the accuracy of bill estimates.

Lifetime Electric Bill Savings Compared to Participants' Costs

Table 13 shows the NPV of lifetime electric bill savings and participants' costs by project type, with net savings calculated as the difference between the two. The costs represent a participant's payment (total, per month, or per kWh) under their purchase agreement, lease agreement, power purchase agreement (PPA), or subscriber agreement over the duration of their contract. The table also includes a ratio of the lifetime participant costs (NPV) to lifetime participant bill savings (NPV).[6] The results in Table 13 are based on assumption of a 1.36%/yr PV performance degradation rate. The PV performance degradation rate is an assumption, representing that the performance of solar panels will decline over time due to factors such as panel cleaning, maintenance, and general wear and tear.

We estimate the total NPV of lifetime electric utility bill savings of energized projects to be $50 million dollars and the NPV of lifetime participant PV costs at $11 million dollars. Overall, this results in a ratio of costs to bill savings of 0.22, indicating that the lifetime bill savings are approximately five times greater than the lifetime participant costs.

The CS projects had the highest participant PV cost to electric utility bill savings ratio at 0.35. While CS projects tend to have relatively high capacity factors, electric utilities calculate bill credits based only on the supply portion of the utility bill. All else equal, this will tend to make costs larger in proportion to benefits when comparing to project types where participants receive the full retail net metering value for PV generation. The 1–4 unit Distributed Generation projects had the lowest participant PV cost to utility bill savings ratio at 0.02. Lower cost to utility bill savings ratios indicates higher net savings all else equal. The 1–4 unit projects had the lowest ratio because most of these projects had $0 payment terms (90% of projects).

Table 13. Net Present Value of Utility Electric Bill Savings and PV Costs of Energized Projects by Type (1.36%/yr PV performance degradation assumed)

PROJECT TYPE	PROJECT TYPE	NUMBER OF PROJECTS	NPV LIFETIME ELECTRIC UTILITY BILL SAVINGS	NPV LIFETIME PARTICIPANT PV COSTS	NPV LIFETIME NET SAVINGS	NPV PARTICIPANT COST PER UTILITY ELECTRIC BILL SAVINGS RATIO	NUMBER OF PROJECTS WITH $0 PAYMENTS
Distributed Generation	**1–4 Units**	110	$1,920,753	$35,135	$1,885,618	0.02	99
	5+ Units	2	$8,559,183	$1,942,164	$6,617,019	0.23	1

[6] Note that this ratio of cost to bill savings is calculated over the 20-year estimated lifetime of the system. This metric is different than the savings percentage calculated for program eligibility, which is estimated over the customer's contract term.

PROJECT TYPE	PROJECT TYPE	NUMBER OF PROJECTS	NPV LIFETIME ELECTRIC UTILITY BILL SAVINGS	NPV LIFETIME PARTICIPANT PV COSTS	NPV LIFETIME NET SAVINGS	NPV PARTICIPANT COST PER UTILITY ELECTRIC BILL SAVINGS RATIO	NUMBER OF PROJECTS WITH $0 PAYMENTS
	Non-Profit /Public Facilities	58	$20,933,624	$2,465,208	$18,468,416	0.12	4 [a]
	Total	**170**	**$31,413,560**	**$4,442,507**	**$26,971,053**	**0.14**	**104**
Community Solar	**Total**	**5**	**$18,121,646**	**$6,326,202**	**$11,795,445**	**0.35**	**3**
All Energized Projects		**175**	**$49,535,206**	**$10,768,709**	**$38,766,498**	**0.22**	**107**

[a]The customer payment terms were not available for one NP/PF project since the approved vendor (AV) and the customer were the same entity. However, since the total renewable energy credit (REC) incentives for this project were greater than the total project cost, the customer cost for this project is modeled as a $0 payment.

The NPV results are sensitive to the assumption about how PV performance will change over time. Assumption of a slower PV performance degradation rate of 0.5%/yr produces the results presented in Table 13. Reducing the assumed rate of PV degradation by 63%, from 1.36%/yr to 0.5%/yr, results in NPV lifetime net savings that increases 8%, from $38,766,498 to $41,887,981. Ratios of participant PV costs to electric utility bill savings change only slightly because the additional PV generation corresponding to slower performance degradation also increases participant PV total costs. These increased total costs are attributable to those projects with a PPA, where participants purchase each unit of electricity generated at a prescribed cents/kWh price. However, the increase in utility bill savings more than offsets the increase in participant PV total costs, thus producing the modest increase in lifetime net savings.

Table 14. Net Present Value of Utility Electric Bill Savings and PV Costs of Energized Projects by Type (0.5%/yr PV performance degradation assumed)

PROJECT TYPE	PROJECT TYPE	NUMBER OF PROJECTS	NPV LIFETIME UTILITY ELECTRIC BILL SAVINGS	NPV LIFETIME PARTICIPANT COSTS	NPV LIFETIME NET SAVINGS	NPV PARTICIPANT COST PER UTILITY ELECTRIC BILL SAVINGS RATIO	NUMBER OF PROJECTS WITH $0 PAYMENTS
Distributed Generation	**1–4 Units**	110	$2,071,298	$36,834	$2,034,464	0.02	99
	5+ Units	2	$9,229,982	$2,042,993	$7,186,989	0.22	1

PROJECT TYPE	PROJECT TYPE	NUMBER OF PROJECTS	NPV LIFETIME UTILITY ELECTRIC BILL SAVINGS	NPV LIFETIME PARTICIPANT COSTS	NPV LIFETIME NET SAVINGS	NPV PARTICIPANT COST PER UTILITY ELECTRIC BILL SAVINGS RATIO	NUMBER OF PROJECTS WITH $0 PAYMENTS
	Non-Profit /Public Facilities	58	$22,524,130	$2,577,544	$19,946,587	0.11	4
	Total	**170**	**$33,825,410**	**$4,657,371**	**$29,168,040**	**0.14**	**104**
Community Solar	**Total**	**5**	**$19,541,990**	**$6,822,049**	**$12,719,942**	**0.35**	**3**
All Energized Projects		**175**	**$53,367,400**	**$11,479,419**	**$41,887,981**	**0.22**	**107**

We show the NPV of electric utility bill savings and participants' PV costs by sector and ownership type in Table 15, below, for Distributed Generation projects, assuming a PV performance degradation rate of 1.36%/yr. For Residential Solar (Small and Large) projects, the leased and purchased projects had the lowest cost to savings ratio (0.00) because 97% of these projects had $0 payments on their contract terms. The residential PPA projects had a cost to savings ratio of 0.24.

Ownership models in the ILSFA program:

Lease: Participants lease the project. The project is on the participant's property but owned by someone else.

Power Purchase Agreement (PPA): Participants purchase electricity generated by the solar project through a PPA. The project is on the participant's property but is owned by someone else.

Purchase: Participants purchase the solar project outright. The participant may take out a loan to finance the purchase.

The NP/PF projects with a lease/PPA payment structure had a much lower proportion of projects with $0 payments (one PPA and no PPA projects). The savings ratios for NP/PF are all less than 0.15.

Table 15. Net Present Value of Bill Savings and Cost by Sector and Ownership Type of Distributed Generation Projects (1.36%/yr PV performance degradation assumed)

SECTOR	OWNERSHIP TYPE	NUMBER OF PROJECTS [A]	NPV LIFETIME UTILITY BILL SAVINGS	NPV LIFETIME PARTICIPANT PV COSTS	NPV LIFETIME NET SAVINGS	NPV PARTICIPANT COST PER BILL SAVINGS RATIO	NUMBER OF PROJECTS WITH $0 PAYMENTS
Residential	**Lease**	84	$1,408,295	$2,462	$1,405,833	0.00	83
	PPA	24	$8,108,805	$1,974,267	$6,134,539	0.24	15

SECTOR	OWNERSHIP TYPE	NUMBER OF PROJECTS [A]	NPV LIFETIME UTILITY BILL SAVINGS	NPV LIFETIME PARTICIPANT PV COSTS	NPV LIFETIME NET SAVINGS	NPV PARTICIPANT COST PER BILL SAVINGS RATIO	NUMBER OF PROJECTS WITH $0 PAYMENTS
	Purchase	4	$962,836	$570	$962,266	0.00	2
Non-Profit/ Public Facilities	**Lease**	14	$3,915,377	$347,511	$3,567,866	0.09	0
	PPA	39	$12,985,528	$1,849,404	$11,136,124	0.14	1
	Purchase	5	$4,032,719	$268,293	$3,764,426	0.07	3

[a]This table excludes one NP/PF Distributed Generation project as its ownership type was not available.

An assumption of a slower PV performance degradation rate of 0.5%/yr produces the results presented in Table 16. Reducing the assumed rate of PV degradation from 1.36%/yr to 0.5%/yr results in the NPV lifetime net savings increasing by anywhere from 8% to 9%. The magnitude of these changes is reflected in the participant cost to utility bill savings ratios. These ratio values are rounded to two digits, and in only two instances (residential PPA and NP/PF PPA) does the difference in PV degradation rate result in the rounded cost to savings ratio falling by 0.01.

Table 16. Net Present Value of Bill Savings and Cost by Sector and Ownership Type of Distributed Generation Projects (0.5%/yr PV performance degradation assumed)

SECTOR	OWNERSHIP TYPE	NUMBER OF PROJECTS [A]	NPV LIFETIME UTILITY BILL SAVINGS	NPV LIFETIME PARTICIPANT PV COSTS	NPV LIFETIME NET SAVINGS	NPV PARTICIPANT COST PER UTILITY BILL SAVINGS RATIO	NUMBER OF PROJECTS WITH $0 PAYMENTS
Residential	**Lease**	84	$1,518,674	$2,462	$1,516,212	0.00	83
	PPA	24	$8,744,304	$2,076,795	$6,667,510	0.24	15
	Purchase	4	$1,038,302	$570	$1,037,732	0.00	2
Non-Profit/ Public Facilities	**Lease**	14	$4,210,758	$347,511	$3,863,247	0.08	0
	PPA	39	$13,976,606	$1,961,740	$12,014,867	0.14	1
	Purchase	5	$4,336,766	$268,293	$4,068,473	0.06	3

[a]This table excludes one NP/PF Distributed Generation project as its ownership type was not available.

Environmental Impacts

The evaluation team estimated the environmental impacts of program year 5 (PY5) approved projects and energized projects. We calculated the emission impacts as the difference between the emissions generated by the program photovoltaic (PV) systems and baseline emissions that would have occurred in the absence of Illinois Solar for All (ILSFA). Table 17, below.

Table 17. Environmental Impact Analysis Research Questions

CATEGORY	PRIMARY RESEARCH QUESTIONS
Environmental Impacts	What are the first-year and lifetime emissions reductions associated with approved and energized ILSFA projects?

Below, we summarize our key findings from this analysis.

Key Findings

FINDING 1

The evaluation team estimates the first-year avoided emissions of PY5 approved projects to be equal to 53.6 million pounds CO_2e, 27.5 thousand pounds of NO_x, and 31.6 thousand pounds of SO_2. Assuming a 1.36%/yr PV performance degradation rate and a 3% (real) discount rate, we estimate the total lifetime avoided emissions to be equal to 302 million pounds CO_2e, 315 thousand pounds of NO_x, and 363 thousand pounds of SO_2.

FINDING 2

The evaluation team estimates the first-year avoided emissions of PY5 energized projects to be equal to 41.5 million pounds CO_2e, 20 thousand pound of NO_x, and 22.9 thousand pounds of SO_2. Assuming a 1.36%/yr PV performance degradation rate and 3% (real) discount rate, we estimate total lifetime avoided emissions to be equal to 227 million pounds CO_2e, 230 thousand pounds of NO_x, and 263 thousand pounds of SO_2.

First-Year and Lifetime Avoided Emissions

We estimated avoided emissions using the National Renewable Energy Laboratory (NREL) Cambium dataset of marginal CO_2e emissions rates and marginal CO_2e, NO_x and SO_2 emissions rates from the U.S. Environmental Protection Agency's (EPA) AVoided Emissions and geneRation Tool (AVERT).[7,8] We calculated

[7] https://www.nrel.gov/analysis/standard-scenarios.html

[8] https://www.epa.gov/avert

emissions impacts as the product of marginal emissions rates and estimated PV generation. Note that our estimates of environmental impacts would be more accurate if metered PV production data were available.

Using AVERT data for 2023, we estimated first-year avoided CO_2e emissions of PY5 approved projects equal to 53.6 million pounds, which corresponds to an average rate of 1,621 pounds CO_2e per MWh (energy production from Table 6). We estimated reductions of NO_x emissions (27.5 thousand pounds) and SO_2 emissions (31.6 thousand pounds) using 2023 marginal emissions rates from AVERT. Table 18 shows the distribution of estimated emissions impacts by project type.

Table 18. PY5 Approved Projects Estimated First-Year Avoided Emissions per NREL Data

PROJECT TYPE		FIRST-YEAR ESTIMATED AVOIDED LBS OF CO_2E	FIRST-YEAR ESTIMATED AVOIDED LBS OF NO_X	FIRST-YEAR ESTIMATED AVOIDED LBS OF SO_2
Distributed Generation	**1–4 Units**	3,455,314	1,475	1,670
	5+ Units	-	-	-
	Non-Profit/ Public Facilities	18,146,443	9,144	10,491
	Total	21,601,757	10,618	12,161
Community Solar	**Total**	31,988,501	16,906	19,462
All Approved Projects		53,590,258	27,524	31,624
Note: There were no 5+ Units with approved projects in PY5				

For PY5 energized projects, we estimate that first-year operations reduce CO_2e emissions by 42 million pounds, NO_x emissions by 20 thousand pounds, and SO_2 emissions by 22.9 thousand pounds. Table 19 shows the distribution of estimated emissions impacts by project type. Average NO_x and SO_2 emissions reductions rates are 0.75 lbs/MWh and 0.86 lbs/MWh, respectively (calculated using the energy production values in Table 7).

Table 19. Energized Projects Estimated First-Year Avoided Emissions

PROJECT TYPE		FIRST-YEAR ESTIMATED AVOIDED LBS OF CO_2E	FIRST-YEAR ESTIMATED AVOIDED LBS OF NO_X	FIRST-YEAR ESTIMATED AVOIDED LBS OF SO_2
Distributed Generation	**1–4 Units**	1,378,070	536	602
	5+ Units	6,569,788	2,516	2,821
	Non-Profit/ Public Facilities	15,652,942	7,695	8,813
	Total	23,600,800	10,747	12,236
Community Solar	**Total**	17,944,295	9,275	10,662
All Energized Projects		41,545,095	20,022	22,897

Table 20 shows the distributions of lifetime emissions impacts estimates by project type for PY5 approved projects for two different PV degradation rates: 1.36%/yr and 0.50%/yr. The emissions rate assumed for the first year was obtained from AVERT, while emissions rates forecast for future years are from NREL's Cambium data set. We used a discount rate of 3% (real) to calculate these values. When the PV degradation rate is assumed equal to 1.36%/yr, these projects could reduce CO_2e emissions by 302 million pounds, NO_x emissions by 316 thousand pounds, and SO_2 emissions by 363 thousand pounds. While the assumed degradation rates differ by nearly a factor of three, the lifetime emissions impacts differ by less than 10%.

Table 20. PY5 Approved Projects Estimated Lifetime Avoided Emissions per NREL Data (Results for 1.36%/yr degradation rate, and 0.50%/yr degradation rate in parentheses).

PROJECT TYPE		LIFETIME ESTIMATED AVOIDED LBS OF CO_2E	LIFETIME ESTIMATED AVOIDED LBS OF NO_X	LIFETIME ESTIMATED AVOIDED LBS OF SO_2
Distributed Generation	**1–4 Units**	17,935,831 (18,802,645)	16,920 (18,058)	19,160 (20,449)
	5+ Units	0 (0)	0 (0)	0 (0)
	Non-Profit/ Public Facilities	100,458,685 (105,310,675)	104,903 (111,960)	120,363 (128,460)
	Total	**118,394,515** **(124,113,321)**	**121,823** **(130,018)**	**139,523** **(148,908)**
Community Solar	**Total**	**183,410,899** **(192,372,347)**	**193,955** **(207,002)**	**223,289** **(238,310)**
All Approved Projects		**301,805,414** **(316,485,668)**	**315,779** **(337,021)**	**362,812** **(387,218)**

Table 21 shows the distribution of the estimated emissions impacts by project type for energized projects.

Table 21. Energized Projects Estimated Lifetime Avoided Emissions per NREL Data (Results for 1.36%/yr degradation rate, and 0.50%/yr degradation rate (in parentheses))

PROJECT TYPE		LIFETIME ESTIMATED AVOIDED LBS OF CO_2E	LIFETIME ESTIMATED AVOIDED LBS OF NO_X	LIFETIME ESTIMATED AVOIDED LBS OF SO_2
Distributed Generation	**1–4 Units**	6,914,913 (7,248,990)	6,148 (6,561)	6,903 (7,367)
	5+ Units	33,269,684 (34,889,000)	28,870 (30,812)	32,368 (34,545)
	Non-Profit/ Public Facilities	85,839,322 (89,989,726)	88,279 (94,218)	101,106 (107,907)
	Total	**126,023,918** **(132,127,717)**	**123,297** **(131,591)**	**140,376** **(149,819)**
Community Solar	**Total**	**100,609,740**	**106,415**	**122,320**

	(105,467,431)	**(113,573)**	**(130,548)**
All Energized Projects	**226,633,658** **(237,595,148)**	**229,712** **(245,165)**	**262,696** **(280,367)**

Impact Equivalencies

To help understand the magnitude of the energy and environmental estimated impacts, the evaluation team calculated estimates of equivalent actions that would reduce the same amount of energy or CO_2 emissions as the ILSFA PV first-year project impacts. Table 22 shows these impact equivalents.

Table 22. Estimated First-Year Impact Equivalents

EQUIVALENT IMPACT	PY5 APPROVED PROJECTS	PY5 ENERGIZED PROJECTS
Number of homes powered for a year	4,315	3,479
Number of cars taken off the road for a year	3,496	2,710

The average annual amount of electricity sold to residential customers in Illinois was 7,662 kWh in 2023.[9] Therefore, the first-year electric energy savings from PY5 approved projects is equivalent to the electric energy consumption of 4,315 homes. The first-year electric energy savings of PY5 energized projects are equivalent to the electric energy consumption of 3,479 homes.

The reduction in CO_2 emissions from program projects can also be considered in terms of the number of cars taken off the road. The EPA estimates that the average CO_2 emissions per vehicle per mile in 2023 was 516 grams.[10] The U.S. Department of Transportation estimates that the average annual miles driven per driver is 13,476 miles.[11] Therefore, the average vehicle emits 6,953,616 grams of CO_2 per year, or 15,330 pounds. The first-year estimated CO_2e emissions reductions of PY5 approved projects is equivalent to taking 3,496 cars off the road. The first-year estimated CO_2e emissions reductions of energized projects is equivalent to taking 2,710 cars off the road.

Workforce and Economic Impacts

This section considers the impacts of the Illinois Solar for All (ILSFA) program's implementation on the Illinois workforce, as well as other economic impacts.

When a program participant gains access to new solar power under the ILSFA program, the necessary funds go to support a variety of activities. These include site inspections and planning for installation, purchase of the solar panels, purchase of other necessary construction materials, and the installation of the panels. Additionally, program participants benefit from on-bill energy cost savings once the new solar systems are energized. While some of the economic impacts created by ILSFA's activities are unlikely to create significant economic impacts within Illinois (such as the manufacturing of solar panels, which largely takes place

[9] https://icc.illinois.gov/api/web-management/documents/downloads/public/en/23-22%20Comparison%20of%20Electric%20Sales%20Statistics.pdf
[10] U.S. Environmental Protection Agency, Office of Transportation and Air Quality, personal communication, Oct. 13, 2023: https://www.bts.gov/content/estimated-national-average-vehicle-emissions-rates-vehicle-vehicle-type-using-gasoline-and
[11] https://www.fhwa.dot.gov/ohim/onh00/bar8.htm

overseas), other impacts, such as the sourcing of construction materials and installation activities, will take place locally and have an impact on the local economy.

Below, we summarize our key findings from this analysis.

Key Findings

FINDING 1

The modeled GDP impact of program year five (PY5) energized projects totaled over $29.5 million, of which more than $12 million came from investments in Community Solar (CS) projects. This accounts for 44% of the over $66.5 million in modeled GDP impacts generated from ILSFA program spending since PY1. In PY5, CS investments made up the largest portion of spending, while in previous years spending was concentrated in the Non-Profit/Public Facilities (NP/PF) subprogram.

FINDING 2

The largest share of modeled spending occurred in East Central Illinois on CS projects and supported large employment and GDP impacts in this area. However, the ripple of indirect impacts on Cook County and Northwest Illinois suggests the region was still somewhat reliant on other parts of the state for construction inputs. In previous project years, Cook County and the Northwest region had the largest shares of project spending and continue to support the construction and energization of ILSFA projects statewide.

FINDING 3

Across the ILSFA projects energized in PY5, the evaluation team modeled that approximately 30% of total project costs went to hiring in-state labor related to project installations.

FINDING 4

Modeled state tax impacts came primarily from production and import taxes, followed by employee compensation taxes and income taxes paid by households with incomes of over $100,000 per year, as opposed to participating households. This suggests that participating households enjoy the benefits of ILSFA but do not bear the primary tax burden. For federal taxes, employee compensation taxes made up the largest share of the tax burden.

FINDING 5

Based on economic models of household spending patterns, new household spending following on-bill savings generated additional economic activity focused on the healthcare and housing sectors, indicating that participants likely use money saved through the program to meet their basic needs. This finding is consistent with the PY4 annual report.

Detailed Results

Given the range of possible economic impacts and their potential relevance to Illinois's geography, we assessed two high-level economic contributions of the ILSFA program: near-term investments constructing and installing new solar infrastructure as well as ongoing energy bill savings following program participants' resulting access to affordable solar power. To measure these two economic effects, we aimed to answer the research questions summarized in Table 23.

Table 23. Workforce and Economic Impacts Research Questions

CATEGORY	PRIMARY RESEARCH QUESTIONS
Near-Term Employment Impacts	How is near-term employment affected by spending on ILSFA projects?
New Employee Income	What portion of ILSFA's investments directly or indirectly become local employee wages?
Contribution to GDP	What is the total amount of additional value added to in-state GDP?
New Household Savings Spending Patterns	Where in the economy do households spend their on-bill savings?
Impacts on Taxes	What are the changes in collected taxes resulting from program spending?

This analysis makes use of the IMPLAN input/output economic model using ILSFA program data inputs to estimate workforce and economic impacts described above. IMPLAN approximates a multisectoral cash flow model of the economy with the ability to disaggregate by geography (state, county, etc.). Essentially, the model tracks dollars as they are spent in one economic sector (e.g. hospitals) and in turn generates additional spending in other related sectors (e.g. healthcare supplies). For the purposes of this analysis, we use IMPLAN to track the effects of new spending within the Illinois solar industry and subsequent ripple effects throughout the state's economy. For each dollar of new program spending, IMPLAN estimates new demand for employment, new employee compensation, impacts on taxes, and other changes.

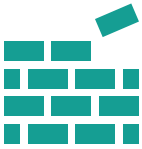
Where possible, we show metrics disaggregated by ILSFA program region.[12] For this analysis, IMPLAN is configured to accept new investments aligned with the ILSFA program regions, while accounting for the fact that new spending in one region will also cause spillover impacts in nearby regions. For example, a project in the East Central region may rely on some labor or materials from the adjacent West Central region. Out-of-state impacts are not captured as a part of this analysis.

Impacts measured by IMPLAN are also differentiated by three different types of economic impact: direct, indirect, and induced effects, which differentiate the ways an investment (i.e., an ILSFA project) can affect the local economy. These effects are defined as follows:

[12] Program region definitions can be found in the ILSFA Vendor Directory: https://www.illinoissfa.com/vendor-directory/. These regions are primarily used to help participants locate a contractor through the program. They used calculated Regional EJ Scores, which are also one of the criteria considered when prioritizing which projects will be approved through the program.

Direct Effects

New demand for employment that is a direct result of program-funded activities and investment dollars, including, for example, installation of new solar arrays.



Indirect Effects

Employment and dollars that are generated by changes in supply chain demand due the product (i.e. solar arrays), such as the purchase of tools, materials, and other inputs that are necessary for completing the construction of ILSFA projects and are produced or provided by companies located in Illinois.

Induced Effects

Changes in expenditure driven by newly earned income following new employment in the direct and indirect sectors or by household savings resulting from lower energy costs. For example, a new employee in the solar installation field might spend part of their pay on a haircut or at a restaurant, contributing to demand for employment and products in those sectors.

The following sections outline the results of this IMPLAN analysis, broken out based on the two high-level economic contributions of ILSFA: near-term solar installations and ongoing energy bill savings.

Modeled Near-Term Impacts from Solar Installations

ILSFA's projects support a range of new solar installations from individual household rooftop arrays to larger municipal building installations and CS field development. The development of each of these sites requires an initial, near-term direct investment in labor and materials using program funds to construct the projects. These investments in turn have indirect and induced economic impacts. The following sections describe these near-term impacts.

Total Near-Term Impacts

As discussed above, the levels of economic impact correspond to the number of projects as well as the overall level of direct project costs associated with each program region. This analysis focuses specifically on projects energized in PY5. Results in this section reflect the effects of energized project spending to represent fully the realized economic and workforce impacts of ILSFA projects. Note, projects are only included in the analysis for the year that they are energized, regardless of when they are approved. Projects energized in earlier program years are not included in the core PY5 evaluation analysis but are used for comparison only in Table 25, Figure 3, and Figure 4.

Table 24 details modeled GDP and employee compensation impacts by project type for direct, indirect, and induced impacts. We show the total impacts by project type, and the statewide total reflects the full dollar amount of economic impacts for the state of Illinois resulting from PY5 energized project spending.

Table 24. Modeled GDP and Employee Compensation Impacts by Project Type

IMPACT TYPE	PROJECT TYPE		EMPLOYEE COMPENSATION	GDP IMPACTS
Direct	Distributed Generation	1–4 Units	$300,000	$1,030,000
		5+ Units	$350,000	$1,200,000
		Non-Profit/ Public Facilities	$950,000	$3,210,000
	Community Solar		$3,640,000	$12,370,000
Indirect	Distributed Generation	1–4 Units	$80,000	$330,000
		5+ Units	$90,000	$390,000
		Non-Profit/ Public Facilities	$250,000	$1,030,000
	Community Solar		$980,000	$3,980,000
Induced	Distributed Generation	1–4 Units	$90,000	$350,000
		5+ Units	$110,000	$410,000
		Non-Profit/ Public Facilities	$300,000	$1,090,000
	Community Solar		$1,140,000	$4,190,000
Total	Distributed Generation	1–4 Units	$480,000	$1,700,000
		5+ Units	$560,000	$1,990,000
		Non-Profit/ Public Facilities	$1,490,000	$5,330,000
	Community Solar		$5,760,000	$20,530,000
	Statewide Total		**$8,290,000**	**$29,550,000**

Table 25 compares the total investments in energized ILSFA projects from PY1 to PY4 with investments in PY5 energized projects. While spending in the earlier years was more focused in Cook County as well as the Northeast and Northwest regions, spending on PY5 energized projects was focused primarily in the East Central region. Additionally, PY5 spending alone is almost on par with all project spending between PY1 and PY4, signaling the continued growth of the ILSFA program and increases in program benefits from the Climate and Equitable Jobs Act (CEJA). Notably, most project spending in the East Central region came from CS projects, which contributed to increased accessibility to downstate households.

Table 25. Energized Projects and Actual Project Spending

REGION	PROJECTS ENERGIZED BEFORE PY5	PROJECT SPENDING BEFORE PY5	PROJECTS ENERGIZED IN PY5	PROJECT SPENDING IN PY5
Cook County, IL	56	$6,514,237	31	$1,553,157
Northeast	23	$4,452,751	17	$471,901
Northwest	6	$5,911,516	9	$4,705,679
East Central	15	$2,536,283	5	$9,511,296
West Central	4	$1,157,013	3	$988,770
South	3	$1,161,080	3	$578,853
Total	**107**	**$21,732,880**	**68**	**$17,809,656**

The injection of project spending in the East Central region increased demand for workers and worker compensation overall. Figure 3 and Figure 4 compare the total employment impacts and the employee compensation for PY5 energized projects and PY1–4 energized projects. As with project spending, PY5 numbers show a higher impact in the East Central region than in Cook County.

Figure 3 Total Modeled Employment Impacts of Energized Projects Across Project Years

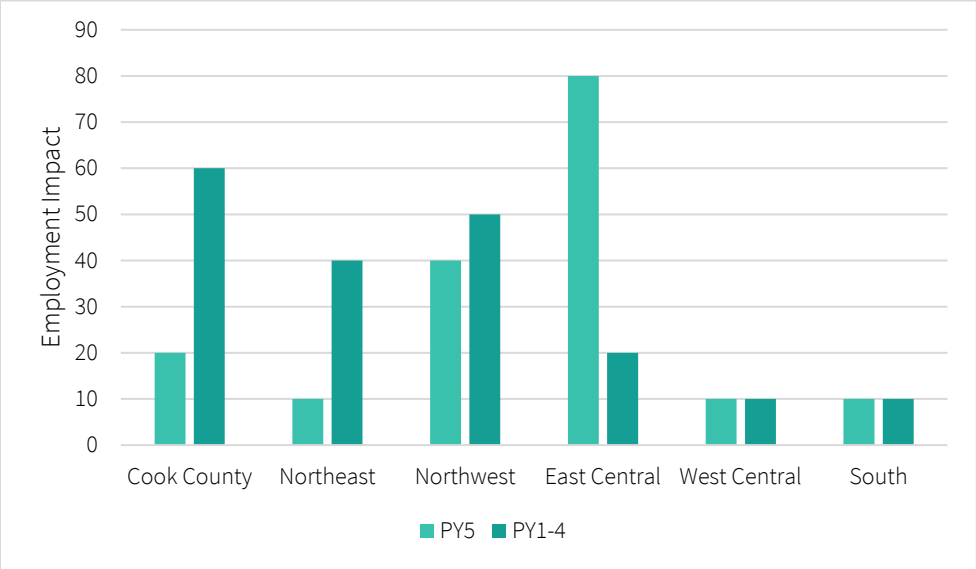
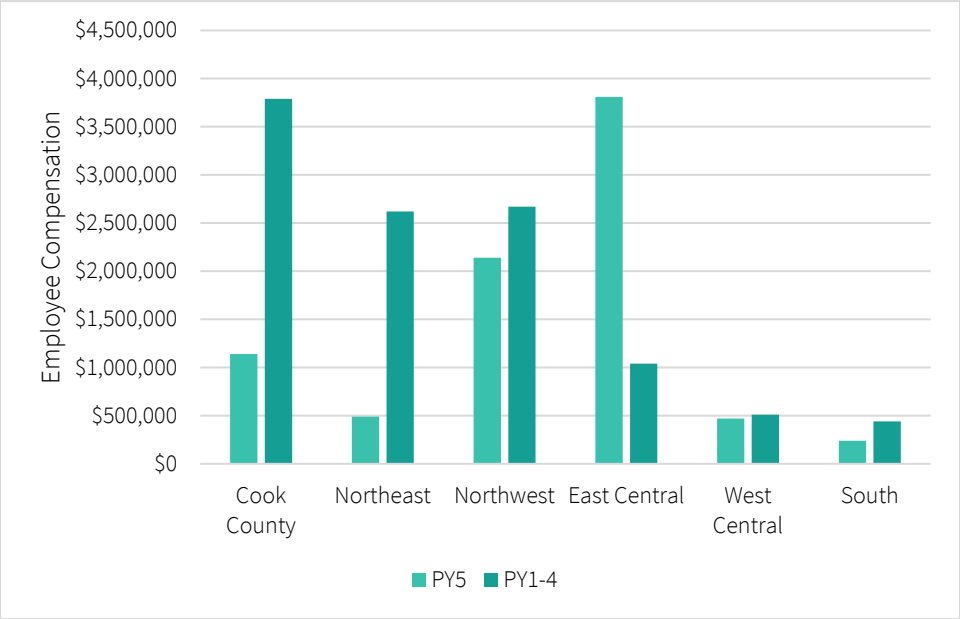


Figure 4 Total Modeled Employee Compensation from Energized Projects Across Project Years



Direct Impacts

Direct impacts include those resulting from the actual installation of solar panels and any related development activities. Table 26 details the impact from direct effects for each of the ILSFA regions. The impacts measured are changes to:

- **Total employee compensation:** measures wages earned by employees in jobs created by direct impact
- **Impacts on GDP:** quantifies new industry spending across activities related to solar installation

Across the ILSFA projects energized in PY5, approximately 30% of the total project costs went to hiring in-state labor related to project installations. The highest employee compensation and GDP impacts are focused in the Northwest and East Central regions, which align with the high concentration of project spending on CS in those regions.

Table 26. Incremental Modeled Direct Impacts of PY5 Energized Projects by Program Region

REGION	MODELED EMPLOYEE COMPENSATION	DIRECT PROJECT COST IMPACTS TO GDP
Cook County, IL	$490,000	$1,550,000
Northeast	$160,000	$470,000
Northwest	$1,450,000	$4,700,000
East Central	$2,690,000	$9,510,000
West Central	$290,000	$990,000
South	$160,000	$580,000
Total	**$5,240,000**	**$17,800,000**

Indirect Impacts

As seen in Table 27, indirect impacts (i.e., the "ripple effects" of purchasing supplies and services in Illinois to support project construction) have smaller increases in employment demand, wages, and GDP than direct impacts. These effects come from more subtle changes in the demand for tools, materials, and other inputs needed to construct new solar installations, and they are separate from (and can be added to) the direct effects. In the context of indirect impacts, GDP contributions can be interpreted as additional upstream supply chain spending to support direct installation activities.

The Northwest and East Central regions have the highest portion of indirect impacts on GDP and employee compensation. While the Northwest region had much higher levels of PY5 energized project spending than Cook County and the Northeast, the indirect effects are relatively evenly spread across the regions, suggesting that all three regions may be providing construction inputs to projects constructed in the Northwest region.

Table 27. Incremental Modeled Indirect Impacts of PY5 Energized Projects by Program Region

REGION	MODELED EMPLOYEE COMPENSATION	INDIRECT PROJECT COST IMPACTS TO GDP
Cook County, IL	$350,000	$1,090,000
Northeast	$200,000	$760,000
Northwest	$310,000	$1,190,000
East Central	$430,000	$1,870,000
West Central	$90,000	$490,000
South	$40,000	$320,000
Total	**$1,420,000**	**$5,720,000**

Induced Impacts

Induced impacts represent the smallest set of impacts in dollar value, but these impacts often represent the most significant reach within the communities served by the ILSFA program because they reflect the local economic impacts of spending the money earned by those employed in the construction of the projects. Table 28 shows these induced impacts, which occur in a broad range of industries where wages are spent, including housing, retail, and healthcare, and reflect the increased need for jobs (e.g., employees in retail or services) as well as the demand for products and services themselves (e.g., food and medicine).

As before, the induced impacts are concentrated in the Northwest and East Central regions, though Cook County also has a high level of induced impacts. This indicates that induced spending generally stays within the same region as where the project spending occurred, while Cook County attracts some additional consumer spending. This is consistent with the results seen in prior program years.

Table 28. Incremental Modeled Induced Impacts of PY5 Energized Projects by Program Region

REGION	TOTAL MODELED EMPLOYEE COMPENSATION	ONE-TIME INDUCED IMPACTS TO GDP
Cook County, IL	$300,000	$890,000
Northeast	$130,000	$460,000
Northwest	$380,000	$1,420,000
East Central	$690,000	$2,720,000
West Central	$90,000	$360,000
South	$40,000	$180,000
Total	**$1,630,000**	**$6,030,000**

Incremental Modeled Employment Impacts

Total impact on employment approximates the total demand for employees in PY5 from program-funded direct activities. The employment impact metric is not a rigid count of annual full-time employees. Rather, it reflects the total demand for full-time-equivalent employment across the full year, including temporary demand for a portion of the year. For example, demand for 10 workers for six months would be captured as a total employment impact of five.

Key terms used to describe employment impacts:

Direct employment impacts: Specific to demand for jobs that facilitate the construction of solar projects from the ILSFA program in PY5

Indirect employment impacts: Estimate of the demand for jobs that enable the purchasing of supplies and services that enabled construction

Induced employment impacts: Demand for employment in other sectors of the economy that benefit from increased spending due to economic activity from direct and indirect impacts

Table 29. Incremental Modeled Employment Impacts of PY5 Energized Projects by Program Region

REGION	DIRECT EMPLOYMENT IMPACT	INDIRECT EMPLOYMENT IMPACT	INDUCED EMPLOYMENT IMPACT	TOTAL
Cook County, IL	10	<10	<10	**20**
Northeast	<10	<10	<10	**10**
Northwest	30	<10	10	**40**
East Central	60	10	20	**90**
West Central	10	<10	<10	**10**
South	<10	<10	<10	**10**
Total	**110**	**30**	**40**	**180**

Note: In the above table, "<10" approximates any single-digit estimates for employment impacts. Totals may not sum due to rounding.

Tax Impacts

This section also includes a tax impact modeling analysis to estimate the effects of ILSFA on specific groups of taxpayers at the federal, state, and local levels. Potential tax impacts may include:

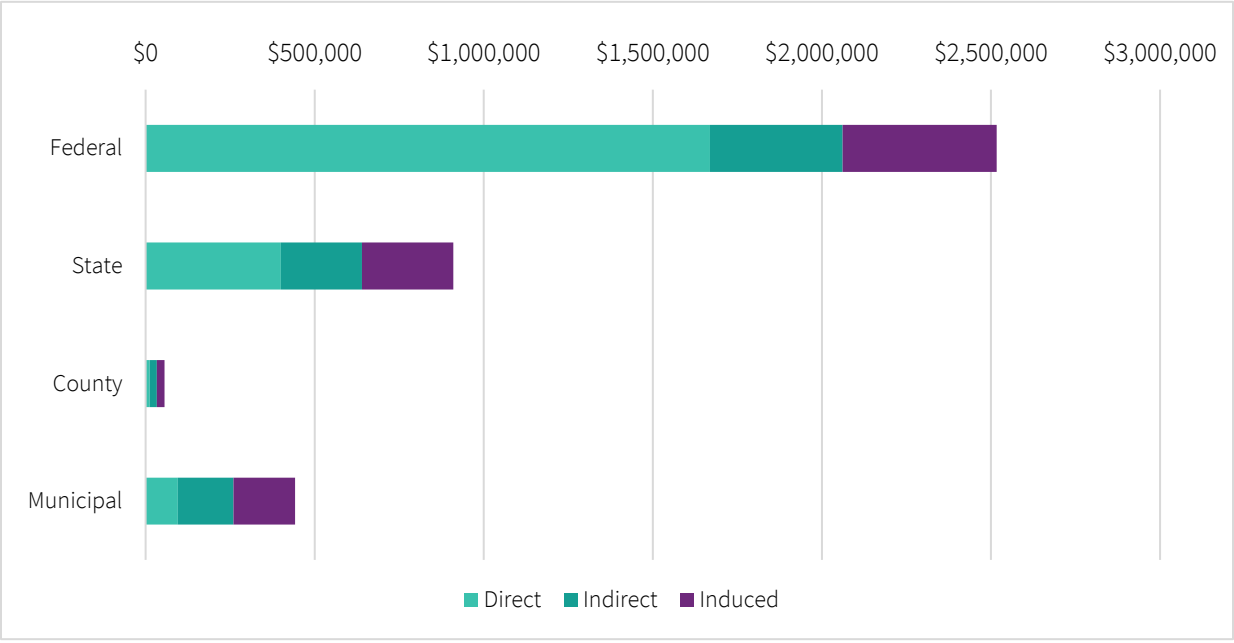
- Federal and state employment and income taxes on wage earners
- Local property taxes
- State sales taxes and some local assessments
- Federal and income taxes on corporations

Note that federal tax impacts do not include potential tax savings due to the solar investment tax credit (Solar ITC). Because ILSFA directly affects both regional employment and household spending and has potential longer-term impacts on property values, the related tax impacts can be complex. While the tax impacts are small compared to the total project impacts, they may overlap and have the effect of redistributing some program benefits.

For ILSFA participants, for example, increased disposable income from energy bill savings may be spent in other places where taxes are higher than those for electricity (e.g., buying clothing and paying a sales tax), increasing the overall tax burden as a percentage of income and spending. On the other hand, new taxes paid to municipalities or counties could directly benefit program participants through the funding of public programs serving individuals living in that community. The overall benefits of the tax impacts are overlapping and might cancel out in some cases.

Figure 5 shows the breakdown of direct, indirect, and induced tax impacts on federal, state, and local (including county and municipal) taxes.

Figure 5. Modeled Direct, Indirect, and Induced Tax Impacts of PY5 Energized Projects



*Note: Direct tax impacts are those resulting directly from project spending, indirect effects come from economic activity related to inputs or supplies for projects, and induced effects are from money that flows from project spending into other parts of the economy.

Figure 6 shows the distribution of how direct tax effects flow from various taxpayers.[13] The taxpayer categories are typically separated by the payer and the type of tax paid.

More than 40% of the modeled federal tax impacts come from employee compensation taxes, which are paid by employees toward social security. An increase in social security taxes implies an increase in income overall, which reiterates the positive impacts of ILSFA. Production and import taxes make up a very small portion of federal tax impacts but are larger contributors for state and municipal impacts. This signals that direct production expenses are most likely to benefit taxpayers directly by way of municipal programs that benefit their constituents.

Key terms used to describe tax impacts:

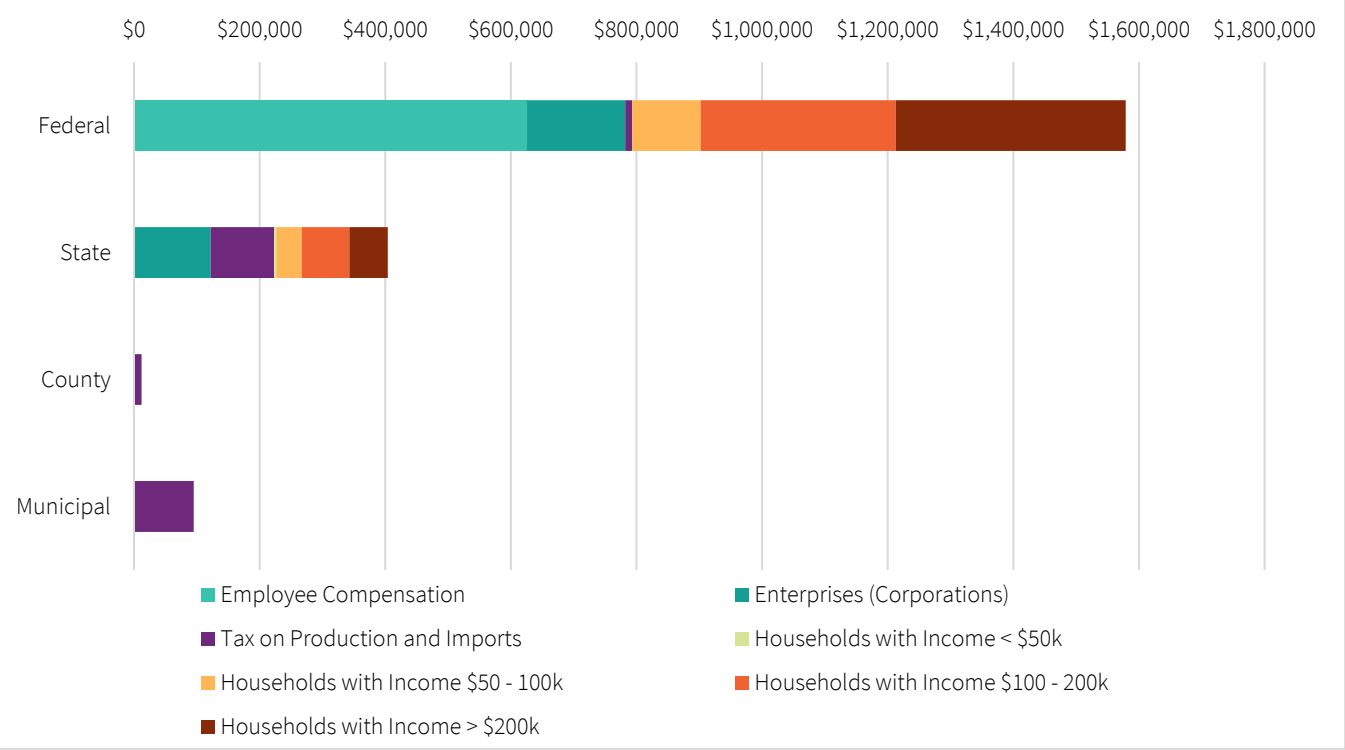
Employee compensation: Social security taxes paid by employees

Enterprise (corporations): Taxes paid by corporations

Households: Personal income taxes paid by households with various annual income levels

Tax on production and imports: A range of various taxes such as excise taxes, import duties, property taxes, and sales tax that may be paid by individuals or larger entities depending on the situation

Figure 6. Modeled Direct Tax Impacts of PY5 Energized Projects by Source



[13] See Appendix B for data tables.

Direct project spending results in economic activity, such as demand for labor and materials, which impacts firms and individuals in segments of the economy not directly participating in ILSFA. These modeled economic ripple effects result in tax revenues to actors not participating in ILSFA. Notably, the state and federal tax impacts personal income taxes for households in higher income brackets than ILFSA program participants, reflecting tax impacts on higher paid workers at firms that construct and maintain the projects.

Solar Panel Installations and Property Value Impacts

While recent literature on solar installations and property values is not specific to Illinois, research conducted in other parts of the U.S. with high solar penetration suggests that, on average, solar panels have a positive impact on property values.[14] For example, one study found that homes in Arizona with electricity-generating solar panels enjoyed an average premium of 15% of the median home value and a transaction price premium of 17% of the median home sales price.[15] These benefits could be realized by owners of the homes that house the 1–4 units Distributed Generation projects that make up more than half of all ILSFA projects and 6% of ILSFA project spending.

While researchers agree that solar panels do not negatively impact property values, the actual impacts may be dampened over time as the panels age and because of the quality of the home itself.[16] For many homeowners, the cost of installation may not be offset by the benefits to their property values. ILSFA participants are in a unique position as they can reap the property value benefits of solar panels on their homes with a reduced burden of installation costs. There are limitations to the available research as it does not explore differences in benefits for panels isolated from versus connected directly to the grid. It also does not account for panels owned by a third party. Solar panels may not be a reliable way to increase property value, but the available research suggests they have a neutral-to-positive impact on home value overall.

[14] Hoen et al. 2017. "Multi-state residential transaction estimates of solar photovoltaic system premiums." Published June 2017. *Renewable Energy Focus.* https://www.sciencedirect.com/science/article/abs/pii/S1755008416304537.
[15] Qiu, Yueming, Want, Yi David, and Wang Jianfeng. 2017. "Soak up the sun: Impact of solar energy systems on residential home values in Arizona." Published August, 2017. *Energy Economics.* https://www.sciencedirect.com/science/article/abs/pii/S0140988317302384?casa_token=wPZ_Njj-YZkAAAAA:a0Av-WAdSk-i1ZpcDOPKdP11jBaxpACZkrOrJ2AiLO3ttKLUmMozgZHMMS2zhK2o0XYheP97jQ.
[16] Gillingham, Kenneth, and Watten, Asa. 2024. "How is rooftop solar capitalized in home prices?" Published July 2024. *Regional Science and Urban Economics.* *https://www.sciencedirect.com/science/article/abs/pii/S0166046224000309?casa_token=2DBFzmrfgMoAAAAA:aPexEVeq88efmChTsv28tEoN9WSGYmvBOkpPz6krv_bXcxPaD-Q3CT9QG5Ah4JfXyQJxAT02kQ.*

Ongoing Impacts from Household Energy Bill Savings

In addition to providing one-time impacts from direct investments in solar installations, ILSFA also supports access to ongoing energy bill savings for program participants. Once new solar installations are energized, program participants will pay less in electricity expenses, assuming there are no changes in their usage habits. These on-bill savings (see Bill Impacts) effectively operate as new disposable household income. Households have the option to use these funds for the purpose of their choosing, and subsequent spending in those sectors leads to additional induced impacts. Because this benefit will accrue annually for all program participants, it will increase in overall magnitude as ILSFA progresses and more projects are energized.

As with the one-time impacts discussed above, we use IMPLAN to assess the distribution of economic impacts associated with new household spending. This analysis limits its assessment of ongoing impacts to those associated with household energy bill savings or the Distributed Generation and CS projects funded under ILSFA due to data limitations. Additional benefits due to bill savings accrue to NP/PF participants but spending patterns in these cases are likely to reflect the specialized operating budgets of those organizations and are not captured here. To the extent that these entities are funded by taxpayer resources, these savings may simply represent a more effective distribution of public funds.

We estimate that Residential Solar (Small) and CS program participants have received approximately $1.3 million in increased household disposable income in PY5 because of reduced energy bill burdens from PY5 energized ILSFA projects (see Bill Impacts section).[17] IMPLAN identifies the sectors where this influx of income is likely to generate the newest induced economic activity and nets out cash savings before developing the spending profile. The spending profile comprises a multitude of sectors and is specific to Illinois households with incomes of less than $70,000 since almost all ILSFA subscribers in PY5 fall into this bracket. Notably, the induced impacts estimated by IMPLAN total more than $1.4 million, which is higher than the total estimated household savings for program participants. This is because the new induced activity generated by participant spending in turn creates additional induced activity. For example, if a program participant spends more money at the grocery store following new on-bill energy savings, there is a small additional induced ripple effect as grocery store employees go out and spend their earnings.

While the modeled increase in household income is derived from bill savings, the IMPLAN tool is used to assess where spending is likely to occur following any increase in disposable income for households with annual income between $0 and $70,000 in Illinois. Thus, this analysis could more broadly capture which sectors would benefit the most from additional spending from individuals with increased income through other project-related means, such as a higher salary following participation in the job training program.

Table 30. Top Sectors for Modeled Induced Economic Impacts from Increased Household Spending Due to PY5 Energized Projects

CATEGORY	INDUCED IMPACT
Housing	$240,000
Healthcare	$220,000
Retail Shopping	$170,000

[17] Note, this includes savings for community solar participants, which were not included in the ILSFA Evaluation PY4 annual report.

CATEGORY	INDUCED IMPACT
Other	$170,000
Groceries and Dining	$120,000
Transportation	$110,000
Utilities	$90,000
Debt Service	$90,000
Insurance	$40,000
Non-Cash Savings and Investments	$40,000
Business Expenses	$10,000

Housing and healthcare are projected to be the largest single sectors for modeled new induced activity following new household spending under ILSFA. Spending patterns from bill savings in PY5 are like those in PY4. These categories represent basic needs, which program participants are eager to address. Similarly, retail shopping, groceries, debt service, transportation, and other utilities make up the next-largest share of sectoral spending, focusing on lifestyle fundamentals. Insurance and non-cash savings also represent a choice option for households to dedicate this new discretionary income. The "other" category captures a wide range of additional activities with small overall impacts, including business development, legal services, entertainment, and home investments. While these results capture changes in economic activity, measured in dollars, following new household spending, the real social benefits to households come in the form of what these dollars can provide. For instance, new spending in the healthcare, housing, and food sectors translates to improvements in health, housing stability, and nutritional benefits that are not as easily quantified. These improvements represent an additional value of program participation.

Heat and Energy Burden Impacts

The team investigated other potential economic impacts, such as reduction of heat and energy burden (high costs on household energy bills), which may be generated because of ILSFA. While the analysis does not specifically assess the impact of ILSFA on household energy burden, literature suggests that reduced energy burden may be an unmeasured impact of the program. The Bill Impacts section provides estimates of the program's impact on bills overall, and the following section provides a summary of a literature review that identifies heat and energy burden benefits potentially generated by ILSFA.[18]

As global temperatures increase, a larger number of households will require air conditioning. A U.S. Energy Information Administration (EIA) study from June 2024 found that 90% of U.S. households currently cool their homes with air conditioning and that, although electricity generation costs are declining, transmission and distribution costs are increasing.[19] The economic burden of increased energy usage to cool homes during the warm months of the year will be felt most acutely by households facing existing financial strain.

[18] The team will collect participant feedback on their perceived bill savings and ability to pay bills in the PY6 focus groups.
[19] 2024. "Typical residential electricity bills could be slightly higher this summer." Published June 13, 2024. *EIA.* https://www.eia.gov/todayinenergy/detail.php?id=62303#:~:text=This%20summer%E2%80%94June%20through%20August,last%20summer's%20average%20of%20%24168.

The 2024 Energy Hardship Report, published by the National Energy Assistance Directors Association and Center for Energy Poverty and Climate, found that about 16% of households were behind on their energy bills and owed a total of $20.3 billion in energy debt as of December 2023. Additionally, the share of households that reported keeping their homes at unsafe temperatures for at least one month in the last year saw a slight increase in 2023, growing from 22.3% to 22.9%. Low-income households reported a more significant increase from 31.7% to 34%. The Energy Hardship report defines low-income households as those making less than $50,000 a year, which is about 1.6 million homes, or 31.4% of households in Illinois.[20] IMPLAN estimates that increased energy usage patterns for the summer of 2024 would mean around 44 million households cutting $15 from other spending to pay for power bills, resulting in a shift of about $660 million in the U.S. economy. These 44 million households include low-income households in Illinois, which would be the most likely residences to forgo medical and food expenses to pay for an increased energy bill. The sectors most affected by this shift would be hospitals, physicians, restaurants, and retail. [21]

Social Impacts

This section presents findings from our social impacts analysis. The Social Impacts analysis assesses how the Illinois Solar for All (ILSFA) program effects individual communities. For the program year five (PY5) evaluation, we assessed the following research questions:

- Is the program meeting its goals of reaching environmental justice communities (EJCs)?
- Is the program meeting its energy sovereignty goals?
- Who is benefitting from the program? Are there any significant differences between groups or regions?

Below we summarize our key findings from this research:

[20] U.S. Census Bureau, U.S. Department of Commerce. 2023. "Income in the Past 12 Months (in 2023 Inflation0Adjusted Dollars)." *American Community Survey, ACS 1-Year Estimates Subject Tables, Table S1901,* 2023. https://data.census.gov/table/ACSST1Y2023.S1901?t=Income (Households, Families, Individuals): Income and Earnings:Income and Poverty&g=040XX00US17. Accessed on October 10, 2024.

[21] West, Chandler and Lucas, Maria. 2024. "Extreme Heat: The Cost of Climate Change." Published July 23, 2024. *Implan Blog.* https://blog.implan.com/extreme-heat?utm_campaign=IMPLAN%20Customer%20Newsletter&utm_medium=email&_hsenc=p2ANqtz-81B7U2O5VhR-0lyF4xewFiF0uuKcSIbDpyxjXVhJ_JmO8zKk0JkVcf4vuNbfdXtgbg5tZco4FhdMzBFqwwEI_x0Lewbg&_hsmi=317297644&utm_content=317297644&utm_source=hs_email.

Key Findings

FINDING 1

The program met its goal of allocating at least 25% of the incentives to EJCs for the Non-profit/Public Facilities (NP/PF) and Residential Solar (Small) subprograms. However, it failed to meet this goal for the Community Solar (CS) subprogram as there was only one approved project sited in an EJC. No Residential Solar (Large) projects were approved in PY5.

Program Recommendation

ILSFA may consider reviewing current strategies to foster participation in EJCs to help the program better align with its goals. This review might shed light on opportunities for more CS projects sited in EJCs and provide valuable insights for improvement.

FINDING 2

The program successfully allocated 25% of incentives to Energy Sovereignty (ES) projects for the CS and NP/PF subprograms. However, the program was unable to allocate the total budget carveout for the Residential Solar (Small) subprogram, with only 2% of approved projects qualifying as ES projects. The Residential Solar (Small) subprogram struggled to allocate its ES carveout due to 1) the subprogram only spent 20% of the total program year budget on approved projects and 2) within the projects approved few projects qualified as ES projects. Interviews with Approved Vendors (AVs) revealed that participants had few incentives to pursue system ownership. Ownership offers similar benefits to non-energy sovereignty projects but with additional maintenance and management responsibilities. No Residential Solar (Large) projects were approved in PY5.

Background

Key terms used to describe social impacts:

Disadvantaged Communities (DAC): General term used in this chapter to represent the myriad of designations for communities that have been (and may continue to be) marginalized

Environmental Justice Community (EJC): Term used by the ILSFA program to describe areas that stand to benefit greatly from access to solar energy

Energy Sovereignty (ES): Eligible low-income household or community organization having or being on a defined path to majority or full ownership of the photovoltaic generating facility or, in the case of a cooperative or community ownership model, a share or membership in the entity that owns the photovoltaic generating facility

The ILSFA program has specific targets and requirements pertaining to EJCs. Firstly, the program is required to hold 25% of each subprogram budget for within or serving EJCs. If there are not enough EJC projects submitted within a given program year to use all reserved funds, these funds are rolled over to the next program year's budget.

ILSFA also uses EJCs as part of the project selection process (e.g., projects sited in or benefiting EJCs are scored higher in the ranking for funding). ILSFA uses the project selection process to prioritize program funding when the number of projects submitted to the program exceeds the available incentive budget.

The Illinois Power Agency (IPA) designates EJCs using a scoring system that considers environmental and demographic factors. Communities can also apply to self-designate as EJCs by providing evidence that their communities still meet or approximate key criteria, such as exposure indicators (pollution), environmental effects, sensitive populations (based on age or health), and socioeconomic factor indicators. Figure 7 shows the distribution of ILSFA EJCS in Illinois.

Figure 7. Illinois Solar For All PY5 EJCs

The evaluation team collected feedback from stakeholders during the PY4 evaluation to understand the program's priorities and the barriers that were important to the communities served by ILSFA. One theme emerging from the stakeholder interviews was that there may be barriers in the ILSFA program that prevent some populations (e.g., rural communities, communities served by certain utilities) from participating in ILSFA.

For the PY4 evaluation, the evaluation team examined barriers to populations by exploring Disadvantaged Communities (DAC) designations and the overlap between DAC designations and project distribution, as well as the differences in program participation across service territories. In the PY5 evaluation, the team continues to focus on the project distribution within EJCs and different service territories while introducing two new analyses: an evaluation of participation in ES projects and a demographics analysis.

Table 31 summarizes the categories and the primary research questions that supported the PY5 evaluation social impacts analysis.

Table 31. Social Impacts Research Questions

CATEGORY	PRIMARY RESEARCH QUESTIONS
Geographic Distribution	How are program participants distributed across ILSFA EJCs?
	How are program participants distributed across utility service territories?
Energy Sovereignty	What is the incidence of Energy Sovereignty (ES) projects?
Demographics Analysis	Is ILSFA participation serving diverse populations?

Methods

Below, we summarize how we used program tracking data to answer the primary research questions.

- Geographic Distribution:
  - Analyzed locations of PY5 approved projects among EJCs and service territories.
  - Created interactive maps to show the ILSFA EJCs, the distribution of ILSFA CS and Distributed Generation projects across Illinois, and the utilities service territories.
    - ILSFA PY5 Projects and DACs Map: ILSFA PY5 Approved Projects and ILSFA EJCs Map
  - Compared PY4 with PY5 year-over-year participation rates.
- Energy Sovereignty: Assessed the percentage of projects classified as ES projects in PY5
- Demographics Analysis: Analyzed participation demographics compared to the Illinois total population baselines.

Geographic Distribution

Environmental Justice Communities

The evaluation team analyzed ILSFA projects' geographic locations to identify the portion of projects and incentives that occur within EJCs. Our team conducted this analysis for five CS projects, 33 NP/PFs projects, and 223 Residential Solar (Small) projects approved in PY5. No Residential Solar (Large) projects were approved in PY5, and therefore this subprogram was not included in our social impacts analysis.

ILSFA is required to reserve 25% of the budget for each subprogram for projects sited within EJCs for the entire program year. Any unused funds are rolled over to the subsequent program year where they become part of the overall subprogram budget, which is used to reset the 25% carveout for EJC projects.

Table 32 shows the total PY5 budget by subprogram, the portion of the budget set aside for projects in EJCs, the incentives allocated to approved projects, and the approved project incentives allocated to projects within EJCs. Throughout the social impacts section, the evaluation team focuses on the percentage of all approved project incentives allocated to projects in EJCs to understand the portion of distributed funding impacting these communities.

Table 32. Subprogram Carveouts and Incentives Allocated to PY5 Approved Projects Sited in EJCs

SUBPROGRAM	SUBPROGRAM BUDGET	25% BUDGET CARVEOUT FOR EJCS	TOTAL APPROVED PROJECT INCENTIVES ALLOCATED	APPROVED PROJECT INCENTIVES ALLOCATED TO PROJECTS IN EJCS	PERCENT OF APPROVED PROJECT INCENTIVES ALLOCATED TO EJCS
Community Solar	$29,385,209	$7,345,127	$25,113,703	$3,698,815	15%
Residential Solar (Small)	$27,337,726	$6,834,432	$5,237,815	$1,342,542	26%
Non-Profit/Public Facilities	$16,822,130	$4,205,533	$16,712,016	$7,203,172	43%

In PY5, the percentage of projects sited in EJCs decreased across all subprograms, with larger drops in the CS and NP/PF subprograms. Table 33 shows the percentage of approved projects sited in EJCs by subprogram in PY4 and PY5. The largest percentage point change is observed in the CS and the NP/PF category. The small number of CS projects makes this category more susceptible to significant percentage swings, even when changes in actual project numbers may be modest. The NP/PF subprogram dropped from 66% in PY4 to 36% in PY5, a 30% decrease.

Table 33. Percentage of Approved Projects in ILSFA EJCs

PROGRAM	PY5	PY4	DIFFERENCE (PERCENTAGE POINTS)
Community Solar	20%	50%	-30
Residential Solar (Small)	30%	33%	-3
Non-Profit/Public Facilities	36%	66%	-30

This decline in the percentage of projects in EJCs aligns with a reduction in the percentage of approved project incentives allocated to these communities. Table 34 illustrates a shift in the allocation of ILSFA's incentive values within EJCs between PY4 and PY5. In PY5, the program met its overall goal of 25% incentive allocation to EJCs, with 26% of incentives directed to these areas. This marks a decline from PY4 when 69% of incentives were allocated to EJCs.

The decrease in CS projects sited in EJCs in PY5 drives the overall decrease in incentive allocation. This subprogram did not meet its 25% incentive allocation goal, but it did hold these incentives for the entire program year, per program requirements.

While only one of the CS projects approved during PY5 was sited in an EJC, future analyses could examine whether the subscribers of CS projects reside in EJCs, even if the projects themselves are sited elsewhere. The data for subscribers benefitting from CS projects is available once the projects are energized. Currently, only CS projects that were approved between PY1 and PY3 have been energized. For the PY4 evaluation analysis, the evaluation team provided results on potential subscribers who went through the income verification process for the approved projects in that program year. This data was not available for the PY5 evaluation at the time of analysis. For the PY6 evaluation, the team will analyze the available data from PY1 to PY6 to provide an overall overview of the share of participants in EJCs for both those who went through the income verification process and the participants who actually benefitted from the program. Some attrition between the two groups is expected due to opt-outs, incomplete enrollment, unsuccessful eligibility determination, and participants being on waitlists. The analysis will also provide insight into the magnitude of the attrition.

Given the program did not meet the 25% incentive allocation goal in PY5, ILSFA may consider reviewing its strategies to foster participation in EJCs to help the program better align with its objectives.

Table 34. Percentage of Incentive Values Allocated in EJCs over Total Incentive Values

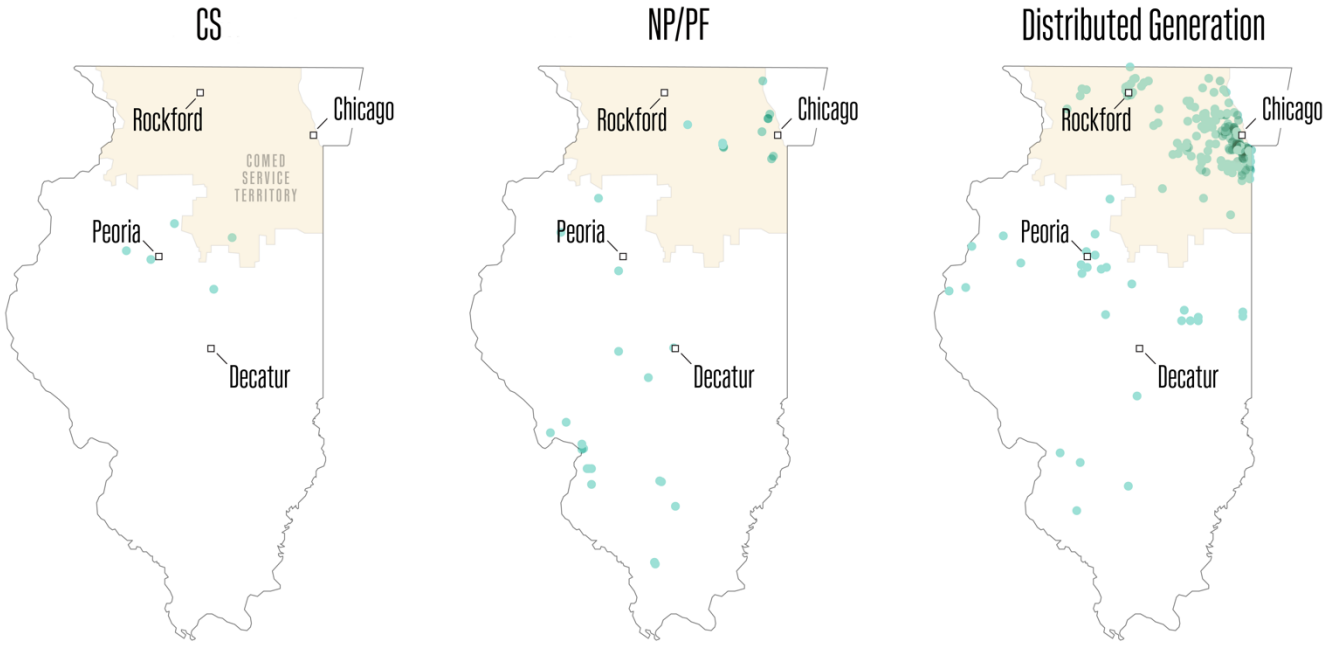
PROGRAM	PY5	PY4	DIFFERENCE (PERCENTAGE POINTS)
Community Solar	15%	81%	-66
Residential Solar (Small)	26%	25%	1
Non-Profit/Public Facilities	43%	61%	-18

Utility Service Territories

In PY5, most ILSFA-approved projects were in ComEd's service territory, though it was a lower percentage of projects than in PY4. ComEd's service area, which covers around 70% of Illinois's population, accounted for 78% of the projects approved in PY5, down from 88% in PY4. The uneven distribution in PY5, like in PY4, is primarily driven by the Residential Solar (Small) subprogram, which has 86% of its projects located in ComEd's service territory. In contrast, the CS and NP/PF subprograms had a smaller presence in the ComEd territory, with only 20% and 36% of their projects located there, respectively. It's important to note that while the Residential Solar (Small) subprogram drives the highest number of projects, the CS and NP/PF subprograms tended to generate a higher magnitude of energy, billing, and environmental impacts at the subprogram level due to their larger average project size. At the household level, the average bill savings from CS tend to be smaller than Residential Solar (Small), a trend which is explored further in the Bill Impacts section.

Figure 8 illustrates the spatial distribution of projects across subprograms. The highlighted region denotes ComEd's service area, while the majority of the remaining state falls under Ameren's service territory. Projects are depicted as dots on the map with areas of higher project density represented by darker clusters of points.

Figure 8. Distribution of PY5 Approved Projects Across Service Territories by Subprogram



Stakeholder interviews from both 2023 and 2024 highlighted similar concerns about the geographic coverage of ILSFA's projects: First, there were concerns that the program was too concentrated on ComEd's service territory, especially within the Chicagoland region. Second, stakeholders expressed difficulties in locating vendors within the Ameren service territory. Third, there were anecdotal remarks on challenges working with downstate utilities on ILSFA projects, such as approving some projects but not others.

As stated in the PY4 evaluation, EJC designations might accentuate the geographic gap in future program years, particularly if the Residential Solar (Small) program reaches oversubscription, and must implement the project selection criteria.

In the scenario where this program implements the project selection criteria—a situation that has not yet occurred—ILSFA's process would prioritize projects in EJCs. Since 92% of ILSFA EJCs are within ComEd's service territory, this would lead to more projects in that territory. As Figure 7 showed, ILSFA EJCs tend to be concentrated in or near urban areas, with most being in Chicago and surrounding cities. Rural areas, many of which rely on Ameren for utility service, could be less likely to receive the advantages of ILSFA because they are less likely to be designated as EJCs.

Energy Sovereignty

"Energy sovereignty" (ES) means that eligible low-income households or community organizations either own or are on track to own most or all of a solar energy system. In cooperative or community ownership cases, it means having a share or membership in the group that owns the solar system. The transfer of ownership occurs over the long term as it can take several years to complete.

Each year, 25% of the funding for every subprogram is reserved for projects that support energy sovereignty. For PY5, this funding was required to be held for the first nine months of the year for ES projects. If the reserved funding was not allocated after nine months, it could be used for any project that met program requirements and was rolled into the following year's subprogram budget if unused.

Residential and NP/PF subprogram projects can achieve the ES designation through a lease or power purchase agreement (PPA) with an early buyout seven years or earlier after energization. These projects must include the cost and timing of the transfer of ownership and other related details in the participant contract. CS projects can qualify for ES designation through ownership or a cooperative model. The ownership model includes a lease or PPA with a buyout clause that is triggered seven years or earlier after energization. The cooperative model allows for a co-op organization to sell low-cost subscription to participants/owners of the co-op.

Table 35 shows the total PY5 budget by subprogram, the portion of the budget set aside for ES projects, the incentives allocated to approved projects, and the approved project incentives allocated to ES projects. Throughout the social impacts section, the evaluation team focuses on the percentage of all approved project incentives allocated to ES projects, to understand the portion of distributed funding advancing ES objectives.

Table 35. Subprogram Carveouts and Incentives Allocated to ES PY5 Approved Projects

SUBPROGRAM	SUBPROGRAM BUDGET	25% BUDGET CARVEOUT FOR ES	TOTAL APPROVED PROJECT INCENTIVES ALLOCATED	APPROVED PROJECT INCENTIVES ALLOCATED TO ES	PERCENT OF APPROVED PROJECT INCENTIVES ALLOCATED TO ES*
Community Solar	$29,385,209	$7,345,127	$25,113,703	$6,946,142	28%
Residential Solar (Small)	$27,337,726	$6,834,432	$5,237,815	$112,492	2%
Non-Profit/Public Facilities	$16,822,130	$4,205,533	$16,712,016	$10,415,859	62%

*Incentives allocated to ES projects are shown as a percentage of the total incentives allocated, which is different from the total subprogram budget.

Table 36 shows the percentage of ES projects by subprogram and the corresponding approved project incentives allocated to each. Although the program has successfully allocated 25% of the total incentives used for CS and NP/PF projects, it did not meet this threshold for Residential Solar (Small). This subprogram had 2% of the projects qualifying as ES projects. Furthermore, the subprogram only allocated 20% of the budget for the program year. Interviews with stakeholders for the PY5 evaluation revealed that achieving ES participation in the residential program is challenging due to insufficient incentives for participants: While receiving the same benefits, they would bear greater responsibility, such as making decisions about operations and maintenance, finance and revenues, and other management decisions. Interviews with AVs provided additional insight into the low ES participation rate: Their feedback indicated that due to life circumstances, many clients might be compelled to focus on addressing immediate needs, leaving them with little capacity to think about long-term decisions.

Table 36. Percentage of Energy Sovereignty PY5 Projects

PROGRAM YEAR	ENERGY SOVEREIGNTY PROJECTS*
Community Solar	20% (28%)
Residential Solar Small	2% (2%)
Non-Profit/Public Facilities	58% (62%)

*Numbers in parenthesis represent the percentage of incentives allocated

Demographics Analysis

The evaluation team analyzed data from Customer Certification Forms for projects approved between PY1 and PY5. This analysis describes participant demographic characteristics but does not track the performance against specific objectives. Insights derived from race and ethnicity data for Residential Solar (Small) participants should be interpreted cautiously. A significant portion of Residential Solar (Small) participants (41%) chose not to answer the question regarding their race/ethnicity, while only 11% of CS participants declined to answer.

Table 37 provides evidence of the program's success in reaching diverse populations with the CS subprogram exceeding participation from several subgroups, including households with seniors and participants who identify as Black/African American. Bolded values indicate instances where the subprogram is reaching diverse populations at higher rates than the general Illinois population. This table does not illustrate how the program is comparatively serving groups within the income-eligible population, whose demographics differ from those of the general population.

Table 37. Demographic characteristics of ILSFA participants (PY1 to PY5 approved projects)

DEMOGRAPHIC CATEGORY	ILLINOIS POPULATION* (%)	COMMUNITY SOLAR[22] (%)	RESIDENTIAL SOLAR (SMALL) (%)
Households with Seniors	31	**35**	**35**
Households with Children Under Six	5	**17**	**6**
Rent	33	**64**	5
RACE/ETHNICITY			
Black/African American	14	**57**	**26**
Hispanic or Latino	18	9	**20**
Asian	6	1	6
Native American/Native Hawaiian†	0.1	**0.6**	**0.6**

*Census Data, 2023: ACS 1-Year Estimates
† Includes American Indian and Alaska Native, Native Hawaiian, and Other Pacific Islander

[22] Data for PY5 approved Community Solar projects was unavailable at the time this report was created.

Demographic data is unavailable for Residential Solar (Large) projects because Customer Certification Forms are only required for income verification in the Residential Solar (Small) program. Income verification for this subprogram is mainly conducted using affordable housing documentation (HUD) or rent rolls. ILSFA might consider gathering this data to better understand how the program reaches diverse populations in all subprograms.

The demographics analysis suggests that the CS subprogram could further reach Asian and Hispanic or Latino populations. Grassroots educator interviews pointed to language barriers as a significant implementation challenge. ILSFA could explore if adding program resources in additional languages boosts participation in these populations.

Next steps

The Social Impacts section of the PY6 evaluation report will continue to offer an overview of how the program impacts diverse communities and will feature a comparison with the results for PY4 and PY5. In addition, it will present new insights drawn from qualitative research that directly involves participants, shedding light on how participants are benefitting from the program and addressing questions that the available tracking data alone cannot fully capture. The team will gather insights from participants' experiences, focusing on potential benefits such as reduced energy burdens, reduced expenses, access to energy efficiency programs, and access to electric transportation, among other factors. Finally, the team will analyze CS subscribers from PY1 to PY6 and add details on their spatial distribution by EJCs and service territories.

Process Evaluation

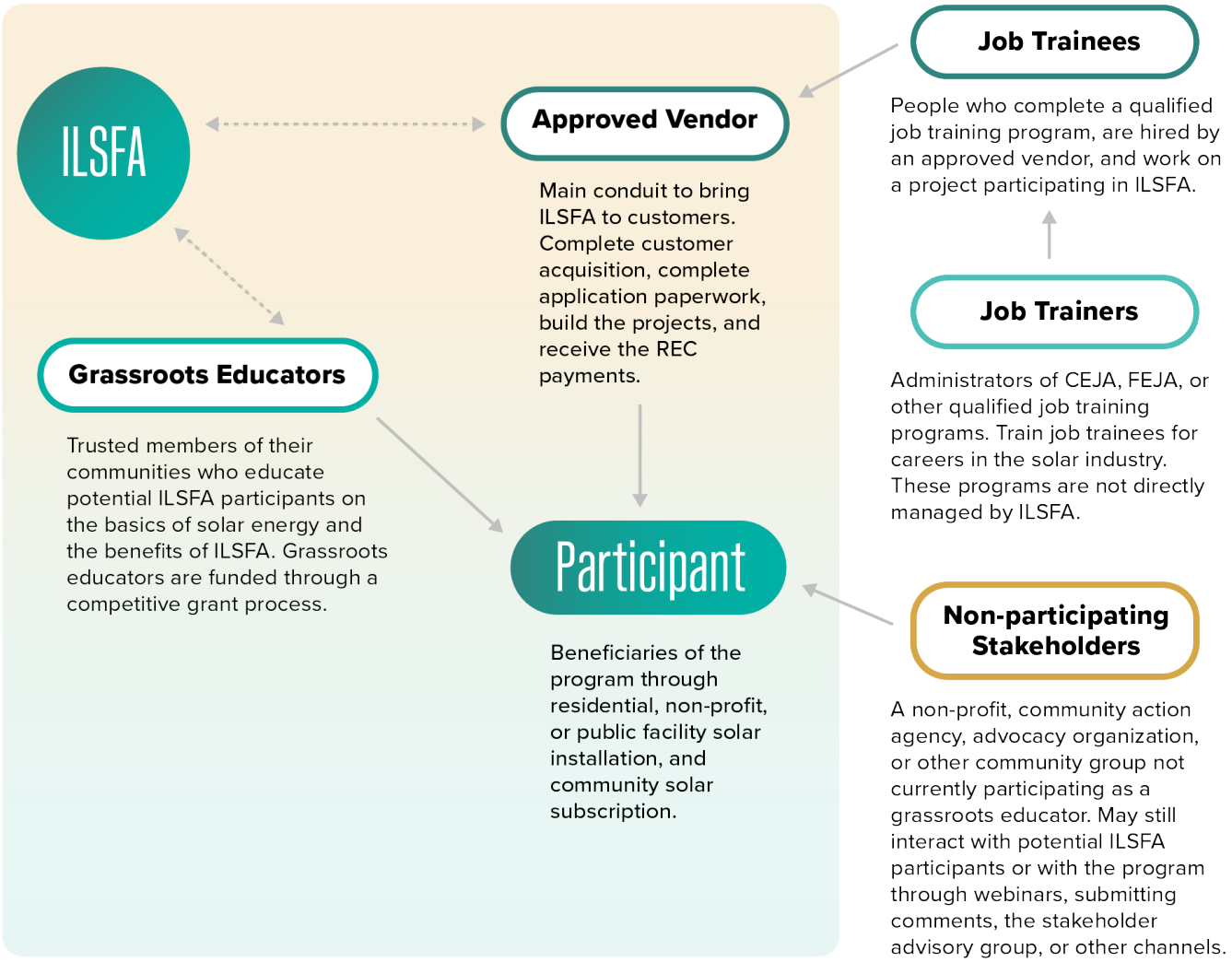
The process evaluation assesses the performance of Elevate as the program administrator and the experience of various parties who help implement or receive benefits from the Illinois Solar for All (ILSFA) program. The PY5 process evaluation included multiple primary data collection activities, including:

- Interviews with:
    - IPA staff
    - Elevate staff
    - Nonparticipating stakeholders (including community-based organizations, non-profits, advocacy organizations, and community action agencies who did not participate in the program as grassroots educators in PY5 or PY6)
    - Grassroots Educators (GEs)
    - Administrators of job training programs (job trainers)
- A survey of participants in job training programs (job trainees), and
- A review of the program tracking database

ILSFA involves several different program actors and stakeholders as shown in Figure 9. The arrows show how program actors interact with the program and each other.

Results from interviews with GEs, non-participating stakeholders, and job trainers as well as results from surveys with job trainees are included in this PY5 annual report. Results from two key primary data collection activities—including participants' focus groups and the Approved Vendor's (AV) survey—will be included in the PY6 annual report, which is scheduled to be published in spring 2024.

Figure 9. Program Actors in the ILSFA Program



This section first summarizes PY5 program changes and progress toward goals and then presents key findings on program performance relative to its goals, program delivery, and implementation in PY5. It is followed by detailed findings from each PY5 primary data collection.

Program Changes in PY5

The Climate and Equitable Jobs Act (CEJA) introduced several new requirements and refinements to improve ILSFA's outcomes and administrative efficiency. Notable PY5 program changes were the addition of an energy sovereignty (ES) RECs adder, separation of the Residential Solar program into the Small (1–4 unit) and Large (5+ unit) subprograms, removing schools from Nonprofit/Public Facilities programs (NP/PF), eliminating 2MW system size cap for Net Energy Metering (NEM), and adjustments to the funding allocations for other sub-programs. The IPA created a REC adder for energy sovereignty to incentivize qualifying ILSFA projects. Energy sovereignty contracts allow an early buyout of the solar system within seven years of energization for Residential Solar – Small and Large and NP/PF projects or direct ownership or ownership through a cooperative model for Community Solar (CS) projects.

The Low Income Community Solar Pilot Procurement, which previously received 25% of the Renewable Energy Resource Fund (RERF) funding allocation under FEJA, was eliminated, freeing up approximately $17.5 million for other programs.[23] CEJA changed and expanded the job training requirements to all subprograms and clarified that GEs are solely focused on assisting community-driven education about ILSFA and general energy issues rather than engaging in marketing or sales efforts of solar projects. CEJA also eliminated the 2MW system size cap for NEM and the program increased the maximum project size from 2MW to 5MW.

Additionally, the program administrator made a few process improvements in PY5, including removing the minimum batch requirements for small residential projects (allowing vendors to submit several projects at once), adding clarification and "help text" on Salesforce, and including more guidance on the submission documentation.

Program Goals

In the interview with IPA staff, they shared that the main way they quantitatively measured program success was whether the program allocated its annual subprograms budget. In PY5, the NP/PF Distributed Generation subprogram awarded nearly its full budget, and CS awarded 85% of its incentive budget to projects submitted to the program (see Table 38). However, the Residential Solar subprograms—both Large and Small—allocated less than 10% of the budget. It is important to note that the combined Residential Solar (Small) and Residential Solar (Large) subprograms received over $33 million of rollover funds from previous program years. These subprograms have struggled to get the project volume and meet their program budget target throughout ILSFA's lifetime. The Illinois Solar for All Residential Solar (Small) subprogram mid-year report (published January 2024) focused on the barriers and opportunities to increase participation in the Residential Solar (Small) subprogram.[24]

Table 38. PY5 Subprogram Budget and Allocated Incentives

SUB-PROGRAM	PY5 TOTAL BUDGET	PY5 INCENTIVE VALUE OF APPROVED PROJECTS	% BUDGET ALLOCATED TO INCENTIVES
Residential Solar (Small) and (Large)	$ 54,755,452	$5,237,815	10%
Non-Profit/Public Facilities	$16,822,130	$16,712,016	99%
Community Solar	$ 29,380,509	$25,113,703	85%

Source: Illinoissfa.com- Illinois Solar for All Sub-Program Budgets for 2022-2023 Announced- Accessed 10/18/2024 and PY5 program data tracking reports received from Elevate in 2024.

In PY5, the program saw a small growth in the total number of projects from 209 in PY4 to 261 in PY5 and about a 37% increase in residential solar projects due to a large project backlog of one AV (see Table 39). While most of the growth in project volume was driven by Residential Solar (Small) projects, new installed solar capacity was driven primarily by the NP/PF and CS subprograms, due to the smaller average size of Residential Solar (Small) projects.

[23] The budget for Residential Solar projects increased from 22.5% to 35%, and the budget for low-income CS projects increased from 37.5% to 40%. The budget for NP/PF grew from 15% to 25%.
[24] https://www.illinoissfa.com/announcements/2024/01/illume-advising-releases-evaluation-report-for-illinois-solar-for-all/

More information can be found on this in the Electricity Impacts section above. In the Key Findings section, below, we explore some factors that may have contributed to smaller growth in project volume, despite the additional budget.

Table 39. Projects and Approved Vendors by Program Year

PROGRAM YEAR	ALL PROJECTS (RESIDENTIAL)	APPROVED VENDORS (MWBE)
Program Year 1	11 (0)	8
Program Year 2	38 (10)	49 (6)
Program Year 3	84 (62)	58 (10)
Program Year 4	209 (162) [a]	86 (12)
Program Year 5	261 (223)	Not Available [b]

[a] Note that project counts in the PY4 Annual Summary differ from evaluated project counts due to two projects being ineligible or withdrawn between PY4 and the evaluation.

[b] The evaluation team used the program's quarterly and annual summary reports to determine the number of MWBE AVs. The PY5 program year did not have an annual summary report, so we could not verify this number for PY5.

Source: Illinois Solar for All Annual Summary: June 2021 – May 2022, and PY5 program tracking report provided by Elevate team

Table 40 shows the number of AVs who submitted projects to the program and the number of AVs with approved projects from PY1-PY5. The number of AVs active in the program dropped in PY5. In the Residential Solar (Small) and Residential Solar (Large) subprograms, only three AVs submitted all approved projects. Furthermore, only two AVs submitted 213 of the 223 approved residential projects. The IPA and Elevate noted that they discovered one AV had a large backlog of small residential solar projects, which the AV had procured and begun developing, but did not submit or communicate to the program prior to PY5. The vendor submitted Phase I applications for these projects in PY5 and PY6.

Table 40. Number of Approved Vendors Active in Each Program Year

PROGRAM YEAR	UNIQUE NUMBER OF APPROVED VENDORS WITH APPROVED PROJECTS (TOTAL NUMBER OF UNIQUE APPROVED VENDORS WITH SUBMITTED [a] PROJECTS)		
	RESIDENTIAL SOLAR - LARGE AND SMALL	NON-PROFIT/PUBLIC FACILITIES	COMMUNITY SOLAR
Program Year 1	0 (1)	3 (7)	3 (14[b])
Program Year 2	2 (2)	10 (14)	6 (14[b])
Program Year 3	3 (12)	6 (16)	2 (14[b])
Program Year 4	4 (6)	10 (12)	5 (9)
Program Year 5	3 (8 [c])	6 (8)	2 (5)

[a] This total number includes all projects listed for year 5 in the PY5 program tracking database including dropped projects

[b] Seventeen CS projects and associated 11 vendors submitted projects that are tracked over two or three program years. Consequently, this number includes carried-over projects and associated AVs from one program year to another.

[c] The five vendors who did not have projects approved by the program all submitted five projects or fewer. Of these, three vendors' projects were dropped due to ineligibility, one vendor withdrew all the projects they submitted, and one vendor's project was approved by the program in a future year.

Key Findings

Key findings are largely informed by interviews with GEs, IPA, and Elevate staff, though findings from interviews with nonparticipating stakeholders and job trainers are woven in where relevant. The key findings focus on the Residential Solar (Small) and CS subprograms since most of the program actors included in PY5 data collection activities shared experiences related to these subprograms.

Program Implementation Challenges

The program faced challenges that impacted program management and delivery. This section includes findings from interviews with the IPA and Elevate teams.

FINDING 1

PY5 program revisions to align with CEJA resulted in the delayed start of the program.

PY5 was the first year CEJA changes took effect, and incorporating CEJA requirements necessitated updating various program documents, Approved Vendor portal, and Salesforce. The IPA and Elevate updated the long-term plan, AV manual, and project selection protocol, adding new program elements or requirements. In addition, Elevate updated the customer disclosure form based on feedback from participants and AVs. The Elevate team noted that updating the disclosure form to capture CEJA changes and roll out an online version of the form was a major effort in PY5.

These challenges caused PY5 to have a delayed timeline. The ILSFA program Administrator staff explained that the challenges delayed the program's opening by five to seven months. The program year typically opens in June, but in PY5, subprograms opened between October 2022 and January 2023. GEs noted that this delay impacted their planned outreach during PY5.

Program Recommendation:

- Ensure that the program communicates any schedule changes and delays to all program actors, including GEs. Clearly communicate the expected timeline for the program year onboarding.

FINDING 2

Key Elevate staff transition impacted program management.

One of the most common themes the evaluation team heard from the program administrator interviews was that Elevate experienced several challenges in PY5 related to staffing. The ILSFA program director's leave created an unexpected leadership gap. This absence, lasting from November to March, left Elevate with limited strategic oversight during a critical time for program planning and operations. Elevate's capacity to guide ILSFA through PY5 and prepare for PY6 was significantly affected without sufficient support structures. New staff members joined the team, and efforts were made to continue operations. However, the absence of the program director—who had extensive knowledge of the program's overall framework and decision-making processes—led to challenges in maintaining cohesive oversight and delivery of the program in PY5.

Program Recommendation:

- Encourage the program administrator to cross-train team members and build redundancy into roles to ensure that program operations can continue smoothly should there be staff turnover or leave of absence. Creating simple documentation of program procedures and processes may help new team members get up-to-speed more quickly.

FINDING 3

Operationalizing the Energy Sovereignty policy directive into the program was challenging.

According to program administrators, the energy sovereignty requirement was and still is difficult to understand, calculate, and track. The implementation of energy sovereignty posed significant challenges, particularly in operationalizing the intent of the law, which is to build wealth in communities. The Elevate team highlighted that energy sovereignty was a new concept for everyone involved, which created unforeseen complexities throughout the program. One of the major hurdles was updating contracts and recalculating backend data in Salesforce to accommodate energy sovereignty projects.

Additionally, calculating Renewable Energy Certificates (RECs) for energy sovereignty projects was complex and did not go smoothly, leading to some discrepancies in understanding and implementation between the Elevate team and AVs.

Finally, program staff have raised concerns about whether the additional value of owning solar arrays outweighs the risks to participants. In the residential solar sector, the ILSFA lease models offer no upfront costs for participants. Ownership of solar systems in comparison to the lease option could involve added responsibilities, such as making decisions about operations and maintenance, finance and revenues, and other management decisions with no additional economic benefit.

Despite these challenges, multiple AVs applied for the energy sovereignty adder, and Elevate worked closely with one of these vendors to clarify the process for REC calculations. ILSFA awarded funds to a total of 24 ES projects, including four Residential Solar (Small) projects, one CS project, and 19 NP/PF projects.

Evaluation Next Step:

- The evaluation team will conduct further analysis of Energy Sovereignty (ES) projects as part of the PY6 social impacts analysis.

FINDING 4

For the program administrator, tracking and managing program data has been a challenge.

The program faced many challenges with managing program tracking data in PY5. These challenges were exacerbated by Elevate's staff turnover and the loss of institutional knowledge described in the section above. Tracking data challenges included data discrepancies, timing delays, inconsistent data formatting, and insufficient documentation. These data-related challenges limit the ability to monitor performance of the program, both in real-time by IPA, the ICC, and stakeholders, as well as to assess success of the program during the program evaluation.

- **Data discrepancies:** The evaluation team received the program tracking data through different reports exported from Salesforce. However, inconsistencies across reports, such as differing values and counts, required multiple rounds of corrections. For example, total project costs for a certain project varied unexpectedly across different reports. Similarly, some projects were inconsistently represented, appearing in some reports but missing from others.
- **Timing:** The process of fulfilling data requests and resolving errors was time intensive, leading to delays in obtaining accurate data.
- **Data formatting:** Data came in different formats, required manual input, and combined both granular and aggregated measures in the same rows.
    - Sometimes when a data request needed to be updated with corrected or more recent data, the updated data file came in a different format from the original data file.
    - Occasionally, certain reports required manual data entry, such as extracting data from PDFs to complete report fields.
    - Data delivered at granular levels included aggregated measures at the project level. For example, a project with three solar arrays would list the total project cost three times—once for each array—requiring careful interpretation to avoid overestimating costs.
- **Documentation:** A comprehensive data dictionary for the fields included in the reports was not readily available, and a definitive source of truth for the data was lacking.

In the experience of the evaluation team, the issues with data discrepancies and data formatting described above are common within low-code program tracking data systems that use form-based inputs, but have limited data-validation built into the product, such as Salesforce. The strengths of these systems (such as support for form-based inputs and automated data exports) also open the door to wide-ranging errors not immediately evident to the user focused on single tasks. Robust quality assurance checks on exported data are critical to ensure data validity and to resolve common errors (e.g., duplicate records or inconsistent totals across time periods).

Program Recommendations:

- Evaluate and assess data governance protocols within the program to uncover potential issues compromising data integrity.
- Consider building data systems that allow easier access to data retrieval for external stakeholders with minimal intervention (e.g., API access).
- Implement a data QA process. For example, create scripts that automatically flag and log potential data issues (e.g., missing values, outliers, data discrepancies) for manual review. Such QA will likely need to take place *outside* of the data tracking system, to ensure exported tables are indeed ready for sharing.
- Store data tables with associated data dictionaries for easy field definition retrieval.
- Create a current and comprehensive scorecard that serves as a data reference, featuring key program metrics organized by program year, subprogram, and project stage. This tool would provide the IPA and evaluators with clear data benchmarks and help identify and address any data discrepancies.

- Avoid including aggregated measures in reports with finer granularity. Deliver data using hierarchical structures that clearly distinguish between project level and array level information providing metrics associated to the different level separately but identified by unique IDs.

FINDING 5

For Grassroots Educators, unclear communication and slow response times from the Elevate team have been challenges. In addition, data tracking requirements are burdensome for Grassroots Educators.

GEs noted several challenges in communication and coordination with Elevate during PY5 and PY6. Specifically, they mentioned slow response times, difficulty in receiving responses to questions, long turnaround times for requests to review materials, and delays to the PY5 training and onboarding, which then delayed GEs' ability to kick off their work. GEs also shared that they received meeting invitations and information about trainings with little notice, making it difficult to rearrange their schedules to attend. Finally, some GEs expressed that Elevate wasn't following through on requests for support, such as attending outreach events that GEs invited them to.

These challenges have led some GEs to decide not to continue with the program or make others question whether they will continue to participate. GEs acknowledged that staff turnover and lack of support for new staff likely contributed to their challenges. From program administrator interviews, the evaluation team heard that staff turnover and an unexpected leave of absence at the leadership level resulted in the team being understaffed and lacking redundancy in the team to fill leadership roles.

GEs also noted that they found reporting in Salesforce to be burdensome and difficult. They found some fields within the database to be difficult to complete or confusing. They also wanted to add additional fields to collect information that is useful to them, such as language spoken by the individuals and households they interact with. Most of the GEs reported tracking their engagement and follow-up data in their own systems separately from the Elevate Salesforce, as this allows them to track the data in a way that is more useful to them.

Program Recommendations:

- Establish a system for Elevate to track and document questions, feedback, or concerns from GEs. Establish metrics for Elevate to ensure they are responding to GEs in a timely fashion, and track these metrics to ensure GEs are receiving timely responses. These metrics can also help Elevate identify any issues with staffing or capacity that may be impacting communication with Grassroots Educators.
- Provide GEs with a single point of contact at Elevate and the IPA for questions and inquiries. If GEs do not hear from that contact, offer a process to ensure their questions are answered.
- Develop a standard procedure for meetings with GEs, including scheduling meetings with appropriate advance notice and distributing agendas ahead of the meeting.
- Schedule the program kickoff training at the beginning of each program year with ample notice so GEs can ensure they are able to attend and get started on their outreach promptly.

- Offer additional training on Salesforce use and provide technical support. Also, request feedback from GEs on Salesforce to determine if the system can be made more user-friendly or useful to GEs. For changes that are not implemented, communicate to GEs that those requests were received and explain why they were not implemented.
- If Elevate or the IPA agrees to attend a GE event, ensure that they follow through on that request. There should be an Elevate staff member who makes themselves available to participate in GEs' events.

Program Education Successes and Challenges

FINDING 6

Grassroots Educators serve as trusted community partners to overcome skepticism surrounding solar offerings. However, Grassroots Educators and the ILSFA program lose trust with community members when the community faces barriers to participating.

Lack of trust among potential participants is a major challenge for participation in the ILSFA program. The program must overcome mistrust due to communities' history of energy-related scams and skepticism of offerings that sound too good to be true. Both nonparticipating stakeholders and GEs discussed using their trusted status in their communities to provide assurance that the ILSFA program is not a scam. GEs assure the communities they speak with of the legitimacy of the program by answering their questions and explaining what makes ILSFA distinct from other programs.

GEs shared that the trust they build can be broken when the ILSFA program is overly burdensome to participate in, doesn't have participation opportunities available (e.g. there are no community solar subscriptions or no participating vendors in a certain area), or leaves participants with negative experiences. These experiences can also harm the trust that communities have in GEs that educate them about ILSFA, creating risks for the GEs who may rely on that trust to deliver other services to the community. Barriers to program participation are outlined in the Participation Barriers section below.

FINDING 7

Grassroots Educators use tailored methods of outreach to connect with their communities and educate them about ILSFA. They had several suggestions for additional materials and information that would help them raise awareness about the program with potential participants.

Through their community engagement experience, GEs understand the best channels, messages, and language to use when communicating with the communities they work in. They lean on this experience to design outreach events and materials that are accessible and describe the benefits of participation in a way that resonates with the individuals and communities they serve.

Though GEs have determined strategies that work well to educate their communities about ILSFA, there are resources that could help them better raise awareness and communicate the legitimacy of the program. In addition to the materials that GEs currently have with the IPA and ILSFA program logos, they said that being able to have Elevate staff at events helps reassure attendees that the program is legitimate. It would also be helpful to them to answer questions about the program that GEs may not have the answers to.

In addition, GEs said that testimonials from participants in their communities are powerful in showing the benefits of the program and helping participants understand how the program might impact their bills.

Some GEs struggled to find testimonials to share, especially if there has been little or no participation in the program in their neighborhood. They would appreciate additional support from the program in identifying participants in their region that can provide testimonials.

GEs also shared that the ILSFA program's written materials are too text and information heavy. They requested catchier and simpler materials that are easy to read and understand. GEs also requested materials more tailored to the communities they serve. For example, GEs that serve Spanish-speaking communities requested more materials in Spanish. One GE requested materials that include images of Black families for outreach to predominantly Black communities. Finally, GEs also requested additional materials with program branding to use while tabling at community events. The program branding helps support the legitimacy of the program, and having these materials provided by the program will help alleviate the burden on GEs to create these materials themselves and submit them for reimbursement.

Program Recommendations:

- Encourage Elevate staff attendance at GEs' events. This could lend additional legitimacy to the program and provide an onsite expert to answer questions that GEs aren't able to address.
- Create more testimonials and program success stories that GEs can point to in their recruitment efforts. Additionally, facilitate connection between GEs and participants who went through the program successfully. These personal stories can serve as powerful tools in overcoming community distrust.
- Update written program materials to make them simpler and easier to read. Include only topline information and a clear call to action.
- Tailor materials to communities served by ILSFA by including photos of a greater variety of households and translating materials into the most common languages spoken in Illinois.
- Offer additional ILSFA-branded materials for GEs to use at tabling events, including polos, tablecloths, posters, and handouts (tote bags, pens, magnets, etc.).

Participation Barriers

FINDING 8

The Residential Solar (Small) subprogram processes are time consuming and can have a lengthy timeline.

GEs reported that the participation process for the Residential Solar (Small) subprogram is difficult for participants to complete due to multiple steps and wait times. GEs do their best to walk participants through the process, but sometimes it isn't clear to them what is supposed to happen next, and they have expressed frustration that the process isn't more straightforward.

GEs see potential participants fall off each time they need to take another step or provide documentation. Multiple GEs mentioned that the income verification process can take a while, and this leads to loss of participation.

Once an individual makes it through income verification, they have more challenges to navigate to connect with an AV and move forward. This is discussed later in this section.

GEs reported that people also follow-up with them when they run into any issues during the participation process, such as lengthy wait times or damaged property from an AV. GEs said they follow-up with Elevate for support in addressing issues that the GEs cannot address themselves. GEs shared that they often do not receive responses from Elevate staff or that they need to follow-up multiple times. GE communication with Elevate is covered in more detail in the Program Implementation Challenges section above.

Program Recommendations:

- Offer increased training for GEs, providing them with clearer guidance on program processes and their role in each stage.
    - Consider creating a checklist or flow chart that outlines each step of the program process and clarifies the responsibilities of GEs at each point.
    - Have Elevate or the IPA lead the trainings so that GEs that are currently tasked with leading trainings can also benefit from learning new approaches and content.
- Amend GE contracts to formalize their role in supporting participants through the program. This essential service supports program participation, which would be more challenging for participants without their support. Including this role in their contracts will clarify expectations, provide GEs with a clear understanding of their role, and ensure the program allocates sufficient resources to help them continue serving effectively.
- Set clear expectations for the income verification timeline and aim to expedite the income verification process whenever possible. After income verification is complete, provide potential participants with clear next steps to reduce drop off during that stage.

FINDING 9

Some interested households are not able to participate in the Residential Solar (Small) program because of structural or electrical issues in their homes.

GEs and nonparticipating stakeholders both noted that they can struggle to find potential participants who meet income eligibility guidelines for ILSFA, own their homes, and have homes in solar-ready condition. One GE noted that, in their neighborhood, finding this combination of characteristics can be nearly impossible.

Oftentimes, homes need roof repairs or electrical panel upgrades, which ILSFA does not cover outside the Home Repairs Pilot. GEs who supported community members in accessing the Home Repairs Pilot Program in PY6 noted that the process to receive roof repairs was long and frustrating, making it difficult to complete. According to GEs, to participate, community members often need to communicate with multiple external funding programs, wait to hear back, and sometimes get rejected or placed on a long waitlist.

AVs also face barriers to supporting participants in accessing funds for the Home Repairs Pilot. One of the main barriers to participation is the mechanism by which incentives for the Home Repairs Pilot are paid out, which is via an adder to the REC incentive. This means that vendors who directly work with participants to complete these repairs, either in-house or via a subcontractor, must float the costs of those repairs in addition to the solar array until the project is fully constructed and energized, a process that can take months to years. This creates a barrier for smaller vendors who may not have ready access to capital or be easily able to secure a loan with financially favorable terms. As a result, there are few AVs who are offering this support to participants.

Recommendation:

- Consider streamlining the Home Repairs Pilot to make participation easier and quicker for participants. Interested individuals may have an easier time overcoming the barrier of structural issues if they are able to work directly with their AV to complete necessary repairs.
    - Continue to explore financing for AVs. Having the capital to cover both the solar array and home repairs until payment of RECs is one of the major challenges to participating in the Home Repairs pilot. Financing, particularly low-interest financing accessible to smaller vendors, can help alleviate this challenge.
    - Continue to raise awareness of the Home Repairs Pilot and encourage AVs to participate. Create platforms for AVs that have participated in the pilot to share their experiences with other vendors.
- Consider allocating more funds to the CS subprogram. For interested individuals that can't participate in the Residential Solar (Small) program due to structural or electrical issues, a CS subscription may offer a better pathway to participation. As discussed below, potential participants have difficulty finding CS subscriptions.

FINDING 10

Interested participants have difficulty finding Approved Vendors or Community Solar subscriptions.

GEs and nonparticipating stakeholders both noted the limited availability of AVs as a major barrier to participation in the Residential Solar (Small) program. The challenges that potential participants face in reaching AVs vary across the state. GEs and nonparticipating stakeholders in southern and central Illinois said there were no or few approved vendors who worked in their area, which made it hard for them to promote the Residential Solar (Small) subprogram. GEs in northern Illinois said there were more AVs in their area. Still, the AVs are difficult to get in touch with and may not respond to a potential participant for many months. In addition, AVs are often not able to or interested in completing Residential Solar (Small) projects. GEs believe that this is because AVs struggle to float the capital for ILSFA projects and those that can prefer to complete larger projects. In PY5, three AVs across the state had approved Residential Solar (Small) projects. Most (86%) of the Residential Solar (Small) projects approved in PY5 were in ComEd's service territory.

Nonparticipating stakeholders and GEs also reported that there was a lack of CS subscriptions available. They described talking about the program with potential participants and then not being able to deliver on the promises made due to a lack of subscriptions or long waitlists. In the CS subprogram, participants are only able to subscribe to projects in their utility territory. Four of the five CS projects that were approved in PY5 were in Ameren territory, and one was in ComEd territory. These projects were energized in later program years.

Program Recommendations:

- Continue to address barriers that AVs face when participating in the Residential Solar (Small) program. The Residential Solar (Small) Midyear Report[25] outlines these barriers and makes recommendations for addressing them.
- Create an AV directory that details which vendors are accepting new Residential Solar (Small) projects and in what areas they work. Ensure the directory is updated regularly so that GEs and nonparticipating stakeholders know which vendors are active and accepting new Residential Solar (Small) projects. This will allow potential participants to streamline their outreach to only vendors that would be willing to take on their project.
- Host networking opportunities for GEs and AVs to connect. This would help GEs connect with active vendors in their region and know which vendors are taking projects and, thus, which vendors to direct participants to. These connections could also help GEs recruit AVs to attend outreach events.
- Provide a database or a live update for GEs on solar farm subscription availability and a timeline for when new subscriptions will become available.

[25] https://www.illinoissfa.com/announcements/2024/01/illume-advising-releases-evaluation-report-for-illinois-solar-for-all/

FINDING 11

General experiences with Community Solar are positive.

Nonparticipating stakeholders shared that the community members they knew of who had subscribed to CS appreciated the benefits their subscription provided and had generally positive experiences. Nonparticipating stakeholders discussed participants being "thrilled" at the bill savings they received and liking the fact that it was not a big commitment to participate.

Program Actor Feedback (Detailed Findings)

Nonparticipating Stakeholders

The research team completed interviews with five nonparticipating stakeholders: three community action agencies (CAAs) and two non-profits. For this research task, "nonparticipating stakeholders" were defined as community organizations that were not currently participating in any aspect of ILSFA.

These stakeholders represented communities statewide, including central Illinois, the five counties bordering Cook County, and downstate. The goals of these interviews were to understand where community priorities lay independent of ILSFA, as well as to gain a broader understanding of awareness of and potential barriers to ILSFA programs. Nonparticipating stakeholders discussed the challenges and priorities of the communities they served, their knowledge of and past participation in ILSFA, recommendations for improving access to ILSFA, and brief thoughts on ES. This section summarizes findings from those interviews.

Nonparticipating stakeholders report that their community's main concerns are more immediate needs, like housing and food, than those provided by energy and solar programs.

The main priorities for Illinois communities, according to the organizations interviewed, included affording utility bills, housing availability and affordability, and environmental pollution and environmental justice issues. The stakeholders located in rural areas discussed a lack of transportation, as well as a lack of childcare and well-paying jobs. One organization shared that high foreclosures and rents are significantly impacting their community, as seen in the quote below.

> *"Illinois has some of the highest disconnection rates in the country. Energy should be a human right."*
>
> *– Stakeholder*

Other organizations shared similar barriers to engagement with the services they offer, including a hesitancy to ask for help, language barriers, lack of funding, and staffing problems. Some CAAs also shared they are not as well-known in the community and are often working to raise awareness of the services they provide. Another organization discussed how they often feel equipped to break down barriers to engagement. The quotes below highlight these findings.

"If there is an obstacle, we try to figure it out."

"Community Action is one of the best kept secrets in the world. We do our best to be out in the community and attend resource fairs, but people don't know we exist."

"We would love to be able to offer more assistance, but we need more funding and LIHEAP needs more funding."

– Stakeholders

Overall, nonparticipating stakeholders reported mixed participation in existing energy programs. Some CAAs discussed how the Weatherization Assistances Program (WAP) and the Low-Income Heating Assistance Program (LIHEAP) are the two most well-known programs they implement. One non-profit we interviewed discussed how they don't believe their community members are participating in energy programs and shared that online applications are often a barrier and can prevent access to energy programs. Another CAA shared how energy efficiency was not a priority for their community members, and they were primarily concerned with meeting basic needs like food and housing. The quote below is from this CAA representative.

"Going green is a nice idea, but people are primarily concerned about putting food on the table."

– Stakeholder

One CAA shared there are also false perceptions of WAP that they often must correct, including the idea that it is a "beautification" program for homes that need aesthetic upgrades. One CAA discussed the issues they have implementing WAP, including a waitlist so long that some community members have been on the list for years. They also said that contractors are difficult to find to complete WAP work, and they encounter many issues with the housing stock that prevent the installation of weatherization measures. These barriers mirror those to the Residential Solar (Small) subprogram, discussed in brief by some stakeholders familiar with ILSFA. These issues included roofs that are unable to support solar panels, too much shade, and needing an electrical panel upgrade, among others.

We also asked nonparticipating stakeholders for their opinions on ES. While all organizations felt that ES as a goal made sense, there was uncertainty with how achieving ES would work, especially with CS. One CAA reported that while energy sovereignty was a nice idea, their clients were often not thinking that far ahead and were much more focused on immediate needs, as the quote below highlights.

"Clients are so focused on whether they can eat, they are not thinking that far in the future. We struggle to get them involved in savings/budgeting."

– Stakeholder

Most of the nonparticipating stakeholders we interviewed were aware of ILSFA and described significant barriers to participation for their community members.

Four of the five nonparticipating stakeholders we interviewed had a significant awareness and understanding of ILSFA, and one CAA had heard of ILSFA but did not know details about the program offerings. Two of the organizations we interviewed had significant involvement with ILSFA in the past as GEs and another used to work for an AV. Three were also working with ILSFA on the Clean Energy Connector Pilot, which aims to connect households who qualify for LIHEAP with community solar subscriptions.

Four nonparticipating stakeholders discussed awareness of their community members participating in either community solar or the Residential Solar (Small) subprogram. Overall, they shared that most participation they knew of was in CS and felt there were significant barriers to their community members participating in the Residential Solar (Small) program. These barriers included:

- A lack of approved vendors in their geographic area,
- Issues with housing stock, including roofs that are not suitable for solar and other structural concerns, and
- Difficulties finding homeowners that make a qualifying income.

For CS, one non-profit described how there was no opportunity for their community members to participate because there was not a local community solar project available, and the barriers to the Residential Solar (Small) program were too high. The quote below is from another non-profit that used to work for an AV and saw firsthand the difficulties in finding eligible participants.

"Finding a customer is like finding a needle in a haystack—they need to be interested in solar, roof needs to be in a decent state of repair, need to own their home or have a supportive landlord, enough sun, electrical box upgraded and grounded. Even if a customer gets through all those factors, it is hard to find an AV."

– Stakeholder

Nonparticipating stakeholders had some suggestions on how to make ILSFA more accessible to their communities. Two organizations discussed how assistance for getting homes ready (including roof improvements) would improve access to the Residential Solar (Small) subprogram. A quote from one of these CAAs is below.

"We are just trying to get people's homes livable before looking at solar panels."

– Stakeholder

Three nonparticipating stakeholders discussed increasing awareness of ILSFA programs and felt that their community lacked a basic understanding of what ILSFA was and how they might benefit from it. Another CAA discussed the fact that many community members were wary of solar scams and generally mistrusting solar programs. Another CAA reported that they needed more solar vendors and installers in their rural area. Those that are giving solar quotes to participants are quoting high costs, and many participants are unaware they might qualify for ILSFA. One CAA also shared their concern with combining CS subscriptions with the new statewide low-income discount rate. They felt the combination of these two offerings would lead to a larger bill for qualified participants.

Nonparticipating stakeholders shared that their community members were excited about the potential bill savings from solar, and those that participated in Community Solar generally had positive experiences.

Most nonparticipating stakeholders reported they felt their community members were excited about and interested in solar power, especially the potential bill savings from both community solar and rooftop solar. One CAA discussed how some of their younger community members were also excited about renewable energy and energy efficient solutions in general.

However, one non-profit felt as though solar was so far from being accessible to their community members that they could not name benefits that would resonate. The quote below is from this non-profit.

> *"I appreciate your question, but in a way it's imaginary. My anxiety is that we'll just have this same conversation three years from now."*
>
> *– Stakeholder*

Overall, nonparticipating stakeholders reported the CS subprogram had a positive impact on their community, and subscribers they knew were very satisfied with the bill savings they were seeing. One CAA discussed how they felt community solar subscriptions were an easy way for their community members to save money, especially because they can take their subscription with them when they move, and there is not a big commitment on the participant's end.

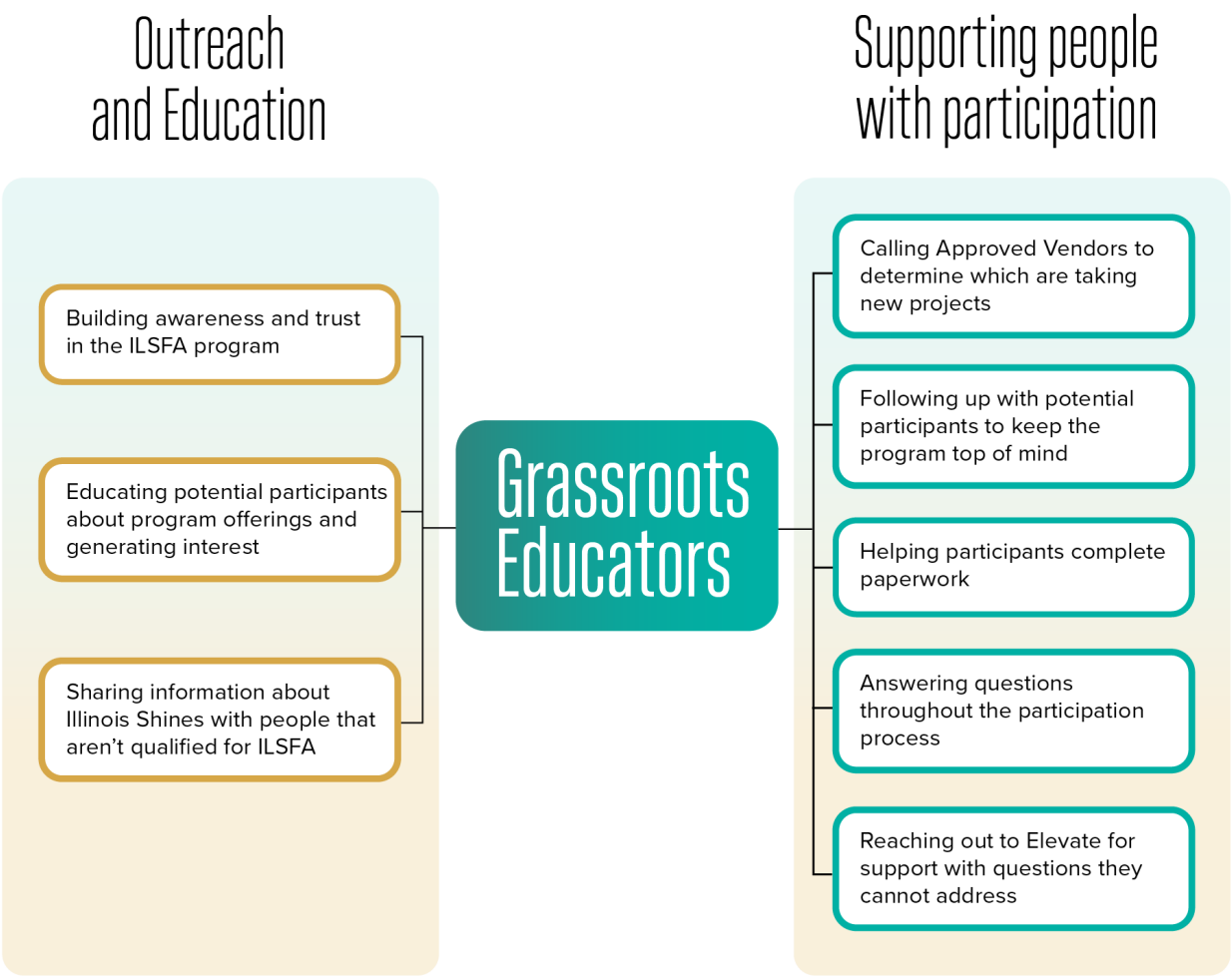
The only concerns about CS that nonparticipating stakeholders shared were around the two-bill system. Two CAAs shared that it made the program confusing for participants, and one described it as being a "hard sell."

Grassroots Educators

GEs are important actors in ILSFA. They educate communities about the program, address questions or concerns, and support individuals through the participation process (Figure 10). The evaluation team spoke with nine GEs; all nine participated in PY5 and seven participated in PY6. The evaluation team asked GEs about their approach to their role, how they explain the program to potential participants, participant reactions to the program, how they help participants through the program processes, and their experiences working with the program. GEs shared insights on challenges with educating communities about the program, barriers to participation, and challenges GEs face in their role.

Most of the interviewed GEs worked in northern Illinois, though a couple worked in southern Illinois or across the state. The interviewees primarily focused on education about the Residential Solar (Small) and CS programs. A couple of GEs had experience working with the NP/PF subprogram.

Figure 10. Activities that Most Grassroots' Educators Are Doing to Support ILSFA Outreach and Participation



Below, we describe GEs' experiences with ILSFA, how they approach their roles, and barriers to ILSFA program participation.

Grassroots Educators appreciated ILSFA and wanted it to succeed. However, they expressed that participation was taxing and stressful.

Overall, GEs were invested in performing well in their role within the program. They were excited about how the benefits of ILSFA could support individuals and their communities. GEs saw alignment between the goals of the program and the needs in their communities, and they wanted to make sure that as many people as possible had the opportunity to participate.

> *"We want to have fun doing the work—how joyous we feel, it brings such joy, coming in, and saving money, electric bills are more affordable, doing their part to make climate and community healthier and cleaner. That's the reason we do this."*
>
> *– Grassroots Educator*

However, GEs faced challenges in educating their communities about ILSFA and supporting individuals through the enrollment process. These challenges included difficulties in communication and coordination with Elevate, complexity of program processes, and lack of participation opportunities. These challenges made GEs' roles frustrating and limited the impact their efforts could have. These experiences led some GEs to question their continued participation in the program and others to choose not to continue in the role.

"It's the most frustrating thing I've ever done. I probably won't do it again, but I say that every year."

– Grassroots Educator

People were often skeptical of ILSFA when they first heard about it. GEs used their status as trusted messengers to overcome skepticism in ILSFA program offerings, however, they were concerned about their reputation when the program didn't deliver.

When educating communities about solar, GEs were often met with skepticism due to a history of their communities being targeted by alternative retail electric supply rates or other energy-related scams. Because of this history, community members have their guard up, distrusting programs that sound too good to be true and wondering if these programs will really benefit them. One GE said the people they talk to are typically "interested and cautious" when they hear about ILSFA.

While it can be hard to earn trust, GEs saw themselves as good messengers for ILSFA. GEs described themselves as "deeply rooted [in] and part of the community." Additionally, GEs expressed that they understand the history and context of energy programs. One shared, "I think that is where we make a big difference, because we know it's tough. People have bad experiences, and I would say that there is a lot of distrust out there." This status as a trusted messenger allows GEs to distinguish ILSFA from other less legitimate offerings. We will further explore the role of GEs from the participant perspective in the PY6 focus groups.

Some GEs expressed concerns that when interested households were unable to participate in ILSFA due to long wait times, lack of vendor responsiveness, or limited participation opportunities, that it harmed the reputation of the GEs.

"I have developed relationships with communities, and if I tell them something and then it doesn't happen, I lose trust with them."

– Grassroots Educator

GEs also noted that these experiences could lead communities to be wary of ILSFA. GEs said that people share their bad experiences with the program to other community members through word of mouth and the reputation can spread quickly.

"Once you whet the appetite and they've qualified, but the opportunity doesn't exist, it builds distrust of ILSFA."

– Grassroots Educator

Grassroots Educators used varied and tailored strategies to educate their communities about ILSFA, leaning on their knowledge and status in their communities as well as program materials.

GEs used many methods to educate communities about solar and ILSFA. These included tabling at community events; hosting workshops, information sessions, and community meetings; reaching out directly to community members; partnering with elected officials, community action agencies and other GEs; and more. GEs discussed how their history of engaging with communities prior to becoming GEs allowed them to understand community priorities and communicate in ways that resonate.

At outreach events, GEs used language and materials tailored to the communities they serve. Some GEs customized materials based on prior experience with outreach in their communities. Others conducted more formal market research. For example, one GE held focus groups to hear from parents in their communities about how they receive information best and their priorities.

Based on this information gathering, GEs took a variety of approaches in customizing materials and outreach. For some, materials focused on big visuals that explained how community solar works and how participants will see their subscription reflected on their utility bills. Others tailored their messaging to focus on individual and community benefits. Some GEs focused on creating materials with images of people that visually reflect the communities they serve, and others focused on providing communication and resources in Spanish. One GE focused on one-on-one interactions and began the conversation by talking about climate change, while another found that workshops were the best approach.

Across these varied approaches, a common theme that emerged was knowing their communities and earning their trust. As one GE detailed:

"[Our organization has] a well-earned and hard-earned reputation as voice for the people in the community. What they see in me is a person who speaks to them in a way that's considerate, respectful, and helps them understand what's available to them, give them the pros, the cons, and now they call me on the phone."
–Grassroots Educator

GEs shared additional strategies that helped them convince community members of the legitimacy of ILSFA. These included communication about the program from a source of authority (i.e. a city mayor) and sharing testimonials (i.e. real bills from participants showing the money the program is saving them) helped to combat skepticism. A couple of GEs relied on testimonials as a key part of their education strategy. Others would like to include testimonials but have struggled to gather them due to a lack of ILSFA participation opportunities in their area.

Grassroots Educators put time and effort into following-up with potential participants to keep the program top of mind and to help them through the participation process.

GEs reported doing a lot of "handholding" to support people through the ILSFA participation process, both in the CS and Residential Solar (Small) subprograms. Multiple organizations said they used to send people to the website but have since learned that people need more follow-up and support. This can be especially useful for people who struggle with technology or prefer not to use it:

"Some people are go-getters, and they want it. There are some people that need serious handholding. I don't tell people to go on the website, I give them my phone number and help them walk through it."

– Grassroots Educator

When participants ran into issues (not hearing back from vendors, vendors that damaged their property, etc.) that GEs could not remedy, GEs reached out to Elevate for support. Many referenced having difficulty hearing back from and getting their questions answered or concerns addressed by Elevate. There are more details about difficulty in communication with Elevate below.

Although Grassroots Educators worked to support community members through the participation process, community members still faced challenges enrolling in ILSFA.

GEs reported that the program participation process was difficult for community members to complete. They emphasized this was particularly true for the Residential Solar (Small) subprogram but that some feedback also applies to CS. One GE noted that people expect income-eligible programs to be streamlined and thus are confused when the process to participate in ILSFA is so hard.

GEs highlighted that each additional step in the participation process created some risk that potential participants would drop out. However, they noted that steps that require additional documentation and information, like the income verification process, could be particularly difficult for participants to complete. GEs provided mixed feedback on how difficult this process was for participants. One GE said that income verification has improved a little bit to get easier. However, another GE said, "income verification in that process often takes a while. There is a huge loss in participation at that point."

Multiple GEs expressed confusion about what was supposed to happen after someone interested in the Residential Solar (Small) program completed the income verification through Elevate or contacted an AV.

"If they haven't found an Approved Vendor, and I haven't followed up with them, and they haven't heard anything, then what now? I'm trying to do more to help people, but I don't know what they need."

– Grassroots Educator

Overall, GEs expressed frustration that the entire participation process for ILSFA wasn't more straightforward. They did their best to walk participants through the process, but sometimes it wasn't clear to them what was supposed to happen next. They noted that a resource like a checklist, which could help them walk a potential participant through the process, would be beneficial. They also noted that having a better understanding of program processes could help them identify when hangups are likely to occur and support participants through these steps.

"I think when people see an income eligible program, they expect it to be very streamlined. A lot of confusion comes in when it's so hard."

– Grassroots Educator

Some participants made it through the beginning steps of participation but were unable to find available Approved Vendors or Community Solar subscriptions.

Several GEs noted that finding AVs working with the program is a major barrier to participation. GEs in central and southern Illinois said they had to "give up" on the rooftop program because there aren't AVs that work in that part of the state. GEs in northern Illinois said there was more opportunity because there were more AVs, but community members still struggle to get in touch with vendors. One GE shared that AVs have taken six to eight months to get back to people. Another GE said they'd experienced an AV signing people up for ILSFA and then leaving the program. These challenges are difficult for participants who invest their time and effort in trying to participate in the program and can lead to feelings of mistrust. One GE expressed disappointment that there were not more women and minority-owned vendors in the program.

GEs requested that Elevate provide them with a list of vendors that are currently active in the program and willing to take on new projects or have subscriptions available. GEs reported spending substantial time calling through the AV list to figure out which vendors would take on projects in their areas. This process was time consuming and frustrating. One GE said that the list has been condensed on the website to make this process easier.

"It's difficult to have this program roll out and don't have the product. We have been reluctant to continue to do this, until program is clearer about who the Approved Vendors are… We don't have that kind of time: to go through the whole list… just tell us up front who's available."

– Grassroots Educator

GEs that have been able to form relationships with vendors or include vendors in outreach have found success in enrolling people in ILSFA. One GE had a strong relationship with a CS vendor who would come to events and enroll people at the event. Other GEs expressed interest in having vendors as part of their workshops, calls, or events to connect people to an active AV, answer people's questions, and have an opportunity to begin the application process. Some GEs would appreciate Elevate's support in forming these connections.

GEs said that vendors struggled to complete projects through the Residential Solar (Small) subprogram due to lack of financing or because they would rather complete larger projects. There was more opportunity in the CS subprogram, but GEs still ran into a lack of available subscriptions or vendors being hard to reach. GEs saw solving these problems for vendors as essential to the program's success.

"In the interest in keeping this program alive, I think we need to solve some of the AV problems."

– Grassroots Educator

Some households were unable to participate because their homes were not solar ready.

In addition to program processes, GEs said that interested individuals can struggle to participate if their home needs structural or electrical work to be solar ready. One GE noted that in their neighborhood, it is nearly impossible to find a homeowner with a solar-ready home who also meets the income-eligibility guidelines for ILSFA. They estimated that 70 to 80% of the people they speak with who are interested in the program don't fall within the income guidelines.

Some GEs have worked with people who tried to go through the Home Repairs Pilot that began in PY6. They described participation in this pilot as difficult, complicated, and daunting, explaining that homeowners must look for funding through multiple different organizations, many of which have waitlists or are out of available funding. Homeowners sometimes wait months and try again later to find funding, sometimes needing to take screenshots to submit to ILSFA. GEs explained that this process didn't make sense to families that were dealing with so much in their lives day-to-day or that it "became too much" to deal with to complete the process. One GE also mentioned that homeowners can be wary of getting an inspection that may uncover other issues. We recommend looking into the Home Repairs Pilot as a midyear report.

Grassroots Educators faced barriers in coordination and communication with Elevate

GEs found working with Elevate to be challenging, frustrating, and, at times, confusing. These difficulties led some GEs to feel they were not valued partners in implementing the program. Through interviews, GEs cited a range of issues, including challenges with processes, materials, meetings, education, and reporting.

Program Processes

GEs reported feeling like Elevate's processes were a black box. They said that when income verification takes a long time, they are not sure what is happening behind the scenes and what might be holding the process up.

Program Materials

GEs expressed a need for more support with materials. They noted it would be helpful to have pre-made branded items for display tables, such as tablecloths, polos, and giveaways like pens or magnets. Currently to create these materials, GEs must download logos, create their own materials, and submit them for reimbursement, which they find burdensome.

Additionally, educators would appreciate more educational materials, such as brochures and PowerPoint templates. While some found the current materials helpful and appreciated recent updates that condensed information, others felt the materials were too lengthy, lacked appeal, or didn't reflect their communities. Educators working with Spanish-speaking communities noted that materials were not translated, prompting them to create their own.

Finally, GEs who created their own materials struggled with the turnaround time for the program to review and approve their materials. They felt the lengthy process and back-and-forth required for approval hindered their ability to effectively promote ILSFA.

"There is a lot of red tape. If we want to make a flyer for an event, we need to make it a month in advance. It's frustrating because they are making it so hard to function. It's more work than it's worth. So then sometimes we just decide not to do it."

– Grassroots Educator

Meetings

GEs expressed frustration with receiving meeting invitations with little advance notice and without agendas for what would be covered. They noted that this issue occurs with a variety of meetings, including pod check-ins, one-on-ones, trainings, and onboarding sessions. GEs felt that being asked to attend meetings on short notice was disrespectful of their time, especially for in-person trainings. Last-minute scheduling also makes it difficult for the entire team at a GE's organization to attend. Finally, GEs noted they would appreciate having agendas ahead of time to understand the meeting's purpose, determine if it's mandatory, and come prepared.

GEs did appreciate office hours, as these provided a chance to connect with peers and get direct answers to their questions.

Education and Training

While some GEs said their training has been generally good, others expressed frustration or disappointment with the trainings. One GE was satisfied with their staff members' comfort with Salesforce after that training and another appreciated that the PY7 training was more organized than the previous year. However, multiple GEs shared that they felt that the training did not adequately prepare them to understand the complexities of the program. One GE, who has been asked to lead trainings multiple times, suggested that Elevate or the IPA should take the lead on trainings, so that the GE could participate in the training and receive the benefits. GEs also expressed interest in learning from one another, sharing successful strategies and tactics that have helped increase sign-ups.

Additionally, GEs requested more organization and structure around the trainings. Delays in training and onboarding have prevented them from starting their work on time at the beginning of the program year. They also wanted more advanced notice of training dates, especially for organizations that need to travel to Chicago.

Outside of the training sessions, GEs struggled to get their questions answered. Overall, they did not feel they had a consistent point of contact at Elevate or the IPA to address their concerns. When they brought up questions during meetings or through email, they reported long response times and often having to follow up multiple times before receiving a reply.

Data Tracking and Reporting

GEs found reporting in Salesforce to be burdensome and difficult. Most of the GEs that we spoke with tracked their engagement and follow-up data in their own systems separately from the Elevate Salesforce database. They said that some fields in Salesforce were cumbersome to complete, while others were confusing. GEs would benefit from clear explanations of each field and what data is expected.

One GE also said that the database lacked some fields and functionality that would be useful to them in tracking their outreach, conducting follow-up, and showing they are meeting goals.

This GE proposed reaching out to Spanish speakers in their application and said it would be useful to have a field in Salesforce to track the language that a customer speaks. They mentioned it would also improve their efficiency to be able to sort entries, filter data, and create views and reports in Salesforce.

Job Trainees

The job trainee program is a requirement of ILSFA to ensure participants are qualified to work with AVs, who must staff at least 33% of their residential and non-profit projects with trainees. Coordinated by the Illinois Department of Commerce and Economic Opportunity, the program goes beyond standard workforce development and focuses on providing technical skills, particularly in solar and electrical work. According to conversations with Elevate, the goal is to ensure trainees are hired within the ILSFA program and remain employed long term.

The evaluation team used a survey to understand job trainees' experience with the ILSFA job training programs and their subsequent work with AVs. The survey asked about the effectiveness of the training program, the challenges they faced, the skills they gained during training and on the job, their employment outcomes after the training and once they completed their AV position, and their overall satisfaction with each stage of the process. Seven ILSFA job trainees completed this survey.

Most responding trainees felt that the training program covered essential skills and were satisfied with the program.

Surveyed trainees attended training programs that varied in length from one month to over three months. Illinois IBEW and Millennium Solar Electric Training Academy were the most common providers, while others trained at Kankakee Community College, Quad County Urban League, and Local 57 electricians. Programs primarily focused on electrical skills and solar installation, with additional topics including solar system design and commissioning. Less frequently covered were skills in solar system operations, maintenance, and project management or administration.

Overall, trainees rated their training programs positively, feeling prepared both for ILSFA jobs and broader employment opportunities. Most (five out of seven) believed their training covered all essential skills for working with AVs on solar projects, though two noted minor knowledge gaps best filled through on-the-job experience.

Two trainees reported receiving transportation assistance during their programs, and the majority had no suggestions for additional support services. Satisfaction was notably high, with six trainees reporting that they were somewhat or very satisfied with their training. Although one trainee expressed dissatisfaction, they still secured a job with an AV and felt very satisfied in that role. However, this trainee chose not to pursue similar work after their ILSFA position ended.

"I believe that Kankakee Community College is run perfectly for solar students it has prepared me for the work field tremendously. As to what I would suggest improving it I can't think of anything that would have gotten me more prepared than I was starting my job."

– Job Trainee

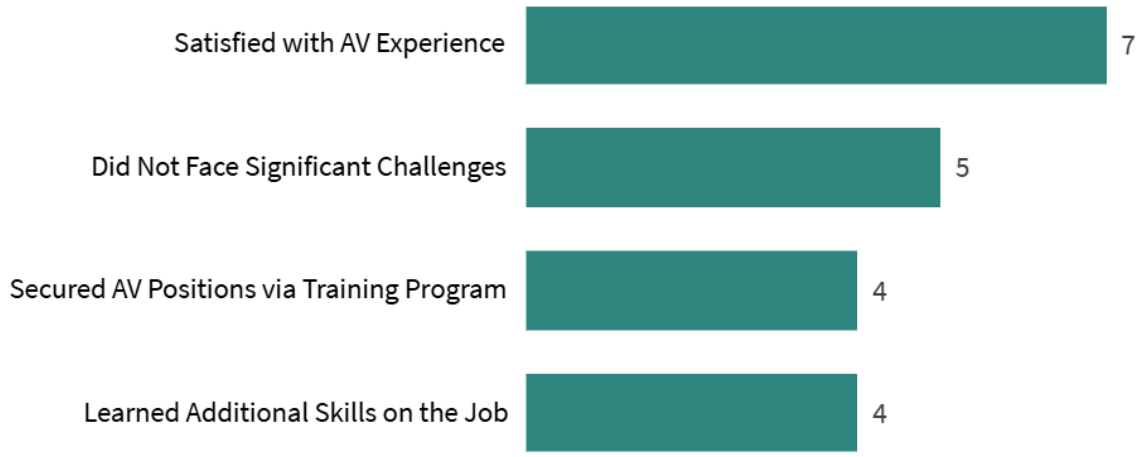
Trainees were satisfied with their experiences with Approved Vendors. Five out of seven either continued their employment with their Approved Vendor or were able to find positions in related fields.

More than half of the trainees (four out of seven) secured positions with AVs directly through their training programs. Most trainees (four out of seven) reported learning additional skills while on the job, and five did not encounter significant challenges while working with AVs. However, two mentioned facing issues related to transportation (one out of seven) and technical difficulties (one out of seven). All participants expressed satisfaction with their experiences working with AVs. Figure 11, below, summarizes outcomes from job training overall.

"Overall, my experience has been amazing and any suggestions I have I feel comfortable bringing to the superiors at the company and see change happen soon."

– Job Trainee

Figure 11: Outcomes from Job Training (n=7)



Of the seven respondents, two reported that they still work for the same AV who initially hired them. Among the five who no longer work for ILSFA AVs, four have since applied for jobs in a similar industry, and three of them successfully transitioned to related fields such as solar installation and electrical work, aligning with their previous job training.

Overall, trainees responded positively about the job training programs and their AV work experiences. The training effectively equipped them with the skills needed for ILSFA jobs, and their AV positions provided additional tools for future employment opportunities. Participants did not raise major challenges or improvement suggestions, indicating that the program is successfully meeting its intended goals. Only two of them mentioned they would like additional certifications or more information on the business side of solar to prepare them for the job better.

Job Trainers

Job training programs serve as a crucial component of the ILSFA's initiative to promote job opportunities for Illinois residents. To better understand the experiences of job trainers within the ILSFA program, the evaluation team conducted seven interviews, including four job trainers from qualified FEJA/CEJA job training programs and three from other qualifying programs. The interviews covered questions about the structure of the job training program, trainer's relationships with ILSFA AVs, trainee's experience and demographics, and challenges with implementing the training program.

While all training programs taught technical solar system installation and maintenance skills, they varied greatly in structure and in additional skills taught. They ranged anywhere from 40 training hours to lasting for one or more years.

Of the seven job trainers interviewed, five ran in-person programs, while the other two offered online programs. Online programs served trainees across the country, while in-person programs specifically served local Illinois communities. Six out of seven programs offered trainees a chance to take the North American Board of Certified Energy Practitioners® (NABCEP®) PV certification exam.

All programs taught technical skills such as the installation and maintenance of solar systems, and the two online programs focused exclusively on those skills. However, all seven trainers noted that trainees' foundation includes learning the skills necessary to begin a career as an electrician. In-person programs offered a broader range of transferrable skills including hands-on training with tools, solar site design, sales, job site safety, resume building, and interpersonal skills.

Six programs reported that students often return to the training program to get further education, additional certifications, or renew existing certifications.

Job trainers try to increase job opportunities for trainees by aligning training schedules with seasonal employment demand and cultivating relationships with solar installers.

Four of the five in-person programs attempted to align their training schedule with seasonal demand for labor. Since most solar installations take place in warmer months, these trainers endeavored to ensure that trainees were ready to begin work by the spring to maximize trainees' number of available employment opportunities. One trainer reported that a delay in receiving FEJA funding prevented them from aligning with seasonal employment cycles, which negatively impacted job prospects for trainees.

In addition to aligning with seasonal employment cycles, trainers also cultivated relationships with ILSFA vendors and other solar installers to place trainees on job sites after the completion of their training. Two trainers said they relied on personal connections within the solar industry to help trainees find jobs. Three programs have dedicated teams to directly support trainees as they enter the workforce through resources such as interview preparation and resume building. One program hosted a job fair each year for trainees to meet employers directly.

Only one job trainer was aware of which trainees went on to work for Approved Vendors. That trainer identified difficulties with paperwork for the trainees and Approved Vendors.

Trainers were generally aware of the ILSFA program but, apart from one trainer, did not know which specific companies worked on ILSFA projects. Therefore, trainers were unsure whether trainees went on to work for ILSFA AVs after completing the program. The trainer who knew which trainees worked for ILSFA AVs, observed difficulties with paperwork for both trainees and AVs. Specifically, this trainer noted that AVs must get affidavits signed by trainees but sometimes forgot and ended up needing to track down trainees after completion of work. To combat this, the trainer worked with both trainees and vendors so that both parties were aware of this requirement prior to trainees arriving at a job site.

"I'm focused on the logistics of ILSFA, making sure that the affidavits are signed on the job, so you don't have to track people down…when they get a job with the contractors, they know what they're supposed to be doing."

- Job Trainer

Trainees faces barriers such as transportation and balancing a demanding course schedule alongside work responsibilities. Trainees leaving the criminal justice system have barriers in securing employment.

Some job training programs catered to a specific demographic, such as Illinois residents with educational, financial, or other barriers to employment and residents who are involved in the criminal justice system. In-person programs found that most of their students came from the area surrounding their location, while online programs reported trainees enrolling from all over the state.

Job trainers identified the largest barriers for trainees in successfully completing the program or securing employment as 1) reliable transportation to classes or job sites, with two trainers noting that those outside of the Chicagoland area often need to drive long distances and 2) balancing a rigorous course schedule alongside full-time or part-time work.

One trainer that facilitated job training for people leaving the criminal justice system emphasized the difficulties of finding work for trainees with criminal backgrounds, especially with larger vendors that tend to take on ILSFA projects.

"…Sometimes with a smaller 'mom-and-pop' ILSFA [vendor], we can convince them to take our students, but we're really finding the pushback in medium to larger solar companies that are hard to penetrate."

-Job Trainer

Interviewees expressed the importance of wraparound services for trainees such as food, housing, childcare, and transportation stipends during training.

Job trainers identified opportunities to improve program communications and better support students.

Trainers shared feedback on their interactions with IPA, Elevate, and ILSFA, highlighting both positive and challenging aspects. Three out of seven trainers reported that some trainees were confused about ILSFA's requirements, specifically around NABCEP certification. One trainer noted that IPA's communications often used excessive jargon, which made it difficult for contractors and training programs to fully understand them.

Additionally, this trainer felt that the frequency of messages reduced the likelihood of recipients thoroughly reading and digesting the information. Another trainer expressed disappointment that the IPA and Elevate did not act on feedback provided by job trainers. One trainer voiced frustration with Elevate, citing a lack of transparency about how funding is allocated. Finally, one trainer suggested that ILSFA could better support students by providing more resources for potential partners and employers, collaborating more closely with communities of interest, and working directly with installers.

Next Steps

The PY6 program process evaluation will include a few areas for further investigation, including the following.

- Participant Focus Groups: The evaluation team plans to conduct focus groups with participants in each subprogram where possible. To supplement these focus groups, the evaluation team will also conduct in-depth interviews with participants. We plan on conducting:
    - Three focus groups with CS participants
    - One focus group with Residential Solar (Small) participants and up to 10 in-depth interviews
    - Up to 10 in-depth interviews with NP/PF participants
    - Up to four in-depth interviews with property managers participating in the Residential Solar (Large) and Residential Solar (Small) subprograms

  These research activities will provide insight into the participant experience, and we will focus on sources of awareness, motivations for participation, the income verification and installation/enrollment process, satisfaction with the program overall, and any pain points or challenges participants encountered during their experience.

- AV Surveys and Interviews: For PY6 process evaluation, the evaluation team will gather input from eight to 10 AVs to understand their experiences with the ILSFA program process, motivations for participating, participant acquisition, project financing, program portal, and job training requirements. The survey and interview guides include questions about key barriers to program participation and opportunities for improvement.

Appendix

Appendix A. Methodologies

Primary Data Collection

The following section describes additional details on the primary data collection activities conducted for the Illinois Solar for All (ILSFA) program year 5 (PY5) program evaluation.

Program Material Review

The evaluation team reviewed many of ILSFA's program materials for the purpose of understanding the ILSFA program goals, design, and any recent changes made to the program that would impact our research activities. In total, our team reviewed 56 materials for the ILSFA program. These materials cover several aspects of ILSFA, such as:

- Program design (e.g., the Approved Vendor (AV) manual, the Long-Term Renewable Resources Procurement Plan (LTRRPP))
- Vendor resources (e.g., the overview of the Vendor Portal)
- Participant resources (e.g., "Community Solar Opportunities for Owners and Renters")
- Marketing materials (e.g., newsletters, announcements, brochures)
- Previous reports or evaluations (e.g., quarterly, and annual summaries)

The team made extensive notes from their materials review that answer the questions summarized in Table 41, below.

Table 41. Program Materials Review Questions

CATEGORY	REVIEW QUESTIONS
Program Design	What are the goals or objectives of the ILSFA program?
	How is the ILSFA program designed to meet those objectives?
	Who are the key actors in program implementation, and what are their roles?
	How is the ILSFA program funded?
	How does the ILSFA program define the communities that it is meant to assist with these programs?
	How does the ILSFA program verify income for participants?
	What does ILSFA program success look like?
Program Participation Processes and Barriers	What does project selection look like?
	What does participation look like from the perspective of an AV? What barriers might prevent vendors from participating?
	What does participation look like from the perspective of a job trainer? What barriers might prevent job trainers from participating?

CATEGORY	REVIEW QUESTIONS
	What does participation look like from the perspective of a job trainee? What barriers might prevent job trainees from participating?
	What does participation look like from the perspective of a grassroots educator? What barriers might prevent grassroots educators from participating?
	What does participation look like from the perspective of an end user? What barriers might prevent end users from participating?
	What barriers have stakeholders raised?
Program History and Status	What is the history of the ILSFA program?
	What changes were made to ILSFA in PY22-23?
	What changes are in the pipeline for ILSFA, if any?
	Did the ILSFA program meet its goals?
	What has been successful in the ILSFA program? What has been challenging?
	Are there specific end users, program actors, geographies, building types, etc. that seem to be underserved by the ILSFA program?
Program Marketing	Through what channels does program marketing and outreach occur?
	Who does the marketing and outreach target?

Program Tracking Data

The evaluation team requested and reviewed tracking data for PY1–PY5. The team reviewed the tracking data to assess whether the information necessary to complete the evaluation was available, as well as for completeness and accuracy. Tracking data was a fundamental input for both the impact and process analyses for this evaluation. ILSFA implementer, Elevate, maintains a Salesforce database that houses the ILSFA program tracking data for all projects across subprograms. The Elevate database provided the following key elements necessary for energy, environmental, bill, jobs, economic, and social impacts analyses:

- **Project information** such as application program year, project stage (including the date of the last project stage update), project specifications (installation type, system size, azimuth, tilt, etc.), and project financials (project costs, incentive values, total projected Renewable Energy Credits (RECs), etc.). This data will be used to assess program metrics required by statute and key performance indicators (KPIs) and to develop estimates of PV system energy production.
- **Location details** include if the project is in an Environmental Justice Community (EJC) or in a low-income census tract. This data allowed us to evaluate if programs are being developed in more distressed areas and if the program is meeting its goals.
- **Projects classified as Energy Sovereignty (ES).** This data was used to evaluate if the program is meeting its goals related to funding projects in which system ownership is ultimately transferred to participants.
- **Utility territory of the project, buyer information, and contract information** (e.g., length and contract type). This information was used to segment and analyze the data by specific subcategories.

- **Participant demographics information** (e.g., race/ethnicity of participants who went through the income verification process). This data provided insight on how the program is reaching diverse populations
- **Trainee data by subprogram**, including the number of job trainees and their total amount of hours worked, which was used for the jobs and economic impacts analysis.

Stakeholder Webinar

The evaluation team presented the PY4 evaluation results and got feedback on the evaluation plan for PY5 and PY6 in a webinar with program stakeholders on July 18, 2024. The purpose of the webinar was to give stakeholders insight into what to expect from the evaluation and to ensure stakeholders that they can provide input into key questions and priorities that should be addressed. The evaluation team collected stakeholder input both during the webinar and afterwards in an email box. Feedback collected is summarized in the Participatory Evaluation section of the report.

In-Depth Interviews

To better understand the PY5 program design, key updates and changes, challenges and successes, evaluation priorities, and job impacts, the evaluation team conducted in-depth interviews (IDIs) with program administrators, nonparticipating stakeholders, Grassroots Educators (GEs), and job trainers.

For each data collection effort, the evaluation team developed a semi-structured interview guide to ensure they captured the key themes and metrics of interest to the IPA and ILSFA stakeholders, while allowing room for the interviews to explore unexpected yet pertinent details associated with ILSFA's implementation. Where possible, our team applied learnings from one interview to enhance our inquiry in the next. We provided each interview guide to the IPA project manager for review and comment prior to commencing any of the data collection. The evaluation team conducted and took notes on all IDIs. The evaluation team incorporated interview findings into both evaluation planning and the PY5 evaluation report.

Program Administrator Interviews

ILLUME conducted seven interviews with the IPA and the Elevate program teams via Microsoft Teams, an online video conferencing software, in June 2024. The primary purpose of these interviews was to understand program design, delivery, and implementation successes and challenges during the PY5 program year. We spoke with key program staff at the IPA and Elevate, as well as Elevate program leaderships during PY5, about topics including leading the AV management, GE coordination, and job training components of the ILSFA program. Interview topics included those summarized in Table 42, below.

Table 42. Program Administrator Research Questions

CATEGORY	PRIMARY RESEARCH QUESTIONS
Roles and Responsibilities	What are the roles and responsibilities of the IPA and Elevate staff? What is the participation process for each subprogram for end-users, AVs, and GEs?

CATEGORY	PRIMARY RESEARCH QUESTIONS
Program Design and Delivery	What are the key program components and steps? What role does each key actor play, and how do they work together? What changes have been made to the ILSFA program since PY4?
Program Funding and Budget	How is the ILSFA program funded? How is funding allocated? How do REC incentives and contracting work?
Program Goals and Performance	What are ILSFA goals or Key Performance Indicators (KPIs)? What were the goals of the ILSFA program in PY5? Were there any PY5 goals related to societal benefits or impacts? What goals are the IPA or Elevate required to hit? Did the ILSFA program meet its goals in PY5? Which aspects of implementation went well, and where did the ILSFA program run into challenges? What are the participation barriers from the program administrator's perspective?
Marketing and Outreach	Are there specific KPI or guidelines for marketing and outreach? What channels does the ILSFA program use for outreach? What works well with program outreach, and where is the ILSFA program facing challenges?
Evaluation Needs	What are the evaluation priorities and needs for PY5? What are the evaluation and ILSFA program data needs across the three-year evaluation cycle?
Primary Data Collection	What else does the IPA want to understand from the following planned primary data collection? • Trainee surveys • Trainer interviews • AV survey and interviews • GE interviews • Participant focus groups

Program administrator interviews provided important context and informed findings and recommendations in the PY5 process evaluation report chapter.

Nonparticipating Stakeholder Interviews

ILLUME conducted five, 45-minute-long interviews with ILSFA nonparticipating stakeholders via Microsoft Teams between August and September of 2024. ILLUME targeted community organizations that were not currently participating as GE in ILSFA and spoke to three community action agencies and two non-profits.

These interviews had two primary objectives: first, to understand the key challenges and opportunities associated with the communities each stakeholder serves independent of ILSFA, and second, to understand stakeholders' perspectives on awareness and potential barriers to ILSFA programs. Interview topics included:

- **General stakeholder information:** organizational mission, scope, and service territory
- **Stakeholders' perspectives on their communities:** their communities' biggest priorities and challenges
- **Perspectives on ILSFA:** program knowledge, perception of strengths, and challenges of ILSFA
- **Community member participation and barriers:** respondent's perspectives on their community member's participation experiences and barriers to ILSFA programs
- **Stakeholders' evaluation needs:** evaluation expectations and interests

The results from these interviews provided the evaluation team with perspectives on the needs of communities ILSFA aims to serve both within and outside of the context of the program. They also provided insight into barriers and opportunities for collaboration with other organizations offering energy-related services or serving the income-eligible population.

Grassroots Educator Interviews

The evaluation team contacted 17 PY5 and PY6 grassroots educators for feedback on ILSFA. Of these, nine GEs completed interviews with the evaluation team. All nine GEs participated in ILSFA in PY5, and seven participated in PY6. These interviews were an hour long and conducted via Microsoft Teams between August and September of 2024. The evaluation team asked GEs about their approach to their role, how they explain the program to potential participants, participant reactions to the program, how they help participants through the program processes, and their experiences working with the program. The research questions for this activity are summarized in Table 43, below.

Table 43. Grassroots Educator Research Questions

CATEGORY	PRIMARY RESEARCH QUESTIONS
Grassroots Educator Role	How do GEs support people, if at all, in the participation process (compiling income verification documentation, finding a contractor, etc.)?
Outreach and Engagement	How effective are the program's efforts to advise and engage participants? • How do GEs engage participants with ILSFA? • How are GEs approaching explaining technical solar concepts and/or the complexities of the participation process to communities?
Program Perception	How do end users perceive the program? • Do people trust the program offerings? If not, how do GE address this? • What priorities do communities have, and are they aligned with program offerings?
Participation Barriers	What are barriers that prevent participation in the program?

CATEGORY	PRIMARY RESEARCH QUESTIONS
Participant Experience	How could the program be more attractive and user friendly? • Is there anything the program could be doing to better support participants? What benefits do participants realize through the program? • Are there any benefits not being captured through our evaluation that we could measure? What benefits not being offered through the program would GEs like to see, if any?
Grassroots Educator Experience	Is the program meeting GE needs from the perspective of funding and support provided? • How could the program better support GEs?

Job Trainer Interviews

The evaluation team reached out via email and phone to administrators of the Climate and Equitable Jobs Act (CEJA), FEJA, and other job training programs. Of the 26 job trainers contacted, seven agreed to participate in the interviews via phone or Microsoft Teams. The interviews took place between August and October 2024, and the questions explored topics such as the training program structure, key barriers and challenges, skills taught, trainee demographics, trainee outcomes, and general feedback on ILSFA. Table 44 below shows the job trainer research questions.

Table 44. Job Trainer Interview Questions

RESEARCH THEMES	PRIMARY RESEARCH QUESTIONS
Job Training Processes	What is the structure of job training program? What key skills are needed by trainees to establish a career path?
Vendor and Employer Relationships	Do specific ILSFA vendors and/or jobs/positions collaborate with trainers/represent targets for training? Do job training programs ever make changes or adjust their trainings to suit the needs of a specific vendor or employer? How big of a role does ILSFA play in hiring trainees compared to other programs?
PY5/PY6 Changes and Challenges	In what capacity did the trainers work with the ILSFA program? Have program requirements necessitated any changes to training programs over the past two program years? Were there challenges that trainers encountered in working within program requirements?
Program Data Collection	Do job training programs track long-term outcomes (3–5 years) for trainees, and if so, what does this data tell us about career sustainability for job trainees working on ILSFA projects?

RESEARCH THEMES	PRIMARY RESEARCH QUESTIONS
	What are the demographic and locational characteristics of job trainees?
Trainee Outcomes	What barriers and challenges do trainees in the solar workforce face in sustaining a career post training? What are the long-term impacts of job training programs for solar workforce trainees?

Job Trainee Survey

The evaluation team developed and distributed an online survey via Qualtrics to trainees who participated in any of the ILSFA job training programs from PY2 to PY6. The survey aimed to gather insights into their experiences with the training and their subsequent work with ILSFA AVs. The survey took 10 minutes to complete and was conducted between August and September 2024. We invited 64 trainees through email invitations. The survey achieved an 11% response rate, with seven complete responses. The questions, shown in the table below, explored topics such as the training program's effectiveness, challenges faced, skills gained during training and on the job, employment outcomes post training, and overall satisfaction with each stage of the process. Table 45 below shows the job trainee research questions.

Table 45. Job Trainee Research Questions

CATEGORY	PRIMARY RESEARCH QUESTIONS
Training Program Efficacy: Preparedness for ILSFA Job and Future Employment Opportunities	Does the job training provide skills needed by AVs for ILSFA projects? What is missing? What else is needed?
	Does job training prepare trainees for permanent jobs? What is the transferability of their training?
	What kinds of jobs do trainees take on after the program?
Challenges and Opportunities	What are the pain points for job trainees as they go through the program? What are the challenges or barriers to employment?
	What are the opportunities to improve the job training process and getting a job, from a job trainee perspective?
Demographics	What is the geographic distribution of ILSFA's job trainers/trainees?

Process Evaluation

The process evaluation assesses the performance of Elevate as the program administrator and examines the experiences of various stakeholders involved in implementing or benefiting from the ILSFA program. The PY5 process evaluation draws on primary data collection activities, including interviews with the IPA and Elevate staff, as well as nonparticipating stakeholders, GEs, and job training program administrators ("job trainers"). Additionally, it incorporates insights from a survey of job training program participants ("job trainees") and the review of the PY5 program data tracking. Table 46 below summarizes the process evaluation research questions.

Table 46. Process Evaluation Research Questions

RESEARCH THEMES	PRIMARY RESEARCH QUESTIONS
Program Design and Delivery	What are the roles and responsibilities of program administrator, IPA, and other key players? What is the participation for each of the subprograms for end users, AVs, and GEs? What changes have been made to ILSFA since PY4? What changes have been made to ILSFA as part of CEJA? Are there any parts of ILSFA processes that may be inefficient or confusing for participants?
Program Actors	What role does each key actor play (including AVs, GEs, job training organizations, and related efforts) and how do they work together? Are there any opportunities to improve or streamline coordination?
Program Goals	What were the goals of the ILSFA program in PY5? What are program goals or KPIs? What strategies or interventions did ILSFA use to achieve these goals and KPIs?
Program Performance	Did the ILSFA program meet its goals in PY5? Which aspects of implementation went well, and where did ILSFA run into challenges? What barriers might prevent participation? How can PY5 process results be used to contextualize PY5 impact findings?
Marketing and Outreach	Are there specific KPIs or guidelines for marketing and outreach? What channels does the ILSFA program use for outreach? What is working well with program outreach, and where is the ILSFA program facing challenges?
Data Tracking	What does the ILSFA program track, and who is responsible for tracking and reporting? How does program data get quality checked?

Energy Impact Analysis

The evaluation team estimated the energy savings and coincident demand savings of PY5 approved projects and energized projects. Approved PY5 projects are projects that applied for the ILSFA program in PY5 and advanced at least as far as the Part I approval stage by May 31, 2023. Energized projects are projects that applied for the ILSFA program in PY1 through PY5 and received Part II approval by May 31, 2023. The table below (Table 47) outlines the research questions addressed by the energy impact analysis.

Table 47. Energy Impact Analysis Research Questions

CATEGORY	PRIMARY RESEARCH QUESTIONS
Project Summary	What is the total number of approved and energized projects? What is the total capacity (kW_{AC}) of approved and energized projects?

CATEGORY	PRIMARY RESEARCH QUESTIONS
	What is the average system cost per kW_{AC} of project capacity (approved and energized)?
Energy Savings	How much energy would be produced in a typical meteorological year from approved and energized projects?
Demand Savings	How much peak load would be reduced by the energy generated by approved and energized projects?

Project Summary

The evaluation team reviewed ILSFA program tracking data and summarized program participation. We quantified the total number of projects, the total capacity (kW_{AC}) of projects, and the average cost per kW_{AC} of project capacity (approved and energized).

Energy Savings

The evaluation team produced hourly simulations to generate independently verified estimates of energy savings. We collected PV system configuration information (e.g., size, tilt, and azimuth) from the ILSFA program tracking data. We developed simulated PV production using the National Renewable Energy Laboratory (NREL) PVWatts Calculator API (version 8).[26] PVWatts estimates electricity production of grid-connected PV systems based on several inputs. The API requires the following inputs to simulate hour-by-hour output over a period of one year for any PV system: nameplate capacity (DC), tilt, azimuth, latitude and longitude, system losses, array type (fixed – open rack, fixed – roof mounted, 1-axis, 1-axis backtracking, or 2-axis), desired climate dataset, and module type (standard, premium, or thin film). PVWatts also allows for several optional inputs, including the DC to AC ratio, the ground cover ratio, and the inverter efficiency at rated power.

We took most of these inputs directly from ILSFA program tracking data. PVWatts uses the system's location to choose the appropriate weather data from the selected climate dataset; for this study, we used the typical meteorological year (TMY) weather from the NREL National Solar Radiation Database (NSRDB).[27] We modeled all PV systems as standard modules.

Some projects in the tracking database contained panels with different specifications (e.g., tilt or azimuth). For this reason, we simulated each panel individually with PVWatts and calculated the hourly generation for a given project as the sum of the output of all panels.

The evaluation team's study of customer energy consumption in another state has found that many customers increase their energy consumption following the installation of solar.[28] The analysis presented here assumes no change in consumption has taken place. However, if participants increase their energy consumption once the PV systems are installed, there would be a reduction in energy, environmental, and bill savings impacts relative to the assumption of no change in participant energy consumption.

[26] https://developer.nrel.gov/docs/solar/pvwatts/v8/
[27] https://nsrdb.nrel.gov/
[28] https://verdantassoc.com/wp-content/uploads/IEPEC-2022_Residential-Solar-Consumption.pdf

A review of the tracking data showed that only one project was paired with storage. We based energy savings estimates of all projects, including the one project with battery storage, solely on hourly solar PV simulations.

The Energy Savings section also includes estimates of capacity factor. Capacity factor is a metric of system utilization and is defined as the amount of energy generated during a given period divided by the maximum possible amount of energy that could have been generated during that period. Annual capacity factors are useful when comparing utilization across technology types or project sizes. The annual capacity factor was calculated as the annual PV generation during all 8,760 hours of a typical year divided by the product of the project's capacity and 8,760.

Demand Savings

Estimated coincident peak demand impacts are the generation from ILSFA systems during hours of grid-system peak demands. The largest annual grid-system peak hour provides a brief snapshot of program coincident demand impacts. However, analyzing peak demand over the top 100 peak hours can provide a greater insight into how ILSFA impacts the grid during hours of highest load.

By coincidentally generating during system peak hours, the ILSFA program's projects allow the electric utility to avoid the purchase of high-cost wholesale energy. At the same time, the electric utility reduces its transmission and distribution losses during hours of high system congestion. It should be noted, however, that these hours are not necessarily when program systems have their highest output (i.e., during the middle of the day when irradiance peaks).

To estimate coincident peak demand savings, we simulated the energy generated by ILSFA PV systems during hours of grid-system peak demands. First, the TMY simulated PV generation values were filtered to retain data only for the same month (August) and same hour of day (4:00 to 5:00 p.m. (PJM-ComEd) or 5:00 to 6:00 p.m. (MISO-Illinois-Zone 4)) as the actual 2023 system peaks. The medians of the remaining values were used to estimate impacts. The purpose of using medians is to exclude PV generation values that likely correspond to cloudy days in the TMY dataset

PJM and MISO are the independent system operators in Illinois. Table 48 presents the hours and magnitudes of PJM-ComEd and MISO-Illinois-Zone 4 peak demands in 2023.

Table 48. PJM-ComEd and MISO-Illinois-Zone 4 2023 Peak Hours and Demands (MW)

ISO REGION	PEAK DEMAND (MW)	DATE	HOUR BEGINNING (LOCAL TIME)
PJM-COMED	22,467	2023-08-24	4:00 P.M.
MISO-ILLINOIS-ZONE 4	9,478	2023-08-24	5:00 P.M.

We used the estimated hourly PV production results to calculate demand impacts during hours of MISO and PJM peak demands. We analyzed peak demand over the top one and 100 hours to provide insight into how ILSFA projects impact the grid during the hours of highest load.

We obtained the top hours in 2023 from publicly available hourly historical load data from the PJM and the MISO websites.[29,30] We used PJM load data specific to the ComEd load zone. For MISO, we used the load data specific to Illinois (Load Resource Zone 4).

Analyzing the top 100 peak hours results in a more robust measure of impacts during PJM-ComEd and MISO-Illinois-Zone 4 peak grid loads. Representing just 1.1% of all the hours in a year, the top 100 peak hours capture the steepest part of load distribution curves.

Bill Impact Analysis

The bill impact analysis provided an estimate of participant savings as the difference between bill savings and the participant's costs to acquire solar PV (e.g., system costs, debt service payment, lease/PPA payments). We completed this analysis for all energized projects. The research questions addressed by the bill impact analysis are listed in Table 49, below.

Table 49. Bill Impact Analysis Research Questions

CATEGORY	PRIMARY RESEARCH QUESTIONS
Bill Impacts	How much bill savings can participants expect due to the energy produced by ILSFA projects? How do bill reductions compare to the participant's cost to acquire solar?

First-Year Bill Savings

The evaluation team calculated bill savings by estimating the difference between participant bills with and without PV benefits. The analysis assumes no increase in electrical consumption after PV installation. Three key inputs were necessary to calculate participant bills: 1) hourly PV system generation, 2) hourly participant load shapes, and 3) utility rate selection. We calculated bills using the hourly estimated PV production from the energy savings analysis (described above).

Since information about participant's load was not available, the evaluation team leveraged the statewide load profiles available from NREL's database of end use load profiles.[31] These datasets provide an estimate of the total statewide energy usage from specific building types at 15-minute intervals for an entire year. The datasets also include information on the number of units modeled in the state. Therefore, an average load profile can be calculated by dividing the total energy usage by the number of units modeled. Note that this method provides a smoothed load profile and does not account for individual peaks and valleys that are typically present in an individual's load profile. We used the single-family detached, multi-family (5+ units) load profiles for the 1–4 unit and 5+ unit Distributed Generation project types, respectively. We used the nonresidential small office load profile for the Non-Profit/Public Facilities (NP/PF) projects. We also leveraged the single-family detached load profiles for the CS projects. We then adjusted the load profiles so that they were sized appropriately for each participant in the ILSFA program.

[29] https://dataminer2.pjm.com/feed/hrl_load_metered
[30] https://www.misoenergy.org/markets-and-operations/real-time--market-data/market-reports
[31] https://www.nrel.gov/buildings/end-use-load-profiles.html

Adjustment factors used to scale the NREL load shapes were calculated using electric bills issued prior to PV installation. The specific treatment varied by project type, as summarized below.

- **1–4 Units Distributed Generation:** For a random sample of 30 projects, participant bills and estimated first-year PV generation were used to calculate PV Sizing Factors. The mean of these PV Sizing Factors (102%) was used in the calculation of bills for all 1–4 Units Distributed Generation projects.
- **NP/PF Distributed Generation:** For a random sample of 30 projects, participant bills and estimated first-year PV generation were used to calculate PV Sizing Factors. The mean of these PV Sizing Factors (77%) was used in the calculation of bills for all NP/PF projects.
- **5+ Units Distributed Generation and CS**: A PV Sizing Factor of 100% was assumed. (The availability of participant electric bills did not support calculation of PV Sizing Factors.)

In the case of CS projects, the evaluation team adjusted the PV estimates to match the annual load for a single-family detached home to approximate the bill savings for an individual participant subscribed to CS.

Historical rate selection information was not readily available for all projects. Therefore, results of the evaluation team's review of a sample of bills guided assumptions with respect to participant rates. Table 50, below, presents the rate assumptions used to model participant bill savings. Note that we modeled the two MidAmerican projects using Ameren Illinois bill assumptions. The evaluation team assumed that participants were not using hourly-based versions of these rates.

Table 50. Participant Rate Selection Assumptions

UTILITY SERVICE AREA	PROJECT TYPE	NUMBER OF PROJECTS	ASSUMED PARTICIPANT RATE SELECTION
ComEd	1–4 Unit Distributed Generation	107	BES
	5+ Unit Distributed Generation	2	BES
	Non-Profit/Public Facilities	28	BES
	Community Solar	1	BES
Ameren Illinois	1–4 Unit Distributed Generation	2	DS1 – Residential Delivery Service
	Non-Profit/Public Facilities		
	Small Participant <150 kW	27	DS2 – General Delivery Service
	Large Participant >150 kW	2	DS3 – General Delivery Service
	Community Solar	4	DS1 – Residential Delivery Service
MidAmerican	1–4 Unit Distributed Generation	1	[Ameren Illinois DS1
	Non-Profit/Public Facilities	1	Ameren Illinois DS2]*

*Due to the limited number of energized MidAmerican projects (2 projects), the evaluation team estimated bill savings for these projects using Ameren rates.

The evaluation team calculated monthly bills under two scenarios, pre-solar installation and post-solar installation. The monthly bills were calculated based on energy (kWh) delivered and the energy (kWh) received (i.e., solar generation). The fixed rates, delivery charges, fees, and taxes were sourced from the ComEd[32] and Ameren Illinois[33] online rate definitions, as well as from the Illinois Commerce Commission archive of all tariff filings and compliance filings. The supply costs (including the purchased electricity adjustment, electricity supply charge, and transmission services charge) vary throughout the year, and the historical values from June 2022 through May 2023 were used, per data available from Plug In Illinois.[34]

Lifetime Bill Savings Compared to Cost

The evaluation team estimated the lifetime bill savings over 20 years. We made several assumptions regarding how bill calculation inputs would change over time. We estimated bill savings assuming two different PV degradation rates: 1.36%/yr and 0.5%/yr.[35] We did not assume that the participant's load would change over the lifetime of the system. Finally, we assumed retail rates will increase by 4% annually based on our review of ComEd and Ameren rates from 2017 through 2023. ComEd rates increased by an average of 3% per year and Ameren rates increased by an average of 8%. Based on each utility territory's proportional representation in energized projects, we used the weighted average annual rate increase of 4% (nominal).[36]

We also estimated the lifetime costs associated with the project. Cost assumptions were taken from ILSFA tracking data where information was available about purchase terms, including: the ownership type (purchase, lease, or PPA), the number of years of the contract terms, and the payment (per month, or per kWh for PPA terms).

Sixty-three systems (59%) had no payments (i.e., payments of $0).[37] We present results as the net present value (NPV) of bill savings and participants' costs. We calculated the NPV using a 2.5% inflation rate and 3% (real) discount rate.[38]

Environmental Impact Analysis

The environmental impact analysis evaluated the avoided emissions of approved PY5 projects and energized projects. Approved PY5 projects are projects that applied for the ILSFA program in PY5 and received Part I approval by May 31, 2023 (including all subsequent project stages). Energized projects applied for the ILSFA program in PY1 through PY5 and received Part II approval by May 31, 2023. Table 51, below, lists the research question addressed by the environmental impact analysis.

[32] ComEd Rate Definitions: https://www.comed.com/my-account/my-dashboard/rates-tariffs/current-rates-tariffs.
[33] Ameren Illinois Rate Definitions: https://www.ameren.com/illinois/residential/rates/electric-rates.
[34] https://plugin.illinois.gov/understanding-the-price-to-compare/price-to-compare-comed.html.
[35] The 1.36% annual degradation rate is based on findings from Itron and Verdant's 2020 California Solar Initiative Final Impact Evaluation Report (https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/csi-progress-reports/csi-2/csi_evaluation-report.pdf). IPA uses an annual degradation rate of 0.5% for the purposes of program planning.
[36] These data were obtained from: https://plugin.illinois.gov/understanding-the-price-to-compare/price-to-compare-comed.html.
[37] The customer's payment terms were not available for one Non-profit/Public Facility project.
[38] The 3% (real) discount rate was used for consistency with past evaluations.

Table 51. Environmental Impact Analysis Research Questions

CATEGORY	PRIMARY RESEARCH QUESTIONS
Environmental Impacts	What are the first-year and lifetime emissions reductions associated with approved and energized ILSFA projects?

Environmental impacts from solar PV generation are a result of reduced utility power plant operation. We estimated avoided CO_2e emissions using data from the U.S. Environmental Protection Agency's AVoided Emissions and geneRation Tool (AVERT) and NREL's Cambium datasets, which are annually released sets of simulated hourly emission, cost, and operation data for a range of modeled futures of the U.S. electric sector.[39] [40] The AVERT data were used for 2023, while the 2023 Cambium release provided data for 2025–2042. The emissions rate assumed for 2024 was interpolated using values for 2023 and 2025.

Our analysis uses the mid-case scenarios, which utilize central estimates for inputs such as technology costs, fuel prices, and demand growth. The 2023 Cambium dataset used for the last 18 years of the study period assumes electric sector policies as they existed in September 2023.

We estimated avoided NO_x and SO_2 emissions using data from AVERT. Marginal 2023 emissions rates for the Distributed PV Generation profile were used for first-year impacts. Values for future years were estimated by assuming a 2.163%/year decrease in marginal emissions rates. That is the default value assumed in NREL's Renewable Energy Integration and Optimization tool, which estimates NO_x and SO_2 impacts from AVERT data.[41] The 2023 AVERT emissions rates used to calculate first-year NO_x and SO_2 impacts are shown in Table 52.

Table 52: AVERT First-year NO_x and SO_2 Emissions Rates (2023, Distributed PV Generation Profile)

REGION	NO_X EMISSIONS RATE (LBS/MWH)	SO_2 EMISSIONS RATE (LBS/MWH)
Mid-Atlantic	0.4958	0.5978
Midwest	0.9091	1.1365

The evaluation team used the Cambium and AVERT data to estimate first-year and lifetime avoided CO_2e emissions, NO_x, and SO_2 emission impacts. We calculated lifetime avoided emissions for 20 years with two different assumed annual PV degradation rates: 1.36% and 0.5%. A 3% (real) discount rate was assumed in the calculation of NPV lifetime emissions impacts.

[39] U.S. Environmental Protection Agency (EPA). 2024. AVERT v4.3 Avoided Emission Rates 2017-2023. Available at https://www.epa.gov/avert.
[40] Gagnon, Pieter. 2024: Long-run Marginal Emission Rates for Electricity - Workbooks for 2023 Cambium Data. NREL Data Catalog. Golden, CO: National Renewable Energy Laboratory. https://data.nrel.gov/submissions/230.
[41] https://reopt.nrel.gov/tool.

Jobs and Economic Impact Analysis

The evaluation team estimated economic impact metrics by applying the IMPLAN input/output economic model with tailored inputs informed by ILSFA program data. IMPLAN's economic sector characterization of the Illinois state economy allows for each of the economic impacts to be disaggregated by economic sector. This enabled an illustration of the breakdown of employment, income, or GDP impacts across sectors such as construction, manufacturing, engineering, and administration.

The development of inputs for the economic analysis relied on data inputs from other aspects of the evaluation project team's work, including ILSFA tracking data, total project costs, on-bill impacts, and subscriber data.

Table 53 tabulates the methods for the calculation of each of the identified economic impacts, broken out by impact category, key inputs, an overview of the technical method, and key outputs.

Table 53. Methodology and Key Outputs

IMPACT CATEGORY	KEY INPUTS	ANALYTIC METHOD	KEY OUTPUTS
Near-term impacts from new solar installations	• Project tracking data, including project expenditures and location by project type	• Project expenditures (as well as any program-related local employment, expenditure assumptions) serve as key input to IMPLAN input/output model • IMPLAN calculates employment impacts for new activity in the New Construction of Power and Communication Structures industry	• Direct, Indirect, and Induced employment impacts across sectors. • Incremental earned income and GDP impacts. • Impacts to taxes resulting from new near-term economic output
Ongoing impacts from energy bill savings	• Average bill savings by project type and geography, estimated by Verdant • Assumptions for household savings rates from the literature	• On-bill savings serve as key input to IMPLAN input/output model • IMPLAN calculates new household spending following gains in household disposable income	• Distribution of new household spending by economic sector

Appendix B. Direct Tax Impacts

The tables below show direct tax impacts by taxpayer at the federal, state, county, and municipal levels.

Table 54. Federal Direct Tax Impact by Taxpayer

TAXPAYER	FEDERAL TAX
Employee compensation	$626,000
Enterprises (corporations)	$156,000
Tax on production and imports	$11,000
Household income < $50k	$0
Household income $50-100k	$109,000
Households income $100-200k	$311,000
Household income > $200k	$366,000
Total	**$1,579,000**

Table 55. State Direct Tax Impact by Taxpayer

TAXPAYER	STATE TAX
Employee compensation	$0
Enterprises (corporations)	$122,000
Tax on production and imports	$101,000
Household Income < $50k	$4,000
Household Income $50-100k	$40,000
Households Income $100-200k	$76,000
Household Income > $200k	$61,000
Total	**$404,000**

Table 56. County and Municipal Direct Tax Impact by Taxpayer

TAXPAYER	COUNTY TAX	MUNICIPAL TAX
Households	$0	$0
Tax on production and imports	$12,000	$95,000
Total	**$12,000**	**$95,000**