Assessing the Distribution of Costs and Benefits of Energy Efficiency and Electric Vehicle Programs to Different Customers in Illinois

Case Studies of Commonwealth Edison's Energy Efficiency and Ameren Illinois' Beneficial Electrification Programs

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Contents

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- Members of the DEA case studies Work Group (see Table 23 in Appendix A for a list of members)

The findings, recommendations, and report in general do not necessarily reflect the views of utility collaborators, stakeholders, or ICC staff.

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Abbreviations

Ameren	Ameren Illinois Company
AVERT	Avoided Emissions and geneRation Tool
BE Plan	Ameren's beneficial electrification plan
BCA	benefit-cost analysis
BCR	benefit-cost ratio
CBO	community-based organization
CEJA	Climate and Equitable Jobs Act
COBRA	CO-Benefits Risk Assessment Health Impacts Screening and Mapping Tool
ComEd	Commonwealth Edison
DEA	distributional equity analysis
DEA Guide	*Distributional Equity Analysis for Energy Efficiency and Other Distributed Energy Resources: A Practical Guide*
DER	distributed energy resources
EE	energy efficiency
EERS	Energy Efficiency Resource Standard
EIEC	equity investment eligible community
EIEC/LI	low-income and equity investment eligible community
EJC	environmental justice community
EPA	U.S. Environmental Protection Agency
EV	electric vehicle
FEJA	Future Energy Jobs Act
GIS	geographic information system
ICC	Illinois Commerce Commission
IL EPA	Illinois Environmental Protection Agency
MTR	Methods, Tools, and Resources Handbook
MW	megawatt
MYIGP	Multi-Year Integrated Grid Plan
NEI	non-energy impacts
NESP	National Energy Screening Project
NSPM	National Standard Practice Manual
PHEV	plug-in hybrid vehicle
PUC	public utility commission
R&D	research and development
RIM	Ratepayer Impact Measure (test)
R3	Restore, Reinvest, and Renew (areas)
SAG	Energy Efficiency Stakeholder Advisory Group
TRC	Total Resource Cost (test)

Executive Summary

Distributional Equity Analysis: An Emerging Framework

The costs, burdens, and benefits of the energy system do not fall equally on all utility customers. Low-income communities, communities of color, rural customers, and other vulnerable or disadvantaged groups face disproportionate burdens and lack of access to clean energy and distributed energy resource (DER) programs.[1] In recent years, states across the country have passed energy legislation to address rising burdens on these types of communities and populations.[2]

While utilities in many states have long provided low-income energy efficiency (EE) programs (e.g., weatherization of homes) to help reduce energy bills, utility regulators are increasingly interested in understanding the distribution of costs and benefits from all DER investments to underserved customers – what is called a "priority population" in this report – relative to other customers.

Jurisdictions regularly use benefit-cost analysis (BCA) to inform energy resource decisions, to shed light on whether an investment in DERs is likely to provide net benefits across all customers on average. However, approving or rejecting utility resource investments based on BCA results alone does not take into account the implications of those investments on underserved customers. A different type of analysis called distributional equity analysis (DEA), when performed alongside a BCA, can provide a more comprehensive framework to inform regulators' decisions on resource investments. DEA focuses on how the costs, benefits, and burdens of utility investment decisions are distributed across different customer groups to identify disparities or inequities in utility resource investments.[3] DEAs assess the *distributional* impacts of DER investments on priority populations.

A DEA is a seven-stage process that begins with the establishment of a stakeholder and community input process and finishes with making resource decisions about the future of the DER (Figure 1). This summary provides a brief overview of these stages below. Section 1 describes the stages in further detail.

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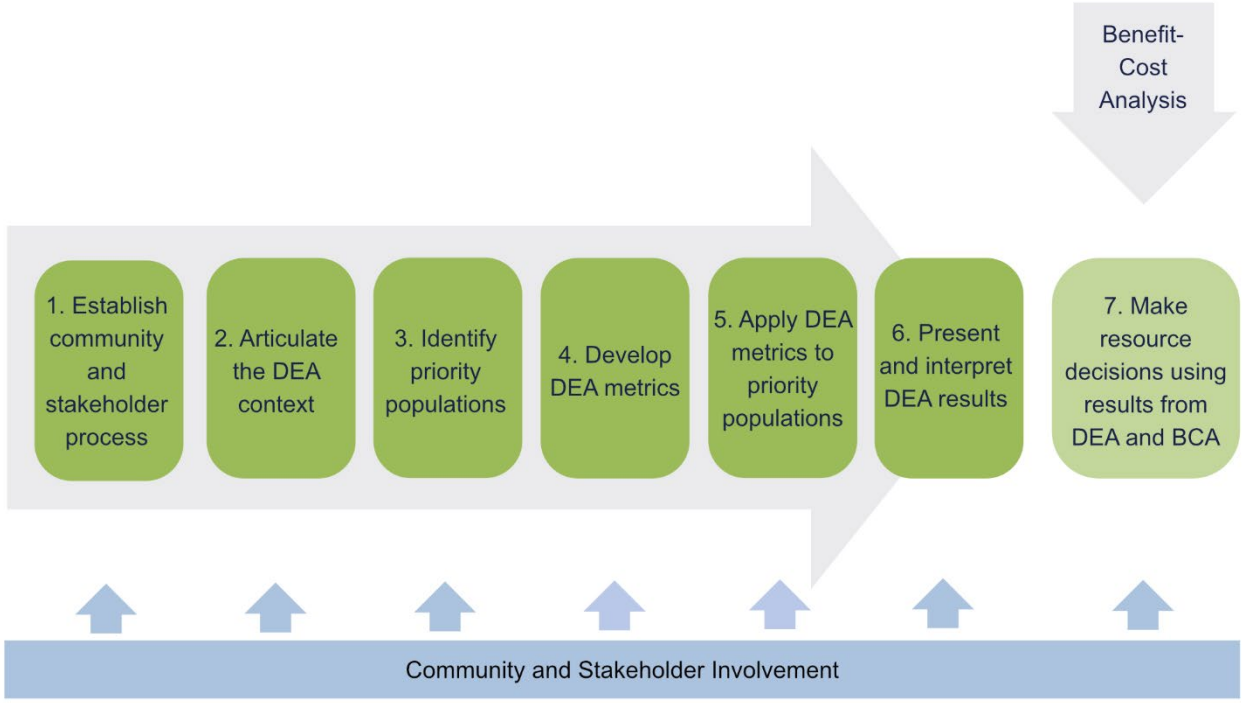
[1] DERs are "electricity and gas resources sited close to customers that can provide all or some of their immediate power needs and/or can be used by the utility system to either reduce demand or provide supply to satisfy the energy, capacity, or ancillary service needs of the grid. These include EE, demand response, distributed generation, distributed storage, building electrification, and electric vehicles." Source: National Energy Screening Project. 2020. *National Standard Practice Manual (NSPM) for Benefit-Cost Analysis of Distributed Energy Resources*. Available at: https://www.nationalenergyscreeningproject.org/wp-content/uploads/2020/08/NSPM-DERs_08-24-2020.pdf

[2] As used in this report, "underserved" is synonymous with "vulnerable," "marginalized," and/or "disadvantaged" populations and communities.

[3] Woolf, Tim, Alice Napoleon, Natalie Mims Frick, Lisa C Schwartz, Julie Michals. *Distributional Equity Analysis for Energy Efficiency and Other Distributed Energy Resources: A Practical Guide*. Lawrence Berkeley National Laboratory – Energy Markets & Policy (May 2024). Available at https://emp.lbl.gov/publications/distributional-equity-analysis.

Figure 1: Seven stages of a distributional equity analysis



- **Stage 1. Stakeholder process**: Energy resource investment decisions (including those using DEA) are more effective when they involve the communities and stakeholders who will be affected by those decisions. Community and stakeholder input is essential at each DEA stage.
- **Stage 2. Articulate the DEA context:** A DEA is appropriate for a variety of contexts. Establishing study parameters, including how the DEA will be applied, to which DER programs, and over what timeframe, is best done early in the process.
- **Stage 3. Identify priority populations:** Priority populations are the set of electric or gas utility customers who warrant additional attention to address equity concerns, consistent with the jurisdiction's energy equity policy and with stakeholder input. DEAs require defining priority populations using demographic and socioeconomic indicators based on a jurisdiction's equity goals.
- **Stage 4. Develop DEA metrics**: DEA metrics provide a yardstick for determining if costs and benefits of a utility program or investment are equitably distributed between priority populations and other customers. The choice of DEA metrics determines which DER impacts the DEA will assess.
- **Stage 5. Apply DEA metrics to priority populations**: The foundation of the DEA framework is to develop estimates for each of the DEA metrics, for both the priority population and all other customers. This exercise may require large amounts of data, and analytical tools are available to facilitate the collection, assessment, and presentation of this data.

- **Stage 6. Present and interpret DEA results for stakeholders:** This stage entails presenting and determining the equity implications of the results for each chosen DEA metric.
- **Stage 7. Make resource decisions using the results of the BCA and DEA:** The final stage in the decision-making process is to make resource decisions and determine if the DER program or portfolio under review has the potential to distribute benefits equitably or if it needs improvement.

Project overview

This report presents two case studies describing how to conduct a DEA using guidance from the *Distributional Equity Analysis for Energy Efficiency and Other Distributed Energy Resources: A Practical Guide* (the DEA Guide).[4]

With a grant from the Joyce Foundation, along with leveraged funding from E4TheFuture, the Project Team conducted a set of case studies in the Great Lakes Region based on the DEA Guide. This study aims to demonstrate how to conduct a DEA and use DEA alongside BCA when making decisions on utility DER investments.

The Project Team selected Illinois as the state in which to conduct the DEA case studies. Illinois has a strong track record in clean energy and energy equity legislation. Specific statutes require utilities to dedicate program funding towards equity and disadvantaged populations in EE and beneficial electrification plans. (See Section 2.)

Over the course of nearly 18 months, the Project Team conducted the case studies in collaboration with a group of stakeholders that included the Illinois Commerce Commission (ICC) staff, utility partners, community-based organizations, consumer advocates, non-governmental organizations, and others.

Illinois energy and equity background

Recent energy legislation in Illinois aims to address equity and bring more energy benefits to all consumers, especially in low-income and disadvantaged communities. In particular, the Climate and Equitable Jobs Act (CEJA) is a legislative initiative signed into law in Illinois on September 15, 2021.[5] CEJA focuses on promoting environmental sustainability and social equity, encompassing various provisions related to clean energy, climate change, job creation, and equity in workforce development.[6] See Section 2.2 for more information.

DEA provides a framework that stakeholders can use to understand how the benefits of CEJA and other clean energy initiatives are distributed among utility customer groups. DEA also provides a basis for aligning or realigning benefits with equity goals.

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[4] Woolf, Tim, Alice Napoleon, Natalie Mims Frick, Lisa C Schwartz, Julie Michals. *Distributional Equity Analysis for Energy Efficiency and Other Distributed Energy Resources: A Practical Guide.* Lawrence Berkeley National Laboratory – Energy Markets & Policy (May 2024). Available at https://emp.lbl.gov/publications/distributional-equity-analysis.

[5] Illinois Public Act 102-0662. Available at: https://epa.illinois.gov/content/dam/soi/en/web/epa/topics/ceja/documents/102-0662.pdf.

[6] Illinois Environmental Protection Agency. 2025. "Climate and Equitable Jobs Act." Available at: https://epa.illinois.gov/topics/ceja.html.

Conducting the DEA case studies

The Project Team followed the seven-stage process outlined above (Figure 1) to analyze distributional equity for two utility plans in Illinois.

Stakeholder Engagement: Robust community and stakeholder engagement is foundational for a DEA. Effective community and stakeholder engagement facilitates transparency and creates opportunities for dialogue throughout the entire DEA process.

To create a stakeholder work group (Work Group) for the DEA Case Study project, the Project Team engaged with three broad groups of stakeholders: regulators (the ICC), the utilities whose programs and portfolios were chosen for the study, and other energy and community stakeholders with an interest in the outcome of the project (staff from community-based organizations, academia, consulting groups, and nonprofits). Over 18 months, the Project Team, consisting of staff from E4TheFuture, Synapse Energy Economics, and the Midwest Energy Efficiency Alliance, convened eight fully remote meetings with Illinois-based stakeholders to discuss the two case studies, solicit feedback, and refine the scope of the analysis. Section 3 and Appendix A provide more detail on the stakeholder and Work Group process.

Articulation of the DEA context: The second step of the DEA is to articulate the DEA context, including the project scope, timeframe, and DER type. In selecting the utilities to participate in the DEA case studies, the Project Team considered the availability of data, priority populations, timeline for DER plan updates, and the utility perspective. In consultation with the Work Group, the Project Team chose two utilities and two DER program types:

1. Ameren's 2026–2028 BE Plan, focusing on its ChargeSmart and ChargeReady programs. This was a prospective analysis looking at future impacts.
2. ComEd's EE programs, focusing on the actual program years 2022–2025. This was a retrospective analysis looking at historical impacts.

The Project Team selected these specific utilities, DERs, and programs based on available data and Work Group feedback. Additional details about the plans and statutory requirements are summarized in Table 1.

Table 1: Background on utility BE and EE plans

	Ameren BE Plan	ComEd EE Plan
Plan description	Illinois defines BE programs as "programs that lower carbon dioxide emissions, replace fossil fuel use, create cost savings, improve electric grid operations, minimize increases to peak demand, improve electric usage load shape, and align electric usage with times of renewable generation." (Electric Vehicle Act)	EE plans describe how utilities will offer customer EE programs. By law, the EE programs in an EE plan must lead to designated amounts of energy savings each year. (Future Energy Jobs Act).
Statutory goals	**CEJA** requires that utilities deliver beneficial electrification plans to promote EV adoption, as well as support and improve access to charging equipment. Beneficial electrification plans must deliver 40 percent of investment in chargers/ upgrades to underserved populations. (Climate and Equitable Jobs Act)	**The Future Energy Jobs Act (FEJA)**, a precursor to CEJA, seeks to improve EE and scale up renewable energy deployment. FEJA sets minimum targets for utility spending on EE programs for low-income households ($25 million for ComEd). (Climate and Equitable Jobs Act)
Programs offerings	Ameren's BE Plan programs include time-of-use rates, incentives for installing EV chargers, technical assistance to schools, communities, and businesses, and public education and outreach programs. The BE Plan also includes pilot programs and a home energy assessment program. (Ameren BE Plan 2)	ComEd's EE programs include support for residential and business customers with rebates for energy-efficient appliances, smart thermostats, lighting upgrade incentives, HVAC systems, and free energy-savings products. (ComEd Revised EE Plan)

Definition of priority populations: To choose priority populations for the case studies, the Project Team reviewed existing state energy equity goals and policies, as well as state and utility definitions already in use, and solicited input from Work Group members. Ultimately, the Project Team selected low-income (income-eligible) customers for the ComEd case study, and equity-investment eligible community (EIEC) and low-income areas for Ameren (Table 2). The chosen priority populations align with the statutory requirements for utility EE and beneficial electrification programs (see Section 2).

Table 2: Definitions of equity-investment-eligible and low-income communities

EIEC/LI	Component	Definition	Legislation
EIEC	Restore, Reinvest, Renew (R3)	Communities that have been historically harmed by violence, excessive incarceration, and economic disinvestment. Communities are identified by rates of gun injury hospitalization, unemployment, child poverty, commitments to/returns from Illinois Department of Corrections, or identified by the Illinois Dept. of Commerce and Economic Opportunity. (R3 – Restore, reinvest, renew)	2019 IL Cannabis Regulation and Tax Act
	Environmental Justice Community (EJC)	Block groups that have experienced disproportionate burdens of pollution. (Illinois Solar for All)	Illinois Power Agency Act and Illinois Solar4All program (Illinois Solar for All)
Low-income	Low-income individual	Individuals and families whose income does not exceed 80% of the Illinois area median income, adjusted for family size and revised every 2 years, as well as census tracts where at least half of households are low-income. (Climate and Equitable Jobs Act)	Climate and Equity Jobs Act (Climate and Equitable Jobs Act)

Selection of DEA metrics: DEA metrics provide ways to measure whether costs and benefits of a utility program or investment are equitably distributed between priority populations and other customers.

In consultation with the Work Group, the Project Team assessed possible DEA metrics for their suitability for a DEA and the data available at the time of the project. For each case study, the Project Team was able to analyze three metrics. The metrics analyzed include program participation, utility investment, rate and bill impacts, and energy savings. The selected metrics measure impacts distributionally, are linked to equity goals, and are tied to the DER programs. Each metric has data available at an adequately granular level of resolution.

The Project Team was unable to analyze several of the metrics considered. These fell into two general categories:

1. Metrics that are not measurably tied or related to the impact of the DER on the priority population: Shutoffs for the BE Plan case study, and reliability (outages), and greenhouse gas emissions for both EE and BE Plan case studies.
2. Metrics that may have a measurable relationship to the DER, but for which there is not available data to analyze impacts on the priority population at a sufficiently granular level: Shutoffs for EE case study, and employment and jobs impacts and public health impacts for both EE and BE Plan case studies.

DEA results: The last stages of the DEA involve processing the data, presenting the results, and drawing conclusions based on the DEA and BCA. BCA results will indicate whether the program or portfolio is cost-effective. Similarly, the DEA metrics results will indicate whether a program or portfolio will distribute benefits equitably or will require modifications to do so.

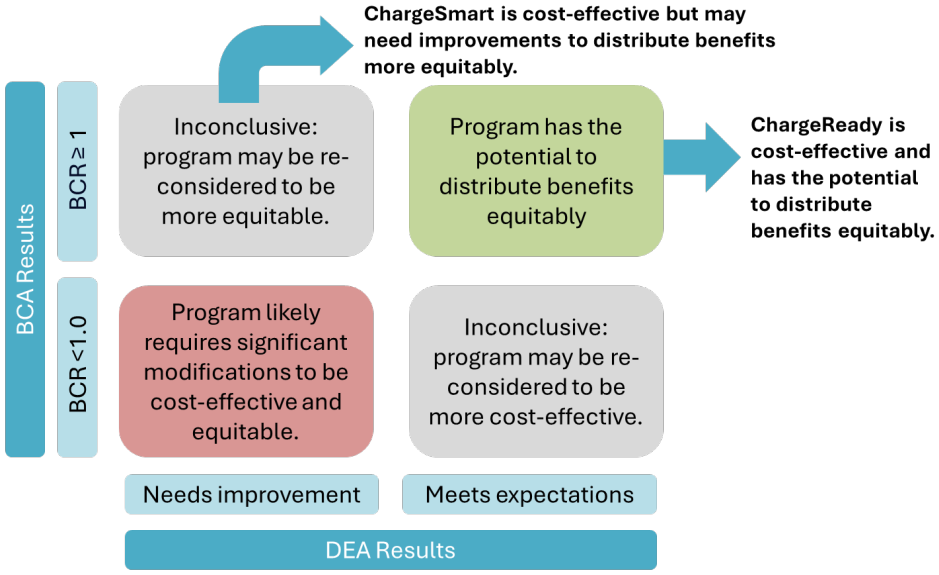
More detail and results for the specific metrics chosen for the Ameren and ComEd case studies can be found in Sections 4.4 and 5.4, respectively.

Ameren Beneficial Electrification case study

The Ameren BE Plan case study evaluated two programs: ChargeSmart and ChargeReady. For the metrics analyzed, the Project Team found that EIEC/LI customers participating in ChargeReady are expected to receive more benefits than all other customers. In contrast, ChargeSmart is expected to provide a larger share of benefits to non-EIEC/LI customers. (For detailed metric results, see Section 5.5.)

Based on the Total Resource Cost (TRC) test, Ameren estimates that the ChargeSmart and ChargeReady programs are cost-effective over the plan period from 2026 to 2028.[7] While ChargeSmart is cost-effective, the Project Team found that the program may need modifications to fully reach and provide proportional benefits to EIEC/LI populations. In contrast, the Project Team found that ChargeReady is cost-effective and has the potential to distribute benefits equitably (see Figure 2).

Figure 2: DEA and BCA results for Ameren ChargeSmart and ChargeReady

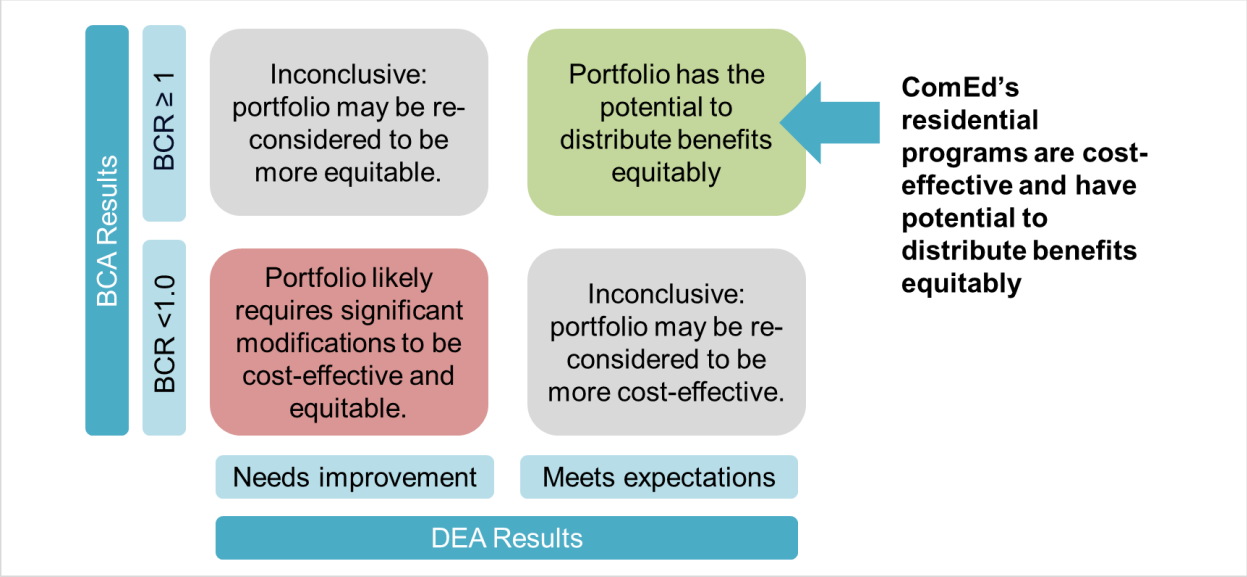


ComEd Energy Efficiency case study

The ComEd EE case study analyzed metrics for residential programs only. Overall, for the metrics that the Project Team was able to analyze, the benefits of ComEd's residential EE program are generally weighted more towards income-eligible customers. (For detailed metric results, see Section 5.5.)

As a whole, ComEd's residential programs were cost-effective in 2022 and 2023 under the TRC.[7,8] ComEd's residential programs appear to meet expectations for distributional equity so far. Given the positive BCA results, the Project Team finds that ComEd's residential programs fall into the top-right quadrant of the decision framework set forth in the DEA Guide. (See Figure 3).[9]

Figure 3: DEA and BCA results for ComEd residential energy efficiency programs



Lessons learned and recommendations

Key takeaways and recommendations revolve around improving data access, recommending areas for further study, and better integration of DEA with existing state processes. (See Section 6 for a full list.) For case-study-specific recommendations, refer to Ameren Section 4.8 and ComEd Section 5.8). See Table 3 for takeaways shared by both case studies.

[7] Guidehouse. 2023. *ComEd Cost-Effectiveness Analysis CY2022 Report*. Prepared for ComEd. June 28. Available at: https://www.ilsag.info/wp-content/uploads/ComEd-CY2022-TRC-Report-23-06-28-Final.pdf.

[8] Guidehouse. 2024. *ComEd Cost-Effectiveness Analysis CY2023 Report*. Prepared for ComEd. June 28. Available at: https://www.ilsag.info/wp-content/uploads/ComEd-Cost-Effectiveness-Analysis-CY2023-Report-2024-06-28-Final.pdf.

[9] Woolf, Tim, Alice Napoleon, Natalie Mims Frick, Lisa C Schwartz, Julie Michals. *Distributional Equity Analysis for Energy Efficiency and Other Distributed Energy Resources: A Practical Guide*. Lawrence Berkeley National Laboratory – Energy Markets & Policy (May 2024). Available at https://emp.lbl.gov/publications/distributional-equity-analysis.

Table 3: Lessons learned and recommendations

DEA Stage	Issue	Recommendation
Stakeholder Engagement	Other ongoing work groups, processes, and meetings in Illinois presented scheduling challenges.	Consider ongoing processes and coordinate with existing meeting schedules that may impede utility or stakeholder participation.
	There was limited community-based organization (CBO) participation.	Better advertise the participation stipend and conduct specific outreach to CBOs.
DEA Context	Utility plan cycles were ongoing or ramping up, leading to challenges with data availability.	Conduct prospective DEAs during DER design; conduct retrospective DEAs during post-program review.
Priority Populations	Different definitions across EE and beneficial electrification programs prevent cross-portfolio comparisons.	Consider adopting a long-term goal to align definitions for EE and beneficial electrification.
DEA Metrics	Publicly reported census-tract-specific data for public health modeling were not available.	Continue studying how EE and beneficial electrification programs can improve public health for priority populations and the best ways to measure this impact for priority populations.
	Jobs and employment programs are ramping up and lack publicly available data.	Continue to explore how to track local jobs impacts; continue to focus workforce development programs in EIEC and low-income communities.
	Community priorities should inform metric development.	Conduct more robust up-front stakeholder engagement to ensure metrics incorporate community perspectives.
Data Access	Sharing data between Project Team and utilities involved a long and involved process.	Develop utility partnerships and share non-disclosure agreements as early as possible.
	Accessing data stored in utility databases was challenging for the Project Team.	Collaborate with each utility to establish a list of data available in the utility database(s) and streamline data requests to the utility.
	Stakeholders expressed interest in metrics that weren't tracked by utilities or had insufficient granularity.	Track and report available data on a census-tract level, ideally in a publicly accessible dashboard.
Other	There were potential synergies between other ongoing utility data or metrics proceedings that the Project Team did not study (due to a lack of time/resources).	Explore using other utility reporting avenues (e.g., performance metrics) to enable utilities to track the data needed for a DEA.

1. Introduction

Electricity is an essential resource in today's world. Electricity runs household appliances; heats, cools, and lights homes and other buildings; powers essential medical equipment; enables access to the internet; and charges electric vehicles (EV). Not all people have equitable access to affordable and efficient energy technologies, which consumers often use to manage their energy bills, and which can also provide a range of non-energy benefits.

Roughly a third of households in America have trouble paying energy bills and must decide between paying for electricity or other home essentials, such as food or medicine.[10] The impact is more pronounced among communities of color (Black, Hispanic, and indigenous households), and for families in low-income multifamily housing and older buildings. These populations typically experience much higher energy burdens (i.e., the percentage of income spent on energy bills) compared to other households.[11] Rural electricity customers also spend more of their household income on electricity in comparison to other Americans. Electricity customers who are repeatedly late on energy bill payments may experience shutoffs, which can lead to exposure to extreme temperatures during heat waves or cold snaps that exacerbate cardiovascular health conditions and can even cause death.[12] High energy burdens can lead to mental stress and respiratory disease, and make it difficult to move out of poverty.[13]

In recent years, states across the country, including Illinois and other Midwest states, have passed energy legislation to address rising burdens on these underserved communities and populations.[14] While utilities are often required to provide low-income energy efficiency (EE) programs (e.g., weatherization of homes) to help reduce energy bills, commissions are increasingly interested in understanding how the costs and benefits from all distributed energy resource (DER) investments[15]

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[10] Seidman, N. et al. 2020. *Energy Infrastructure – Sources of Inequities and Policy Solutions for Improving Community Health and Wellbeing*. Available at https://www.synapse-energy.com/sites/default/files/Equity-in-Energy-Report-19-037-0.pdf.

[11] Drehobl, A., L. Ross, and R. Ayala. September 2020. *How High Are Household Energy Burdens? An Assessment of National and Metropolitan Energy Burden across the United States*. American Council for an Energy-Efficient Economy. Available at: https://www.aceee.org/sites/default/files/pdfs/u2006.pdf.

[12] Flaherty, M., S. Carley, D. Konisky. 2020. *Electric utility disconnection policy and vulnerable populations*. Available at https://www.sciencedirect.com/science/article/abs/pii/S1040619020301512.

[13] Drehobl, A., L. Ross, and R. Ayala. September 2020. *How High Are Household Energy Burdens? An Assessment of National and Metropolitan Energy Burden across the United States*. American Council for an Energy-Efficient Economy. Available at: https://www.aceee.org/sites/default/files/pdfs/u2006.pdf.

[14] Underserved is synonymous with vulnerable, marginalized, and/or disadvantaged populations and communities.

[15] Electricity and gas resources sited close to customers that can provide all or some of their immediate power needs and/or can be used by the utility system to either reduce demand or provide supply to satisfy the energy, capacity, or ancillary service needs of the grid. These include EE, demand response, distributed generation, distributed storage, building electrification and electric vehicles. Source: National Energy Screening Project. 2020. *National Standard Practice Manual (NSPM) for Benefit-Cost Analysis of Distributed Energy Resources*. Available at: https://www.nationalenergyscreeningproject.org/wp-content/uploads/2020/08/NSPM-DERs_08-24-2020.pdf.

Role of Benefit-Cost Analysis Compared to Distributional Equity Analysis

As the electricity and gas industries evolve, DERs are expected to play a sizeable role in decarbonization - an important goal for many states. While BCA can demonstrate the extent the to which utility a DER investment can reduce carbon emissions across the utility system and beyond, a DEA informs how priority populations will be impacted, relative to others, by the DER investment across a range of metrics, such as energy burden.

(e.g., distributed generation, building and transportation electrification, and distributed storage) are allocated across customers.

The Purpose of BCA: Jurisdictions use benefit-cost analysis (BCA) to make energy resource decisions, including whether and how utilities should invest in DERs. In many states, BCA is well-established for DERs, such as for EE and beneficial electrification, and there is movement in some jurisdictions to expand BCA frameworks to include other DERs.

A BCA of a DER program indicates whether that program is likely to provide net benefits *across all customers on average*. A BCA may consider costs and benefits from the perspectives of the jurisdiction/regulator, utility, participant, or society. However, it does not distinguish results for specific populations, such as low-income or other underserved customers—called 'priority' populations in this report. Examples of energy-related costs and benefits included in a BCA are the costs to install and operate the DER, and the benefits of avoiding generation, transmission, and distribution facilities because of the DER.[16]

The Purpose of DEA: Approving or rejecting utility resource investments based on BCA results alone does not consider principles of equity or the implications of those investments on priority populations. A different type of analysis – referred to as a distributional equity analysis (DEA) – is valuable to conduct alongside a BCA to provide a more comprehensive framework to inform regulators' decisions in resource investments to understand the *relative* impacts of DERs across different populations.

1.1. Overview of DEA

Equity advocates and analysts generally recognize four major dimensions of energy equity: recognitional, procedural, distributional, and restorative (see Figure 4).[17, 18] The four dimensions of equity are meant to help jurisdictions identify existing inequities, develop and implement recommendations, monitor key changes, and continuously come up with new ways to address

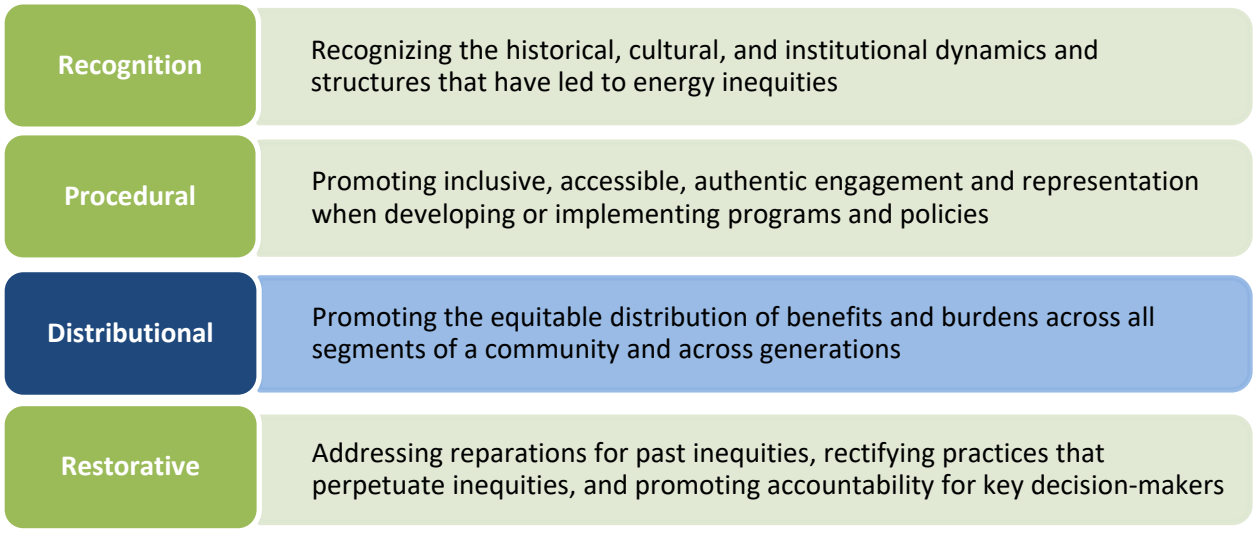
[16] For guidance on conducting BCAs, see the National Standard Practice Manual for DERs (NSPM 2020) at https://www.nationalenergyscreeningproject.org/national-standard-practice-manual/.

[17] ACEEE, 2025. "Energy Equity." Available at https://www.aceee.org/topic/energy-equity.

[18] Woolf, Tim, Alice Napoleon, Natalie Mims Frick, Lisa C Schwartz, Julie Michals. *Distributional Equity Analysis for Energy Efficiency and Other Distributed Energy Resources: A Practical Guide*. Lawrence Berkeley National Laboratory – Energy Markets & Policy (May 2024). Available at https://emp.lbl.gov/publications/distributional-equity-analysis.

inequities over time.[19] While all of these dimensions are important, this report focuses solely on **distributional equity**.

Figure 4: Dimensions of energy equity



DEA is a decision-making framework that can be used to complement BCA results by adding critical information about the equity impacts of utility investments. DEA focuses on how the costs, benefits, and burdens of utility investment decisions are distributed across different customer groups to identify disparities or inequities in utility resource investments.[20] DEAs thus assess the impacts of DER investments on a priority population relative to other customers. In comparison, BCAs assess the impacts of utility resources across all customers on average.

DEA includes a variety of metrics to indicate energy equity impacts, whereas BCA metrics are limited to total costs and total benefits. Together, the two analyses can help to inform decisions about whether and to what extent utilities should invest in proposed DERs.

There is no one-size-fits-all BCA test. States and jurisdictions use different versions of BCA tests to best suit their needs, varying the types of costs and benefits included. For more information about specific BCA, see the *National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources* (NSPM, 2020).[21]

The case studies herein describe how to conduct a DEA using guidance from the *Distributional Equity Analysis for Energy Efficiency and Other Distributed Energy Resources: A Practical Guide*.[22]

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[19] Ibid.

[20] National Energy Screening Project. 2020. *National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources* (NSPM). Available at: https://www.nationalenergyscreeningproject.org/wp-content/uploads/2020/08/NSPM-DERs_08-24-2020.pdf.

[21] Ibid.

[22] Woolf, Tim, Alice Napoleon, Natalie Mims Frick, Lisa C Schwartz, Julie Michals. *Distributional Equity Analysis for Energy Efficiency and Other Distributed Energy Resources: A Practical Guide*. Lawrence Berkeley National Laboratory – Energy Markets & Policy (May 2024). Available at https://emp.lbl.gov/publications/distributional-equity-analysis.

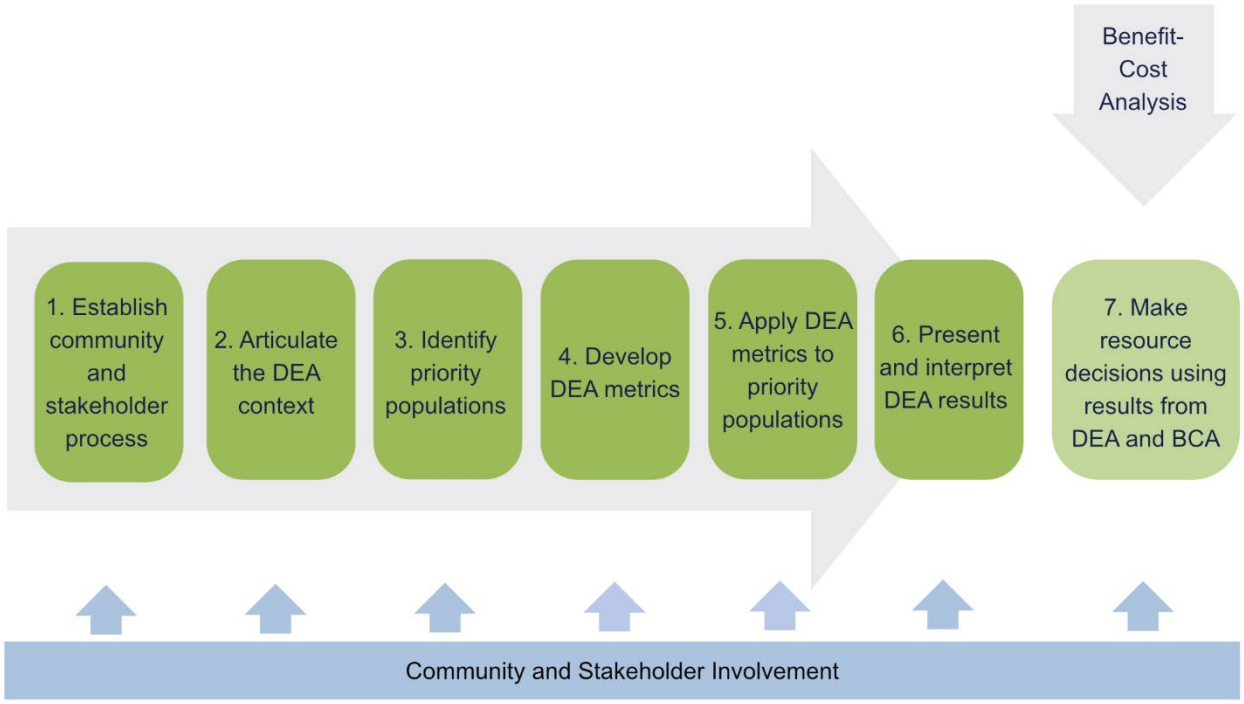
This report also references the NSPM (NSPM, 2020), which provides guidance on conducting BCAs.[23]

1.2. Seven Stages of a Distributional Equity Analysis

A DEA is a seven-stage process that begins with the establishment of a stakeholder and community input process and finishes with making resource decisions about the future of the DER. As noted in Section 1.1, the results of a DEA are meant to complement the results of a BCA. While this report does not describe how to conduct a BCA, or how to develop a BCA test, it is important to differentiate the purpose of the two analyses, the types of questions each answers, and how they can complement each other in making decisions on resource investments.

Figure 5 outlines the DEA stages.

Figure 5: Seven stages of the distributional equity analysis



Stage 1. Establish a community and stakeholder process: Energy resource investment decisions (including those using DEA) are more effective when they involve the communities and stakeholders who will be affected by those decisions. Communities may be underrepresented in legislative and regulatory practices and hence may not currently be active stakeholders. Communities and stakeholders are essential to the DEA process and should provide input and

[23] National Energy Screening Project. 2020. *National Standard Practice Manual (NSPM) for Benefit-Cost Analysis of Distributed Energy Resources*. Available at: https://www.nationalenergyscreeningproject.org/wp-content/uploads/2020/08/NSPM-DERs_08-24-2020.pdf.

recommendations at every stage of the DEA. They should also play a meaningful role in the ultimate decisions regarding utility DER investments.

Stage 2. Articulate the DEA context: Stage 2 entails determining the scope of the project. DEA can be applied to DERs in a variety of different contexts. It is important to articulate the context of a DEA up front because the context might affect the choice of inputs, metrics, presentation of results, or how the results are used. The DEA application should be consistent with the BCA application of the DER being evaluated. The scope (or context) should define the following:

- The type of DER being examined (e.g., EE programs, demand response, distributed solar or storage, and building or transportation electrification programs)
- Whether the DER is part of a portfolio (the DER may be part of a larger portfolio, a single program, or a comparison of programs); and
- The DER timeframe (i.e., a DEA can be retrospective or prospective, meaning the analysis is forward- or backward-looking. The selection of a retrospective DEA means that those involved will be able to draw conclusions as to whether the utility met its stated plan goals (such as participation rates for a particular customer segment). Prospective DEAs are useful for making modifications to a program before implementation to better distribute benefits to a population.)

Stage 3. Identify priority populations. Priority populations are the set of electric or gas utility customers who warrant additional attention to address equity concerns. The approach to determining priority populations can vary. Some states may have defined priority populations through legislation or regulation. Other jurisdictions may choose to have communities self-identify as priority populations. Some jurisdictions may use multiple approaches to determining priority populations.

Determining the priority population involves identifying relevant indicators—characteristics that identify populations that are more likely to experience disproportionate burdens from the energy system. These can include energy burden, environmental and climate hazards, and socioeconomic vulnerabilities. Priority populations likely include customers that already receive incentives or additional focus in utility programs (for instance, low-income customers in an EE plan). Table 4 summarizes four considerations for selecting priority populations.

Table 4: Priority populations considerations

Consideration	Description
Equity goals	Alignment of the definition with the state's equity policy goals to allow for relevant and actionable conclusions. Input by equity stakeholders is important, especially where there are no legislated equity goals.
Data resolution	The data resolution in utility plans, such as zip code, town, and customer segment will help inform the priority population definition. For example, if metric data is only available at the zip code level, then it is appropriate to aggregate the demographic data at the census tract level into zip codes. This reduces the resolution of the results, leading to potential uncertainties and inaccuracies.
Ease of comparison	Ideally DEA results for different programs will be comparable to one another, which will require consistent definitions.
Level of effort	Some definitions will be much harder to implement than others. It may be better to use existing definitions found in state legislation rather than come up with new definitions, given the level of effort required.

Stage 4. Develop DEA metrics. DEA metrics help determine if costs and benefits of a utility program or investment are equitably distributed between priority populations and other customers. The choice of DEA metrics determines which DER impacts the DEA will assess. The following four criteria guide the choice of DEA metrics:

- Measure distributional benefits, i.e. whether some customers are receiving greater benefits than others for the required costs
- Be discrete and not overlap with other DEA metrics to avoid double-counting results
- Relate to or align with the jurisdiction's equity goals
- Have a clear causation relationship between the DER and the selected metric to be able to correlate the DEA metric to the specific impact of the program

Table 5 below provides examples of DEA metrics.

Table 5: Examples of potential DEA metrics

Impact Type	Category	Subcategory	Potential DEA Metrics
Utility System	Provision of service	Reliability	Change in number and duration of outages on the utility system
		Shutoffs	Change in number of shutoffs or frequency of shutoffs
Societal	Public health	Health impacts	Change in rates of hospital admissions, asthma, cancer risk
	Community	Jobs	Workforce development, job training, clean energy apprenticeships in priority populations
		Utility dollars invested	Utility funds invested in businesses and contractors located in priority populations
Rates, Bills, and Participation	Rates	Change in rates	Percent change in rates
	Bills	Change in bills	Percent change in bills
		Energy burden	Percent change in energy burden
	Participation	Participation for the DER evaluated	Participants as percent of eligible customers

Data for DEA metrics usually comes from utility reports, plans, or workbooks. Data availability and resolution are two other key considerations. Data needs to be *available* (either publicly available or obtainable through utility cooperation) and at the desired resolution (or geographic level). For example, if the priority population is defined at a census tract level, but available data is on a county level, it will be difficult to allocate costs and benefits.

Stage 5. Apply DEA metrics to priority populations. Applying DEA metrics to the priority populations and other customers requires combining the information from two datasets—population data and equity metrics data—to calculate the impacts of each DEA metric on the priority populations. DEA practitioners may make use of existing data, mapping software, and analytical tools to apply metrics to priority populations and the other customers. The resolution of the available data and modeled data (if any)—i.e., whether it is at the census tract, town, or zip code level—will dictate the granularity of the results.

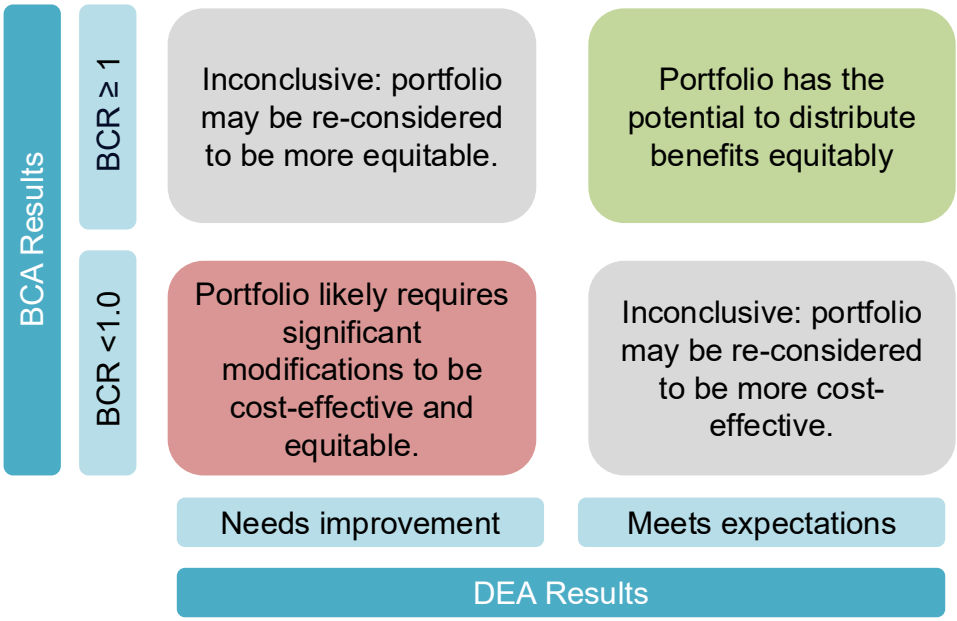
Stage 6. Present and interpret DEA results for stakeholders. This stage entails presenting the results for each chosen DEA metric. Analysts and stakeholders review the equity implications of the results for each metric and determine whether the results meet expectations or need improvement. These criteria should be co-created with community and stakeholder input and should ideally be established before determining the results of the DEA. Sometimes, benchmarks or weighted scores can aid in the interpretation of the results.

Stage 7. Make resource decisions using the results of the BCA and DEA. The final stage of the analysis is to make resource decisions and determine if the DER program or portfolio under review has the potential to distribute benefits equitably or if it needs improvement. Figure 6 lays out potential outcomes of the DEA.

BCA uses clearly defined monetary thresholds for determining whether an investment will have positive economic outcomes, e.g., when a BCA finds "positive net benefits" or the benefit-cost ratio (BCR) is greater than 1.0. In contrast, as noted above in Stage 6, DEA does not have clearly defined criteria to determine what constitutes a sufficiently positive equity outcome.

DER offerings that land in the top right quadrant of Figure 6 are both cost-effective and have the potential to distribute benefits equitably, if the program is implemented as planned. DER programs or portfolios that do not meet standards for one or both criteria may need reconsideration or to undergo modifications.

Figure 6: Outcomes for BCA and DEA results



In all cases where an investment fails the BCA or does not meet DEA results, it is especially important to present all the BCA and DEA results as transparently as possible. It is also important to incorporate robust community and stakeholder input to make changes to the DER program to improve its DEA results and/or BCA results and ultimately to strike an appropriate balance between the BCA and the DEA results.

The following sections describe the application of the DEA stages in Illinois to two case studies on utility EE and beneficial electrification plans.

1.3. Project background

The Project Team received a grant from the Joyce Foundation to conduct two DEA analyses in the Great Lakes region. The Project Team reached out to public utility commissions (PUC) in several

midwestern states to solicit interest, seeking states with several characteristics that would facilitate the work:

- Equity goals and an established network of stakeholders representing priority populations (e.g., underserved populations)
- PUC regulatory staff who could facilitate connections with the utility, help with case selection, provide relevant legislative and regulatory background, oversee the process, and review deliverables
- Interested utilities with data for equity metrics and on rate impacts of DER programs, focusing on electric utilities because data collection is generally mature

The Project Team selected Illinois as the state in which to conduct the DEA case studies. Illinois has a strong track record in clean energy and energy equity legislation. Specific statutes require utilities to dedicate program funding towards equity and disadvantaged populations in EE and beneficial electrification plans. (See Section 2.2.) There was also strong interest from the Illinois Commerce Commission (ICC), the regulatory agency overseeing utilities, to participate in the DEA. Over the course of nearly 18 months, the Project Team conducted two case studies in collaboration with a group of stakeholders that included the ICC staff, utility partners, community-based organizations, consumer advocates, non-governmental organizations, and others.

The study had multiple goals for the two case studies:

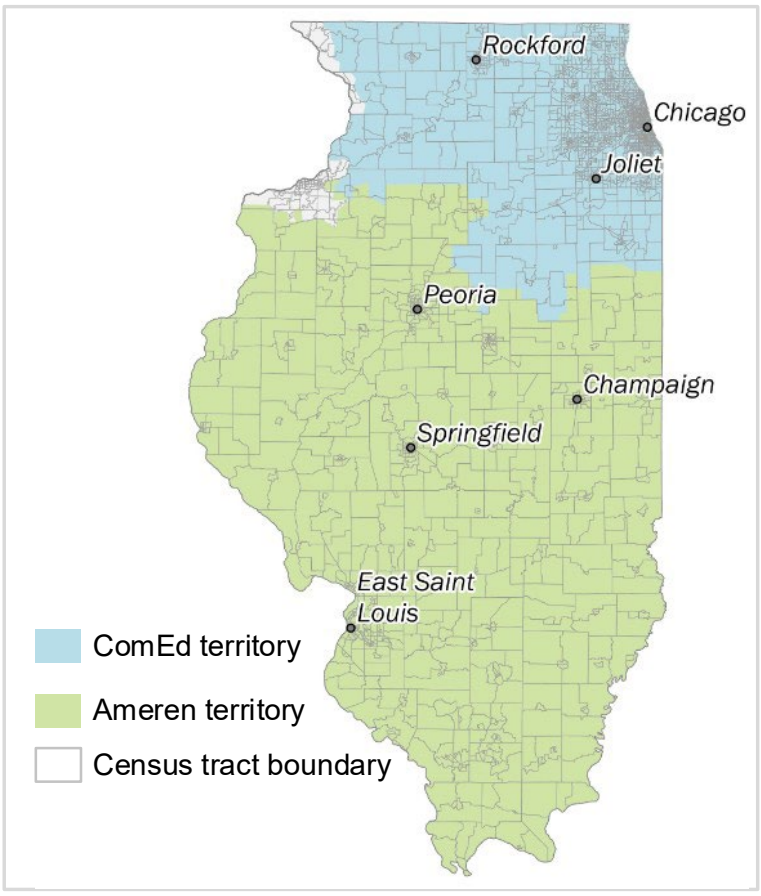
- Ensure understanding across all stakeholders of the various dimensions of equity (structural, procedural, distributional), how they interrelate, and the scope and role of DEA.
- Demonstrate the importance of working with diversely represented stakeholder groups, including community representatives, to identify distributional equity metrics that can meaningfully inform how the target population will be impacted by specific DER investments being considered by the jurisdictions.
- Build understanding of data requirements to support DEA for different types of equity metrics, and how to address potential gaps and limitations in data availability.
- Provide guidance to stakeholders on resources and geographic information system (GIS) tools to support mapping distributional equity metrics to the priority population.
- Use research and analysis to evaluate impacts of resource investments on the utility system, host customers, and society on average (i.e., BCA), versus analyzing impacts to priority populations relative to other customers (i.e., DEA).

2. Illinois Energy and Equity Landscape

2.1. Background on electric utilities

Illinois has six investor-owned electric and gas utilities, as well as numerous other municipal utilities and co-ops. Commonwealth Edison (ComEd) and Ameren Illinois Company (Ameren) are the two largest electric utilities in the state. ComEd provides electricity service to the northern part of state, including the Chicago region. Ameren provides electricity service to the southern two-thirds of the state, including Springfield (see Figure 7). ComEd serves over four million customers, representing 70 percent of the population of Illinois.[24,25] Ameren has roughly 1.2 million electric customers and 816,000 natural gas customers.[26]

Figure 7: ComEd and Ameren service areas *



**Approximate. Source: Synapse 2025, based on: U.S. EIA. "Electric Retail Service Territories. Available at: https://atlas.eia.gov/datasets/geoplatform::electric-retail-service-territories/explore*

[24] Exelon. "ComEd." Available at: https://www.exeloncorp.com/companies/comed.

[25] U.S. Energy Information Administration. "Electric Sales, Revenue, and Average Price." *EIA Form 861*. October 10, 2024. Available at: https://www.eia.gov/electricity/sales_revenue_price/.

[26] Ameren Illinois. "Ameren Illinois Service Territory." Available at: https://www.ameren.com/illinois/company/about-ameren/service-territory.

2.2. Illinois Energy and Equity Legislation

Illinois is a leading state in energy and equity policy. Recent energy legislation in Illinois aims to address equity and bring more energy benefits to all consumers, especially in low-income and disadvantaged communities.

Future Energy Jobs Act

In 2017, Illinois passed the Future Energy Jobs Act (FEJA) to improve EE and renewable energy deployment by scaling up clean energy and supporting jobs.[27] FEJA requires the state to build at least 4,300 megawatts (MW) of new solar and wind by 2030 and to allot $10 million annually to fund job training programs in renewable energy. FEJA enacted several requirements relating to the state's utility EE programs, including new aggressive energy savings targets and a requirement for ComEd to spend at least $25 million per year and Ameren to spend at least $8.35 million per year on EE programs for low-income households. FEJA also established the Illinois Solar for All program, a comprehensive low-income solar and job training program.

Climate and Equitable Jobs Act

CEJA is a legislative initiative signed into law in Illinois on September 15, 2021.[28] Building on FEJA, the Act focuses on promoting environmental sustainability and social equity, encompassing various provisions related to clean energy, climate change, job creation, and equity in workforce development.[29]

CEJA includes provisions to phase out carbon emissions from the energy and transportation sectors. CEJA directed the Illinois Environmental Protection Agency (IL EPA) to establish rebate and grant programs for EVs and charging stations, including an EV rebate program,[30] and oversee the phase-out of fossil-fuel-fired electric generation units. CEJA requires electric generating units to permanently reduce all greenhouse gas and co-pollutant emissions no later than 2045, based on the current emissions of the unit and its geographic location. Units that are located within three miles of an environmental justice community or equity-investment-eligible community (EIEC) must reduce emissions earlier than 2045 (see Table 6).[31]

CEJA mandates that utilities deliver program benefits to low-income communities through several key provisions. It requires electric utilities to allocate 80 percent of their low-income EE budgets to whole-building weatherization programs for low-income households. Additionally, utilities must dedicate at least 15 percent of the weatherization budgets to health and safety measures within these programs. The Act also establishes provisions for a low-income rate that allows utilities to

[27] Illinois Public Act 099-0906. Available at: https://www.ilga.gov/legislation/publicacts/99/099-0906.htm.

[28] Illinois Public Act 102-0662. Available at: https://epa.illinois.gov/content/dam/soi/en/web/epa/topics/ceja/documents/102-0662.pdf.

[29] Illinois Environmental Protection Agency. "Climate and Equitable Jobs Act." 2025. Available at: https://epa.illinois.gov/topics/ceja.html.

[30] Illinois Environmental Protection Agency. "Electric Vehicle Rebate Program." 2025. Available at: https://epa.illinois.gov/topics/ceja/electric-vehicle-rebates.html.

[31] Illinois Environmental Protection Agency. 2025. "Electric Generating Units and Large Greenhouse Gas-Emitting Units." Available at: https://epa.illinois.gov/topics/ceja/electric-generating-units.html.

offer discounted utility rates to eligible customers.[32] CEJA also allows electric utilities to offer electrification (i.e., fuel-switching) programs as part of their EE portfolios. Electrification measures must reduce total energy consumption.

Finally, CEJA includes numerous provisions related to equity and workforce development, including allocating $80 million per year to workforce development programs in underserved and low-income communities.[33]

CEJA defines EIECs as geographic areas across the state that should benefit from equitable investments in Illinois. The definition encompasses Restore, Reinvest, and Renew (R3) areas as well as Environmental Justice Communities (EJCs), as detailed in Table 6. Figure 8 shows the locations of EIECs in Illinois.

Table 6: Components of EIEC definition

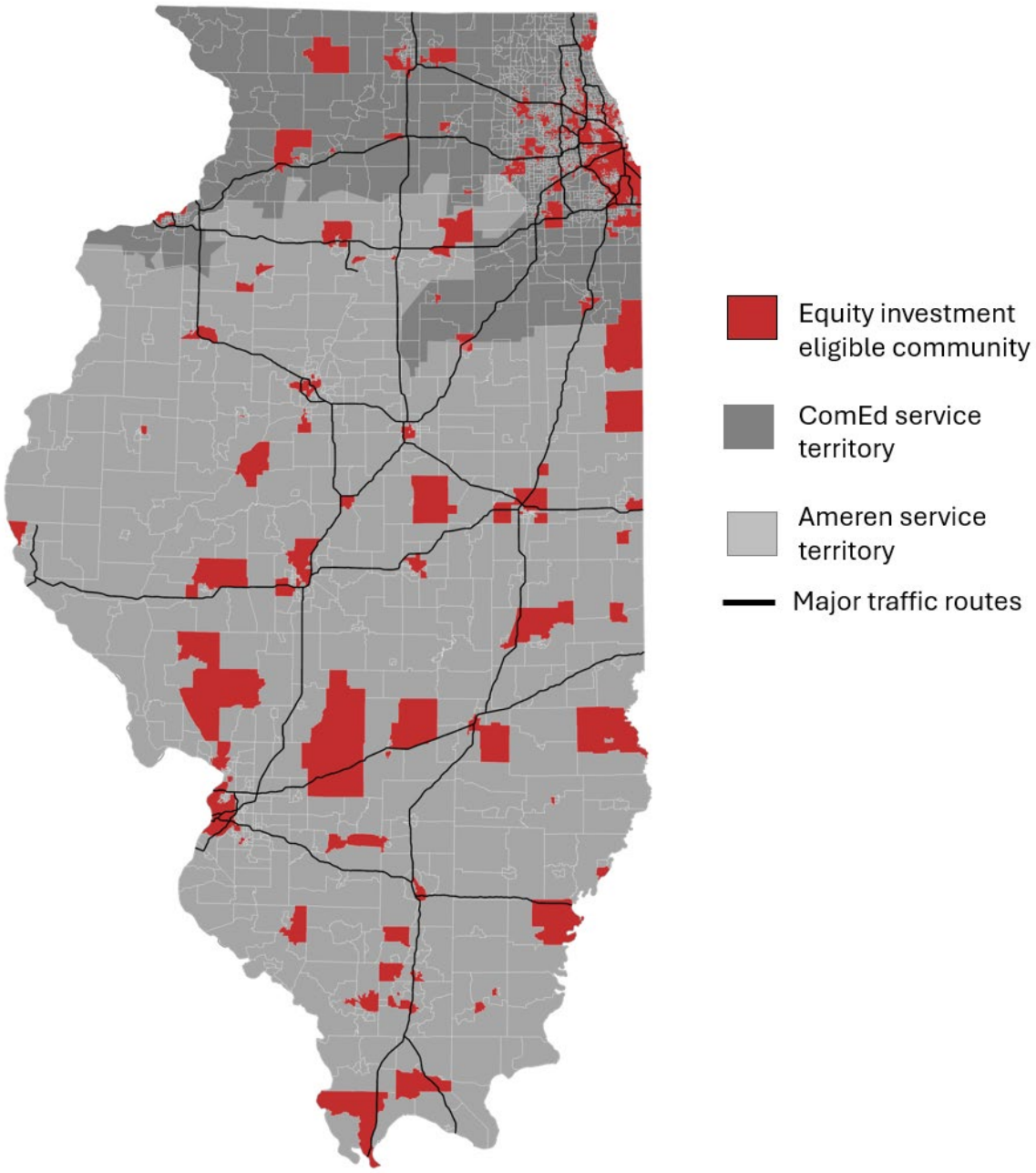
Component	Definition	Legislation
Restore, Reinvest, Renew (R3)	Communities that have been historically harmed by violence, excessive incarceration, and economic disinvestment. Communities are identified by rates of gun injury hospitalization, unemployment, child poverty, commitments to/returns from Illinois Department of Corrections, or identified by the Illinois Dept. of Commerce and Economic Opportunity. (1)	2019 IL Cannabis Regulation and Tax Act (2)
Environmental Justice Community (EJC)	Block groups that have experienced disproportionate burdens of pollution	Illinois Power Agency Act and Illinois Solar4All program (3) (4)

(1) State of Illinois, 2024. "R3. Restore. Reinvest. Renew." Available at https://r3.illinois.gov/
(2) 410 ILCS 705/10-40, 2019. Cannabis Regulation and Tax Act. Available at https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992
(3) Illinois Power Agency, 2024. Illinois Solar for All. Available at https://www.illinoissfa.com/environmental-justice-communities/
(4) 20 ILCS 3855, 2007. Illinois Power Agency Act. Available at https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=2934&ChapterID=5

[32] State of Illinois. "ICC Staff Report: Low-Income Discount Rates for Electric and Natural Gas Residential Customers are Appropriate for Illinois." December 22, 2022. Available at: https://www.illinois.gov/news/press-release.25833.html.

[33] Hetzel, Claire. "An Equitable Clean Energy Transition Underway in Illinois." January 26, 2022. Climate X Change. Available at: https://climate-xchange.org/2022/01/an-equitable-clean-energy-transition-underway-in-illinois/.

Figure 8: Equity-investment-eligible communities in Illinois



2.3. Utility DER-related programs

Implementation of FEJA and CEJA takes place in multiple venues and programs, primarily through EE and beneficial electrification plans, as well as multi-year grid plans. A summary of each is provided below, along with examples of barriers to disadvantaged or underserved populations.

Energy Efficiency Plans

In 2007, the Illinois General Assembly enacted legislation requiring the state's electric utilities and the state energy office to offer customer EE programs and meet energy savings goals. This legislation established an Energy Efficiency Resource Standard (EERS) that required utilities to provide programs that deliver an increasing amount of energy savings each year. In late 2016, Illinois passed FEJA, further raising the overall utility EE targets.[34] This legislation requires ComEd and Ameren Illinois to achieve cumulative reductions in energy use by 2030 (21.5 percent for ComEd and 16 percent for Ameren) relative to average consumption between 2014 and 2016.[35] The utilities must meet these energy savings targets through a combination of residential, commercial, and industrial programs. The utilities submit for Illinois Commerce Commission (ICC) approval detailed EE plans that outline proposed programs, projected energy savings, and associated costs.

Both gas and electric utilities administer ratepayer-funded EE programs and each utility manages its own portfolio of programs. While this report focuses on electric utilities, gas utilities also offer EE programs, and those merit similar attention to equitable design and implementation.

EE planning is informed in part by the Energy Efficiency Stakeholder Advisory Group (SAG), established by the ICC to provide transparency and collaboration in the development and implementation of utility EE programs in Illinois.[36] The SAG reviews new program designs, budgets, and progress against statutory goals. It also helps develop the Energy Efficiency Policy Manual, which guides program implementation.[37]

Beneficial Electrification Plans

Illinois defines beneficial electrification programs as "programs that lower carbon dioxide emissions, replace fossil fuel use, create cost savings, improve electric grid operations, minimize increases to peak demand, improve electric usage load shape, and align electric usage with times of renewable generation."[38] The Electric Vehicle Act governs the state's beneficial electrification programs. The Electric Vehicle Act promotes the adoption of EVs across the state. Specifically, it established a target of deploying 1 million EVs by 2030 and increasing public access to charging equipment.[39] CEJA introduces utility-run beneficial electrification initiatives, including rebates for EV charging infrastructure, with a focus on expanding access in equity investment eligible communities (EIEC). These efforts aim to reduce reliance on fossil fuels, lower transportation emissions, and stimulate economic development through the growth of the EV industry in Illinois.

CEJA requires electric utilities serving over 500,000 customers to file Beneficial Electrification Plans with the ICC. These ratepayer-funded plans must outline programs that promote the adoption of EVs and related infrastructure. The plans can include a portfolio of several initiatives,

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[34] Illinois Public Act 099-0906. Available at: https://www.ilga.gov/legislation/publicacts/99/099-0906.htm.

[35] (220 ILCS 5/8-103B) https://www.ilga.gov/legislation/ilcs/documents/022000050K8-103B.htm.

[36] Illinois Energy Efficiency Stakeholder Advisory Group. "SAG Background." Available at: https://www.ilsag.info/background/.

[37] Illinois Energy Efficiency Policy Manual. Version 3.0. Effective January 1, 2024. Available at: https://www.ilsag.info/wp-content/uploads/IL_EE_Policy_Manual_Version_3.0_Final_11-3-2023.pdf.

[38] Illinois General Assembly. 20 ILCS 627/ Electric Vehicle Act. Available at: https://www.ilga.gov/legislation/ilcs/ilcs3.asp?ActID=3348&ChapterID=5.

[39] Illinois General Assembly. 20 ILCS 627/ Electric Vehicle Act. Available at: https://www.ilga.gov/legislation/ilcs/ilcs3.asp?ActID=3348&ChapterID=5.

including but not limited to, time-of-use or hourly pricing electric rates; optimized or off-peak charging programs or incentives; incentives for electric school buses, government and private fleets, and associated infrastructure; and incentives for EVs or EV charging infrastructure. Beneficial electrification plan statutes focus on offerings to low-income and equity investment eligible communities (EIEC/LI). Per statute, beneficial electrification plans must dedicate 40 percent of investment towards EV charger infrastructure incentives (e.g., electric equipment upgrades to support EV charging infrastructure) for EIEC/LI communities.

The beneficial electrification plans are relatively new compared to the utilities' EE programs: ComEd and Ameren filed their first beneficial electrification plans by July 1, 2022. CEJA requires utilities to update the plans every three years, incorporating stakeholder feedback and aligning the plans with distribution system planning processes.

Total Resource Cost Test in Illinois

Illinois uses the modified total resource cost (TRC) test, as defined in state statute, to evaluate cost-effectiveness of utility DER programs. Utility EE plans must be cost-effective under the TRC per the Illinois Power Authority Act, and utility beneficial electrification plans must be cost-effective including the impacts listed in Section 45 of the Electric Vehicle Act. Sections 4.1 and 5.1 further explain Illinois beneficial electrification and EE plan BCA.

Sources: 20 ILCS 3855/1-10, https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=2934&ChapterID=5; 20 ILCS 627/45(d), https://www.ilga.gov/legislation/ilcs/fulltext.asp?DocName=002006270K45

Multi-Year Integrated Grid Plans

While not the focus of this report, CEJA also required the electric utilities to file Multi-Year Integrated Grid Plans (MYIGP) before the Commission.[40] These plans outline investments in grid modernization, reliability enhancements, and programs to support clean energy goals. CEJA requires that 40 percent of the benefits from clean energy programs in the MYIGPs reach EIEC customers. Ameren and ComEd amended MYIGPs were approved by the ICC in late 2024. These plans cover the years 2024–2027 and are consolidated with the utilities' multi-year rate plans.

Barriers for Disadvantaged Communities

Utility customers in low-income and disadvantaged communities face several barriers to accessing energy services and programs.[41,42] For EE programs, housing conditions such as building age and deferred maintenance can deter participation because they often require costly repairs to enable energy-saving upgrades.[43] Additionally, the landlord-tenant dynamic creates split

[40] 220 ILCS 5/16-105.17. Available at: https://www.ilga.gov/legislation/ilcs/documents/022000050K16-105.17.htm.

[41] Morales, D., and S. Nadel. 2022. *Meeting the Challenge: A Review of Energy Efficiency Program Offerings for Low-Income Households*. American Council for an Energy-Efficient Economy. Available at: https://www.aceee.org/sites/default/files/pdfs/u2205.pdf.

[42] Illume. 2023. *ComEd Disadvantaged Communities Study Report.* Prepared for ComEd. Available at: https://illumeadvising.com/files/ComEd-Disadvantaged-Communities-DAC-Study-Report.pdf.

[43] Residential Retrofits for Energy Equity. May 31, 2024. "The Residential Retrofits for Energy Equity Playbook." Available at: https://r2e2playbook.org/.

incentives, where landlords may be unwilling to invest in EE improvements that benefit tenants but provide no direct financial return to landlords.[44]

For beneficial electrification programs, inadequate charging access is a barrier. Residents of multifamily dwellings tend to have less access to at-home charging than residents of single-family homes. [45] Furthermore, lack of public charging stations is a major barrier to EV adoption (due to range anxiety). [46] Drivers may have concerns about the distance EVs can go on one charge. Households without off-street parking or at-home private chargers, who must compete with others for public charger access, may have even greater reluctance to obtain an EV if chargers are few and far between.

Financial constraints further exacerbate these issues, as many residents lack the capital or credit necessary to finance energy upgrades (e.g., for efficiency measures or EV charger upgrades) or navigate complex program applications. Information gaps persist as well. Many community members are unaware of available programs or are unable to access them due to language barriers or complex application processes.[47] Moreover, insufficient outreach and the lack of culturally competent communication strategies hinder program participation. Communication gaps leave many underserved households without the benefits of EE and beneficial electrification initiatives.

Given these barriers, it is crucial to ensure that programs being designed and implemented today are effective at reaching low-income and underserved customers. This remainder of this report presents the outcomes of the case studies of the DEA conducted on utility EE and beneficial electrification programs and plans in Illinois.

[44] Bird S, Hernández D. 2012. "Policy options for the split incentive: Increasing energy efficiency for low-income renters." *Energy Policy*. *Energy Policy* 48: 506–514. Available at: https://www.sciencedirect.com/science/article/abs/pii/S0301421512004661.

[45] Chih-Wei, H., K. Fingerman. 2021. *Public electric vehicle charger access disparities across race and income in California*. Transport Policy, Volume 100. Available at: https://doi.org/10.1016/j.tranpol.2020.10.003.

[46] Dong-Yeon, L, M. H. McDermott, B. K. Sovacool, R. Isaac, 2024. *Toward just and equitable mobility: Socioeconomic and perceptual barriers for electric vehicles and charging infrastructure in the United States*. Energy and Climate Change, Volume 5. Available at: https://www.sciencedirect.com/science/article/pii/S2666278724000229?via%3Dihub.

[47] Amann, J., C. Tolentino, and D. York. 2023. *Toward More Equitable Energy Efficiency Programs for Underserved Households*. American Council for an Energy Efficient Economy. Available at: https://www.aceee.org/sites/default/files/pdfs/B2301.pdf.

3. Setting the Stage: Illinois Stakeholder Engagement

The DEA Guide emphasizes the importance of stakeholder engagement as Step 1 of the distributional equity analysis framework:

Robust community and stakeholder engagement is the bedrock of the DEA process. An effective community and stakeholder engagement process involves a diverse cross-section of customers in a given service area that might include urban, rural, tribal, and indigenous communities; representatives or members of priority populations; advocates (e.g., environmental justice, low-income customer consumer) and other interested or concerned parties. It allows for transparent input and opportunities for dialogue throughout the entire DEA process. *(DEA Guide, p. 15)*

A transparent and open decision-making process requires meaningful input from the communities and stakeholders affected by the decisions. Community members understand the impacts of resource decisions in their areas and can contribute important perspectives to the DEA process. This can help to build trust in the process and increase the amount of upfront buy-in from communities.[48]

To create a stakeholder Work Group for the DEA Case Study project, the Project Team engaged with three broad groups of stakeholders: the ICC, the utilities whose projects were chosen for study, and the broad group of energy and community stakeholders with an interest in the outcome of the project.

3.1. Stakeholder Work Group

The stakeholder process was led by MEEA and involved the following:

- *Outreach and convening of stakeholders*. MEEA invited stakeholders that had been involved in prior ICC-led workshops to join the Case Study Work Group. Participants from academia, community-based organizations (CBO), government and state agencies, utilities, consulting groups, and nonprofits joined the Work Group
- *Community-based organizations: outreach and collaboration*. The Project Team led additional work to connect with and include CBO perspectives throughout the process. MEEA held separate one-on-one meetings and small group calls to encourage engagement and solicit feedback. A small stipend (up to $125 per meeting attended) was available to reduce financial barriers to participation.
- *Work group meeting schedules and topics*. The Work Group met a total of eight times over 16 months, with a meeting every 1 to 2 months. The presentation and meeting minutes were posted to the project website. Each meeting covered one or two stages of the DEA, with later meetings focused on DEA results and conclusions.
- *Stakeholder meeting norms, processes, and feedback*. MEEA set norms and expectations, including Chatham House rule to encourage no attribution. For any

[48] Woolf, Tim, Alice Napoleon, Natalie Mims Frick, Lisa C Schwartz, Julie Michals. *Distributional Equity Analysis for Energy Efficiency and Other Distributed Energy Resources: A Practical Guide*. Lawrence Berkeley National Laboratory – Energy Markets & Policy (May 2024). Available at https://emp.lbl.gov/publications/distributional-equity-analysis.

questions that couldn't be answered fully during the meeting, the Project Team ensured they recorded these and posted answers in the meeting notes afterwards. The Project Team gathered feedback during these meetings through discussions with specific questions and polls where participants voted.

Appendix A provides more detail on the stakeholder Work Group process.

3.2. ICC collaboration

Cooperation with the state regulatory agency was essential to conducting the case studies. Buy-in from the regulator helps to put weight behind the subsequent ask to the utilities to participate and legitimizes the work group process for all participants.

To get the support of the ICC for the project, the Project Team gave an overview presentation to Commissioner Stacey Paradis and her policy advisor, Nick Dreher.[49] Commissioner Paradis agreed that the ICC would support the case study project and connected the Project Team with the ICC's, Jim Zolnierek Bureau Chief, Public Utilities Bureau who brought in additional relevant staff.

ICC Staff remained involved throughout the case study process. They attended work group meetings, participated in direct discussions about policies and scheduling, and provided their perspectives on the utility programs.

3.3. Utility collaboration

With buy-in from the commission, and leveraging MEEA's longstanding relationships with the Illinois utilities, the Project Team then presented the case study proposal to the state's two largest electric utilities, ComEd and Ameren Illinois. Both utilities agreed to participate.

Collaboration with utilities for DEA is essential because public data (from state and federal databases, utility regulatory filings, and other similar sources) is not generally available at the level of granularity needed for the DEA analysis. The primary data for the analysis will of necessity come from the DER program administrator, in this case the utility.

3.4. Key lessons learned and best practices

Some aspects of the work group process went well, and there are also lessons to inform the efforts of future DEA facilitators and practitioners.

What worked well

- The DEA process was productive using fully remote work group meetings; they made the process accessible across geography and avoided the expense and time commitment of team or participant travel.
- Over the course of the case studies, the Project Team was able to establish open participation from critical stakeholders through the Work Group meetings, including

[49] As Commissioner Paradis was the former Executive Director of MEEA, and Mr. Dreher was MEEA's former policy director, they were already aware of the project – having been part of the early stages of project planning and funding proposal before leaving MEEA.

CBOs and local nonprofits, to shape the analysis performed. Though the meetings were often dense with information, it was important to make space for discussion – especially regarding priority populations and metrics. For more information on Work Group participation, see Stakeholder Work Group Process.

Lessons for future improvement

- Illinois' energy stakeholders have numerous existing processes in which to engage, including the Stakeholder Advisory Group, Low Income EE Committees, commission workshops and proceedings, and coalition meetings. Organizers of future DEA efforts in any state need to carefully evaluate existing schedules, processes, and activities in which key stakeholders are already engaged to avoid scheduling conflicts and capacity limitations.
- Interest in the community participation stipend was lower than expected and creating the stipend did not draw in additional CBO participants. Future organizers might consider whether there is a need for a stipend for community participation, and if there is, how to use it to get more community participants.
- CBO engagement was lower than the Project Team preferred. Future organizers may want to perform deeper intentional recruitment of specific organizations or individuals from within the priority populations and geographies of the study. They might also create outreach messaging that resonates with community representatives, including an individual proposition of the value of their input to the project and the value to them for giving their time and expertise.
- Getting necessary data from the utilities took substantial time. Between negotiating non-disclosure agreements, discussing data availability, setting up data queries, and vetting results, it can take a long time to complete the analytical parts of the process. Better managing the cadence of meetings in response to timing of engagement with utility could help this go more smoothly — for example, tightening up the schedule of some of the earlier stages to allow more time for later stages and starting the administrative processes as early in the timeline as possible.
- If possible, a more formal process with the regulatory commission, such as a workshop, would encourage participation and add weight to the process and its impact.

4. DEA for Ameren Illinois' Beneficial Electrification Plan

This section describes the first case study: Ameren's Beneficial Electrification Plan (BE Plan).

4.1. Stage 1: Stakeholder Engagement

As described in Section 3, the Project Team convened a Work Group and held eight work group meetings over the 16-month project to solicit feedback on the various DEA stages. The Work Group included representatives from Ameren Illinois who were involved in data sharing and access. Staff from the ICC attended meetings and provided guidance throughout the meeting process.

4.2. Stage 2: Articulation of the DEA context

The first step of the DEA is to articulate the DEA context, including the project scope, timeframe, and DER type as described above. Table 7 presents the components of the DEA context for this case study.

In selecting which utility to use for the beneficial electrification DEA, the Project Team considered the availability of data, priority populations, timeline for plan updates, and the utility perspective. In consultation with the Work Group, the Project Team chose Ameren's prospective 2026–2028 BE Plan, focusing on its ChargeSmart and ChargeReady programs. The Project Team chose Ameren as the utility for the beneficial electrification plan DEA based on positive initial conversations with Ameren and availability of beneficial electrification plan data. The forward-looking analysis allowed results to inform future beneficial electrification plans and suggest improvements.

Table 7: DEA context for Ameren case study

DEA context component	Case study
Utility type	Electric
Utility	Ameren Illinois Company (Ameren)
DER type	Beneficial electrification
DEA Application	Residential beneficial electrification programs – ChargeSmart and ChargeReady
Timeframe	Prospective (2026-2028)

Background on Ameren's BE Plan programs

As described in Section 2.2, CEJA requires utilities to implement beneficial electrification plans to accelerate Illinois' transition to 100 percent clean energy and help decarbonize the transportation sector. Ameren's BE Plan tends to focus on transportation electrification, rather than programs for home electrification measures.

Ameren's 2026–2028 BE Plan includes a portfolio of programs to support EVs and EV charger adoption. These programs include time-of-use rates, incentives for installing EV chargers, technical assistance, and EV education, among others. Table 8 provides the full list of program offerings. The goals of these programs are to make EVs more affordable for individuals, businesses, and communities and to educate the public on different aspects of owning and driving an EV. Ameren also provides program offerings for customers in EIEC/LI communities. The Community

Engagement and Consultation program allows communities to apply for grant money to implement specific community-led plans. Meanwhile, Ameren is testing two pilot programs: a home managed-charging program, and a school bus electrification program to demonstrate their ability to provide energy back to the grid. Several programs, including the Driver Education and EV-as-a-service pilot program, aim to use outreach and education to increase EV adoption.

Table 8: Ameren 2026–2028 BE Plan programs

Program type	Program	All other customers offering	EIEC/LI offering	Total electric budget
Bill and delivery credits	ChargeSmart	Special energy rates for charging during peak/off-peak	Same as all other customers	$ 41,010,000
	Residential Managed Charging	Bill credits to test managed EV charging	Same as all other customers	$ 3,310,000
Charging infrastructure	ChargeReady	Charger infrastructure incentives	Greater coverage of charger costs and more support for charging infrastructure	$ 52,360,000
	Driver Education	EV & charger incentives for schools	Higher EV & charger incentives for high schools in EIEC/LI communities	$ 460,000
Technical assistance & education	Community Engagement & Consultation	Highly specific assistance to individual communities	Special financial assistance	$ 3,930,000
	Trade Ally & Customer Service	Connects customers to EV experts	Same as all other customers	$ 3,840,000
	Fleet Assessment	Technical assistance for commercial customers	Same as all other customers	$ 1,950,000
	EV-as-a-service pilot	Education program reducing barriers to owning an EV	Same as all other customers	$ 610,000
Other	Home Ready	Discounted home energy assessments	Fully covered assessments for income qualified customers	$ 1,920,000
	EV School Bus Virtual Power Plant pilot	Electrifying school buses & virtual power plant demo	Same as all other customers	$ 1,900,000
	Pilot Programs	Other pilots	Same as all other customers	$ 4,500,000

Program type	Program	All other customers offering	EIEC/LI offering	Total electric budget
Non-program related	Other costs	Education, Evaluation, IT, and Administration	N/A	$ 6,510,000
Total Portfolio				**$ 122,300,000**

Source: Ameren Illinois Company, 2024. Beneficial Electrification Plan 2. Available at https://www.icc.illinois.gov/docket/P2024-0494/documents/352385/files/616708.pdf.

ChargeReady and ChargeSmart Programs

Ameren's three-year electric incentive BE Plan budget is $79 million, 65 percent of which is dedicated towards the residential sector.[50, 51] Incentives are the rebates and discounts that Ameren gives back to the customer to help offset costs and bills. ChargeSmart and ChargeReady make up 53 percent and 45 percent of Ameren's three-year plan, respectively. This DEA focuses on these two programs since they make up 98 percent of Ameren's electric incentive budget and have the most readily available and distributional data of all Ameren's programs.

ChargeSmart is a special rate program that provides time-of-use discounts and charges to encourage customers to charge their EVs during low-cost hours. This program is available to residential, fleet, transit, education, and public charging facilities. Ameren encourages residential customers to use electricity during a preferred period between 11 PM and 7 AM (off-peak hours) and gives a credit for every kWh consumed during this time period. During peak hours between 11 AM and 7 PM, customers receive an additional charge on their bill per every kWh consumed. During all other hours of the day, Ameren charges participants its normal rates. Ameren also gives residential customers a small monthly bill credit for the first year to help offset higher charges as participants learn to stagger their energy usage.

ChargeReady's purpose is to "to encourage customers to adopt electric transportation technologies and install appropriate charging infrastructure by reducing the upfront costs of installation."[52] ChargeReady rebates are *only* available to chargers that serve EIEC/LI customers. ChargeReady offers 100 percent coverage of residential level 2 chargers (both equipment and charger installation costs). For education customers (schools, higher education, etc.) and transit customers (buses), Ameren offers a $5,000 rebate for level 2 chargers and $25,000 rebate for level 3 chargers. Residential customers receiving a rebate must also enroll in ChargeSmart (transit and education customers do not). ChargeReady additionally offers incentives for installation of supplemental line extensions, or electrical wires that connect the chargers to the distribution grid, for non-residential customers. The focus of this DEA is on the ChargeReady charger incentives and rebates.

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[50] Electric incentive budget excludes non-incentive costs such as administrative overhead, information technology, or program implementation costs. Including these costs, Ameren's 3-year budget is $122 million.

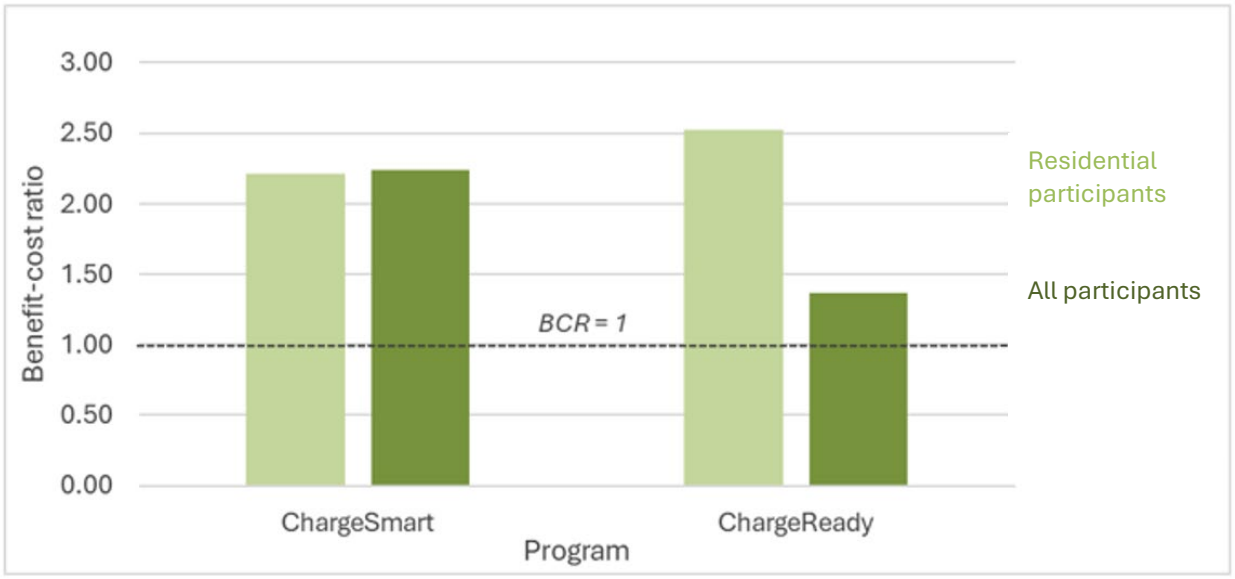
[51] Ameren 2026-2028 BCA workbook.

[52] Ameren Illinois Company, 2024. *Beneficial Electrification Plan 2*. Available at https://www.icc.illinois.gov/docket/P2024-0494/documents/352385/files/616708.pdf.

BCA for Ameren's BE Plan

Illinois requires that the beneficial electrification plan portfolio be cost-effective as a whole, which means that individual program benefits do not necessarily need to outweigh costs. Figure 9 shows the TRC test results for the residential participants of Ameren's ChargeSmart and ChargeReady programs as well as for the programs overall. A benefit-cost ratio (BCR) greater than 1 indicates that the program is cost-effective. The residential subprogram in ChargeSmart has a BCA of 2.2 while residential subprogram of ChargeReady has a BCA of 2.5. When considering all customers served under these programs (residential, multifamily, education, transit, and commercial/industrial customers), ChargeReady BCR is 1.4 and ChargeSmart is 2.2, indicating that both these programs are cost-effective. Ameren calculates that its 2026–2028 portfolio BCR is 1.6.

Figure 9: TRC results for ChargeSmart and ChargeReady, 2026–2028 average



4.3. Stage 3: Defining priority populations

The next stage of the DEA is to define the priority populations, or the set of electric or gas customers who will be the focus of the DEA and for comparison with all other customers. For this stage, the Project Team completed the following steps:

1. Reviewed definitions in CEJA[53]
2. Reviewed definitions for disadvantaged populations used by Illinois utilities for beneficial electrification plans
3. Solicited input from stakeholder representatives during Work Group Meetings

[53] 102-0662 § 10-10 (Sep 15, 2021), https://epa.illinois.gov/content/dam/soi/en/web/epa/topics/ceja/documents/102-0662.pdf.

CEJA requires utilities to offer special programs and incentives to EIEC/LI communities. Consistent with the Act, beneficial electrification program offerings were already targeting EIEC/LI communities. Given this, the Project Team chose to focus on the EIEC/LI as the priority population, which incorporates a wide range of equity criteria (see Table 9). EIECs include Restore, Reinvest, and Renew communities as well as Environmental Justice Communities as defined by statute.

Ameren is required to dedicate 40 percent of the BE Plan budget towards EIEC/LI populations throughout the three years of its plan. Ameren committed to spending $46 million (58 percent) of its electric incentive budget on EIEC/LI programs and offered additional incentives and particular programs only to these customers.[54]

Table 9: Equity investment eligible communities & low-income communities

EIEC/LI	Component	Definition	Legislation
EIEC	Restore, Reinvest, Renew (R3)	Communities that have been historically harmed by violence, excessive incarceration, and economic disinvestment. Communities are identified by rates of gun injury hospitalization, unemployment, child poverty, commitments to/returns from Illinois Department of Corrections, or identified by the Illinois Dept. of Commerce and Economic Opportunity. (1)	2019 IL Cannabis Regulation and Tax Act (2)
	Environmental Justice Community (EJC)	Block groups that have experienced disproportionate burdens of pollution	Illinois Power Agency Act and Illinois Solar4All program (3) (4)
Low-income	Low-income individual	Individuals and families whose income does not exceed 80% of the Illinois area median income, adjusted for family size and revised every 2 years and census tracts where at least half of households are low-income.	Climate and Equity Jobs Act (5)

Sources:

(1) State of Illinois, 2024. R3. Restore. Reinvest. Renew. Available at https://r3.illinois.gov/.

(2) 410 ILCS 705/10-40, 2019. Cannabis Regulation and Tax Act. Available at https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=3992.

(3) Illinois Power Agency, 2024. Illinois Solar for All. Available at https://www.illinoissfa.com/environmental-justice-communities/.

(4) 20 ILCS 3855, 2007. Illinois Power Agency Act. Available at https://www.ilga.gov/legislation/ilcs/ilcs5.asp?ActID=2934&ChapterID=5.

(5) 102-0662 § 5-1, https://www.ilga.gov/legislation/publicacts/102/102-0662.htm.

4.4. Stage 4: Development of metrics

DEA metrics help determine if costs and benefits of a utility program or investment are equitably distributed between priority populations and other customers. The Project Team reviewed the following Ameren data sources to assess available data for metrics:

[54] Ameren 2026–2028 BCA workbook, shared with Synapse Energy Economics through a non-disclosure agreement.

- **2023–2025 Beneficial Electrification Plan (Plan #1)**: program descriptions and TRC test data [55]
- **2026–2028 Beneficial Electrification Plan (Plan #2)** updated program descriptions and TRC data [56]
- **BE Plan Annual Workforce Development Report (July 2024)** historical data on ChargeSmart and updated program descriptions [57]
- **Testimony from relevant dockets**: additional detail about emissions calculations[58]
- **Communication with Ameren staff**: calls and emails with Project Team
- **Ameren's 2026–2028 BCA workbook** [59]

The Project Team evaluated different metrics for the Ameren BE Plan DEA. Table 10 on page 29 summarizes the potential metrics and the key considerations for assessing them.

Metrics included

The Project Team selected four metrics to use for the Ameren DEA that reasonably meet the DEA criteria of being distributional, discrete, tied to equity goals, and tied to beneficial electrification programs. Each metric has data available at an appropriate level of resolution (i.e. broken out by EIEC/LI).

Rate impacts

While rate impacts are the same for participants and non-participants, they are good indicators of impacts to non-participants in the program. Rate impacts do not vary for priority populations versus other customers.

Rates are an input into a bill impact analysis, and therefore these metrics overlap; however, since the customer groups primarily experiencing these two metrics are different, it is helpful to show both. In addition, rates can be tied to the DER being studied through rate impact analyses.

[55] Ameren Illinois Company, 2023. *Beneficial Electrification Plan*. Available at https://www.icc.illinois.gov/docket/P2022-0443/documents/340139/files/593399.pdf.

[56] Ameren Illinois Company, 2024. *Beneficial Electrification Plan 2*. Available at https://www.icc.illinois.gov/docket/P2024-0494/documents/352385/files/616708.pdf.

[57] Ameren Illinois Company, 2024. *Ameren Illinois Company Beneficial Electrification – 2024 Annual Workforce Development Report*. Available at https://icc.illinois.gov/docket/P2022-0431/documents/352348/files/616607.pdf.

[58] Dockets 22-0431 and 22-0443.

[59] Ameren 2026–2028 BCA workbook.

Rate impacts are relevant to state policy goals: Illinois plans to implement discounted rates for low-income customers. CEJA is also meant to lower rates for all customers. Lower rates are a clear equity goal in Illinois.[60,61,62]

While rate data is available, the Project Team could only assess impacts directionally, meaning the team estimated if rates will increase or decrease for different customer groups.

Bill impacts

Bill impacts are a key metric for this case study since a prime motivation for many customers when they switch to EVs is to save on monthly energy bills. Bill savings are especially important to low-income households. Bill savings are distributional (since only the priority population can participate in the ChargeReady program) but may overlap with rate impacts.

Bill impacts shed light on energy affordability, which is an important policy goal in Illinois. The Illinois attorney general recommends a 3.1 percent energy burden.[63] Energy burden, the percentage of household spending spent on energy, is a metric of interest to Illinois agencies.

The Project Team found sufficient data to conduct a bill impact analysis using data in the Ameren 2026–2028 BCA workbook and BE Plan released in July.

Participation

Participation in Ameren's BE Plan is a key indicator for who benefits from programs and is distributional. Benefits such as bill savings accrue directly to participants. Participation overlaps with other metrics, such as utility investment, and so it may not be discrete.

Participation is directly related to equity goals, as participants will receive program benefits, and is highly correlated with the DER being studied.

In the BE Plan update released in July, Ameren reported historical participation in its ChargeSmart program by EIEC/LI customers and all other customers.[64] Data is available by EIEC/LI and all other customers in the Ameren 2026–2028 BCA workbook.

Utility investment

Utility investment in EIEC/LI populations is a distributional metric that varies for the priority population and all other customers. While utility investment overlaps with participation, both are important metrics to include in a DEA.

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[60] Illinois Commerce Commission. 2022. *Low-Income Discount Rate Study Report*. https://icc.illinois.gov/downloads/public/icc-reports/low-income-discount-rate-study-report-2022-12-15.pdf.

[61] Illinois Commerce Commission. 2024. "Utility Energy Assistance." https://www.icc.illinois.gov/consumers/utility-energy-assistance.

[62] CEJA, Section 45(d)(1).

[63] Office of the Attorney General. *Initial Comments*. Illinois Commerce Commission on Its Own Motion – Notice of Inquiry Regarding Energy Affordability (20-NOI-01). September 30, 2020. Available at https://www.icc.illinois.gov/notice-of-inquiry/20-noi-01.

[64] Ameren Illinois Company, 2024. *Ameren Illinois Company Beneficial Electrification – 2024 Annual Workforce Development Report*. Available at https://icc.illinois.gov/docket/P2022-0431/documents/352348/files/616607.pdf

Beneficial electrification plans, by statute, are required to distribute 40 percent of make-ready investment to EIEC/LI populations and so these utility investments are directly related to equity goals. [65] Investment data is available in Ameren's BE Plan and 2026-2028 BCA Workbook.

Metrics investigated but not included

The Project Team investigated but did not ultimately select the following set of metrics for the DEA analysis. In a majority of cases, the DER impact was not strong enough to tie to the DER being studied or data was not available.

Air Emissions

Air emissions results may be different for priority populations and all other customers, depending on where emissions reductions and increases materialize. This metric in theory is discrete, since no other metrics factor in driving habits and travel patterns of participants.

Air emissions are tied to the BE Plan's goals to lower carbon dioxide emissions and replace fossil fuel use. [66] The connection to DER programs, however, would be challenging to determine in a meaningful way. Additionally, the trips data necessary to determine the locations of emissions reductions is not available. The resolution of available modeling tools is not sufficiently granular to determine impacts for the priority populations.

Shutoffs

Shutoffs as a metric may be potentially distributional, with impacts different for priority populations and all other customers. This metric would not overlap with others and has a link to stated Illinois equity goals to prevent disconnections. [67] However, it's unclear how beneficial electrification programs would impact shutoffs, and literature on this subject is limited. Data for shutoffs and beneficial electrification programs is not currently available.

Changes in Energy Consumption

This metric is tied to BE Plan goals to promote renewable energy integration and reduce gasoline consumption. [68] Data is available and on the desired resolution to analyze changes in energy consumption due to beneficial electrification program participation. While change in energy usage is a distributional metric, it overlaps with utility investment and participation.

Workforce, employment, and jobs

While Ameren's BE Plan is intended to have positive impacts on jobs, the program is in early stages and does not have enough participating contractors to draw equity conclusions about the jobs created by the programs. It is difficult to measure changes in jobs and other employment impacts for different population subsets (EIEC/LI communities), given how utilities currently track data.

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[65] CEJA, Section 45(d)(3).

[66] CEJA, Section 45(a)(10)(b).

[67] Illinois House Bill 2172. Available at https://legiscan.com/IL/text/HB2172/2023.

[68] CEJA, Section 45(a)(9).

Greenhouse gas impacts

Unlike air pollutants, which have direct and localized health impacts, greenhouse gases exacerbate the impacts of climate change globally. Climate change leads to more extreme temperatures, precipitation events, storms, flooding, spread of disease, and loss of biodiversity, among other impacts. Oftentimes, priority populations are more at risk from these types of weather events. For example, priority populations may be more likely to live in flood zones due to lower housing costs.

To effectively measure greenhouse gas emissions impacts of a DER for a DEA, a metric would need to capture the impact of weather-related impacts on priority populations. However, correlating climate-related weather events to the greenhouse gas reductions from a single DER on a small scale would be extremely challenging. Additionally, greenhouse gas emissions impacts are already included in BCA results.

Public health impacts

Estimating the public health impacts from beneficial electrification plans is complicated. While beneficial electrification programs reduce emissions from combustion vehicles, the location of these emissions changes requires detailed vehicle trip data. Beneficial electrification programs also increase energy consumption overall, which impacts power plant dispatch and emissions. Lastly, available modeling tools do not estimate public health impacts on the resolution needed for this analysis. For further discussion on modeling public health impacts, refer to the next section.

Table 10 summarizes the metrics included and not included in the DEA, based on the reasons presented in the above section.

Table 10: Ameren BE Plan DEA metrics summary

Consideration	Distributional	Discrete	Tied to equity goals	DER impact	Data availability	Data resolution	Suitability
Key questions answered	*Will the results differ for priority populations vs. all other customers?*	*Will this metric avoid double-counting results if combined with other metrics?*	*Can the metric be tied to state equity goals?*	*Does the metric have a direct causation/correlation with the DER being implemented?*	*Is there data available to use the metric for the DEA?*	*Is there data available at the desired resolution for all customers vs. priority populations?*	*Overall, how suitable is the DEA metric for the case study?*
Rate Impacts	*No*	*No*	*Yes*	*Yes*	*Yes*	*Yes*	*Strong*
Bill Impacts	*Yes*	*No*	*Yes*	*Yes*	*Yes*	*Yes*	*Strong*
Participation	*Yes*	*Potentially*	*Yes*	*Yes*	*Yes*	*Yes*	*Strong*
Utility Investment	*Yes*	*Potentially*	*Yes*	*Yes*	*Yes*	*Yes*	*Strong*
Air Emissions	*Potentially*	*Yes*	*Yes*	*Potentially*	*No*	*No*	*Low*
Shutoffs	*Potentially*	*Yes*	*Yes*	*Potentially*	*No*	*No*	*Low*
Changes in Energy Consumption	*Yes*	*Potentially*	*Potentially*	*Yes*	*Yes*	*Yes*	*Moderate*
Workforce, employment, and jobs impacts	*Potentially*	*Yes*	*Yes*	*Potentially*	*No*	*No*	*Low*
Greenhouse gas impacts	*No*	*Potentially*	*Yes*	*Yes*	*No*	*No*	*Low*
Public health impacts	*Potentially*	*Yes*	*Potentially*	*Potentially*	*No*	*No*	*Low*

Deep Dive: Modeling public health impacts from avoided emissions from DERs

Work Group members were highly interested in measuring the public health benefits from Ameren's BE Plan. While the Project Team was unable to analyze this given lack of data, this section is a deeper dive into how public health benefits from DER programs could be theoretically quantified, in response to this critical Work Group feedback.

DER programs such as EE can reduce fossil-fuel-based air emissions, leading to improved public health.[69] Yet, estimating public health impacts from beneficial electrification plans is complicated. For instance, beneficial electrification programs reduce emissions from combustion vehicles but may increase emissions from power plants. In addition, the location and magnitude of these emissions changes are difficult to estimate.

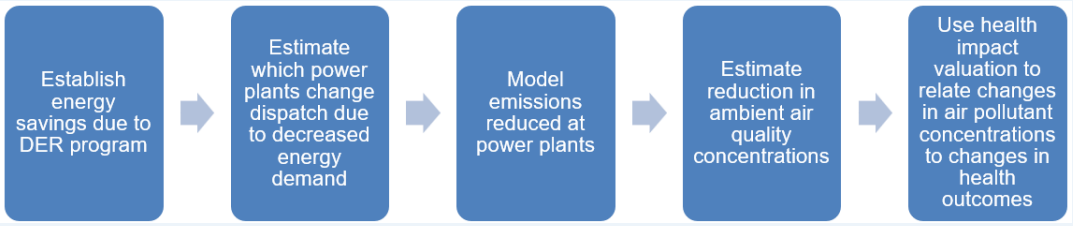
The U.S. Environmental Protection Agency (EPA) developed two tools to estimate public health impacts from energy storage, renewable energy, and EE programs:

- Avoided Emissions and geneRation Tool (AVERT) – estimates avoided emissions from a given DER program[70]
- CO-Benefits Risk Assessment Health Impacts Screening and Mapping Tool (COBRA) – assesses how emissions changes lead to changes in ambient air quality concentrations and estimates monetized public health impacts[71]

These tools estimate impacts on a county-level resolution, which is too coarse for this analysis. The Ameren BE Plan defines impacts on a census-tract or smaller level. In addition, year-over-year changes in a beneficial electrification program such as ChargeSmart are likely to be on the order of a couple of thousand participants per year. The scale of the programs in Illinois is too small for meaningful impacts to materialize.

Figure 10 outlines the process to estimate health impacts from an EE or beneficial electrification program. First, an analyst would estimate changes in energy due to a DER program. As energy demand changes, power plants alter their dispatch to meet demand. AVERT estimates which power plants change their operating behavior and estimates resulting air emissions changes. Next, a model such as COBRA estimates how emissions changes lead to a change in air quality concentration and monetizes these changes in air quality concentrations to represent dollar benefits in terms of improved health due to reduced air emissions.

Figure 10: Process to estimate health impacts from DER programs



[69] ACEEE. 2025. "What are Distributed Energy Resources?" Available at https://www.aceee.org/topic/distributed-energy-resources.

[70] U.S. Environmental Protection Agency. 2024. "AVoided Emissions and geneRation Tool." Available at https://www.epa.gov/avert.

[71] U.S. Environmental Protection Agency. 2024. "CO-Benefits Risk Assessment Health Impacts Screening and Mapping Tool." Available at https://www.epa.gov/cobra.

4.5. Stage 5: Application of metrics and data processing

Most of the data used for Ameren's BE Plan DEA came from Ameren's BCA workbook, which the Project Team obtained under a non-disclosure agreement. Section 4.4 lists other data sources the Project Team used.

Data processing methodology

The Project Team used the list of DEA metrics and Ameren's BCA workbook to break out participation, utility investment, and emissions by EIEC/LI and all other populations. Every program in Ameren's BCA workbook includes the following details:

- Customer sector served (e.g., residential, public, multifamily)
- Customer segment (EIEC/LI or all other customers)
- Type of benefit (i.e. Incentive or bill credit)
- Lifetime
- Level of investment
- Forecasted participation counts

For most metrics, the Project Team sorted, filtered, and summarized the data in Ameren's BCA workbook to show results broken out by EIEC/LI and all other customers. The calculation of bill impacts, as described below, followed a different process.

DEA Metric results

The results for the Ameren BE Plan metrics analyses appear below.

Participation

ChargeSmart: Participation in beneficial electrification programs can be measured in several ways. For ChargeSmart (the time-of-use rate program offering special EV rates and delivery credits), participation is measured as the number of vehicles participating in the program. Ameren estimates that EIEC/LI customers will drive 25 percent of the vehicles participating in ChargeSmart between 2026–2028. Ameren's customer base is approximately 32 percent EIEC/LI, so estimated participation is slightly less than that of the share of EIEC/LI customers.[72]

ChargeReady: Participation in ChargeReady can be measured as the number of chargers installed under the program or the number of vehicles charging at these newly installed chargers (Table 11). Ameren assumes that 85 percent of ChargeReady chargers will be installed for EIEC/LI customers. Ameren estimates that EIEC/LI customers receive 90 percent of all planned residential chargers and 60 percent of public and private sector chargers. Roughly 26 percent of all vehicles are expected to charge in EIEC/LI communities. Most of these vehicles will charge at publicly accessible chargers.

[72] Ameren Illinois Corporation. 2024. *Ameren Illinois' Refiled Multi-Year Integrated Grid Plan*. Available at https://icc.illinois.gov/docket/P2023-0082/documents/348085/files/607904.pdf.

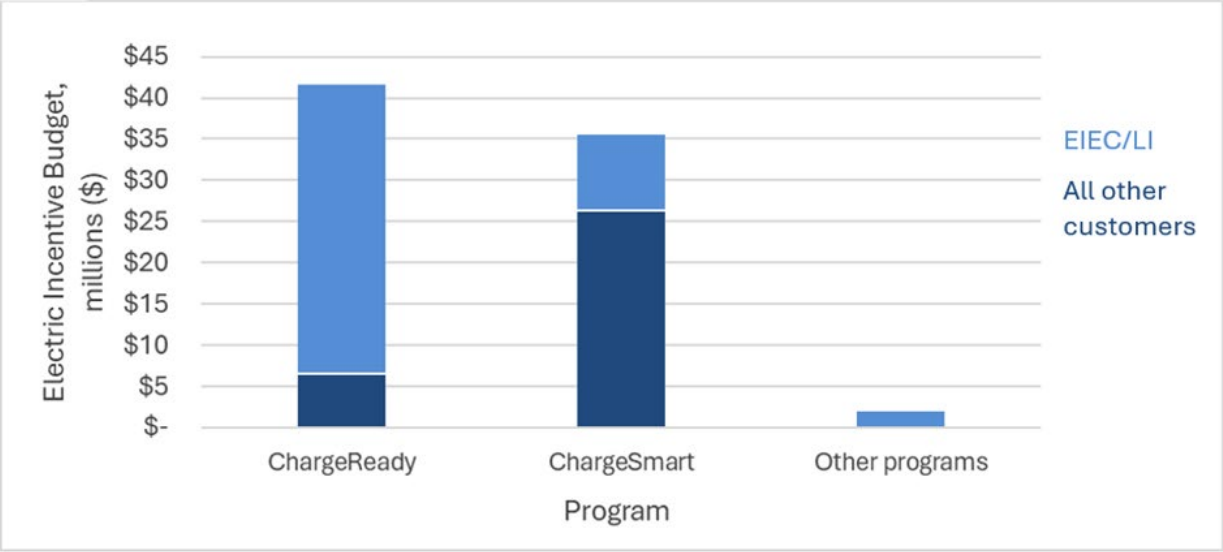
Table 11: Ameren BE Plan participation

Program	Participation Metric	EIEC/LI	All other customers	Total
ChargeSmart	Vehicles	4,602	13,352	17,954
ChargeReady	Chargers installed	4,742	864	5,606
	Vehicles supported	14,986	43,576	58,562

Utility investment

Ameren's three-year electric incentive budget is approximately $79 million, 98 percent of which is for ChargeReady and ChargeSmart. As shown in Figure 11, 84 percent of ChargeReady and 26 percent of ChargeSmart program budget is intended to be spent on EIEC/LI populations. The charger incentives in the ChargeReady residential program are exclusively offered to EIEC/LI customers, which is seen by the high percentage of program budget dedicated towards EIEC/LI customers, as shown in Figure 11. Ameren offers roughly $5 million for supplemental line extensions for all other customers under this program.

Figure 11: Ameren 2026-2028 BE Plan electric incentive budget



Note: includes all incentive spending (including bill & delivery credits) and excludes any non-incentive spending (administrative, IT, and overhead costs).

Rates

Ameren conducted a rate impact analysis to determine how the BE Plan portfolio would impact customers' rates.[73] Ameren found that, overall, the entire BE Plan portfolio will lower customer

[73] Ratepayer impact measure (RIM) test available in BE Plan #2 at https://www.icc.illinois.gov/docket/P2024-0494/documents/352385/files/616708.pdf.

rates. The Project Team further distilled these results to evaluate how individual programs (ChargeSmart and ChargeReady) would directionally impact customer rates.

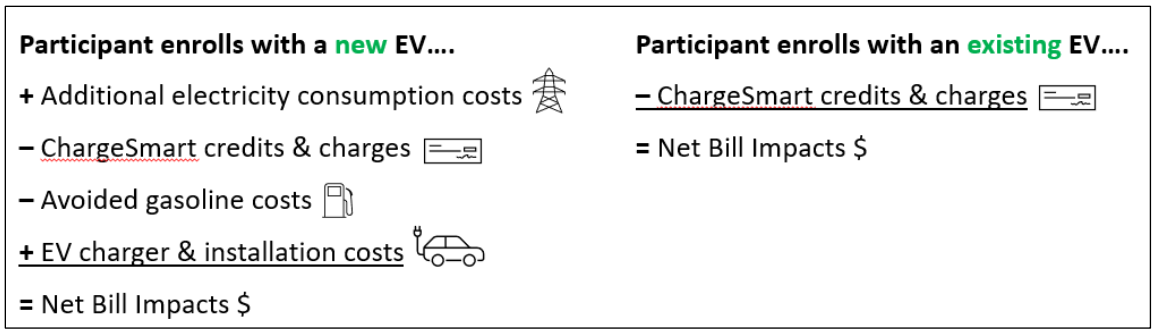
- **ChargeSmart**: On average, all customers in Ameren's service territory will see lower rates from ChargeSmart. This is due to a net reduction in electricity costs and an increase in electricity sales that allows Ameren to recover fixed costs over greater sales. Participants in ChargeSmart will experience additional downward pressure on rates since participants will charge more efficiently with time-of-use rates. Non-participants will experience lower rates on average. Rate impacts for EIEC/LI customers and all other customers are equivalent.
- **ChargeReady**: ChargeReady by itself will increase customer rates. This is due to a net increase in electricity costs despite an increase in electricity sales. However, participants in ChargeReady must also enroll in ChargeSmart. Therefore, these customers will see downward pressure on rates, but it is unclear if the rate reductions will exceed the rate increases for participants. Non-participants will see the same impact as all customers, i.e., slightly higher rates. Rate impacts for EIEC/LI customers and all other customers will be equivalent.

Bills

The Project Team estimated residential bill impacts from participation in ChargeSmart and ChargeReady. The categories of costs and benefits included in the bill impact analysis are presented in Figure 12. The Project Team calculated bills using data available in the BCA workbook plan, Ameren's tariffs, and external data.

- **ChargeSmart**: As shown in Figure 12, a customer who enrolls with a new EV or plug-in hybrid vehicle (PHEV) will consume additional energy leading to higher energy costs. Due to participation in ChargeSmart, they will experience additional bill savings due to the program's special rate structure. Participants will see gasoline costs decline or disappear, but they will need to pay for the EV charger and installation. The sum of these costs and savings yields net monthly bill impacts. Customers who enroll with an existing EV already have higher energy consumption, installed an EV charger, and are experiencing lower gasoline costs. Therefore, the only change for existing EV participants are the bill impacts from special ChargeSmart rates.

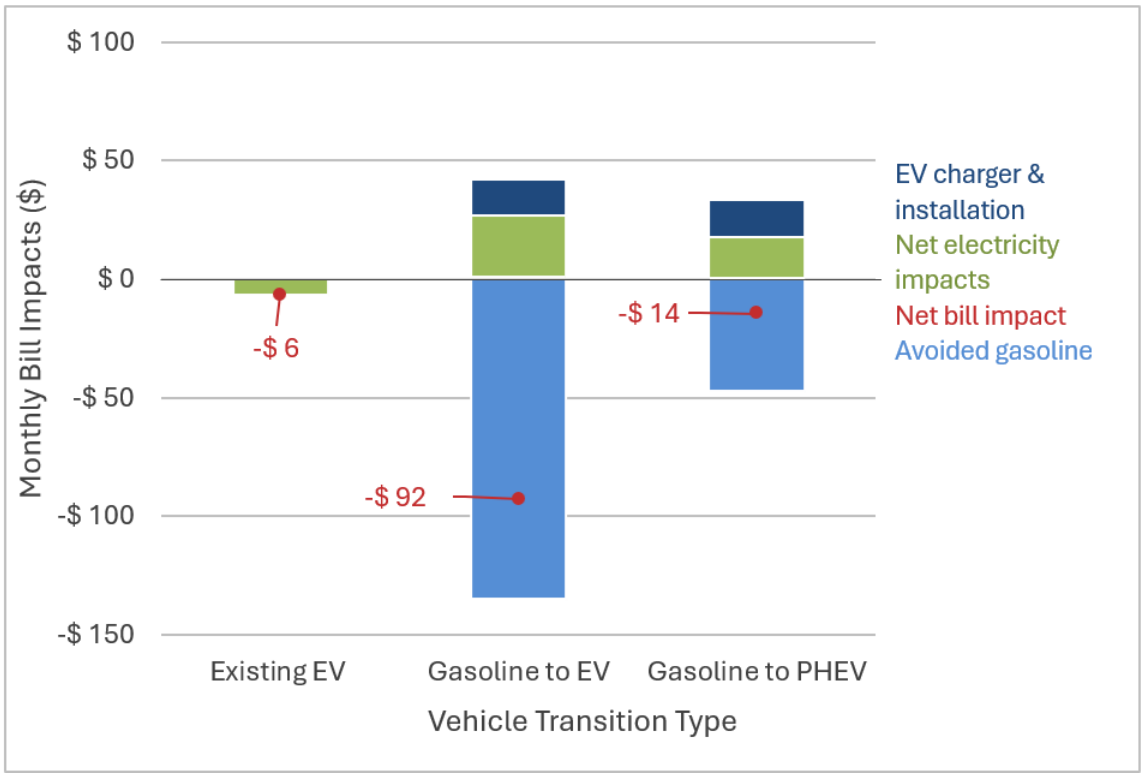
Figure 12: Bill impact analysis overview



As shown in Figure 13, ChargeSmart participants that replace their existing gasoline vehicle with an EV will see the highest net bill savings, mostly attributed to avoided gasoline costs. The net

electricity costs, which include added energy usage and ChargeSmart credits and charges, are a net cost for customers enrolling with a new EV or PHEV. Participants that replace their existing gasoline vehicle with a PHEV will see some net bill savings. Participants that enroll with an existing EV will only see minor net bill savings due to the special EV rates and bill credits. All participants, regardless of EIEC/LI status, experience net monthly bill reductions: a savings of $92 for customers enrolling with a new EV and savings of $14 for customers enrolling with a new PHEV.

Figure 13: ChargeSmart first year monthly participant bill impacts

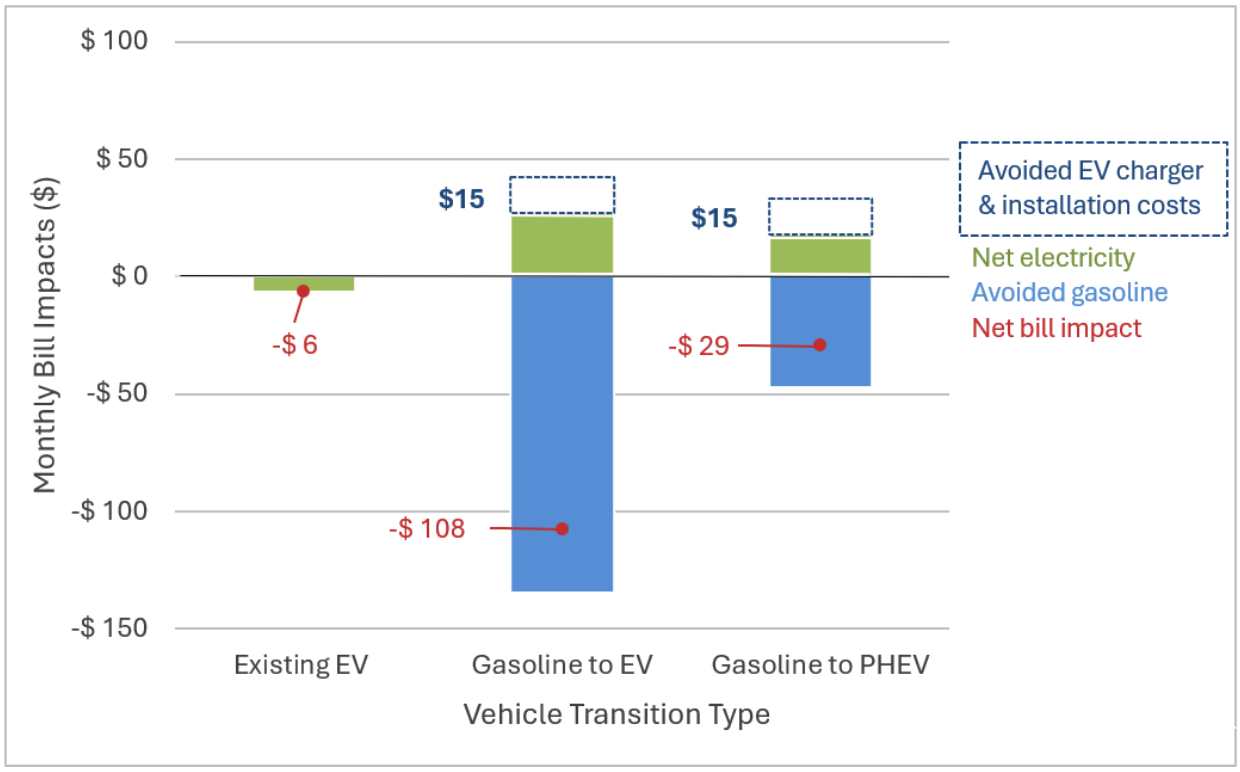


Note: On average, non-participants will experience a reduction in rates from this program based on the results of the Ameren BCA.

- **ChargeReady:** Residential ChargeReady is available only to EIEC/LI customers, and participants must also enroll in ChargeSmart. For residential customers, ChargeReady covers 100 percent of charger purchase and installation costs. The bill impact of this program is $15 in monthly savings[74] from avoiding these costs, in comparison to customers who must pay for their own charger and installation costs. Net monthly bill impacts for EIEC/LI customers are a savings of $108 for customers enrolling with a new EV and savings of $29 for customers enrolling with a new PHEV (Figure 14).

[74] Levelized over the 10-year charger lifetime.

Figure 14: ChargeReady first year monthly bill impacts



Note – ChargeReady participation requires that participants are enrolled in ChargeSmart. Hence, this data includes ChargeSmart bill impacts as well.

Deep Dive: Urban and rural access to EV chargers

ChargeReady: Based on Work Group interest, the Project Team mapped the locations of publicly accessible EV chargers using data from the U.S. Department of Energy's Alternative Fuels Data Center.[75] The Project Team analyzed this data to provide context for existing inequities in public access to EV chargers currently located in Ameren's service territory. Ameren plans for 40 percent of the 60 total publicly accessible EV chargers in its BE Plan to be in EIEC/LI communities. Currently, there are 837 publicly accessible chargers spread across Ameren's service territory (not affiliated with Ameren). Roughly 60 percent of these chargers are in EIEC communities.[76]

The Project Team mapped the distribution of public EV chargers to understand how access to chargers varies by geography (i.e., urban areas compared to rural areas). On average, rural EIEC communities have the lowest count of public chargers per 10,000 people. Rural EIEC communities on average also live the furthest from the nearest publicly accessible charger: 13.9 miles, while rural non-EIEC communities are on average 12.2 miles from the nearest charger (Figure 15). These results (see Table 12) suggest that (a) there are spatial inequities in access to public chargers, and (b) a more robust network of publicly accessible chargers in Illinois, especially in rural areas, might spur more EV adoption. As previously mentioned, this does not include private home chargers. Rural communities in particular need both private home chargers and publicly accessible chargers since these populations are often driving longer distances. Additional information on the distribution of private chargers would shed additional light on the issue of charger access.

Work group members emphasized that EV charger access does not equate to receiving benefits unless the customer owns an EV. Results from the EV charger mapping analysis suggest that EIEC populations have roughly equal or slightly higher access to EV chargers. However, it says nothing about the extent to which these populations own EVs. For example, EV chargers located along highways and major transit routes likely serve long-distance travelers rather than the local host community. Reducing barriers to EV adoption for EIEC/LI customers is as important as siting new EV chargers.

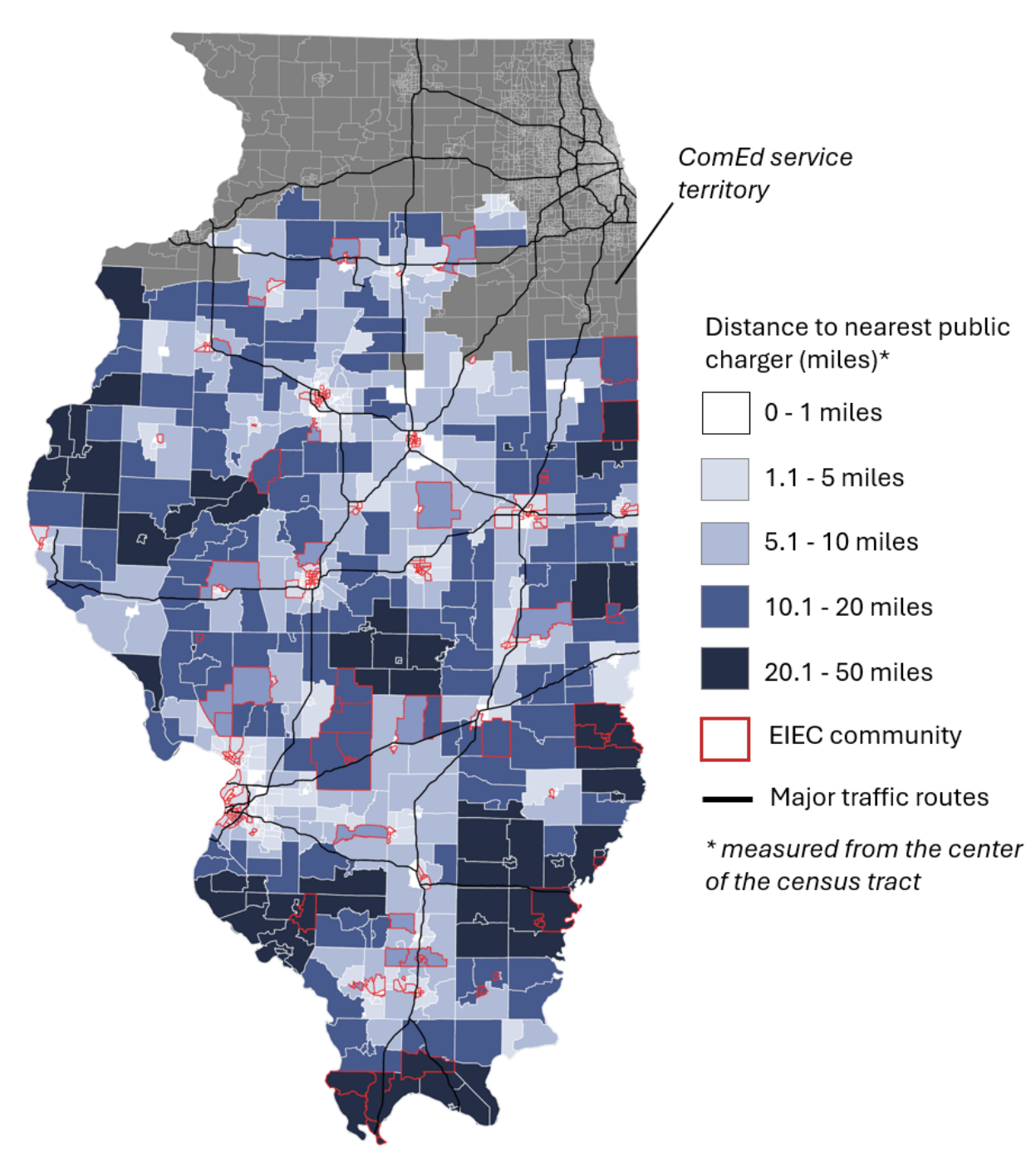
Table 12: EV charger access for urban and rural populations

Metric	Location	Customer Group		
		EIEC	*Non-EIEC*	*All Ameren*
Public chargers per 10,000	Rural	0.5	0.7	0.7
	Urban	4.2	4.1	4.1
	Average	3.5	2.2	2.5
Distance to nearest public charger	Rural	13.9	12.2	12.4
	Urban	2.6	3.5	3.1
	Average	4.8	8.4	7.4

[75] U.S. Department of Energy – Energy Efficiency and Renewable Energy. 2024. "Electric Vehicle Charging Locations." Available at https://afdc.energy.gov/fuels/electricity-locations#/find/nearest?fuel=ELEC.

[76] These charger counts do not include private residential chargers, which are most common and useful for communities in rural areas. Private charger data is not readily available, so this analysis focuses on the publicly accessible chargers.

Figure 15: Distance to nearest public chargers in Ameren's service territory



Source: Synapse, 2025.

Deep Dive: Air emissions summary

While the Project team could not estimate public health impacts, the Work Group was very interested in how Ameren calculates avoided emissions in its plan. The Ameren BCA workbook provided enough data for the team to summarize air emissions impacts.

- Emissions savings are the sum of avoided emissions from replacing combustion vehicles, increased emissions from additional electricity generation, and avoided emissions from load-shifting during peak periods due to time-of-use rate programs.
- To calculate avoided emissions, the Project Team grouped the estimated avoided emissions in Ameren's BE Plan BCA workbook into emissions reduced by EIEC/LI customer participation and all other customer participation.
- The Project Team found that 87 percent of nitrogen oxides and 50 percent of carbon dioxide emissions reductions would be due to vehicles forecasted to be driven by EIEC/LI customers who participate in ChargeSmart and ChargeReady.
- Almost all the emissions reductions from EIEC/LI participation would be due to ChargeReady and the avoided emissions from gasoline-switching.

Analysis limitations: Data on emissions reductions from switching to EVs lacks a spatial component. While Ameren can estimate which type of customer is participating in the program and the quantity of emission reduced by that participant, *where* the emissions reductions will occur is unknown. For example, an EIEC/LI participant may live in one community but do 90 percent of their driving in other areas. Emissions reductions would occur in the community where the participant is driving (data on vehicle trips is unavailable). To understand the spatial component of emissions reductions, Ameren would need to conduct a trips study to map the travel patterns of newly electrified vehicles and participating drivers. Additionally, there will be increases in energy consumption and energy generation as more Illinoisians drive EVs. Estimating the changes in fossil fuel combustion to accommodate new EV energy demand requires the use of tools such as COBRA and AVERT (see above), but even then these EPA models do not produce results on a scale fine enough for a DEA analysis.

Ameren is conducting a neighborhood-level emissions assessment in 2025, which may help shed light on where emissions reductions occur for communities whose members participate in beneficial electrification programs. In summary, while over half of emissions reductions (carbon dioxide, nitrogen oxides, and particulate matter) are due to EIEC/LI participation, it is inconclusive where these emissions reductions will occur. Because it is not clear these reductions lead to health benefits for EIEC/LI customers, emissions do not represent a good metric for the Ameren BE Plan DEA.

To understand the spatial component of emissions reductions, Ameren would need to conduct a trips study to map the travel patterns of newly electrified vehicles and participating drivers.

4.6. Stage 6: DEA results

A summary of the metrics for each program is shown below in Table 13 and Table 14. ChargeSmart benefits are weighted more (i.e., accrue in greater proportion) towards all other customers rather than EIEC/LI customers. This is seen through higher participation rates and utility investment for all other customers, and equivalent rate and bill impacts between the customer groups. In other words, this program does not focus its offerings or benefits to EIEC/LI customers.

The opposite is true for ChargeReady, where most benefits are weighted towards EIEC/LI customers. ChargeReady will have a higher share of utility investment and participation for EIEC/LI customers as compared to all other customers. Additionally, Ameren offers EIEC/LI customers 100 percent coverage for home chargers in its residential ChargeReady subprogram.

Table 13: Summary of ChargeSmart metrics

Metric	EIEC/LI customers	All other customers
Participation *(vehicles)*	26%	74%
Utility investment	26%	74%
Rate impacts (program-level)	rates reduced	rates reduced
1st year monthly bill savings	$6–$92	$6–$92

Table 14: Summary of ChargeReady metrics

Metric	EIEC/LI customers	All other customers
Participation *(chargers)*	84%	16%
Participation *(vehicles)*	26%	74%
Utility investment	84%	16%
Rate impacts (program-level)	rates increased	rates increased
1st year monthly bill savings	$6-$108	Not available

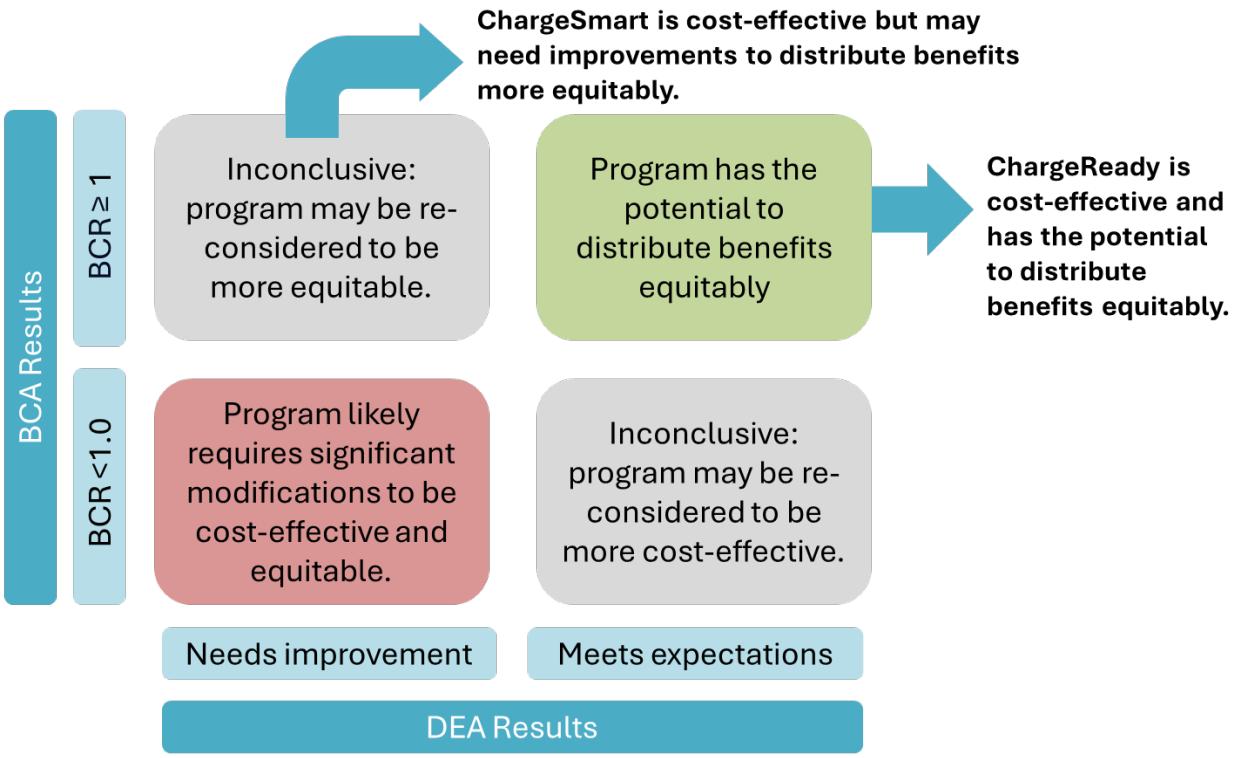
4.7. Stage 7: Comparison to BCA results and make resource decisions

The last stage of the DEA involves drawing conclusions from the results of the DEA and BCA. BCA results will indicate whether the program or portfolio is cost-effective or not. Similarly, the DEA metrics results will indicate whether a program or portfolio will distribute benefits equitably or will require modifications to do so.

The Project Team evaluated ChargeSmart with rates, bills, participation, and utility investment. Using these metrics, the Project Team found that ChargeSmart is cost-effective but may need modifications to fully reach and provide proportional benefits to EIEC/LI populations. The program has relatively low EIEC/LI investment and participation in comparison to other customer groups.

In contrast, the Project Team found ChargeReady to be cost-effective and has the potential to distribute benefits equitably. Figure 16 shows where the two programs fall on the equity quadrant presented previously.

Figure 16: DEA and BCA results for ChargeSmart and ChargeReady



4.8. Case study-specific conclusions and recommendations

Topics of Work Group discussion and feedback

During the Work Group meetings on the Ameren BE Plan case study, the Project Team heard comments and questions from participants. The following is not meant to be an exhaustive list; it is a high-level summary of common themes and areas of discussion.

- Concern about the **EV adoption barriers**, including cost of EVs and lack of charging infrastructure (*see* Deep Dive: Urban and rural access to EV chargers)
- Interest in **other Illinois and private programs** to fund **EV charger deployment**
- Interest in **assumptions** behind Ameren's **avoided emissions calculations** (*see* Deep Dive: Air emissions summary)
- Emphasis on **the importance of education and public outreach** in reaching underserved communities

The topics raised during the Work Group meetings directly informed case study findings and recommendations.

A complete record of meeting notes from the Work Group meetings can be found at the DEA case study website.[77]

Findings and recommendations

Ameren-specific case study recommendations are below. Recommendations common to *both* the Ameren BE Plan and ComEd EE DEAs are detailed in Section 6.

Priority populations

In its BCA and plan, Ameren assumes 25 percent EIEC/LI participation for several of its programs (i.e., of the participants in a program, 25 percent will be EIEC/LI). Ameren does not explain what this assumption is based on. It appears to be an aspirational goal.

- *Recommendation*: For a more transparent BE Plan, Ameren should fully describe and justify this assumption. If it is an aspirational goal, then it is important to review the actual participation rate in the next evaluation cycle of the programs and determine whether a different participation rate is appropriate for future plans. Revisiting this assumption would take relatively little effort but is high priority, considering how much of the BE Plan participation counts hinge upon this key number.

Metrics

Plan targets: Currently, there are no explicit participation or utility investment targets for Ameren's BE Plan portfolio.

- *Recommendation*: Ameren uses a variety of plan assumptions for participation by EIEC/LI customers and utility investment. As an ongoing practice, Ameren could consider using retrospective evaluation practices to confirm that plan assumptions were met.

Utility data access: Data on participation, investment, and energy savings can be challenging to access for the general public.

- *Recommendation*: Ameren may want to consider setting up, or partnering with a third party to set up, an easily accessible and usable dashboard to display aggregated program data, split out by EIEC/LI and other customers. This would be a moderately difficult lift for the utility but would enable more transparency between customers and the utility. CBOs and work group participants may have useful input into what dashboard data would be useful to their organizations.

Other

Integrating CEC program lessons: While not analyzed as part of this DEA due a lack of program data, Ameren does have a beneficial electrification program – the Community Engagement and Consultation program – dedicated towards helping individual communities develop and implement solutions related to EV charging and beneficial electrification.

- *Recommendation*: A high priority recommendation is for Ameren to share the lessons learned during this program with stakeholders. Best practices and

[77] deacasestudy.org; redirecting to https://www.mwalliance.org/illinois-dea-case-study.

community-led solutions could help inform outreach and education methods and potentially program offerings.

EV adoption barriers: A key hurdle in the implementation of Ameren's BE Plan is the upfront costs of purchasing or leasing an EV, especially for low-income customers. EIEC/LI customers must own or lease an EV to participate in ChargeSmart or ChargeReady. Studying EV adoption barriers may be a time- and resource-intensive process.

- *Recommendation:* Ameren, with the help of third-party analysts (for example, a university or consultant group), could spearhead a study into the cost and access barriers that customers in their service territory face when thinking about purchasing an EV.

- *Recommendation:* The study could include a map of existing EV charger distribution. This would help to identify which areas lack access to public chargers and require access to home charging. In turn, having this information would help Ameren focus on specific communities for programs helping customers install at-home chargers.

5. DEA for Commonwealth Edison's Energy Efficiency plan

This section describes the second case study: ComEd's EE plan.

5.1. Stage 1: Stakeholder Engagement

As described in Section 3, the Project Team convened a Work Group and held eight work group meetings over the 16-month project to solicit feedback on the various DEA stages. The Work Group included representatives from ComEd who were involved in data sharing and access. Staff from the ICC attended meetings and provided guidance throughout the meeting process.

5.2. Stage 2: Articulation of the DEA context

As described in Section 1.2, articulating the DEA Context sets the project scope. The components of the DEA context include the selection of the DER type; the specific DEA application (such as evaluating a single program, assessing a portfolio, or comparing multiple programs); and the chosen timeframe (prospective or retrospective).

In consultation with the Work Group, the Project Team selected the ComEd EE plan as the case study application. ComEd is one of the state's larger utilities, serving a diverse mix of urban and rural areas. The Project Team anticipated that a larger utility would have more extensive data collection and reporting practices than smaller ones. As to the choice of EE programs (as opposed to programs for other DERs), the utilities have been operating EE programs in Illinois for over a decade, undergoing multiple rounds of review and refinement. Consequently, EE programs possess a more extensive history compared to the beneficial electrification programs. This history provides a helpful foundation for analysis, including detailed reports on customer participation and spending over time.

Informed by the preferences of the Work Group, the Project Team opted for a retrospective analysis, focusing specifically on the 2022–2025 EE programs. At the time of this case study, ComEd was in the process of filing its 2026–2029 EE Plan. Work Group members hoped to gain insights from this retrospective DEA to inform and enhance the design of 2026-2029 EE Plan. While this case study could not be completed in time to provide insights for the 2026-2029 EE Plan, this case study aims to support improvements during the 2026-2029 Plan period or in future cycles.

Initially, the Project Team envisioned the ComEd case study as a comprehensive (rather than streamlined) DEA, given the extensive history and familiarity with EE programs in the state. The analysis concentrated on the residential sector programs, which include offerings for income-eligible customers in addition to market-rate programs.

Table 15 details the components of the second DEA case study.

Table 15: DEA context for ComEd case study

DEA context component	Case study
Utility type	Electric
Utility	Commonwealth Edison (ComEd)
DER type	EE
DEA Application	Residential EE programs
Timeframe	Retrospective (first three years of 2022-2025 EE Plan)

Background on ComEd energy efficiency programs

As mentioned in Section 2.3, electric utilities in Illinois are required to file four-year EE plans aimed at achieving a set level of energy savings each year.[78] The 2022-2025 EE Plan is ComEd's sixth EE plan since 2008.

ComEd's plan includes several initiatives to assist residential and business customers in improving EE. ComEd's plan includes residential programs, including rebates for energy-efficient appliances and smart thermostats that help customers reduce energy usage. For business customers, ComEd provides incentives for upgrading lighting, HVAC systems, and other equipment. Table 16 describes ComEd's residential programs in more detail. The residential programs account for 35 percent of the total 2022-2025 EE portfolio budget.[79]

ComEd offers additional support for low-income residential customers, including free energy savings products. Starting in 2022, CEJA requires ComEd to allocate a minimum of $40 million per year to low-income customers in its EE Plan.[80] Through ComEd's 2022-2025 EE Plan stipulation agreement, ComEd committed to an average annual investment of $100 million per year in income-eligible programs, or roughly 24 percent of the average annual total budget.

[78] Section 8-103B of the Public Utilities Act.

[79] ComEd. *Revised Energy Efficiency and Demand Response Plan 2022-2025*. Docket No. 21-0155. Filed March 1, 2022. Table 5-2. Available at: https://www.icc.illinois.gov/docket/P2021-0155/documents/321073/files/558684.pdf.

[80] Public Utilities Act 220 ILCS 5/8-103B(c) Available at: https://www.ilga.gov/legislation/ilcs/ilcs4.asp?DocName=022000050HArt%2E+VIII&ActID=1277&ChapterID=23&SeqStart=10900000&SeqEnd=17100000.

Table 16: Summary of ComEd 2022-2025 residential EE programs

Program	Description
Retail/Online*	Rebates for Energy Star certified appliances, home products and lighting products
Single Family Upgrades*	Free assessments and installation of energy savings products
Multifamily Upgrades*	Efficiency upgrades for multifamily properties, including gas[81] and electric measures for tenant units and common areas
Whole Home Electric*	Comprehensive upgrades and weatherization to convert income-eligible single-family and multifamily buildings to all-electric
Product Distribution*	Kits and distribution of products through Food Banks, Food pantries and other partners
Residential New Construction*	Affordable Housing New Construction and Electric Homes New Construction
Contractor/Midstream Rebates	Incentives for replacing heating & cooling equipment with energy efficient measures
Home Energy Reports	Reports on household energy usage patterns and personalized efficiency advice, including behavioral principles

**Includes income-eligible offerings such as higher incentives and enhanced program delivery.*

Source: ComEd 2022-2025 EE and DR Plan, available at: https://www.icc.illinois.gov/docket/P2021-0155/documents/321073/files/558684.pdf.

BCA results for ComEd's energy efficiency plan

In Illinois, utilities are required to determine the cost-effectiveness of their EE portfolios using the TRC test (see Section 2.3). Table 17 lists the impacts (costs or benefits) included in ComEd's TRC test for its EE Plan. The EE portfolio is considered cost-effective if the benefits are greater than the costs, i.e., the BCR is greater than one. Per statute, each utility's EE *portfolio* needs to be cost-effective, but individual programs do not and low-income programs do not.[82]

[81] This program is offered jointly with Nicor Gas, Peoples Gas, and North Shore Gas.

[82] Public Utilities Act (220 ILCS 5/8-104(b))). Available at: https://www.ilga.gov/legislation/ilcs/ilcs4.asp?DocName=022000050HArt%2E+VIII&ActID=1277&ChapterID=23&SeqStart=10900000&SeqEnd=17100000.

Table 17: Impacts included in ComEd's Total Resource Cost (TRC) test

Impact Type	Impact Category	TRC Test
Utility System	Electric Energy	cost or benefit
	Electric Capacity	cost or benefit
	Fossil Fuel Costs	cost or benefit
	Program Administration	cost
Host Customer	Avoided replacement costs	benefit
	Incremental Measure Costs	cost
Other	Water Costs	benefit
Societal Impacts	Environmental adder (greenhouse gases)	cost or benefit
	Societal Non-energy Impacts (NEI) (Public health benefits from emissions and pollutant reductions)	benefit

Figure 17 shows the TRC results for ComEd's residential sector programs for the past two years of program implementation.[83] As a whole, ComEd's residential programs were cost-effective in 2022 and 2023, with overall BCRs of 4.9 and 4.4 under the TRC.[84,85]

Individually, the Multifamily Upgrades and Single-Family Upgrades programs are not cost-effective without consideration of societal non-energy impacts (NEI) (shown in Figure 17 as hatched bar segments). [86] However, these programs include significant income-eligible offerings, and they are not required to be cost-effective on their own.

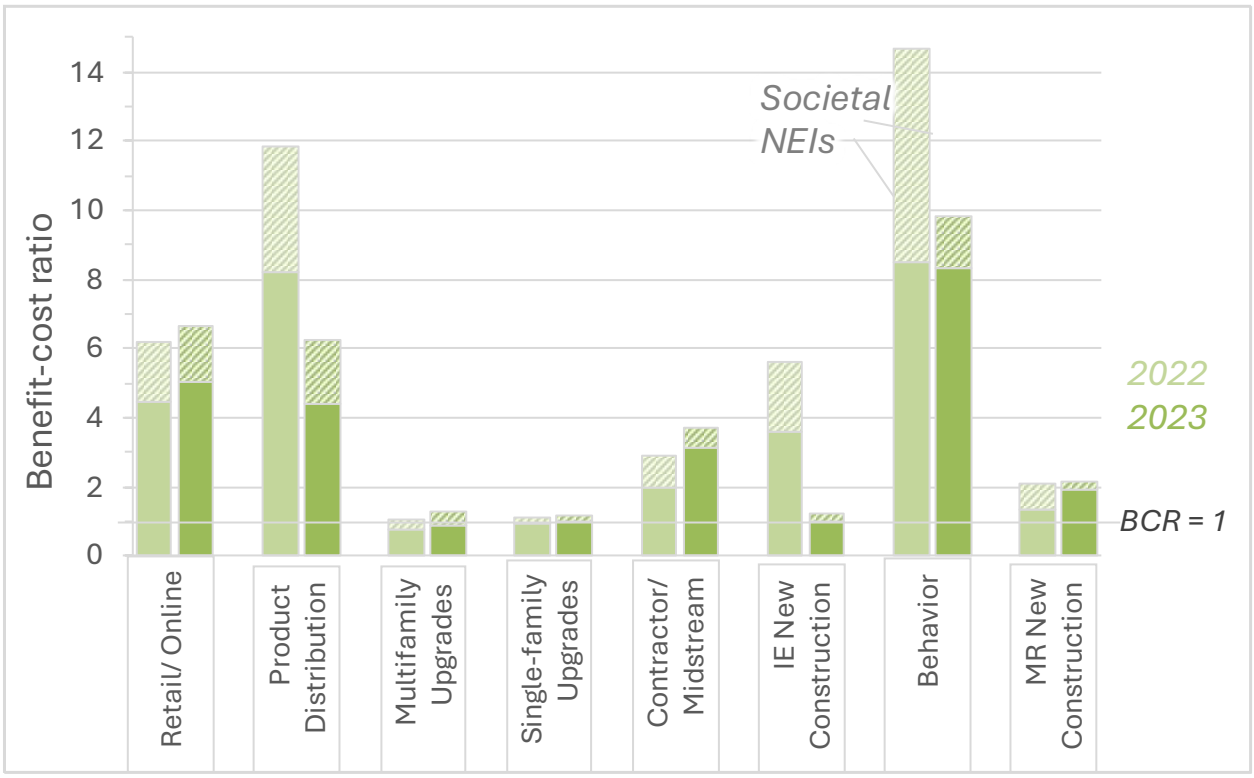
[83] At the time of this report, evaluated cost-effectiveness reports were only available for 2022 and 2023.

[84] Guidehouse. 2023. *ComEd Cost-Effectiveness Analysis CY2022 Report.* Prepared for ComEd. June 28. Available at: https://www.ilsag.info/wp-content/uploads/ComEd-CY2022-TRC-Report-23-06-28-Final.pdf.

[85] Guidehouse. 2024. *ComEd Cost-Effectiveness Analysis CY2023 Report.* Prepared for ComEd. June 28. Available at: https://www.ilsag.info/wp-content/uploads/ComEd-Cost-Effectiveness-Analysis-CY2023-Report-2024-06-28-Final.pdf.

[86] Societal NEIs are monetized public health benefits. These benefits occur when EE programs reduce electricity generated from fossil fuels which reduces emissions of criteria pollutants, which in turn causes reduced adverse health impacts. Utilities calculate NEIs as required by FEJA, available at https://www.ilga.gov/documents/legislation/publicacts/99/PDF/099-0906.pdf.

Figure 17: TRC results for residential sector by program, 2022 and 2023



5.3. Stage 3: Definition of priority populations

As discussed in Section 1.2, **priority populations** are the set of electric or gas utility customers who warrant additional attention to address equity concerns, consistent with the jurisdiction's energy equity policy and with stakeholder input.

To choose priority populations for ComEd EE program, the Project Team:

- reviewed definitions in state statute, including CEJA
- reviewed existing state and utility definitions for income-eligible customers already in use in the EE programs, and
- solicited input from stakeholder representatives during Work Group meetings.

For the first step, the Project Team reviewed CEJA, which defines priority populations as low-income. Further, this law requires the utilities to dedicate a set portion of the EE portfolio budget to programs for low-income customers.[87] As defined by CEJA, low-income (income-eligible) households are those households whose income does not exceed 80 percent of area median

[87] 220 ILCS 5/8-102B(c) https://www.ilga.gov/legislation/ilcs/ilcs4.asp?DocName=022000050HArt%2E+VIII&ActID=1277&ChapterID=23&SeqStart=10900000&SeqEnd=17100000.

income, adjusted for family size and revised every two years.[88] For the Chicago area in ComEd's service territory, this translates to an annual household income of less than $95,900 for a four-person household.[89]

Regarding the second step, ComEd already uses CEJA's definition of low-income for determining eligibility and for data tracking, consistent with the statutory requirement. In situations where verifying customer income for eligibility is impractical or not feasible, the Illinois Energy Efficiency Policy Manual allows utilities to use geographic definitions of income eligibility. Some ComEd EE programs utilize income-eligible zip codes or census tracts to determine eligibility, which are zip codes or census tracts where at least 50 percent of the area's households meet this threshold.[90] (See Figure 18.)

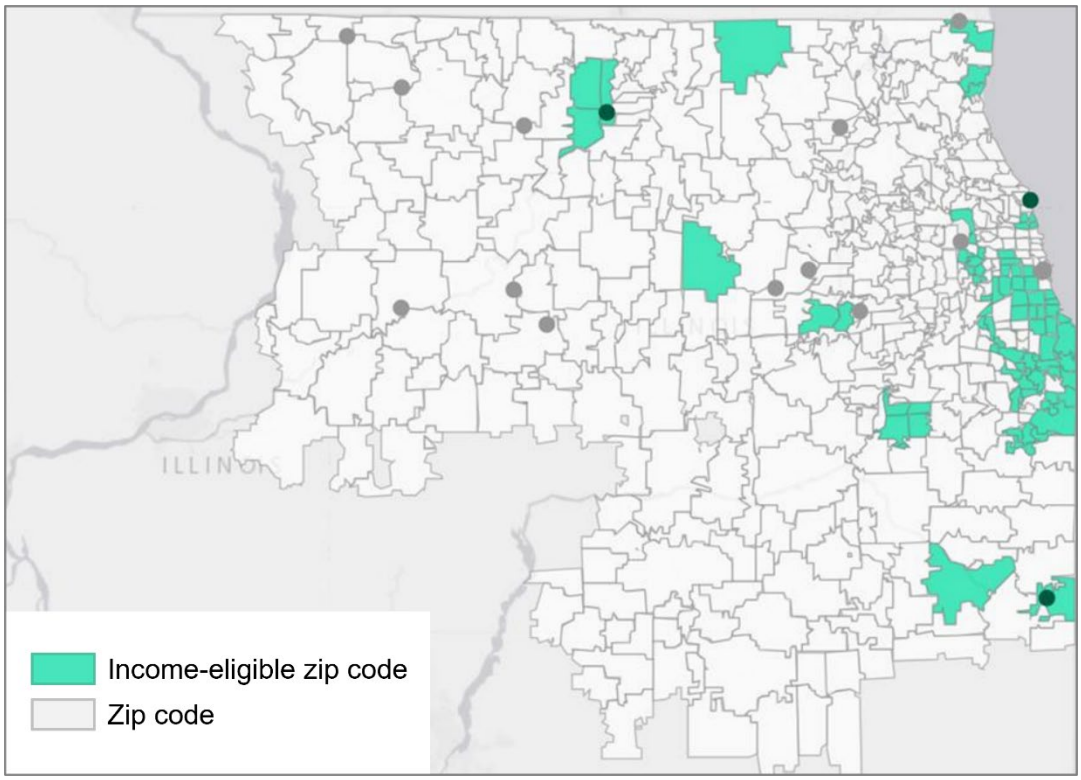
The Project Team discussed the above considerations with the Work Group. In light of available data and the statutory requirements, the Project Team recommended to the Work Group that the priority population for the ComEd case study be **low-income communities** (which ComEd calls income-eligible). The Work Group generally agreed with this proposal.

[88] 102-0662 § 10-10 (Sep 15, 2021), https://epa.illinois.gov/content/dam/soi/en/web/epa/topics/ceja/documents/102-0662.pdf.

[89] City of Chicago. 2025. "Area Median Income (AMI) Chart." Available at: https://www.chicago.gov/city/en/depts/doh/provdrs/renters/svcs/ami_chart.html.

[90] *Illinois Energy Efficiency Policy Manual Version 3.0*. Effective January 1, 2024. Available at: https://www.ilsag.info/wp-content/uploads/IL_EE_Policy_Manual_Version_3.0_Final_11-3-2023.pdf.

Figure 18: Income-eligible (IE) zip codes in ComEd service territory



Source: ComEd, Elevate. 2024. "Income Eligibility Analysis: ComEd 2024 Update." Presented at June 12th SAG Meeting. Available at: https://www.ilsag.info/wp-content/uploads/SAG_ComEd-2024-Update-on-Income-Eligible-Analysis_20240612.pdf

5.4. Stage 4: Development of metrics

As discussed in Section 1, the term **DEA metric** refers to metrics used to determine if costs and benefits of a utility program or investment are equitably distributed between priority populations and other customers.

The Project Team used an iterative process to identify potential DEA metrics, including a review of equity goals in Illinois, utility reporting practices, and metrics suggested in the DEA Guide. The Project Team worked with ComEd to find data for this analysis, including signing a non-disclosure agreement to obtain access to utility data. The team used the following data sources for DEA metrics and related data:

- **2022-2025 Revised EE and DR Plan**: program descriptions, budget, energy savings forecasts[91]

[91] *Commonwealth Edison Company's Revised Energy Efficiency and Demand Response Plan 2022–2025*. March 1, 2022. Docket No. 21-0155. Available at: https://www.ilsag.info/wp-content/uploads/ComEd-2022-2025-Revised-EE-Plan_filed-March-2022.pdf.

- **Quarterly and annual EE reports (2022-2024)**: Participation, energy savings, utility investment data[92]
- **Testimony from relevant dockets**: benefit cost analysis methods in Docket 21-055, Revised ComEd 2022-2025 EE and DR Plan[93]
- **Communications with ComEd staff**
- **Program-specific data**: obtained via a non-disclosure agreement with ComEd

Table 18 on page 54 lists the potential metrics considered for the ComEd case study and the considerations for assessing them. A discussion of the metrics chosen and not chosen is presented below.

Metrics included

The Project Team selected three metrics to use for the ComEd EE DEA that reasonably meet the DEA criteria of being distributional, discrete, tied to equity goals, and impacted by EE programs. Each metric has data available at the appropriate level of resolution (i.e., broken out by income-eligible status). For this case study, the Project Team analyzed these chosen metrics for the residential sector programs, not the portfolio as a whole.

Program participation

Participation is distributional as it can quantify variation in participation in EE programs for different population subsets. Participation is also inherently tied to equity goals. Illinois statute requires utilities to offer programs for low-income customers. Participation is one of the best metrics to assess DER impact, as program participants receive the benefits of EE measures installed through the program. Participation overlaps with other metrics, such as utility investment and energy savings, and so it is not completely discrete.

Participation data is widely reported and publicly available. ComEd reports on program-level participation in its quarterly and annual reports.[94] However, not all income-eligible participation data is available geographically: ComEd reports total participation by program by zip code but does not break out the income-eligible subset of the program participation by zip code.

Utility investment

State equity goals clearly identify utility investment as a priority: CEJA requires ComEd to allocate $40 million per year to EE programs serving low-income customers.[95] The utility investment metric is distributional, as it directly measures which populations are receiving utility funding for a DER.

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[92] Quarterly reports filed in Docket No. 21-0155.

[93] Docket 21-055. Commonwealth Edison Company. *Approval of the Energy Efficiency and Demand Response Plan Pursuant to Section 8-103B of the Public Utilities Act.* Available at: https://www.icc.illinois.gov/docket/P2021-0155/documents.

[94] Quarterly and annual reports filed in Docket No. 21-0155

[95] 220 ILCS 5/8-102B(c) https://www.ilga.gov/legislation/ilcs/ilcs4.asp?DocName=022000050HArt%2E+VIII&ActID=1277&ChapterID=23&SeqStart=10900000&SeqEnd=17100000.

Similar to a participation metric, utility investment data is publicly reported and available in ComEd plans and reports. However, it is not available at the zip code resolution; it is only available for ComEd's programs as a whole across the entire service territory.

Energy savings

The energy savings metric is tied to equity goals: state statute requires utilities to offer EE programs to low-income households and additionally requires 25 percent of any electrification savings to come from low-income programs.[96] Energy savings can be distributional, as this metric can quantify changes in energy consumption for the different population subsets that are eligible for programs. This metric may be less discrete than other metrics, because it is closely related to bill impacts and participation. Nonetheless, the energy savings metric is a key way to determine DER impact, as the EE programs will have a direct impact on energy consumption for participants.

Data is available and reported publicly in ComEd's reports and plans. Some geographic data is available but does not break out income-eligible customers.

Metrics investigated but not included

The Project Team investigated but did not ultimately select the following set of metrics for the DEA analysis. In a majority of cases, the DER impact was not strong enough to tie to the DER being studied or data was not available. Data availability was a key limiting factor for this case study, given the timeline and scope.

Rate and bill impacts

Rate and bill impacts are directly related to the impact of the EE program, as rates reflect the costs of implementing the DER program as well as the benefits of the program. Rate and bill impacts are also tied to state equity goals and policies. For example, Illinois is implementing discounted rates for low-income customers, and CEJA has a goal to reduce rates.[97,98,99]

Bill impacts may be distributional, as participants in EE programs will see changes in their bills due to changes in energy consumption. However, rate impacts will not be distributional; residential rates will not vary for priority populations versus all other residential customers. Rate and bill impacts are also not discrete metrics; bill impacts combine rate impacts and energy savings.

There was insufficient data to estimate changes in rates and bills for this case study. Current data reporting practices regarding gas and electric EE and electrification measures did not allow the Project Team to break out key inputs to identify impacts on all customers for this DEA. In particular, it is difficult to isolate the actual impact on electric and natural gas sales and revenues from the claimed or reported natural gas or electrification measure energy savings.

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[96] 220 ILCS 5/8-102B(b-27) https://www.ilga.gov/legislation/ilcs/ilcs4.asp?DocName=022000050HArt%2E+VIII&ActID=1277&ChapterID=23&SeqStart=10900000&SeqEnd=17100000.

[97] Illinois Commerce Commission. 2022. *Low-Income Discount Rate Study Report*. https://icc.illinois.gov/downloads/public/icc-reports/low-income-discount-rate-study-report-2022-12-15.pdf.

[98] Illinois Commerce Commission. 2024. "Utility Energy Assistance." https://www.icc.illinois.gov/consumers/utility-energy-assistance.

[99] CEJA, Section 45(d)(1).

Shutoffs

Many low-income customers face challenges with paying bills and may be more likely to experience shutoffs. Bill savings can help program participants pay their bills and potentially avoid shutoffs.[100] Illinois recently passed a bill to add protections against shutoffs[101]

Analysts have investigated the relationship between shutoffs and EE programs.[102] ComEd commissioned a research study to assess the magnitude of utility non-energy impacts from income-eligible programs.[103] However, the study did not find a statistically significant difference in arrearages as a result of ComEd's programs, and some results were counter-intuitive. The study recommended further research into EE impacts on disconnections.

Data was not available for this study on shutoffs for EE participants. ComEd and other utilities report numerous disconnections and arrearage statistics in an online, public dashboard.[104] However, this public data does not allow for analysis of the impact of EE programs on shutoffs.

Workforce, employment, and jobs

The workforce, employment, and jobs metrics are discrete from other DEA metrics and are tied to state equity goals, including those established in FEJA and CEJA (see Section 2.2). EE programs will have an impact on workforce, employment, and jobs metrics.[105] ComEd provides estimates of the economic impacts of its programs, including direct and indirect effects on the Illinois economy, using IMPLAN, an industry-standard economic model.[106] However, these estimates are only at the state level.

In addition, ComEd has a Market Development Initiative that offers training, workforce development, and community and business support in the EE field.[107] ComEd reports progress on its Market Development Initiative in its quarterly and annual reports.

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[100] American Council for an Energy-Efficient Economy (ACEEE). 2023. Toward Affordable Energy Access: Approaches to Reducing Energy Unaffordability, Arrearages, and Shutoffs. https://www.aceee.org/sites/default/files/pdfs/toward_affordable_energy_access_-_approaches_to_reducing_energy_unaffordability_arrearages_and_shutoffs_-_encrypt.pdf.

[101] Illinois House Bill 2172. Available at https://legiscan.com/IL/text/HB2172/2023.

[102] NMR Group, Inc. 2022. *X1942A Cross-cutting NEI Study – Utility NEI and Arrearage Data Analysis Results*. Submitted to Connecticut Energy Efficiency Board. Available at: https://energizect.com/sites/default/files/2022-05/X1942A%20Cross-cutting%20Utility%20NEI%20Analysis%20Results%20REVIEW%20DRAFT%202022_05_10.pdf.

[103] Guidehouse. 2021. *ComEd Utility Non-Energy Impacts Research*. Available at https://www.ilsag.info/wp-content/uploads/ComEd-Utility-NEI-Overview_2021-04-19.pdf.

[104] Illinois Commerce Commission. "Credit, Collections, and Arrearages Reports Monthly Dashboard." Available at https://www.icc.illinois.gov/industry-reports/credit-collections-and-arrearages-reports/monthly-dashboard.

[105] ACEEE. *Fact Sheet: Energy Efficiency and Economic Opportunity*. Available at: https://www.aceee.org/files/pdf/fact-sheet/ee-economic-opportunity.pdf.

[106] Guidehouse. 2024. "Memorandum: ComEd CY2023 Energy Efficiency Program Economic and Employment Impacts – Final." June 25. Prepared for ComEd. https://www.ilsag.info/wp-content/uploads/ComEd-CY2023-Economic-Impacts-Memo-2024-06-25-Final.pdf.

[107] ComEd. 2025. "Market Development Initiative." Available at: https://comed.edgeenergy.io/.

Given how data is currently tracked, it is difficult to measure changes in jobs and other employment impacts for different population subsets such as low-income communities within the state.

Public health impacts of emissions reductions

Public health impacts are a priority in Illinois statute. Data and modeling tools are not granular enough to capture impacts on communities or neighborhoods. However, monetized public health benefits resulting from reduced emissions are accounted for in the TRC as Societal Non-Energy Impacts. (See the call-out box in Section 6.1 above.)

Table 18. Summary of metrics and considerations for ComEd EE DEA

Consideration	Distributional	Discrete	Tied to equity goals	DER impact	Data availability	Data resolution	Suitability
Key questions answered	*Will the results differ for priority populations vs. all other customers?*	*Will this metric avoid double-counting results if combined with other metrics?*	*Can the metric be tied to state equity goals?*	*Does the metric have a direct causation/ correlation with the DER being implemented?*	*Is there data available to use the metric for the DEA?*	*Is there data available at the desired resolution for all customers vs. priority populations?*	*Overall, how suitable is the DEA metric for the case study?*
Rate Impacts	*No*	*No*	*Yes*	*Yes*	*No*	*No*	*Low*
Bill Impacts	*Yes*	*No*	*Yes*	*Yes*	*No*	*No*	*Low*
Participation	*Yes*	*Potentially*	*Yes*	*Yes*	*Yes*	*Yes*	*Strong*
Utility Investment	*Yes*	*Potentially*	*Yes*	*Yes*	*Yes*	*Yes*	*Strong*
Shutoffs	*Potentially*	*Yes*	*Yes*	*Potentially*	*No*	*No*	*Low*
Energy Savings	*Yes*	*Potentially*	*Yes*	*Yes*	*Yes*	*Yes*	*Moderate*
Workforce, employment, and jobs impacts	*Potentially*	*Yes*	*Yes*	*Potentially*	*No*	*No*	*Low*
Greenhouse gas impacts	*No*	*Potentially*	*Yes*	*Yes*	*No*	*No*	*Low*
Public health impacts	*Yes*	*Yes*	*Yes*	*Yes*	*Potentially*	*No*	*Moderate*

5.5. Stage 5: Application of metrics and data processing

The majority of data used for ComEd's EE DEA came from ComEd's quarterly and annual reports. Section 5.4 lists other data sources the Project Team consulted.

Data processing methodology

For the ComEd case study, the analysis was mostly limited to compiling reported participation data. The Project Team took most of the metrics data directly from the utility reports but obtained some data directly from ComEd after signing a non-disclosure agreement. In general, the goal of a distributional analysis is to compare impacts and benefits between two population groups. Thus, the main analysis task is to understand the relative share and magnitude of impacts between these groups.

Metric results

The following sections present results for each of the chosen DEA metrics.

Participation

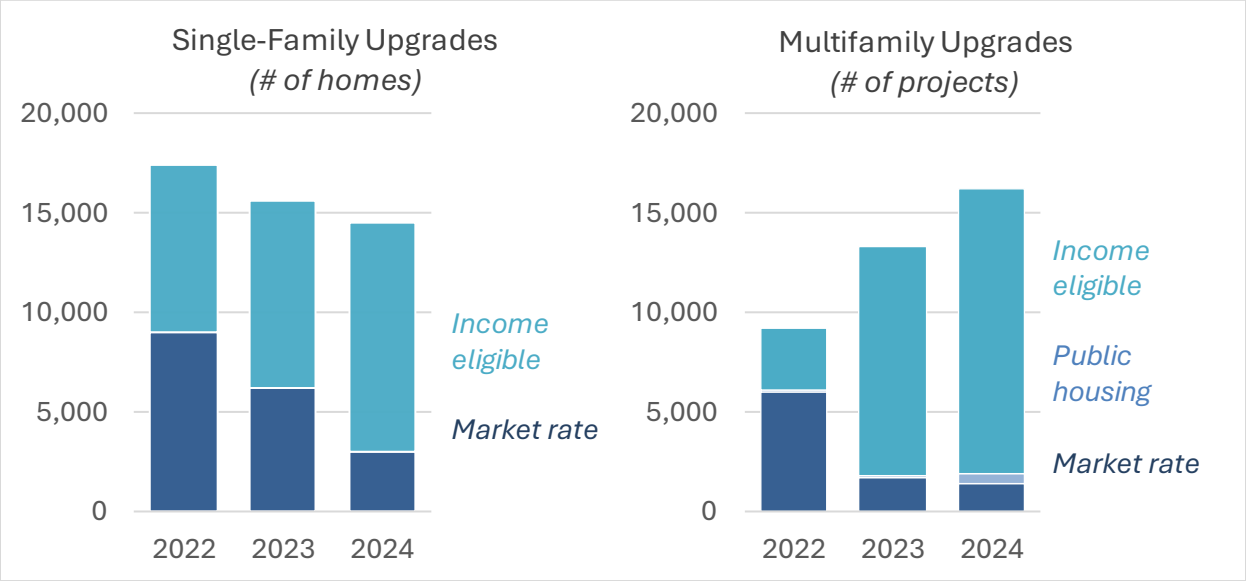
The Project Team assessed participation metrics for as many of the ComEd residential EE programs as possible. However, some programs do not track the same participation metrics between the income-eligible and market-rate subgroups due to the different types of measures or projects offered. For example, the market-rate[108] residential New Construction program tracks participation by the number of single-family homes, while the income-eligible new construction program tracks participation in terms of the number of projects. Thus, the Project Team could not make comparisons between the priority populations and all other populations as a single participation metric for all programs combined. Programs that use incongruent units of participation include Residential New Construction and Product Distribution. The other two programs, Contractor/Midstream Rebates and Home Energy Reports, are geared towards all residential customers and do not have specific offerings for income-eligible customers, nor do they track low-income participation.

Figure 19 shows participation in the Single-Family Upgrades and Multifamily Upgrades programs over the first three years of the current plan cycle. The Single-Family Upgrades program offers free assessments and installation of energy-saving products, with income-eligible customers receiving all products installed for free. Over the past three years, the program has supported efficiency upgrades in over 47,000 homes. Approximately 62 percent of these homes are income-eligible participants.

The Multifamily Upgrades program offers efficiency upgrades for multifamily properties. Over the past three years, the program has completed over 38,000 projects. Of these, 76 percent were income-eligible customers or public housing projects.

[108] "Market-rate" refers to programs not targeted towards income-eligible customers.

Figure 19: Participation in Single-family Upgrades (left) and Multifamily Upgrades (right), 2022-2024



Source: ComEd Quarterly Reports, available at: https://www.ilsag.info/reports/utility-reports/#comed.

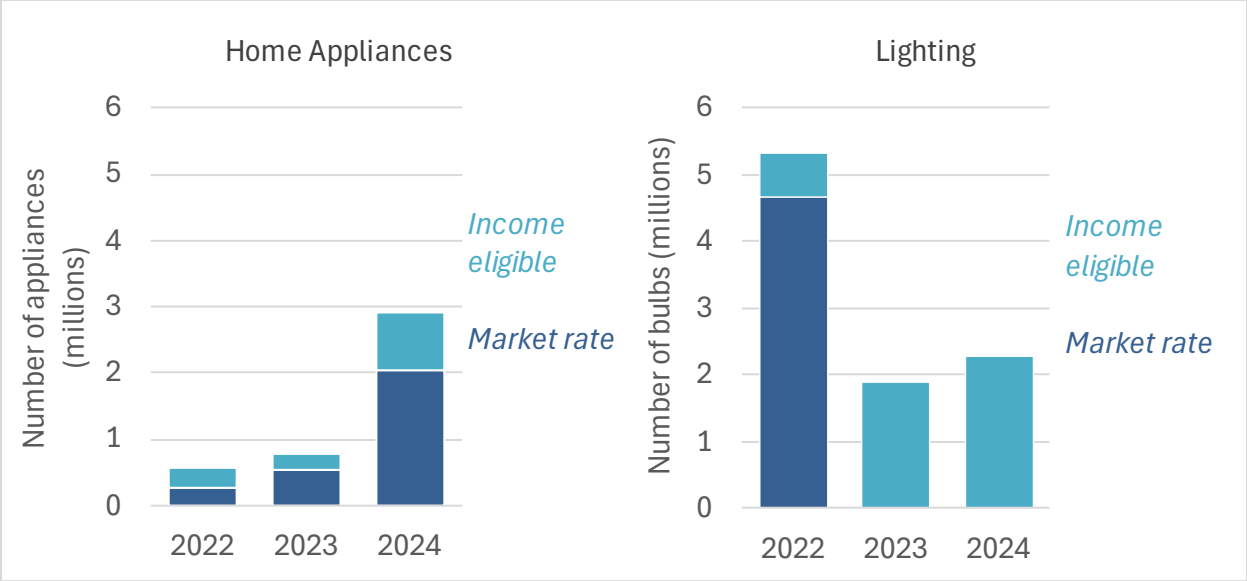
The Whole Home Electric program, launched in 2023, is entirely dedicated to income-eligible customers. Eligible participants include single-family, multifamily, and businesses income-eligible customers. Through the program, ComEd converts participants' homes to all-electric using highly efficient technologies. So far, the program has served 215 single-family homes and 402 tenant units in nine multifamily buildings.[109]

The Retail/Online program offers rebates for energy-efficient appliances and lighting products. ComEd reports participation in this program based on the type of measures: home appliance and lighting (see Figure 20). Through 2024, the program has provided rebates for over 4.2 million appliances and 9.4 million light bulbs.[110] In total, 33 percent of the appliance rebates were for income-eligible customers, and 51 percent of the lighting rebates were for income-eligible customers. Since 2023, the lighting rebates have only been offered to income-eligible customers.

[109] ComEd Quarterly Reports, available at: https://www.ilsag.info/reports/utility-reports/#comed.

[110] ComEd Quarterly Reports, available at: https://www.ilsag.info/reports/utility-reports/#comed.

Figure 20: Participation in Retail/Online program, home appliances (left) and light bulbs (right)



Source: ComEd Quarterly Reports, available at: https://www.ilsag.info/reports/utility-reports/#comed.

Table 19 summarizes the results for the participation metric. Across all of the program segments, the majority of the participants in these programs are income-eligible.

Table 19: Summary of program participation results

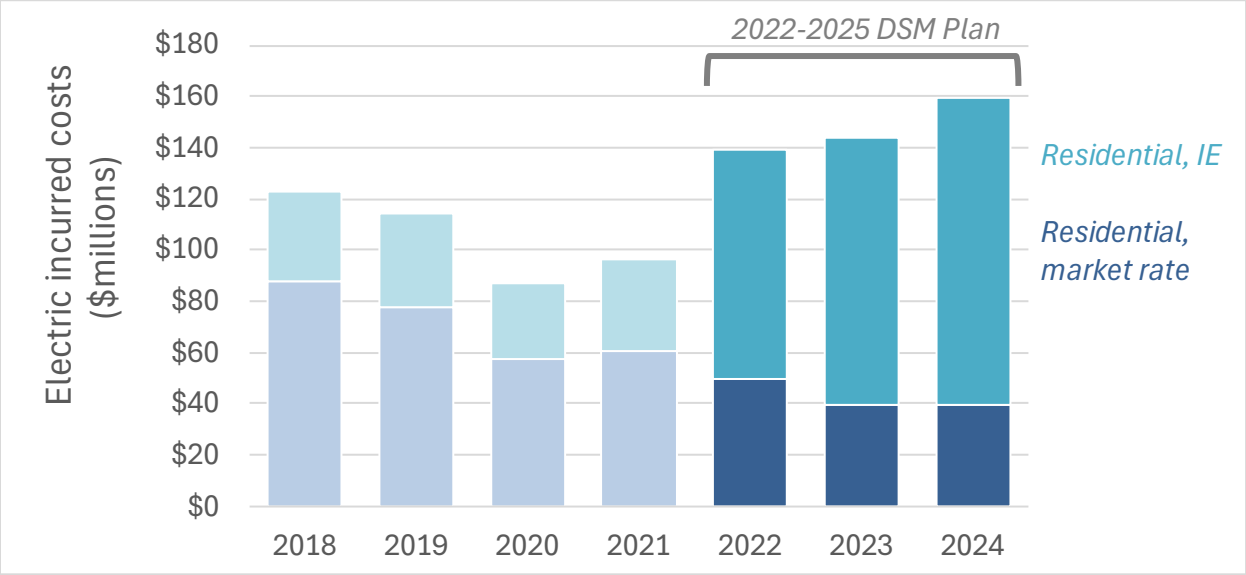
Program segment	Income-Eligible Participation	Equity Implication
Retail/Online - *appliances*	33%	*Income-eligible customers have slightly lower share of participation but receive higher incentives*
Retail/Online - *lighting*	51%	*Benefits weighted more towards income-eligible customers than other customers*
Single Family Upgrades	62%	*Benefits weighted more towards income-eligible customers than other customers*
Multifamily Upgrades	76%	*Benefits weighted more towards income-eligible customers than other customers*
Whole Home Electric	100%	*Benefits dedicated towards income-eligible customers*

Utility investment

Over the past three years of the current plan cycle, ComEd's total EE portfolio spending was $375 million per year on average, not including other costs such as administrative or research and development (R&D) expenses. The residential programs (market rate and income-eligible) make up 39 percent of the total EE portfolio, or approximately $150 million annually.

Figure 21 shows the residential program spending for the past two plan cycles. Over the past three years, income-eligible programs accounted for 71 percent of total residential spending. This is an increase from 32 percent in the previous plan cycle (2018-2021).

Figure 21: ComEd residential energy efficiency program spending

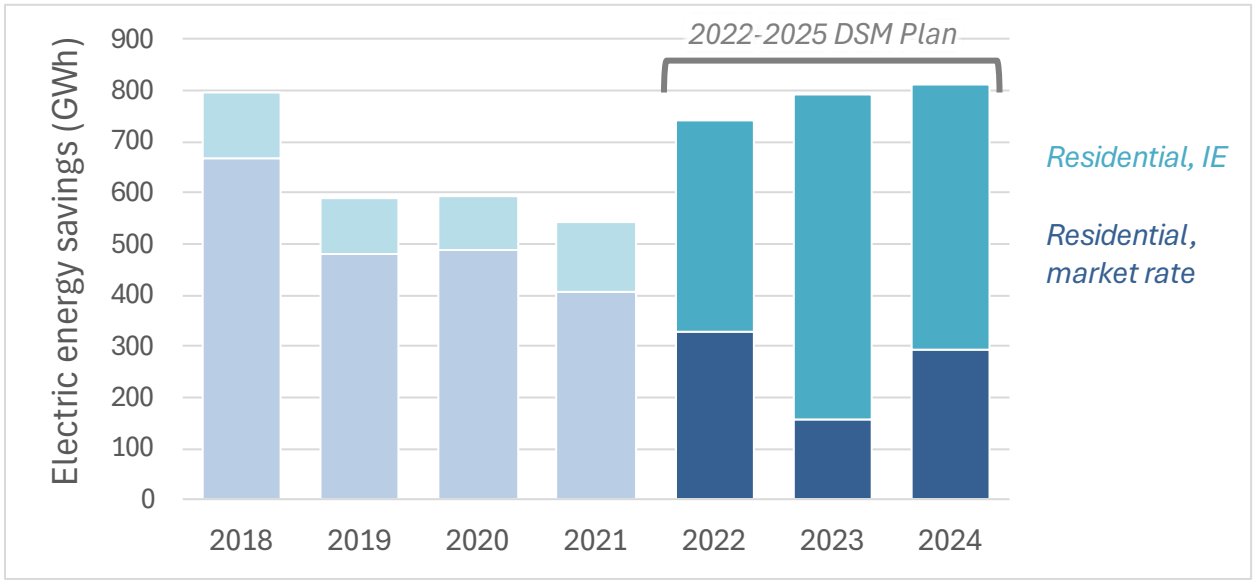


Source: ComEd Statewide Annual Reports, available at: https://www.ilsag.info/reports/utility-reports/#comed.

Energy Savings

Figure 22 shows residential energy savings for the past two program cycles. The energy savings from residential programs are approximately half of the total portfolio savings in the current plan cycle. Over the past three years, income-eligible programs account for 67 percent of total residential energy savings. This is more than double compared to the previous share of 19 percent in the 2018-2021 plan cycle.

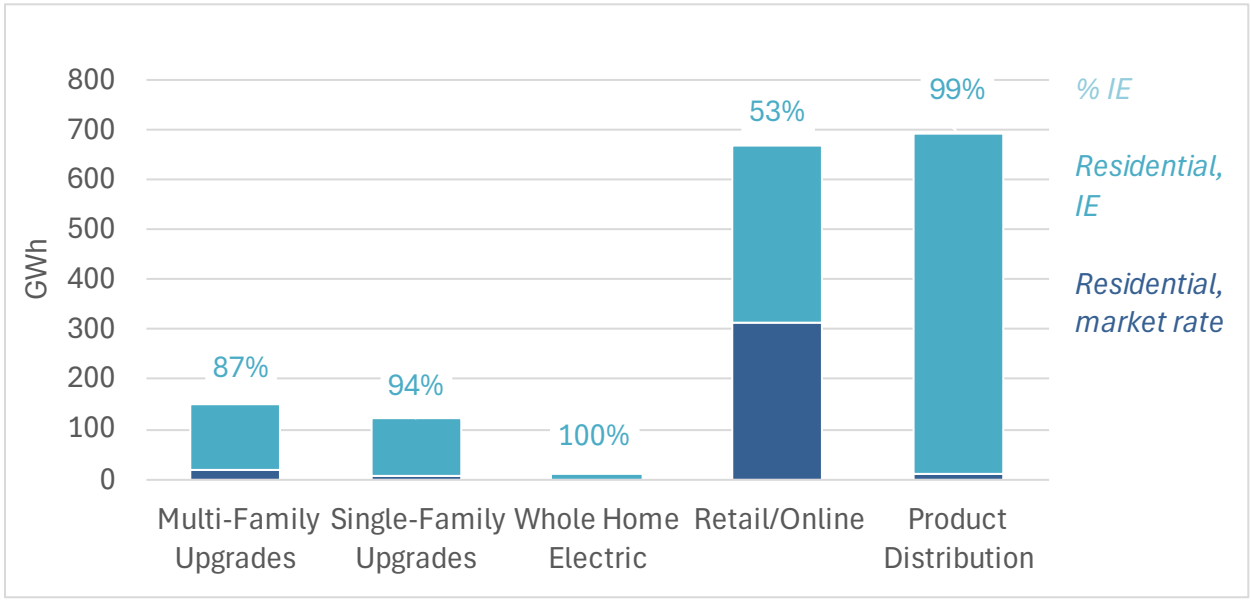
Figure 22: ComEd residential energy efficiency program energy savings



Source: ComEd Statewide Annual Reports, available at: https://www.ilsag.info/reports/utility-reports/#comed.

Figure 23 shows the total energy savings from 2022-2024 by program for ComEd residential EE programs with income-eligible offerings. Across all programs, the majority of energy savings are for income-eligible customers.

Figure 23: ComEd residential energy savings by program, 2022-2024



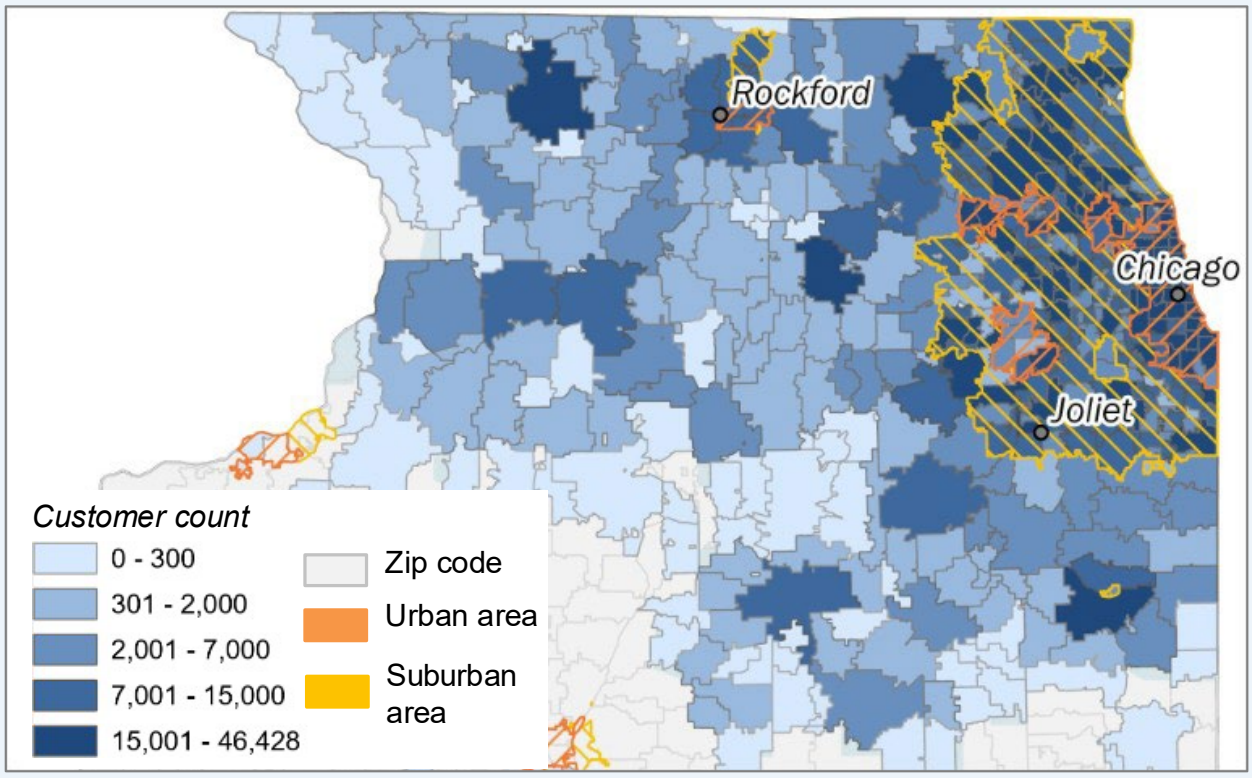
Source: ComEd Annual and Quarterly Reports, available at: https://www.ilsag.info/reports/utility-reports/#comed.

Deep Dive: Urban and rural participation in EE programs

The Project Team mapped available program data to understand how participation and energy savings outcomes vary by geography (i.e., urban areas vs rural areas). Rural customers often face additional barriers to adopting EE measures, including geographic isolation, availability of experienced contractors, and consumer awareness.[111] Furthermore, rural households face a disproportionately high energy burden (the share of income spent on energy bills) compared to the national average.[112]

The majority of ComEd's customers are in urban and suburban zip codes: 38 percent of ComEd's customers are in urban areas, 50 percent in suburban areas, and only 12 percent in rural areas (see Figure 24).

Figure 24: ComEd customers by zip code, 2023



Sources: 2023 Credit and Collections Arrearage Annual Reporting, ComEd, Filed May 1, 2024: https://www.icc.illinois.gov/chief-clerk-office/filings/list?sd=638396640000000000&dts=365&ft=2&dt=240&ddt=10127; National Center for Education Statistics. ZCTA Locale Classifications. https://nces.ed.gov/programs/edge/Geographic/ZCTAAssignments.

[111] MacDonald, S., Winner, B., Smith, L. *et al.* 2020. *Bridging the rural efficiency gap: expanding access to energy efficiency upgrades in remote and high energy cost communities*. Available at: https://doi.org/10.1007/s12053-019-09798-8.

[112] Ross, Drehobl, and Stickles. 2018. *The High Cost of Energy in Rural America: Household Energy Burdens and Opportunities for Energy Efficiency*. American Council for an Energy Efficient Economy. Available at: https://www.aceee.org/sites/default/files/publications/researchreports/u1806.pdf.

In 2022-2024, 39 percent of participants in the Single-family Upgrades program were in urban zip codes, 53 percent in suburban, and 9 percent in rural (see Figure 25). Compared to the share of ComEd's overall customer base by geography, this suggests that rural areas are participating at a slightly lower rate than urban and suburban areas.

Figure 25: Residential Single-Family Upgrades program participation, total 2022-2024

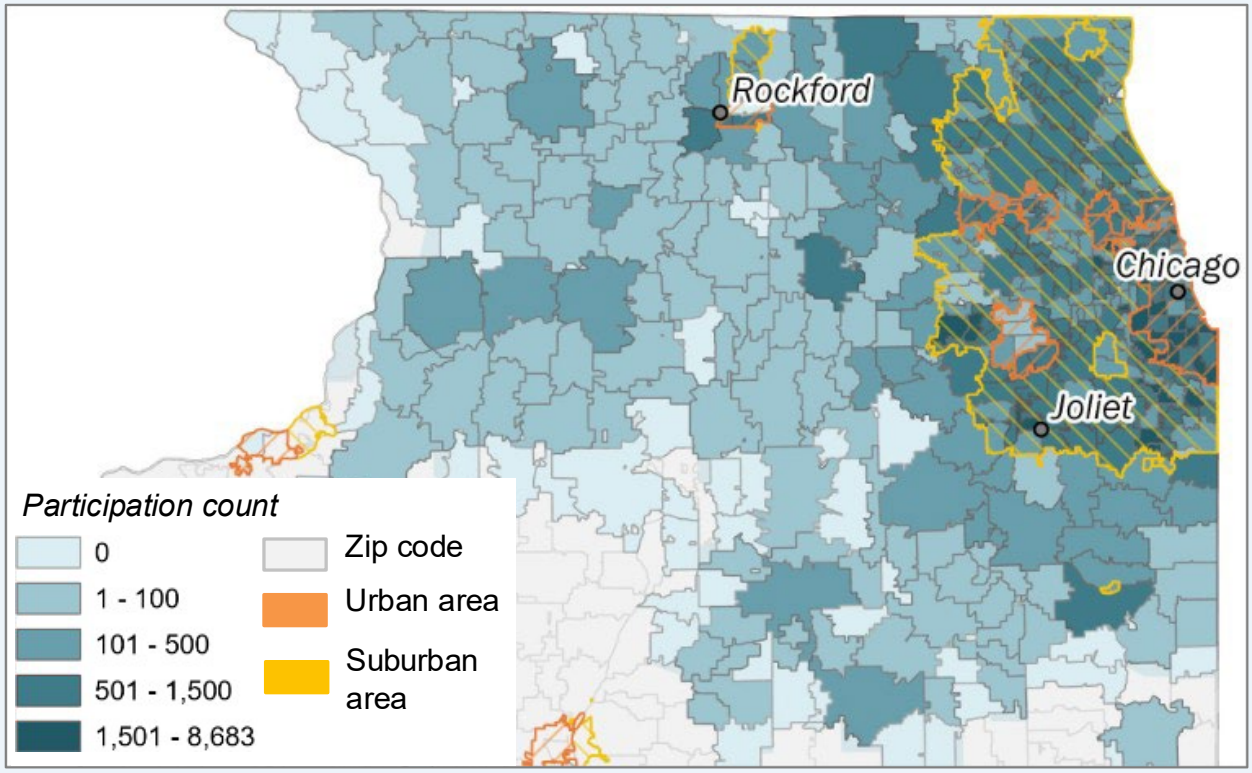
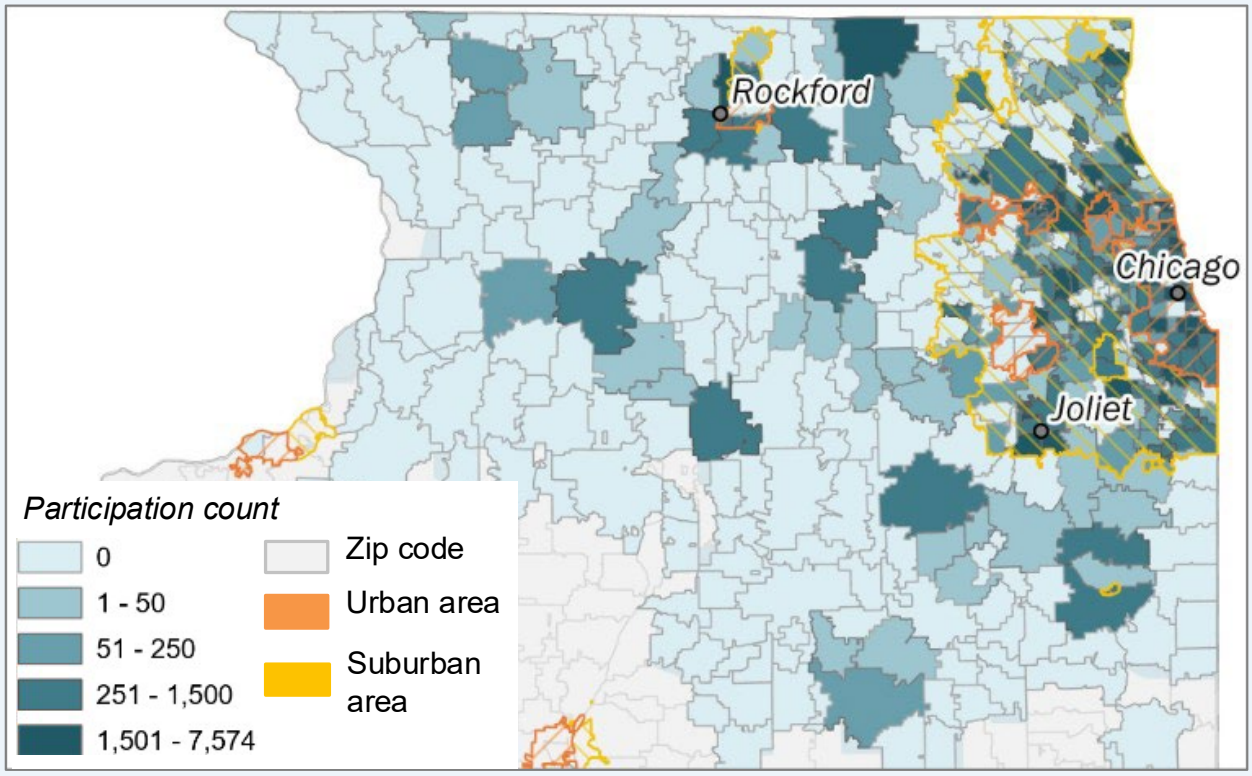


Figure 26 shows participation in the Multifamily Upgrades program from 2022-2024. There is a much higher share of participation for this program in urban areas relative to the share of ComEd customers: in the last three years, 45 percent of Multifamily Upgrades participation was in urban areas, 51 percent in suburban areas, and only 4 percent in rural areas. However, this does not account for the variation in housing stock across geographies. Higher urban participation is likely due in part to a higher density of multifamily housing in urban areas compared to rural areas.

Figure 26: Residential Multifamily Upgrades participation, total 2022-2024



5.6. Stage 6: DEA results

Table 20 summarizes the equity conclusions for each of the metrics proposed for the ComEd DEA. For the metrics the Project Team was able to analyze, the results show that overall benefits (in terms of participation, investment, and energy savings) are weighted more towards the priority population (income-eligible) than all other customers. Three metrics (rate impacts, bill impacts, shutoffs) did not have sufficient data to be included. Inclusion of those metrics would provide a fuller picture of the distributional equity implications of ComEd's residential EE programs.

Table 20: Summary of DEA metric results for ComEd DEA

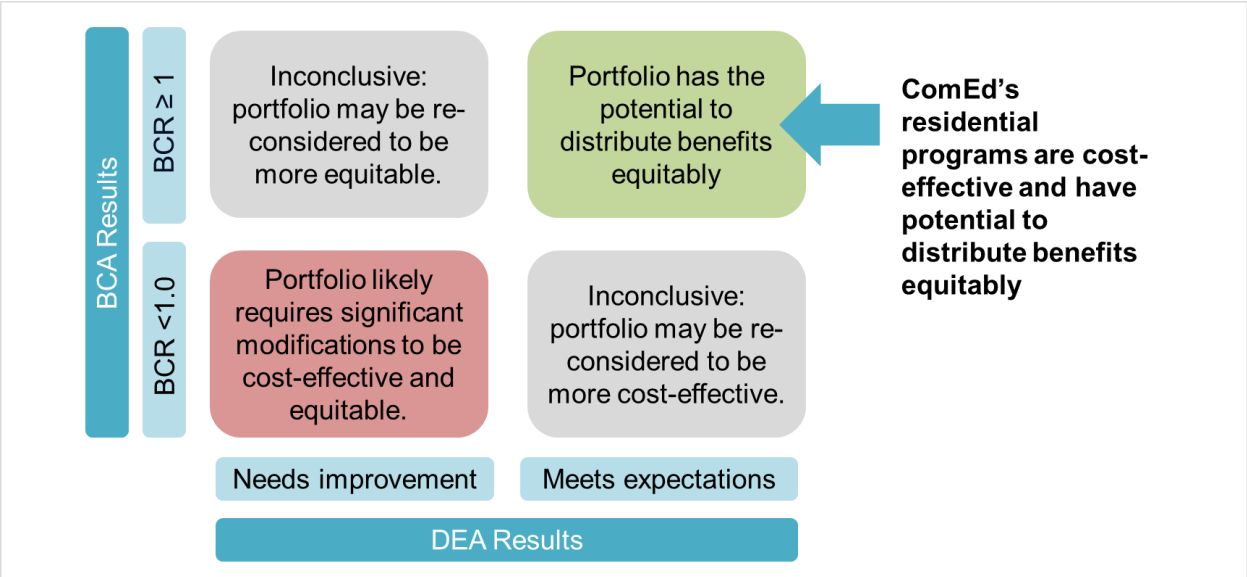
Metric	Conclusion
Participation	Benefits weighted more towards income-eligible customers than other customers
Utility investment	Benefits weighted more towards income-eligible customers than other customers
Energy savings	Benefits weighted more towards income-eligible customers than other customers
Rate impacts	Insufficient data
Bill impacts	Insufficient data
Shutoffs	Insufficient data (more research needed)

5.7. Stage 7: Comparison to BCA results and make resource decisions

The last stage of the DEA involves drawing conclusions from the results of the BCA and DEA metrics. BCA results will indicate whether the program or portfolio is cost-effective or not. Similarly, the DEA metrics results will indicate whether a program or portfolio will distribute benefits equitably or will require modifications to do so.

Based on the DEA conclusions presented in Table 20, ComEd's residential programs appear to meet expectations for distributional equity so far. Given the positive BCA results presented in Figure 17, the Project Team finds that ComEd's residential programs fall into the top-right quadrant of the decision framework (see Figure 27).

Figure 27: Decision framework for ComEd DEA



5.8. Case-study-specific conclusions and recommendations

Topics of Work Group discussion and feedback

During the Work Group meetings on the ComEd EE case study, the Project Team heard comments and questions from participants. The following is not meant to be an exhaustive list; it is a high-level summary of common themes and areas of discussion.

- Questions about how **low-income participants** are counted when using **zip code definition** for certain income-eligible programs
- Interest in **capturing long-term lifetime benefits** of EE measures (e.g., heat pump) and how they are captured in a BCA
- Concerns on how EE programs account for **diverse building stock in low-income communities**
- Concerns around **extreme heat impacts** and how EE can provide **cooling benefits to vulnerable populations**
- Desire and interest to **quantify bill and rate impacts** for ComEd's EE plan in the future

A complete record of meeting notes from the Work Group meetings is available on the DEA case study website.[113]

Findings and recommendations

This section summarizes specific conclusions and recommendations for ComEd's EE Plans. Conclusions and recommendations common to both case studies, including recommendations on the DEA process itself, are addressed in Section 6.

[113] deacasestudy.org; redirecting to https://www.mwalliance.org/illinois-dea-case-study.

DEA context

Portfolio analysis: The Project Team conducted this case study while the 2022-2025 programs were ongoing. As such, only three years of program implementation data was available for inclusion in the DEA.

- *Recommendation:* For a complete picture of the impact of the 2022-2025 Plan, an analysis could be conducted on the entire ComEd EE portfolio after the end of the 2022-2025 Plan in 2026, using actual reported program data and results for all years. Recognizing that conducting a full DEA requires a high level of effort, this is a long-term recommendation.

Comparison of future plans: Relatedly, the case study focused on the 2022-2025 Plan, with some minor comparisons to the 2022-2018 Plan.

- *Recommendation:* A future analysis could assess the distribution of benefits and impacts from more than just a single plan cycle to determine how different legislative requirements and programmatic choices have impacted low-income customer participation and benefits of the program. However, this is a lower priority analysis, given that resources would ideally be directed towards ensuring current and upcoming programs are equitably implemented.

Priority Populations

Census tract to zip codes: ComEd uses zip codes or census tracts to determine eligibility geographically for certain income-eligible programs and developed a data crosswalk for mapping high-resolution census tracts to the larger geography level of zip codes.

- *Recommendation:* Ideally, ComEd would track all data on the census tract level, because it is more targeted and better aligned with state definitions. It is important to note this may require a moderate level of effort on the utility's part. Given the nature of how customer data is tracked in utility databases, it is computationally and logistically complex to map customer addresses to census tracts, although some of this work may have already been done. However, this is a high priority for several stakeholders, who expressed a desire for consistent geographic units across programs.

Moderate-income customers: Illinois offers targeted programs only to low-income customers. Work Group members noted that EE programs are not offered to moderate-income customers, who may also struggle with their bills or live in inefficient housing. However, due to their financial status, these customers are unable to finance upgrades themselves or access energy bill assistance programs.

- *Recommendation:* ICC should consider if and how to include moderate-income individuals as part of the definition for income-eligible participants.

Metrics

Bill and Rate Impacts: The Project Team was unable to include rate and bill impacts as metrics for this case study due to data gaps between electric and gas savings and program data.

- *Recommendation:* Including these metrics in a future DEA would provide greater insight into program impacts. Analyzing rate and bill impacts will require

coordination between electric and gas utilities to understand all components of a customer's bill. This is likely to require a moderate level of effort and coordination between DEA analysts, utilities, and EE administrators. However, it is one of the highest priority actions to improve the robustness of the ComEd EE plan DEA.

- *Recommendation:* In addition, quantitative analyses of bill impacts present average bill impacts and may not represent the range of experiences of priority population customers. To address this, stakeholders suggested that a quantitative analysis of rate and bill impacts should be supplemented with qualitative evaluation. For example, this would include interviews with a sample of priority population customers to assess how programs provide discernible bill and rate impacts to priority populations.

Shutoffs: Shutoffs were of high interest to Work Group members. However, as previously discussed, analyzing the impact of EE measures on the likelihood of household disconnections requires further study.

- *Recommendation:* A long-term study to assess the potential relationship between EE programs and service shutoffs in Illinois would provide critical information regarding how EE programs can address this issue. ComEd or a third party could conduct such a study, building upon previous analysis.[114] This study would require a significant analytical effort, and may span multiple years.

Inconsistent participation units: Another data gap involves participation tracking and utility reporting practices. Currently, participation is not reported in consistent units across ComEd's EE programs, making it challenging to differentiate between income-eligible and non-income-eligible participants. ComEd tracks participation using various metrics, such as the number of measures, homes, or customers, depending on the program. Also, in its annual reports, ComEd provides the total number of customers by zip code but does not specify whether they are low-income customers.

- *Recommendation:* Standardizing participation reporting metrics, such as the number of unique customers or measures, would enhance clarity of the program outcomes. Alternatively, ComEd could collect or estimate and report data to allow comparison between participation for different programs, such as information regarding repeat participants.

- *Recommendation:* In reporting, ComEd should consistently distinguish between priority populations and other customer participation, especially at the household level.

Participation rate: Calculating a "participation rate" for priority populations in ComEd's programs is currently difficult without an estimate of the number of customers who are income-eligible in ComEd's territory.

[114] Guidehouse. 2021. *ComEd Utility Non-Energy Impacts Research*. Available at https://www.ilsag.info/wp-content/uploads/ComEd-Utility-NEI-Overview_2021-04-19.pdf.

- *Recommendation:* ComEd and ICC would benefit from establishing a clear participation metric. This metric would allow for benchmarking current program participation against the share of customers that are part of priority populations.

Access to metric data: Currently, ComEd's EE program data is available in PDF reports posted in the corresponding EE plan docket or on the SAG website, which can be hard to access and time-consuming to gather.

- *Recommendation:* To improve transparency and accessibility, ComEd should consider developing a map or dashboard for reporting data on a census tract level.
- *Recommendation:* Providing data in Excel rather than PDF form would facilitate analysis and understanding of program reach and effectiveness for stakeholders.

6. General Conclusions & Recommendations

Topics of Work Group discussion and feedback: cross-cutting

During the Work Group meetings across both case studies, the Project Team heard comments and questions from participants. The following is not meant to be an exhaustive list, but rather a high-level summary of common themes and areas of discussion.

- Importance of **intersectional solutions** and cross-collaboration when it comes to addressing equity (community planning, housing, etc.)
- Concern about the **impact of federal administration changes** on beneficial electrification and EE plans (particularly EV chargers for Ameren's BE Plan)
- Potential **overlap** between **DEA metrics** and other ongoing utility **performance metrics**
- Interest as well as uncertainty in **how these DEA results can be used** for future Illinois processes, in the SAG, or development of future EE and beneficial electrification plans
- Desire for more **action-oriented and specific recommendations** based on results and findings
- Emphasis on **the importance of public education and outreach** in reaching underserved communities

Case-study-specific topics are presented in each section above. A complete record of meeting notes from the Work Group meetings is available on the DEA case study website.[115]

Findings and recommendations

The following section describes key lessons learned, recommendations, and conclusions and is organized by the DEA stages.

Stakeholder engagement

Scheduling: Illinois' energy stakeholders have numerous existing processes in which to engage, including the Stakeholder Advisory Group, Low-Income EE Committees, commission workshops and proceedings, and coalition meetings. These numerous processes in Illinois presented scheduling challenges.

- *Recommendation*: Organizers of future DEA efforts in any state need to carefully evaluate existing schedules, processes, and activities in which key stakeholders are already engaged to avoid scheduling conflicts and capacity limitations.

Stakeholder outreach: CBO engagement was lower than the Project Team preferred.

- *Recommendation*: Future organizers may want to perform deeper intentional recruitment of specific organizations or individuals from within the priority populations and geographies of the study. They might also create outreach messaging that resonates with community representatives, including an individual

[115] deacasestudy.org; redirecting to https://www.mwalliance.org/illinois-dea-case-study.

proposition of the value of their input to the project and the value to them for giving their time and expertise.

Community stipend: While the Project Team offered a stipend (up to $1,000) for participation, only one participant took advantage of this compensation offering.

- *Recommendation:* In the future, DEA analysts may want to connect with specific organizations about the stipend and continue to advertise at Work Group meetings that the stipend is available.

Timing and cadence: Due to delays in accessing utility data, Work Group meetings were not always at equal intervals, which this led to some dysconnectivity between meetings.

Recommendation: Future DEA analysts could combine some meeting topics in earlier stages and start administrative processes earlier to improve the flow of meetings over the project process.

Formal processes: Participation in some meetings was lacking or lower than desired.

Recommendation: Conducting a DEA in the context of a regulatory work group or workshop would encourage participation and add weight to the analysis process.

DEA context

Full DEA portfolio analysis: Both case studies lacked data to support a portfolio-level analysis for all metrics, so the Project Team selected and analyzed individual programs from Ameren and ComEd's portfolios.

- *Recommendation*: Conducting DEA on the full portfolio of EE or beneficial electrification programs would help provide a more holistic understanding of equity impacts. In a portfolio-level analysis, utility investment is an important metric to indicate if priority populations are receiving benefits from different programs.

DEA timing, DER program review, and evaluation: The Project Team conducted both case studies during a period in which utility plan cycles were ongoing or ramping up and used plans that had already been approved by the ICC. The timeline for this report was established independently of Illinois DER planning and review cycles and therefore was not ideal for providing insights that are immediately actionable.

- *Recommendation*: Ideally, *prospective* DEAs should be conducted in parallel with prospective BCAs when DERs are being designed and reviewed for approval by the ICC. This allows for the results of the DEA to be used to (a) improve DER program designs to make them more equitable, and (b) to consider equity implications when the ICC decides whether and by how much utilities should invest in the DER programs.
- *Recommendation*: Similarly, *retrospective* DEAs should be conducted in parallel with retrospective BCAs when DERs are being evaluated after-the-fact for program improvements or to determine whether they provide purported benefits. This allows for utilities to learn through program implementation how well DERs are achieving equity goals. Each equity metric established in the DEA should be tracked retrospectively to identify which aspects of equity are being achieved and which might not be. Stakeholders clearly expressed a strong desire to use the results of the DEA to review DER programs and ensure priority populations were benefitting from the programs as planned.

Priority populations

Align definitions: Currently, statutory definitions of priority populations in Illinois are different between EE and beneficial electrification plans; EE programs are targeted towards low-income customers while beneficial electrification programs focus benefits to EIEC *and* low-income populations. The alignment of the two definitions would provide greater comparability between program types and may streamline data tracking processes.

- *Recommendation*: ICC and stakeholders should consider developing a new consistent definition for EE and beneficial electrification programs that includes both EIEC and low-income populations. Further, the new definition could be expanded to include additional populations of interest, such as moderate-income, Black, Indigenous, and People of Color. This would allow for consistent data collection between DER programs and greater access of energy resources for underserved populations.

DEA metrics

Public health impacts: The limitations of assessing public health impacts are discussed in Section 4.4. Work Group members voiced their interest in public health impacts as a DEA metric. Currently, without time-consuming and extensive data collection and analysis, public health impacts are only readily available on a county level. This resolution is not granular enough for a DEA.

- *Recommendation*: Due to the relatively small scale of Ameren's BE Plan programs, it may be challenging to measure tangible air quality improvements due to displaced combustion vehicles. Ameren's 2025 neighborhood emissions assessment could be used to shed light on whether beneficial electrification programs have a tangible impact on local air quality and whether public health impacts are a good DEA metric for future analyses.[116]

Jobs & Employment: There was significant interest from community members on workforce impacts. Currently, there is a lack of utility data on the physical locations of employers and where employees live. For example, utility data on workforce development does not indicate whether they have hired priority populations for EE and beneficial electrification plan deployment. Due to these data challenges, workforce impacts may need to be quantified with an approach that relies more on on-the-ground survey methods.

- *Recommendation*: Utilities could modify workforce development programs to offer programs for local EIEC and low-income communities, to the extent they are not already.
- *Recommendation*: ICC could convene a work group to explore how to track and measure workforce metrics.

Community priorities and feedback: Work Group members sought clarity on how they could provide input on metrics throughout the stakeholder engagement process.

[116] Ameren Illinois Company, 2024. *Ameren Illinois Company Beneficial Electrification – 2024 Annual Workforce Development Report*. Available at https://icc.illinois.gov/docket/P2022-0431/documents/352348/files/616607.pdf.

- *Recommendation*: DEA practitioners should design a robust stakeholder process up front, including a process for soliciting community data and perspectives, especially for early decisions on scope and DEA metrics.
- *Recommendation:* The selected DEA metrics should incorporate community priorities and not solely legislative or regulatory policies and requirements.

Non-energy benefits: Work group members emphasized the importance of accounting for non-energy benefits. For example, a utility service upgrade that enables solar may reduce long-term maintenance costs to the utility. It also may increase home value, making it easier to sell, while that upgrade gets passed onto a future homeowner. Although some non-energy benefits are quantifiable, there is often uncertainty about the magnitude of impacts for some non-energy benefits. In Illinois, some non-energy benefits are captured in the TRC (such as societal non-energy impacts, i.e., public health impacts). However, the current accounting method does not allow for distinguishing the extent to which priority populations experience the non-energy benefits.

- *Recommendation:* ICC should continue to require the inclusion of non-energy benefits in BCAs for EE and beneficial electrification plans. DEAs that determine the extent that priority populations participate in EE and beneficial electrification programs will indicate the extent to which those populations experience a range of non-energy benefits.

Other utility reporting: Work Group members, utilities, and ICC mentioned utility performance metrics and multi-year integrated grid plans as sources for potential data and overlap with the DEA process.

- *Recommendation:* Future work groups would benefit from exploring the relationship between DEA metrics and other ongoing utility reporting practices. For example, these processes could provide a regulatory avenue for requiring utilities to track the data needed for DEA.

Rural vs. urbans impacts: A goal of the analysis was to distinguish impacts between rural and urban populations, which was limited by granular data availability.

- *Recommendation*: With enhanced data availability, such as on a census tract level, (discussed in the next section), utilities can report program data by not only EIEC/LI customers but also by rural and urban customers. This will help with insights into how geography impacts program outcomes.

Obtaining data

Data granularity: Both the ComEd and the Ameren DEAs faced challenges due to data being at a much lower resolution than needed.

- *Recommendation:* Both utilities would benefit from tracking and reporting data on the census tract resolution. This may require a crosswalk between address information in utility databases and census tracts (since regular household address data doesn't contain the census tract). If utilities report data on a census tract basis, they can pre-load data into geospatial mapping tools, such as ArcGIS, which is an important step for evaluating distributional equity.

- *Recommendation:* As mentioned before, if utilities published census- or municipality-level data (participation, utility investment, etc.) on dashboards or maps, this would enable stakeholders to more easily access program data. For example, Ameren could publish statistics on the type of EV participating in the program and whether it is a new EV (purchased on account of the program) and whether it is a PHEV or full battery EV.

Data access: The Project Team ran into multiple issues with accessing data stored in utility database systems. Due to the sheer quantity of data that utilities manage, linking customer account and billing data with participation and energy savings data can be a challenging task. It can also be cost-intensive, with utilities needing to invest more time and resources in data-tracking and publicizing information.

- *Recommendation:* In the future, utilities could provide DEA practitioners with a list of the data columns stored in their database(s) relating to a metric (such as participation in a DER program).

Non-Disclosure Agreements: Utilities required the Project Team to sign non-disclosure agreements. Addressing data disclosure concerns took significant time before any data requests could begin months (up to six months for one of the utilities). The Project Team found that data in an Excel workbook format was the easiest to work with.

- *Recommendation:* Where necessary, DEA practitioners should pursue non-disclosure agreements as soon as possible to facilitate data sharing.
- *Recommendation:* DEA practitioners should have clear data requests for the utilities and allow for additional time to iterate upon data requests.

Data privacy: While confidentiality is an important consideration for the development of DEA metrics, the Project Team found that data privacy does not need to be a barrier to the DEA if the information can be aggregated to levels that preclude anyone from attributing data to any one customer.

Making decisions using the results of the DEA and BCA

Education and outreach: The Work Group expressed concerns about priority populations being unable to fully access programs and program benefits. Some expressed concerns that the delivery and implementation of the programs might not be as equitable as what was proposed in the EE and beneficial electrification plans.

- *Recommendation:* To ensure that priority populations can access the purported benefits of the programs, utilities might need to use targeted outreach and education throughout their plan cycle. Further, evaluation, measurement, and verification studies should be used to determine how well EE and beneficial electrification programs perform relative to the plans. If a program is found to have low EIEC or low-income participation counts, then the utility should assess the reasons for low participation, and where appropriate, improve outreach, delivery, and implementation efforts to these customers.

Limitations of the case studies: The results of the DEAs offer insights into the distribution of beneficial electrification program impacts. However, data gaps on various metrics (such as bill impacts for ComEd) means that a DEA may not always tell the full story about how utility programs distribute benefits to priority populations. It is important to acknowledge that these case studies

had limited access to data. They may not represent the full picture of benefits of ComEd's EE and Ameren's beneficial electrification plans.

Appendix A. Stakeholder Work Group Process

The stakeholder process was led by MEEA, and involved the following:

- Outreach and convening of stakeholders
- Community-based organizations - outreach and collaboration
- Work group meeting schedules and topics
- Stakeholder meeting norms, processes, and feedback

A1. Outreach and convening stakeholders

To promote participation in the DEA Case Study Work group, MEEA used several sources of contacts:

- An initial outreach email sent by ICC staff to a list of stakeholders that had participated in previous Commission workshops, inviting them to join the Case Study Work Group.
- Promotion through outreach to established stakeholder bodies with their own mailing lists:
    - Illinois Energy Efficiency Stakeholder Advisory Group (IL-SAG)
    - Income Qualified (IQ) Energy Efficiency Advisory Committees (IQ-South and IQ-North)
- Direct outreach to relevant contacts from MEEA's internal contact relationship management system and inclusion in MEEA's monthly email newsletter.

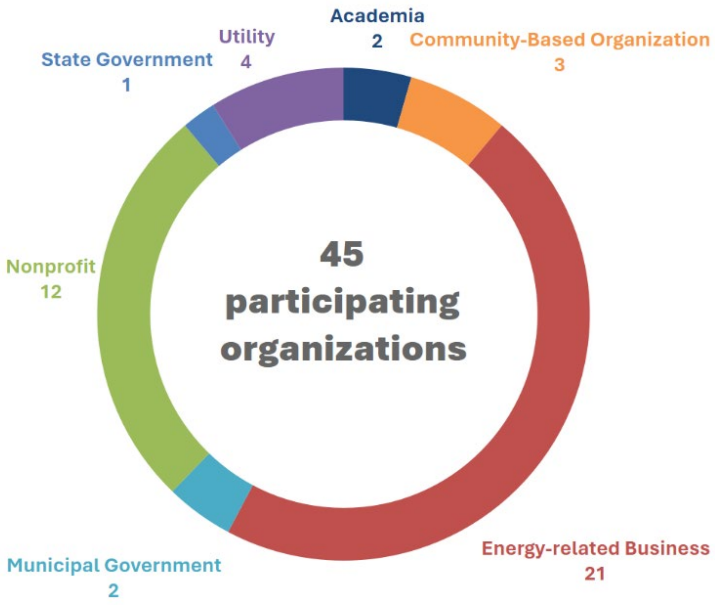
MEEA built and hosted a webpage[117] to hold Work Group and meeting materials. After the initial outreach, additional stakeholders joined the Work Group when they learned about the process through word of mouth or by visiting the webpage or when there were changes in staffing at participating organizations.

Participants in the DEA Case Study Work Group came from seven broad types of organizations:

- Academia: interested students and researchers from local universities
- Community-based organizations: advocates representing specific communities
- Energy-related businesses: consultants; program implementers; product manufacturers
- Municipal government: local and county government representatives
- Nonprofit organizations: clean energy, community and consumer advocates; neighborhood and community associations; program implementers
- State government: consumer protection agency
- Utilities: electric and gas utilities, including the two utilities whose programs were studied

[117] deacasestudy.org; redirecting to https://www.mwalliance.org/illinois-dea-case-study.

Figure 28: Breakdown of participating organizations in working group by category



Besides the Project Team and ICC Staff, forty-five additional organizations participated in some or all of the Work Group process (See Table 23). The greatest level of participation came from businesses. These businesses may have been uniquely motivated and positioned to participate in the Work Group as this novel analysis in the energy program delivery space could be relevant to their business interests. It's also important to note that there were a range of types of businesses who engaged as work group members – including program design and implementation contractors, strategic and policy consultants and facilitators – and they are not necessarily motivated by the same goals despite their shared organization type. There is also substantial overlap between the for-profit and non-profit sectors in those types of roles.

A2. Community-based organization engagement and collaboration

As the project team members tasked with liaison and facilitation, MEEA diligently engaged with the stakeholders from the Work Group outside of the full group meetings to support the case studies' efforts. MEEA hosted one-on-one meetings and small group calls throughout the project to more deeply engage with critical stakeholders about the analysis being conducted to gather their input and perspectives.

MEEA and other project team members held meetings with nonprofits engaged as work group members to glean their perspectives from their history of advocacy in the Illinois energy space. MEEA met with committee facilitators from adjacent state-based energy work groups and regulatory processes to help understand the community landscape and the context of other relevant processes currently happening or previously conducted. Most crucially, MEEA met with individuals representing communities, both personally and as employees of Community-Based Organizations.

Community engagement stipend

Initial discussion with contacts familiar with the community stakeholder landscape in Illinois suggested that community-based organizations might need an incentive to participate. The

demands on energy stakeholders in Illinois are substantial, with several existing committees, ongoing commission workshops, and other processes. The Project Team felt that it would be helpful to provide compensation to community-based organizations if they needed it to be able to participate.

MEEA held an interview call with one community-based organization participant who responded to the initial outreach, to better understand their needs. Based on that discussion, MEEA created a stipend for community participation. MEEA worked with a Northwestern University PhD candidate via the university's Center for Civic Engagement's Graduate Engagement Opportunities (GEO) program to create the Community Compensation Agreement Form (included in Community Stipend Form). MEEA allocated $1000 maximum per participant with an initial assumption that ten Agreements might be submitted.

It turned out that only one participant – the original interviewee – submitted a Community Participation Agreement Form. Over the course of the Work Group process, the team did not receive any direct feedback, positive or negative, regarding the agreement or why it did not spur additional engagement. In the future, the Project Team could do better advertising and ensure that participants were aware of the stipend with multiple reminders throughout the course of the project. More direct and targeted outreach may encourage participation as well.

Feedback gathered from the one participant who received the stipend was that the perspective they got from the Work Group participation helped to remove some of the utility vs. consumer feeling of disconnect that they had going into the process, and that the stipend was valuable to creating the opportunity for them to participate.

A3. Work Group Meeting Schedule and Topics

Over 18 months, the Project Team convened eight fully remote meetings with Illinois-based stakeholders to discuss the two case studies, solicit feedback, and refine the scope of the analysis. The Work Group met at a tempo of approximately one meeting every two months with each meeting focusing on one or more stages of the DEA (Table 21) Table 21.

Table 21: Working group meetings

Meeting	Date	Meeting topic	DEA stages covered
#1	March 6, 2024	Stakeholder Engagement process	1
#2	May 10, 2024	Identify the DEA Context	2
#3	July 24, 2024	Identify priority populations, Metrics I	3, 4
#4	October 9, 2024	Metrics II	4
#5	December 13, 2024	Ameren Illinois BE Plan results (I)	5, 6
#6	March 13, 2025	Ameren Illinois BE Plan results (II)	6, 7
#7	May 1, 2025	Commonwealth Edison EE results	5, 6, 7
#8	June 18, 2025	Present draft report	N/A

A4. Stakeholder meeting norms, processes, and feedback

Meeting norms

During the first work group meeting, MEEA facilitated a discussion of shared meeting norms and guidelines for engaging with other participants to incorporate different stakeholder perspectives. The following norms guided participation in the Work Group meetings and were articulated at the beginning of every meeting:

- Meeting participants should share their name and preferred pronouns, and organization or affiliation – both in their meeting platform display name or in the meeting chat, and as they are verbally engaging during the meeting.
- Meeting participants should define acronyms when referenced, a list of which would be managed by the meeting facilitator.
- Chatham House rule applies. Under these rules, information and input shared in the meetings will not be assigned to or associated with any work group member or representative outside of the work group meetings.
- The facilitator asked participants to mute themselves when not speaking to reduce background noise for the benefit of the group, and to use the "raise hand" function or meeting chat for comments or questions.
- The facilitator encouraged work group members to ask questions and provide feedback, including establishing dedicated opportunities.
- Work group members should share relevant resources and information to aid in the case studies.

Meeting processes

The project team used the following processes to facilitate meeting participation and to help meeting participants fully engage.

- Agendas and meeting materials were sent in advance of meetings. The goal was to have materials out 48 hours in advance of meetings, but this was not always possible. Materials were sent out at least a day ahead of meetings.
- Levels were set at the beginning of meetings by sharing foundational resources and key definitions.
- Work Group members were reminded that discussion and input from all Work Group members is critical to the project and is encouraged.
- Small 'subgroup' calls on specific topics were scheduled throughout the project where more focused discussion or input was needed or to dig deeper into questions presented by specific stakeholders.
- Non-attributed meeting notes from all meetings were shared with the Work Group, so they could be reviewed between meetings.
- The team built the DEA Case Study Project web page – DEACaseStudy.org – on which all meeting materials, video recordings, and meeting notes were posted.

Meeting feedback

The Project Team gathered feedback from participants in several ways over the course of the work group process, both in and out of the full Work Group meetings.

- Polls run during meetings to solicit answers to specific questions.
- Dedicated and facilitated time in meetings for verbal feedback or written feedback via the chat function.
- Dedicated point of contact for stakeholder feedback after meetings, and several team contacts shared during meeting and in written materials shared via email and on the project webpage. [118]

Meeting participation metrics

Participation in the Work Group meetings from the Project Team, Commission staff and stakeholders is detailed below.

- Project Team: eight in total; (two E4TheFuture, two MEEA, four Synapse); five to eight project team members attended any single meeting
- ICC Staff: six in total; 2-6 members of Staff attended any single meeting
- Stakeholder participants: 95 on the outreach mailing list; 75 individual stakeholders participated in at least one meeting; 19-33 stakeholders attended any single meeting

Table 22: Number of stakeholders participating in working group meetings

Meeting	Participant Count
#1	31
#2	31
#3	32
#4	23
#5	19
#6	19
#7	33
#8	27

[118] https://www.mwalliance.org/illinois-dea-case-study.

Table 23. Stakeholder participant list

389nm
Advanced Energy Group
Ameren Illinois
Celia Johnson Consulting
Champaign County Regional Planning Commission
Chicago Historic Bungalow Association
Citizens Utility Board
Clean Energy Works
ComEd
Community Investment Corp (CIC) Chicago
Ecohealth Strategies
Elevate
Encolor Consulting
Energy Futures Group (for NRDC)
Environmental Defense Fund
EPE Consulting
Equitable Resilience Sustainability
Erthe Energy Solutions
Guidehouse
Honeywell
Illinois Association of Community Action Agencies
Inova Energy Group
MECRO (Meadows Eastside Community Resource Org)
Mendota Group
Midwest Energy Efficiency Alliance
National Consumer Law Center
Natural Resources Defense Council
Nicor Gas
Northwestern University
Office of the Illinois Attorney General
Opinion Dynamics
Oracle
People for Community Recovery
Peoples Gas and North Shore Gas
Resource Innovations
School of Environmental Sustainability, Loyola University Chicago

Slipstream
Solutions for Energy Efficient Logistics (SEEL)
The JPI Group
The Will Group
Union of Concerned Scientists
Urban Efficiency Group
Village of Bellwood
Vote Solar
Walker-Miller Energy Services

Appendix B. Community Stipend Form

MEEA
MIDWEST ENERGY EFFICIENCY ALLIANCE

20 N. Wacker Drive, Suite 1301
Chicago, Illinois 60606
312.587.8390 Main Line
312.587.8391 Fax
www.mwalliance.org

Community Compensation Agreement

Distributional Equity Analysis (DEA) is a new analytical framework designed to be used alongside Benefit-Cost Analysis (BCA) to better assess equity for new distributed energy resource (DER) investments. This case study will use DEA to see if contemporary Illinois policies, utility programs, and recent DER investments are adequately addressing distributional equity needs of priority populations in the state.

The best outcomes of this case study fully depend on the input and engagement from community members and partners. To that end, we are offering compensation for participation to eligible individuals or organizations.

Participant Expectations

- Agree to attend and participate as actively as possible in the series of virtual Work Group meetings throughout the rest of 2024 and the beginning of 2025.
- Agree to attend at least 75% of meetings (6 out of the expected 8)
- Agree to participate in a call with the Project Team to help us understand your community and its energy equity issues.

Definitions

Eligible community or **equity investment eligible community (EIEC)** means *"the geographic areas throughout Illinois which would most benefit from equitable investments by the State designed to combat discrimination and foster sustainable economic growth"* as defined in the Climate and Equitable Jobs Act (CEJA). These include:

- *"(1) R3 [Restore, Reinvest and Renew] Areas as established pursuant to Section 10-40 of the Cannabis Regulation and Tax Act, where residents* have historically been excluded from economic opportunities, including opportunities in the energy sector*; and*
- *(2) Environmental justice communities, as defined by the Illinois Power Agency pursuant to the Illinois Power Agency Act, but excluding racial and ethnic indicators, where residents have historically been subject to disproportionate burdens of pollution, including pollution from the energy sector."*

CEJA defines **community-based organization** as *"an organization that: (1) provides employment, skill development, or related services to members of the community; (2) includes community colleges, nonprofits, and local governments; (3) has at least one main operating office in the community or region it serves; and (4) demonstrates relationships with local residents and other organizations serving the community."*

A **community-advocate organization** is defined as *"an organization representing a priority population as a stakeholder in the DEA process."* **Priority populations** are defined in the DEA framework as the *"set of electric or gas utility customers who warrant additional attention to address equity concerns, and includes customers that have suffered from, and continue to suffer from, disproportionate, systemic costs and burdens from energy extraction, generation, transmission, distribution, and consumption."*

1

Eligibility

I am interested in participating in the Distributional Equity Analysis Case Study Work Group to represent my community. I live or work in an eligible community as defined by the Climate & Equitable Jobs Act (CEJA; Public Act 102-0662) . There is a financial barrier to my participation. I am one of the following:

- ☐ **(Option 1)** an employee of a community-based organization, but the organization does not have funding to allow me to participate in the Work Group without additional compensation; or
- ☐ **(Option 2)** a volunteer representative of a community-advocate organization, or independently representing my community and I do not have funding from another entity.

Please complete this section if you selected "Option 1" above.

In the space below, please describe how your organization falls within the definition of a community-based organization and what community you serve.

Please complete this section if you selected "Option 2" above.

If you are independently representing your community, please use the linked map to confirm whether your address is in an EIEC and provide it in the contact information section. Additionally, please use the space below to briefly describe your experience as an energy advocate for your community. If you are a volunteer representative of a community-advocate organization, please use the space below to describe what priority population your organization serves and your organization's role in promoting energy equity for that priority population.

Compensation Information

While we prefer participants to attend all Work Group sessions, our compensation structure does offer some flexibility for unexpected circumstances. Do note that this is a cumulative scale. The maximum compensation for participation is $1,000 for participation in at least 6 work group meetings.

Compensation scale, based on number of meetings attended

Maximum Compensation Amount: $1,000								
Work Group Meetings Attended	1	2	3	4	5	6	7	8
Cumulative Sum	$125	$250	$375	$500	$625	$1,000	$1,000	$1,000

In order to receive compensation for participation, we will ask you to submit:

- This completed form
- A completed IRS Form W-9 (available here)
- A record of dates of attendance at Work Group meetings (at the end of the work group process to compare with our records)

Compensation will be made in the form of a check, issued after the conclusion of the Work Group process and after receiving the required items above. The check will be issued in accordance with the information below. **Please submit relevant documentation to Greg Ehrendreich (gehrendreich@mwalliance.org).**

Contact Information

Name			
Organization (if any)			
Mailing Address			
Phone		☐ Prefer call	☐ Prefer text
Email		☐ Prefer email	

Signature **Date**