

Applying a Framework for Addressing Cost-Effectiveness and Distributional Equity in Distributed Energy Resource Investment Decisions

Illinois Work Group Kick-off Meeting

March 6, 2024

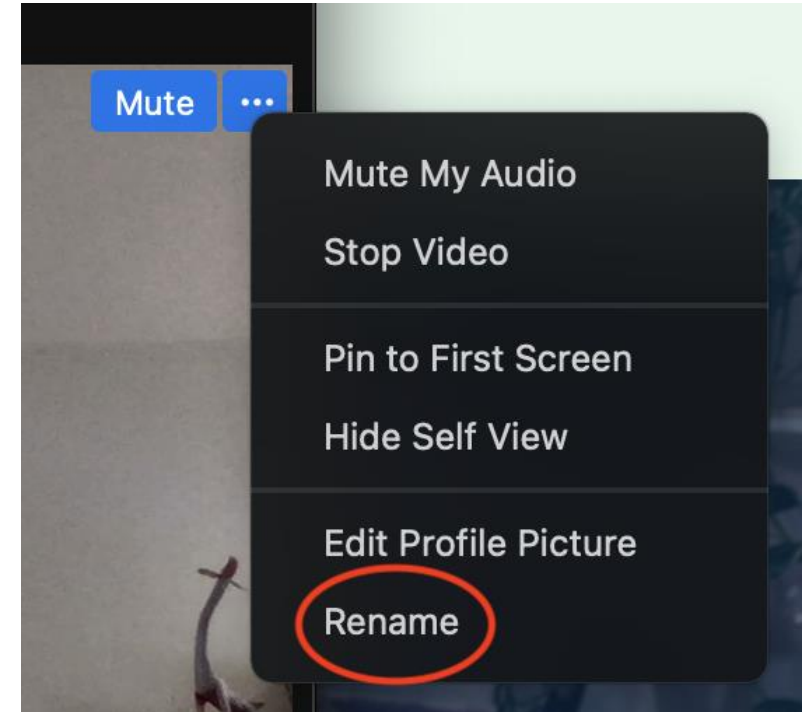
Julie Michals, E4TheFuture

Alice Napoleon and Tim Woolf, Synapse Energy Economics

Greg Ehrendreich and Natalie Newman, Midwest Energy Efficiency Alliance

Housekeeping

- Please add your affiliations and pronouns to your Zoom name – let's get to know each other!
- Please mute yourself when you are not speaking.
- If you have a comment or question, please raise your hand or use the chat.
- We will be recording the session to share with DEA Work Group members that could not attend this call.



Agenda

1. Introductions
2. Project Background and Goals & Objectives
3. Overview of **distributional equity analysis (DEA)**
 - Limitations of benefit-cost analysis (BCA)
 - Stages to conducting a DEA
4. Illinois Case Studies – key policies, initial case study candidates
5. Stage 1: DEA Work Group role, meeting guidelines and process
6. Project schedule and next steps

Project Team

Midwest Energy Efficiency Alliance

Liaison and facilitation



Gregory Ehrendreich
Sr. Analyst



Natalie Newman
Sr. Policy Associate

E4TheFuture

Project management



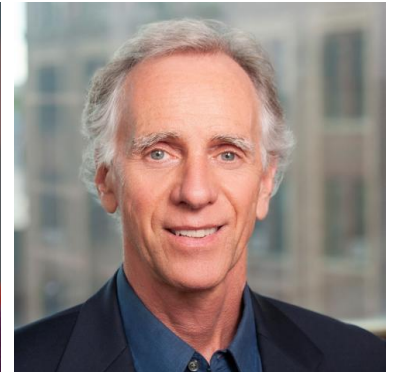
Julie Michals
Director

Synapse Energy Economics

Research and analysis



Alice Napoleon
Principal Associate



Tim Woolf
Senior VP



DEA Work Group – Responded to Invitation

Name	Organization
Kevin Dick	389nm
Bev Bowlby	Ameren Illinois
Brice Sheriff	Ameren Illinois
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Sarah Moskowitz	Citizens Utility Board
Kyle Danko	ComEd
Jim Fay	ComEd
Molly Lunn	ComEd
Cassidy Kraimer	Community Investment Corp (CIC) Chicago
Kenyatta Parker	Community Investment Corp (CIC) Chicago
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Mike Brandt	Elevate
Kate Brown	Elevate
Michael Ihesiaba	Elevate
Amy Jewel	Elevate
Antonia Ornelas	Elevate
Briana Parker	Elevate
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Neil Curtis	Guidehouse
Mark Mandolini	Honeywell
Roger Pavey	Illinois Association of Community Action Agencies

Name	Organization
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Ronaldo Jenkins	Illinois Commerce Commission
Jennifer Morris	Illinois Commerce Commission
Latifat Moradeyo	Illinois Commerce Commission
Jim Zolnierek	Illinois Commerce Commission
Sharon Louis	MECRO (Meadows Eastside Community Resource Org)
Karen Lusson	National Consumer Law Center
Kari Ross	Natural Resources Defense Council
Mike King	NiCor Gas
Susan Satter	Office of the Illinois Attorney General
Hannah Howard	Opinion Dynamics
Zachary Ross	Opinion Dynamics
Julia Friedman	Oracle
Christina Frank	Peoples Gas and North Shore Gas
Kristen Kalaman	Resource Innovations
Gilbert Michaud	School of Environmental Sustainability, Loyola University Chicago
Deborah Dynako	Slipstream
Keely Hughes	The JPI Group
Michael Cabrera	The Will Group
Stephen Taylor	The Will Group
Darnell Johnson	Urban Efficiency Group
John Delurey	Vote Solar
Will Kenworthy	Vote Solar
Boratha Tan	Vote Solar
Carla Walker-Miller	Walker-Miller Energy Services

Project Background, Goals and Objectives

Project Funding: DEA Case Studies: Co-funded by Joyce Foundation and E4TheFuture

Overarching Goal: to demonstrate the use of a decision framework for assessing the distributional equity impacts of electric and gas resource investment decisions on disadvantaged communities, and to inform decision making going forward.

Case Study Objectives (5):

1. Build stakeholder **understanding of the different dimensions of energy equity** (recognition, procedural, distributional and restorative), and scope/role of DEA.
2. Demonstrate and practice working with **diversely represented stakeholder groups** throughout the DEA process.

Case Study Objectives cont.

3. Assess **available DEA metric data, identify gaps and limitations** and options to address gaps going forward.
4. Develop stakeholder understanding on **how to use map-based resources and spatial tools** to visualize DEA metrics for priority populations.
5. Using analysis results, **demonstrate the use of DEA, alongside BCA, to guide decision-making** on DER resource investments that accounts for impacts on priority populations.

Foundational Resources for BCA and DEA

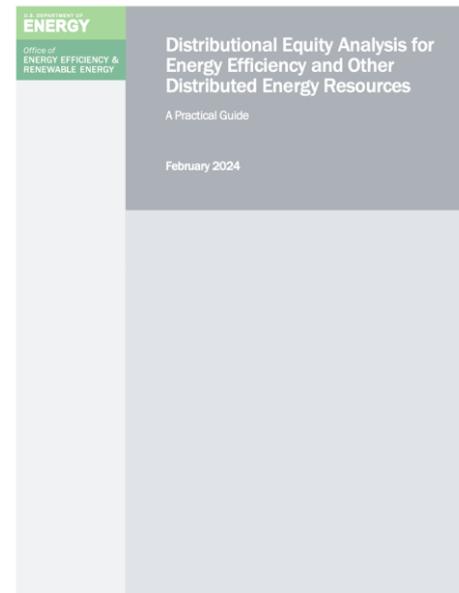
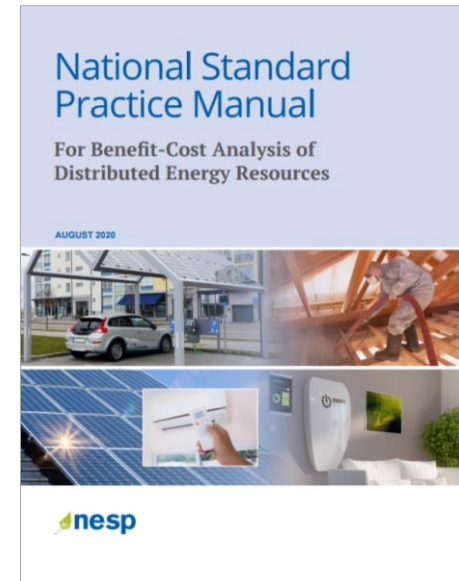
This project will be guided by two central resources.

1. National Standard Practice Manual (NSPM) for DERs

- Benefit Cost Analysis (BCA) guidance increasingly being used by states across the country
- With state focus on equity, key questions raised about how BCA addresses equity (or not...)

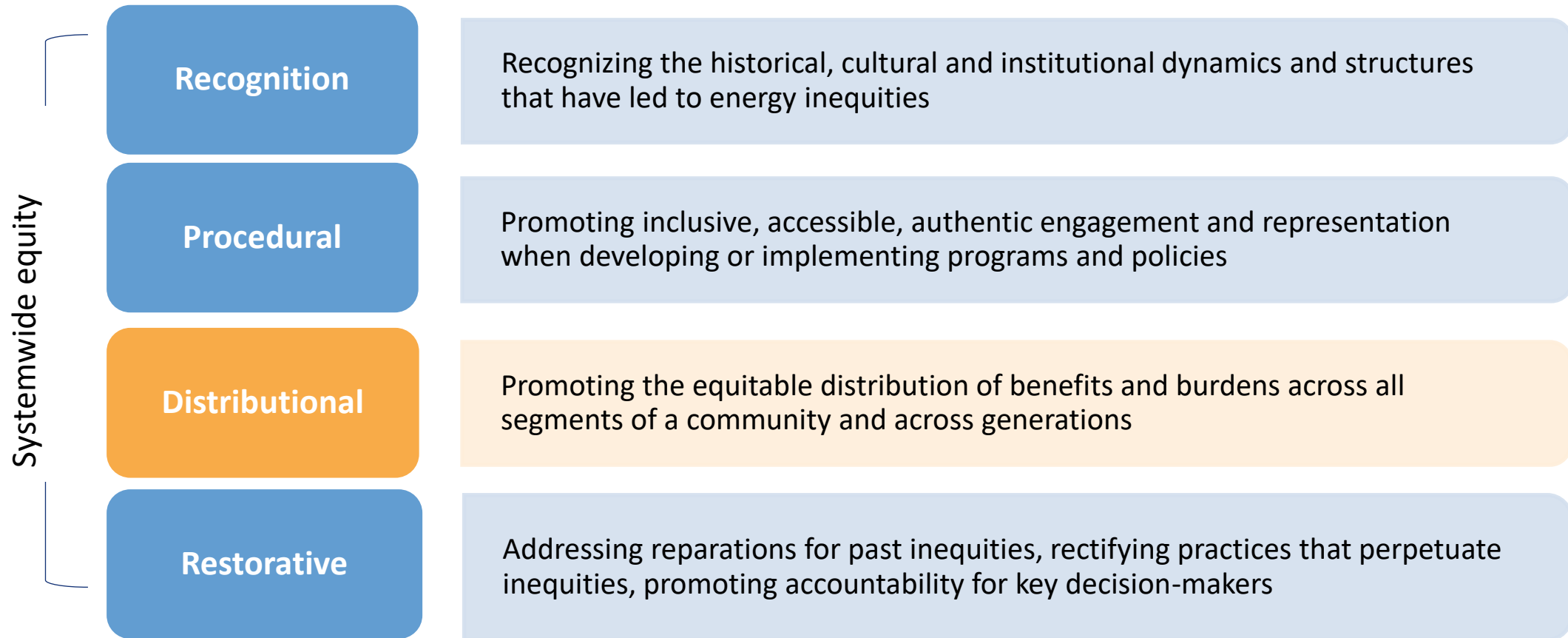
2. Distributional Equity Analysis for Energy Efficiency and Other Distributed Energy Resources (forthcoming March 2024)

- Companion document to the NSPM
- Project jointly funded by US Dept. of Energy and E4TheFuture
- Project team: Lawrence Berkeley National Laboratory, E4TheFuture, Synapse Energy Economics
- Guided by an advisory committee (*including organizations here today: Elevate, IL CUB, MEEA, NCLC, Opinion Dynamics*)



Overview of Distributional Equity Analysis

Energy Equity Dimensions



Adapted from University of Michigan Energy Equity Project Framework Report, v1.0

What is Distributional Equity?

- **Definition:** Ensure the fair distribution of benefits and burdens across all segments of a community and across generations.
- **Distributional Equity Analysis (DEA):**
 - **WHAT:** an analytical framework that can be used to evaluate the distributional impacts of investment decisions on energy resources on different customer groups, particularly equity priority populations.
 - **HOW:** DEA involves analyzing the costs, benefits, and burdens of these decisions ***across different customer groups*** to identify any disparities or inequities in program outcomes.

Limits of Benefit-Cost Analysis (BCA)

- Benefit Cost Analysis (BCA) compares the present value (PV) of a DER's benefits with the PV of its costs
- Some jurisdictions conduct rate, bill, and/or participation impact analyses, which address equity between program participants and non-participants
- However, BCA is not designed to address distributional equity
 - BCA measures impacts *on average* across the utility system
 - BCA cannot distinguish impacts on priority populations
 - BCA focuses mostly on monetary results, but many equity metrics cannot be put into monetary terms
 - BCA should not account for rate, bill, or participation impacts

Distributional Equity Analyses

DEA can be conducted alongside BCA

- DEA provides additional information on equity
- DEA uses many of the same inputs, methods, and assumptions as BCA

Key differences between DEA and BCA

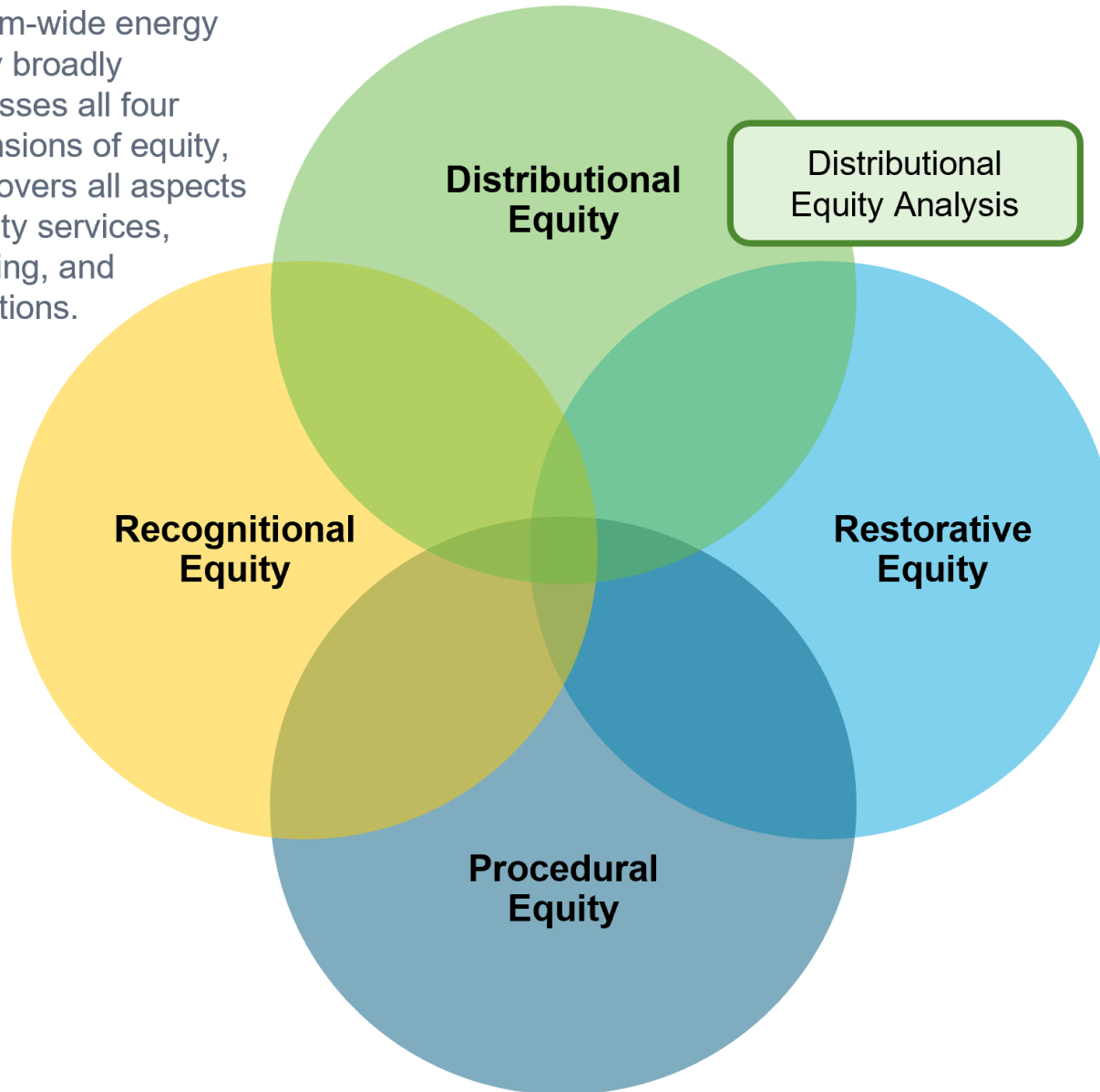
- DEA separates customers into priority populations and other customers.
 - To indicate how the costs and benefits are distributed across different customers
- DEA includes metrics to provide energy equity data

Together the two analyses can inform decisions about whether and to what extent utilities should invest in DERs.

BCA and DEA comparison

	Benefit Cost Analyses (BCA)	Distributional Equity Analyses (DEA)
Purpose	To identify which DER programs utilities should invest in or support	To identify how DER programs impact priority populations relative to other customers
Questions Answered	What are the costs and benefits of a DER program across all customers?	How will DER impacts accrue to priority populations compared to other customers?
Impacts Analyzed	<ul style="list-style-type: none"> • Utility system impacts • Participant impacts • Societal impacts 	<ul style="list-style-type: none"> • Participant and societal impacts • Rate, bill, and participation impacts • Distributional equity metrics
Example Metrics	<ul style="list-style-type: none"> • Costs (PV\$) • Benefits (PV\$) • NPV • BCR 	Disaggregated for priority populations and other customers: <ul style="list-style-type: none"> • Rates (\$/kWh) • Bills (\$/month) • Participation rates (% of eligible) • Energy burden (% of income on energy bills) Additional metrics of health (ER visits), environmental impacts (PM 2.5), economic development (# of jobs), etc.
Scope	A single BCA to assess absolute DER program impacts	One analysis for priority population and another for other customers to compare impacts across groups

System-wide energy equity broadly addresses all four dimensions of equity, and covers all aspects of utility services, planning, and operations.



Distributional Equity Analysis

+

Benefit Cost Analysis

DEA and BCA address one aspect of distributional equity:

What are the distributional equity impacts of utility resource investments?

Questions on DEA vs BCA?

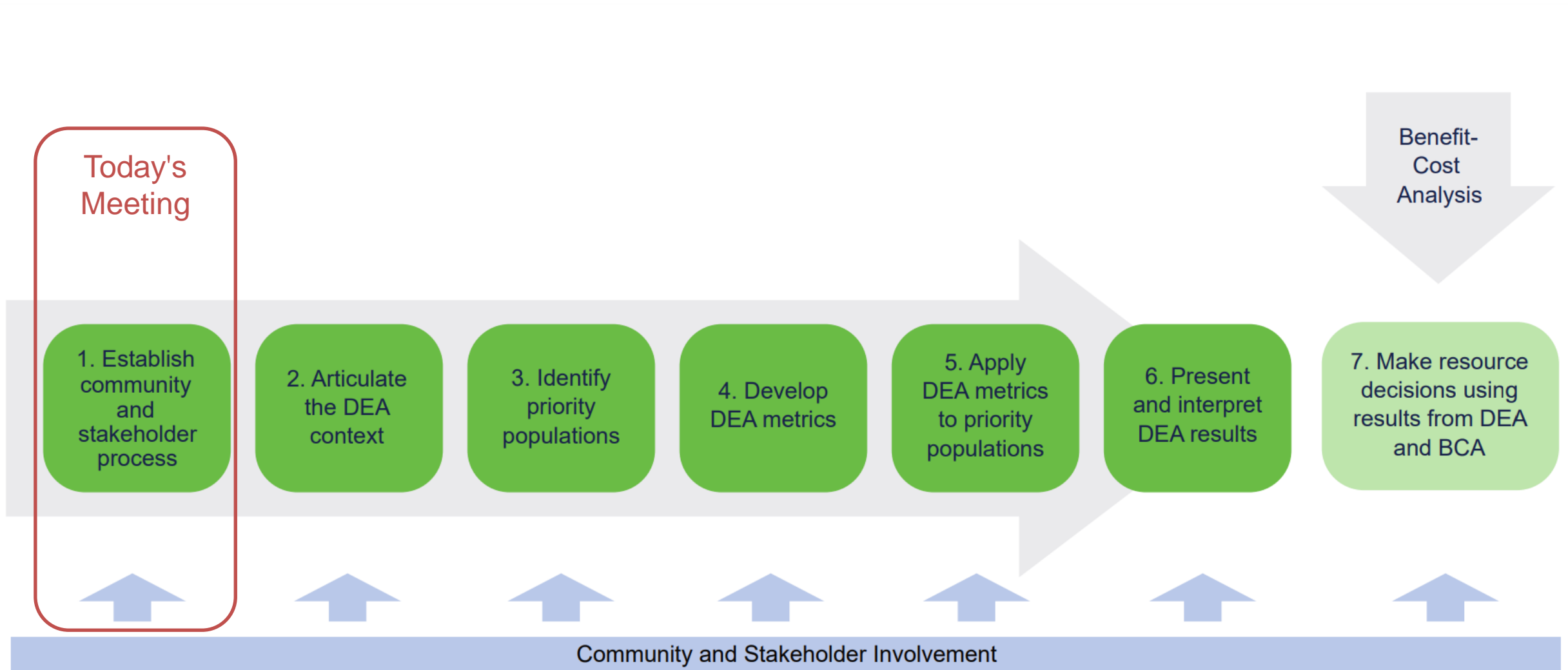
Also, as we go through an overview of the stages of conducting a DEA, please think about what ***you'd like to learn*** from this case study project. We'll share a poll later in our meeting to gauge what's most important to this Work Group.

Examples of learning objectives:

- How the DEA framework relates to broader system-wide equity frameworks
- How to use the DEA results alongside the BCA to inform utility DER proposals
- How to prioritize metrics to include in the DEA
- How to identify data to inform the DEA and address potential data gaps
- How DEAs can inform program design (and vice versa)

Stages to Conducting a DEA – Overview

DEA Stages - Overview

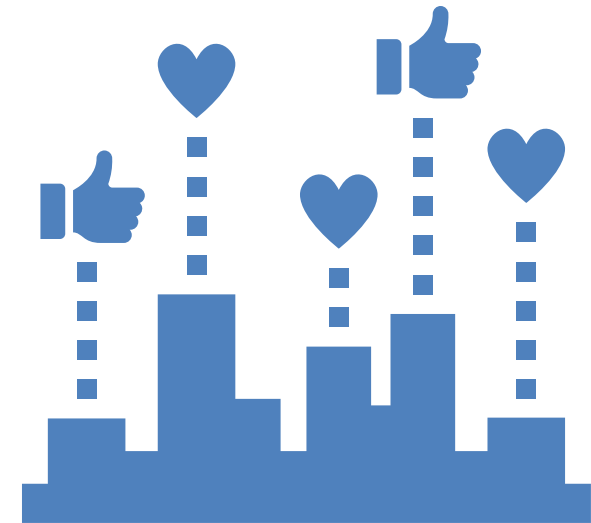


Stage 1. Establish Community and Stakeholder Process

- 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.
- Community and stakeholder input is essential at each stage of a DEA. Analytical decisions should carefully and thoroughly account for the likely impacts on communities.
- Like with BCA for utility investments, follow-up to DEA is important: investments should be carefully overseen and monitored over time to ensure that programs are implemented as planned and the expected equity benefits are achieved.

Stage 1: In Practice: Consensus Building

- Shared meeting norms + guidelines for how we engage with each other
 - e.g. Define acronyms when referenced
- Shared goals for our participation in this workgroup
 - e.g. Connecting with other organizations



Stage 2. Articulate the DEA Context

The DEA context is the project scope, which should align with an existing or planned BCA scope.

1. Identify the **DER type(s)**: energy efficiency, demand response, distributed solar, distributed storage, building or transportation electrification
2. Identify the **DEA application**: a single energy program or investment, multiple programs (a portfolio), or a comparison of programs
3. Identify the **DEA timeframe**: whether the DEA will evaluate a proposed program (prospective), or a previously implemented program (retrospective)

Stage 2. Potential DEA Context Applications

Applications	Examples
Compare across DER programs	<p><i>Compare same type of DERs:</i> one energy efficiency program vs. other energy efficiency programs, one distributed generation net-billing program versus other distributed generation net-billing programs</p> <p><i>Compare different types of DERs:</i> energy efficiency versus distributed generation; distributed generation versus storage program; demand response versus storage program</p>
Assess a portfolio including programs of the same type of DERs	Portfolio of energy efficiency programs, portfolio of multiple distributed generation programs, portfolio of multiple storage programs
Assess multiple portfolios including programs of multiple types of DERs	Portfolio including all types of DER programs (energy efficiency, demand response, distributed generation, batteries, electric vehicles)

Stage 3. Identify Priority Populations

Steps to identify priority populations

1. Review any existing state definitions already in use (e.g., for environmental justice)
2. Review existing state energy equity goals
3. Review indicators that other jurisdictions have used for priority populations
4. Solicit input from stakeholder representatives
5. Choose a set of indicators based on the previous four steps
6. Conduct “cumulative impact analyses” to identify the most highly impacted customers
7. Consider refinements for the purpose of conducting the DEA

Language used to describe these populations varies depending on the region or entity. Priority populations are also called:

- Disadvantaged
- Overburdened
- Marginalized
- Underserved
- Vulnerable
- Environmental justice communities
- Frontline communities
- Highly impacted communities
- Target populations

Stage 4. Develop DEA Metrics

- **“System-wide energy equity metric”** refers to a broad range of metrics that can be used to address the full range of equity issues.
- **“DEA metric”** refers to a narrower subset of metrics used to determine if costs and benefits of a utility program or investment are equitably distributed between priority populations and other customers.
 - DEA Metrics should meet standards for good utility performance metrics:
 - ✓ Distributional
 - ✓ Discrete
 - ✓ Tied to equity goals
 - ✓ Impactful

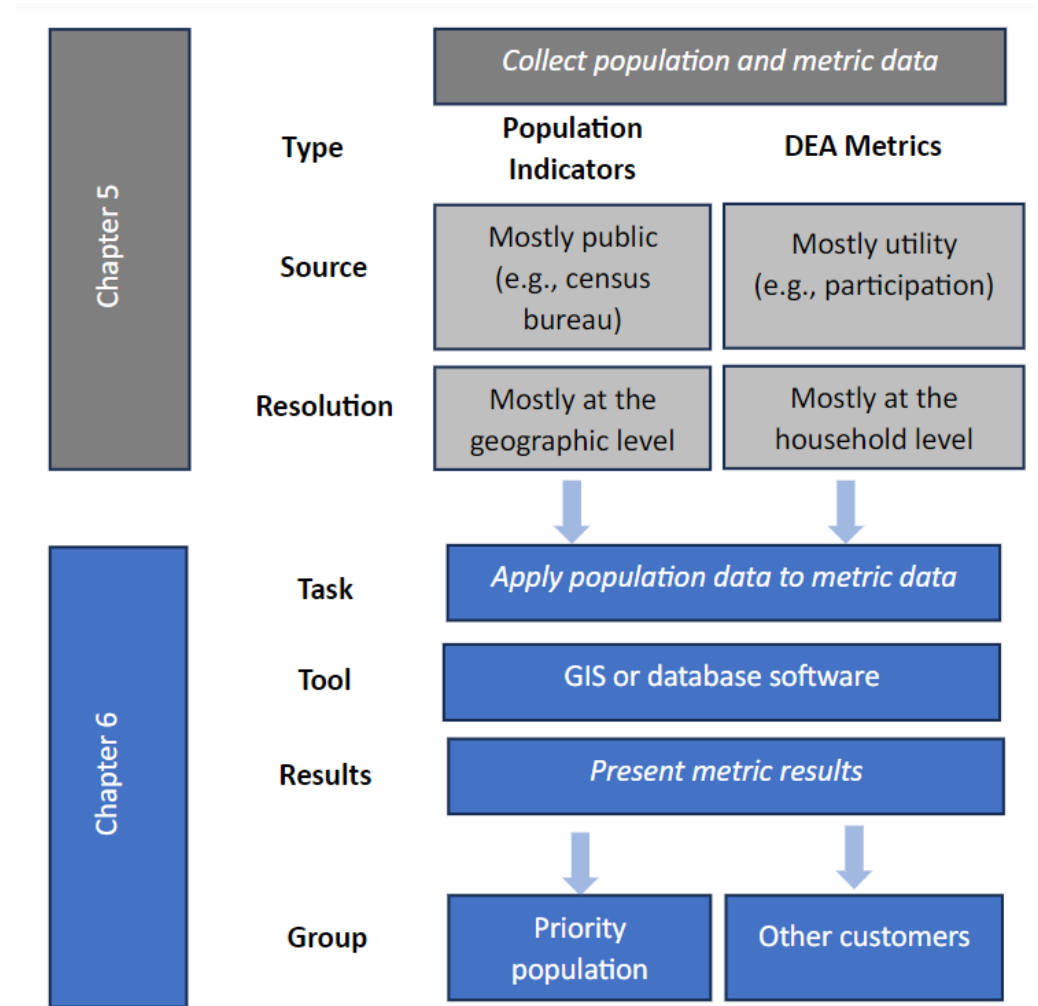
Stage 4. DEA Metrics - Examples

DEA Categories	Subcategory	Potential DEA Metrics
Access	Participation for the DER being evaluated	Participants as percent of eligible customers
Economy	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
Affordability	Change in rates	Percent change in rates
	Change in bills	Percent change in bills
	Energy burden	Percent change in energy burden
Public Health	Health, safety, and comfort	Change in medical costs, change in lost workdays, lost school days, maternal health impacts, % of homes at unsafe temperatures
	Health impacts	Change in rates of hospital admissions, asthma, cancer risk
Shutoffs	Shutoffs	Change in number of shutoffs or frequency of shutoffs
Reliability and resilience	Outages	Change in number and duration of outages on the utility system
		Change in number and duration of outages at the customer level

Stage 5. Apply DEA Metrics

Apply the metric data to priority populations and other customers.

1. Assess existing data and **analytical tools**.
2. Review data type and **resolution**. To apply metrics to priority populations, data for each metric needs to be at same resolution. Data at the household level may need to be aggregated up to a new **geographic level** e.g., census tract.
3. Protect data privacy and encourage equitable data practices. **Household level** data is sensitive and should be protected.
4. Combine priority population and metric data. After carefully considering data type, resolution, and sources of uncertainty, calculate results for each metric for both population group.



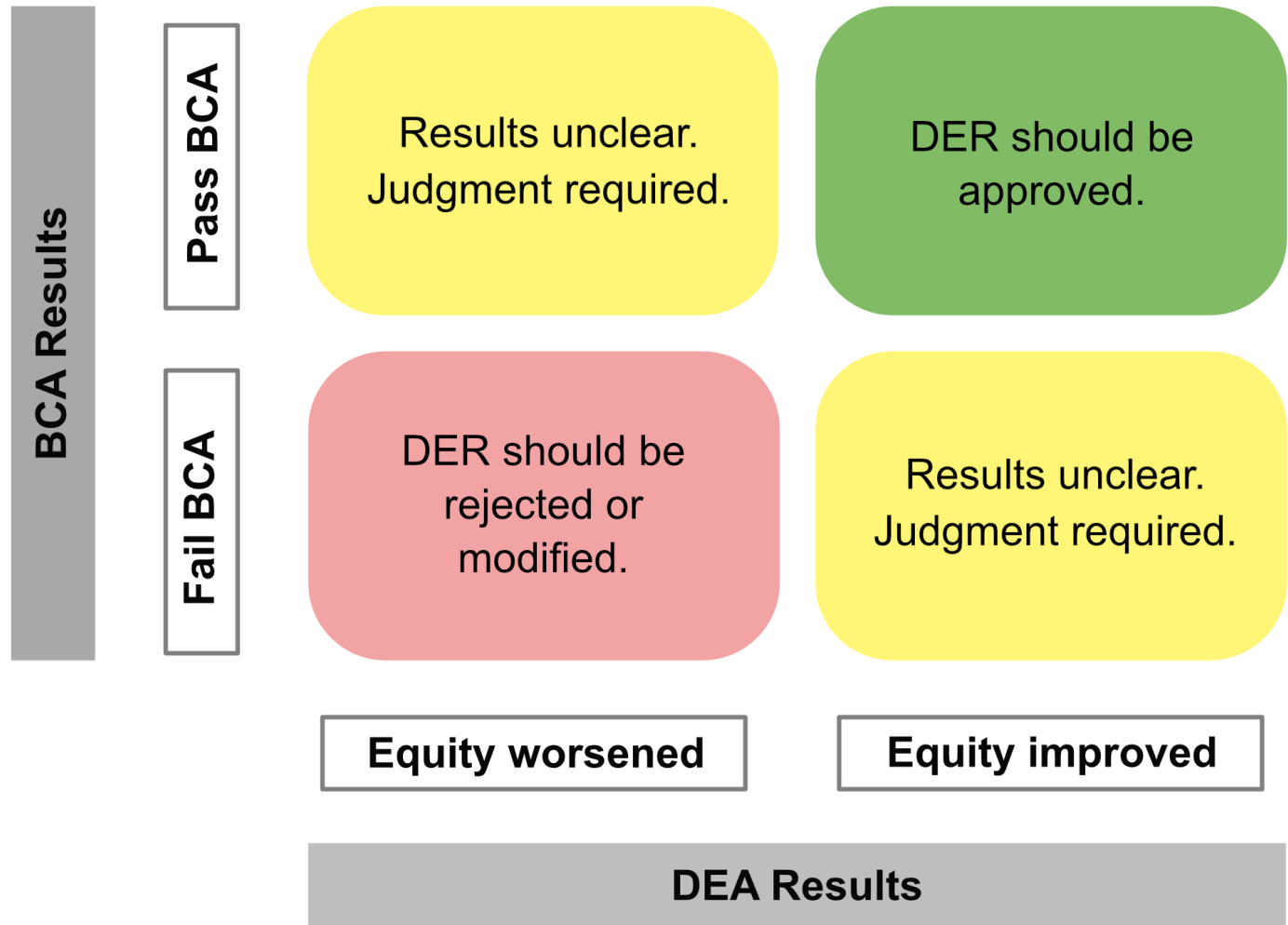
Stage 6. Present and Interpret Results

Clearly articulate results of each metric and provide simple, benchmarked, and unweighted results.

1. Document **simple results** for DEA metrics, or the unadjusted results for each metric and customer group.
2. Apply **benchmarks** to DEA metrics. Benchmarks are the identified goals for each metric and help put the results in context, helping to determine if the intervention had equitable or inequitable outcomes.
3. Develop **DEA scores**. DEA scores can be used to normalize the simple results to a common scale such that the metric results can be aggregated and analyzed together.

Stage 7. Decision-Making

- Informed by equity policies, stakeholders define or clarify DEA pass/fail criteria, including qualitative considerations.
- If BCA passes and equity is improved, then DER program likely should be approved.
- If BCA fails and equity is worsened, then DER program should be rejected or modified.
- Otherwise, the combined results are unclear, and judgment is required. Pass/fail criteria can help in these situations.



Questions on DEA Stages?

Illinois DEA Case Studies Policies and DEA Context

Case Studies will be Informed by Illinois Policies

We will draw upon Illinois policy, publicly available data, and tools to inform the case studies.

- Climate and Equitable Jobs Act
 - Existing definition for *Environmental Justice Community* under the Power Agency Act and the IPA's procurement plans
 - Definition of *Equity Investment Eligible Communities* (EIECs) as "R3 Areas" under the tax code and EJ communities
 - Definition of *Equity Focused Populations* to include residents of EIECs, low-income, BIPOC, formerly convicted, child welfare, displaced energy workers, LBGTQ+, and persons with disabilities
- Future Energy Jobs Act
 - Broad support for EE and DER resources, electrification
 - Minimum of 25% of electrification savings from low-income customers
 - Requirements in statute for cost-effective investment in “nontraditional resources” including renewables and DERs, as well as demand side management
- Others?

Utility Grid Plans and Equity

Utility Grid Plans are required to:

- Describe how utilities plan to support efforts to bring at least 40% of benefits from proposed programs, policies, and initiatives to ratepayers in low income and EJ communities.
- Describe how utilities plan to bring benefits from clean energy and grid modernization to all retail customers, and to bring 40% of those benefits to EIECs.
- Describe approach or framework that will be used to “identify, measure, track, and report (1) what specific benefits are being created, (2) how much these benefits are resulting from Grid Plan investments, and (3) **who is receiving those benefits.**”
- Use Strawman to ensure benefits accrue to EIEC, EJ, and low-income communities as required by the Act upon refiling.
 - **Compare EIEC and non-EIECs populations for different equity metrics – investments, shutoffs, disconnection notices, and outages.**

The DEA case studies will help to **demonstrate the process for how the utilities can analyze the impact of their proposed programs alongside the respective program BCAs** to answer questions highlighted above. The case studies may not cover all relevant metrics, but the priority metrics identified by the Work Group (that are likely to align with the utility Grid Plans).

Initial DEA Context for Illinois Case Studies

- **Energy Efficiency**

- Programs that save electricity and reduce costs
- Will likely use information from 2022-2025 EE plans – Dockets 21-0155 and 21-0158
- Application, timeframe and geographic scope (urban vs rural) – TBD

- **Beneficial Electrification**

- Programs that increase efficiency by changing end-uses
- Will likely use information from BE plans required by the Electric Vehicle Act (20 ILCS 627) – Dockets 22-0431 and 22-0432
- Application, timeframe and geographic scope (urban vs rural) – TBD

Poll Question: What do you hope to learn from this DEA case study project?

(please select top three priorities)

1. How the DEA framework relates to broader system-wide equity frameworks
2. How to use the DEA results alongside the BCA to inform utility DER proposals
3. How to prioritize metrics to include in the DEA
4. How to identify data to inform the DEA and address potential data gaps
5. How DEAs can inform program design (and vice versa)
6. Other (please fill in chat box)

Stage 1: DEA Work Group Role and Process

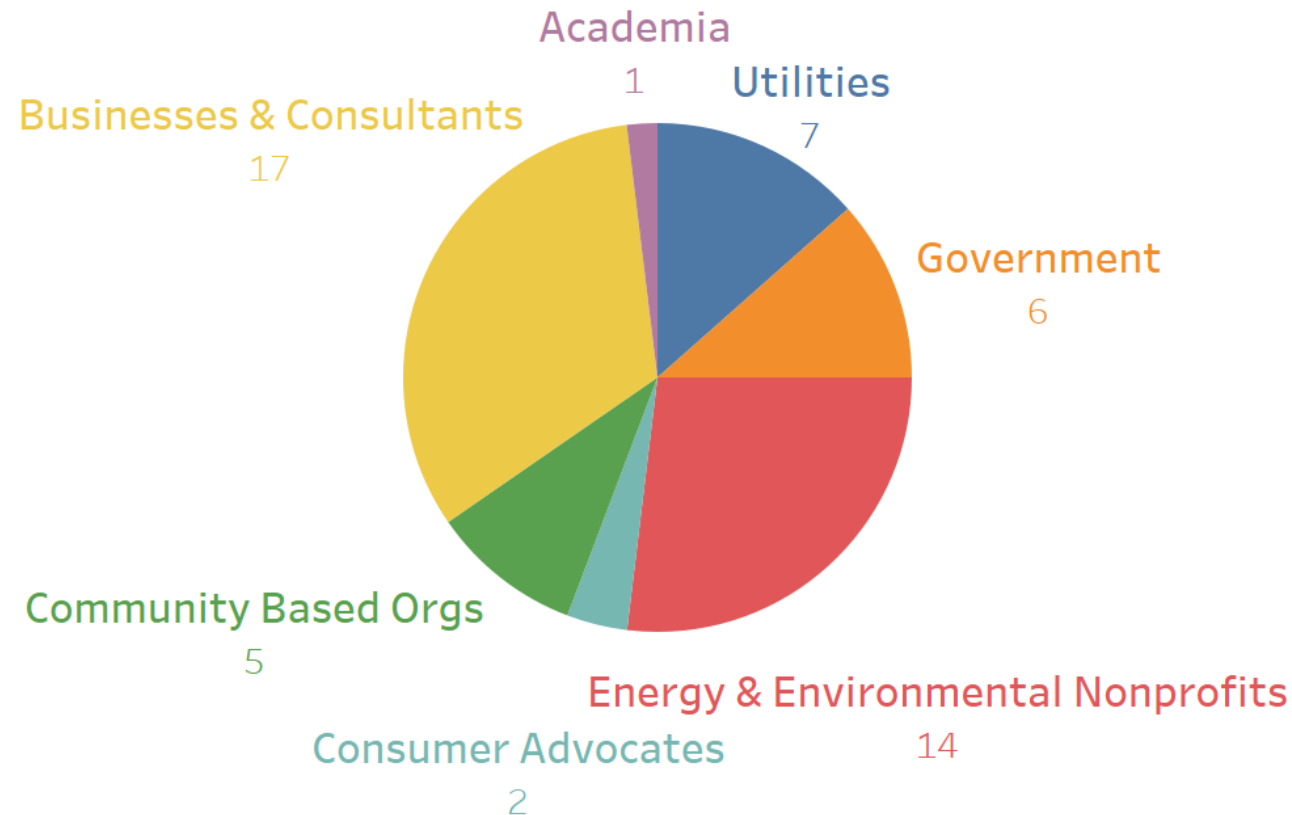
(throughout DEA Case Study)

Role of this DEA Work Group

- Participate in 6-8 meetings over ~12-14 months
- Review meeting agendas and materials
- Provide comments on key methodologies, inputs, and assumptions
 - Relevant policies, tools, and data
 - DER program or portfolio choice
 - Perspective of analysis (retrospective or prospective)
 - Priority population definition
 - Equity metrics
 - Minimum thresholds/conditions
- Review and offer comment on DEA results and presentation of results
- Review and offer comment on report describing the case studies and DEA results
- ICC staff – supports this project and will assist in key DEA stages where needed

Work Group Representation

- Do we have appropriate representation to inform this project?
- Are there any barriers to participation that need to be addressed?



Number of people who responded to Work Group invitation, by organization type

Work Group Meetings – Guidelines

- Agendas and meeting materials will be sent in advance of meetings
- Input from all Work Group members is critical to project and is encouraged:
 - Please participate in discussions if you are able, whether verbally, by chat box, and/or follow up emails.
 - Small ‘subgroup’ calls on specific topics may be scheduled throughout the project where more focused discussion or input is needed.
- Meeting notes (from all meetings) will be shared with Work Group
 - **Chatham House rules** will apply (i.e., information and input shared in our meetings will not be assigned to or associated with any Work Group member or representative outside of the Work Group meetings)

DEA Case Study Project Website – DEACaseStudy.org
(all materials will be posted to this website)

Project Schedule and Next Steps

Estimated Project Schedule and Work Group Meetings

Work Group Meeting	Approximate Date
#1 - Introduction to process and relevant policies	3/6/2024
#2 – Proposed Case Studies & DEA Context	Late April/Early May 2024
#3 – Priority Populations and Analysis	Q3 2024
#4 – DEA Metrics and Analysis	
#5 – DEA Results – part I	Q4 2024
#6 – DEA Results – part II	
#7 – Review Final Results & Draft Report	Q1 2025
#8 - Final Report & Decision-making	Q2 2025

Next Steps

- In mid to late April, we plan to circulate a proposal for the **DEA Contexts** (*Stage 2*) for the two case studies for your review prior to next meeting
 - ***Today: Identify key utility contacts to help inform DEA contexts***
- US DOE Distributional Equity Analysis Guide
 - We will circulate to the Work Group as soon as this guide is published
- Please reach out to team with any questions/comments following this meeting (see next slide)
 - Project Coordination: Julie Michals at jmichals@e4thefuture.org
 - Lead Work Group contact: Greg Ehrendreich at gehrendreich@mwalliance.org

Thank you!

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