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Distributional Equity Analysis for Energy Efficiency and Other Distributed Energy Resources

Framework Summary:
A Companion to the Practical Guide

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Disclaimer

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Preface

This report is a companion document to *Distributional Equity Analysis for Energy Efficiency and Other Distributed Energy Resources: a Practical Guide (the DEA Guide)*. It provides a summary of the framework proposed in the DEA Guide and an overview of the key steps needed to conduct a DEA.

The DEA Guide describes an analytical framework—referred to as distributional equity analysis—that allows utilities, regulators, and stakeholders to answer one key question: *What are the distributional equity impacts of utility resource investments in the context of cost-effectiveness evaluation*? These distributional equity results can be combined with *benefit-cost analysis* results to inform decision-making regarding investments in new or existing utility resources.

Much of the energy equity work to date addresses a wide range of energy inequities that can affect all aspects of electric and gas utility planning and operations. The DEA Guide refers to such analysis as "system-wide energy equity analysis." In contrast, the distributional equity analysis explained in the DEA Guide focuses on a much narrower set of questions relating to the energy equity impacts associated with new utility distributed energy resource investments.

An important premise of the framework is that traditional benefit-cost analysis is not suited for evaluating energy inequities because it is limited to comparing impacts on all utility customers on average without considering disparate impacts on different groups. Distributional equity analysis focuses on identifying and estimating the distribution of costs and benefits *across different customer types*. This analysis can inform decision-makers of how some customers will experience costs and benefits differently from other customers.

Distributional equity analysis, or DEA, is an emerging concept; to date, literature is limited on conducting DEAs on electric or gas utilities' distributed energy resource investments. The materials provided in The DEA Guide should be viewed as early, nascent guidance useful for advancing this important topic further. Additional experience, information, and analyses over time will be important to help build upon the concepts and guidance provided in this document.

The importance of carefully and thoughtfully designing and applying a DEA cannot be overstated. Robust stakeholder input is critical at each stage of a DEA, and analytical decisions made when preparing a DEA should carefully and thoroughly account for the likely impacts on the customers and communities. As with benefit-cost analysis of utility investments, follow-up to DEA is important. Distributed energy resource programs and other utility investments should be carefully overseen and monitored over time to ensure that the programs are implemented as planned and the forecasted equity benefits are achieved in practice.

Some of the techniques described in the DEA Guide can be complex and time-consuming. To increase the accessibility and applicability of the framework, the DEA Guide identifies opportunities to streamline DEA. Analysts and decision-makers, however, should be conscientious of the implications of streamlining and the extent to which it might oversimplify, and perhaps undermine, some important elements.

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Framework Summary

Distributional Equity Analysis: An Emerging Framework

Distributional equity analysis (DEA) is an analytical framework that allows utilities, regulators, communities, and stakeholders to answer questions about the equity implications of utility investments and to consider those implications alongside benefit-cost analysis (BCA). Though BCA is a well-established practice, DEA is an emerging decision-making tool. Several jurisdictions in the United States have begun conducting some form of system-wide energy equity assessment, especially in the context of environmental justice, but most jurisdictions have little or no experience with conducting DEA.

This report is a companion document to *Distributional Equity Analysis for Energy Efficiency and Other Distributed Energy Resources: a Practical Guide (the DEA Guide)*. It provides a summary of the framework proposed in the DEA Guide and an overview of the key steps needed to conduct a DEA.

The DEA Guide is a starting point in developing DEA practices and policies. It provides a framework that can be further developed. As this framework is used, input from key community members and stakeholders and access to increasing amounts of equity data will build documented knowledge and experience, leading to identification and dissemination of best practices.

Jurisdictions will likely start with different geographic or demographic data, definitions of priority populations, choices of equity metrics, and analytical tools. This document aims to provide guidance for jurisdictions wishing to account for energy equity in utility DER investment decisions, regardless of their starting point.

This DEA framework can be a powerful tool for answering one key question: *What are the distributional equity impacts of utility resource investments in the context of cost-effectiveness evaluation*? These distributional equity results can be combined with BCA results to inform decision-making regarding investments in new or existing utility resources.

As advancing energy equity becomes a more central focus for more policymakers, it will be increasingly important to apply and build upon the principles, concepts, and techniques described in the DEA Guide. Achieving energy equity goals in utility resource decision-making practices will require transparent, intentional, and comprehensive attention to all the potential impacts of those resource decisions.

Interest in Distributional Equity and Distributed Energy Resources

The burdens of the energy system do not fall equally on all electricity and gas utility customers.[1] The production, delivery, and consumption of electricity and gas can cause disproportionate social, health, and economic costs and benefits among low-income communities, communities of color, indigenous people, and rural customers, for example.

Such inequities might include excessive energy burdens,[2] limited access to distributed energy resources (DER)[3] or clean energy, inadequate infrastructure to support those resources, exposure and vulnerability to environmental and public health impacts, greater risk of reliability and resilience issues, greater risk of service shutoffs, and lack of access to economic or job benefits of the clean energy transition.

[1] The DEA Guide is focused on analysis of customers served by electric and gas utilities. Individuals not served by the utility may still experience impacts of DER investment decisions. This is outside the scope of this document.

[2] Energy burden refers to the percentage of a customer's income spent on energy bills.

[3] DERs include electricity and gas resources sited close to customers that can provide all or some of their immediate power needs 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 energy efficiency, demand response, distributed generation, building and transportation electrification programs, and storage.

State legislators and regulators are establishing new goals and processes to promote energy equity. Such goals pursue the fair distribution of energy system benefits and burdens across all populations. Achieving this requires intentional decision-making and consideration of the technologies, policies, and procedures involved in the energy system.

States are also increasingly motivated to address climate change challenges and improve the resilience and efficiency of our energy systems, which has led to an upwelling of interest in DERs. As the electricity and gas industries evolve and decarbonize, DERs are expected to play a sizeable role in that progress. Greater investment in DERs has the potential to reduce utility system costs, utility customer bills, and environmental impacts of energy generation.

Limits of BCA in Accounting for Equity

Regulators, utilities, and other decision-makers commonly rely on benefit cost-analysis (BCA) when considering utility investments in DERs. BCA is an essential tool for understanding whether an investment will provide net benefits for all customers on average. However, BCA does not allow for assessment of the distribution of costs and benefits across customers with different characteristics (e.g., priority populations[4] relative to all other customers). DEA can be used alongside BCA to allow for such an assessment.

Benefit-cost analysis does not typically indicate whether DER investments are equitable for priority populations relative to other utility customers.

Unlike BCA, a DEA separates customers into two distinct groups—priority populations and all other customers—to allow analysts to assess how benefits and costs may affect each group. A DEA also includes a broad set of metrics that are specifically chosen to estimate equity impacts, allowing analysts to assess additional costs and benefits not captured in a BCA. Applying the equity metrics to priority populations in a DEA will help decision-makers understand whether DER investments have the potential to deliver equitable net benefits for priority populations relative to other utility customers.

The primary purpose of the DEA Guide is to describe a DEA framework and discuss how it can be used to complement BCA results and to inform equitable utility DER investments decisions.[5] The framework can be used to answer questions such as: (a) whether to pursue or invest in a proposed DER program or continue to support an existing one; (b) whether to modify or redesign a proposed or existing DER program; and (c) how to prioritize investments across multiple DER programs. A DEA complements BCA by contributing important equity information to an overall evaluation of an investment.

Readers interested in guidance on how to conduct a BCA for DERs can refer to the *National Standard Practice Manual™ (NSPM) for Benefit-Cost Analysis of Distributed Energy Resources*. The DEA Guide is intended to serve as a companion document to the NSPM.

The DEA Guide focuses on applying DEA to DERs. In theory, the methods, concepts, and principles described herein can be applied to any type of major utility investment.

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[4] 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. These include customers who have borne and continue to bear disproportionate, systemic costs and burdens from energy extraction, generation, transmission, distribution, and consumption.

[5] The concepts in the DEA Guide apply to DER investments and programs by all types of electric and gas utilities, including vertically integrated and distribution only, as well as investor-owned, publicly owned, and cooperative utilities. While the DEA Guide uses the term "utilities" throughout, it also applies to DER investments by other entities that are engaged in DER programs. These entities include state energy offices, third-party DER program administrators, DER vendors and contractors, and others.

Overview of Distributional Equity Analysis

Figure 1 presents the key stages in the DEA framework. A summary of each stage appears below. Some jurisdictions may choose to perform the DEA in a different order than presented below, depending upon their circumstances.[6] Nonetheless, each of these stages are critical for conducting a robust DEA. The remainder of this framework summary discusses the stages in more detail.

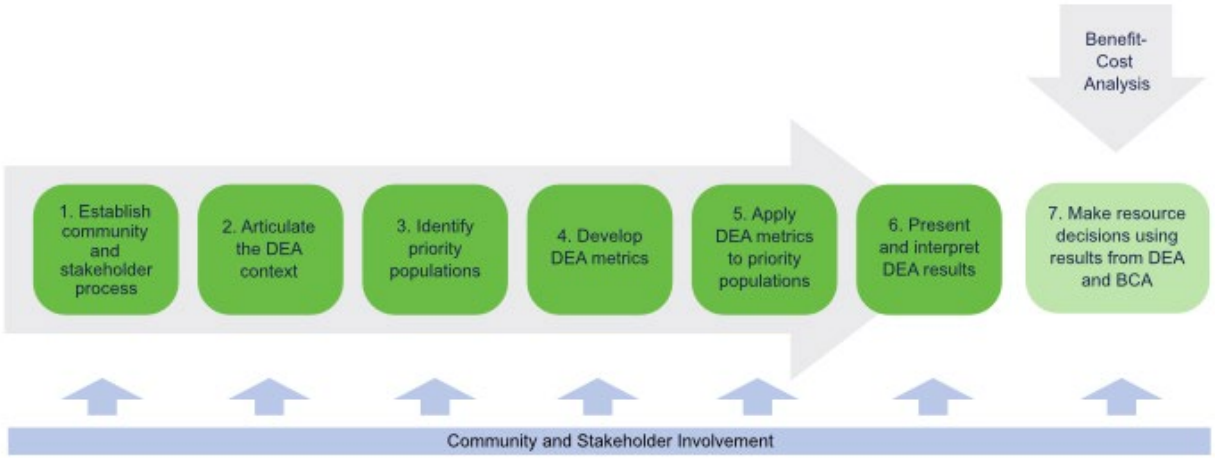

Figure 1. Key Stages in the Distributional Equity Analysis Framework

1. Establish community and stakeholder process. Community and stakeholder input is necessary in every stage of the DEA framework to make it effective and meaningful. A robust community and stakeholder process requires inclusion of representatives from a broad variety of perspectives, especially those representing priority populations.

2. Articulate the DEA context. DEA can be applied in a variety of contexts. It is useful to determine up front how the DEA will be applied and over what timeframe.

3. Identify priority populations. Defining priority populations entails using demographic and socioeconomic indicators, depending on a jurisdiction's equity goals.

4. Develop DEA metrics. DEA can use a range of metrics to assess energy inequities: e.g., energy rates, bills, and DER participation; energy burden; health and environmental impacts on priority populations; and economic development in priority populations. While BCA metrics are primarily presented in monetary terms, DEA metrics are often presented in non-monetary quantitative or qualitative terms.

5. Apply DEA metrics to priority populations. A core element of the DEA framework is to develop estimates for each of the equity metrics, for both the priority population and the rest of the customers. This exercise typically requires large amounts of data, and analytical tools are available to facilitate the collection, assessment, and presentation of this data.

6. Present and interpret DEA results. DEA metrics can be presented using a variety of values and units of measurement that are often not in monetary terms. Some utilities, regulators, and communities

[6] In the DEA Guide the term "jurisdictions" is used broadly to refer to any state, province, utility, municipality, or other region with a governing authority for which DER resources are planned and implemented.

and stakeholders might decide to use simpler results or results that contextualize the metrics with selected benchmarks. Others might decide to use analytical techniques that aggregate all the DEA metrics into a single net score for priority populations and a single net score for other customers.

7. Make decisions using DEA and BCA results. The final stage in the decision-making process is to use the DEA results alongside the BCA results to choose between different investment options.

System-Wide Energy Equity Assessment Versus Distributional Equity Analysis

Energy inequities can affect electric and gas utility customers in complex, multidimensional aspects that often intersect and overlap. To signal this complexity, such inequities are often characterized by a systemic or structural "dimension:"

- Procedural: that which promotes inclusive, accessible, and authentic engagement and representation when developing or implementing programs and policies
- Distributional: that which promotes the equitable distribution of benefits and burdens across all segments of a community and across generations
- Recognitional: that which recognizes societal structures that have led to energy inequities
- Restorative: that which repairs past inequities, rectifies practices that perpetuate inequities, and promotes accountability for key decision-makers

Comprehensively addressing energy inequities within all four of these dimensions requires a broad assessment, which the DEA Guide refers to as a system-wide energy equity assessment.[7] System-wide energy equity assessment addresses a very broad question: *How can all inequities in utility practices, services, and investments be addressed*? DEA is narrower than system-wide energy equity assessment; it addresses the question: *What are the distributional equity impacts of utility resource investments in the context of cost-effectiveness evaluation*? These DEA results can be combined with BCA results to inform decision-making regarding investments in new or existing utility resources.

The equity impacts considered in the DEA framework are narrower than those considered in a system-wide energy equity assessment.

Figure 2 depicts the relationship between system-wide energy equity assessment and DEA. It shows that the DEA framework addresses a portion of distributional equity impacts but does not address issues related to the other dimensions of energy equity.[8] Further, BCA is inextricably linked with DEA for the purpose of making decisions on new utility resources, but BCA does not otherwise play a large role in understanding or addressing energy inequities.

It is important to address all dimensions of energy equity through some form of a system-wide energy equity analysis. The primary purpose of DEA is limited to addressing energy inequities that might be caused by future utility investments.

[7] System-wide energy equity assessments are jurisdiction or utility system assessments that comprehensively address all dimensions of energy equity and all aspects of utility planning, operation, and services.

[8] DEA requires *procedural equity* concepts and practices to ensure they fully address the interests of priority populations, but the DEA framework is not designed to address or resolve procedural energy inequities.

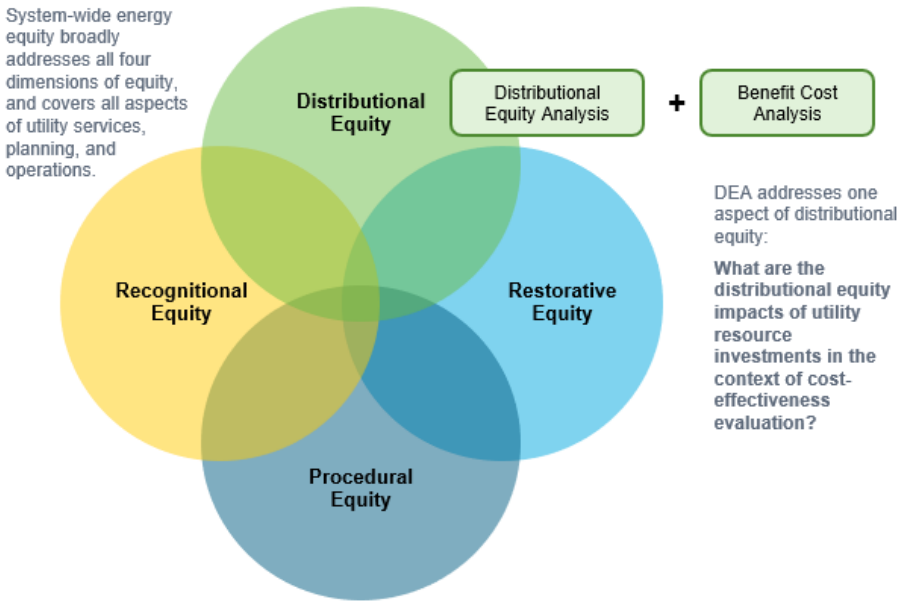

Figure 2. System-Wide Energy Equity Assessment and DEA

Summary of Distributional Equity Analysis Framework

Establish a Process for Robust Community and Stakeholder Engagement

Community and stakeholder engagement is the bedrock of the DEA process. As used in the DEA Guide, the term "community" refers to any people with a shared identity within or across different geographic areas and includes urban, rural, tribal, and indigenous people. "Stakeholder" refers to representatives or members of priority populations, advocates (e.g., environmental justice, low-income customer, consumer), and other interested or concerned parties. 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 recommendations at every stage of the DEA. They should also play a meaningful role in the ultimate decisions regarding utility DER investments.

Jurisdictions cannot meaningfully engage customers, especially those experiencing equity concerns, without understanding and addressing the barriers they face to participating in the DEA process. One such common barrier is that many customers do not trust their utilities and regulators. Working with organizations that have a presence in and that understand how to engage with these communities can be an important, effective way for regulators and utilities to engage stakeholders and bridge potential trust issues. Language barriers for some customers are another possible obstruction to DEA participation. Providing resources in multiple languages can enable more stakeholder feedback.

Chapter 1 of the DEA Guide expands on the importance of establishing a robust community and stakeholder process to guide the development of a DEA.

In the DEA Guide, "community" refers to any people with a shared identity within or across different geographic areas and includes urban, rural, tribal, and indigenous people. "Stakeholder" refers to representatives or members of priority populations, advocates (e.g., environmental justice, low-income customer, consumer) and other interested or concerned parties.

Articulate the DEA Context

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.

First, DEA can be used for different applications, i.e., different types and combinations of DERs. Table 1 presents several of the most likely applications of BCAs and DERs, with examples. In most contexts, broader applications (e.g., at the portfolio level, as shown at the bottom of the table) will be more useful than applications that are narrow in focus (e.g., assessing a single DER program, as shown at the top of the table).

Table 1. Potential BCA and DEA Applications

Applications	Examples
Assess a single DER program serving priority populations	Low-income energy efficiency program, low-income community solar program, low-income microgrid program
Assess a single DER program serving all types of customers	Residential retrofit energy efficiency program, distributed generation net-billing program, distributed storage program
Compare across DER programs	*Compare same type of DERs*: one energy efficiency program vs. other energy efficiency programs, one distributed generation net-billing program versus other distributed generation net-billing programs *Compare different types of DERs*: energy efficiency versus distributed generation, distributed generation versus storage program, demand response versus storage program
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)

Second, similar to BCA, DEA can be applied (a) prospectively before a DER investment is made to assess whether to make the investment, or (b) retrospectively after the DER investment has been made to evaluate the effectiveness of the DER. A DEA should account for the same timeframe and use the same data as the BCA it complements. Retrospective BCA and DEA should use actual, historical data as much as possible, while prospective BCA and DEA rely primarily on forecasts of future data.

Chapter 2 of the DEA Guide expands on the importance of articulating the DEA application and timeframe as the first stage of the framework.

Identify Priority Populations

In this document, a priority population refers to a defined customer segment that is the focus of the DEA. States, utilities, stakeholders, and communities can identify priority populations based on a jurisdiction's energy equity policies and goals, or designated indicators. Robust community and stakeholder input is essential in identifying priority populations.

A jurisdiction's energy equity policies and goals should be used to inform which customers to include in the priority populations.

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 begins with selecting relevant indicators—characteristics that identify populations that are more likely to experience disproportionate burdens from the energy system. Possible indicators are numerous, and some may be more relevant based on the jurisdiction and DEA applications. For example, the U.S. Department of Energy's (DOE) Justice40 initiative uses four categories to define disadvantaged communities (i.e., priority populations): fossil dependence, energy burden, environmental and climate hazards, and socioeconomic vulnerabilities. Each category contains multiple indicators, such as low income, energy burden, health impacts, people with disabilities, people who are linguistically isolated, and more.

Another consideration when identifying a priority population is the cumulative impact that may occur due to multiple inequities or stressors. For example, some customers might face a high energy burden while other customers might face inequitable environmental impacts, and some customers might face both. One approach to address this challenge is a cumulative impact analysis—a quantitative framework to help prioritize customers who are at risk of experiencing the most types of inequitable impacts.

Chapter 3 of the DEA Guide expands on the data sources and methods that can be used to identify priority populations.

Develop Distributional Equity Analysis Metrics

DEA metrics help determine the DER impacts and aspects of equity that will be considered in the analysis. Co-developing DEA metrics with community members and stakeholders helps to ensure the metrics address the most important types of inequities facing priority populations. A jurisdiction's energy equity policies and goals, developed with community and stakeholder input, should inform which metrics to use in a DEA.

It is helpful to begin with a broad set of equity metrics that address all equity dimensions and could apply to a broad, system-wide energy equity assessment. This broad set of metrics can then be winnowed down to those that are specifically relevant to the narrower DEA metrics. It is important to develop a narrower set of DEA metrics, partly to make DEA easier to conduct and interpret, but also to ensure that the analysis provides information that is necessary to make decisions about the utility DER investments under evaluation.

DEA metrics are derived from the jurisdiction's energy equity policies and goals.

Table 2 below describes some guidelines that can help winnow down system-wide energy equity metrics to DEA metrics.

Table 2. Guidelines for Developing DEA Metrics

Guidelines	Description
Distributional	Equity metrics for a DEA should focus on distributional equity impacts. Broad, system-wide energy equity metrics may cover many dimensions of equity (distributional, procedural, recognitional, restorative). The DEA framework is not designed to address all these dimensions.
Discrete	Many metrics might overlap or measure the same impact in different ways. DEA metrics should minimize overlap with each other to avoid double-counting the same or similar impacts, where possible.
Tied to equity goals	DEA metrics should capture the benefits and costs relevant to a jurisdiction's equity goals, if applicable.
Represents Impacts of DER	When applying a DEA to DERs, the focus should be on metrics where utility DER investments, or the investments that they defer or avoid, are likely to have an impact.

Table 3 shows an example set of metrics that could be used to evaluate DER investments using a DEA. It is important to emphasize that DEA metrics in Table 3 are for illustrative purposes only. Further, some jurisdictions might choose only a portion of the DEA metrics presented below.

Table 3. Illustrative Set of DEA Metrics to Evaluate Utility DER Investment

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
Host Customer	Non-energy impacts	Health, safety, and comfort	Change in medical costs, change in lost workdays, lost school days, maternal health impacts, % of homes at unsafe temperatures
		Reliability and resilience	Change in number and duration of outages at the customer level
Societal	Public health	Health impacts	Change in rates of hospital admissions, asthma, cancer risk
			Lost workdays
	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 rate	Percent change in rates
	Bills	Change in bills	Percent change in bills
		Energy burden	Percent change in energy burden
	Participation	Participation for the DER being evaluated	Participants as percent of eligible customers

Chapter 4 of the DEA Guide expands on the data sources and methods that can be used to develop and benchmark DEA metrics.

Apply DEA Metrics to Priority Populations and Other Customers

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. This stage can be supported with analytical tools, including mapping tools (such as geographic information system models), environmental justice screening tools, dashboards, and modeling tools.

The majority of data currently available to identify priority populations can be obtained from government entities and is available according to geographic location. Data used for metrics tends to be available from utilities and may be available at the customer level. Because these sources often provide data in different forms and levels of granularity, combining them requires careful consideration.

Figure 3 summarizes the process used for applying priority population data to equity metric data, as well as the typical types and sources of data required for each. It also indicates the resolution of the data from different sources. The resolution of the data should be as granular as possible to provide the most detailed results. The analysis and results can only be as detailed as the data source with the least granularity.

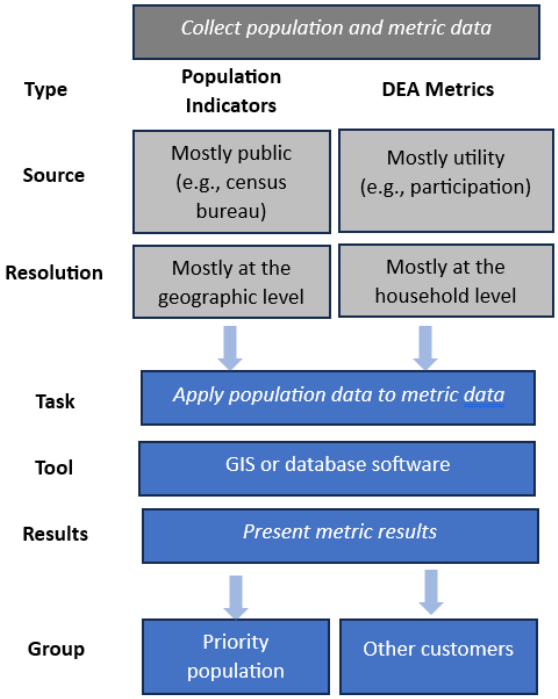

Figure 3. Process for Applying Population Data to Metric Data

Analysts conducting DEA should take care to protect data privacy to ensure that the data made public does not create risks of data security, privacy, or misuse. Further, analysts conducting DEA should ensure that data collection and sharing does not disproportionately or negatively impact priority populations, and that the data used is not biased against priority populations due to historical inequities in data collection and processing.

Chapter 4 of the DEA Guide expands upon how to apply DEA metrics to priority populations and other customers while protecting data privacy.

Present and Interpret DEA Results

To increase the accessibility and applicability of the framework, the DEA Guide describes three variations of interpreting DEA results. The simplest variation applies DEA metrics to the priority populations and to other customers. These "simple results" can indicate how a utility investment affects the priority populations and other utility customers for each of the metrics, but without additional context on the metrics.

The second variation builds on the simple results and adds benchmarks for each metric. Benchmarks compare the performance of the utility investment to a target or a preferred outcome. DEA metric benchmarks should be determined with input from community members and stakeholders and should reflect the jurisdiction's equity goals.

The third variation builds upon the benchmarked results by developing and applying scoring techniques to provide a more quantitative comparison of DEA metrics. Equity metrics are often presented in non-monetary, qualitative terms and use inconsistent units, making it difficult to consider DEA and BCA results together. To address this, analysts can create (a) a uniform scale for all metrics, (b) a score for each DEA metric, and (c) a weighting system across all DEA metrics. This approach allows analysts to create a "net score" reflecting all

the equity impacts associated with the utility investment.[9] The net score for priority populations and the net score for other customers provides a DEA result that can be compared with BCA results.[10]

Table 4 provides an overview of the advantages and limitations of presenting the simple DEA results, the benchmarked DEA results, and the weighted DEA scores.

Table 4. Applicability of DEA Results

Results Type	Description	Advantages	Limitations
Simple results	Includes unadjusted results for each DEA metric separately for priority population and other customers.	This format is simple, transparent, and does not require policy-based assumptions.	Metric results cannot be compared to each other or aggregated for populations. It may be difficult to draw conclusions about the total equity impact.
Benchmarked results	Includes simple results for each metric alongside metric-specific benchmarks.	This format provides additional context for the simple results, allowing analysts to draw equity conclusions for each DEA metric in isolation.	The benchmarks are goals that impact the objectivity of the results. Metric results cannot be compared to each other or aggregated for populations.
Weighted DEA scores	Applies weights regarding importance to benchmarked metrics to calculate weighted DEA scores. Weighted scores for each DEA metric can be aggregated to present net scores across all DEA metrics, providing a net score for priority population and a net score for other customers.	This format allows for comparison across different metrics. It also allows for net DEA scores to be calculated for each population. This format provides the most context for overarching conclusions.	This format requires the most data, policy decisions, and assumptions, which can significantly impact the objectivity of the results. If not applied properly and transparently, it can result in misinterpretation of DEA results.

Chapter 5 of the DEA Guide provides details on presenting and interpreting DEA results.

Make Decisions Using Both BCA and DEA Results

The final stage in conducting a DEA is to use the results of the DEA and BCA to inform decisions about utility DER investment. All three variations of DEA described above can be applied to this stage of the analysis.

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". In contrast, DEA does not have clearly defined criteria to determine what constitutes a sufficiently positive equity outcome. Therefore, it is useful to establish pass/fail criteria for DEA. These criteria should be co-created with robust community and stakeholder input and should ideally be established before determining the results of the DEA.

Figure 4 presents four types of outcomes for both the BCA and DEA results, in simple pass/fail terms. In cases where a utility investment passes both the BCA and DEA, it will likely be appropriate to make that investment. When a utility investment fails both the BCA and DEA, it will likely be appropriate to reject or modify the investment.

[9] The techniques described here are commonly called multi-attribute analysis.

[10] It is important to recognize that these techniques condense many complex results into one simple result and therefore can obscure some of the important details in the complete set of results. They can also be subject to misinterpretation and manipulation. Therefore, they should be used cautiously and only with robust stakeholder input and oversight.

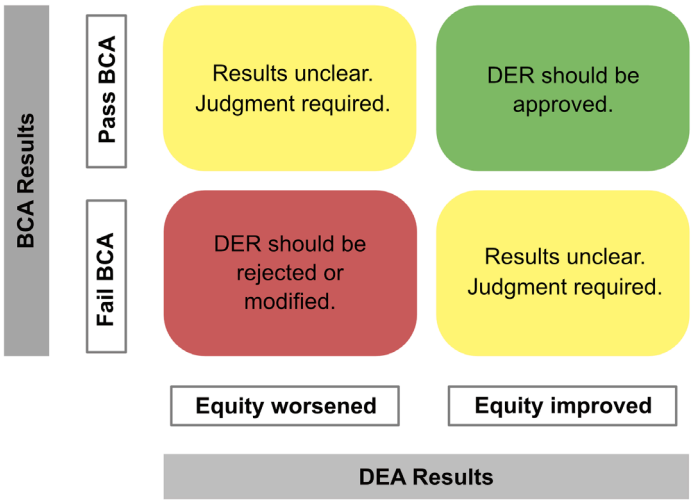

Figure 4. Conclusions Matrix for the BCA and DEA

However, if an investment passes a BCA and fails a DEA, or vice versa, the conclusion requires more consideration of the details of that investment, the jurisdiction's policy goals, and the specific results of the BCA and DEA.

- A DER might pass a DEA but marginally fail the BCA and still be approved because the DER helps achieve the jurisdiction's equity goals. Utility low-income energy efficiency programs are one example where this might happen.
- A DER might marginally fail a DEA but pass the BCA and still be approved because the DER has overall positive impacts that make it worthwhile. This might be the case if a DEA were applied to a commercial and/or industrial energy efficiency program in isolation from the other efficiency programs.

In all cases where an investment fails either the BCA or DEA results, it is especially important to present all the BCA and DEA results as transparently as possible, and to incorporate robust community and stakeholder input to: (a) make changes to the DER program to improve its DEA results; (b) make changes to the DER program to improve its BCA results, and ultimately (b) strike an appropriate balance between the BCA results and the DEA results.

Chapter 6 of the DEA Guide provides details on making decisions using both BCA and DEA results.

Opportunities for Streamlining Distributional Equity Analysis

Some of the techniques described in the DEA Guide can be complex and time-consuming. Several options for simplifying DEA are available to increase the accessibility and applicability of the framework. A simplified version of DEA can provide valuable information to assess the equity impacts of utility DER investments when time and resources are limited. Below are some examples of opportunities for streamlining.

- Stage 1: Establish a Robust Stakeholder Process. This stage should not be streamlined as it is a critical and central component of a DEA.
- Stage 2: Articulating the DEA Context. Start with a relatively narrow DEA application, such as assessing a portfolio of well-established energy efficiency programs where a large amount of data is readily available, instead of a broad DEA that aims to optimize multiple portfolios of different types of DERs.

- Stage 3: Identifying Priority Populations. Rely upon existing indicators, such as those created for environmental justice purposes, or those used in other jurisdictions. Use relatively few indicators that capture the most important energy equity characteristics. Skip the cumulative impact analysis.
- Stage 4: Developing Distributional Equity Metrics. Rely upon existing equity metrics, or those used in other jurisdictions. Use relatively few DEA metrics that capture the most important equity impacts. Rate impacts and DER participation rates are examples of metrics that capture very important equity implications. Minimize the use of overlapping DEA metrics.
- Stage 5: Applying DEA Metrics to Priority Populations and Other Customers. Use mapping, screening, and modeling tools that have been established in other jurisdictions.
- Stage 6: Presenting and Interpreting DEA Results. Focus on using the simple results and the benchmarked results. Skip the calculation and application of weighted DEA scores.
- Stage 7: Making Decisions Using Both BCA and DEA Results. Establish clearly defined DEA pass/fail criteria prior to conducting the DEA. Establish other conditions up front that might allow for approval of an investment when either the BCA or the DEA fails.

Streamlining the DEA process might lead to reasonable results for decision-making purposes, but it creates the risk of oversimplifying important issues or omitting important equity considerations. Jurisdictions should be careful to strike the appropriate balance between streamlining the DEA process and conducting a more comprehensive analysis. Stakeholder and community engagement is such a critical part of conducting a DEA that it should not be reduced or limited in order to streamline the DEA. Future DOE-funded research may explore how to make a DEA more accessible under policy or funding constraints.

Jurisdictions should be careful to strike the appropriate balance between streamlining the process and conducting a comprehensive analysis.

References and Resources

A detailed list of references and resources for conducting DEA is provided in Chapter 8 of the DEA Guide.

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