3. Accounting for Equity in Cost-Benefit Analysis

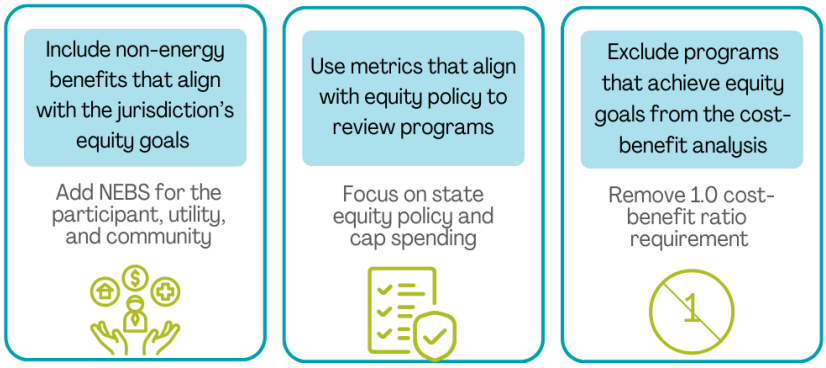
Current cost-benefit analysis practices ensure energy efficiency programs deliver cost-effective energy savings. This means inputs to the cost-benefit analysis look only at energy costs and savings, which does not account for environmental, economic, and health impacts of programs. Centering equity in program design requires that programs prioritize energy plus environmental, economic, and health impacts of programs. Implementing equitable energy efficiency programs provides benefits beyond energy as they improve neighborhoods and the built environment through investing in housing, reducing air emissions, and improving public health.

Cost-benefit tests are used to assess the cost-effectiveness of various energy resources such as energy efficiency, pipe and wire infrastructure, and other distributed energy resources to ensure ratepayer investments result in benefits for customers, utility systems, and society. State utility regulatory agencies usually establish the cost-benefit test and have program implementers apply it to proposed programs to ensure that the benefits of the programs outweigh the cost.

Every state uses a different approach and input values for cost-benefit analysis. But there are five tests that states usually use for energy efficiency evaluation: Utility Cost Test, Participant Cost Test, Ratepayer Impact Measures Test, Total Resource Cost Test (TRC), and Societal Benefits Cost Test (SBC). Three of the tests – the Utility Cost Test, Participant Cost Test, and Ratepayer Impact Measures Test – focus on costs and benefits on the energy system from only certain perspectives: the utility, participant, or ratepayer. Two of the tests – Total Resource Cost Test (TRC) and Societal Benefits Cost Test (SBC) – take a more holistic view, building on each other to capture a fuller picture of both costs and benefits. The Total Resource Cost Test (TRC) considers the energy impacts for both utility and participants. The Societal Benefits Cost Test builds on the TRC to include costs and benefits to society as a whole, known as non-energy impacts. These impacts can include public health, greenhouse gas emissions, and economic development. The National Energy Screening Project provides state cost-effectiveness fact sheet for which test and inputs states use for their cost-benefit test.

Pathways to Centering Equity in Cost-Benefit Analysis

A majority of states still use the Utility Cost Test or Total Resource Cost Test to determine if programs are cost effective. The narrow focus of current cost-benefit analysis ignores the environmental, economic, and health impacts these improvements have and can become obstacles to implementing programs that target energy equity needs. States have used three pathways to address this barrier so far:



Exclude Programs That Are Designed to Address Inequities from a Cost-Benefit Analysis

While most energy efficiency programs must pass a cost-benefit analysis, some states have created exemptions for programs that seek to encourage participation and remove barriers for historically marginalized and/or excluded communities. These programs include those that are focused on serving low- and moderate- income customers or fulfill an energy equity priority of the state.

Regulatory agencies can exempt specific programs or whole portfolios from the requirement to achieve a 1.0 cost-benefit ratio by allowing a lower threshold. This approach recognizes hard-to-monetize benefits of these programs without the need to calculate specific monetary or other proxy values. However, it is important to remember when programs are excluded from cost-benefit analysis, other regulations and guidance should step in to ensure programs are still achieving state policies and benefits are still flowing to historically marginalized and/or excluded communities. For example, in Maryland and Ohio programs that serve low-income customers do not need to pass cost-effectiveness testing because they provide benefits that are difficult to monetize like addressing barriers in program implementation and decreasing energy burden.

In order to encourage program administrators to design programs for historically marginalized and underserved communities, policymakers can mandate energy efficiency programs incorporate equity-focused goals through changes in program design and portfolio composition, tracking metrics, goals, and performance incentives. During this process, policymakers should consult with and incorporate suggestions of community stakeholders to inform program design and goals. Additionally, providing guidance in other areas of program design and EM&V can help program implementers design programs that align with policy and provide for more uniform and transparent program review.

Include Non-Energy Impacts That Align with Equity Policy

Inequities in the energy system cause negative health and societal outcomes as they impact conditions in the environments where people live, work, and learn. Moreover, implementing equitable energy efficiency programs provides benefits beyond energy. Such programs improve neighborhoods and the built environment though investing in housing, reducing air emissions, and improving public health. Adding non-energy impacts (NEIs) to cost-benefit analysis creates a more complete and balanced analysis of energy efficiency program impacts by accounting for these benefits. This can better align the cost-benefit analysis with state equity goals and support more comprehensive community-focused programs.

There are many NEIs that policymakers can seek as energy efficiency programs provide non-energy impacts for participants and community. For participants, benefits include lower energy burden, improved health and safety, increased property value, and lower maintenance costs from improvements in the home. For the community, programs provide benefits such as reduced environmental pollutants, improved public health, lower monthly utility bills, and improvements in housing stock efficiency, increasing community-wide property values. Including these benefits can encourage program implementers to offer them as the cost-benefit analysis will better represent the value of combining efficiency with other efforts like health and safety repair.

States can modify tests by including additional NEI metrics to existing tests in a public proceeding or by creating a Jurisdiction-Specific Test. While identifying proper metrics for tests can be challenging, states can, in the near term, use other resources that have captured the benefits or include an equity adder. An equity adder quantifies the disproportionate impacts and benefits felt by underserved communities without needing to identify precise numbers for each benefit. Current adders for low-income programs range from 50 percent in Colorado, 25-20 percent in New Mexico and Nevada, 15 percent in Vermont, and 10 percent in New Jersey and Utah. These adders represent a range of benefits including reduced energy burden, increased comfort from more controlled indoor climates, investment in homes, and health and safety for participants and communities. To include more precise metrics, states can use information from studies in other jurisdictions that identify specific amounts for the benefits that flow to historically underserved and overburdened communities. See Appendix A for a list of resources.

Use Metrics That Align with Equity Policy to Review Programs Instead of a CBA

An alternative to lowering the cost-benefit threshold or adding non-energy impacts is to create metrics that align with state equity policy as evaluation criteria for programs and place a cap on spending. This is referred to as program segmentation. Program segmentation can help evaluate and streamline offerings because all programs offered by energy companies are together in one part of the portfolio. Segmentation provides increased accountability since progress is assessed for each sub-portfolio of programs. This provides a clear sense of program objectives for program administrators, local governments, third-party providers, and other stakeholders.

In California, the Public Utilities Commission (CPUC) divided its energy efficiency portfolio into three segments: resource acquisition, market support, and equity.

1. Resource Acquisition includes programs that will provide cost-effective savings during the program cycle;
2. Market Support includes programs whose primary purpose is to support the long-term success of the energy efficiency market through educating customers, training the workforce, building partnerships, and accelerating adoption of clean energy technologies; and
3. Equity includes programs whose primary purpose is to provide energy efficiency to historically marginalized and/or excluded communities aligned with the Commission's Environmental and Social Justice Action Plan.

While market transformation and equity programs are exempt from cost-benefit analysis, these programs are capped at 30 percent of total program spending and must achieve targets identified through an inclusive stakeholder process, which ensures they will achieve the policy objectives of the state and reflect the needs of the local communities. Creating performance metrics and capping spending can ensure that investments in energy efficiency programs yield benefits aligned with state policy and are at an appropriate level of spending.

The CPUC made this division because it found it difficult to assign values to benefits from equity-focused initiatives such as public health, economic, and improved housing. Further, it discovered that focusing on cost-effectiveness as a decision point resulted in administrators prioritizing cost-effectiveness over other state policy objectives like equity, market transformation, and strategic electrification. Other states can adopt this policy as well by segmenting their equity-focused programs, identifying a percentage of budget for their programs, and establishing a transparent and inclusive stakeholder progress to identify performance metrics or goals.

Appendix A: Studies That Identify Benefits for Low-Income and Community-Based Programs

Resource	Summary
Skumatz Economic Research Associates, Non-energy impacts/Non-Energy Impacts (NEBs/NEIs) and Their Role & Value in Cost-Effectiveness Tests: State of Maryland, March 2014.	Study provides NEB values identified from other literature to be used in Maryland's CBA, including utility arrearages/financial impacts, societal emissions impacts, societal economic impacts, participant comfort/noise impacts, health/ safety impacts, home improvement impacts, and savings on other bills.
Apprise, Inc. Connecticut Non-Energy Impacts - Literature Review: R1709, December 2018	Study provides a review of research and values for NEIs completed in 2000 or later with original research and calculation of NEB values. It includes values for medical/health, safety, comfort, affordability, operation and maintenance costs, water usage, economic, property value, utility rates and arrearage reduction, transmission & distribution, and environmental, including avoided emissions and participant valuation.
Independent Electricity System Operator: Non-Energy Benefit Study: Phase II – Quantified Benefits and Quantitative Insights, July 2021.	Study presents values for non-energy impacts for low-income and First Nation participants, as well as residential commercial, institutional, industrial, and agricultural. The numbers are specific to Ontario, but the methodology is replicable.
Three Cubed, Non-Energy Impact Analysis for Xcel Energy's Low-Income Programs, June 2020.	Study of NEIs that result from Xcel Energy Colorado's low-income programs, including participant/household benefits of lowering asthma, heat stress, cold stress, missed days of work, predatory loans, reduced fire risk, carbon monoxide poisoning, reduced utility disconnects and increased food security, and societal benefits from lowering asthma rates, heat stress, cold stress, missed days of work reduced fire risk, carbon monoxide poisoning, and increased food security.
EPA, Quantifying the Emissions and Health Benefits of Energy Efficiency and Renewable Energy, Part Two, Chapter Four.	Report provides tools to help analysts and decision-makers in states and localities understand methods, tools, opportunities, and considerations for assessing emissions and health benefits of energy efficiency and renewable energy policies, programs and measures.

Resources

Applied Public Policy Research Institute for Study and Evaluation. "Connecticut Non-Energy Impacts Literature Review: R1709." For Connecticut Energy Efficiency Board (CTEEB), Dec 2018. http://www.appriseinc.org/wp-content/uploads/2019/02/Connecticut-Non-Energy-Impacts-Report.pdf

"Assessment of Energy Efficiency Potential and Goals and Modification of Portfolio Approval and Oversight Process." For the Public Utilities Commission of California. May 2021. https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M385/K864/385864616.PDF

California Public Utilities Commission. "Environmental & Social Justice Action Plan." Apr 2022. https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/news-and-outreach/documents/news-office/key-issues/esj/esj-action-plan-v2jw.pdf

California Public Utilities Commission. "Order Instituting Rulemaking Concerning Energy Efficiency Rolling Portfolios, Policies, Programs, Evaluation and Related Issues: Appendix A: Roadmap: Better Energy Efficiency Policy." Nov 2013. https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M339/K545/339545105.PDF

Caputo, Samantha, Lisa Cascio, Serge Jean-Baptiste, Chris Tanner, and Elizabeth Titus. "Non-Energy Impacts Approaches and Values: an Examination of the Northeast, Mid-Atlantic, and Beyond." NEEP for NH Public Utility Commission, Jun 2017. https://neep.org/sites/default/files/resources/NEI Final Report for NH 6.2.17.pdf

Colorado Department of Regulatory Agencies, Public Utilities Commission. "Details of Proceeding 17A-0462EG (Public Service Company - Demand Side Management Plan)." Jul 2017. https://www.dora.state.co.us/pls/efi/EFI.Show_Docket?p_session_id=&p_docket_id=17A-0462EG

Contreras, Mario. "Energy Efficiency and Load Management Report." Xcel Energy to New Mexico Public Regulation Commission, May 2020. https://drive.google.com/file/d/1LoKWyR_QKvHzHcYqDJfkJIvSZ-6Ud5E2/view

Cosgrove, Erin. "Turning Policy into Performance: Determining a Discount Rate for Decarbonization." NEEP, Mar 2022. https://neep.org/blog/turing-policy-performance-determining-discount-rate-decarbonization

Drehobl, Ariel, and Lauren Ross. "Lifting the High Energy Burden in America's Largest Cities: How Energy Efficiency Can Improve Low Income and Underserved Communities." ACEEE, Apr 2016. https://www.aceee.org/sites/default/files/publications/researchreports/u1602.pdf

Dunsky. "Non-Energy Benefits Study: Phase II." Independent Electricity System Operator (IESO), Jul 2021. https://www.ieso.ca/-/media/Files/IESO/Document-Library/conservation-reports/Non-Energy-Benefits-Study-Phase-II.ashx

Erb, Tom. "The Social Cost of Carbon – Going Nowhere but Up." Center for Climate and Energy Solutions, Mar 2021. https://www.c2es.org/2021/03/the-social-cost-of-carbon-going-nowhere-but-up/

Ettenson, Lara, and Mohit Chhabra. “New Energy Efficiency Rules Will Cut Carbon & Lower Costs.” NRDC, Oct 2021. https://www.nrdc.org/experts/lara-ettenson/new-energy-efficiency-rules-will-cut-carbon-and-lower-costs

Hawkins, Beth, Bruce Tonn, Michaela Marincic, and Erin Rose. “Non-Energy Impact (NEI) Analysis for Xcel Energy’s Low-Income Programs.” Three Cubed, Jun 2020. http://www.threecubed.org/uploads/2/9/1/9/29191267/non-energy_impacts__nei__analysis_for_xcel_energys_low-income_programs.pdf

Healthy People 2030. “Social Determinants of Health.” U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. https://health.gov/healthypeople/priority-areas/social-determinants-health

Lazar, Jim, and Ken Colburn. “Recognizing the Full Value of Energy Efficiency.” US Program Regulatory Assistance Project, Sep 2013. https://www.puc.nh.gov/electric/15-137 non docket info/RAP_LazarColburn_LayerCakePaper_2013_Sept_9 (1).pdf

Lienke, Jack, Iliana Paul, Max Sarinsky, Burçin Ünel, and Ana Varela Varela. “Making Regulations Fair: How Cost-Benefit Analysis Can Promote Equity and Advance Environmental Justice.” Institute for Policy Integrity, Aug 2021. https://policyintegrity.org/publications/detail/making-regulations-fair

National Energy Screening Project. “NSPM Supporting Resources.” 2022. https://www.nationalenergyscreeningproject.org/resources/

New Jersey Board of Public Utilities. “In the matter of the implementation of P.L. 2018, c. 17 regarding the establishment of energy efficiency and peak demand reduction programs in the matter of the Clean Energy Act of 2018 – New Jersey cost test.” Aug 2020. https://www.bpu.state.nj.us/bpu/pdf/boardorders/2020/20200824/8A - ORDER New Jersey Cost Test.pdf

NV Energy. “Application of Nevada Power Company d/b/a NV Energy and Sierra Pacific Power Company d/b/a NV Energy for approval of their 2019 Combined Annual Electric Demand Side Management Update Report as it relates to the Action Plan of their 2019-2038 Triennial Joint Integrated Resource Plan.” For the Public Utilities Commission of Nevada, Jul 2019. https://drive.google.com/file/d/1wPWG2F7UEvEiVPeozssy3zs_pUce1VJI/view

“Part 2, Chapter 4: Quantifying the Emissions and Health Benefits of Energy Efficiency and Renewable Energy.” In *Quantifying the Multiple Benefits of Energy Efficiency and Renewable Energy: A Guide for State and Local Governments*, EPA, 2018. https://www.epa.gov/sites/default/files/2018-07/documents/mbg_2-4_emissionshealthbenefits.pdf

Public Service Commission of Maryland. “2021-2023 EmPOWER Maryland Program.” Dec 2020. http://webapp.psc.state.md.us/newIntranet/Casenum/NewIndex3_VOpenFile.cfm?FilePath=//Coldfusion/Casenum/9600-9699/9648/43.pdf

Sears, Justine, and Kelly Lucci. “Vermont Energy Burden Report.” Efficiency Vermont, Oct 2019. https://www.efficiencyvermont.com/news-blog/whitepapers/vermont-energy-burden

Skumatz, Lisa A. “Non-Energy Benefits / Non-Energy Impacts (NEBs/NEIs) And Their Role & Values In Cost-Effectiveness Tests: State Of Maryland.” NRDC, Mar 2014. https://sahlln.energyefficiencyforall.org/sites/default/files/2014_NEBs report for Maryland.pdf

Woolf, Tim, Courtney Lane, Melissa Whited, Chris Neme, Mike Alter, Steve Fine, Karl Rábago, Steven Schiller, Kate Strickland, and Brenda Chew. “National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources.” NESP, Aug 2020. https://www.nationalenergyscreeningproject.org/wp-content/uploads/2020/08/NSPM-DERs_08-24-2020.pdf

Woolf, Tim, William Steinhurst, Erin Malone, and Kenji Takahashi. “Energy Efficiency Cost-Effectiveness Screening.” US Program Regulatory Assistance Project and Synapse Energy Economics, Inc., Nov 2012. https://www.synapse-energy.com/sites/default/files/SynapseReport.2012-11.RAP_.EE-Cost-Effectiveness-Screening.12-014.pdf