Measuring Equity Benefits in RD&D

Prepared for the CPUC EPIC Partnership Workshop on
EPIC Strategic Goals Equity in RD&D

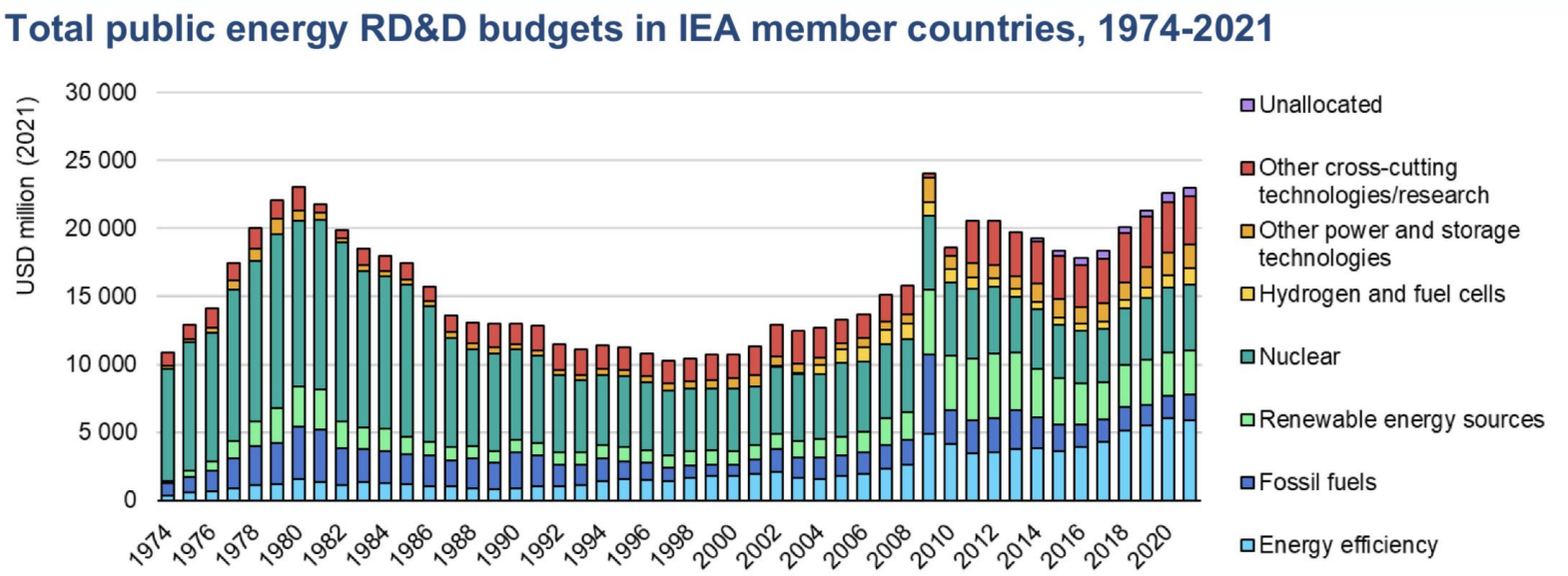
August 17, 2023

By Holmes Hummel, PhD
Energy Equity & Just Transitions
Institute for Energy
Stanford University

Preview of Remarks on Developing Definition of Benefits and Measurable Metrics for EPIC R&D Investments

- **Consider California's positionality in energy transition R&D**
- Apply equity metric categories for measuring R&D benefits
- Develop metrics through broader California activity streams

California's EPIC investments are part of a multi-national R&D complex for energy transitions



Source: International Energy Agency, *Tracking Public Investment in Energy Technology Research: A Roadmap. https://iea.blob.core.windows.net/assets/788429a3-5733-4576-a75d-bb250d4e4c20/TrackingPublicInvestmentinEnergyTechnologyResearchARoadmap.pdf*

In the U.S., the leading sources of R&D investment recognize the equity imperative in energy transitions. ***How are they measuring?***

EPRI
ELECTRIC POWER RESEARCH INSTITUTE

Stanford ENERGY

Considering California's positionality – and the CPUC's position with EPIC within that context

- **What are the relatively unique questions that California faces?**
- Which of them are EPIC funds well-positioned to help answer?
- **Is EPIC accountable to state government pledges to support specific lines of inquiry?**
- How will EPIC research award decisions be informed and reviewed by stakeholders in the communities with the most at stake in the transitions?
- What **infrastructure for engagement and consultation** (e.g. the Disadvantaged Communities Advisory Group and the state policy on Tribal Consultation) can EPIC leverage to inform the definition of benefits?
- How might partnerships between EPIC and other R&D enterprises in California accelerate the integration of **both procedural equity and distributive equity?**

Preview of Remarks on Developing Definition of Benefits and Measurable Metrics for EPIC R&D Investments

- Consider California's positionality in energy transition R&D
- **Apply equity metric categories for measuring R&D benefits**
- Develop metrics through broader California activity streams

Core tenets of Energy Justice

- Recognition
- Procedural justice
- Distributional justice
- Restorative justice

Source: Carley & Konisky. (2020) The justice and equity implications of the clean energy transition. *Nature Energy.*

Recognition

Carley & Konisky, quoting several other scholars, published this definition:

"**Recognition justice** requires an understanding of historic and ongoing inequalities, and prescribes efforts that seek to reconcile these inequalities."

Tribes and four categories of **Justice Communities** are recognized by the State of California as being primary stakeholders in rapid, just energy transitions.

The EPIC R&D Framework can – and must — face and embrace recognition of past injustice and the opportunity to engage in a restorative path.

Photo credit: Indigenous Environmental Network (2021) *Indigenous Resistance Against Carbon*

Procedural equity

- "**Procedural justice** focuses on **who is included** in energy decision-making processes and seeks to ensure that energy **procedures** are fair, equitable and inclusive of all who choose to participate."

Source: Carley & Konisky. The justice and equity implications of the clean energy transition. *Nature Energy.* 5, 569-577 (2020).

Spectrum of Community Engagement

The Spectrum of Community Engagement to Ownership

Stance Towards Community	0 Ignore
Impact	Marginalization
Community Engagement Goals	Deny access to decision-making processes
Message to Community	"Your voice, needs, and interests do not matter"
Activities	Closed-Door Meetings Misinformation Systematic Disenfranchisement Voter Suppression

Source: Emerald Cities (2020) *Community Engagement on Equitable Building Electrification*
https://emeraldcities.org/wp-content/uploads/2021/05/Climate-Equity-and-Community-Engagement-Toolkit_Nov102020.pdf

Spectrum of Community Engagement

The Spectrum of Community Engagement to Ownership

Stance Towards Community	0 Ignore	1 Inform	2 Consult	3 Involve	4 Collaborate	5 Defer To
Impact	Marginalization					
Community Engagement Goals	Deny access to decision-making processes					
Message to Community	"Your voice, needs, and interests do not matter"					
Activities	Closed-Door Meetings Misinformation Systematic Disenfranchisement Voter Suppression					

IAP2: "Empower"

Source:
International Association for Public Participation (IAP2)

Source: Emerald Cities (2020) *Community Engagement on Equitable Building Electrification*
https://emeraldcities.org/wp-content/uploads/2021/05/Climate-Equity-and-Community-Engagement-Toolkit_Nov102020.pdf

Spectrum of Community Engagement

The Spectrum of Community Engagement to Ownership

Stance Towards Community	0	1	2	3	4	5
	Ignore	Inform	Consult	Involve	Collaborate	Defer To
Impact	Marginalization	Placation	Tokenization	Voice	Delegated Power	Community Ownership
Community Engagement Goals	Deny access to decision-making processes	Provide the community with relevant information	Gather input from the community	Ensure community needs and assets are integrated into process and inform planning	Ensure community capacity to play a leadership role in implementation of decisions	Ensure community capacity to play a leadership role in implementation of decisions
Message to Community	"Your voice, needs, and interests do not matter"	"We will keep you informed"	"We care what you think"	"You are making us think (and therefore act) differently about the issue"	"You are making us think (and therefore act) differently about the issue"	"It's time to unlock collective power and capacity for transformative solutions"
Activities	Closed-Door Meetings Misinformation Systematic Disenfranchisement Voter Suppression	Fact Sheets Open Houses Presentations Billboards Videos	Public Comment Focus Groups Community Forums Surveys	Community Organizing & Advocacy House Meetings Interactive Workshops Polling Community Forums	MOUs with Community-Based Organizations Community Organizing Citizen Advisory Committees Open Planning Forums with Citizen Polling	Community-Driven Planning Consensus Building Participatory Action Research Participatory Budgeting Cooperatives

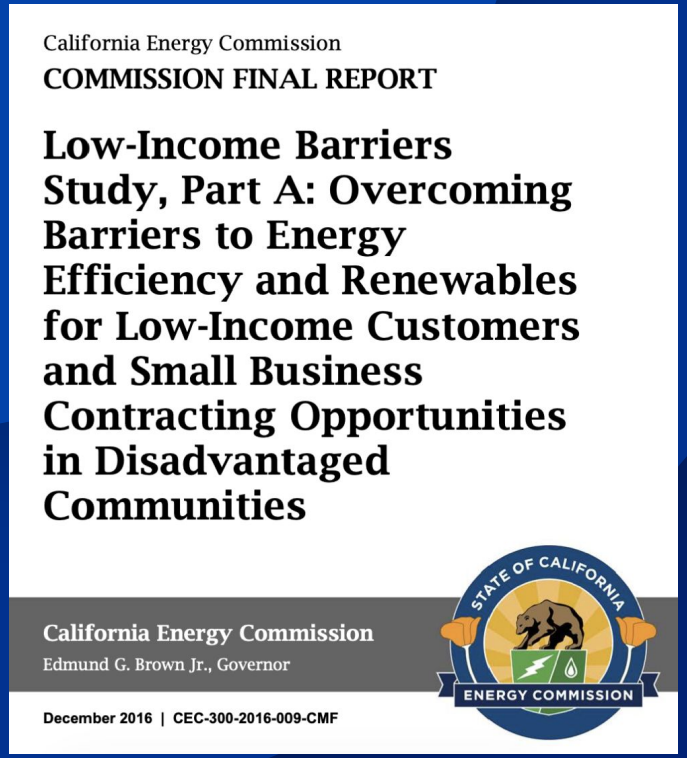
Source: Emerald Cities (2020) *Community Engagement on Equitable Building Electrification*
https://emeraldcities.org/wp-content/uploads/2021/05/Climate-Equity-and-Community-Engagement-Toolkit_Nov102020.pdf

Distributional equity

- "**Distributional justice** refers to distribution of benefits and burdens across populations, and an objective to ensure that some populations do not receive an inordinate share of the burdens or are denied access to the benefits."

Source: Carley & Konisky. The justice and equity implications of the clean energy transition. *Nature Energy.* 5, 569-577 (2020).

Barriers are well-known. But how is progress tracked?



California Energy Commission

COMMISSION FINAL REPORT

Low-Income Barriers Study, Part A: Overcoming Barriers to Energy Efficiency and Renewables for Low-Income Customers and Small Business Contracting Opportunities in Disadvantaged Communities

California Energy Commission

Edmund G. Brown Jr., Governor

December 2016 | CEC-300-2016-009-CMF

Policy and Program Barriers Limiting Access to Clean Energy for Low-income Customers

There are also several policy and program barriers limiting low-income customers' access to energy efficiency and renewable energy, including challenges related to:

- Market delivery. Effective market delivery can be hampered by differing definitions of low-income or disadvantaged communities, insufficient or poorly calibrated outreach and delivery, high transaction costs imposed on low-income residents with limited time and resources, and slow rebate disbursals. For multifamily building owners, a lack of information about whole-building energy usage and energy upgrade potential and lack of program coordination across multiple services can contribute to limited participation.
- Program integration. Barriers to program integration, collaboration, and leveraging limit opportunities to streamline services and lock complementary funding sources into silos. Rate-setting and regulatory challenges can create uncertainty *and* new possibilities. Insecure, inadequate, or inequitable program funding can limit the transformative effect of low-income programs.
- Data limitations. Data limitations impede innovative and adaptive approaches to reaching low-income residents and stymie collaborative efforts.
- Unrecognized non-energy benefits. Non-energy benefits are often not considered in cost-effectiveness tests, which devalues some of the most important factors that motivate investment in clean energy upgrades, such as family health and safety, comfort, and tenant retention.

Source: California Energy Commission. (2016) Low-Income Barriers Study, Part A.

PNNL identifies three types of energy equity metrics

Target Population Metrics

Capture descriptive analytics on the constituency that may be eligible for support programs

Table 1 Target population identification metrics

Metric and Reference	Needed Data Points	Data Sources and Description
Program equity index [5]	Energy assistance offered	Program data; distribution of program benefits across populations
Program accessibility [6]	Eligible population data, income data	Program data; distribution of program eligibility across population groups
Energy cost index [5]	Median annual energy bill	EIA, utility records; distribution of energy cost across populations
Energy burden index [5]	Median annual energy bill and annual median income	EIA, utility records, census; distribution of energy burden across populations (i.e., 6% is considered high, 10% is considered severe)
Late payment index [5]	Late energy bill payment rate	Utility records, LIHEAP; distribution of late bill payment habits across populations
Appliance performance [7]	Appliance maintenance cost (lifespan, energy profiles)	Appliance purchase records, audit template; distribution of access to energy efficiency measures
Household-human development index [8]	Health status, education level, income	NIH, EPA, EJScreen[7]; distribution of HDI scores across population subgroups

Source: Pacific Northwest National Laboratory (2021). *Metrics for an Equitable and Just Energy System.*

PNNL identifies three types of energy equity metrics

Investment Decision Making Metrics

Describe how investment in one constituency compares to another to address distributive equity

Table 2 Investment decision-making metrics

Metric and Reference	Needed Data Points	Data Sources and Description
Community acceptance rating [6, 9]	Numeric representation of community satisfaction	Surveys of community acceptance and support for investment
Program funding impact [6]	Percent budget for advancing equity	Program data; percent of investment funding supporting disadvantaged communities
Energy use impacts [9]	Health and environmental impacts due to investment	Distribution of health and environmental impacts of energy investments across populations
Energy quality [9]	Investment impact on frequency of electric outages, energy capacity	EIA; utility data
Workforce impact [6, 7]	Investment generated jobs	Department of Labor (DOL); community benefits from investment (participation from low-income groups, local business contracts)

Source: Pacific Northwest National Laboratory (2021). *Metrics for an Equitable and Just Energy System.*

PNNL identifies three types of energy equity metrics

Program Impact Assessment Metrics

Show how well a support program has helped a specific constituency

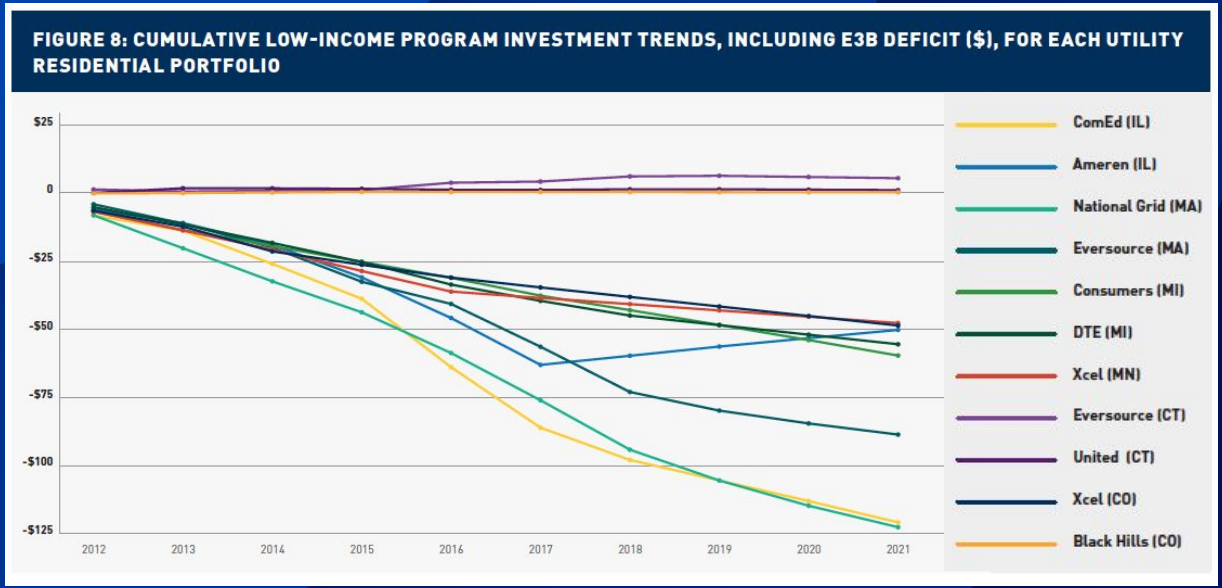
Table 3 Program impact assessment metrics

Metric and Reference	Needed Data Points	Data Sources and Description
Program acceptance rate [6]	Percent of population enrolled in program	Program data; program enrollment after receiving information (i.e., information dissemination, transparency, community trust, etc.)
Energy savings (MWh) [6]	Energy use over time	EIA, utility records; Energy use savings in disadvantaged communities after program implementation
Energy cost savings ($) [6]	Energy cost over time	Energy cost savings in disadvantaged communities after program implementation
Energy burden change [8]	Household income, energy bill	EIA, utility records, census; percent reduction in energy burden after program implementation (EE, weatherization, rate design, wage changes, etc.)
Change in HDI score [8]	Household income, quality of life	EIA, NIH; wellbeing and quality of life improvement after program implementation

Source: Pacific Northwest National Laboratory (2021). *Metrics for an Equitable and Just Energy System.*

The distribution of ratepayer funded rebates and incentive programs managed by many utilities is skewed toward higher income participants

Key metric: Energy Efficiency Equity Baseline ("E3B")



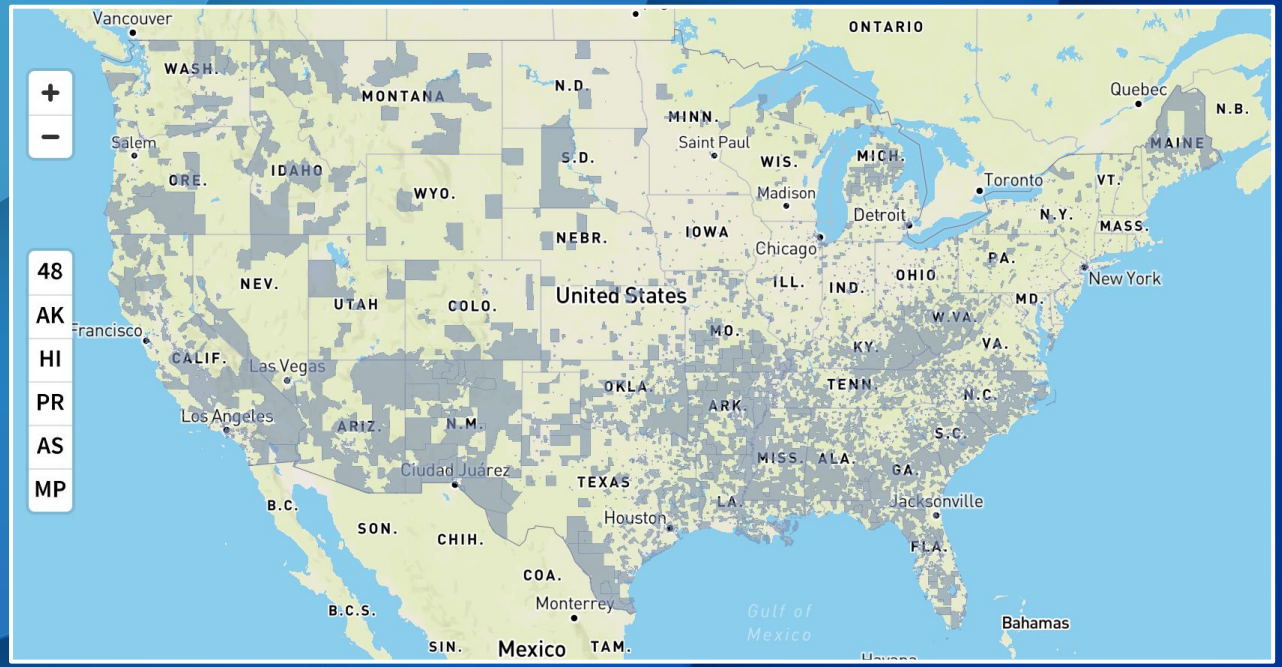
A study of energy efficiency spending with ratepayer funds over the past decade by 11 large U.S. utilities shows their distribution of EE funding is **increasingly inequitable.**

How might this metric be adapted to evaluate EPIC R&D portfolio investments?

Source: Urban Energy Justice Lab ; Reames et al. A Multi-State Analysis of Equity in Utility-Sponsored Energy Efficiency Investments for Residential Electric Customers, 2019

U.S. Climate & Economic Justice Screening Tool

Disadvantaged Communities are identified through metrics in any one of 8 categories that are rendered at the census tract level of aggregation.



Source: Council for Environmental Quality, https://screeningtool.geoplatform.gov/en/#8/0/0

U.S. Climate & Economic Justice Screening Tool

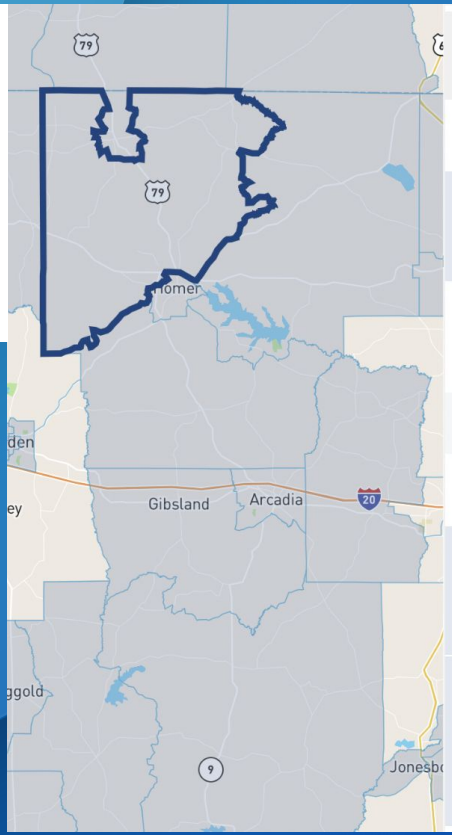
Methodology version 0.1

Census tract: 22027950200
County: Claiborne Parish
State: Louisiana
Population: 4,205

Identified as disadvantaged?

YES ●

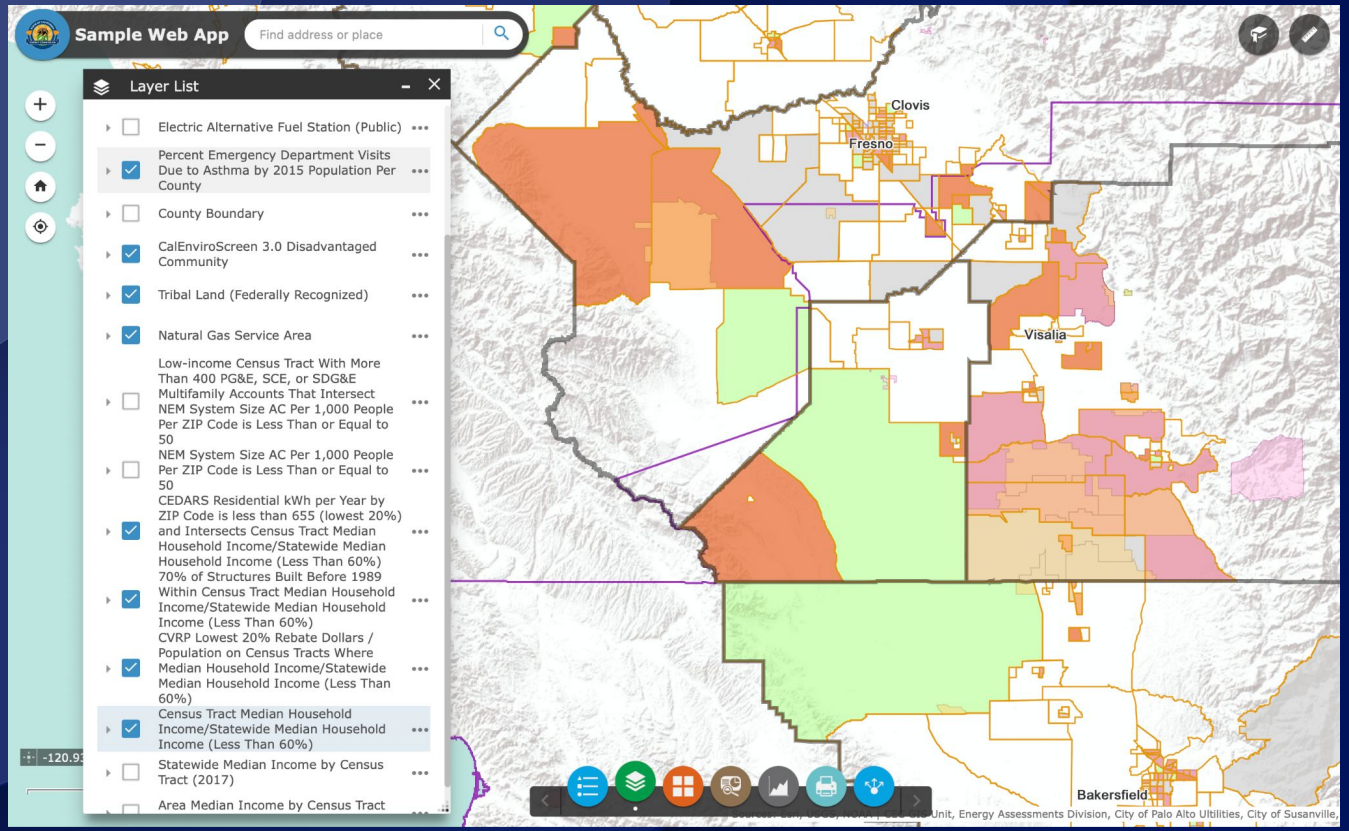
in 1 category



Clean energy and energy efficiency	● –
At or above at least one threshold?	**Yes**
Energy burden Average annual energy costs divided by household income	94th ↑ above 90th percentile
PM2.5 in the air Fine inhalable particles, 2.5 micrometers or smaller	71st ↓ below 90th percentile
AND	
At or above both associated thresholds?	**Yes**
Low income Household income is less than or equal to twice the federal poverty level	81st ↑ above 65th percentile
Higher education non-enrollment Percent of the census tract's population 15 or older not enrolled in college, university, or graduate school	98 ↑ above 80 percent

Source: Council for Environmental Quality, https://screeningtool.geoplatform.gov/en/#8/0/0

California Energy Equity Indicator Maps



Source: California Energy Commission. https://caenergy.maps.arcgis.com/apps/MapJournal/index.html?appid=d081a369a0044d77ba8e80d2ff671c92

Restorative justice

- "**Restorative justice** is described as using government or other intervention to either avoid distributional, recognitional, or procedural injustices, or to correct for them."

- What fraction of EPIC investments are **responsive to state-recognized barriers** to participation in the clean energy economy? What are indicators that restoration is occuring?

- How many longitudinal policies for advancing equity and accelerating energy transitions have data collection, analysis, and publication standards? How will California manage restoration without being a **feedback loop enabled by measurement?**

- How are **affected communities prioritized** in the funding of the work that supports accountability for restoration?

Source of definition:
Carley & Konisky. The justice and equity implications of the clean energy transition. *Nature Energy.* 5, 569-577 (2020).

Energy Community Tax Credit Bonus

U.S. DEPARTMENT OF ENERGY

NATIONAL ENERGY TECHNOLOGY LABORATORY

LEGEND

Coal Closure Energy Communities

Tract Status

- Census tract directly adjoining a census tract with a coal closure
- Census tract with a coal closure

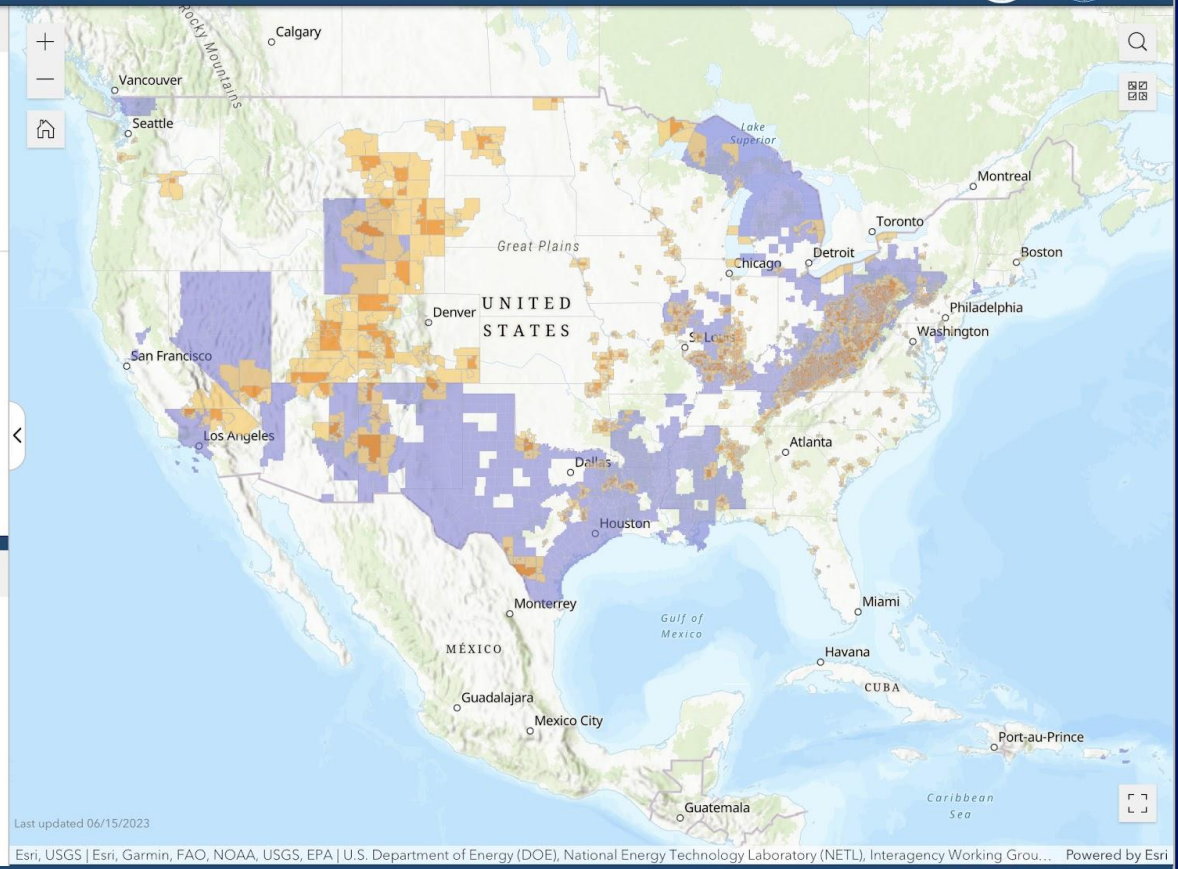
MSA/Non-MSAs that are Energy Communities

Status

- MSAs/non-MSAs that meet both the Fossil Fuel Employment (FEE) threshold and the unemployment rate requirement

MAP LAYERS

- Coal Closure Energy Communities
- MSA/Non-MSAs that are Energy Communities
- MSAs and Non-MSAs that only meet the Fossil Fuel Employment Threshold



Also: Brownfields are eligible – see EPA site.

https://www.epa.gov/enviroatlas/enviroatlas-brownfields
Tip: In the giant table, select “see map” the row for Brownfield Properties (ACRES)

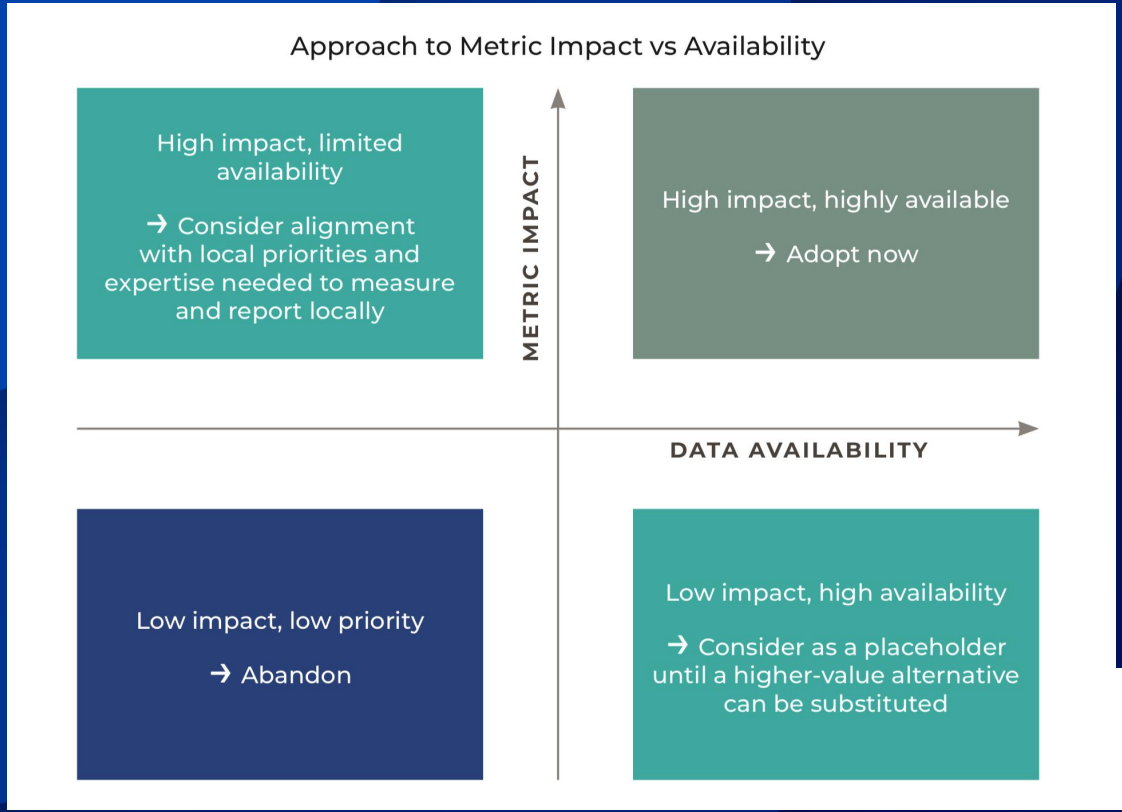
Preview of Remarks on Developing Definition of Benefits and Measurable Metrics for EPIC R&D Investments

- Consider California's positionality in energy transition R&D
- Apply equity metric categories for measuring R&D benefits
- **Develop metrics through broader California activity streams**

Leveraging California activity streams

- CPUC Environmental & Social Justice Action Plan
- CEC Justice, Access, Equity, Diversity, and Inclusion Framework
- CEC Resolution Committing to Tribal Energy Sovereignty
- CEC Nonenergy Benefits Analysis
- Executive Order to the CA Office of Data and Innovation
- CA Racial Equity Commission

Plan for variable data availability and metric impact initially



SEAS SCHOOL FOR ENVIRONMENT AND SUSTAINABILITY UNIVERSITY OF MICHIGAN

Energy Equity Project Report 2022

Source: Energy Equity Project, https://energyequityproject.com/wp-content/uploads/2022/08/220174_EEP_Report_8302022.pdf

Be rigorous in documenting choices along the way.

This will be an *iterative* and *collaborative* process over more than a decade.

PLAN ELEMENT	STAKEHOLDERS INVOLVED	TIME TO DEVELOP	LENGTH AND FORMAT	ANTICIPATED BENEFITS	PITFALLS TO WATCH FOR
Review equity prompts					
Map a robust process of engagement					
Define equity dimensions					
Co-create equity principles					
Set equity targets					
Establish accountability measures					
Develop a process for collecting and reporting data					
Establish roles and responsibilities for implementation					
Establish evaluation practices					

SEAS SCHOOL FOR ENVIRONMENT AND SUSTAINABILITY UNIVERSITY OF MICHIGAN
Energy Equity Project Report
2022

Measuring Equity Benefits in RD&D

Prepared for the CPUC EPIC Partnership Workshop on
EPIC Strategic Goals Equity in RD&D

August 17, 2023

By Holmes Hummel, PhD
Energy Equity & Just Transitions
Institute for Energy
Stanford University

Appendix 1.
Leveraging California Activity Streams

Leveraging California activity streams

- CPUC Environmental & Social Justice Action Plan
- CEC Justice, Access, Equity, Diversity, and Inclusion Framework
- CEC Resolution Committing to Tribal Energy Sovereignty
- CEC Nonenergy Benefits Analysis
- Executive Order to the CA Office of Data and Innovation
- CA Racial Equity Commission

Environmental and Social Justice Action Plan

California Public Utilities Commission

ESJ ACTION PLAN 2.0: UPDATED GOALS & OBJECTIVES

Goal 1: Consistently integrate equity and access considerations throughout CPUC regulatory activities.

Goal 2: Increase investment in clean energy resources to benefit ESJ communities, especially to improve local air quality and public health.

Goal 3: Strive to improve access to high-quality water, communications, and transportation services for ESJ communities.

Goal 4: Increase climate resiliency in ESJ communities.

Goal 5: Enhance outreach and public participation opportunities for ESJ communities to meaningfully participate in the CPUC's decision-making process and benefit from CPUC programs.

Goal 6: Enhance enforcement to ensure safety and consumer protection for all, especially for ESJ communities.

REVISED Goal 7: Promote high road career paths and economic opportunity for residents of ESJ communities.

Goal 8: Improve training and staff development related to environmental and social justice issues within the CPUC's jurisdiction.

Goal 9: Monitor the CPUC's environmental and social justice efforts to evaluate how they are achieving their objectives.

Source: California Public Utilities Commission, 2022, Environmental & Social Justice Action Plan 2.0. https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M465/K846/465846599.pdf

The CPUC Environmental & Social Justice Action Plan calls for both procedural and distributive equity in research

- **Goal #1. Consistently integrate equity and access considerations**
  - Expand Opportunities for Access: ***Who*** *is able to participate?*
  - Outreach and Engagement: ***How*** *are they being reached and engaged?*

- **Goal #2. Increase investment in clean energy resources to benefit ESj communities, especially to improve local air quality and public health**
  - Research & Analysis to Understand Impact
    - Four studies requested
    - Provide EPIC Research & Development Program Benefits to ESJ Communities

Source: California Public Utilities Commission, 2022, Environmental & Social Justice Action Plan 2.0. https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M465/K846/465846599.pdf

Lessons learned from by the EPIC Policy & Innovation Coordination Group, as reported in its Equity Workstream Report, February 2021

"Benefiting a community requires more than simply locating a project there."

"Panelists noted that just because a project is located in a disadvantaged community, it does not necessarily mean the project is equitable or serves the needs of the community members.

In some cases, panelists noted, community members can feel further disenfranchised when a project is being built in their community that they are not aware of or understand and support.

There may also be a missed opportunity to have more successful project deployment if the project is deployed in a disadvantaged community yet is not designed around the need to deliver benefits to those most in need of assistance or support.

The project site selection should be a thoughtful process that not only uses local data to inform technological compatibility, but also uses insights from local leaders to determine fit."

Source: https://www.epicpartnership.org/resources/Equity_Workstream_Report_Final.pdf

Lessons learned from by the EPIC Policy & Innovation Coordination Group, as reported in its Equity Workstream Report, February 2021

"Benefiting a community requires more than simply locating a project there"

Presenters discussed resources and recommendations for project site selection:

- Open-source data like CalEnviroScreen and others, as CalEnviroScreen excludes many tribes.
- Work with local leaders who are writing community plans (many times available online).
- Consider how other funding sources (and their respective goals) play a role in the selection process.
- Compensation for community members (e.g., CBOs as paid consultants)
- Look at established equity models as benchmarks.
- Be intentional about screening local community partners.

Source: https://www.epicpartnership.org/resources/Equity_Workstream_Report_Final.pdf

Lessons learned from by the EPIC Policy & Innovation Coordination Group, as reported in its Equity Workstream Report, February 2021

"Equity, diversity, and inclusion in EPIC projects should be measurable."

Presenters discussed ideas for creating metrics for equitable processes in EPIC projects:

- Use mediators when necessary.
- Closely evaluate failures and implement lessons learned.
- Bring on team members from various academic backgrounds, industries, races, ethnicities, cultures and socioeconomic backgrounds.
- Respect and acknowledge every person's individual contributions to the project.
- Understand and agree on what the desired outcome looks like for communities.
- Understand how your project impacts the local economy and quality of life.
- Consider diversity of thought and evaluate who else is missing from the table.

Source: https://www.epicpartnership.org/resources/Equity_Workstream_Report_Final.pdf

All Agencies Are Ordered to Embed Explicit Analysis of Equity

"WHEREAS agencies and departments within my Administration can and should take additional actions to embed explicit analysis of equity considerations in policies and practices, including by:

- analyzing demographic and geographic gaps in outcomes and access to funding and services,
- developing and consistently utilizing data analysis tools and practices to understand gaps in access to services and programs or outcomes from state programs, and
- reviewing community engagement strategies with a focus on Californians who reside in communities that have historically been underserved and marginalized"

Source: https://www.gov.ca.gov/wp-content/uploads/2022/09/9.13.22-EO-N-16-22-Equity.pdf

All Agencies Are Ordered to Embed Explicit Analysis of Equity

"By June 30, 2023, the **Office of Data and Innovation**, in consultation with agencies subject to my authority, shall **develop a set of statewide data and service standards and practices** to support agencies and departments to identify and address disparities in government operations and services, including but not limited to:

- standards for collecting and managing race and ethnicity data
- metrics for measuring and tracking equity in state services and programs
- and service delivery standards to support equity.

This will include best practices to address sensitivities around data collection."

Source: https://www.gov.ca.gov/wp-content/uploads/2022/09/9.13.22-EO-N-16-22-Equity.pdf

California Racial Equity Commission

"i. In consultation with private and public stakeholders, as appropriate, [the Commission shall] **develop a statewide Racial Equity Framework** …no later than April l, 2025 …[that] shall set forth the following:

1. **methodologies and tools** that can be employed in California to advance racial equity and address structural racism; and

2. budget methodologies, including equity assessment tools, that entities can use to **analyze how budget allocations benefit or burden communities of color**; and

3. processes for **collecting and analyzing data effectively and safely**, as appropriate and practicable, including disaggregation by race, ethnicity, sexual orientation and gender identity, disability, income, veteran status, or other key demographic variables and the use of proxies"

ii. **upon request by a state agency, provide technical assistance** on implementing strategies for racial equity consistent with the Racial Equity Framework; and

iv. engage, collaborate, and **consult with policy experts to conduct analyses and develop tools**, including by building on and collaborating with existing bodies, as appropriate"

Source: https://www.gov.ca.gov/wp-content/uploads/2022/09/9.13.22-EO-N-16-22-Equity.pdf

Justice Access Equity Diversity Inclusion (JAEDI) Framework

Terms & Definitions:

- Environmental Justice
- Energy Justice
- Just Transition
- Energy Equity
- Racial Equity
- California Native American **Tribes**
- **Justice Communities**
  - Disadvantaged Communities
  - Low-income communities &and households
  - Underserved community
  - People living with disabilities

Source: https://efiling.energy.ca.gov/GetDocument.aspx?tn=250084

Justice Access Equity Diversity Inclusion (JAEDI) Framework

"CEC seeks to increase opportunities for and the participation of all Californians in CEC programs and proceedings.

Aligning with Executive Order N-16-22, the **CEC must take action** to address existing disparities in opportunities and outcomes **by designing and delivering services and programs** consistent with federal and state constitutional requirements **to address unequal starting points and drive equal outcomes** so all Californians may reach their full potential and lead healthy and rewarding lives.

Accordingly, unless legislative mandates or other executive directives apply, the CEC will **prioritize efforts to increase resources, benefits, and opportunities to, while measurably reversing existing disparities and inequities for California Native American Tribes (Tribes) and Justice Communities.** The CEC intentionally differentiates Tribes to recognize their distinct status as sovereign nations instead of squeezing them into the 'community' category."

Source: https://efiling.energy.ca.gov/GetDocument.aspx?tn=250084

Justice Access Equity Diversity Inclusion (JAEDI) Framework

"Set aside a percentage of program funds for grant investments for Tribes and Justice Community projects.

Many CEC grant programs already dedicate a significant portion of investments – with most spending at least **15** percent of their funding on projects located in and benefitting disadvantaged communities, with some programs requiring at least **50** percent and others achieving over **70** percent spending of its funding – on projects located in disadvantaged communities.

Communicate investment and funding opportunities through extensive outreach, including through the EmpowerInnovation.Net platform."

Source: https://efiling.energy.ca.gov/GetDocument.aspx?tn=250084

Justice Access Equity Diversity Inclusion (JAEDI) Framework

"Track qualitative and quantitative data that can help evaluate programs, policies, and projects with an equity lens.

Unless it is confidential, this data should be shared with Tribes and Justice Communities and the public, to enable them to assess our work and inform their efforts.

Policies should direct more data to be collected and research to be conducted that can lead to increased understanding of the needs of communities and how to effectively deliver solutions.

Nonenergy benefits and social costs should also be considered in analyses.

Nonenergy benefits represent the array of diverse impacts of energy programs and projects beyond the generation, conservation, and transportation of energy."

Source: https://efiling.energy.ca.gov/GetDocument.aspx?tn=250084

Justice Access Equity Diversity Inclusion (JAEDI) Framework

"Specific categories of nonenergy benefits to consider:

Participant nonenergy benefits accrue to the program participants, including, but not limited to, reduced building or home operating costs, lower energy burden, increased property value, improved health, safety, and comfort, educational opportunities, increased energy reliability and household resilience, asset ownership, and beneficial fuel switching.

Utility nonenergy benefits accrue as indirect costs or savings to the utility, including, but not limited to, bill payment improvements and reduced arrearages, reduced bad debt, infrastructure savings, improved fire safety, system resilience, and increased reliability for customers.

Societal nonenergy benefits represent indirect program effects beyond those realized by ratepayers, the utility, or participants, and they accrue to society at large, including, but not limited to, quality local job creation, economic development, growth of tax receipts, increased community resilience, increased labor productivity, lower energy costs, increased property values, neighborhood stability, reduced emissions of greenhouse gases, improved air quality and other environmental benefits, avoided short- and long-term displacement, improved fire safety, development of and access to new technologies, improved public health and reduced health care costs, meaningful community engagement, community pride, ratepayer satisfaction through thoughtful equity and inclusion, reduced water use, and reduced reliance on fossil fuels."

Source: https://www.gov.ca.gov/wp-content/uploads/2022/09/9.13.22-EO-N-16-22-Equity.pdf

Justice Access Equity Diversity Inclusion (JAEDI) Framework

"Implement metrics for program and policy evaluation to ensure accountability.

Programs should develop and track metrics that help determine the success of a program, gaps in access or delivery, or need for course correction.

The CEC should be responsive and accountable to community concerns, following up to provide data, findings, and continuing discussions about issues.

The CEC should be diligent about working on an issue and communicate progress to the community."

Source: https://www.gov.ca.gov/wp-content/uploads/2022/09/9.13.22-EO-N-16-22-Equity.pdf

CEC seeks to quantify Non-Energy Benefits & Social Costs

Request For Proposals from "contractor teams" issued in August 2023 includes:

- Developing standard approaches that CEC can use to evaluate such factors as:
  - land-use impacts
  - public health and air quality, water supply and quality
  - economic impacts
  - resilience

CEC will use these approaches to support multiple responsibilities, including evaluating different clean energy deployment scenarios to meet SB100 goals.

The approaches may also be applied, as appropriate, in other CEC programs to evaluate their social costs and non-energy benefits.

Source: https://www.energy.ca.gov/solicitations/2023-07/rfp-23-801-social-costs-and-non-energy-benefits

Appendix 2.
Core tenets of energy justice

Reflecting on the core tenets of Energy Justice

- Distributional justice
- Procedural justice
- Recognition
- Restorative justice

Source: Carley & Konisky. The justice and equity implications of the clean energy transition. *Nature Energy.* 5, 569-577 (2020).

Reflecting on the core tenets of Energy Justice

- "**Energy Justice** is centered around the notion that all individuals should have:
  - access to energy that is affordable, safe, sustainable and able to sustain a decent lifestyle, as well as
  - the opportunity to participate in and lead energy decision-making processes with the authority to make change." [10, 11]

10. Bazilian, M., Nakhooda, S. & Van de Graaf, T. Energy governance and poverty. *Energy Research & Social Science* 1, 217–25 (2014).

11. Middlemiss, L. & Gillard, R. Fuel poverty from the bottom-up: Characterizing household energy vulnerability through the lived experience of the fuel poor. *Energy Research & Social Science* 6, 146–54 (2015).

Source: Carley & Konisky. The justice and equity implications of the clean energy transition. *Nature Energy.* 5, 569-577 (2020).

Reflecting on the core tenets of Energy Justice

- "**Distributional justice** refers to distribution of benefits and burdens across populations, and an objective to ensure that some populations do not receive an inordinate share of the burdens or are denied access to the benefits." [12, 13]

12. Jenkins, K., McCauley, D., Heffron, R., Stephan, H. & Rehner, R. Energy Justice: A Conceptual Review. *Energy Research & Social Science* 11, 174–82 (2016).

13. McCauley, D., Heffron, R., Stephan, H. & Jenkins, K. Advancing energy justice: The triumvirate of tenets. *International. Energy Law Review.* 32, 107–110 (2013). Provides a conceptual framework for energy justice and defines the three tenets of the concept.

Source: Carley & Konisky. The justice and equity implications of the clean energy transition. *Nature Energy.* 5, 569-577 (2020).

Reflecting on the core tenets of Energy Justice

- "**Procedural justice** focuses on who is included in energy decision-making processes and seeks to ensure that energy procedures are fair, equitable and inclusive of all who choose to participate." [12, 13, 14]

12. Jenkins, K., McCauley, D., Heffron, R., Stephan, H. & Rehner, R. Energy Justice: A Conceptual Review. *Energy Research & Social Science* 11, 174–82 (2016).

13. McCauley, D., Heffron, R., Stephan, H. & Jenkins, K. Advancing energy justice: The triumvirate of tenets. *International. Energy Law Review.* 32, 107–110 (2013). Provides a conceptual framework for energy justice and defines the three tenets of the concept.

14. Sovacool, B. K. & Dworkin, M. H. Energy justice: Conceptual insights and practical applications. Appl. Energy 142, 435–444 (2015).

Source: Carley & Konisky. The justice and equity implications of the clean energy transition. *Nature Energy.* 5, 569-577 (2020).

Reflecting on the core tenets of Energy Justice

- "**Recognition justice** requires an understanding of historic and ongoing inequalities, and prescribes efforts that seek to reconcile these inequalities." [12, 13, 16]

12. Jenkins, K., McCauley, D., Heffron, R., Stephan, H. & Rehner, R. Energy Justice: A Conceptual Review. *Energy Research & Social Science* 11, 174–82 (2016).

13. McCauley, D., Heffron, R., Stephan, H. & Jenkins, K. Advancing energy justice: The triumvirate of tenets. *International. Energy Law Review.* 32, 107–110 (2013). Provides a conceptual framework for energy justice and defines the three tenets of the concept.

15. Jones, B. R., Sovacool, B. K. & Sidortsov, R. V. Making the ethical and philosophical case for "energy justice". *Environmental Ethics* 37, 145–68 (2015).

Source: Carley & Konisky. The justice and equity implications of the clean energy transition. *Nature Energy.* 5, 569-577 (2020).

Reflecting on the core tenets of Energy Justice

- "**Restorative justice** is described as using government or other intervention to either avoid distributional, recognitional, or procedural injustices, or to correct for them." [12, 13, 16]

12. Jenkins, K., McCauley, D., Heffron, R., Stephan, H. & Rehner, R. Energy Justice: A Conceptual Review. *Energy Research & Social Science* 11, 174–82 (2016).

13. McCauley, D., Heffron, R., Stephan, H. & Jenkins, K. Advancing energy justice: The triumvirate of tenets. *International Energy Law Review.* 32, 107–110 (2013). Provides a conceptual framework for energy justice and defines the three tenets of the concept.

16. Heffron, R. J. & McCauley, D. The concept of energy justice across the disciplines. *Energy Policy* 105, 658–667 (2017).

Source: Carley & Konisky. The justice and equity implications of the clean energy transition. *Nature Energy.* 5, 569-577 (2020).

Reflecting on the core tenets of Energy Justice

- "A **comprehensive energy justice framework** can be said to include:
  - energy availability and access
  - affordability
  - due process
  - accountability and transparency
  - intergenerational equity
  - intragenerational equity." [17, 18]

17. Sovacool, B. K., Heffron, R. J., McCauley, D. & Goldthau, A. Energy decisions reframed as justice and ethical concerns. *Nature Energy* 1, 1–6 (2016).

18. Sovacool, B. K., Burke, M., Baker, L., Kotikalapudi, C. & Wlokas, H. New frontiers and conceptual frameworks for energy justice. *Energy Policy* 105, 677–691 (2017).

Source: Carley & Konisky. The justice and equity implications of the clean energy transition. *Nature Energy.* 5, 569-577 (2020).

Reflecting on the core tenets of Energy Justice

- **Just transition:** equity and justice in the planning, implementation, and assessment of every socio–energy system change that shapes the energy transition.

- This involves redistributing welfare:
  - so as to **avoid undue burden** on any specific population and provide sufficient energy services to all,
  - and also to **provide an adequate safety net** for all populations, especially those most marginalized or burdened. [19, 20]

19. Healy, N. & Barry, J. Politicizing energy justice and energy system transitions: Fossil fuel divestment and a "just transition". *Energy Policy* 108, 451–459 (2017).

20. Oppenheim, J. The United States regulatory compact and energy poverty. *Energy Research & Social Science* 18, 96–108 (2016). *Evaluates the origins and intentions of utility regulation, and then proposes measures that could improve the degree to which such regulations advance social justice.*

Source: Carley & Konisky. The justice and equity implications of the clean energy transition. *Nature Energy.* 5, 569-577 (2020).