

ADVANCING ENERGY EQUITY & JUSTICE IN POLICY, INTEGRATED GRID PLANNING, AND TECHNICAL ASSISTANCE

Hawaii Public Utilities Commission
Energy Storage Systems Workshops
Session 3: Equity, Resilience, and Policy

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U.S. DEPARTMENT OF
ENERGY


Pacific Northwest
NATIONAL LABORATORY

 **Sandia**
National
Laboratories

PNNL-SA-194240



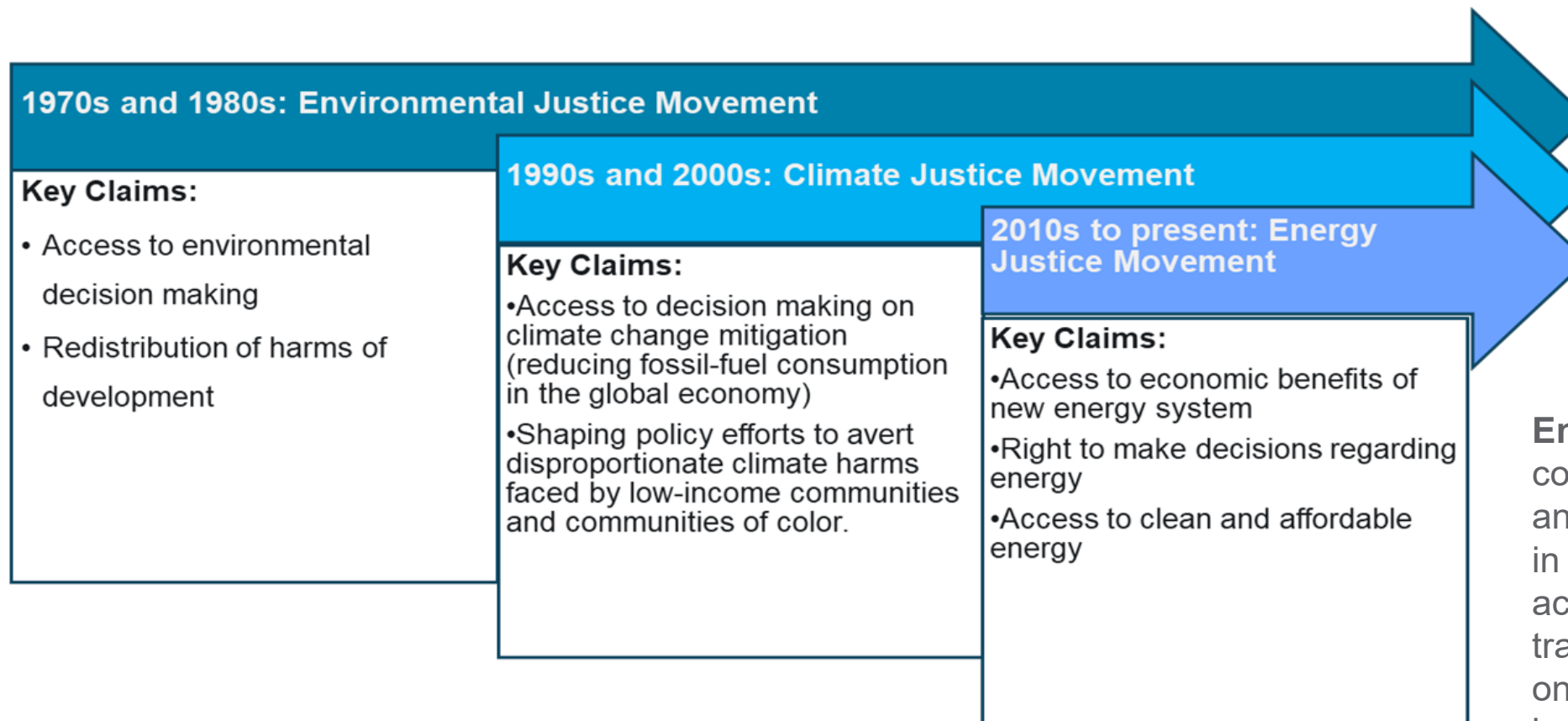
Co-developing Equity & Resilience in Policy and Planning with Communities

Overview of Justice Movements, Tenets, and Principles of Energy Justice

Integrating Equity & Resilience in Policy and Planning

Technical Assistance Example: Ho‘āhu Energy Cooperative Molokai

Movements of Environmental, Climate, and Energy Justice



Energy Equity recognizes that disadvantaged communities have been historically marginalized and overburdened by pollution, underinvestment in clean energy infrastructure, and lack of access to energy-efficient housing and transportation. An equitable energy system is one where the economic, health, and social benefits of participation extend to all levels of society, regardless of ability, race, or socioeconomic status. **Achieving energy equity requires intentionally designing systems, technology, procedures, and policies that lead to the fair and just distribution of benefits in the energy system.**”

Energy justice refers to the goal of achieving equity in both the social and economic participation in the energy system, while also remediating social, economic, and health burdens on those historically harmed by the energy system (“frontline communities”). Energy justice explicitly centers the concerns of marginalized communities and aims to make energy more accessible, affordable, and clean and democratically managed for all communities.

Integrating Energy Justice Tenets & Energy Equity Principles in Policy and Planning

Energy Justice Tenets

Recognition Justice (who?)

The practice of cultural domination, disregard of people and their concerns, and misrecognition

Procedural Justice (how?)

The fairness of the decision-making process

Distributive Justice (where?)

The unequal allocation of benefits and burdens and unequal distribution of the consequences

Restorative Justice

The response to those impacted by the burdens of energy projects

Key Principles of Energy Justice

Availability

Affordability

Transparency & Accountability

Due Process

Intergenerational Equity

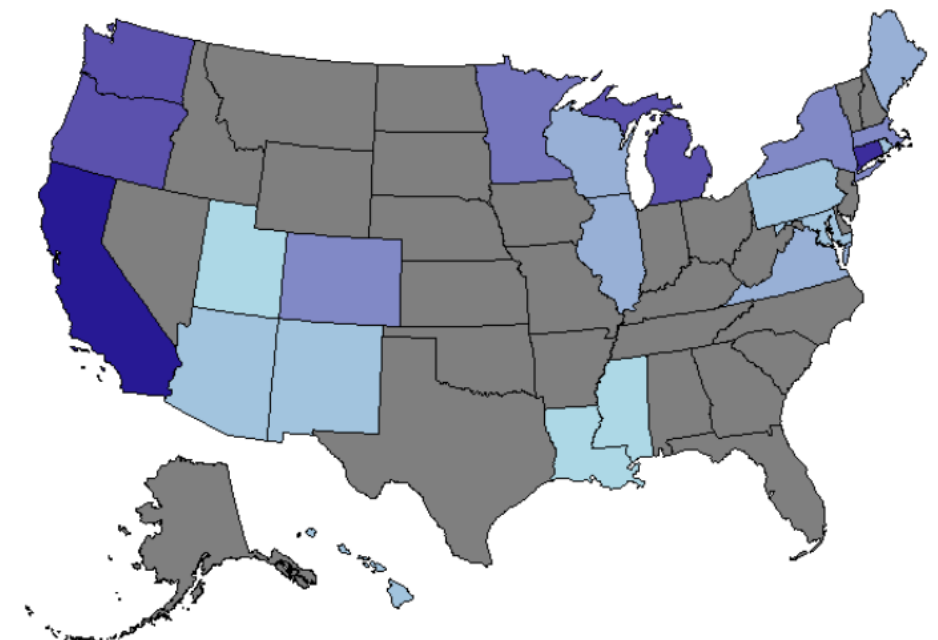
Intragenerational Equity

Sustainability

Responsibility

Regulatory Technical Assistance to States Led to Equity Cohort and Equity Actions Database

- States with equity TA were brought together into a cohort to share ideas and experience
- Cohort led to a review of equity-related state regulatory and legislative actions between 2020 and 2022.
- Report and database are published and [now available](#).



Equity Actions 3 6 9 12 No Action

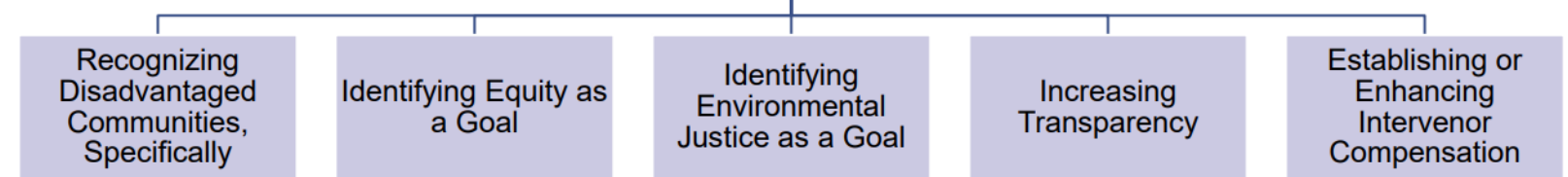
Task 1: Equity Cohort

Hawaii	Maine	Washington	Wisconsin
Develop a framework for equitable utility-scale RE procurement	Identify equitable rate design frameworks & evaluate DER/EE tech	Identify equitable clean energy programs & rate plans; develop metrics	Conduct energy burden analysis that informs rate design

Task 2: Current State of Equity Regulation

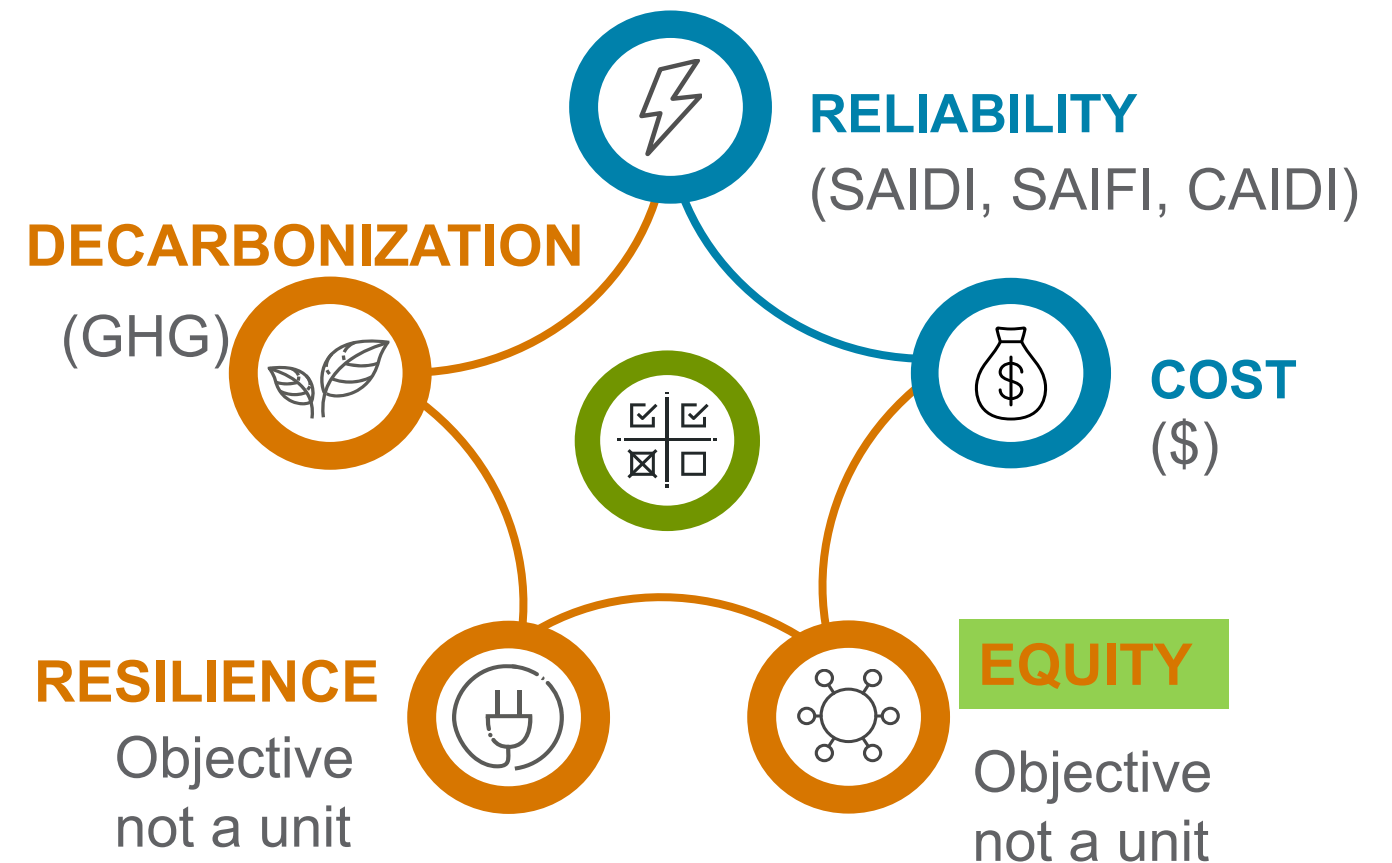
Equity Database
Develop a database of executive, legislative, and regulatory actions focusing on energy equity and directed at electricity and natural gas utilities.

Energy Equity Objectives



Advancing Emerging Objectives in Grid Planning

- Traditionally electric grid planning strives to maintain **safe, reliable, efficient, and affordable** service for current and future customers.
- As policies, social preferences, and the threat landscape evolve, additional considerations for power system planners are emerging, including **decarbonization, resilience, and energy equity and justice**.
- Relative to traditional objectives, these emerging objectives are not well integrated into grid planning paradigms.

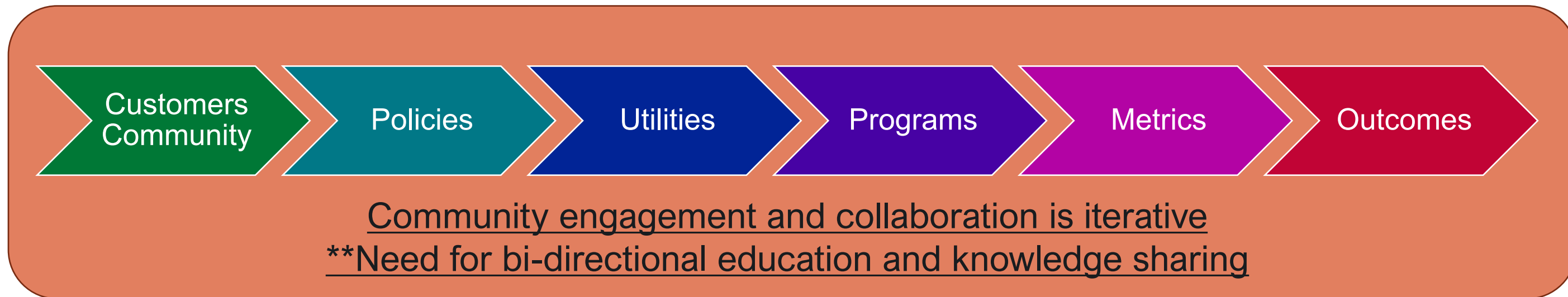


Policies drive programs and outcomes

Traditional processes

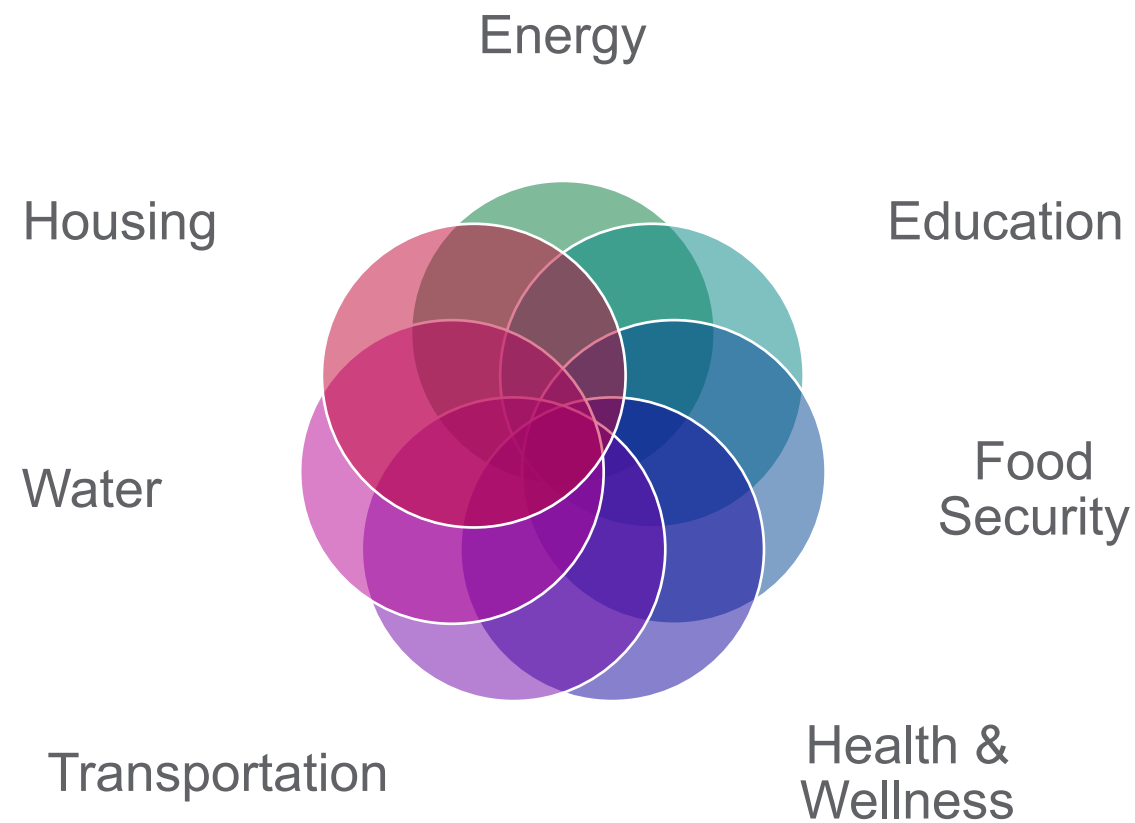


New processes

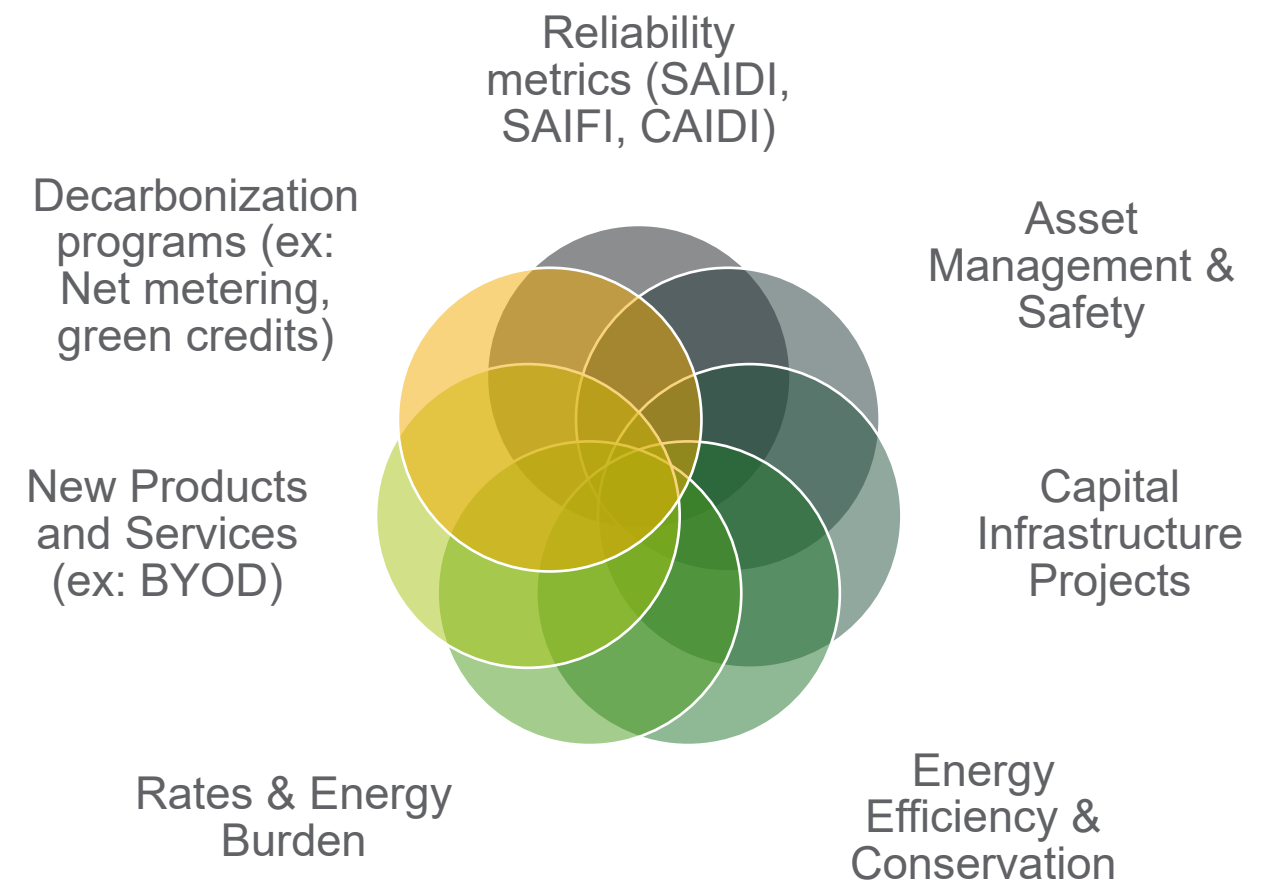


Intersection of community, state, utility, and agency goals and identification of gaps

Example attributes of a healthy community or household



Example State and Utility objectives and priorities



*Cultural aspects of Indigenous and Native Communities needs to be recognized and included

Examples of incorporating Equity in Integrated Distribution System Planning

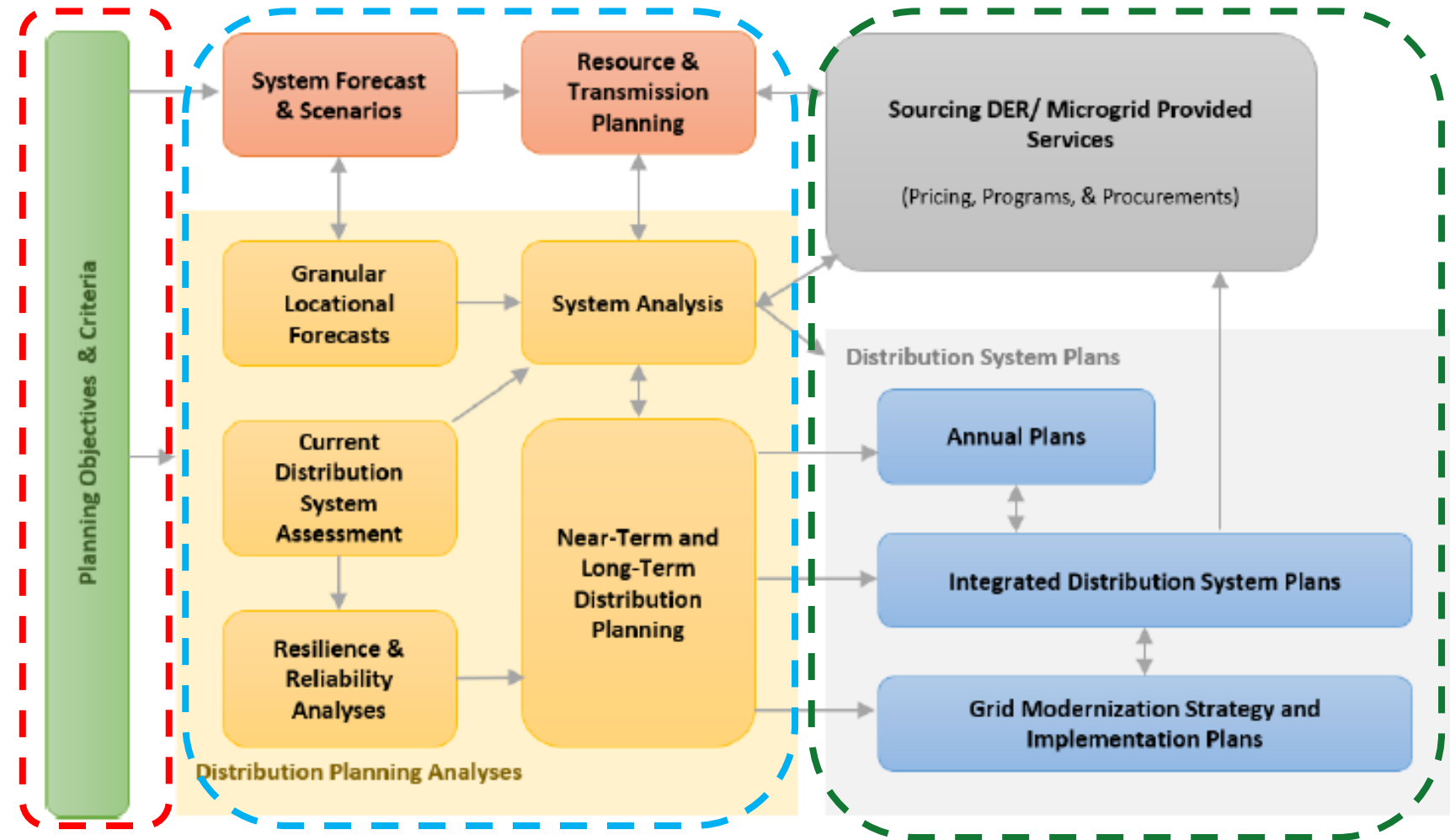
Recognition Justice: Identify and include communities in an iterative feedback process and decision making in the creation of policies, plans, outcomes, and metrics.

Procedural Justice: Policy & requirements for supply chain, procurement, workforce, contracting, planning decisions.

Distributive Justice: Holistic benefits and consequences of programs, assessment of environment, system, metrics, and community impacts.

Grid & Community Resiliency, Energy Burden: Weather/Climate forecasts that impact energy costs, environmental and climate justice, and connecting community resilience plans.

Energy Democracy, Restorative Justice, and Community Resilience: Creating co-designed solutions for communities, co-ownership models, grid hardening and modernization, and community goals (food, transportation, education, etc).



Equity Examples HI PUC ENERGY EQUITY & JUSTICE DOCKET

Procedural Equity

- Who has not participated or have access to programs and technologies?
- Recognition and inclusivity of Native Hawaiian and other Indigenous communities, customs and culture (ex: 'ōlelo).
- Limited or no access to energy efficiency and conservation programs, appliances, DERs, technologies.

Energy Affordability & Direct Payment Assistance

- Energy is one aspect that intersects basic needs.
- What other government agencies does the PUC and SEO need to partner with to address housing, transportation, food security?
- Accessibility of systems, technology, etc.

Equitable Siting & Permitting

- Land ownership, data and survey accuracy, reviewing land rights (Native Hawaiian history of public lands, crown lands, Hawaiian Homesteads).
- Food security, housing, environmental, transportation, and other items that benefit and create consequences.
- Address and avoid 'green grabbing'.

Equitable Access to Clean Energy

- Who is left out of accessing DERs, Battery Energy Storage, EV, and BYOD Programs.
- Program designs that address accessibility and metrics that track and report on assess goals.
- Community Benefits, Workforce Training Partnerships, Contracting

Utility Performance & Tracking

- Community Benefits & Workforce Training Partnerships (ex: Alu Like, Makaha Learning Center, etc).
- Accountability of program goals, milestone, and customer goals being met.
- Contract mechanisms for flowing money to local economy.

Energy Storage for Social Equity (ES4SE) Initiative:

Supporting community goals and needs through energy storage and clean energy solutions

WHY ENERGY STORAGE?

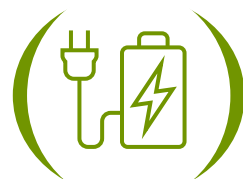
Locational flexibility



Wide applications



Broad uses for storage



HOW CAN ENERGY STORAGE SUPPORT COMMUNITY GOALS AND ADDRESS NEEDS?

Access



Affordability



Environmental Impact



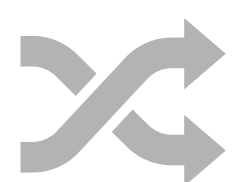
Social Impact



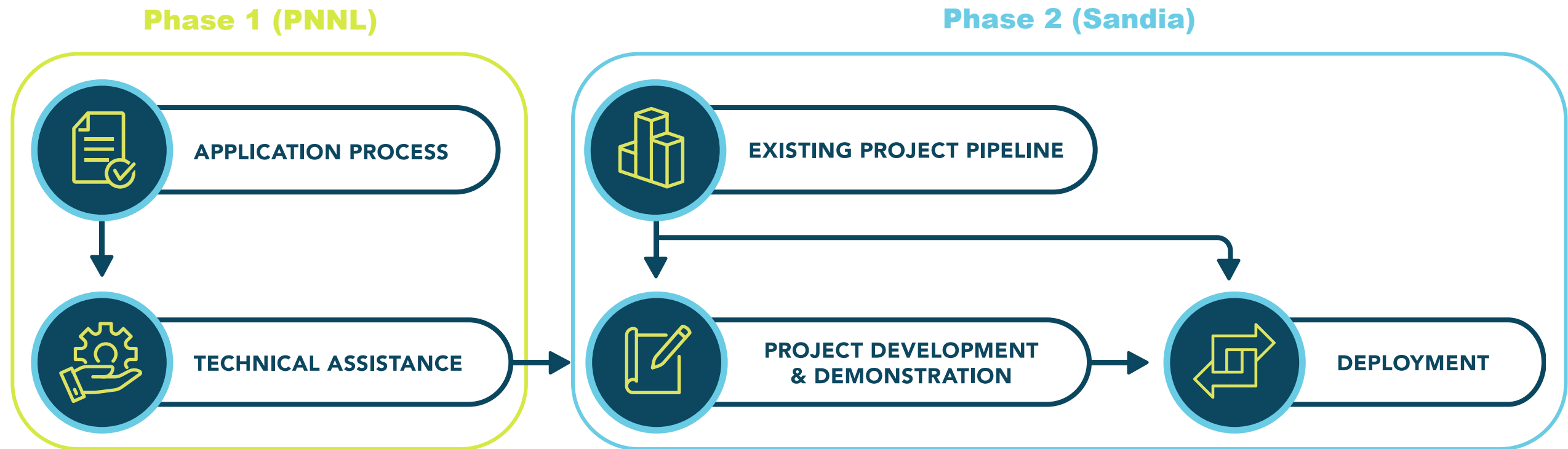
Decarbonization



Resiliency



Program Phases Link Technical Assistance (TA) with Project Development and Demonstration Assistance (PDDA)



OUTCOMES

Connect disadvantaged communities with energy solutions that support equitable outcomes

Demonstrate the role of energy storage in energy equity

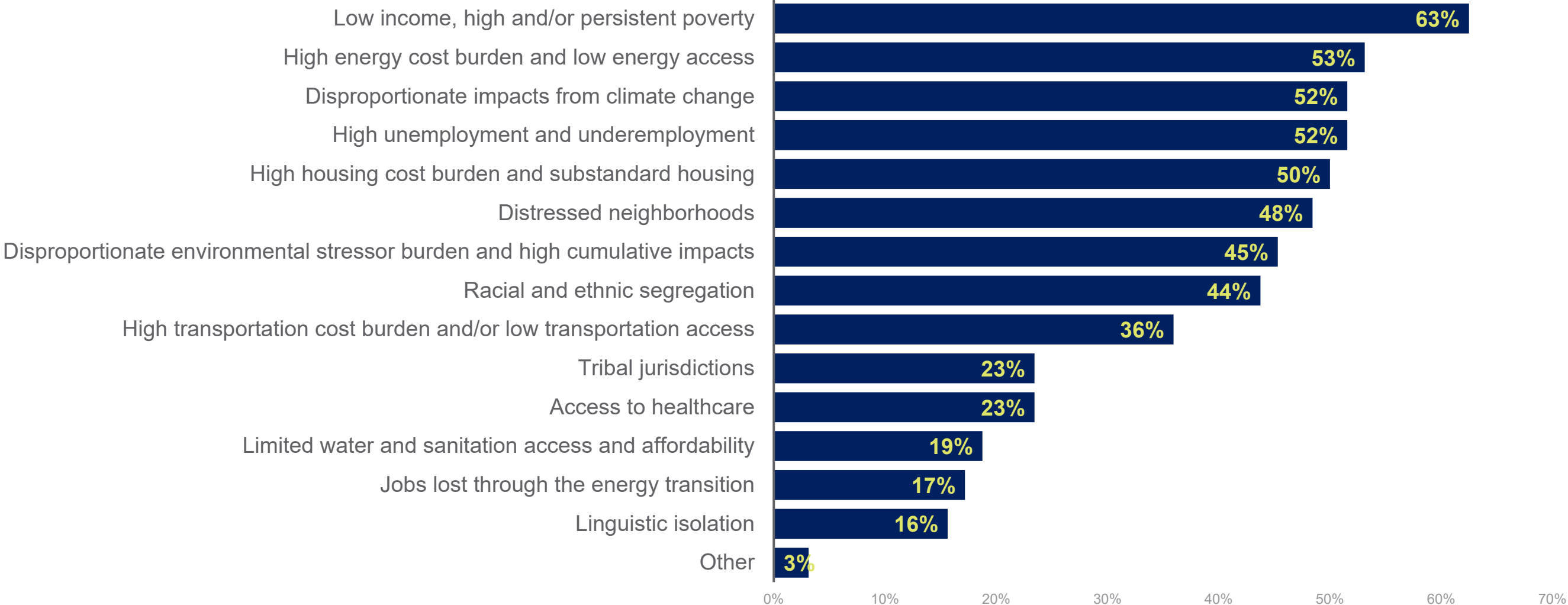
Develop methods and metrics to analyze impact of investment on equity

Report on lessons learned and best practices to support future work across DOE

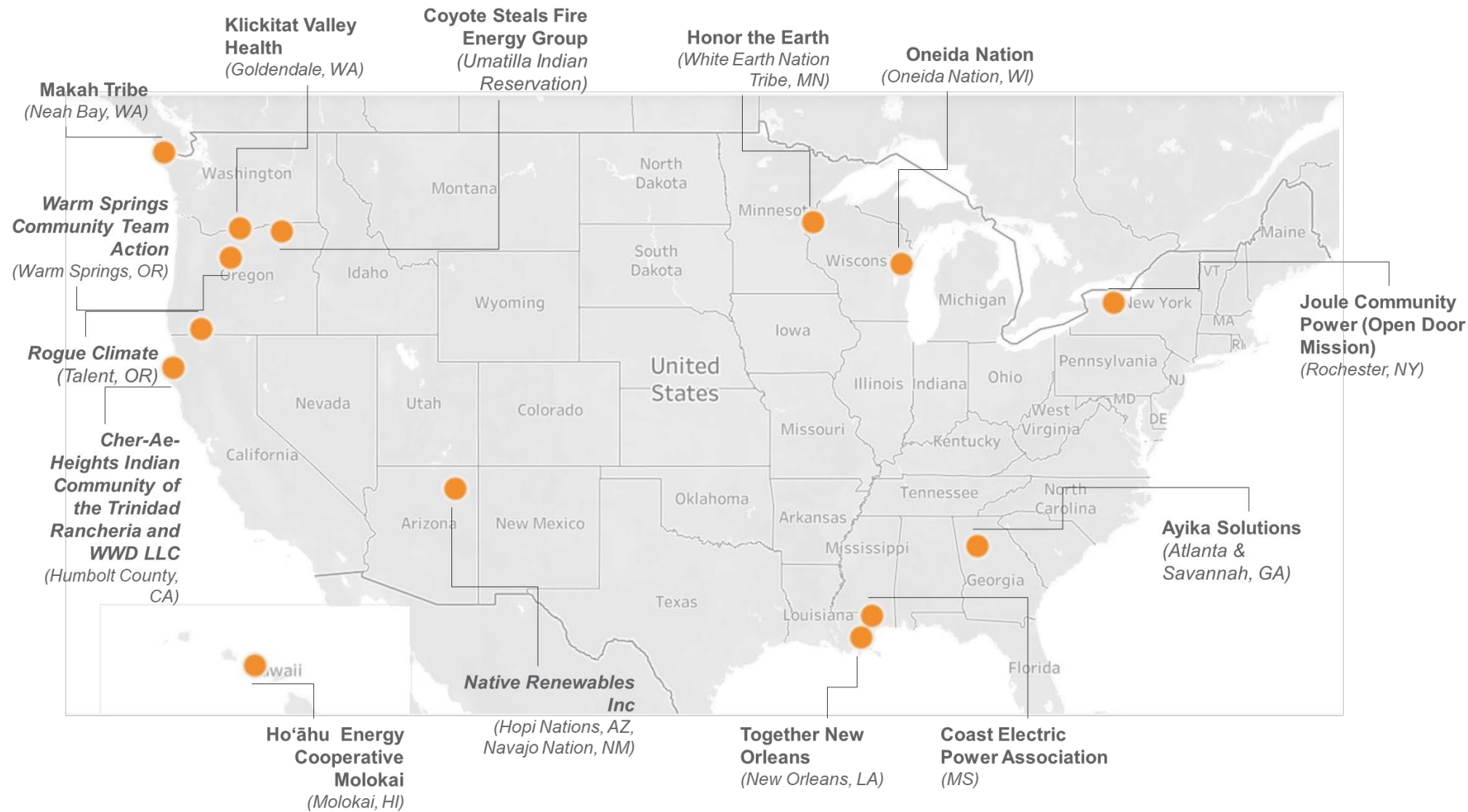
Grow and strengthen DOE project pipeline


ES4SE Application Community Criteria

% Applications Selected DAC Criteria



Energy Storage for Social Equity Initiative integrates equity, workforce, and techno-economic solutions




 Focus on the problem with many possible solutions

 Linking Grid and Community Resilience

 Workforce and equity are part of the assistance

 Cohort of Communities

 Direct connection to future project funding

 Easy Access and Targeted Outreach

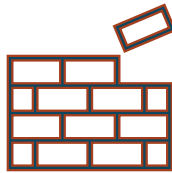
Centering communities and co-developing technical solutions with equity and workforce goals for the community



Center Communities



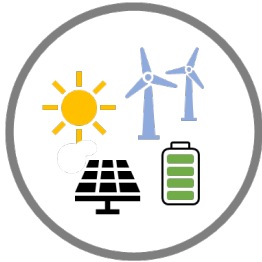
Benefits flow to intended recipients



Build community capacity and skills



Knowledge sharing



Microgrids



Off-grid Systems

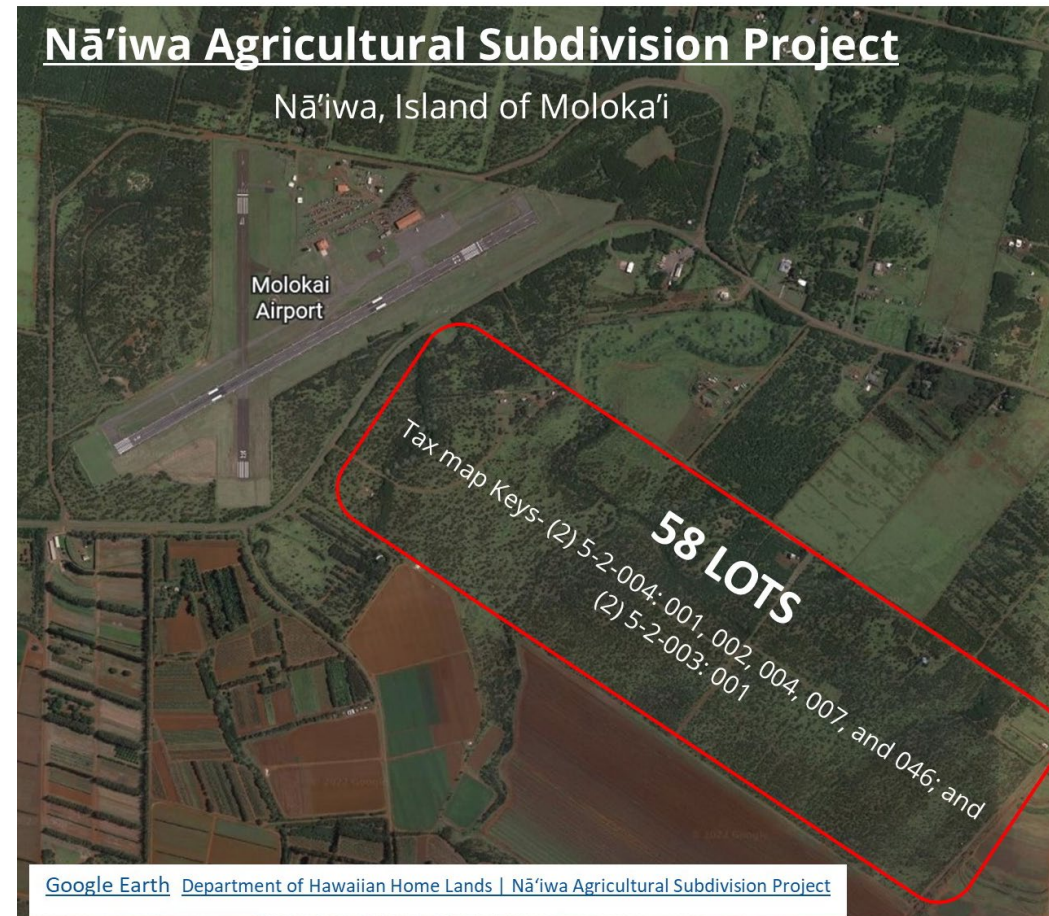
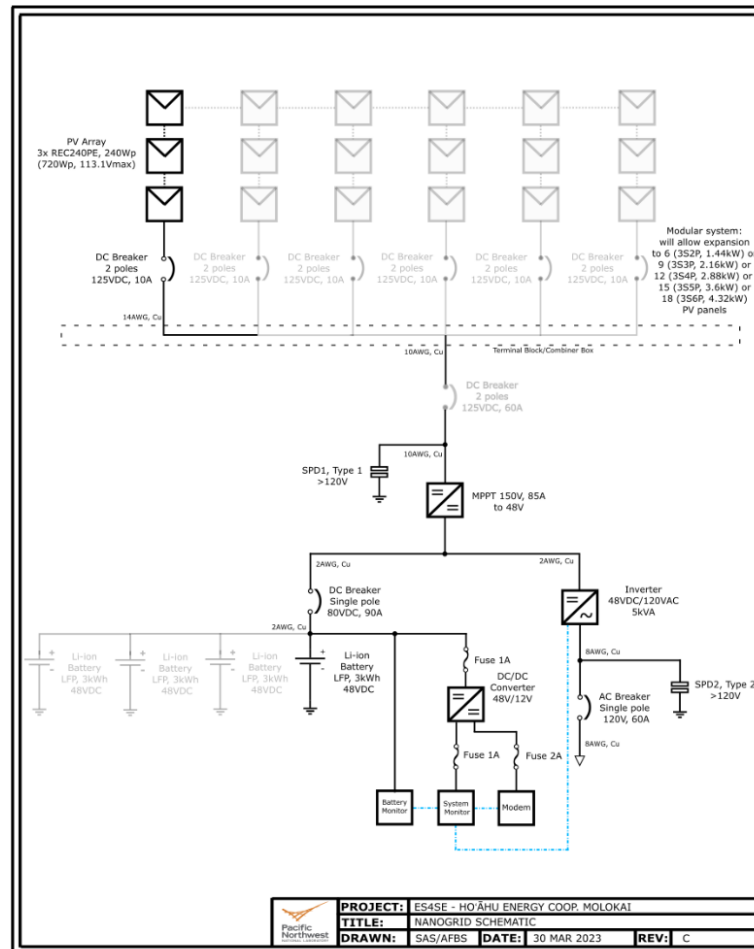


Resilience Hubs



PV + BESS for Commercial and Residential Buildings

Technical economic + Equity + Workforce analysis for nanogrids (islanded systems)



Community Goals

- Addressing limited access to electrical infrastructure or electrical service
- Addressing limited access to telecommunication infrastructure
- Islanded microgrid solutions with diverse environmental conditions
- Repurposing and/or selection of battery technologies & PV panels
- Creating modular options for families to increase and/or decrease sizes

Approach 1- Community interconnected microgrids for Nani Maunaloa that highlight significant shading on homes



PV Required (Estimation)

- Molokai consumption est./household: Wh/month or kWh/day
- PV size est./household
- Total PV size (kW)
- Tax Map Key (TMK)

PV Generation Assessment

- Areas in red limited by shade
- Total available roof area (SQ FT)
- Panels square footage
- Potential power generation

Approach 2- Address shading on homes through shared microgrids -- requires community and household engagement and agreements supporting the community goals



Proposed PV and BESS design

- 15 Zoning areas of 3 or 4 houses
- Min. required PV generation
- Considerations for the community included shared agreements between homes.

HECM's Workforce Development Program Led by Liliana Napoleon

Ho'āhu is a volunteer working group of Molokai community members who are passionate about energy and believe in sharing leadership and decision-making through transparency and inclusion. Ho'āhu's goal is 100% local hiring, and have successfully been able to create a Workforce Development program with hands-on training in general construction, installation, and maintenance of renewable energy systems.



Example Program Structure

Led by HECM

- Identify and remove barriers (ex: education, age)
- Partner with Makah Learning Center
- OSHA Training
- ASU Microgrid Classes and Training
- Goal to hire all local residents for installations and maintenance

Examples of PNNL support:

- Review of entry requirements for specific jobs (ex: electricians, plumbers, carpenters, accountants, project managers)
- Working with Sandia to include local hiring goals into RFP

Connecting socioeconomic, demographic, and environmental indicators to support community plans, goals, and funding opportunities

Socioeconomic and Demographic Indicators

- People of Color by State Percentiles
- Low Income by State Percentiles
- Unemployment Rate by State Percentiles
- Less than High School Education by State Percentiles
- Under Age of 5 by State Percentiles
- Over Age 64 by State Percentiles

Energy, Infrastructure, and Environmental Indicators

- Environmental Protection Agency (EPA) Cleanups in My Community (CIMC)
- Low-Income Energy Affordability Data (LEAD Tool)
- Environmental Justice Screening and Mapping Tool (EJScreen)- Medically Underserved
- Households with Limited Broadband
- Food Deserts
- Environmental Justice Screening and Mapping Tool (EJScreen) –Risk Management Plan Facility Proximity
- Coastal Flood Hazard

Energy Storage for Social Equity Initiative:

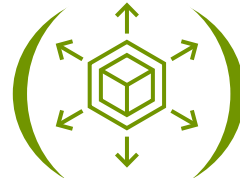
Connecting community goals and needs through energy storage and clean energy solutions

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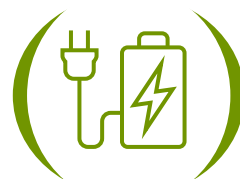
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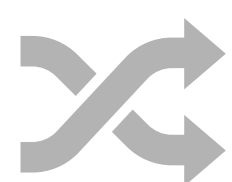
Social Impact



Decarbonization



Resiliency



Lessons Learned for co-developed planning and design implementation with communities

1. Relationships and trust take time and require sustained engagement. Avoid a one and done approach.
2. Listen to the communities without bias and learn what they share.
3. Research and review information, policies, commitments (even when broken) with communities you are seeking to work with.
4. Build cultural competencies and hold your staff, teams, and contractors accountable.
5. Follow through on commitments. Do what you say, when you say it, and how you plan to do it.
6. Be flexible and adjust with the community.
7. Do not require the communities to use or understand industry terminologies. Make information digestible and understandable for all.
8. Accountability is needed for agencies, industry, government leaders, etc.
9. Coordinate on the back end of agencies, governments, and systems. Do not make communities do that work.
10. Ask questions and connect 'what' communities tell you with opportunities (existing or future).
11. Think of new approaches, pathways, and solutions that has not been done before (ex: contracting methods and hiring practices). Build paths with communities to achieve equitable outcomes.
12. Visit with communities and spend time to connect with them beyond just the project and work. When invited, it is important to show up as much as possible.

THANK YOU

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