Considerations for Planning for Resilience and Equity

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DISCUSSION TODAY

- Resilience and equity are emerging objectives for the electric grid, but to date, most utilities have not applied rigorous criteria for these objectives to electricity system planning.
- Emerging objectives require assessing new technologies, interactions, and data and integrating stakeholders into planning processes. This presentation discusses pathways to build rigor around the emerging objectives of resilience and equity.
- Optimizing for individual objectives will not lead to the same results. For example, the most aggressively decarbonized system is not the most reliable or affordable. Multi-objective decisionmaking involves tradeoffs. We present initial methods to balance disparate objectives.

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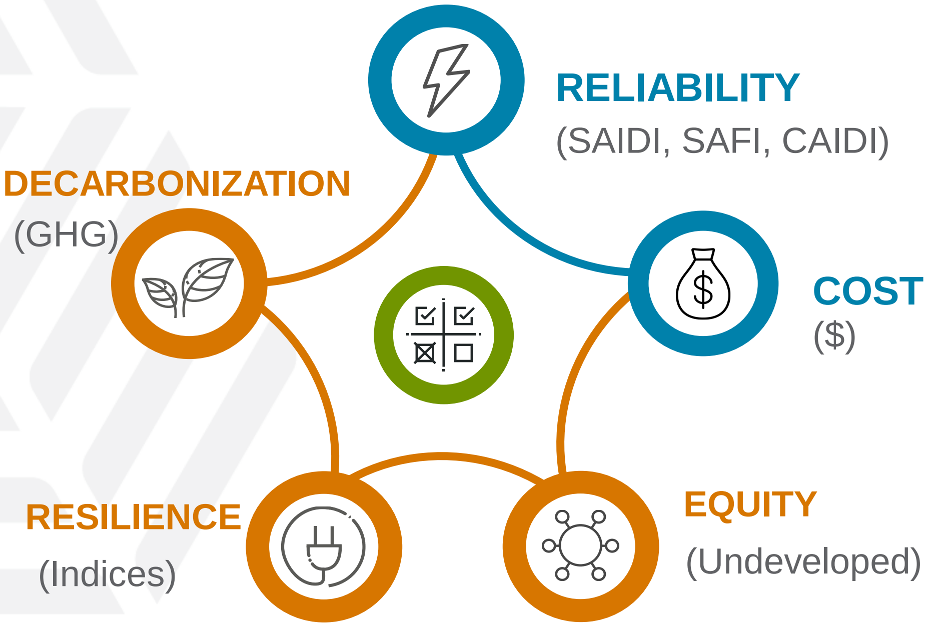
Emerging Objectives in Grid Planning

- 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**.
- Relative to traditional objectives, these emerging objectives are not well integrated into grid planning paradigms.



Dimensions & Approaches of Energy Equity

Distributive Justice (where?)

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

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

Restorative Justice

- The response to those impacted by the burdens of energy projects

Key Principles:

- Availability
- Transparency and accountability
- Due process
- Intergenerational equity
- Affordability
- Sustainability
- Intragenerational equity
- Responsibility

Key Terms	Definition
Energy Burden	Percent of household income spent to cover energy cost.
Energy Insecurity	The inability to meet basic household energy needs.
Energy Poverty	A lack of access to basic, life-sustaining energy.
Energy Vulnerability	The propensity of a household to suffer from a lack of adequate energy services in the home.

Observations from Utility Engagements

- **Utilities lack the mechanisms to successfully communicate infrastructure needs.** It may be difficult for utility planners to communicate resilience needs to utility customers, regulators, and even to their own utility executives.
- **Utilities lack reliable funding sources for resilience investments.** When competing for limited capital funding, long-term investments in system hardening and resilience are frequently crowded out by more immediate needs.
- **Making long-term resilience investments today is challenging.** Growing and changing risk profiles make long-term forecasting difficult. Future-proofing and least-regrets investments are needed.
- **Utilities' perception of non-wires alternatives is evolving.** They may view non-wires alternatives less as long-term solutions and more as temporary stopgaps to assist in managing and spreading out capital expenditures on large infrastructure upgrades.
- **Distribution planning standards vary by utility.** While some states have established distribution planning requirements for regulated utilities, there are very limited universal standards or scenario-based planning applications like there are for generation and transmission.

State of Current Practice

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Policy Translation to Grid Investment Strategy → Objective Formulation → Planning Practice → Balancing Multiple Objectives → Implementation and Performance Metrics

Planning Paradigms	Traditional Objectives				Emerging Objectives		
	Safety	*Reliability*	*Efficiency*	*Affordability*	*Decarbonizati on*	*Resilience*	*Equity*
Integrated Resource Planning	Connected	Robust	Robust	Robust	Robust	Limited	Limited
Transmission Planning	Robust	Robust	Connected	Connected	Limited	Connected	None
Distribution System Planning	Robust	Robust	Robust	Connected	Limited	Connected	Limited
Reliability Planning	Robust	Robust	Robust	Connected	Robust	Connected	None
EE & DSM Planning	Connected	Robust	Robust	Robust	Robust	Connected	Limited
Integrated Distribution Planning	Connected	Robust	Robust	Robust	Limited	Connected	Limited

Equity in Grid Planning: Current Practice

Remain tied to decarbonization goals and/or environmental justice

- **Michigan**: 2020 Executive Order (EO) requires PUC to expand its environmental review of integrated resource plans (IRPs) to evaluate whether utilities are meeting state decarbonization goals
    - Also requires PUC to assess whether IRPs consider environmental justice and health impacts
- **Washington**: 2019 Clean Energy Transformation Act requires IRPs to include an assessment of energy and non-energy benefits and reductions of burdens to vulnerable populations
- **Connecticut**: 2019 EO requires the Public Utilities Regulatory Authority (PURA) to analyze decarbonization pathways consistent with the state's goal of 100% carbon-free electricity by 2040
    - EO also calls for PURA oversight to ensure energy affordability and equity for all ratepayers during the resource planning process (but this is loosely outlined)
- **California**: 2018 CPUC decision requires IRPs with LSEs to assess their impacts on disadvantaged communities
    - CA defines disadvantaged communities as those with the highest pollution burden (top 25% statewide)

Planning Paradigm	Treatment of Equity Within Paradigm
Integrated Resource Planning	**Limited**
Transmission Planning	**None**
Distribution System Planning	**Limited**
Reliability Planning	**None**
EE & DSM Planning	**Limited**
Integrated Distribution Planning	**Limited**

Dimensions of Energy Justice Reflected into State Policies for Incorporating Equity into Grid Planning

Jurisdiction & Policy	Dimensions of Energy Justice Included			
	Procedural	Recognition	Restorative	Distributive
Oregon (HB 2021)	X	X		X
Washington (SB 5116, 2019)		X		X
Connecticut (EO.3, 2019)		X		
Illinois (SB 2408, 2021)		X		X
California (SB 350, 2015)	X		X	X
Hawaii (Decision/Order NO. 37787, 2021)				X
Massachusetts (Chapter 8 of the Acts of 2021)				X
Michigan (ED 2020-10, 2020)		X		

Kazimierczuk K., M. DeMenno, and R.S. O'Neil. 2022. *Equitable Electric Grid: Defining, Measuring, & Integrating Equity into Electricity Sector Policy & Planning*. PNNL-32887. Richland, WA: Pacific Northwest National Laboratory

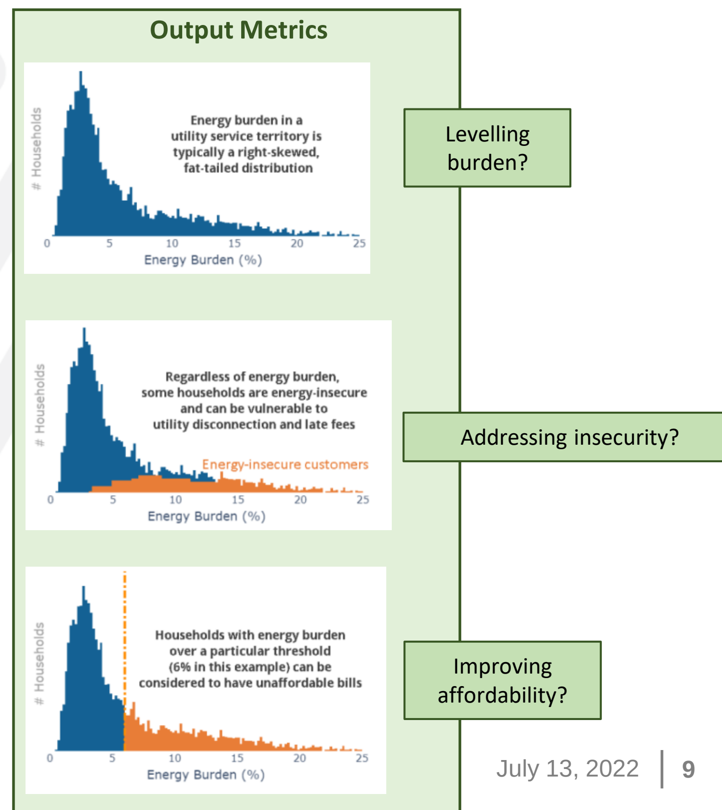
Creating Comparable Objectives

- ► **New Analytical Framework Required:** Different from siting a facility or a discrete decision under environmental justice framework

- ► **Grid Planning Scales:** Distribution system planning is useful starting point – spatial in nature, closely connected to community experience

- ► **Missing Insights on Investments to Effects:** No one single attribute of the grid is sufficient for energy equity – may be composite or index until clearer insights about which are the most meaningful in practice

- ► **Tradeoffs and Co-Optimization:** Strong relationships, including tradeoffs, with other objectives



Example:
Energy Storage and Community Objectives

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WHY **ENERGY STORAGE**?

Locational flexibility

Wide applications

Broad uses for storage

HOW CAN ENERGY STORAGE SUPPORT **COMMUNITY GOALS** AND ADDRESS **NEEDS?**

Access

Affordability

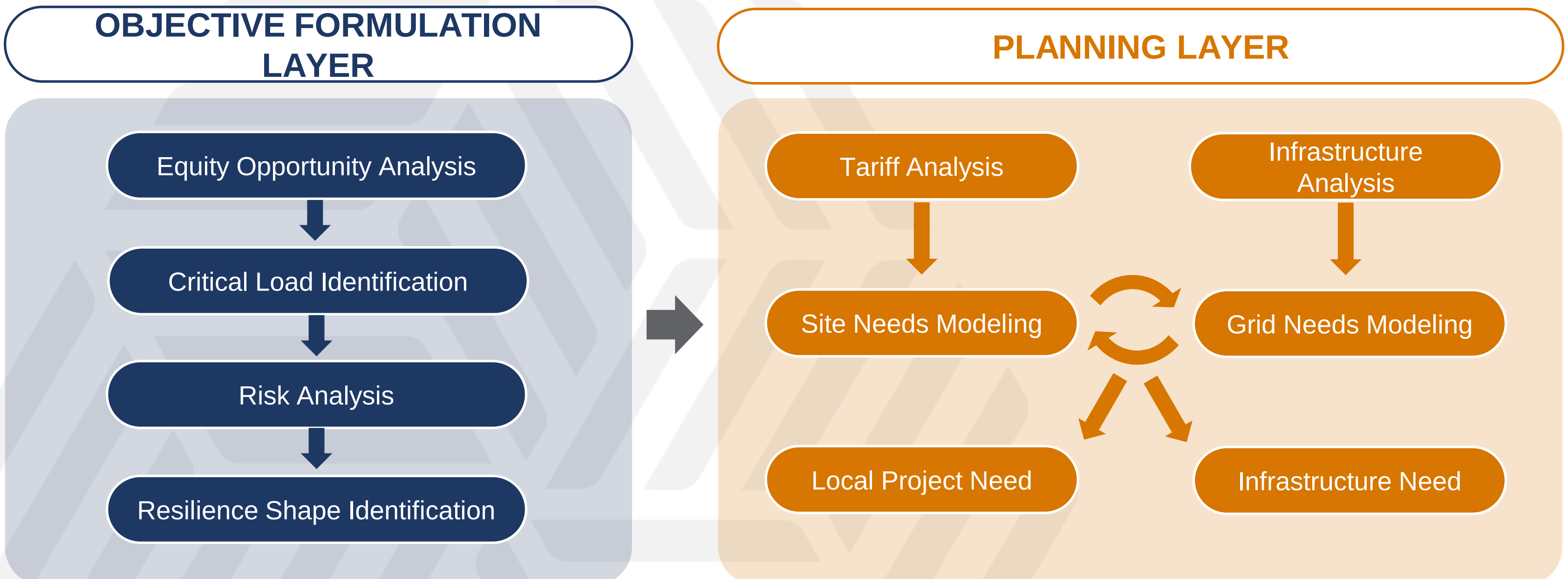
Environmental Impact

Social Impact

Decarbonization

Resiliency

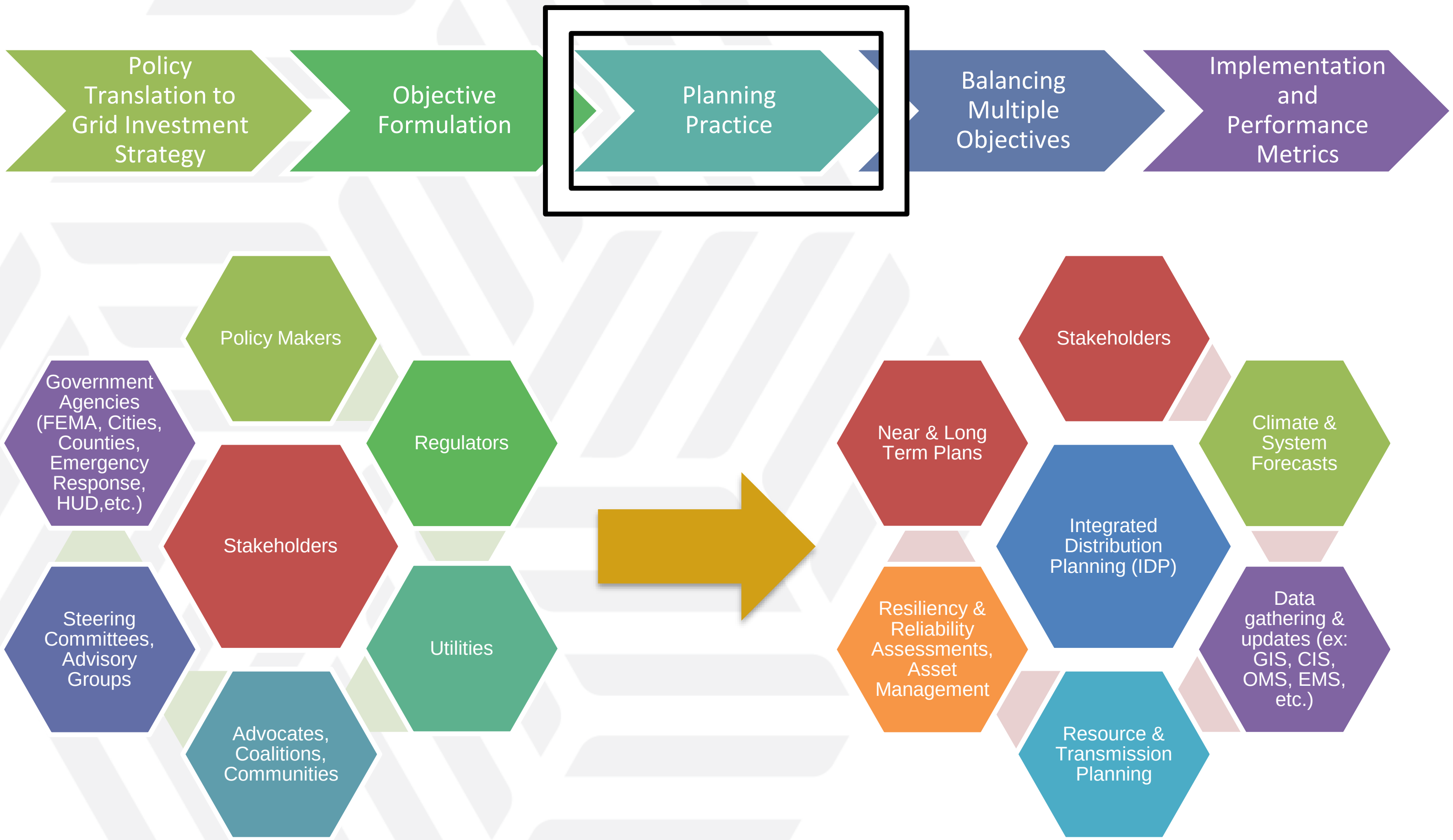
Formulating Resilience Objectives as Part of Planning Practices



Objectives:
- Cross-sectoral evaluation of critical loads
- Inclusive approach captures current inequities
- Model-grade needs identification

Objectives:
- Identify a *portfolio* that meets resilience needs and offers other strategic benefits such as reliability services and equity
- Identify communication and control needs to enable project functionality

Stakeholder Roles and Responsibilities



Multiple Objectives and Tradeoffs

Policy Translation to Grid Investment Strategy → Objective Formulation → Planning Practice → **Balancing Multiple Objectives** → Implementation and Performance Metrics

Multi-Objective Tradeoffs with Resilience

Cost:

- Bounding cost with investment outcome
- Relationship between public/ratepayer costs
- Relationship between ratepayer and resilience benefit
- Least cost individual measures vs. best fit portfolio standard

Decarbonization:

- Reliable backup power alternatives to diesel
- Central vs. distributed resources
- Role of clean energy transition in resilience drivers
- Reduce health harms to vulnerable and disadvantaged communities

Equity

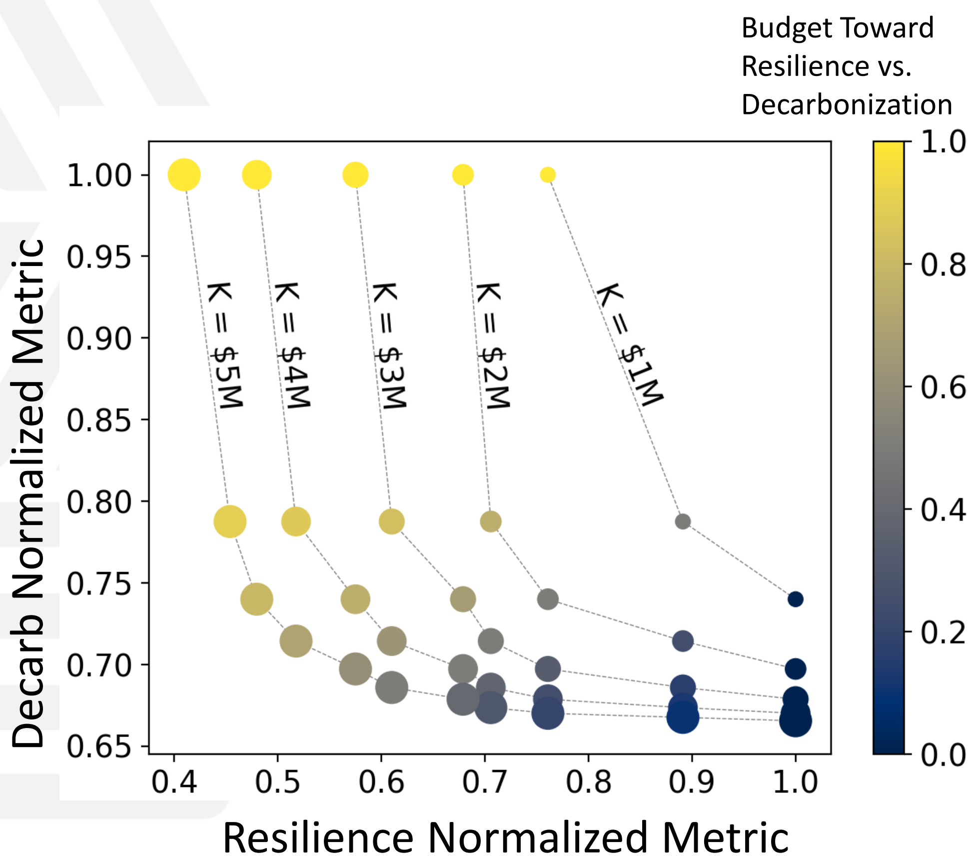
- Recognition of most impacted communities
- Remedial strategies and prioritization for acute or long-term conditions
- Cost pressure and affordability (energy burden, insecurity, poverty, democracy)
- Transitional effects

Reliability

- SAIDI, SAIFI, CAIDI improvements
- Improvement in daily disruptions
- Asset Management Portfolio
- Reliability project prioritization

Pathways to Evaluating Tradeoffs: Multi-Objective Decision Analysis

- Priorities among objectives
  - Determine "must haves" which can be represented as constraints (e.g., fixed investment, minimum reliability performance in identified disadvantaged communities)
  - Requires understanding relationship between investment and effect
- Analytical process to show trade-offs in achieving objectives between investment decisions and portfolios
  - Fixed hierarchy
  - Optimization
  - Multi-criteria decisionmaking analysis (subjective weighting)
- A portfolio approach with performance metrics supports planning decisions as well as post-investment validation.



CREDIT: Brian Pierre, Sandia National Laboratories

Performance Metrics

- *Metrics* for new objectives lack national standardization and quantification practice.
- Grid performance metrics can support evaluating in a planning context and also validating cause-effect relationships between plans and outcomes.

RESILIENCE	**Attribute-Based**	**Performance-Based**			
		Power System Performance	Economic Consequence	Social Consequence	National Security Consequence

EQUITY	**Procedural and Recognition** *(due process and accountability)*	**Distributive** *(affordability and availability)*	**Restorative** *(intra- and inter-generational sustainability and responsibility)*

DECARBONIZATION	**Emissions**	**Resources**

Grid Performance Metrics for Emerging Objectives: Resilience

Attribute-Based	Performance-Based			
	Power System Performance	Economic Consequence	Social Consequence	National Security Consequence
• Absorptiveness • Adaptiveness • Robustness • Resourcefulness • Recoverability • Resilience indices (e.g., Resilience Measurement Index)	• Cumulative electricity demand not served (e.g., MWh load unserved) • Average number/ percentage of customers experiencing outage • Duration of load curtailment • Recovery duration • Frequency of outages exceeding a given duration	• Unserved load for key production facilities • Utility outage costs (e.g., revenue loss, restoration, repair, and recovery costs) • Customer outage costs or damage functions (e.g., business interruption costs, value of lost load) • Outage impact on economic production (e.g., gross regional product)	• Unserved load for critical services (e.g., hospitals) • Vulnerable populations experiencing outages • Loss of life and health impacts • Labor market impacts • Effort to access critical services (e.g., social burden metric)	• Unserved load for key military facilities • Degradation of mission readiness, assurance, or performance

Measuring Energy Equity

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Target Population Identification

- Program equity index
- Program accessibility
- Energy cost index
- Energy burden index
- Late payment index
- Appliance performance
- Household-human development index

Investment Decision Making

- Community acceptance rating
- Program funding impact
- Energy use impacts
- Energy quality
- Workforce impact

Program Impact Assessment

- Profits
- Program acceptance rate
- Energy savings (MWh)
- Energy cost savings ($)
- Energy burden change
- Change in household-human development index score

See *Review of Energy Equity Metrics*
https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-32179.pdf

Effects from Equitable Outcomes

Recognition

- Ending disconnections (e.g., commitment to reduce or end disconnections, moratorium on shutoffs for customers with severe or extreme energy burdens)
- Maximizing resilience, minimizing vulnerabilities (e.g., targeted program investments for communities and households facing severe climate and health risks)

Distributive

- Maximizing co-enrollments in affordable rates, payment plans, and clean energy programs (e.g., notify disadvantaged customers of the programs they qualify for)
- Enabling energy affordability (e.g., commitment for reducing the distribution of high energy burdens)

Restorative

- Integration in cross-sector and long-term planning (e.g., quantitative and qualitative treatment of equity in long term plans and models)
- Wealth building (e.g., on-bill financing with special terms for disadvantaged customers, effective caps on DERs and storage)

Procedural

- Enabling participation (e.g., participation stipends, intervenor funding for disadvantaged community engagement)
- Unbiased evaluation (e.g., no conflict-of-interest w/ third party evaluators, evaluation open for public input, access to original data)

Extending Energy Equity Metrics

Procedural and Recognition (due process and accountability)	**Distributive** (affordability and availability)	**Restorative** (intra- and inter-generational sustainability and responsibility
• Representativeness and inclusiveness of planning processes for all affected stakeholders • Responsiveness of planning processes to public participation and fairness of decisions • Transparency of planning processes and decisions	• Electricity cost burden (i.e., household electricity bills/income) • Electricity affordability gap • Electricity quality (e.g., geographic disaggregation of outage frequency/severity; restoration efficiency) • Electricity program (e.g., tax credits; energy efficiency) and technology (e.g., BTM solar and storage) accessibility and performance (e.g., participation/investment demographics; distribution of savings/costs, reliability/resilience, or other benefits/burdens) • Social burden (i.e., effort and ability to access critical services)	• Economic (e.g., job training/job quality; energy resource ownership/governance; reparation of electricity cost burden shouldered by energy burdened communities) • Environmental (e.g., natural resource replenishment; generation/storage resource siting) • Social (e.g., improvements in household-human development index; establishment of safeguard/grievance redress mechanisms)

The Need for Energy Equity Simulation Analysis

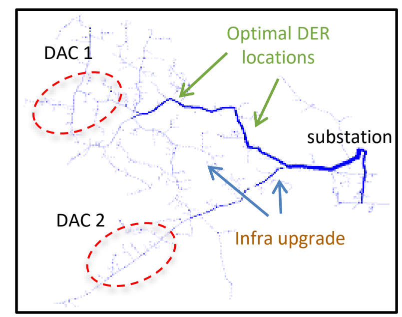
- Inclusion of ***energy equity*** within planning models is a complex process and is not yet well explored by utilities or existing literature.
- Most utilities are not likely to have sufficient data and approaches to model energy equity effects. Unclear where to stop when collecting data related to communities (education, health, medical condition).
- Purpose of laboratory analysis is to provide <u>insights into trade-offs</u> among emerging objectives such as equity/resiliency and traditional objectives such as affordability/efficiency etc.

Impact on Outcome

DSP Planning

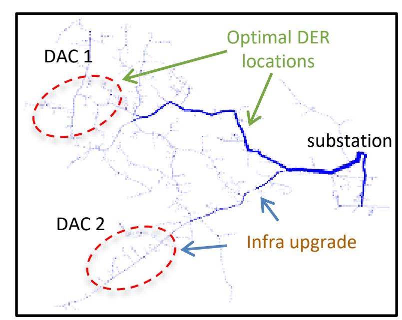
Business as Usual

- Major focus on cost and reliability



With Equity Considerations

- Potentially different investment strategy
- Insights into what part of the feeder needs to be prioritized
- Insights into how to reduce energy burden and increase resiliency of disadvantaged communities (DAC)



DSP Plan and Modeling Equity

Go to step 1 and repeat process with improved inputs

0 Base Case Assessment

system awareness- equity, DER levels

Identification of critical loads, DAC

1 Load/BTM-DER Forecast

energy assistance

load growth
EV adoption
DER adoption

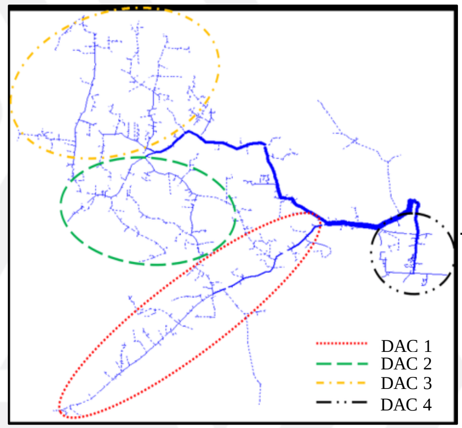
decarb goals →

2 U-DER investment (total capacity & mix)

Investment strategy

3 U-DER Optimal Locational Distribution

energy access
energy security



4 Infrastructure Upgrades Assessment

DER locational profile to minimize infra upgrades with equity constraint

list of transformers, lines, voltage devices upgrades

5 Monte-Carlo Simulation Analysis

statistical post-processing

6 Performance Measurement via Metrics

- *Equity input*
- *Distribution system planning*
- *Output metrics generation*

Equity in Planning Simulation

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To analyze the impact of equity considerations on DER allocation and asset upgrade planning through hosting capacity analysis

Identify a synthetic feeder

Identify random DAC regions

baseline equity level

Distribute baseline DERs

DER hosting capacity analysis for DAC and non-DAC regions

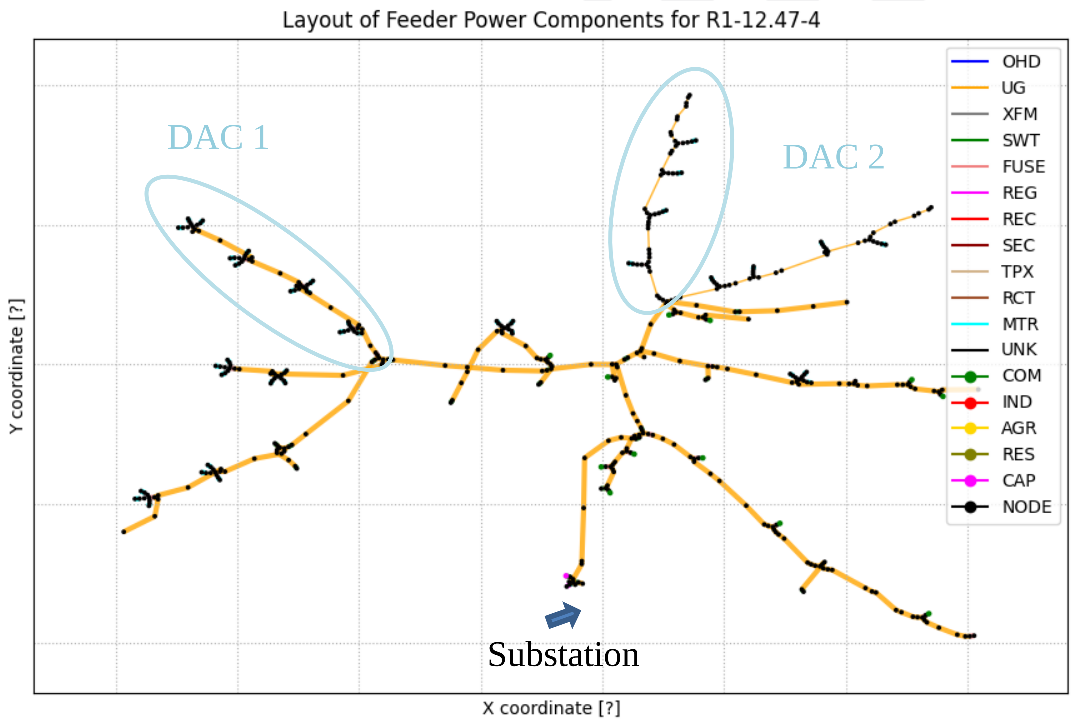
Load growth EV growth

DER allocation planning

Associated infra upgrade planning

Most DERs at high hosting capacity regions	✓ less cost ✓ low DER equity
Each region has equitable DER allocation	✓ Infra-upgrade cost ✓ high DER equity

PNNL Prototype Feeder

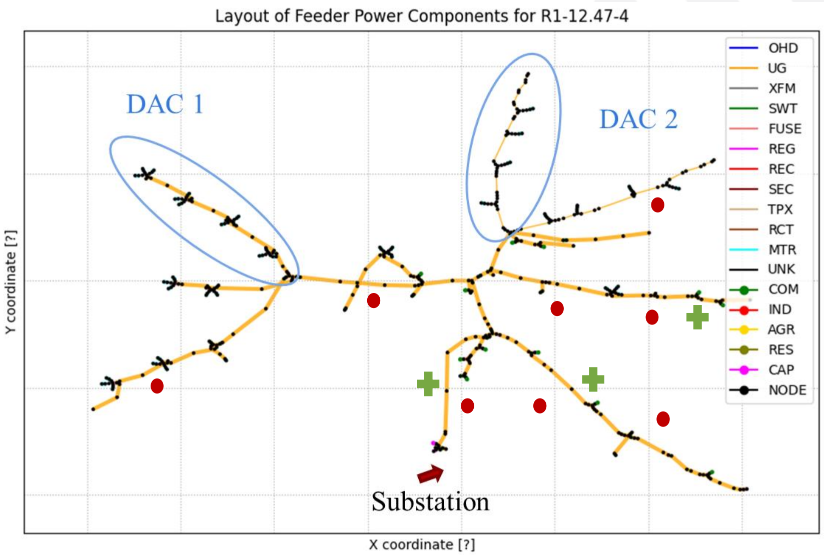


- A 300-node taxonomy feeder representing west-coast heavy sub-urban area

Service transformers	50
Residential customers	380
Commercial customers	12
Total load	5.3 MW

- Randomly identified DAC regions
  - Average DAC customer load: 1.8 kW
  - Non-DAC: 5 kW
  - DAC: 70 customers
  - Non-DAC: 310 customers

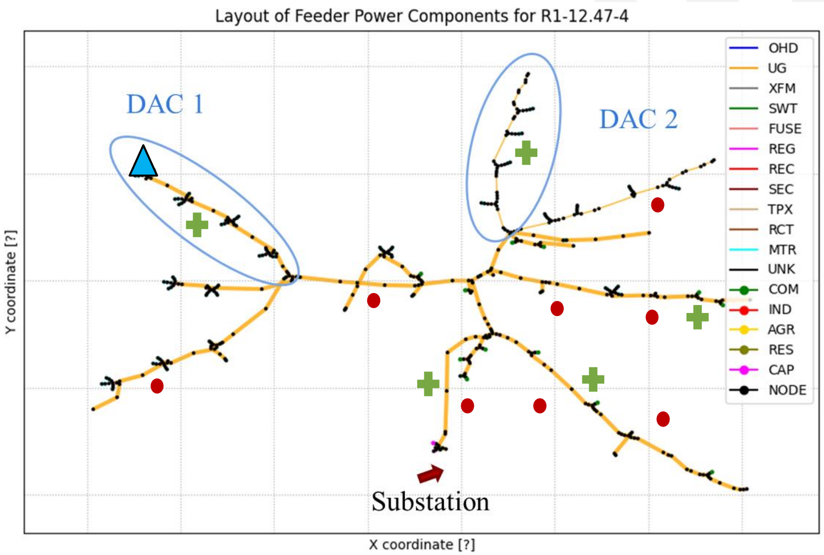
Planning: BAU



- Transformer and line upgrade
- Utility-level DER allocation

- Utility-level DER allocation - Most DERs should be located:
  - Closer to high EV load locations to avoid asset upgrade
  - In high hosting capacity locations without voltage violations to avoid voltage mitigation solutions
- Asset Upgrade - Transformer upgrades at locations obtained from the analysis in non-DAC region
- DAC regions are not likely to be part of asset upgrades and DER allocation in this case, making them vulnerable to resiliency events.

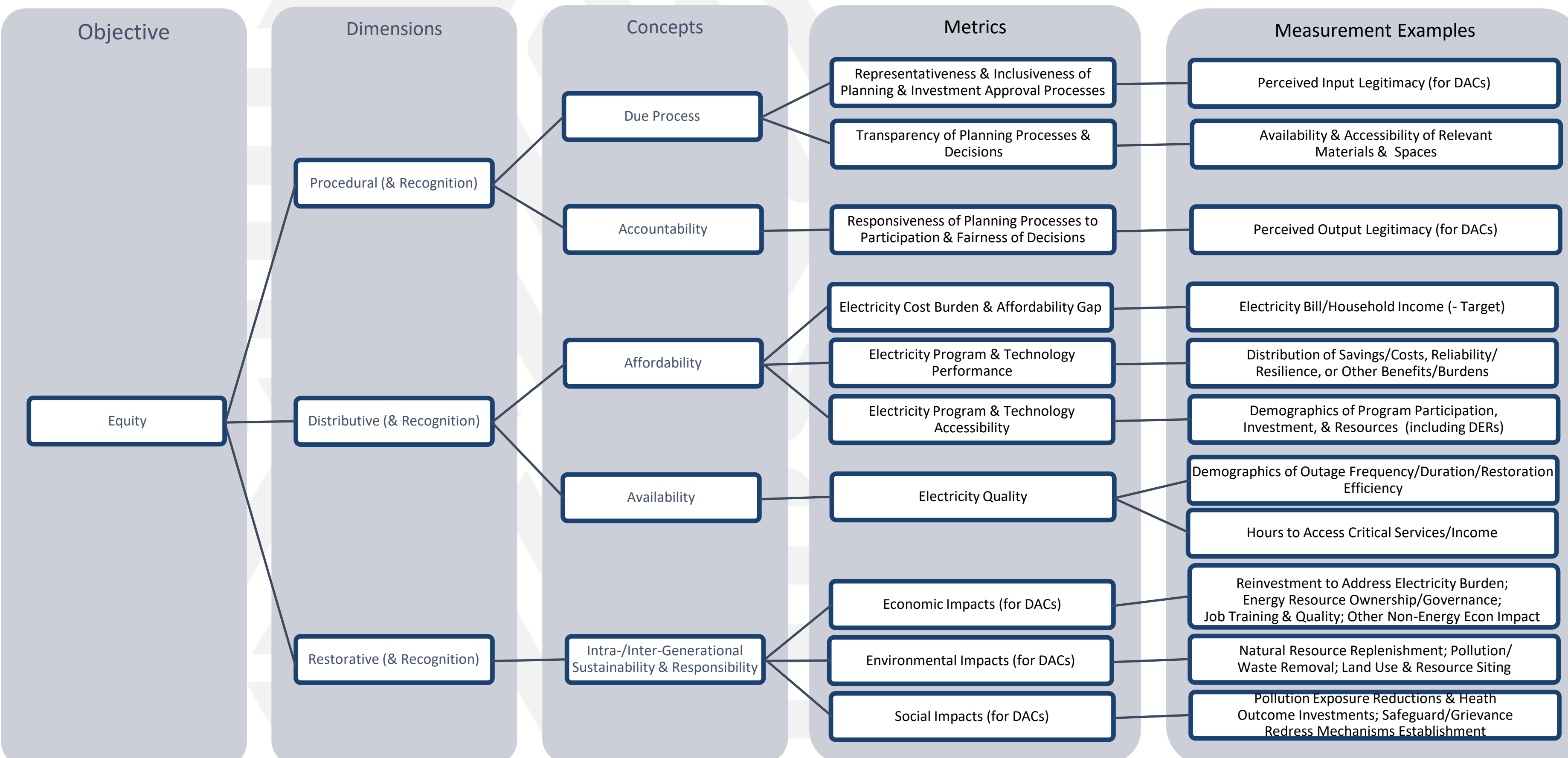
Planning with Equity



- Transformer and line upgrade
- Utility-level DER allocation
- Voltage regulator installation

- DAC regions should have equitable PV hosting capacity
  - Requires solutions such as voltage regulator installation in DAC-region
  - TODO: simulation analysis to demonstrate increased hosting capacity in DAC-1 region with voltage regulator device
  - TODO: cost analysis
- Asset upgrades in non-DAC region due to high EV load also improve resiliency of these regions compared to DAC
  - TODO: observe the impact of high EV and asset upgrades on resiliency

Equity Objective, Dimensions, Concepts, Metrics, and Measurement Approaches



Equity Metrics and Measurement Approaches

Metrics

- Representativeness & Inclusiveness of Planning & Investment Approval Processes
- Transparency of Planning Processes & Decisions
- Responsiveness of Planning Processes to Participation & Fairness of Decisions
- Electricity Cost Burden & Affordability Gap
- Electricity Program & Technology Performance
- Electricity Program & Technology Accessibility
- Electricity Quality
- Economic Impacts (for DACs)
- Environmental Impacts (for DACs)
- Social Impacts (for DACs)

Measurement Examples

- Perceived Input Legitimacy (for DACs)
- Availability & Accessibility of Relevant Materials & Spaces
- Perceived Output Legitimacy (for DACs)
- Electricity Bill/Household Income (- Target)
- Distribution of Savings/Costs, Reliability/ Resilience, or Other Benefits/Burdens
- Demographics of Program Participation, Investment, & Resources (including DERs)
- Demographics of Outage Frequency/Duration/Restoration
- Hours to Access Critical Services/Income
- Reinvestment to Address Electricity Burden; Energy Resource Ownership/Governance
- Natural Resource Replenishment; Pollution/ Waste Removal; Land Use & Resource Siting
- Pollution Exposure Reductions & Health Outcome Investments; Safeguard/Grievance Redress Mechanisms Establishment

Questions public utility commissions can ask

- How should a grid planning process handle a large, conflicting, and variable amount of social information? Once I start, where do I stop?
- How do modeling strategies vary between planning processes? For example, how does a transmission planning process use highly local information?
- What are the tradeoffs between resilience and equity? Shouldn't some of those objectives be standard requirements, like cost and reliability?
- What are some of the most innovative practices from utilities and commissions in energy equity and resilience?
- What about technology mandates, such as legislative requirements for energy storage solutions?
- What are some of the ways that business models can affect whether a set of solutions shows up in grid performance metrics as more or less resilient or equitable?

Resources for more information

- **Energy Storage as an Equity Asset. *Current Sustainable Renewable Energy Reports* 8, 149–155 (2021).** https://doi.org/10.1007/s40518-021-00184-6
- **Review of Energy Equity Metrics, 2021.** https://www.pnnl.gov/sites/default/files/media/file/Metrics%20for%20Energy%20Equity_0.pdf
- **Multi-Objective Grid Planning** https://energy.sandia.gov/programs/electric-grid/mod-plan
- **Energy Equity Publications** https://www.pnnl.gov/projects/energy-equity/publications, (ex: Community Energy Storage and Energy Equity, FERC Public Participation Workshop, Business Models for Decommissioning)
- **Advancing Equity in Utility Regulation, 2021.** https://emp.lbl.gov/publications/advancing-equity-utility-regulation

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BACKUP

Movements of Environmental, Climate, and Energy Justice

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1970s and 1980s: Environmental Justice Movement

Key Claims:

- Access to environmental decision making
- Equitable distribution of benefits and harms of development

1990s and 2000s: Climate Justice Movement

Key Claims:

- Access to decision making on climate change mitigation
- Shaping policy efforts to avert inequitable social conditions exacerbated by climate change

2010s to present: Energy Justice Movement

Key Claims:

- Right to make energy decisions
- Access to clean and affordable energy
- Access to economic benefits of the new 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.

https://iejusa.org/section-1-defining-energy-justice/

Dimensions and Approaches of Energy Justice

Distributive Justice: Where?

- Addressing the unequal allocation of benefits and burdens and unequal distribution of the consequences
- Increasing affordability and availability

Procedural Justice: How?

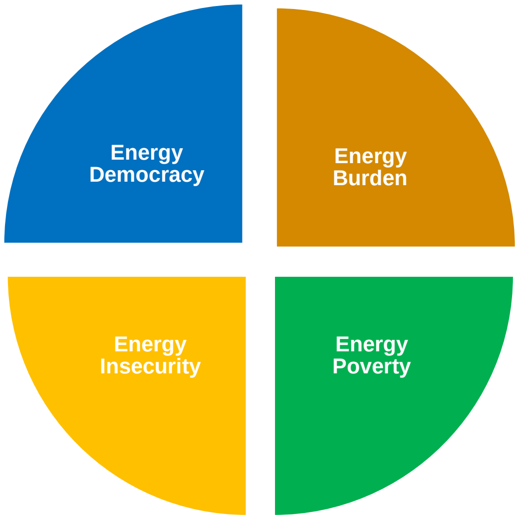
- The fairness of the decision-making process
- Allowing for due process, transparency, and accountability

Recognition Justice: Who?

- Addressing the practice of cultural domination, disregard of people and their concerns, and misrecognition

Restorative Justice

- The response to those impacted by the burdens of energy projects
- Addressing intra- and inter-generational inequities
- Creating sustainability
- Establishing responsibility



https://iejusa.org/section-1-defining-energy-justice/

Performance Metrics

- Energy Burden — *Equity*
- Energy Vulnerability to Outages — *Resiliency, Equity*
- Access to black-start DERs — *Resiliency, Equity*
- Loss of load (SAIFI/SAIDI) — *Reliability, Equity*
- Energy Served from DERs — *Decarb, Equity*
- Cost of Assets Upgrade — *Cost, Equity*
- Impact on Energy Consumption due to Energy Assistance Program — *Efficiency, Equity*

Example Metrics	
Energy Burden	$\frac{Annual\ utility\ bills}{Annual\ household\ income}$
SAIFI	$\frac{Total\ \#\ of\ customers\ interrupted}{Total\ \#\ of\ customers\ served}$
E3B Investment*	$\%\ of\ low\ income\ population \times Total\ residential\ EE\ investment\ (\$)$

*Energy Efficiency Equity Baseline (E3B)

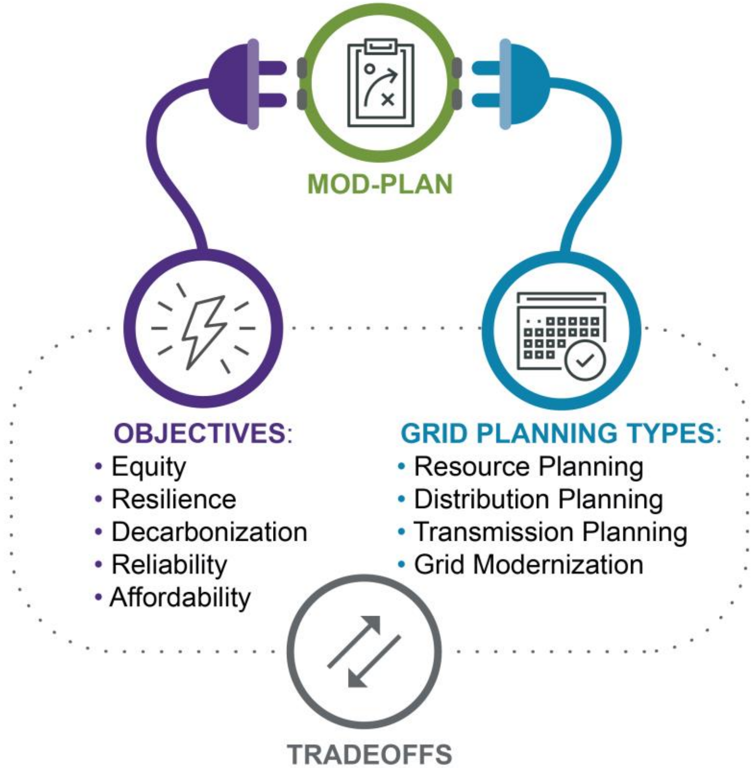
Stakeholder Roles for Resilience Planning within IDP

	Set Planning Goals and Define Metrics and Targets	Forecast Load and DER Adoption, EVs, and Scenarios	Baseline Analysis and Identify Critical Gaps	Systems Analysis to Design Alternative Portfolios to Fill Gaps	Evaluate Tradeoffs and Prioritize Solutions	Implement and Track Performance
Utility	Identify current requirements and foundational needs	Localized threat forecasts, customer and grid vulnerability analysis	Calculate baseline consequence with defined metrics	Identify DER-inclusive resilience investment alternatives	Evaluate improvement in resilience metrics for each alternative	Execute distribution investment plan across asset categories
PUC	Convene stakeholders. Resilience goals, metrics, screening requirements, targets	Define forecasting requirements	Identify resilience gaps versus targets using defined metrics	Ensure candidate alternatives meet screening requirements	Ensure preferred alternative meets resilience goals, and are feasible and equitable	
Other Stakeholders	*DOE:* Work across industry to collect data, standardize resilience metrics, and support goal-setting	*FEMA Regional Offices:* Regional threat forecast and multi-infrastructure vulnerability analysis	*Local Govts:* Provide weighting of human services for social burden, provide economic i-o model	*Local Govts:* Identify and connect initiatives and stakeholders	*Local Govts:* Integrate improved grid resilience into local resilience plan, identify public investments	

MOD-Plan: Multi-Objective Decision Making

Funded by the Office of Electricity

- **Planning frameworks with stakeholder roles.** Develop a framework that applies multiple emerging objectives in electric grid planning processes with stakeholder roles throughout.
- **Emerging objectives and trade-offs.** Advance innovative and practical methods for formulating planning objectives for decarbonization, resilience, and energy equity to indicate trade-offs.
- **Metrics for success.** Develop and report on metrics that can measure the performance of the grid with respect to these emerging objectives.



MOD-Plan Strategic Purpose

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- Identify measurable effects to underserved communities, connected to operational change that can occur within a grid planning and investment context.
- Incremental and idealized approaches needed: address low-data-quality/simpler distribution system plans as well as integrated planning paradigms.
- Complexity in the multi-objective tradeoffs space: where laboratory contribution and insights can be strong
- Case studies, pilots, and other external partnerships for validation will be material to project outcomes

New Grid Objectives through Policy Goals	Identify measurable grid effects to fulfill policy goal
Modernized Planning and Investment Approaches	Incremental and idealized approaches Needed
Change in Investment and Technology Strategies	Complexity in the multi-objective tradeoff space
Grid Performance Metrics to Connect Practice to Effects	Real world validation: case studies, pilots
Measurable, Defensible Outcomes	Strong technical basis for decisionmaking and evaluation

Creating Transparent Process with Stakeholders

Identify Stakeholders	Roles & Responsibilities	Iterative Feedback Process	Implementation into Planning Objectives & Criteria

• Community members
• Disadvantaged Communities
• National Agencies
• Regional Agencies
• State Agencies
• Local Agencies
• Policy Makers
• Regulators
• Utilities
• Industry Experts
	• Meet with stakeholders to:
	  • Define roles for each stakeholder
	  • Identify responsibilities for stakeholders in relation to timing in IDSP process
		• Incorporate stakeholder feedback in creation of iterative process
		• Include policy and regulation schedules
		• Address accessibility of community members in feedback process (ex: transportation, technology, language, etc.)
		• Incorporate feedback into policies
			• Transparency and communication of the following:
			  • Final policies and regulations
			  • Planning Objectives and timing of implementation
			  • Criteria, metrics, and reporting
			  • Performance and feedback to stakeholders