



Energy Storage: Considerations on Equity and Resilience

OE Energy Storage Peer Review

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Energy equity is an administration priority

- **EO 13985, Advancing Racial Equity and Support for Underserved Communities through the Federal Government**
- **EO 14008, Tackling the Climate Crisis at Home and Abroad**
 - **Section 223 establishes the Justice40 Initiative**
 - 40% of the benefits of Federal investments should flow to disadvantaged communities



Energy Equity – What, Why, How

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.

What

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.

Why

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.

How

What are the administration priorities?

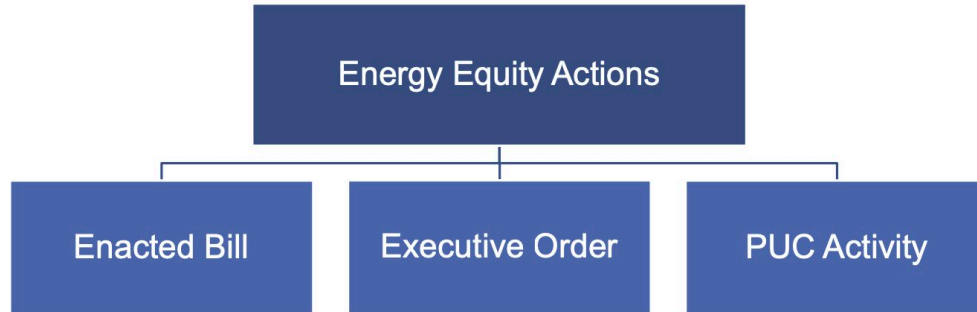
Office of Energy Justice and Equity identified eight policy priorities to guide DOE's implementation of Justice40:

1. Decrease energy burden in disadvantaged communities (DACs).
2. Decrease environmental exposure and burdens for DACs
3. Increase parity in clean energy technology (e.g., solar, storage) access and adoption in DACs.
4. Increase access to low-cost capital in DACs.
5. Increase clean energy enterprise creation and contracting (MBE/DBE) in DACs.
6. Increase clean energy jobs, job pipeline, and job training for individuals from DACs.
7. Increase **energy resiliency** in DACs.
8. Increase energy democracy in DACs.



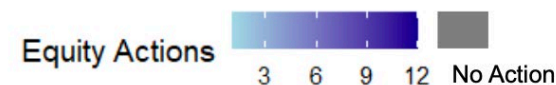
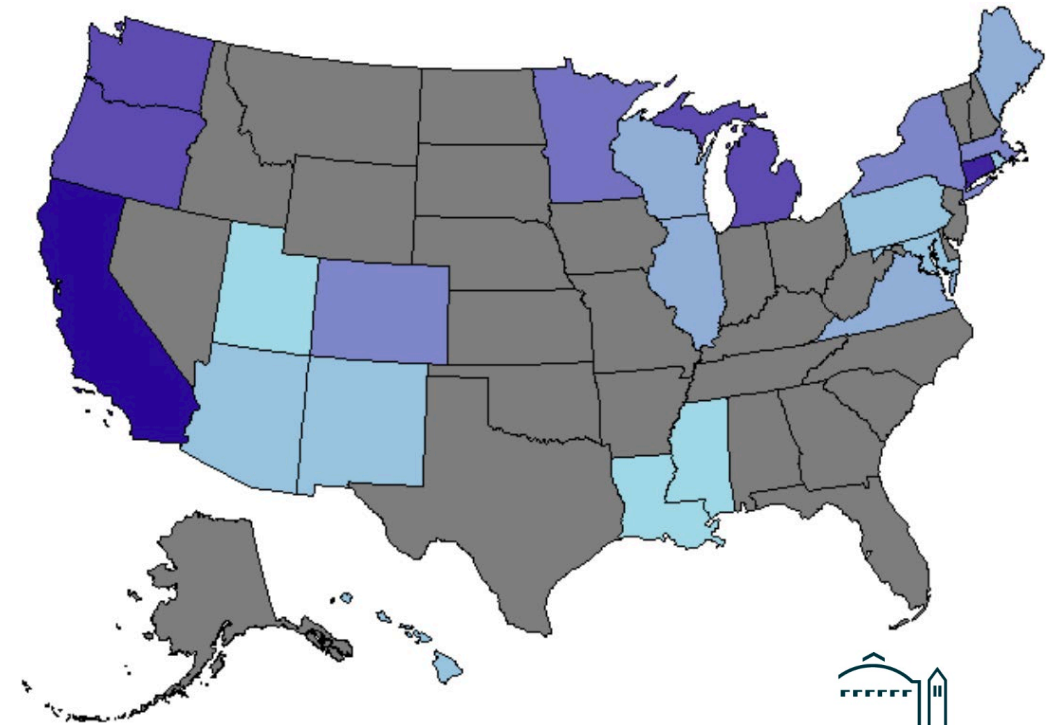
What happens after November 5, 2024?

Regardless of the priorities of the next Administration in relation to equity, there is significant momentum in states across the US.



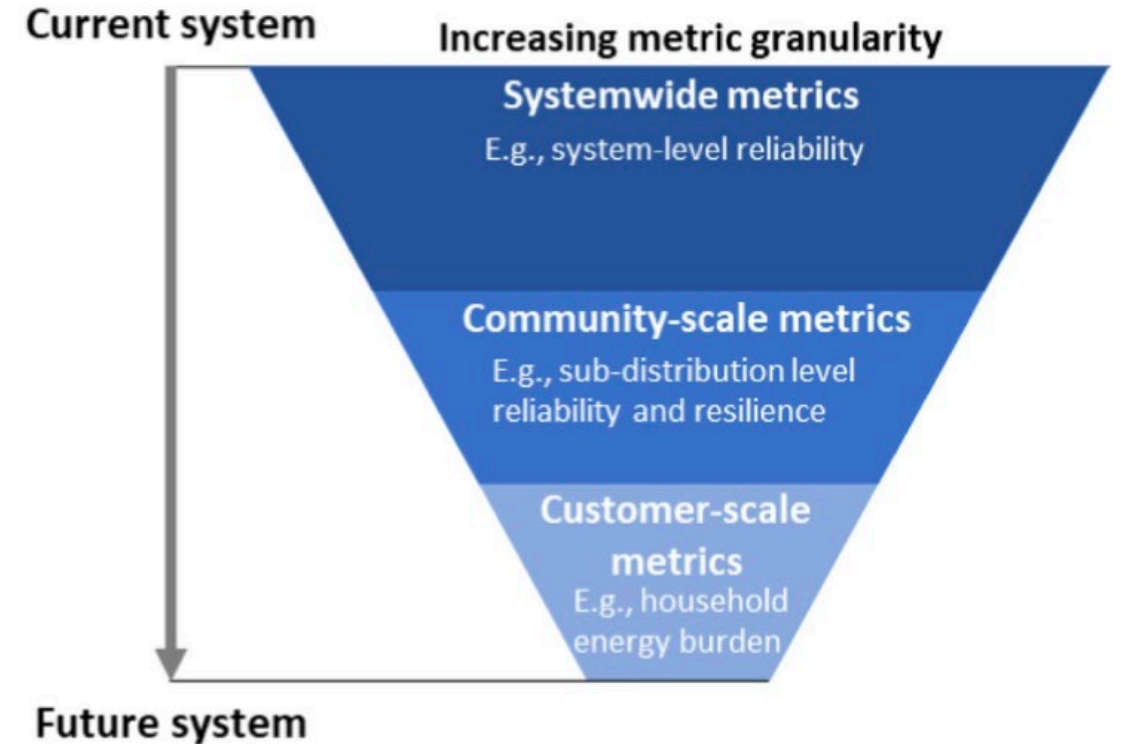
The screening process identified 95 equity actions taken from January 2020 to July 2022 across 22 states and Washington, D.C.

<http://www.pnnl.gov/sites/default/files/media/file/GMLC%20Equity%20Database%20Report%20-%20PNNL%2033957.pdf>



Resilience and Equity Metrics

- Traditional reliability measures do not address system resilience—the ability of the system to prepare for, adapt to, and recover from disruptions.
- Reliability has usually been measured on a utility system-wide basis, resilience is also concerned with localized parts of the grid.
- Uneven resilience conditions implicate the need for equity in metric expansion.
- To understand how the grid serves a community during and after a disruption and to understand where on the system additional investment is needed, it is important to access data at a more granular level.



Resilience Metrics that Enable Equity

- Standard reliability metrics (SAIDI, SAIFI, CAIDI) represent averages and therefore don't point to customers who experience more than their fair share of outages
- Other metrics point to specific customer segments that may be experiencing a larger share of outages:
 - CEMIn - Customers Experiencing Multiple Interruptions of n or more
 - CELIDt - Customers Experiencing Long Interruption Duration or t or more hours
 - CEMM – Customers Experiencing Multiple Momentaries
 - CEMSMI – Customers Experiencing Multiple Sustained and Momentary Interruptions

STATE	CEMI REPORTING
California	Requirement to report CEMI-12
Connecticut	Requirement to report CEMI-3 to 10
Delaware	Requirement to report CEMI-8
DC	Requirement to report CEMI-8
Florida	Requirement to report CEMI-5 for utilities > 50,000 customers
Maryland	Requirement to report CEMI-2, 4, 6, and 8
Michigan	DTE Energy Reporting CEMI-1 to 10
New Jersey	Atlantic City Electric reporting CEMI on a company and district basis
North Dakota	Northern States Power reporting on CEMI-4 to 6
Washington	Avista reporting on CEMI-0 to 6

Resilience Investments – Incorporating Equity

- Accounting for Variations in Hardship, Consequences, and Costs Experienced

- Institute **weighting and scoring** techniques to assess potential projects

- Example California Microgrid Incentive Program Scoring Criteria. Three categories:

- Customer and community benefits
- Resilience benefits
- Environmental benefits

CARE = California Alternate Rates for Energy Program;
 FERA = Family Electric Rate Assistance Program;
 AFN = Access and Functional Needs



Solution	Population at Risk			Weighted Community at Risk
	Critical/Essential Facility (Population Served)	Vulnerable Population (x2.0 weight)	Other Customers	
A	5000	1000	1000	8000
B	0	0	5000	5000
C	5000	0	500	5500
D	2500	1000	1000	5500
E	10000	1000	14500	26500

Example from DeMartini and Taft 2022

Subcategory	Scoring Parameter/Criteria	Validation	Points	Points Cap	Max Points
Low-Income Customers	Number of CARE/FERA customers within microgrid project	Utility Records	0.1 / customer	8	50
Vulnerable Customers	Number of AFN/Medical Baseline/Life Support customers within microgrid	Attestation from Authority having Jurisdiction	0.2 / customer	10	
Critical Facilities	Number of critical facilities within the microgrid	CPUC definition	5 / facility	30	
	Number of critical facilities within the microgrid serving disadvantaged communities	CPUC definition	10 / facility		
Community Services	Community Resilience Service facilities within microgrid (min of 1)	CPUC definition	2 / facility	2	

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Thank you

