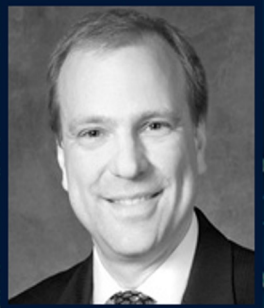
CALFLEXHUB SYMPOSIUM

NOVEMBER 3 | 8am-4pm PT

MARY ANN PIETTE



ANDREW MCALLISTER

RAM NARAYANAMURTHY

ACHINTYA MADURRI

BETH REID

KEYNOTE SPEAKERS: Mary Ann Piette, Associate Lab Director, Principal Investigator, Berkeley Lab; **Andrew McAllister,** Commissioner, California Energy Commission; **Ram Naranyamurthy,** Deputy Director, Department of Energy; **Achintya Madduri,** Senior Analyst, CPUC; **Beth Reid,** CEO, Olivine

2023

CalFlexHub

BERKELEY LAB

MOMENTUM

U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

Decarbonization by 2050: Enabling Grid Enabled Communities

November 3, 2023

A vision for a net-zero U.S. building sector by 2050

Reduce U.S. building emissions 60% by 2035 and 90% by 2050 vs. 2005 while enabling net-zero emissions economy-wide and centering equity and benefits to communities

Prioritize equity, affordability, and resilience

Ensure that at least 40% of the benefits of federal building decarbonization investments flow to disadvantaged communities

Reduce the consumer cost of decarbonizing key building segments 50% by 2035 while also reducing energy burdens

Increase the ability of communities to withstand stress from climate change, extreme weather, and grid disruptions

Increase building energy efficiency

Reduce onsite energy use intensity in buildings 30% by 2035 and 45% by 2050, compared to 2005

Accelerate onsite emissions reductions

Reduce onsite GHG emissions in buildings 25% by 2035 and 75% by 2050, compared to 2005

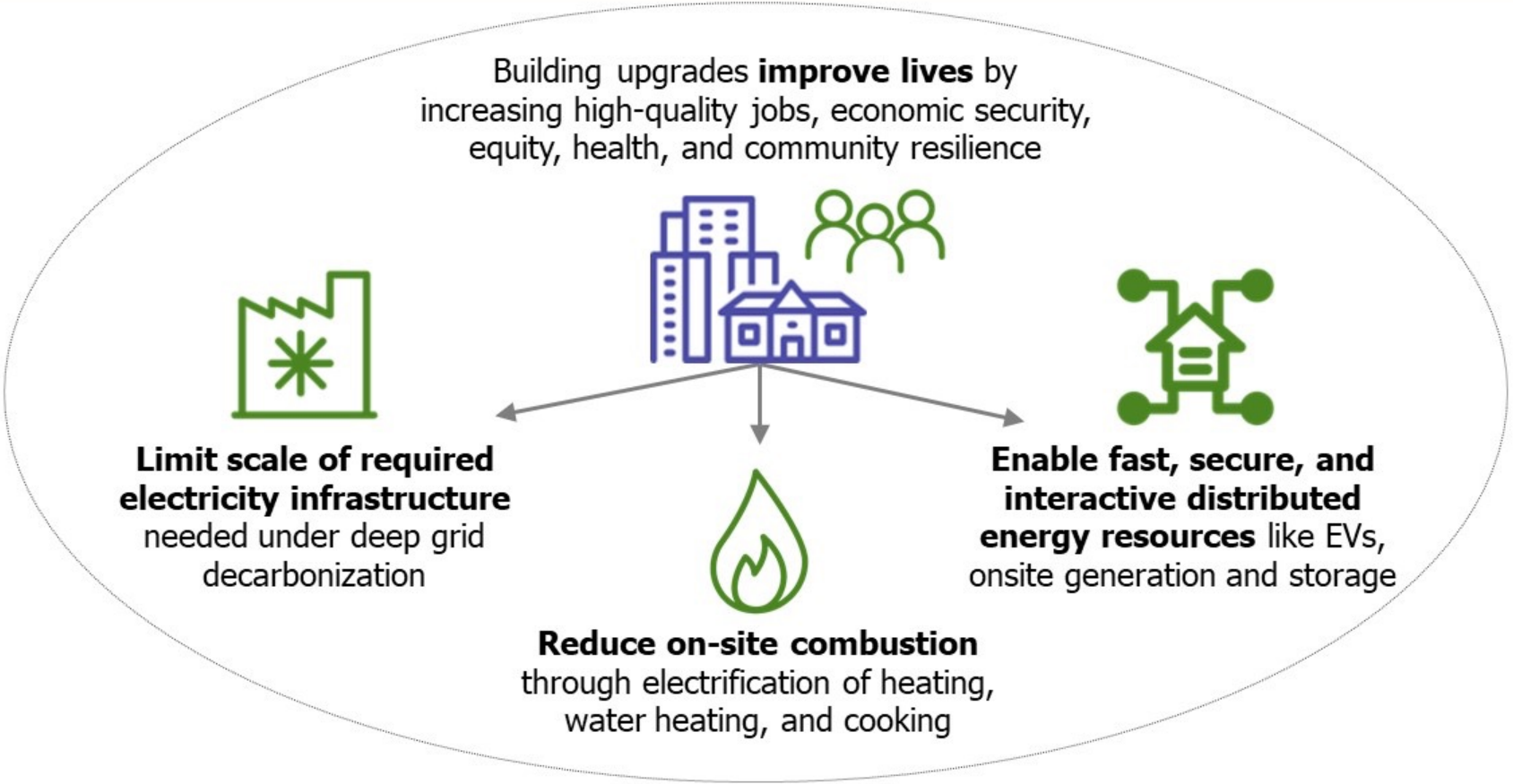
Transform the grid edge at buildings

Increase building demand flexibility potential 3X by 2050, compared to 2020, to enable a net-zero grid, reduce grid edge costs, and improve resilience.

Minimize building life cycle emissions

Reduce embodied emissions from building materials and construction 90% by 2050, compared to 2005.

Buildings are central to multiple decarbonization pillars



The Affordable Homes Earthshot

Reduce by 50%+ the cost of the package of technology needed to decarbonize affordable housing while lowering energy bills by 20% within a decade.

50%+ lower upfront cost

20% lower energy bills

Within a decade

Transform the grid edge at buildings

Demand-side management through building energy efficiency and demand flexibility can reduce the cost and scale of grid transformation to meet decarbonization goals

KEY ISSUES

Distribution system challenges

New behind-the-meter loads from heating and transport electrification will strain existing grid distribution infrastructure without effective load management

Lack of distributed resource integration

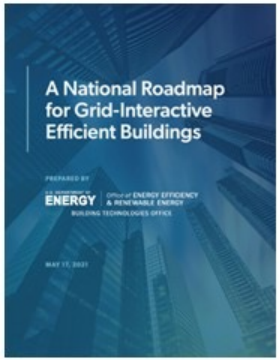
Demand management measures are not typically coordinated with other distributed energy resources such as on-site PV, EVs, and batteries

Lack of valuation and incentives

Demand-side measures are often excluded or undervalued in power markets and stronger regulatory/economic incentives are needed to increase demand flexibility deployment

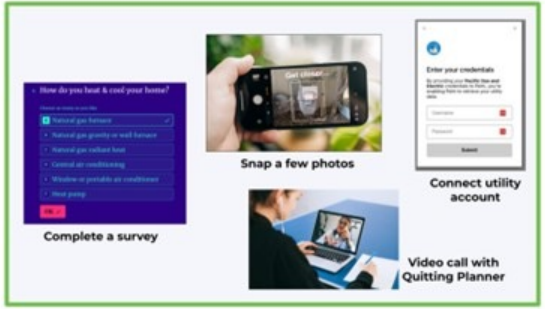
EXAMPLE INITIATIVES

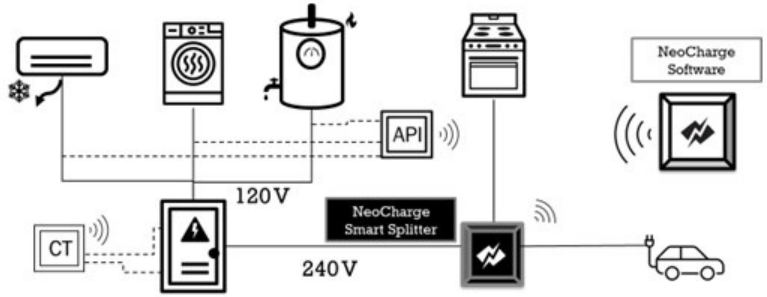
Connected Communities

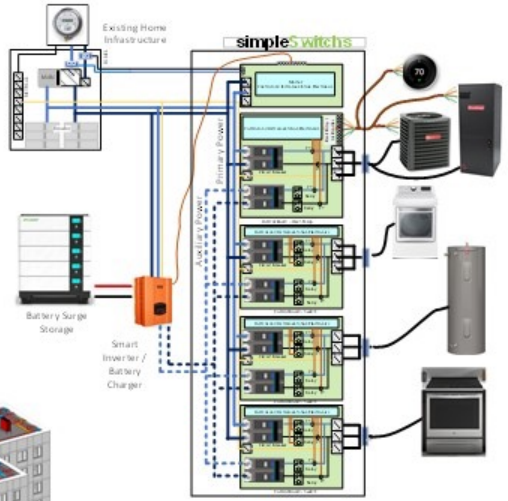


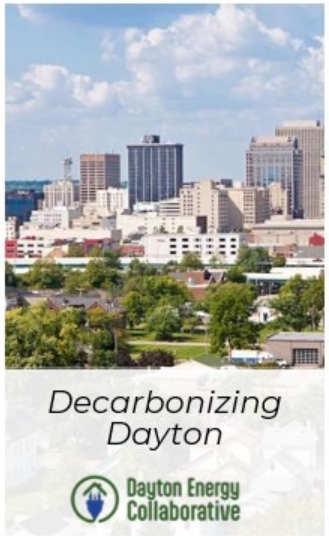
Example Effort: EAS-e Prize

EAS-e (Efficient, Affordable Solutions for Electrification) Prize was awarded to companies and technologies that are advancing innovative approaches to building electrification especially in affordable housing

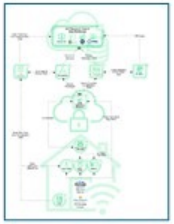








Multiple lenses into Connected Communities



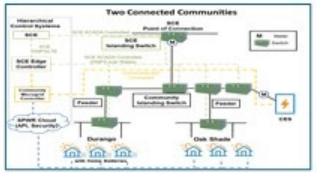
Commercial and residential electric ZNE demos in CA, NC, WA

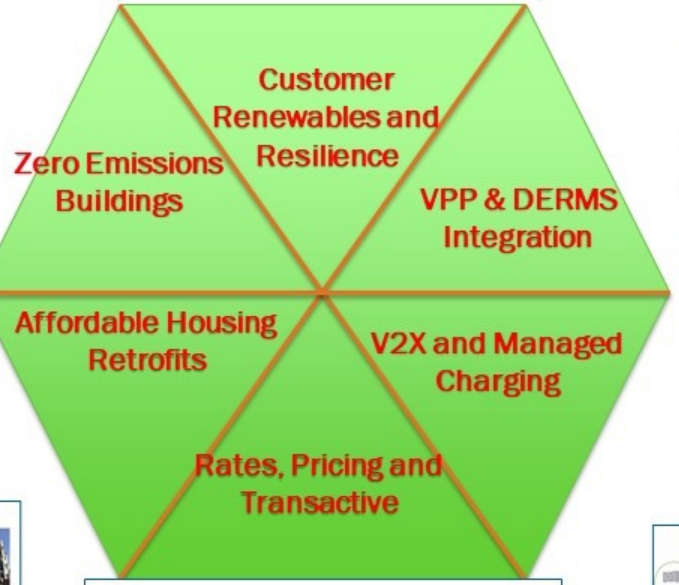
Community microgrid for customer resilience and energy cost management in OH, WI and CA

Utility DERMS deployment with multiple building types incl. LMI communities in OH, NY, OR, UT, NC and WA

Community deployment of 120V HPs and ESCO model for electrification retrofits in NY, MA and WA

Using V2B with EVs for customer resilience in CA; V2G and fleet charging in affordable housing in WA





Key Idea / Takeaway:
Evaluate feasibility of two-way market interactive "prices-to-devices" concept for rural co-ops in NH to manage load

Questions?

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