I. SESSION NAME

Realizing the Opportunity and Promise of the Grid Edge

Utility 360 Collaborative, Beyond the Meter, Center of Excellence Meeting (part of U2030's Energy Transition Center of Excellence)

II. MEETING RECORDING

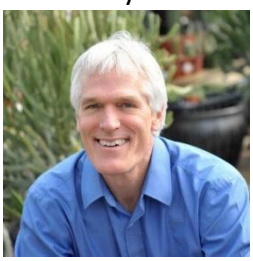
Listen to the recording

II. SESSION DESCRIPTION

Embark on an exploration beyond the meter, at the dynamic intersection of customer-driven initiatives and infrastructure efficiency: the Grid Edge. Delve into California's substantial battery growth, Hawaii's inclusive energy strategies, successful V2G trials, and proposed standardized frameworks. This session offers insights into utility innovations and the evolving integration of renewable energy, uncovering key advancements shaping the industry's future.

III. PRESENTER

Peter Kelly-Detwiler, Co-Founder, NorthBridge Energy Partners, LLC



IV. DISCUSSION HIGHLIGHTS

1. Key Challenges Discussed

Grid Efficiency & Peak Demand

Decarbonization and Decentralization: The primary challenge associated with transitioning to cleaner economies through electrification, and with integrating diverse resources (such as energy storage, air conditioning, and batteries) at the grid edge is reducing peak energy demand. Cutting the top 10% of peak hours can lead to a 25% reduction in capital expenditures, and a more efficient use of the existing infrastructure.

Electric Vehicle (EV) Impact: A projection of 50% electric output by U.S. EV companies by 2030 indicates the rapid growth of EV adoption. Continuous EV charging, especially overnight, strains infrastructure like transformers, potentially reducing their lifespan from decades to half a decade.

Utility Adaptation

Silos & Distributed Energy Resource (DER) Integration: Deconstructing utility silos to integrate DERs requires increased visibility into hosting requirements, as well as collaboration across various divisions such as customer care, planning, and transmission. Leadership must take control of change management and reorganization to realize this

potential.

Regulatory Complexities: A proposed utility initiative aims to establish a universal registry that standardizes grid-edge device programs, IT systems, and nomenclature, to facilitate simplified transactions between different entities. The challenge of this physics-based approach is that it may conflict with the existing policy-based one; however, non-standardization may pose far greater risks to scalability and operational efficiency
2. Best Practices/Solutions

Regional Innovations

Solar & Storage Implementation: Hawaii's inclusive energy planning and California's strides in solar power and battery storage solutions illustrate successful cases. California installed nearly 900 megawatts of behind-the-meter batteries, while Hawaii's 3,400-megawatt capacity sees approximately 25% of energy generation from customer-installed solar panels, often accompanied by battery storage.

Vehicle-to-Grid (V2G) Potential: V2G capabilities offering a promising solution for managing energy demands using EV batteries. School buses in Beverly, Massachusetts, made $5,000 through V2G programs, and a Nissan LEAF at a sewage treatment plant in Burrillville, Rhode Island, earned $4,000 in consecutive years, showcasing tangible value for these vehicles during off-peak periods.

Collaborative Approaches

Vendor-Utility Engagement: Initiatives like Kaluza's V2G trials demonstrate successful collaborations between vendors, utilities, and end-users.

Universal Registry Proposal: "The Collaborative Utility Solutions" initiative suggests a unified registry to define device specifics, location, capacity, and ownership. This system would utilize a unique identifier, facilitating simplified transactions between different entities.

V. RESULTS/ROI
Efficiency Gains: Successful trials showcase substantial demand shift, customer rewards through energy sales, and potential cost savings for EV owners.

Renewable Integration: Regions like Hawaii and Australia demonstrate tangible achievements in renewable energy usage through community engagement and housing development.

VI. NOTABLE SPEAKER QUOTES
"Now, with machine learning, we can do things that we couldn't do 5 or 10 years ago with computers, that are going to create more possibilities on that grid edge, on the customer side of the meter."

"If all of the light passenger vehicles, light trucks, and medium duty vehicles were electrified in this country, Lawrence Berkeley National Labs estimates that we would increase our electricity consumption by roughly 40%."

"51% of all the energy on Maui was renewable last year."

"So (SonnenFlat) takes those ($60) monthly fees, and then they pay the utility out of those monthly fees - but the monthly fees only cover part of it. Sonnen then engages all those batteries, combined with a solar on the rooftop, and sells those services into the grid. So they now become the Energy Manager, and they've completely disintermediated the utility from its former relationship with its 'ratepayer', or customer."

VII. ADDITIONAL RESOURCES

California Solar+Storage Association Sept 2022 County Statistics (15:06, Slide 8)

Tesla Virtual Power Plants Grid Events (16:50, Slide 9)

Bidirectional EV charging explained - V2G, V2H & V2L (21:25, Slide 11)

Planning Hawaii's Grid for Future Generations (25:58, Slide 13)

A Collaborative DER Registry: Solving It the Right Way (30:26, Slide 17)

VIII. CONTACT

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