

# Advanced Community Energy

## “ACE”



A Smart & Secure Energy System for California

# Today's Grid Was Not Built for the 21st Century

- Decarbonization, security, and resilience are now urgent priorities for our electrical system.
- Today's technologies offer much better solutions and business models
- Last century's utility role and compensation model desperately needs a 21<sup>st</sup> Century update
- Communities and their representatives, such as CCAs, deserve much more say and control

**This 20<sup>th</sup> century, centralized, top-down power system and its main institutions need a major update in order to meet the needs of today.**



# Our New Reality...

## Energy is Critical Infrastructure

- Energy is required to run critical services within our communities – health, water, police, fire, shelters, schools, etc. And our economies.
- Our mostly centralized energy system is highly vulnerable to major disruptions from fires, high winds, randomly-caused outages, system constraints, and other transmission failures.
- Extreme weather events are occurring more frequently, demonstrating this vulnerability and high cost of today's mostly centralized grid architecture.
- Cyber attacks and terrorism are growing risks – and a major event can affect millions.
- Communities require a secure, resilient, reliable, and cost-effective grid. As regulated monopolies, California utilities should be required to support the needs of our communities.



# Today's Grid.... A Major Security Risk

- Highly vulnerable to attacks on major transmission lines, or other transmission infrastructure, which can impact entire cities and counties for extended periods of time.
- The Dept. of Homeland Security recently released a report titled “Surviving a Catastrophic Power Outage” stating that our energy system is extremely vulnerable to catastrophic events.
- The report proposes solutions including “microgrids that combine distributed energy resources, energy storage, and innovative consumer technologies.”
- No source of remote energy delivered over long distances, whether renewable or carbon-free, can provide community security and resilience in the face of these inherent vulnerabilities.



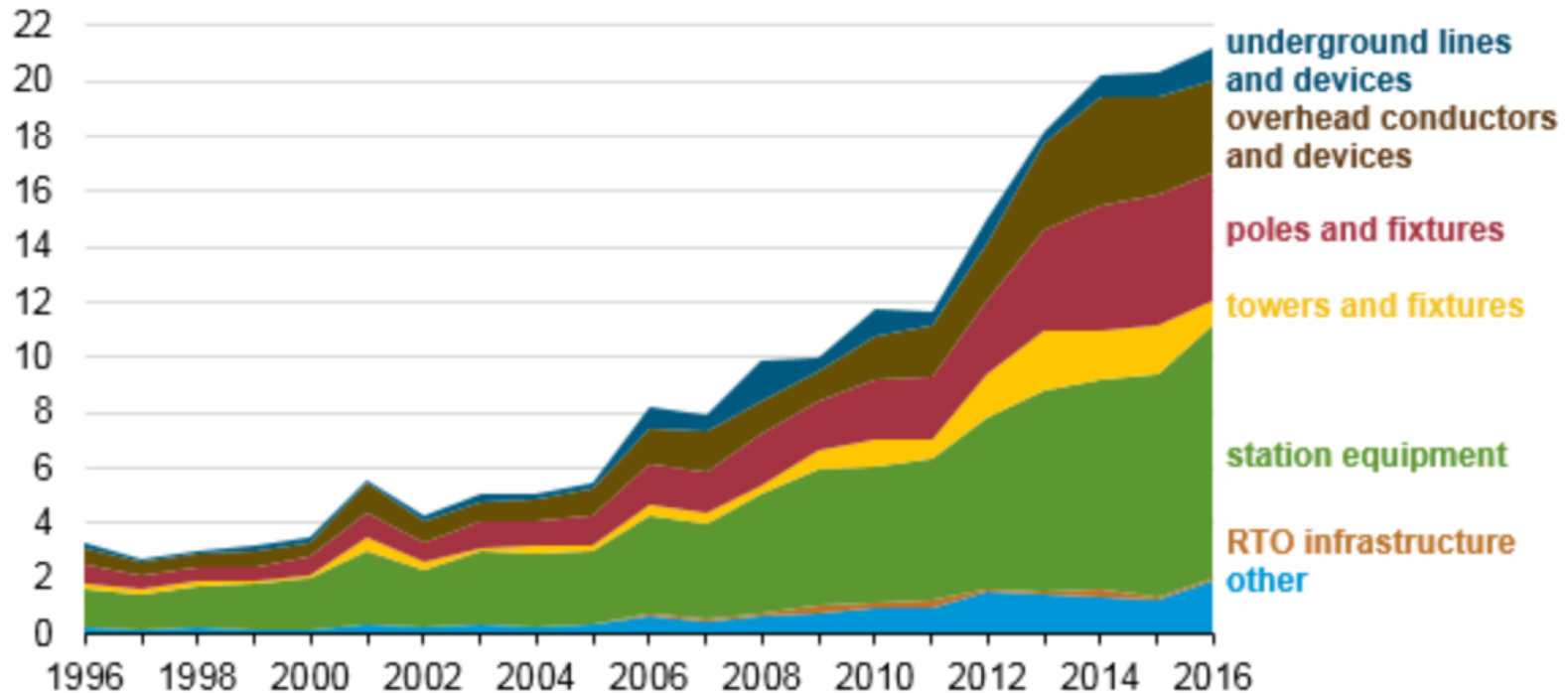


# Meanwhile...

## Due to an Institutional Preference for Costly Infrastructure, Transmission Investment by Utilities Continues to Explode.

Investment in transmission infrastructure by major utilities (1996-2016)

billion 2016 dollars



Source: U.S. Energy Information Administration, Federal Energy Regulatory Commission (FERC) Financial Reports, as accessed by Ventyx Velocity Suite

Note: RTOs are regional transmission organizations.

# What is ACE?

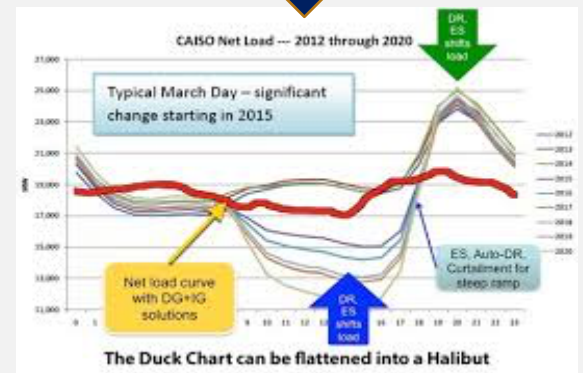
- A proposed statewide legislative initiative and program to develop local energy resources across all California cities and counties, addressing today's grid needs.
- ACE resources will power de-carbonization and resilience projects while supporting optimal performance and efficient utilization of the existing power grid.
- Under the ACE program, the state would provide funding, technical guidance, and other support so that communities and their representatives – e.g. CCAs – can plan and implement ACE systems that serve local energy needs, advance state policy goals, and support a safe, reliable and cost-effective power grid.



# What is an ACE System?

1. A coordinated local energy system connected to the existing grid. Features optimal local generation, storage, and load shaping for the benefit of both communities and grid operations.
2. Targets improved system economics, local energy resilience, and substantial carbon reduction as its highest goals and impacts. Simultaneously delivers de-carbonization, cost savings from peak reduction, cost-effective support for electrification of transportation and buildings, and energy resilience and security to critical and priority services during emergencies.
3. Via the proposed statewide program, provides supporting structure, funding and resources to help achieve this imperative while ensuring that all communities are covered. ACE systems are replicable and scalable, applicable to any size city or county.

**With ACE, communities can achieve their decarbonization, economic, resilience, security, and electrification goals.**



# ACE Legislative and Regulatory Components (1 of 2)

## Statewide ACE planning structure:

- Designate a state agency such as the California Energy Commission (CEC) to establish a new statewide program that empowers local governments to design and implement ACE systems. The state agency would develop standards and templates for ACE systems and requirements for stakeholder engagement, emphasizing de-carbonization, resilience and societal equity in alignment with safe and efficient operation of the state and regional power grid.
- The agency would allocate state funding for local ACE planning, provide technical expertise and perform ongoing oversight to ensure all communities benefit from the program





# ACE Legislative and Regulatory Components (2 of 2)

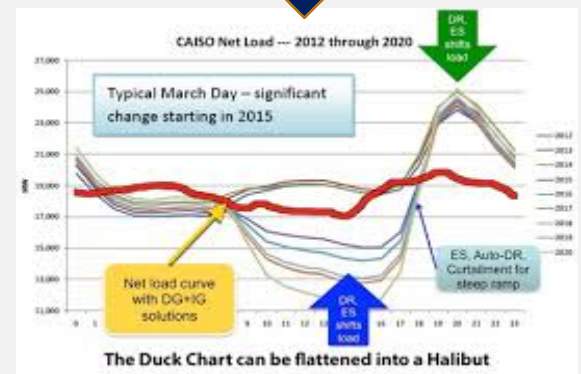
## Distribution utility collaboration framework:

- Legislation would direct the CPUC to develop and adopt, through a regulatory proceeding, provisions that define the role of the investor-owned electric distribution utilities in the ACE program.
- These provisions would direct the utilities to collaborate with local governments and other stakeholders to develop ACE plans in accordance with the criteria of the statewide ACE program.
- This would feature utility compensation being advanced from a focus on capital infrastructure to a performance-based regulatory model, including performance metrics for supporting ACE programs.



# ACE Benefits

- **Lower costs:** ACE systems deliver “local balancing” which reduce grid impacts by lowering peaks, simplifying grid operations, and reducing the high cost of transmission infrastructure. ACE targets optimal locations and sizes for local resources, further reducing costs.
- **Energy resilience and security:** ACE systems provide continuous power to critical and priority locations in communities, to withstand and rapidly recover from natural disasters or cybersecurity events.
- **Practical solution for achieving emissions targets:** ACE systems use clean energy to replace fossil fuels in support of state greenhouse gas reduction goals, providing cost-effective and secure energy for electrification of transportation, homes and buildings in coordination with local climate action plans.
- **Local economic investment and high-quality jobs:** ACE systems feature economic investment in cities and communities, growing quality jobs in clean energy and smart grid solutions and rewarding participating property owners.



# All Key Stakeholders Benefit

- ✓ **Communities, CCAs, Ratepayers:** Energy resilience & security, lower costs, economic investment, support for locally-based climate action goals (electrification, etc.)
- ✓ **Distribution Utilities:** Performance-based regulatory model enables improved operations, partnerships with communities and CCAs, and investment in the modern grid we need
- ✓ **ISO/bulk power system:** Simpler and cleaner model for balancing the grid using net impact of community-scale local energy systems. Managing net load shapes at the grid edge helps solve the system-level “Duck Curve” – **with no curtailment of renewables.**
- ✓ **Providers, Vendors:** Lowers customer acquisition and system costs by partnering with local governments to target top priority opportunities. Economies-of-scale through replicability.
- ✓ **Legislature and Policymakers:** A unified, scalable, cost-effective mechanism that delivers resilient communities, helps California achieve 100% clean energy goals, and decarbonizes other societal sectors securely and cost-effectively, e.g. transportation

