SCE’s Pathway to a Reimagined Grid

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Pathway 2045: Achieving 100% carbon neutrality

- Decarbonization of the electric sector
- Significant electrification of transportation and buildings and the use of low-carbon fuels for hard-to-electrify applications such as industrial and heavy-duty transportation
- Sequestration of remaining carbon through natural processes and engineered solutions
Our Reimagining the Grid approach

GRID CHALLENGES

Factors driving future grid uses, needs & evolution
- Customer
- Energy Supply
- Climate Impacts

Starting point for the grid
- Current SCE Grid
- Physical Topology

DEVELOPMENT OF GRID OPTIONS

SCE Regions
Geographic areas with unique attributes and needs (evolving over time)
- Region 1
- Region 2
- Region 3

Evolving SCE Grid
Grid design solutions with specific capabilities and technologies
- Required capabilities
- New grid technologies
- Specific grid architectures

ROADMAP

Future Grid Roadmap
- Near term
- Mid term
- Long term
Grid Challenges

**CLIMATE**
- Direct impacts to **performance of grid assets** from climate risks such as extreme temperatures, wildfires, and floods
- Climate-driven changes in **customer needs and electric service continuity**

**SUPPLY**
- Integrating very high levels of renewables (far from load centers)
- **Ensuring Resource Adequate** with an evolving mix of resources
- Maintaining grid stability and resilience under **lower levels of inertia** with conventional generation retirements

**CUSTOMER**
- Supporting **large adoption of DERs** on distribution systems
- **Higher usage and load density** largely due to electrification
- **More end-uses that are sensitive to power quality** (e.g., power electronics)
- Overall, **increased reliance on electricity**
Evolving SCE’s Grid

Grid planning, design, and operations will need to shift from a focus on systemwide standards to one that meets multiple objectives based on localized needs. Changes in practice include:

- Strengthening our “forward radar”
- Moving from a deterministic planning approach to a risk-based, multi-scenario, and adaptive approach
- Greater integration of generation, transmission, distribution, and customer resources to optimize planning and operating decisions
- Recognizing the heterogeneity of different regional needs, moving from uniform grid architectures to region-specific, “modular” designs
- Incorporating flexibility into future grid architectures with technologies that can rapidly reconfigure and isolate portions of the grid while utilizing storage, DERs, and controllable loads

Reimagined Grid

to enable Pathway 2045 vision and meet location-specific needs

- Heterogenous and integrated T and D architectures
- Grid decisions more autonomous, flexible, and software/network-centric
- Common IT/OT platform deployed across the grid with advanced cybersecurity
- Tailored grid architectures with existing and next-gen technologies deployed for different regions
Achieving our vision for the reimagined grid will require rethinking various aspects of the grid

- Increased technology focus and collaboration
- Coordinated and adaptive grid planning
- Reimagined approach to grid design
- More efficient and integrated licensing/permitting processes
- Intelligent, more autonomous grid management and operations
Learn more at:
edison.com/pathway2045
edison.com/reimaginingthegrid