<table>
<thead>
<tr>
<th><strong>Docket Number:</strong></th>
<th>16-OIR-06</th>
</tr>
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<tbody>
<tr>
<td><strong>Project Title:</strong></td>
<td>Senate Bill 350 Disadvantaged Community Advisory Group</td>
</tr>
<tr>
<td><strong>TN #:</strong></td>
<td>245082</td>
</tr>
<tr>
<td><strong>Document Title:</strong></td>
<td>Presentation - Joint IOU EPIC 4 Presentation to DAC Advisory Group 8-19-2022 Meeting</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Filer:</strong></td>
<td>Dorothy Murimi</td>
</tr>
<tr>
<td><strong>Organization:</strong></td>
<td>California Energy Commission</td>
</tr>
<tr>
<td><strong>Submitter Role:</strong></td>
<td>Commission Staff</td>
</tr>
<tr>
<td><strong>Submission Date:</strong></td>
<td>8/16/2022 3:59:25 PM</td>
</tr>
<tr>
<td><strong>Docketed Date:</strong></td>
<td>8/16/2022</td>
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Joint IOU EPIC 4 Presentation to DAC Advisory Group

August 19, 2022
Agenda

- Overview of IOU role as EPIC administrators
- Overview of EPIC 4 cycle
- Discussion of benefits IOU EPIC programs can provide to DACs
- Overview of candidate IOU EPIC 4 topics, with emphasis on most relevant topics to DACs
- Open Discussion
  - Discussion of technology innovation priorities for DACs
  - What’s missing from IOU EPIC 4 topics?
  - How should we best solicit broader DAC input in the upcoming EPIC 4 DAC workshop on 8/25?
The Electric Program Investment Charge (EPIC) is a California statewide program that enables Utilities and CEC to invest in & pursue new/novel emerging energy solutions to meet California’s energy goals & drive innovation in the industry

EPIC promotes building the energy network of tomorrow through innovation focused on

Increased Safety • Improved Affordability • Greater Reliability
Environmental Sustainability • Equity
### CPUC-Designated EPIC Work Categories

<table>
<thead>
<tr>
<th>Applied Research and Development</th>
<th>Technology Demonstration &amp; Deployment</th>
<th>Market Facilitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment in <strong>applied energy science and technology</strong> that provides public benefit but for which there is no current deployment of private capital.</td>
<td>Investments in technology demonstrations at real-world scales and in real-world conditions to showcase emerging innovations and increase technology commercialization.</td>
<td>Investments in market research, regulatory permitting and streamlining, and workforce development activities to address non-price barriers to clean technology adoption.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CEC</th>
<th>CEC</th>
<th>CEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>PG&amp;E</td>
<td>SCE</td>
<td>SDG&amp;E</td>
</tr>
</tbody>
</table>
Other Constraints on IOU EPIC Projects

EPIC provides the IOUs with flexibility to demonstrate a wide range of emerging technologies.

CPUC-designated constraints state that IOU EPIC projects cannot be the following:

- Only Energy Efficiency or Only Demand Response
- Only Power Generation
- Only Gas
- Paper studies (i.e., without lab or field demonstration)
- Broad deployments of commercially available/already proven technologies
- Unnecessarily duplicative of other technology demonstrations
# EPIC-4 Funding Allocations for Project Work

<table>
<thead>
<tr>
<th>Administrator</th>
<th>Funding for 5-Year EPIC-4 Cycle</th>
<th>Share of Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEC</td>
<td>$662,300,000</td>
<td>80.00</td>
</tr>
<tr>
<td>PG&amp;E</td>
<td>$82,953,075</td>
<td>10.02</td>
</tr>
<tr>
<td>SCE</td>
<td>$68,051,325</td>
<td>8.22</td>
</tr>
<tr>
<td>SDG&amp;E</td>
<td>$14,570,600</td>
<td>1.76</td>
</tr>
</tbody>
</table>
## EPIC-4 Implementation Process

<table>
<thead>
<tr>
<th>Sequence of Activity</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>IOUs file EPIC-4 applications with CPUC</td>
<td>October 1, 2022</td>
</tr>
<tr>
<td>CPUC review of applications</td>
<td>Schedule depends on duration of CPUC process</td>
</tr>
<tr>
<td>CPUC modifications requested</td>
<td>Schedule depends on duration of CPUC process</td>
</tr>
<tr>
<td>Final versions of applications approved</td>
<td>Schedule depends on duration of CPUC process</td>
</tr>
<tr>
<td>Funding release by CPUC</td>
<td>Schedule depends on duration of CPUC process</td>
</tr>
<tr>
<td>IOUs begin implementation of projects</td>
<td>T + 3 Months</td>
</tr>
<tr>
<td>Project plans written and internal teams formed</td>
<td>T + 6 Months</td>
</tr>
<tr>
<td>External partners and contract resources</td>
<td>T + 9 Months</td>
</tr>
</tbody>
</table>
# How IOU Programs Can Benefit DACs

<table>
<thead>
<tr>
<th>Benefit Area</th>
<th>Past / Current EPIC Project Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Safety</strong></td>
<td>• Improvements to weather &amp; fire danger models to help prevent wildfire ignitions</td>
</tr>
<tr>
<td><strong>A. Reliability / Resiliency</strong></td>
<td>• Innovative protection schemes for substation transformers to prevent broad power outages</td>
</tr>
<tr>
<td><strong>A. Benefits to All Customers</strong></td>
<td>• Demonstrations that inform industry standards for Smart Inverters to enable clean generation integration</td>
</tr>
<tr>
<td><strong>A. Economic</strong></td>
<td>• Using drones for more efficient inspections to reduce operating costs which lower customer bills</td>
</tr>
<tr>
<td><strong>B. Safety</strong></td>
<td>• Local deployment of hardware to rapidly de-energize power lines in wire-down events, to improve community safety</td>
</tr>
</tbody>
</table>
| **B. Benefits to Specific Communities / Customers** | • Local installation of devices to proactively address power quality issues, to keep agricultural equipment operating in the San Joaquin Valley  
• Local installation of multi-customer microgrids to keep a community’s critical facilities powered during an outage |
| **B. Environmental** | • Local public transit fleet electrification to improve air quality |
| **B. Economic** | • Lowering customer ownership costs of Distributed Energy Resource, such as through:  
  • Innovations that allow for reduced interconnection costs  
  • New communication system that reduces the cost of complying with CPUC data-sharing requirements |
Candidate IOU EPIC 4 Topics

Strategic Objective: Create a More Nimble Grid to Maintain Reliability as California Transition to 100% Clean Energy

• PG&E
  • Clean, Dispatchable Resources
    • Microgrid Enablement → Potential community-level resilience hubs of critical facilities
    • Individual Customer Resiliency → Potential assets for individual customers to improve reliability/resiliency
    • Long-Duration Energy Storage
  • Grid Modernization
    • Sensing and Communication
    • Grid Scenario Planning
    • Advanced Drone Applications
    • Advanced Predictive Maintenance and Failure Cause Analysis
    • Work Management
    • System Protection
Candidate IOU EPIC 4 Topics

Strategic Objective: Create a More Nimble Grid to Maintain Reliability as California Transition to 100% Clean Energy

- SCE
  - T&D Foundational Technologies
    - **Adaptive Protection** – help enable customer choice and support greater system resiliency
    - Ubiquitous Situational awareness
    - Ultra low-latency communications
  - T&D Situational Capabilities
    - High capacity throughput
    - **Seamless grid flexibility** – offer better community level solutions that address specific needs
Candidate IOU EPIC 4 Topics

Strategic Objective: Create a More Nimble Grid to Maintain Reliability as California Transition to 100% Clean Energy

- SDG&E
  - Grid Reliability
    - Mobile Microgrid Demonstration → Resiliency method for local communities which power critical facilities
Candidate IOU EPIC 4 Topics

Strategic Objective: Increase the Value Proposition of Distributed Energy Resources to Customers and the Grid

- **PG&E**
  - Distributed Energy Resource Integration and Load Flexibility
    - **Interconnection Enablement** → Solutions to avoid costly upgrades & streamline connection of renewables
    - **Advanced Distribution Powerflow Management** → Use cases to maximize value of customer DERs, and compensate them for their energy export
  - Transportation Electrification
    - **EV Technology Development and Standardization** → Opportunities to provide community with central charging hub
    - **EV Battery Re-Use for Stationary Energy Storage** → Potential to buy back aging EV batteries from customers for 2nd-life grid demonstrations
Candidate IOU EPIC 4 Topics

Strategic Objective: Increase the Value Proposition of Distributed Energy Resources to Customers and the Grid

• SCE
  • Energy Management Foundational Technologies
    • Localized & edge control – individualize local system responsiveness to customer need
    • Inertia substation
    • Customer load flexibility – improve coordination with customer programs that will broaden participation in savings and quality
  • Energy Management Situational Capabilities
    • Bidirectional power flow
    • Energy buffering
    • Islanding & reconfigurability – isolate or reduce effect to customers from grid level disturbances
Candidate IOU EPIC 4 Topics

Strategic Objective: Increase the Value Proposition of Distributed Energy Resources to Customers and the Grid

- SDG&E
  - Transportation Electrification
    - Displacing a diesel-powered rail line with electrification → lowering local emissions and improving air quality
  - Distributed Energy Resource Integration
    - Optimizing Real Time Net Energy Metering (NEM) Hosting Capacity
    - Demonstrating Solutions for Inverter Integration Issues
    - Communication and Control for Advanced Distribution Systems
Candidate IOU EPIC 4 Topics

Strategic Objective: Inform California's Transition to an Equitable, Zero-Carbon Energy System that is Climate-Resilient and Meets Environmental Goals

- PG&E
  - Climate and Environment
    - Carbon Capture and Re-Use
    - Individual Customer Emissions Visibility
    - Preventing Faults from Causing Ignitions
    - Undergrounding Capabilities
    - Improved Inspection Capabilities
    - Pinpointing Fault Location
    - Risk Modeling Improvements
    - Crowdsourcing
    - Non-Wildfire Disaster Prevention
Candidate IOU EPIC 4 Topics

Strategic Objective: Inform California's Transition to an Equitable, Zero-Carbon Energy System that is Climate-Resilient and Meets Environmental Goals

- SCE
  - Vulnerability, Threats, and Hazard Reduction
    - Hardening & remediation – reduce climate related effects that significantly impact regions with greater vulnerability
    - Safety & work methods advancement – improve worker and public exposure to hazards and potential dangers
  
- Digital Transformation
  - End-to-end advanced simulation & analytics
  - Data driven operations
Candidate IOU EPIC 4 Topics

Strategic Objective: Inform California's Transition to an Equitable, Zero-Carbon Energy System that is Climate-Resilient and Meets Environmental Goals

- SDG&E: nothing identified at this time
## Summary: Potential Opportunities in EPIC 4 Topics

<table>
<thead>
<tr>
<th>EPIC 4 Topic Area</th>
<th>Potential Opportunities for DACs</th>
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<tr>
<td>Displacing a diesel-powered rail line with electrification</td>
<td>Lowering local emissions and improving air quality</td>
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Open Discussion

• Do you see opportunities in the highlighted EPIC 4 topics?
• Are there technology innovation areas of relevance / importance to DACs not covered in our EPIC 4 topics?
• How should we best solicit broader DAC input in the upcoming EPIC 4 DAC workshop on 8/25?
Resources

Contacts
Dan Gilani – PG&E EPIC Lead: Dan.Gilani@pge.com
Aaron Renfro – SCE EPIC Lead: Aaron.Renfro@SCE.com
Stacy Fuhrer – SDG&E EPIC Lead: SFuhrer@sdge.com

Web Resources
PG&E EPIC Website
SCE EPIC Website
SDG&E EPIC Website
Joint EPIC Database
DAC / CBO Outreach for June Workshop

• The Utilities made an announcement at the DACAG Meeting.

Additionally please see the DAC/CBOs the Utilities reached out to in advance of the Joint EPIC DAC Workshop:

• Valley Clean Air Now (Valley CAN)
• Fresno EOC
• Community Housing Opportunities Corp
• GRID Alternatives North Valley
• Acterra
• Veterans in Business (VIB) Network
• Self-Help Enterprises (SHE)
• California Department of Rehabilitation
• Fruition Sustainability Solutions
• City of Salinas

• Modern Backyard
• Energy Vault
• Yale University, Undergraduate Consulting Group
• Central California Environmental Justice Network
• Natural Resources Defense Council
• Clean Tech Dan Diego
• The Energy Coalition
• University of California, Irvine
• Bay Area Council
• Humboldt State University
• East Bay Community Energy
• Green Hydrogen Coalition