Agenda

• Call to Order / Roll Call

• Public Comment (for items not on the Agenda)

• Action to set the Agenda and Approve Consent Items
  o Consent Public Comment
Chair Report

Executive Committee
October 12, 2021
Item 3
Open Positions

** Account Services Specialist / Analyst
** Building Electrification Program Manager

Los Banos Community Outreach position has been filled!
# Board Subcommittees

<table>
<thead>
<tr>
<th>Delivering 100% Renewables on a 24/7 Basis by 2025 Subcommittee</th>
<th>Procurement Subcommittee</th>
<th>Accelerating Decarb by 2035 Subcommittee</th>
<th>CC Power LDS Subcommittee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jeff Aalfs (EC)</td>
<td>Carlos Romero – (A&amp;FC)</td>
<td>Jeff Aalfs (EC)</td>
<td></td>
</tr>
<tr>
<td>Rick Bonilla (EC)</td>
<td>Rick Bonilla – (EC)</td>
<td>Betsy Nash</td>
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</tr>
<tr>
<td>Rick DeGolia (EC)</td>
<td>Rick DeGolia – (EC)</td>
<td>Rick DeGolia (EC)</td>
<td></td>
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<tr>
<td>Donna Colson (EC)</td>
<td>Dave Pine – (EC)</td>
<td>Dave Pine (EC)</td>
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<tr>
<td>Flor Nicolas</td>
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<td>Laura Parmer-Lohan (EC)</td>
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<tr>
<td>Tygarjas Bigstyck</td>
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<tr>
<td>Pradeep Gupta (DE)</td>
<td>Pradeep Gupta (DE)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>John Keener (DE)</td>
<td>John Keener (DE)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
DEAI Subcommittee Recommendation for Consultant

RFO issued: May 4, 2021
Proposals received:
Finalists: 3
DEAI Subcommittee and PCE staff interviewed finalists
Additional questions posed to finalists
Consensus reached on top consultant – last week
Recommendation to full board at October board meeting
Update on California Community Power (CC Power) Long Duration Storage Project (Discussion)

Executive Committee
October 12, 2021
Item 5
Siobhan Doherty, Director of Power Resources
Objective

- Provide background on RFO, evaluation, shortlisting and negotiation process to support approval of an Energy Storage Service Agreement, and ancillary agreements with, LS Power for Tumbleweed Long Duration Energy Storage at a future Board meeting
RFO Background and Timeline

June ’20
Interest & Information Gathering (RFI)

Oct ’20
CCAs Issue a Joint-Request for Offers (RFO) for up to 500 MW of LDS

Feb ’21
California Community Power (CC Power) Formed/Long Duration Storage Project Oversight Committee formalized

Jun ’21
LDS Projects Shortlisted, ESSA Negotiations start, and begin to development of CC Power/CCA Agreements

Jun ’21
CPUC Issues Mid-term Reliability Procurement Order – LDS POC Develop Pathways to Achieve Compliance

Oct ’21
CC Power and individual CCA Approval Process for LDS Project #1 – LS Power’s Tumbleweed
## RFO Timeline

<table>
<thead>
<tr>
<th>Activity</th>
<th>Original Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issuance of RFO</td>
<td>October 15, 2020</td>
</tr>
<tr>
<td>Offerors Webinar</td>
<td>October 28, 2020</td>
</tr>
<tr>
<td>Offer Submission Deadline</td>
<td>December 1, 2020</td>
</tr>
<tr>
<td>Project Shortlisting</td>
<td>Mid-May 2021</td>
</tr>
<tr>
<td>Developer/Buyer Negotiations</td>
<td>June – October 2021</td>
</tr>
<tr>
<td>CC Power 60-day Notice for Contract Approval</td>
<td>October 2021</td>
</tr>
<tr>
<td>CC Power Final Contract Approval (Tentative)</td>
<td>December 2021</td>
</tr>
<tr>
<td>Individual CCA Board Approval</td>
<td>December 2021 – February 2022</td>
</tr>
</tbody>
</table>
RFO Objectives & Requirements

Objectives

• Procure cost-effective LDS to integrate renewables & support grid reliability
• Joint-procurement to share resources and project risk
• Meet future potential IRP procurement mandates
• Technology and location agnostic with desire to evaluate emerging technologies
• Full tolls – for capacity and energy value

Requirements

• CAISO resource or Import with dynamic transfer rights
• Must be able to qualify for Resource Adequacy
• Grid-charged with minimum 8-hour discharge duration
• COD no later than June 1, 2026
• Minimum delivery term 10 years
• 50 MW minimum
• Complete bid submission
Offers

• Projects on-line as early as 2023
• 51 Entities submitted offers (over 9,000 MW)
• Total of 221 unique pricing offers
  o 160 Full Toll Offers
  o 57 RA Only Offers
• 8 Technology types
  o 18 distinct technologies
• 8,10,12-hour, and multi-day discharge durations

<table>
<thead>
<tr>
<th>Technology</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery</td>
<td>aqueous-air, lithium-ion, zinc</td>
</tr>
<tr>
<td>Chemical Flow</td>
<td>iron redox flow, vanadium flow</td>
</tr>
<tr>
<td>Compressed Air</td>
<td></td>
</tr>
<tr>
<td>Fuel Cell – Hydrogen</td>
<td></td>
</tr>
<tr>
<td>Hybrid</td>
<td>hydrogen, combined-cycle gas gen, li-ion, combined-cycle gas gen</td>
</tr>
<tr>
<td>Mechanical – Gravity</td>
<td></td>
</tr>
<tr>
<td>Pumped Hydro</td>
<td></td>
</tr>
<tr>
<td>Thermal</td>
<td>ice (HVAC), liquid air, molten Salt, molten Salt &amp; Gas gen, volcanic stone, water heat exchange</td>
</tr>
</tbody>
</table>
Primary Offers

• Identified **98 primary offers** out of the initial list of 221
• Primary offers were chosen based on the following principles:
  o Conforming offers only
  o Lowest price
  o Shortest delivery term (10-15 years)
Evaluation Process

Conforming Y/N and shorten list to 98 offers
Review each offer and determine if it meets minimum criteria

Round 1
Evaluate and Score Projects based on 100-point scoring rubric
Quantitative and Qualitative Assessment of individual projects based on NPV, Risk, Developer experience, Technology, Environmental Impact, and Delivery Term

Round 2
Rank Projects and Identify Top Candidates for Further Analysis
Top Projects per Technology and Max of 10 -17 will undergo further Quantitative and Qualitative Assessment

Shortlist
Project Oversight Committee Recommendation
Two levels of Projects recommended for Shortlisting & Negotiations to CC Power
Two-Round Evaluation Process

• 98 Primary offers were chosen based on the following principles:
  • Conforming offers only
  • Lowest price
  • Shortest delivery term (10-15 years)

Round One

All Primary Offers were scored and ranked. Top 17 moved to Round 2
Lithium-Ion v. Emerging Technologies

• The top 10 projects were the highest scores (all li-ion).
• The remaining 7 spots were allocated to the highest scoring non li-ion projects.
  o The decision to include non li-ion and classify as “emerging technologies” was to introduce technology diversity to the potential shortlist.
  o 56 out of the 98 primary offers represented li-ion
Round 2 Evaluation Process

Project specific NPV, stochastic modeling, assessment of value under various operational strategies

Locational & Interconnection Risk

Labor – Project Labor Agreement, prevail wages, apprentices

Environmental & Environmental Justice

Emerging Technology* specific viability assessment with follow-up interviews

SCPA, SVCE & Ascend

SVCE & Gridwell

PCE

PCE

All

*Emerging technologies defined as non-Li-Ion including 2nd life EV, Gravity, Hydrogen, Liquid Air, Compressed Air, Iron Redox Flow, and Pumped Storage Hydro
Project Value

1. Cost were assumed fixed, with the exception of projects with a variable operating component
2. Expected value ranged from negative to marginally positive
3. Value highly variable and uncertain over time
   1. Location matters
   2. dependent on and how the storage is operated (day ahead vs. real time)
   3. A/S value expected to decrease over time
4. Resource Adequacy value (avoided cost) is dependent on regulatory structure
Shortlisting

- Based on updates during round 2, the POC agreed upon a two-tier shortlist.
  - Tier 1 – Offers that scored the highest and received the most confidence in delivering a long duration storage product.
  - Tier 2 – Offers that require more information for CC Power negotiating team to commit to executing a contract.
- The two-tiered approach also provides additional capacity to deal with projects dropping
- Focus of negotiations on Tier 1 Projects
- CC Power General Manager finalized Shortlist
Negotiation Team & Agreements

- Confirmation and refinement of Term Sheet Offer
  - Led to dropping a couple of projects
- Exclusivity Agreements between CC Power & Seller/Developer
- Energy Storage Service Agreement Proforma development
- Credit/Collateral Requirements
- Project Participation Share Agreement
- Operating Agreement
- Pathways – Need based on CPUC requirements, project size and CCA member interest in moving forward and specific projects
Contract Structure

- Energy Storage Services Agreement
  - Developer
  - CC

- Project Participation Share Agreement
  - CC Power
  - 7 CCAs

- Buyer Liability Pass Through
  - (Each participating CCA executes with Developer’s Seller entity and CC Power)

Scheduling Coordinator Agreement

LDS Project

CCA Customers
Participating CCAs

- 7 CCAs agreed to move forward with joint LDS procurement
Mid-Term Reliability Decision (2023 – 2026)

- **D.21-06-035** adopted by CPUC on June 24, 2021 to address mid-term reliability needs
- LSEs required to collectively procure 11,500 MW NQC of new resources
- Follow-on to November 7, 2019 CPUC decision mandating 3,300 MW NQC procurement for 2021-2023 to maintain reliability
- Contract of at least 10 years
- Allocated to LSEs by load share
- Resources must be zero-emission or RPS eligible (no fossil resources)
- 4,500 MW of obligation subject to specific category requirements (next slide)
Procurement Timing

• Timing of overall procurement requirement and specific categories is assigned in tranches between 2023 and 2026

**Procurement Obligation in NQC\(^1\) MW for All LSEs by Category and Year**

<table>
<thead>
<tr>
<th>Procurement Category</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
<th>2026</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero-emissions generation, generation paired with storage, or demand response resources(^2)</td>
<td>-</td>
<td>-</td>
<td>2,500</td>
<td>-</td>
<td>2,500</td>
</tr>
<tr>
<td>Firm zero-emitting resources(^3)</td>
<td>-</td>
<td>-</td>
<td></td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Long-duration storage resources(^3)</td>
<td>-</td>
<td>-</td>
<td></td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Remaining New Capacity Required</td>
<td>-</td>
<td>-</td>
<td>7,000</td>
<td></td>
<td>7,000</td>
</tr>
<tr>
<td><strong>Total Annual Capacity Requirements</strong></td>
<td>2,000</td>
<td>6,000</td>
<td>1,500</td>
<td>2,000</td>
<td>11,500</td>
</tr>
</tbody>
</table>

1. Obligation is in NQC MW (not nameplate) and subject to ELCC factor (next slide)
2. Zero-emissions resources required to replace Diablo Canyon must be procured by 2025, but may occur in any of the years 2023-2025; therefore, the columns do not add to the total.
3. LSEs may request an extension by February 1, 2023 up to 2028 for the LLT resources. Minimum 8-hour discharge
Peninsula Clean Energy Allocation

- Volumes allocated to LSEs based on load share
- Some portion of category 1 would need to come online prior to 2025 to meet targets below

<table>
<thead>
<tr>
<th>Procurement Category</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
<th>2026</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero-emissions generation, generation paired with storage, or demand response resources&lt;sup&gt;1&lt;/sup&gt;</td>
<td>-</td>
<td>-</td>
<td>47</td>
<td>-</td>
<td>47</td>
</tr>
<tr>
<td>Firm zero-emitting resources&lt;sup&gt;2&lt;/sup&gt;</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>Long-duration storage resources&lt;sup&gt;2&lt;/sup&gt;</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>Remaining New Capacity Required</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>132</td>
</tr>
<tr>
<td><strong>Total Annual Capacity Requirements</strong></td>
<td><strong>38</strong></td>
<td><strong>113</strong></td>
<td><strong>28</strong></td>
<td><strong>38</strong></td>
<td><strong>217</strong></td>
</tr>
</tbody>
</table>

1. Zero-emissions resources required to replace Diablo Canyon must be procured by 2025, but may occur in any of the years 2023-2025; therefore, the columns do not add to the total.
2. LSEs may request an extension by February 1, 2023 up to 2028 for the LLT resources
Description of Categories

• Zero-emissions resources –
  o Generating resource or generating resource paired with storage
  o No on-site emissions or be considered RPS eligible
  o Continuous power during five hours from 5 PM through 10 PM
  o *Expected qualifying resources: solar paired with storage, wind paired with storage*

• Firm, zero-emitting resources –
  o A generating facility with a
  o Capacity factor of at least 80% and have
  o No on-site emissions or be considered RPS eligible
  o Cannot have use restrictions,
  o Cannot be weather dependent,
  o *Expected qualifying resources: geothermal, biomass, biogas*

• Long-duration storage – Must have duration of 8 hours or more
Effective Load Carrying Capacity Factors

- CPUC released an ELCC study in September 2021 to convert facility nameplate to Net Qualifying Capacity (“NQC”)
- 2025 and 2026 figures are indicative and will be finalized by end of 2022

*Incremental ELCCs for Storage Resources*

<table>
<thead>
<tr>
<th>Procurement Category</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
<th>2026</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-Hour Battery</td>
<td>96.3%</td>
<td>90.7%</td>
<td>74.2%</td>
<td>69.0%</td>
</tr>
<tr>
<td>6-Hour Battery</td>
<td>98.0%</td>
<td>93.4%</td>
<td>79.6%</td>
<td>75.1%</td>
</tr>
<tr>
<td>8-Hour Battery</td>
<td>98.2%</td>
<td><strong>94.3%</strong></td>
<td>82.2%</td>
<td><strong>78.2%</strong></td>
</tr>
<tr>
<td>8-Hour Pumped Storage Hydro</td>
<td></td>
<td></td>
<td></td>
<td>76.8%</td>
</tr>
<tr>
<td>12-Hour Pumped Storage Hydro</td>
<td></td>
<td></td>
<td></td>
<td>80.8%</td>
</tr>
</tbody>
</table>
## LDS Obligation for Participating CCAs

- Long Duration Storage requirement in NQC MW and converted to nameplate using the available 2024 and 2026 ELCCs

<table>
<thead>
<tr>
<th>CCA</th>
<th>NQC MW</th>
<th>Nameplate MW (2024 ELCC)</th>
<th>Nameplate MW (2026 ELCC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CleanPowerSF</td>
<td>15.5</td>
<td>16.4</td>
<td>19.8</td>
</tr>
<tr>
<td>Peninsula Clean Energy</td>
<td>19.0</td>
<td>20.1</td>
<td>24.3</td>
</tr>
<tr>
<td>Redwood Coast Energy</td>
<td>3.5</td>
<td>3.7</td>
<td>4.5</td>
</tr>
<tr>
<td>San Jose Clean Energy</td>
<td>21.5</td>
<td>22.8</td>
<td>27.5</td>
</tr>
<tr>
<td>Silicon Valley Clean Energy</td>
<td>20.5</td>
<td>21.7</td>
<td>26.2</td>
</tr>
<tr>
<td>Sonoma Clean Power</td>
<td>12.5</td>
<td>13.3</td>
<td>16.0</td>
</tr>
<tr>
<td>Valley Clean Energy</td>
<td>4.0</td>
<td>4.2</td>
<td>5.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>96.5</strong></td>
<td><strong>102.3</strong></td>
<td><strong>123.4</strong></td>
</tr>
</tbody>
</table>

Obligation is less than sought through RFO.
LDS Project #1

- **Project** – LS Power’s Tumbleweed
- **Product** - 69 MW/552 MWh – Tolling Agreement
- **Location** – Rosamond, Kern County
- **Technology** – Li-ion
- **Interconnection Status** - PCDS
- **COD** – 7/1/24
- **Discharge Duration** – 8 hours
- **Price** - fixed $/kw-mo
- **Term** – 15 years
Tumbleweed Shares per CCA

- Expected capacity share per CCA is based on a pro rata share of CPUC’s Mid-term Reliability Procurement Order

<table>
<thead>
<tr>
<th>Participating CCA</th>
<th>MTR Procurement Capacity Order LDS MW</th>
<th>% of MTR Requirement</th>
<th>Tumbleweed Allocation MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPSF</td>
<td>15.5</td>
<td>16%</td>
<td>11.1</td>
</tr>
<tr>
<td>PCE</td>
<td>19</td>
<td>20%</td>
<td>13.6</td>
</tr>
<tr>
<td>RCEA</td>
<td>3.5</td>
<td>4%</td>
<td>2.5</td>
</tr>
<tr>
<td>SJCE</td>
<td>21.5</td>
<td>22%</td>
<td>15.4</td>
</tr>
<tr>
<td>SVCE</td>
<td>20.5</td>
<td>21%</td>
<td>14.7</td>
</tr>
<tr>
<td>SCPA</td>
<td>12.5</td>
<td>13%</td>
<td>8.9</td>
</tr>
<tr>
<td>VCE</td>
<td>4</td>
<td>4%</td>
<td>2.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>96.5</strong></td>
<td></td>
<td><strong>69.0</strong></td>
</tr>
</tbody>
</table>

- Participating CCAs will seek authority to take a maximum capacity to cover:
  - Increased capacity should a CCA not obtain approval to move forward
  - Step-up capacity of up to 25% of contracted capacity
CC Power Tumbleweed Approval Process

**Step 1:** CC Power Board issues 60-day notice to consider ESSA for approval in December - Today

**Step 2:** CC Power Board approves ESSA, PPSA, BLPTA & Operating Agreement condition on individual CCA Approval

**Step 3:** CCAs seek respective Board Approvals of PPSA, BLPTA and Operating Agreement ✓

**Step 4:** Tumbleweed Agreements become effective

---

Process will be repeated for additional LDS Project Agreements – condition on negotiations and interest from other CCAs
Peninsula Clean Energy Approval Process

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/12</td>
<td>October Executive Committee</td>
<td>Provide background</td>
</tr>
<tr>
<td>October TBD</td>
<td>LDS Subcommittee</td>
<td>Deeper dive on project and contract</td>
</tr>
<tr>
<td>10/28</td>
<td>October Board Meeting</td>
<td>Provide Board with background on project</td>
</tr>
<tr>
<td>11/8</td>
<td>November Executive Committee</td>
<td>Provide any updates</td>
</tr>
<tr>
<td>11/18</td>
<td>November Board Meeting</td>
<td>Vote on CC Power participation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vote on Peninsula Clean Energy participation</td>
</tr>
<tr>
<td>12/16</td>
<td>December Board Meeting</td>
<td>Report back on status of CC Power vote</td>
</tr>
</tbody>
</table>
Summary

1. Tumbleweed NPV to participating CCAs is highly uncertain
2. Procurement of Long Duration Storage (8-hours or more) is mandated through MTR order
3. LS Power’s Tumbleweed project will meet 56 to 68 percent of participating members MTR obligation
4. Tumbleweed COD is 2024, which may provide for a greater ELCC (94.3%) than 2026 COD (78.2%). Seeking CPUC clarification
5. Seeking provisions for prevailing wages, a PLA and prohibition of forced labor.
Update on California Community Power (CC Power) Labor and Environmental Policy (Discussion)

Executive Committee
October 12, 2021
Item 6