Wholesale Electricity Portfolio Plan

BART Board of Directors
March 9, 2017
Overview

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• Next Steps
• District uses about 400,000 MWh every year, slightly more than the City of Alameda, making it one of the largest users in Northern CA.

• District electricity costs are about $41 million per year.

• Electricity is the 2\textsuperscript{nd} largest cost after labor.

• District buys wholesale electricity directly under CA Public Utility Code 701.8, including renewables as of January 2016 (under SB 502).

• District has wide latitude in designing its electricity supply portfolio.

• Electricity demand profile follows ridership patterns (peak usage during morning and evening commutes, and special events).
From 1972 to 1995, District bought both electricity supply and delivery services from PG&E.

Since 1995, District has built its own portfolio, while still receiving delivery services from PG&E.

How does the District compare with PG&E?

<table>
<thead>
<tr>
<th>Factor</th>
<th>District</th>
<th>PG&amp;E (Large Customer)</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs (2017)</td>
<td>10.3 ¢/kWh</td>
<td>12.6 ¢/kWh</td>
<td>District is 18% lower</td>
</tr>
<tr>
<td>Carbon Content</td>
<td>97 lbs CO2e/MWh</td>
<td>435 lbs CO2e/MWh</td>
<td>District is 78% cleaner</td>
</tr>
<tr>
<td>Renewable* (%)</td>
<td>2% (2017)</td>
<td>&gt;30% (2017) → (50% by 2030)</td>
<td>District lags far behind</td>
</tr>
</tbody>
</table>

*Defined in CA state Renewable Portfolio Standard (RPS) law.
District Electricity Facts

Zero Carbon Sources
- Large Hydro
- Solar
- Wind
- Biomass
- Small Hydro
- Geothermal

Renewable Portfolio Standard Sources

Conventional Sources
- Natural Gas
- Coal

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Next Steps
High Level Objective | “On the Ground” Objectives and Metrics
---|---
Support low and stable District operating costs | • Maintain long-term cost advantage over PG&E.
• Maintain costs within Short Range Transit Plan (SRTP) projections.
Maximize use of low-carbon, zero-carbon and renewable electricity sources | • Exceed current state Renewable Portfolio Standard (RPS) of 50% by 2030.
  • Meet or exceed 90% RPS by 2040.
• Continue meeting balance of needs with low- and zero-carbon sources.
Recent Achievements

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Achievements

Electricity Portfolio

Why Renewables?

Next Steps

Unspecified (70%) California state average carbon intensity

2016

BART Emission Factor (lbs CO₂ emissions/MWh)

679 lbs

2017 and 2018

97 lbs

Long-Term Federal Large Hydro (5%)

Long-Term RPS-Eligible Renewable (2%)

Short-Term Low-Carbon Imports (90%)
Managing Risks: In order to meet the first Electricity Policy Objective of low and stable operating costs, the District must act soon to buy Electricity for 2019 and beyond.
Building a supply portfolio to meet District objectives requires a balanced approach and understanding of the strengths and weaknesses of various sources.

<table>
<thead>
<tr>
<th>Source</th>
<th>Current Low Cost</th>
<th>Long-Term Fixed Cost</th>
<th>Low or Zero GHG Emissions</th>
<th>RPS-Qualified Renewable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Wind</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Other renewables</td>
<td>?</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Small Hydro</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geothermal Biomass</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conventional/Gas power</td>
<td>✓</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
</tbody>
</table>
Why Renewable RFP?

- RPS-eligible renewable electricity costs have fallen enough that the District may be able to buy long-term renewables at or below its current electricity portfolio supply cost (around 5.9 ¢/kWh for 2018).
  - Supply costs do not include delivery costs of approximately 4.6 ¢/kWh (total: 10.5 ¢/kWh in 2018)

1) Source: National Renewable Electricity Lab (through 2015); estimated for 2016 and 2017.
Next Steps - Timing

• Policy brought to Standing Committee Meeting April 18, 2017; Board Meeting April 27, 2017.

• District expects to release a Request for Proposals (RFP) for renewable supply by May 2017.

• Timing for a renewable RFP is favorable:
  1. Aligns with declining renewable project costs.
  2. Takes advantage of upcoming expiration of federal wind and solar tax credits.
Next Steps – RFP Details

• RFP objectives:
  • Solicit proposals to lock in favorable prices for renewable electricity to coincide with the District’s open portfolio position in 2019 and beyond.
  • Solicit proposals with terms from 10 to 30 years, with flexible online date.
  • Solicit proposals from all qualifying renewable technologies.

• Proposals will be evaluated based on portfolio fit; cost-effectiveness; and alignment with Wholesale Electricity Policy Objectives.

• District may sign zero, one or multiple contracts under this RFP.

• Balance of 2019+ Electricity needs that are not contracted through this RFP will be filled with medium-term purchases of low- and zero-carbon Electricity and through future RFPs.