Board of directors

Mar. 25, 2021
Distributed energy resources
strategy committee
March 25, 2021
DER strategy goals

- A vision shared by Platte River and the owner communities for DER integration
- Guiding principles and approaches for integrating DER through coordinated evaluation and planning, operations and customer programs
- A framework that considers benefits and costs of DER across the electric system
- A coordinated approach to securing customer and system data
- Improved outcomes for DER integration
Stakeholder engagements

Second engagement – completed Jan. 26 through Feb. 2
- Four interactive, virtual sessions
  - 150 people registered, 90 attended
- Agenda (90 minutes)
  - Introduction to the DER strategy committee and work completed to date
  - Interactive session to gather input from stakeholders
  - Stakeholder questions for DER committee

Third engagement – currently planning for mid April

Fourth engagement – targeting June timeframe, near completion of strategy
Stakeholder input – priorities for the strategy

What do you feel the DER strategy should prioritize?
(select only one)

- DER role in achieving a 100% non-carbon portfolio by 2030: 67%
- DER value to customers: 9%
- DER value toward making the grid more efficient: 9%
- DER value toward making the grid more resilient: 15%

Total responses across 4 sessions
What is the level of importance of addressing each of the initial DER strategy solutions created by the DER Committee?
(1 – not important to 5 – very important)

- Creating the DER framework and planning process / tools
- Revising the DER interconnection process
- Developing an approach for monitoring and forecasting DER*
- Developing an approach for DER dispatch and control*
- Establishing a process for the owner communities to coordinate on rates, services and customer programs
- Offering new DER programs
- Coordinating retail and wholesale rate design

* Solution has been paraphrased.
DER integration in a high-DER future

DER strategy subcommittees

DER integration involves coordination across five utilities and a variety of areas and functions. Each subcommittee included staff from owner communities and Platte River.

<table>
<thead>
<tr>
<th>Functions</th>
<th>Planning and evaluation</th>
<th>Operations</th>
<th>Customer programs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Integrated resources planning</td>
<td>• Load forecasting and generation dispatch</td>
<td>• DER programs</td>
</tr>
<tr>
<td></td>
<td>• Transmission and distribution planning</td>
<td>• DER visibility and operational forecasting</td>
<td>• Wholesale and retail rates</td>
</tr>
<tr>
<td></td>
<td>• Load and DER forecasting</td>
<td>• DER control and dispatch</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• DER interconnection requirements</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
DER subcommittee gap assessment and solutions

**Gap assessment process (completed)**
- Assess current state
- Determine future state
- Identify gaps

**Develop solutions / charters (ongoing)**
- Scope and deliverables
- Staffing and resources
- Draft processes
- Timing, sequencing and prioritization
- Industry best / emerging practices

Solution implementation can begin as the strategy is completed
Gap assessment and solution example

Customer programs area

Identified gaps and need for improved coordination

• Between owner communities and Platte River
• Between departments: customer programs, planning, operations and rates

Proposed solutions

• Form ongoing customer program group
• Establish and implement processes for proposing, evaluating and implementing programs
• Evaluate interactions between DER programs and wholesale, retail rates
• Begin developing pilots and programs
DER evaluation framework

A common structure for evaluating DER initiatives (development ongoing)

DER initiative examples
• Policy, process, program, tariff/rate, incentive or technology investment

Two step approach
• Qualitative screening
  • Does the initiative contribute to owner community and Platte River goals?
  • Is initiative consistent with DER strategy vision and guiding principles?
• Quantitative model
  • Considers benefits and costs of DER initiatives from perspectives of Platte River, owner communities, host customer and society

Informed by the 2020 National Standard Practice Manual for Benefit-Cost Analysis of DERs
Next steps

Continue strategy development
• Gap closure solutions
• DER evaluation framework

Continue stakeholder engagement
• 3rd engagement – mid April
• 4th engagement – June

Complete strategy – June
Questions and discussion
Strategic planning and goals
Agenda

• Strategic planning - Alyssa Clemsen Roberts, chief strategy officer
• Goals - Jason Frisbie, general manager/CEO
Strategic planning
Timeline of strategic planning process

April
- Two new board members from Fort Collins
- Issue RFI

October
- Select strategic planning consultant
- Vendor selection

July
- One new board member from Loveland
- Issue RFP for strategic planning consultant

November
- One new board member from Longmont

January
- Kick off
- Bring back to board timeline for strategic planning events (work sessions-drafts)
Strategic planning

• Kickoff meeting
• Board surveys
• Board work sessions
• White paper with draft version
• Presentation
• Board approval
• Stakeholder communication
Goals
Current IRP milestones

- **2021**
  - DER strategy completed

- **2022**
  - Entry into WEIM

- **2023**
  - 150 MW of solar added

- **2024**
  - Second IRP completed

- **2025**
  - 77 MW of Craig Unit 1 retired

- **2028**
  - 74 MW of Craig Unit 2 retired
  - Third IRP completed

- **2029**
  - 100 MW of energy storage added*
  - 100 MW of wind added*
  - 280 MW of Rawhide Unit 1 retired

- **2030**
  - 104 MW of RICE added*
  - 300 MW of solar added*
  - 200 MW of energy storage added*
  - 100 MW of wind added*
  - 60 MW of Spring Canyon wind added back to the system

*All resources in 2029 and 2030 will require further modeling to determine timing, type and amount of resource.
Resource Diversification Policy

Proactively work toward the goal of a 100% noncarbon resource mix by 2030 while maintaining Platte River’s three pillars of providing **reliable**, **environmentally responsible** and **financially sustainable** electricity and services.
Joint dispatch agreement

• Platte River, Black Hills Colorado and PSCo began operating joint dispatch agreement (JDA) in June 2017
• Expanded to include Colorado Springs Utilities in March 2020
• Each JDA participant must have sufficient resources to meet hourly load
• Adjusts dispatch of resources in PSCo balancing authority to lower overall dispatch costs through coordination of generation dispatch
• Higher-cost generation resources displaced by lower cost generation
• JDA transactions allowed Platte River to reduce its coal generation output, resulting in 560,000 fewer tons of carbon emission in 2020
Distributed energy resources

- Complete coordinated distributed energy resources (DER) strategy for all five utilities in 2021
- DER planning, operations and evaluations committees will initiate pilot programs
- Evaluate DER options versus supply-side options
- Develop DER pilot programs and test appropriate level of controls
- Expand programs that provide benefit to the system and customers
- Work toward full integrated planning
- Work toward system integration and grid management/controls

Greater control of load and distributed resources will allow integration of more renewables.
Western Energy Imbalance Market

- Platte River, Black Hills and PSCo plan to begin operating in the CAISO Western Energy Imbalance Market (WEIM) in 2022
- Determine optimal dispatch for resources offered into market every five minutes
- Calculate and settle prices at every point of injection or withdrawal on the transmission system for each five-minute period
- Optimally commit and decommit resources up to four and a half hours ahead of operating hour, which will improve unit commitment to serve load in a least-cost manner
Current IRP resource additions

2023
• 150 MW solar

2029
• 100 MW x four-hour storage
• 100 MW wind

2030
• 104 MW RICE/peaking
• 300 MW solar
• 100 MW wind
• 200 MW x four-hour storage
• 60 MW wind (Spring Canyon back on system)

Earlier resource additions than proposed in P2 will further reduce carbon emissions
Energy market

Independent system operator/regional transmission organization (RTO)

- Benefits of the WEIM plus the benefits of an ancillary service market and day-ahead market
- Ancillary service market allows more resources to provide ancillary services, enabling more renewables integrated into system
- All resources must offer into day-ahead and real-time markets proving least-cost solution for all resources in region
- Day-ahead market allows least-cost resources to be committed well ahead of the operating hour resulting in lower market prices
- Day-ahead market improves reliability by ensuring appropriate and sufficient resources are committed well ahead of operating hour
- Full RTO coordinates planning and construction of sufficient transmission to keep the system reliable at reasonable cost

Ensures system reliability is maintained and appropriate transmission is constructed
Systems

- Evaluate existing transmission rights with coal plant retirements
  - Potential for new renewable interconnections
  - Minimal transmission investment needed
- Evaluate more interconnections with other WEIM participants
  - Dispatch coordination with more market participants
  - Physical interconnection does not confer transmission service rights
- Expand transmission to improve access to geographically diverse resources
- Potential for significant investment in regional transmission
Wholesale rate structures

Completed rate strategy and rate design, implemented Jan. 1, 2020

Rates established to achieve Platte River’s rate setting goals:
• Improve value added of Platte River in support of owner communities
• Offer a desirable portfolio of services and rates that meet owner communities’ needs
• Better align wholesale pricing signals with cost of service
• Send pricing signals that result in system benefits

Work toward alternative rate structures or modifications to support:
• Distributed energy resource objectives
• Intermittent resources and storage
• Organized energy market
• Wholesale/distribution rate alignment
CO$_2$ intensity

- Coal unit: 2,080 lb./MWh
- EA gas unit: 1,540 lb./MWh
- FA gas unit: 1,350 lb./MWh
- RICE gas unit: 1,000 lb./MWh

12% reduction
Key takeaways

We continue to drive down carbon by proactively working on:

• Joint dispatch agreement
• Distributed energy resources
• Western Energy Imbalance Market
• Additional wind, solar and storage
• Energy market
• Systems
• Rates

While continuing to maintain our three pillars of **reliable, environmentally responsible and financially sustainable** energy and services.
Board of directors

Mar. 25, 2021
# February operational results

<table>
<thead>
<tr>
<th>Category</th>
<th>February variance</th>
<th>YTD variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Municipal demand</td>
<td>7.8%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Municipal energy</td>
<td>9.2%</td>
<td>6.2%</td>
</tr>
<tr>
<td>Baseload generation</td>
<td>2.8%</td>
<td>(4.9%)</td>
</tr>
<tr>
<td>Wind generation</td>
<td>(5.6%)</td>
<td>(12.0%)</td>
</tr>
<tr>
<td>Solar generation</td>
<td>(9.5%)</td>
<td>(22.0%)</td>
</tr>
<tr>
<td>Surplus sales volume</td>
<td>(7.9%)</td>
<td>(12.0%)</td>
</tr>
<tr>
<td>Surplus sales price</td>
<td>95.2%</td>
<td>45.5%</td>
</tr>
<tr>
<td>Purchase volume</td>
<td>13.1%</td>
<td>80.9%</td>
</tr>
<tr>
<td>Purchase price</td>
<td>111.0%</td>
<td>15.6%</td>
</tr>
<tr>
<td>Dispatch cost</td>
<td>(1.1%)</td>
<td>(1.5%)</td>
</tr>
</tbody>
</table>

**Variance key:** Favorable: ⬤ >2% | Near budget: ◆ +/- 2% | Unfavorable: ■ <-2%
Board of directors

Mar. 25, 2021
<table>
<thead>
<tr>
<th>Category</th>
<th>February variance from budget ($ in millions)</th>
<th>Year to date variance from budget ($ in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net income</td>
<td>$3.6</td>
<td>$4.3</td>
</tr>
<tr>
<td>Fixed obligation charge coverage</td>
<td>1.39x</td>
<td>.87x</td>
</tr>
<tr>
<td>Revenues</td>
<td>$3.6</td>
<td>$2.9</td>
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<tr>
<td>Operating expenses</td>
<td>$0.2</td>
<td>$1.7</td>
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<tr>
<td>Capital additions</td>
<td>$2.8</td>
<td>$4.0</td>
</tr>
</tbody>
</table>

> 2% ● Favorable  | 2% to -2% ◆ At or near budget  | < -2% ■ Unfavorable