Rate tariff schedules review

Shelley Nywall, director of finance
Agenda

• No change in charges from May presentation
  • Firm Power Service
  • Other rate tariff schedules
    • Standard Offer Energy Purchase
    • Wholesale Transmission Service
    • Large Customer Service
  • Approval request in October (on consent agenda)
Firm Power Service (FP-24)

5.0% average wholesale rate increase (budget to budget)

<table>
<thead>
<tr>
<th></th>
<th>2024</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average $/MWh</strong></td>
<td>$71.26</td>
</tr>
<tr>
<td><strong>Owner community charge</strong></td>
<td>$13,059</td>
</tr>
<tr>
<td><strong>Demand charges</strong></td>
<td></td>
</tr>
<tr>
<td>Transmission</td>
<td>$6.68</td>
</tr>
<tr>
<td>Generation: summer</td>
<td>$6.61</td>
</tr>
<tr>
<td>Generation: nonsummer</td>
<td>$4.92</td>
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<tr>
<td><strong>Energy charges</strong></td>
<td></td>
</tr>
<tr>
<td>Fixed</td>
<td>$0.01681</td>
</tr>
<tr>
<td>Variable</td>
<td>$0.02427</td>
</tr>
</tbody>
</table>
Other tariff schedules

Standard Offer Energy Purchase (Tariff SO-24)
- 7.8% increase to $0.02191

Wholesale Transmission Service (Tariff WT-24)
- Correction to annual charge (error)
- Original effective date June 1

Large Customer Service (Tariff LC-24)
- Charges established through separate contract
- Changes tied to firm power service tariff and annual budget
Summary

• Owner community rates staffs were given rates information in May to facilitate their budgeting process

• Next steps
  • Request board adoption in October of the 2024 Rate Tariff Schedules with a Jan. 1, 2024 effective date
Questions
Board of directors

Sept. 28, 2023
Proposed 2024 Strategic Budget work session

Jason Harris, senior manager, financial reporting and budget
Agenda

- Budget
  - Schedule
  - Process
  - Budget document
  - Trends
  - 2024 overview
- Capital 5-year forecast
Budget schedule

September
• Board work session

October
• Updates and budget discussion
  • Model prices and resource updates
  • Sales contracts
  • Wheeling and ancillary service rate adjustments
  • Medical expense update
  • Departmental O&M updates
  • Capital project updates
• Public hearing

December
• Board adoption
• File with the State of Colorado
Budget process

2024 budget

- Project planning
- O&M expenses
- Production cost model
- Review and refinement
- Strategic initiatives and core operations activities
- Reporting improvements
Budget document

- Overview
  - Background information about the organization, the owner communities, significant initiatives, goals and departmental objectives
- Summary
  - Budget discussion and support for our foundational pillars, strategic initiatives and core operations
- Budget
  - Financial results, comparisons to the strategic financial plan and budget schedules
- Additional information
  - Process for developing the budget and information on financial governance
  - Final document will have table showing changes from proposed
GFOA Distinguished Budget Presentation Award received for the 2023 document

- Recognition that the budget document meets program criteria and excels as a policy document, financial plan and communications tool
- Fourth consecutive year receiving the award
Trends

Revenues
• Moderate owner community load growth
• Stable surplus sales
• Increasing interest income from higher rates

Expenditures
• Infrastructure advancements and investments
• Resource diversification, markets, DER
• Focus on managing controllable expenses while advancing strategic initiatives and the RDP goal

• Volume and price volatility, participation in WEIS
• Lower contract sales as several expire, pending update for new long-term sales contracts signed
• Higher purchase power volumes as WEIS market participation continues
• Investments in future resources
• Increasing baseload and peaking unit flexibility
• Continued exposure to price volatility
Revenue trends

2021 actual | 2022 actual | 2023 estimate | 2024 budget
--- | --- | --- | ---

Sales to owner communities

| Year   | Sales (millions) | Trend | 2024 budget vs. trend*
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>$199.2</td>
<td>4.6%</td>
<td>12.6%</td>
</tr>
<tr>
<td>2022</td>
<td>$212.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2023</td>
<td>$217.3</td>
<td></td>
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<tr>
<td>2024</td>
<td>$236.1</td>
<td></td>
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</tr>
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</table>

Peak (MW)

<table>
<thead>
<tr>
<th>Year</th>
<th>Peak (MW)</th>
<th>Trend</th>
<th>2024 budget vs. trend*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>707</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2022</td>
<td>684</td>
<td>3.1%</td>
<td>4.6%</td>
</tr>
<tr>
<td>2023</td>
<td>654</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2024</td>
<td>713</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Energy (MWh)

<table>
<thead>
<tr>
<th>Year</th>
<th>Energy (MWh)</th>
<th>Trend</th>
<th>2024 budget vs. trend*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>3,216,707</td>
<td>3.1%</td>
<td></td>
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<tr>
<td>2022</td>
<td>3,249,401</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2023</td>
<td>3,181,766</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2024</td>
<td>3,314,141</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sales for resale and wheeling

<table>
<thead>
<tr>
<th>Year</th>
<th>Sales ($ millions)</th>
<th>Trend</th>
<th>2024 budget vs. trend*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>$66.2</td>
<td></td>
<td>-8.1%</td>
</tr>
<tr>
<td>2022</td>
<td>$81.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2023</td>
<td>$66.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2024</td>
<td>$65.6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Trend represents 3-year average of 2021 and 2022 actuals and 2023 estimate.
## Expense trends

<table>
<thead>
<tr>
<th>Service Category</th>
<th>2021 actual</th>
<th>2022 actual</th>
<th>2023 estimate</th>
<th>2024 budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchased power</td>
<td>$54.6</td>
<td>$53.4</td>
<td>$63.2</td>
<td>$58.9</td>
</tr>
<tr>
<td>Fuel</td>
<td>$47.5</td>
<td>$66.5</td>
<td>$41.8</td>
<td>$52.8</td>
</tr>
<tr>
<td>Production and transmission</td>
<td>$60.5</td>
<td>$67.5</td>
<td>$77.4</td>
<td>$76.7</td>
</tr>
<tr>
<td>Administrative and general</td>
<td>$21.4</td>
<td>$25.6</td>
<td>$31.8</td>
<td>$36.3</td>
</tr>
<tr>
<td>Distributed energy resources</td>
<td>$7.0</td>
<td>$8.4</td>
<td>$10.7</td>
<td>$13.8</td>
</tr>
</tbody>
</table>

### 2024 budget vs. trend*

- **Purchased power**: Participation in WEIS, higher volumes at higher average prices but still economical (3.2%)
- **Fuel**: Higher coal prices, lower natural gas prices (1.7%)
  - Lower coal generation, replaced with WEIS purchases and lower sales for resale as capacity factors are lower
- **Production and transmission**: 2021 Rawhide Unit 1 major outage, 2023 Rawhide Unit 1 minor outage, Last Rawhide Unit 1 major outage scheduled for 2025 (12.0%)
- **Administrative and general**: Investments in:
  - Staffing and benefits
  - Community engagement
  - Resource planning (38.3%)
- **Distributed energy resources**: Investments in staffing, benefits, strategy and program development
  - 2021-2022 lower due to COVID-19/economy, lost pipeline of projects
  - 2023-2024 refocus programs for increased participation, new DER initiatives (58.9%)

* Trend represents 3-year average of 2021 and 2022 actuals and 2023 estimate.
2024 overview
2024 Strategic Budget focus

Foundational pillars
1. System reliability
2. Environmental responsibility
3. Financial sustainability

2023 Strategic Plan, 4 initiatives
1) Baseload and peaking generation, transmission, energy efficiency programs
2) PPAs for existing renewable resources & hydropower

Core operations, 85%
Strategic initiatives, 15%

Operating expenses and capital additions: $275.4 million
2024 Strategic Budget focus

Operating and capital: $275.4 million
Strategic initiatives, $41.4 million, 15%

Resource diversification planning and integration, $27.4 million, 10%
  • Dispatchable resource design and air permitting
  • Noncarbon resources infrastructure and planning
  • DER, including DERMS, beneficial electrification and program development
  • 2024 IRP development
  • RTO West planning
  • Operational flexibility
Community partner and engagement, $2.2 million, 1%
  • Public engagement for the RDP, IRP, DER and DES programs
Workforce culture, $2.1 million, 1%
  • Workforce evolution and development
Process management and coordination, $9.7 million, 3%
  • Enterprise resource planning software
  • Enterprise risk management
  • Project management

Core operations, $234 million, 85%

Rawhide Energy Station and Craig Generation Station
  • Preventive and proactive maintenance and capital improvements for reliability, safety, efficiency and environmental compliance
Purchased power
  • All renewable resource PPAs
  • Reduction in projected hydropower energy, consistent wind and solar
Transmission
  • Substation switchgear and transformer upgrades and replacements
  • Drake transmission line rebuild engineering
Energy efficiency programs
  • Continued collaboration under the Efficiency Works™ brand
Other expenses
  • 14 net new positions to support organization changes and strategic initiatives

Revenues $313.3 million

• Owner communities – 0.4% load increase, 5% average wholesale rate increase
• Sales for resale – Decrease in volume of energy sold, increased market prices, increased wheeling revenues
Financial results

**Strategic financial plan indicators**

<table>
<thead>
<tr>
<th></th>
<th>Target minimums</th>
<th>2023 budget</th>
<th>2024 budget</th>
<th>Increase (decrease)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net income as a percentage of projected operating expenses(^{(1)})</td>
<td>3%</td>
<td>9%</td>
<td>11%</td>
<td>22.2%</td>
</tr>
<tr>
<td>Fixed obligation charge coverage ratio</td>
<td>1.50x</td>
<td>2.43x</td>
<td>2.58x</td>
<td>6.2%</td>
</tr>
<tr>
<td>Debt ratio</td>
<td>&lt; 50%</td>
<td>25%</td>
<td>24%</td>
<td>(4.0%)</td>
</tr>
<tr>
<td>Unrestricted days cash on hand</td>
<td>200</td>
<td>422</td>
<td>439</td>
<td>4.0%</td>
</tr>
</tbody>
</table>

\(^{(1)}\) Excludes projections for a portion of revenues that will be deferred to a future period and will be reflected in year-end results.

**Budget results ($ millions)**

<table>
<thead>
<tr>
<th></th>
<th>2023 budget</th>
<th>2024 budget</th>
<th>Increase (decrease)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total revenues</td>
<td>$ 305.0</td>
<td>$ 313.3</td>
<td>2.7%</td>
</tr>
<tr>
<td>Total expenditures</td>
<td>$ 298.6</td>
<td>$ 294.0</td>
<td>(1.5%)</td>
</tr>
<tr>
<td>Board contingency</td>
<td>$ 52.0(^{(2)})</td>
<td>$ 55.0</td>
<td>5.8%</td>
</tr>
</tbody>
</table>

\(^{(2)}\) Contingency transfer to be determined later in the year.
Budget contingency

Reserved to the board

- $55 million contingency
  - Unforeseen expenses (forced outages, gas usage, changes in capital additions, business opportunities, etc.)
  - Requires board approval prior to use
  - No impact on rates in budget
  - $55 million contingency
  - Allowable under state budget law and reduces need for amendments
  - Based on approximately 20% of operating expenses and capital additions
2024 system energy
Includes renewable energy certificate allocations to carbon resources

Significant changes from 2023 budget
- 7.3% decrease in system energy (due to less sales for resale)
- 9.0% of system decrease in coal due to lower sales for resale volumes and economic dispatch in WEIS
- 6.0% of system increase in other purchases due to market conditions and economic dispatch in WEIS

Noncarbon energy trend
- 35.8% noncarbon due to drought conditions, not all hydropower may be considered noncarbon
Revenues and expenditures

2021 actual: $268
2022 actual: $297
2023 budget: $305
2023 estimate: $292
2024 budget: $313

Operating expenses
Debt service expenditures
Capital additions
Revenues
2024 revenues

Sales to owner communities, 75%
Sales for resale and wheeling, 21%
Interest and other income, 4%

<table>
<thead>
<tr>
<th>Variance</th>
<th>Sales to owner communities $12 M</th>
<th>Sales for resale ($9.1 M)</th>
<th>Interest and other income $5.4 M</th>
</tr>
</thead>
</table>

Sales to owner communities
- Loads developed on 10-year load forecast and energy changes from energy efficiency
- Energy deliveries increase 0.4%
- Coincident billing demand increase 1.2%
- Average wholesale rate increase 5%

Sales for resale and wheeling
- Energy and market prices – hourly model
- Continuation of long-term contracts
- Increase in wheeling revenues due to demand for short-term point-to-point service

Interest and other income
- Interest income higher due to increase in rates, cash and investment balances

$313.3 million | variance from 2023 budget: $8.3 M
2024 expenditures

<table>
<thead>
<tr>
<th>Variance</th>
<th>$294 million</th>
<th>variance from 2023 budget: ($4.6 M)</th>
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</thead>
<tbody>
<tr>
<td>Operating</td>
<td>$0.3 M</td>
<td></td>
</tr>
<tr>
<td>Capital</td>
<td>($5.8 M)</td>
<td></td>
</tr>
<tr>
<td>Debt</td>
<td>$0.9 M</td>
<td></td>
</tr>
</tbody>
</table>

**Purchased power**
- Long-term contracts for noncarbon resources stable
- Other purchases (price/qty) – hourly model
- Increase due to WEIS market economic dispatch

**Fuel**
- Generation – hourly model
- Coal prices based on long-term contracts, increase
- Natural gas based on modeling, decrease

**Production**
- O&M – Rawhide, Craig, CTs, power ops
- No maintenance outages

**Transmission**
- O&M – lines, substations, SCADA, fiber, telecom

**Administrative and general**
- Support groups
- O&M – HQ facilities

**Distributed energy resources**
- Energy efficiency
- DER including beneficial electrification

Operating expenses, 81%
Capital additions, 13%
Debt expense, 6%
Salaries and benefits

**Salaries**
- Regular wages increase $5.2 M
  - 14 net new positions $2.0 M
  - Available for salary and market adjustments $2.0 M
  - Other adjustments including less time allocated to billable projects $0.8 M
  - Additional 2023 market adjustment $0.4 M
- Overtime decrease $0.1 M

**Benefits**
- Increase of $2.7 M
  - Defined benefit $2.1 M
  - Social security $0.4 M
  - Defined contribution $0.2 M
Operating expenses and capital additions

$275.4 million | variance from 2023 budget: ($5.5 M)
Salaries and benefits
Purchased power
Fuel
O&M
Distributed energy resources
Craig units 1 & 2
Wheeling
Outage accrual
Outages - Rawhide
Water

Operating expenses

Core generation and transmission expenses have been controlled through continued preventive and predictive maintenance strategies and proactive capital investments.

2024 includes net additional costs from non-routine projects, emphasis on CT-related projects to promote reliability and operational flexibility.

14 net new positions, market adjustment allowances, benefits increases
Increased market purchases
Lower coal generation, partially offset by higher price

Efficiency Works programs, DER initiatives
Cost control due to upcoming unit retirements, no maintenance outages in 2024
Last major maintenance outage scheduled for 2025

Core generation and transmission expenses have been controlled through continued preventive and predictive maintenance strategies and proactive capital investments.

2024 includes net additional costs from non-routine projects, emphasis on CT-related projects to promote reliability and operational flexibility.

$238.5 million | variance from 2023 budget: $0.3 M
2024 capital additions

$36.9 million

**Strategic projects**
- Dispatchable resource – Rawhide
- Evaporative cooling - combustion turbine Unit F
- Hydrogen dryer and auto-purge - combustion turbine Unit F
- Solar substation 230 kV - Severance Substation
- Distributed energy resources management system
- Regional transmission organization market software
- Operations analytics software
- Enterprise resource planning software

**Core projects**
- Compressor blade upgrade - combustion turbine Unit F
- Gas control valve replacement - combustion turbine Unit F
- Transformer T3 replacement - Timberline Substation
- Transformer T1 replacement - Longs Peak Substation
- Circuit breaker replacement 592, 596 - Ault Substation WAPA
- Circuit breaker replacement 492, 1092, 3124, 3224 - Ault Substation WAPA
- Fiber optic cable replacement - Long-Haul East (Loveland to Longmont)
- Trapper Mine post-mining reclamation
2024 capital additions

$36.9 million | variance from 2023 budget: ($5.8 M)

Excludes estimated 2023 capital carryovers of $7.8 million

Solar substation 230 kV - Severance Substation*, 23%
ERP and DERMS software*, 22%
Transmission and substation equipment, 17%
Dispatchable resource*, 12%
Rawhide, 8%
Other strategic projects*, 7%
Fiber optics, 5%
Asset management and maintenance, 3%
Asset retirement obligations, 2%
Craig units 1 and 2, 1%

* Strategic projects
Capital 5-year forecast
Capital 5-year forecast

Years 2024-2028 | $466.2 million

- Dispatchable resource, 51%
- Transmission and interconnection - noncarbon resources, 22%
- Transmission and substations, 16%
- ERP and DERMS software, 3%
- Rawhide, 3%
- Asset management and maintenance, 2%
- Asset retirement obligations, 2%
- Rawhide outages, 1%

Includes estimated 2023 capital carryovers of $7.8 million
Capital 5-year forecast

Years 2024-2028 | $466.2 million

$ millions

2024 2025 2026 2027 2028

Production Transmission General Asset retirement obligations

$466.2 million

Production Transmission General Asset retirement obligations
Production additions: $259.8 million

- Dispatchable resource - Rawhide, 2023-2027, $239 M
- Exhaust silencer replacement - combustion turbine units A-C, $4.9 M
- Combustion component upgrade - combustion turbine Unit C, $4.3 M
- Evergreen controls hardware upgrade - Rawhide Unit 1, $2.3 M
- Dust collection systems, $2.9 M
- Gas control valve replacement - combustion turbine units A-D, $1.8 M
- Compressor blade upgrade - combustion turbine Unit F, $1.9 M

Stated amounts represent total project cost. May have had costs prior to 2024 or extend past 2028.
Capital 5-year forecast

Transmission additions: $174.7 million

Stated amounts represent total project cost. May have had costs prior to 2024 or extend past 2028.

- Transmission lines – noncarbon resources, $50.3 M
- Substation interconnections – noncarbon resources, $10.1 M
- Substation expansion and reliability upgrade - Rawhide Substation, $13.5 M
- Solar substation 230 kV, 2021-2024, $14.9 M
- Generator outlet line and substations - new wind resource, 2026-2029, $65 M
- 115 kV Drake transmission line replacement, 2023-2027, $8 M
- Substation - Fort Collins Northeast, $9.2 M
- Substation - Loveland Southeast, $6.8 M
- Transformer T3 replacement - Timberline Substation, 2021-2024, $5.3 M
- Transformer T1 replacement – Longs Peak Substation, 2022-2025, $5.1 M

9 projects 100% reimbursable, $7.9 M gross
- Substation perimeter walls
- Airport Substation
- Crossroads Substation
- Drake Substation
- Richard Lake Substation
- Switchgear replacement
- Airport Substation
- Transformer replacement
- Valley Substation
- Transmission line modifications
- Highway 287
- I-25 widening
- HVAC unit replacements (annual)

Represents 73% of total
Capital 5-year forecast

General additions: $24.6 million

- Enterprise resource planning software, 2022-2024, $10.6 M
- Distributed energy resources management system, $9.9 M
- Fiber optic cable replacement - Long-Haul East (Loveland to Longmont), $1.8 M
- Vehicle replacements, $0.1 M - $0.3 M annually

General additions include:
- Facilities upgrades
- Information technology equipment
- Communication equipment
- Vehicles

Represents 77% of total

Stated amounts represent total project cost. May have had costs prior to 2024 or extend past 2028.
Capital 5-year forecast

Asset retirement obligation additions: $7.1 million

Stated amounts represent total project cost. May have had costs prior to 2024 or extend past 2028.
Highlights – 2024 Strategic Budget

Operating expenses and capital additions: $275.4 million

Strategic initiatives
- Resource diversification planning and integration (dispatchable resource, noncarbon resources, distributed energy resources, integrated resource plan, organized energy markets)
- Community partner and engagement
- Workforce culture
- Process management and coordination (ERP, enterprise risk management, project management)

Core operations
- Baseload and peaking generation, transmission, energy efficiency
- PPAs for existing renewable resources & hydropower
- Predictive maintenance
- Proactive capital investments to maintain reliability, efficiency and environmental compliance

Revenues
- Stable owner community loads
- Decreasing sales for resale
- Increasing wheeling and interest income
- 5% average wholesale rate increase

2024 budget: $349 M
Questions
Reference: budget details

Not presented

Small differences may exist in the following tables compared to the budget document due to rounding.
Sales to owner communities

<table>
<thead>
<tr>
<th></th>
<th>2023 budget</th>
<th>2024 budget</th>
<th>Increase (decrease)</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sales to owner communities</strong></td>
<td></td>
<td></td>
<td></td>
<td>0.4% higher loads and a 5% average wholesale rate increase</td>
</tr>
<tr>
<td>Owner community charge</td>
<td>$ 15.4</td>
<td>$ 15.2</td>
<td>$ (0.2)</td>
<td></td>
</tr>
<tr>
<td>Demand</td>
<td>79.7</td>
<td>82.9</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>Energy</td>
<td>129.0</td>
<td>138.0</td>
<td>9.0</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$ 224.1</td>
<td>$ 236.1</td>
<td>$ 12.0</td>
<td></td>
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</table>

**Coincident billing demand**

Accumulated monthly values

<table>
<thead>
<tr>
<th></th>
<th>2021 actual</th>
<th>2022 actual</th>
<th>2023 budget</th>
<th>2023 estimate</th>
<th>2024 budget</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MW</strong></td>
<td>6,653</td>
<td>6,679</td>
<td>6,654</td>
<td>6,487</td>
<td>6,734</td>
</tr>
</tbody>
</table>
Sales to owner communities energy

MWh

- 2021 actual: 3,216,707
- 2022 actual: 3,249,401
- 2023 budget: 3,301,376
- 2023 estimate: 3,181,766
- 2024 budget: 3,314,141
## Sales for resale and wheeling

<table>
<thead>
<tr>
<th></th>
<th>2023 budget</th>
<th>2024 budget</th>
<th>Increase (decrease)</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sales for resale and wheeling</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long-term</td>
<td>$14.9</td>
<td>$11.5</td>
<td>$3.4</td>
<td>Decreased volume as one contract expires and lower calls on a capacity contract</td>
</tr>
<tr>
<td>Short-term</td>
<td>$53.6</td>
<td>$45.0</td>
<td>$8.6</td>
<td>Decreased volume</td>
</tr>
<tr>
<td>Wheeling</td>
<td>$6.1</td>
<td>$9.1</td>
<td>$3.0</td>
<td>3.0 Point-to-point transmission service new to budget</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$74.6</td>
<td>$65.6</td>
<td>$9.0</td>
<td></td>
</tr>
</tbody>
</table>

($ millions)

---

**Increase (decrease):**

- $66.2 (2021 actual)
- $81.1 (2022 actual)
- $74.6 (2023 budget)
- $66.7 (2023 estimate)
- $65.6 (2024 budget)
Sales for resale average price
Includes energy and capacity

$23.38
$22.34 budget
$29.19 budget

$37.29
$44.25
$38.17
$49.12
$40.36

$55.29 YTD through Aug
### Other revenues

<table>
<thead>
<tr>
<th></th>
<th>2023 budget</th>
<th>2024 budget</th>
<th>Increase (decrease)</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Other revenues</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest income</td>
<td>$ 6.0</td>
<td>$ 11.2</td>
<td>$ 5.2</td>
<td>Increase in interest rates and higher cash and investment balances</td>
</tr>
<tr>
<td>Other income</td>
<td>0.3</td>
<td>0.4</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$ 6.3</td>
<td>$ 11.6</td>
<td>$ 5.3</td>
<td></td>
</tr>
</tbody>
</table>

**Explanation:**

- **2021 actual:**
  - Interest income: $2.3
  - Other income: $3.3

- **2022 actual:**
  - Interest income: $3.3
  - Other income: $3.3

- **2023 budget:**
  - Interest income: $6.3
  - Other income: $6.3

- **2023 estimate:**
  - Interest income: $7.7
  - Other income: $7.7

- **2024 budget:**
  - Interest income: $11.6
  - Other income: $11.6

---

**Notes:**

- The table shows the budgeted amounts for 2023 and 2024, along with the actual amounts for 2021 and 2022.
- The increase in interest income is due to higher cash and investment balances.
- The total increase in other revenues is $5.3 million.
## Purchased power

<table>
<thead>
<tr>
<th></th>
<th>2023 budget</th>
<th>2024 budget</th>
<th>Increase (decrease)</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purchased power</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wind and RECs</td>
<td>$ 25.9</td>
<td>$ 26.2</td>
<td>$ 0.3</td>
<td>Contract rate escalations and model assumptions</td>
</tr>
<tr>
<td>Hydropower</td>
<td>15.5</td>
<td>15.3</td>
<td>(0.2)</td>
<td>Decrease in CRSP energy delivered (3.2%)</td>
</tr>
<tr>
<td>Other purchases and reserves</td>
<td>8.0</td>
<td>12.4</td>
<td>4.4</td>
<td>Increased energy purchases and higher average prices in WEIS</td>
</tr>
<tr>
<td>Solar</td>
<td>5.0</td>
<td>5.0</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Outage accrual</td>
<td>0.7</td>
<td>-</td>
<td>(0.7)</td>
<td>No accrual necessary in 2024</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$ 55.1</td>
<td>$ 58.9</td>
<td>$ 3.8</td>
<td></td>
</tr>
</tbody>
</table>

### GRAPHS

- **Wind & REC**
- **Hydropower**
- **Other purchases**
- **Solar**
- **Outage accrual**

### TABLE

<table>
<thead>
<tr>
<th></th>
<th>2021 actual</th>
<th>2022 actual</th>
<th>2023 budget</th>
<th>2023 estimate</th>
<th>2024 budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>$ millions</td>
<td>$54.6</td>
<td>$53.4</td>
<td>$55.1</td>
<td>$63.2</td>
<td>$58.9</td>
</tr>
<tr>
<td>Fuel expense</td>
<td>2023 budget</td>
<td>2024 budget</td>
<td>Increase (decrease)</td>
<td>Explanation</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>-------------</td>
<td>--------------------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>Rawhide Unit 1</td>
<td>$37.5</td>
<td>$34.6</td>
<td>$2.9</td>
<td>Capacity factor of 75.8% due to generation decrease of 13% partially offset by a price increase of 7%</td>
<td></td>
</tr>
<tr>
<td>Craig units 1 and 2</td>
<td>16.9</td>
<td>10.2</td>
<td>$(6.7)</td>
<td>Capacity factor of 35.2% due to generation decrease of 44% partially offset by a price increase of 6%</td>
<td></td>
</tr>
<tr>
<td>Combustion turbines</td>
<td>8.3</td>
<td>8.0</td>
<td>$(0.3)</td>
<td>Price decrease of 14% partially offset by a generation increase of 12%</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$62.7</strong></td>
<td><strong>$52.8</strong></td>
<td><strong>$(9.9)</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$ millions

2021 actual: $47.5
2022 actual: $66.5
2023 budget: $62.7
2023 estimate: $41.8
2024 budget: $52.8

- Rawhide Unit 1
- Craig units 1 and 2
- Combustion turbines
Fuel expense

Fuel unit cost per million Btu
Excludes gains and losses from sales

2024 $/MBtu
- Rawhide: $1.79
- Craig: $2.07
- CTs: $4.37

---

<table>
<thead>
<tr>
<th></th>
<th>2021 actual</th>
<th>2022 actual</th>
<th>2023 budget</th>
<th>2023 estimate</th>
<th>2024 budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rawhide Unit 1</td>
<td>1.79</td>
<td>2.12</td>
<td>2.12</td>
<td>2.12</td>
<td>2.12</td>
</tr>
<tr>
<td>Craig units 1 and 2</td>
<td>2.07</td>
<td>2.07</td>
<td>2.12</td>
<td>2.12</td>
<td>2.12</td>
</tr>
<tr>
<td></td>
<td>2023 budget</td>
<td>2024 budget</td>
<td>Increase (decrease)</td>
<td>Explanation</td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------</td>
<td>-------------</td>
<td>---------------------</td>
<td>-------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Production expenses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rawhide</td>
<td>$37.4</td>
<td>$37.3</td>
<td>$0.1</td>
<td>Increased non-routine projects, personnel expenses and major outage accrual, partially offset by</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2023 minor outage expenses</td>
<td></td>
</tr>
<tr>
<td>Craig units 1 and 2</td>
<td>9.0</td>
<td>7.4</td>
<td>(1.6)</td>
<td>Decreased due to the completion of the scheduled maintenance outage on Craig Unit 2 in 2023</td>
<td></td>
</tr>
<tr>
<td>Combustion turbines</td>
<td>3.5</td>
<td>6.5</td>
<td>3.0</td>
<td>Increased non-routine projects, maintenance and personnel expenses</td>
<td></td>
</tr>
<tr>
<td>Power operations</td>
<td>4.9</td>
<td>4.4</td>
<td>(0.5)</td>
<td>Decreased SPP WEIS implementation costs due to entering the market</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$54.8</td>
<td>$55.6</td>
<td>$0.8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$ millions

2021 actual: $41.7
2022 actual: $48.9
2023 budget: $54.8
2023 estimate: $57.1
2024 budget: $55.6

New position: Purchasing agent
## Transmission expenses

<table>
<thead>
<tr>
<th></th>
<th>2023 budget</th>
<th>2024 budget</th>
<th>Increase (decrease)</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmission</td>
<td>$ 16.0</td>
<td>$ 16.8</td>
<td>$ 0.8</td>
<td>Increase in personnel expenses partially offset by a decrease in non-routine projects</td>
</tr>
<tr>
<td>Wheeling</td>
<td>4.2</td>
<td>4.3</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$ 20.2</td>
<td>$ 21.1</td>
<td>$ 0.9</td>
<td></td>
</tr>
</tbody>
</table>

- **New positions:**
  - System electrical engineer
  - Substation apprentice
  - Fiber optic program manager

### Graph

- **2021 actual:** $18.8
- **2022 actual:** $18.5
- **2023 budget:** $20.2
- **2023 estimate:** $20.3
- **2024 budget:** $21.1

- Transmission O&M
- Wheeling expense
## Admin and general expenses

<table>
<thead>
<tr>
<th></th>
<th>2023 budget</th>
<th>2024 budget</th>
<th>Increase (decrease)</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Administrative and general</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operations</td>
<td>$26.6</td>
<td>$31.6</td>
<td>$5.0</td>
<td>Increased personnel expenses for new positions and market adjustments, additional expense for consulting related to energy transition and future resources</td>
</tr>
<tr>
<td>Maintenance</td>
<td>4.9</td>
<td>4.7</td>
<td>(0.2)</td>
<td>Decreased computer maintenance partially offset by an increase for landscaping</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$31.5</td>
<td>$36.3</td>
<td>$4.8</td>
<td></td>
</tr>
</tbody>
</table>

**New positions:**
- Communications (2)
- Human resources business partner
- General counsel (2)
- Transition and integration services (2)
- Financial services (2)

### Chart:
- Personnel expenses
- A&G operations
- A&G maintenance

### Timeline:
- 2021 actual
- 2022 actual
- 2023 budget
- 2023 estimate
- 2024 budget

### Notes:
- Increase (decrease) in millions:
  - $21.4
  - $25.6
  - $31.5
  - $31.8
  - $36.3
### Distributed energy resources

<table>
<thead>
<tr>
<th></th>
<th>2023 budget</th>
<th>2024 budget</th>
<th>Increase/Decrease</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personnel expenses</td>
<td>$3.0</td>
<td>$3.7</td>
<td>$0.7</td>
<td>Increased personnel expenses for new positions and market adjustments</td>
</tr>
<tr>
<td>Commercial and industrial</td>
<td>7.6</td>
<td>6.0</td>
<td>(1.6)</td>
<td>Decrease in commercial incentives, partially offset by an increase in business audits</td>
</tr>
<tr>
<td>Residential</td>
<td>0.2</td>
<td>1.9</td>
<td>1.7</td>
<td>Increase due to shift of owner community directive funds to Platte River common funds</td>
</tr>
<tr>
<td>Consumer engagement</td>
<td>0.8</td>
<td>1.0</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td>Other segments and general</td>
<td>2.2</td>
<td>1.2</td>
<td>(1.0)</td>
<td>Decrease in DER planning scope to focus on DERMS</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$13.8</strong></td>
<td><strong>$13.8</strong></td>
<td><strong>-$</strong></td>
<td><strong>-$</strong></td>
</tr>
</tbody>
</table>

#### Explanation

- **$7.0** 2021 actual
- **$8.4** 2022 actual
- **$13.8** 2023 budget
- **$10.7** 2023 estimate
- **$13.8** 2024 budget

- **Personnel expenses**
- **Commercial and industrial**
- **Residential**
- **Consumer engagement**
- **Other segments and general**

**New positions:**
- DER system integrator
## Capital additions

<table>
<thead>
<tr>
<th>($ millions)</th>
<th>2023 budget</th>
<th>2024 budget</th>
<th>Increase (decrease)</th>
<th>Projects</th>
</tr>
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<tbody>
<tr>
<td><strong>Capital additions</strong></td>
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<td></td>
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<td></td>
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<tr>
<td>Production</td>
<td>$14.7</td>
<td>$8.7</td>
<td>$-6.0</td>
<td></td>
</tr>
<tr>
<td>Transmission</td>
<td>14.9</td>
<td>14.9</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>General</td>
<td>13.0</td>
<td>12.3</td>
<td>$-0.7</td>
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</tr>
<tr>
<td>Asset retirement obligations</td>
<td>0.1</td>
<td>1.0</td>
<td>$0.9</td>
<td>Trapper Mine post-mining reclamation</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$42.7</td>
<td>$36.9</td>
<td>$-5.8</td>
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</tr>
</tbody>
</table>

2023 projects include combustion component upgrade - CT Unit D, pipeline reroute Rawhide pipeline, simulator evergreen upgrade - Rawhide Unit 1 and monofil upgrade - Rawhide. 2024 projects include dispatchable resource, compressor blade upgrade combustion turbine Unit F and evaporative cooling combustion turbine Unit F Solar substation 230 kV - Severance Substation, transformer T3 replacement - Timberline Substation, relay panel and breaker replacements - Airport Substation and transformer T1 replacement - Longs Peak Substation Enterprise resource planning software, distributed energy resources management system, and fiber optic cable replacement - Long Haul East (Loveland to Longmont)
## Debt service expenditures

<table>
<thead>
<tr>
<th></th>
<th>2023 budget</th>
<th>2024 budget</th>
<th>Increase (decrease)</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Debt service expenditures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Principal - power revenue bonds</td>
<td>$12.6</td>
<td>$13.2</td>
<td>$0.6</td>
<td>Series JJ and Series KK power revenue bonds, lease and subscription liabilities relating to accounting standards</td>
</tr>
<tr>
<td>Principal - lease and subscription liabilities</td>
<td>$ -</td>
<td>$0.8</td>
<td>$0.8</td>
<td>New accounting standard (GASB 96) implemented during 2023</td>
</tr>
<tr>
<td>Interest - power revenue bonds</td>
<td>5.2</td>
<td>4.6</td>
<td>(0.6)</td>
<td></td>
</tr>
<tr>
<td>Interest - lease and subscription liabilities</td>
<td>$ -</td>
<td>$ -</td>
<td>$ -</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$17.8</td>
<td>$18.6</td>
<td>$0.8</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>$ millions</th>
<th>2021 actual</th>
<th>2022 actual</th>
<th>2023 budget</th>
<th>2023 estimate</th>
<th>2024 budget</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>$18.0</strong></td>
<td><strong>$17.8</strong></td>
<td><strong>$17.8</strong></td>
<td><strong>$18.3</strong></td>
<td><strong>$18.6</strong></td>
<td></td>
</tr>
</tbody>
</table>

- **Principal - Power revenue bonds**
- **Interest - Power revenue bonds**
- **Principal - Lease and subscription liabilities**
- **Interest - Lease and subscription liabilities**
Dispatchable resource implementation

Raj Singam Setti, chief transition and integration officer
M. Masood Ahmad PhD, resource planning manager
Tyler Michie, plant operations manager
Clean energy transition

Portfolio development

Reliability
Financially sustainable
Environmentally responsible

Resource Diversification Policy

Three pillars
## Dispatchable capacity selection teams

<table>
<thead>
<tr>
<th>Technology selection</th>
<th>Steering committee</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Masood Ahmad</td>
<td>• Travis Hunter</td>
</tr>
<tr>
<td>• Pat Connors</td>
<td>• Darren Buck</td>
</tr>
<tr>
<td>• Brodie Griffin</td>
<td>• Pat Connors</td>
</tr>
<tr>
<td>• Tyler Michie</td>
<td>• Leigh Gibson</td>
</tr>
<tr>
<td>• Mark Siano</td>
<td>• Jennifer Hammitt</td>
</tr>
<tr>
<td>• Chris Wood</td>
<td>• Matt Tribby</td>
</tr>
<tr>
<td>• Matt Tribby</td>
<td>• Jace Staponski</td>
</tr>
<tr>
<td></td>
<td>• Masood Ahmad</td>
</tr>
<tr>
<td></td>
<td>• Chris Wood</td>
</tr>
</tbody>
</table>
Agenda

• Justification for building dispatchable capacity
  • Reliability, risk mitigation and economics
  • Third party assessment of our portfolio
  • Third party assessment of new technology readiness for 100% noncarbon supply
  • Recommended portfolio

• Dispatchable technology selection
  • Process
  • Recommendation
Resource plan development process

Portfolio development
- Objective - lowest cost and CO2
- Constraint - must meet PRM
When, how much and what technology?

Reliability testing
- Resource portfolio testing with
  - Dark calms (DC)
  - Extreme weather
  - Different wind/solar profiles
Can't solve without dispatchable capacity

Plexos model

- External studies
- Forecasts
- Customer input
- DERs
Our prior work and industry assessment validate the need for dispatchable capacity

- **2020 Integrated Resource Plan:** 104 MW (using average weather)
- **Resource Plan update 2022:** 166 MW (using Feb. 2021 extreme weather)

Other utilities and organizations are reaching the same conclusion – up until long duration energy storage is available, dispatchable capacity is required to complement renewable generation.
Independent assessment by Black & Veatch

B&V analyzed our power supply needs in 2030 (after retiring 431 MW of coal)

• They recommend adding 280-300 MW of new dispatchable capacity to ensure reliability
• They could not develop a reliable portfolio even by adding 10,000 MW of new solar and storage
• B&V used Plexos model (same as the one Platte River uses)
• B&V did stochastic and deterministic modeling
  • In stochastic modeling – DC event can occur any time during the year
  • In deterministic modeling – DC event occurs during the peak demand period
## Independent assessment of low or noncarbon options by Black & Veatch

<table>
<thead>
<tr>
<th>Technology</th>
<th>Findings – cost, suitability, availability, timings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long duration energy storage</td>
<td>Will likely be an option during the next decade</td>
</tr>
<tr>
<td>Hydrogen</td>
<td>Will likely be an option during the next decade</td>
</tr>
<tr>
<td>Small modular reactor</td>
<td>May be available in the middle of next decade, but not suitable to follow load and renewables</td>
</tr>
<tr>
<td>Pump storage</td>
<td>Possible option for a few hours of storage – no identified sites nearby</td>
</tr>
<tr>
<td>Carbon sequestration</td>
<td>Possible by next decade, but cost will be very high for our low capacity factor, dispatchable generation needs</td>
</tr>
</tbody>
</table>

**Recommendation:**
Build dispatchable peaking generation for 2030 needs and progressively convert to green hydrogen fuel when available
Select portfolios

- Tested 25 portfolios
- Each portfolio simulated 504 times
- 155 MW distributed solar and 32 MW of Virtual Power Plant (VPP)

<table>
<thead>
<tr>
<th></th>
<th>No new dispatchable resource</th>
<th>Least cost portfolio</th>
<th>Recommended portfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Carbon free resources (MW)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wind</td>
<td>600</td>
<td>566</td>
<td>568</td>
</tr>
<tr>
<td>Solar</td>
<td>842</td>
<td>373</td>
<td>407</td>
</tr>
<tr>
<td>Hydro</td>
<td>70</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>Total carbon free resources</td>
<td>1,512</td>
<td>1,009</td>
<td>1,045</td>
</tr>
<tr>
<td><strong>Dispatchable Resources (MW)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage 4 hr</td>
<td>3,149</td>
<td>90</td>
<td>139</td>
</tr>
<tr>
<td>Storage 100 hr</td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>New dispatchable capacity</td>
<td>0</td>
<td>240</td>
<td>200</td>
</tr>
<tr>
<td>Existing CTs</td>
<td>388</td>
<td>388</td>
<td>388</td>
</tr>
<tr>
<td>VPP</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td><strong>Total portfolio (MW)</strong></td>
<td>5,081</td>
<td>1,759</td>
<td>1,814</td>
</tr>
<tr>
<td><strong>Incremental capital cost, $ billion</strong></td>
<td>$4.6 - $6.9</td>
<td>$0.70-$1.1</td>
<td>$0.80 - $1.2</td>
</tr>
<tr>
<td><em><em>CEP</em> compliance</em>*</td>
<td>Exceed</td>
<td>Exceed</td>
<td>Exceed</td>
</tr>
</tbody>
</table>

* Colorado Clean Energy Plan – requires 80% CO2 reduction by 2030 from 2005 actual emissions
Dispatchable technology selection
Process for recommending the most suitable dispatchable technology

Followed a multi track process

<table>
<thead>
<tr>
<th>Internal team</th>
<th>Vendor engagement</th>
<th>B&amp;V process</th>
<th>Decision matrix</th>
<th>Industry engagement</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Resource planning</td>
<td>• GE</td>
<td>• Screening</td>
<td>• More weights to the attributes related to three pillars</td>
<td>• Cheyenne</td>
</tr>
<tr>
<td>• Portfolio strategy</td>
<td>• Mitsubishi</td>
<td>• Operational characteristics</td>
<td>• Multiple sub-categories</td>
<td>• Drake</td>
</tr>
<tr>
<td>• Operation</td>
<td>• Mitsubishi Aero</td>
<td>• Levelized cost of energy</td>
<td>• Qualitative and quantitative attributes evaluated</td>
<td>• Pueblo</td>
</tr>
<tr>
<td>• Engineering</td>
<td>• Siemens</td>
<td>• Operational flexibility</td>
<td></td>
<td>• Meetings with utilities</td>
</tr>
<tr>
<td>• Transmission</td>
<td>• Wartsila</td>
<td>• Reliability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Environmental</td>
<td>• Pro Energy</td>
<td>• Fuel versatility</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Emissions</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Constructability</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Market performance</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Evaluation criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reliability</strong> – availability and failure rate at normal and extreme weather</td>
<td>30%</td>
</tr>
<tr>
<td><strong>Emissions</strong> - minor modification, NOx, CO2, VOCs, rates etc.</td>
<td>25%</td>
</tr>
<tr>
<td><strong>Cost</strong> – capital cost and levelized cost of energy (LCOE)</td>
<td>20%</td>
</tr>
<tr>
<td><strong>Operational flexibility</strong> – ramp rates, turn down, minimum run and down times, etc. to complement/integrate renewables</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Fuel versatility</strong> – gas, back up liquid fuels, H2</td>
<td>5%</td>
</tr>
<tr>
<td><strong>Constructability</strong> – supply chain, domestic vs. foreign parts</td>
<td>5%</td>
</tr>
<tr>
<td><strong>Market performance</strong> – how these technologies are performing, A/S</td>
<td>5%</td>
</tr>
</tbody>
</table>
Screening

- Identified 58 options across all major manufacturers:
  - Reciprocating internal combustion engines (RICE)
  - Aeroderivative turbines
  - Frame turbines
  - Simple-cycle or combined-cycle (CC) configurations
- Obtained operational characteristics to filter to 7 possible candidates for additional evaluation
- Built capital cost estimates and performed LCOE analysis
## Overview

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Units</th>
<th>Option 1</th>
<th>Option 2</th>
<th>Option 3</th>
<th>Option 4</th>
<th>Option 5</th>
<th>Option 6</th>
<th>Option 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant size</td>
<td>MW</td>
<td>171</td>
<td>169</td>
<td>159</td>
<td>179</td>
<td>177</td>
<td>216</td>
<td>168</td>
</tr>
<tr>
<td>Capital cost</td>
<td>$M</td>
<td>$300</td>
<td>$307</td>
<td>$269</td>
<td>$218</td>
<td>$252</td>
<td>$489</td>
<td>$347</td>
</tr>
<tr>
<td>Capacity cost</td>
<td>$M/MW</td>
<td>$1.8</td>
<td>$1.8</td>
<td>$1.7</td>
<td>$1.2</td>
<td>$1.4</td>
<td>$2.3</td>
<td>$2.1</td>
</tr>
<tr>
<td>Efficiency</td>
<td>%</td>
<td>40.1%</td>
<td>34.6%</td>
<td>35.4%</td>
<td>38.7%</td>
<td>35.1%</td>
<td>48.1%</td>
<td>47.8%</td>
</tr>
</tbody>
</table>

Unit sizes range from 17-105 MW.
# Outside engagement

**Vendor**
- Data and criteria validation
- Early-stage project definition
- How is industry employing the technologies?
- What implementation strategies do you offer?
- What is the distinctive value proposition?

**Industry**
- First-hand operating and maintenance experience
- Performance characteristics
- Market performance
- Pain points
- What would have done differently?
- How did you structure the project?
- How are the assets leveraged?
## Decision category – reliability

| Qualification                          | Units       | Option 1 | Option 2 | Option 3 | Option 4 | Option 1 | Option 2 | Option 3 | Option 4 | Option 1 | Option 2 | Option 3 | Option 4 | Option 1 | Option 2 | Option 3 | Option 4 | Option 1 | Option 2 | Option 3 | Option 4 | Option 1 | Option 2 | Option 3 | Option 4 |
|----------------------------------------|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Number of shafts                       | Number      | 10       | 6        | 4        | 2        | 9.0      | 8.3      | 7.5      | 5.0      | 8%       | 0.72     | 0.67     | 0.60     | 0.40     |          |          |          |          |          |          |          |          |          |          |          |          |
| Third party support                   | Yes/No      | No       | Yes      | Yes      | No       | 0.0      | 10.0     | 10.0     | 0.0      | 2%       | 0.00     | 0.20     | 0.20     | 0.00     |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Risk from major maintenance duration  | Yes/No      | Yes      | No       | No       | Yes      | 0.0      | 10.0     | 10.0     | 0.0      | 2%       | 0.00     | 0.20     | 0.20     | 0.00     |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Equivalent availability factor        | %           | 92.8     | 98.0     | 98.0     | 90.0     | 4.8      | 10.0     | 10.0     | 2.0      | 2%       | 0.10     | 0.20     | 0.20     | 0.04     |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Forced outage factor                  | %           | 2.2      | 0.9      | 0.9      | 1.5      | 4.1      | 10.0     | 10.0     | 6.0      | 2%       | 0.08     | 0.20     | 0.20     | 0.12     |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Start reliability                     | %           | 97.6     | 99.3     | 99.3     | 99.3     | 1.5      | 10.0     | 10.0     | 10.0     | 5%       | 0.07     | 0.50     | 0.50     | 0.50     |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Installed power generation MW in US   | MW          | 432      | 374      | 15,700   | 4,173    | 3.0      | 3.0      | 10.0     | 6.0      | 5%       | 0.15     | 0.15     | 0.50     | 0.30     |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Cold weather reliability              | L/M/H       | High     | High     | High     | Medium   | 10.0     | 10.0     | 10.0     | 5.0      | 3%       | 0.30     | 0.30     | 0.30     | 0.15     |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Need for gas compression              | Yes/No      | No       | No       | Yes      | Yes      | 10.0     | 10.0     | 0.0      | 0.0      | 1%       | 0.10     | 0.10     | 0.00     | 0.00     |          |          |          |          |          |          |          |          |          |          |          |          |          |
| Category total                        |             |          |          |          |          |          |          |          |          |          | 1.52     | 2.52     | 2.70     | 1.51     |          |          |          |          |          |          |          |          |          |          |          |          |

Weighted total: 1.52 for Option 1, 2.52 for Option 2, 2.70 for Option 3, 1.51 for Option 4.
Relative scores from the decision matrix

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Weight</th>
<th>Option 1</th>
<th>Option 2</th>
<th>Option 3</th>
<th>Option 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability</td>
<td>30%</td>
<td>1.52</td>
<td>2.52</td>
<td>2.70</td>
<td>1.51</td>
</tr>
<tr>
<td>Emissions</td>
<td>25%</td>
<td>0.70</td>
<td>2.41</td>
<td>2.34</td>
<td>1.69</td>
</tr>
<tr>
<td>Costs</td>
<td>20%</td>
<td>1.55</td>
<td>1.47</td>
<td>1.55</td>
<td>2.00</td>
</tr>
<tr>
<td>Operational flexibility</td>
<td>10%</td>
<td>0.90</td>
<td>0.91</td>
<td>0.88</td>
<td>0.80</td>
</tr>
<tr>
<td>Fuel versatility</td>
<td>5%</td>
<td>0.05</td>
<td>0.36</td>
<td>0.36</td>
<td>0.42</td>
</tr>
<tr>
<td>Constructability</td>
<td>5%</td>
<td>0.45</td>
<td>0.45</td>
<td>0.45</td>
<td>0.35</td>
</tr>
<tr>
<td>Market performance</td>
<td>5%</td>
<td>0.40</td>
<td>0.50</td>
<td>0.45</td>
<td>0.45</td>
</tr>
<tr>
<td><strong>Total weighted score</strong></td>
<td>100%</td>
<td><strong>5.57</strong></td>
<td><strong>8.62</strong></td>
<td><strong>8.72</strong></td>
<td><strong>7.21</strong></td>
</tr>
</tbody>
</table>

**Recommendation:**
Aeroderivative turbines are the dispatchable technology best suited to meet Platte River’s power supply requirements, ensuring system reliability while facilitating the continued development of noncarbon resources.
Investor-owned utilities
Xcel Energy
PG&E

ISO/RTO
PJM/MISO

Public power utilities
SMUD
CSU

Research institutes
NREL
EPRI

Reliability
Dispatchable resource
Conclusion

- Platte River will need at least 200 MW of dispatchable capacity to complement renewables and storage upon retirement of Rawhide Unit 1 to ensure reliable, economic and low risk power supply to its customers

- We define dispatchable capacity as the state of the art, flexible, lowest emitting, hydrogen capable, turbine technology. It will:
  - Complement intermittent renewable generation when it's not sunny or windy
  - Initially use natural gas fuel, but will be able to burn renewable natural gas and/or green hydrogen if and when they become commercially and economically available
Back up slides
DER forecast

Flexible DER capacity

- Capacity assessed based on ability to provide a four-hour resource during evening peaks
- Electric vehicle charge management, battery storage management and traditional demand response
- Distributed energy resource management system (DERMS) and related systems are in planning and development
Planning reserve margin (PRM) requirement

- Each utility must carry PRM. Market can help in emergencies, but it is not guaranteed
- PRM used to be 15% but with the addition of intermittent renewables it is going up
- Independent assessment from external advisors suggested we will need 20-25% PRM
- WECC study recommends 22-25% PRM for our area
- Texas studies show they may need to raise PRM to 18.5%

Renewable generation, DERs and 4-hour battery storage can provide PRM but their ELCC drops significantly as more resources are added, due to intermittency and energy limitations. Traditional thermal generation are better suited to provide PRM. 100 MW of wind or solar can only provided 5-10 MW of PRM, while 100 MW of dispatchable generation or long duration energy storage (when developed) can provide 90 MW of firm capacity.
Reliability during dark calms (DC) and extreme weather events (EWE)

- This is DC experienced during the winter storm Uri in 2021. We scaled up the load and generation to 2031.
- The only way to supply noncarbon energy during DC is to rely:
  - Long duration energy storage (LDES), that once charged will last many days
  - Traditional generation burning noncarbon fuel like hydrogen
- 3,000 MW of currently available 4-hour Li Ion battery, along with the existing CTs will cover this DC.
- Based on our analysis, we will need about 13,000 MW of 4-hour storage – which is not practical.
- Can a market help? Maybe, but we cannot plan for it.
  - Usually, severe weather patterns cover large areas. Most likely, all the neighboring utilities will be having similar shortages as we saw during Uri.
  - Even if we can find power, it will be very expensive. Our quick analysis showed it will cost almost 40% of our annual power supply cost. This was observed for many small utilities after Uri.
- During winter severe weather, there are challenges of getting fuel as well, which means on-site storage will be required.
Recent dark calm experiences

PSCo November 2015

Pacific Northwest January 2009

1780 MW of Wind Installed

No Wind Generation in the Pacific Northwest for 12 days in January 2009
Recent extreme weather event - PJM 2022

Load Stayed Unusually High Overnight (Preliminary Data)

Christmas Eve valley was 40,000 MW higher than second highest.

Dec. 23–25 Loads* 2022 & Previous 10 Years
A dispatchable resource is a resource where power output can be changed quickly to complement renewable generation intermittency. A dispatchable generation resource will balance load and renewable generation in real time. It can start, stop, speed up and slow down quickly to produce more or less generation when needed.

Examples: battery storage, a quick start CT or RICE unit. Current battery storage technology lasts only 4-hours and will not be sufficient in dark calms or extreme weather events. Once long duration energy storage (LDES) is developed, it will provide dispatchable capacity

What is dispatchable capacity?

A dispatchable capacity resource is:

- State of the art
- Flexible
- Lowest emitting
- Hydrogen capable
- Aero-derivative (based on jet engine technology)
- Proven
- Reliable
- Able to quickly start and stop
- Provide power when it’s not sunny or windy
- Initially burn natural gas and capable of burning biodiesel, renewable natural gas and green hydrogen when they become available in commercial quantities at economical prices
Questions
Board of directors

Sept. 28, 2023

Energy leaders since 1973
IRP community engagement update

Eddie Gutiérrez, chief strategy officer
Key highlights from engagement

- Extreme weather modeling and climate change
- What is a dispatchable resource?
- Energy market and resource planning
  - Source of "other purchases"
- Electrification efforts and growth in demand/load
- Equity
- Behavioral change vs. adding more resources
Community meetings

Longmont

Completed
• Longmont Sustainability Advisory Board
• Longmont Neighborhood Group

Planned
• Climate Action Sunday (community event)
• City council
• Latino chamber of commerce
• Longmont economic development partnership
• Equitable climate action team

Loveland

Completed
• City council
• Loveland Utilities Commission

Planned
• City council
• League of Women Voters
• Downtown Development Authority
• FUEL – Loveland’s young professional group
• Renewables Now Loveland
• Loveland Chamber of Commerce Ambassadors
Community meetings

**Estes Park**

**Completed**
- Town board
- League of Women Voters
- Estes Park Sierra Club

**Planned**
- Chamber of Commerce
- Rotaries

**Fort Collins**

**Completed**
- Fort Collins Energy Board
- Colorado State University
- Fort Collins Natural Resources Advisory Board
- COSSA
- Northern Colorado Renewable Energy Society

**Planned**
- City council
- Fort Collins Sustainability Group
- Larimer County
Fall marketing campaign
Marketing campaign

Overview

• Celebrating 50 years of serving Estes Park, Fort Collins, Longmont and Loveland
• Highlights our commitment to the principles that have shaped our history and will direct our transition to a noncarbon energy future
• As we plan for the next 50 years, we remain committed to our foundational pillars:
  • Reliability
  • Environmental responsibility
  • Financial sustainability
The giving you the power campaign

Radio ads, digital billboards, newspaper and digital ads, social media ads and posts

Platte River introduction

Platte River's future

English

Spanish
We're generating reliable electricity for your utility provider for 50 years. See how we're working toward a noncarbon future by working with your utility to bring you sustainable energy.

Serving our communities for 50 years and counting.

See how we're working toward a noncarbon future and giving you the power.
Marketing strategy

- Celebrate 50 years of reliable power and ongoing collaboration with our owner communities
- Wholistic approach utilizing all platforms: digital, print, out of home
- Educate and inform on ongoing resource planning, align with 2024 IRP efforts and related community engagement
  - Proactive media approach
  - Website page with more information and continued transparency
  - Educational social media campaigns
  - Continue to schedule community meetings
Questions
Board of directors

Sept. 28, 2023

Energy leaders since 1973
# August operational results

<table>
<thead>
<tr>
<th>Category</th>
<th>August variance</th>
<th>YTD variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner community demand</td>
<td>3.2%</td>
<td>(1.9%)</td>
</tr>
<tr>
<td>Owner community energy</td>
<td>(5.0%)</td>
<td>(4.0%)</td>
</tr>
<tr>
<td>Surplus sales volume</td>
<td>(15.4%)</td>
<td>(33.6%)</td>
</tr>
<tr>
<td>Surplus sales price</td>
<td>69.2%</td>
<td>38.4%</td>
</tr>
<tr>
<td>Purchase volume</td>
<td>(485.7%)</td>
<td>(135.4%)</td>
</tr>
<tr>
<td>Purchase price</td>
<td>(7.3%)</td>
<td>(54.3%)</td>
</tr>
<tr>
<td>Coal generation</td>
<td>(52.9%)</td>
<td>(43.6%)</td>
</tr>
<tr>
<td>Combustion turbine generation</td>
<td>(6.4%)</td>
<td>59.3%</td>
</tr>
<tr>
<td>Net variable cost to serve owner community load*</td>
<td>(81.5%)</td>
<td>(14.5%)</td>
</tr>
</tbody>
</table>

**Variance key:**  
- Favorable: ●  
- Near budget: ◆  
- Unfavorable: ■

*Total resource variable costs plus purchased power costs less sales revenue*
August financial summary

<table>
<thead>
<tr>
<th>Category</th>
<th>August variance from budget ($ in millions)</th>
<th>YTD variance from budget ($ in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in net position*</td>
<td>$4.8</td>
<td>$12.8</td>
</tr>
<tr>
<td>Fixed obligation charge coverage</td>
<td>1.46x</td>
<td>.45x</td>
</tr>
<tr>
<td>Revenues</td>
<td>$2.8</td>
<td>$(4.9)</td>
</tr>
<tr>
<td>Operating expenses</td>
<td>$1.4</td>
<td>$15.7</td>
</tr>
<tr>
<td>Capital additions</td>
<td>$1.2</td>
<td>$18.9</td>
</tr>
</tbody>
</table>

Variance key:  Favorable: •  | Near budget: ◯  | Unfavorable: ■

* August and YTD change in net position was impacted by $0.5 million and $2.2 million unrealized gains on investments, respectively.
Board of directors

Sept. 28, 2023

Energy leaders since 1973