Tri-State Background

- Founded in 1952. 65th anniversary year
- Not-for-profit, cooperative wholesale power supplier owned by the 43 distribution cooperatives it serves
  - Diversity: residential, industrial, irrigation, tourism
- Serve >1.5 million customers (rural & lower income)
- Generation and purchased power portfolio
  - 4,000 MW including coal, gas, oil, wind, solar & hydro
- Transmission: > 5,500 miles of 115, 230 & 345 kV
- Employees: 1,585

- La Plata Electric ~ 6% of Tri-State member usage

La Plata Electric Workshop – June 8, 2017
Tri-State 2016 Financial Data

- Revenue: $1.4B
- Assets: $4.9B
- Liabilities: $3.8B
- Equity: $1.1B
  - La Plata equity = ~$75M
  - La Plata owns ~ 8%

Financial Ratings: “A”
2016 Average Retail Rates

Source: FERC Form 1, Utility Annual Reports, and RUS Form 7 Reports

*Data for San Miguel Power Association is from 2015
Class A Rate Forecast

2017 LTFF Class A Rates

- 2017: 4.91%
- 2018: 0.30%
- 2019: 0.00%
- 2020: 1.40%
- 2021: 0.82%
- 2022: 0.00%
- 2023: 0.00%
- 2024: 0.76%
- 2025: 0.48%
- 2026: 0.00%

La Plata Electric Workshop – June 8, 2017
Tri-State Governance

- Board of Directors plays unusually strong role
  - Approves all contracts > $500,000 value
  - Meet monthly. Each member has one vote
  - Strategic planning twice each year

Common Priorities
1. Safety
2. Compliance
3. Reliability
4. Cost
Current Tri-State Resources
Tri-State Cost Components

- **Generation**
  - 79% of overall Tri-State expense
  - Majority of generation cost is fixed
  - Some fuel and some operations and maintenance expense is variable
  - **Incremental cost is approximately $.02 / kWh**

- **Transmission**:
  - 21% of overall Tri-State expense
  - 100% fixed cost
2016 Tri-State Resource Mix

2016 Capacity (%)

- **Coal**: 43%
- **Natural Gas**: 19%
- **Basin**: 12%
- **Oil**: 2%
- **Renewable**: 24%

2016 Energy

As a % of gross member sales

- **Coal**: 50%
- **Natural Gas**: 2%
- **Basin**: 9%
- **Oil**: <1%
- **Renewable**: 27%
- **Market Purchases**: 12%

La Plata Electric Workshop – June 8, 2017
Mid-1970s Severe Natural Gas Shortages

Power Plant & Industrial Use Act 1978

Craig, LRS & Escalante 1979 - 1984

1954 FPC Regulates Wellhead Prices

Source: SNL; ScottMadden analysis

La Plata Electric Workshop – June 8, 2017
Coal Generation

Reflects 16% reduction in amount of power generated from coal due primarily to market economics.

The plants generating less energy are generally the two that are being retired due to cost.
Tri-State Total CO2 Emissions

Reflects 19% CO2 reduction from 2011 peak without any coal unit retirements
Tri-State Total NOx Emissions

Reflects 30% NOx reduction via controls and less fossil generation.

La Plata Electric Workshop – June 8, 2017
## Environmental Controls

<table>
<thead>
<tr>
<th></th>
<th>Sulfur Dioxide Removal</th>
<th>Particulate Collection / Removal</th>
<th>Nitrogen Oxide Reduction / Removal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Craig</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Nucla</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Escalante</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Laramie River</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>San Juan #3</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Springerville #3</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

All of Tri-State’s facilities meet or exceed Federal and State Clean Air and Water Standards
Coal Retirements & Renewables

- Three announced coal unit retirements
- Employee and community transition
- Costs
  - Incremental cost of existing baseload generation is cheaper than variable renewables
  - Employee transition
  - Reclamation
  - Accelerated depreciation
## SCHEDULED COAL UNIT RETIREMENTS

<table>
<thead>
<tr>
<th>Unit</th>
<th>Total Capacity (MW)</th>
<th>Tri-State Capacity (MW)</th>
<th>Retirement Date</th>
<th>Original Retirement Date</th>
<th>Increased Depreciation Expense</th>
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<tr>
<td>San Juan #3</td>
<td>500</td>
<td>41</td>
<td>2017</td>
<td>2046</td>
<td>$8.2 M</td>
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<tr>
<td>Waterflow, NM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Nucla</td>
<td>100</td>
<td>100</td>
<td>2022</td>
<td>2049</td>
<td>$8.4 M</td>
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<tr>
<td>Nucla, CO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Craig #1</td>
<td>428</td>
<td>104</td>
<td>2025</td>
<td>2051</td>
<td>$2.3 M</td>
</tr>
<tr>
<td>Craig, CO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>1,028</td>
<td>244</td>
<td></td>
<td></td>
<td><strong>$19 M</strong></td>
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</tbody>
</table>
## Resource Additions

<table>
<thead>
<tr>
<th>Year</th>
<th>Resource</th>
<th>Fuel</th>
<th>Megawatts</th>
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<tbody>
<tr>
<td>2008</td>
<td>Rawhide</td>
<td>Natural Gas</td>
<td>100</td>
</tr>
<tr>
<td>2009</td>
<td>Shafer</td>
<td>Natural Gas</td>
<td>150</td>
</tr>
<tr>
<td>2009</td>
<td>Brush</td>
<td>Natural Gas</td>
<td>70</td>
</tr>
<tr>
<td>2010</td>
<td>Kit Carson</td>
<td>Wind</td>
<td>51</td>
</tr>
<tr>
<td>2011</td>
<td>Cimarron</td>
<td>Solar</td>
<td>30</td>
</tr>
<tr>
<td>2011</td>
<td>Shafer</td>
<td>Natural Gas</td>
<td>122</td>
</tr>
<tr>
<td>2012</td>
<td>Basin Electric</td>
<td>Unspecified</td>
<td>75</td>
</tr>
<tr>
<td>2012</td>
<td>Colorado Highlands</td>
<td>Wind</td>
<td>67</td>
</tr>
<tr>
<td>2013</td>
<td>Boulder Canyon</td>
<td>Hydro</td>
<td>5</td>
</tr>
<tr>
<td>2013</td>
<td>CHW 2</td>
<td>Wind</td>
<td>24</td>
</tr>
<tr>
<td>2014</td>
<td>Ridgway</td>
<td>Hydro</td>
<td>8</td>
</tr>
<tr>
<td>2014</td>
<td>Vallecito</td>
<td>Hydro</td>
<td>6</td>
</tr>
<tr>
<td>2015</td>
<td>Shoshone</td>
<td>Hydro</td>
<td>3</td>
</tr>
<tr>
<td>2016</td>
<td>Carousel</td>
<td>Wind</td>
<td>150</td>
</tr>
<tr>
<td>2016</td>
<td>San Isabel Solar</td>
<td>Solar</td>
<td>30</td>
</tr>
<tr>
<td>2017</td>
<td>Williams Fork</td>
<td>Hydro</td>
<td>3.5</td>
</tr>
<tr>
<td>2017</td>
<td>Alta Luna</td>
<td>Solar</td>
<td>25</td>
</tr>
<tr>
<td>2017</td>
<td>Twin Buttes</td>
<td>Wind</td>
<td>76</td>
</tr>
<tr>
<td>2008-present</td>
<td>Member Generation</td>
<td>Various</td>
<td>113 *</td>
</tr>
</tbody>
</table>

### 18 Resource Additions

- **Renewables**: 592 MW
- **Natural gas**: 442 MW
- **Unspecified**: 75 MW

**Total**: 1,109 MW

---

* Tri-State provided financial incentives
**Summer Capacity Position**

**2017 LTFF Base Case Scenario**

- **Member Load and Losses**
- **+ Planning & Operating Reserves**
- **+ Contract Sales**

---

**Key Assumptions**

- San Juan, Nucla & Craig 1 retired
- Brush capacity purchase expires 2019
- Springerville Sale to SRP expires 2036
- Normal load growth

---

*La Plata Electric Workshop – June 8, 2017*
Industry Excess Capacity

Summary of Assessment Results: WECC – Summer

The numbers represented here are a summary from the PSA datasheets and cannot be used independently to replicate the assessment results. For complete information, please access the PSA datasheets posted on the WECC website.

![WECC: Case 1 through 4 - Summer Results](chart)

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Net Internal Demand</strong></td>
<td>151,243</td>
<td>152,317</td>
<td>154,558</td>
<td>157,197</td>
<td>159,045</td>
<td>160,399</td>
<td>161,395</td>
<td>162,987</td>
<td>164,933</td>
<td>166,572</td>
</tr>
<tr>
<td><strong>Anticipated Internal Capacity</strong></td>
<td>202,410</td>
<td>205,371</td>
<td>206,300</td>
<td>206,650</td>
<td>207,334</td>
<td>205,822</td>
<td>205,105</td>
<td>204,386</td>
<td>204,364</td>
<td>203,525</td>
</tr>
<tr>
<td>Wind Expected On-Peak MW</td>
<td>8,191</td>
<td>8,230</td>
<td>8,230</td>
<td>8,402</td>
<td>8,402</td>
<td>8,402</td>
<td>8,402</td>
<td>8,402</td>
<td>8,402</td>
<td>8,402</td>
</tr>
<tr>
<td>Percentage of Wind Capacity</td>
<td>32.2%</td>
<td>32.2%</td>
<td>32.2%</td>
<td>32.3%</td>
<td>32.3%</td>
<td>32.3%</td>
<td>32.3%</td>
<td>32.3%</td>
<td>32.3%</td>
<td>32.3%</td>
</tr>
<tr>
<td>Percentage of Solar Capacity</td>
<td>37.1%</td>
<td>37.1%</td>
<td>37.0%</td>
<td>36.9%</td>
<td>36.9%</td>
<td>36.9%</td>
<td>36.9%</td>
<td>36.9%</td>
<td>36.9%</td>
<td>36.9%</td>
</tr>
<tr>
<td>Percentage of Hydro Capacity</td>
<td>60.4%</td>
<td>60.4%</td>
<td>60.4%</td>
<td>60.4%</td>
<td>60.4%</td>
<td>60.2%</td>
<td>60.2%</td>
<td>60.2%</td>
<td>60.2%</td>
<td>60.2%</td>
</tr>
<tr>
<td><strong>Anticipated Resource Reserve Margin MW</strong></td>
<td>27,271</td>
<td>28,988</td>
<td>27,322</td>
<td>24,616</td>
<td>23,160</td>
<td>20,080</td>
<td>18,209</td>
<td>15,647</td>
<td>13,372</td>
<td>10,635</td>
</tr>
<tr>
<td><strong>Anticipated Resource Reserve Margin %</strong></td>
<td>33.8%</td>
<td>34.8%</td>
<td>33.5%</td>
<td>31.5%</td>
<td>30.4%</td>
<td>28.3%</td>
<td>27.1%</td>
<td>25.4%</td>
<td>23.9%</td>
<td>22.2%</td>
</tr>
</tbody>
</table>
Tri-State Federal Hydropower

- Two purchased power agreements
  - Colorado River Storage Projects
    - Upper/Lower Molina, McPhee, Towaoc, Elephant Butte
  - Loveland Area Projects
    - Big Thompson, Estes, Flatiron, Green Mountain, Seminoe

- 2016 Data
  - $82.4M power purchase expense
  - Approximately 600 MW & 2,350,000 MWH/Year
  - Served 15% of Tri-State member load
Tri-State & Member Renewables
Excludes WAPA Hydro

Tri-State Renewables Capacity by Category
2007-2017

- Member Generation
- Small Hydro
- Utility Scale Solar
- Utility Scale Wind

La Plata Electric Workshop – June 8, 2017
Tri-State Wind & Solar Generation

2016 LPEA Total Load was 945 GWH

La Plata Electric Workshop – June 8, 2017
Renewable Pricing Trends

- Price of new renewable generation is heavily impacted by federal tax credits & MACRS
  - Wind PTC = +60%  Solar ITC = +30%
- “Utility-scale” projects PPA prices
  - New wind generation: 2 to 3 cents / kWh
  - New solar generation: 3 to 4 cents / kWh
- Must add Integration costs to get total costs
  - Dispatchable back-up – redundant units
  - Balancing Authorities charge .1 to .5 cents / kWh
- Transmission is a major issue for wind
Tri-State Renewable Prices Falling

Wind & Solar Weighted Average Purchase Prices

 Opportunistically adding new projects Tri-State has benefited from improved technology & falling prices

Average price is less than half the levels when we contracted for our first renewable projects

All Current Projects

Cimarron Solar
Kit Carson Wind

Colorado Highlands

Alta Luna, San Isabel & Twin Buttes - 2017

Carousel Wind

La Plata Electric Workshop – June 8, 2017
Relative Costs of Solar Generation

- **Rooftop 2 kW:** 10.3¢ / kWh
- **Solar Garden 500 kW:** 6¢ / kWh
- **Utility Scale Solar 30 MW:** 4¢ / kWh
- **Retail Rate:** 12.5¢ / kWh
- **Tri-State Class A Rate:** 7.4¢ / kWh
- **Wholesale Market:** 3¢ / kWh

* Solar pricing assumes full ITC qualification; tax incentives set to phase out
Because of high variability, Xcel charges ~ $5/MWh to integrate wind.
Tri-State Load, Coal, Wind & Solar
May 25, 2017
Implications

- Wind and solar need to be supplemented and “backed-up” with conventional hydro, coal and gas generation.

- Today, you cannot realistically replace coal 1:1 with intermittent renewables.

- Battery or other storage technology could change this situation.
Renewable Generation
April 2017

RENEWABLES = 379 GWH
26% of Total Power Supply
32% of Member Sales

La Plata Electric Workshop – June 8, 2017
Member Generation
In 2001 Tri-State and each of its Members signed a new Wholesale Electric Service Contract that had provisions to allow for (but not require) 5% Member “self-generation”

Tri-State Board Policy contains the specifics of the implementation details concerning this option

Many cooperative generation and transmission organizations do not allow any member generation
Member Generation Today

113 MW
61 Projects
18 Member Systems

Projects By Technology (MW)
As of April 1, 2017

La Plata Electric Workshop – June 8, 2017
## Policy 117 – Payment History

<table>
<thead>
<tr>
<th>Year</th>
<th>Policy 115 Projects</th>
<th>Net Metered Projects</th>
<th>Total Policy 117 Member Payments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>$270,483</td>
<td>$123,258</td>
<td>$393,741</td>
</tr>
<tr>
<td>2010</td>
<td>$394,765</td>
<td>$326,699</td>
<td>$721,464</td>
</tr>
<tr>
<td>2011</td>
<td>$1,089,958</td>
<td>$492,188</td>
<td>$1,582,146</td>
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<tr>
<td>2012</td>
<td>$1,482,466</td>
<td>$238,979</td>
<td>$1,721,445</td>
</tr>
<tr>
<td>2013</td>
<td>$2,108,641</td>
<td>$294,773</td>
<td>$2,403,414</td>
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<tr>
<td>2014</td>
<td>$2,057,831</td>
<td>$364,931</td>
<td>$2,422,762</td>
</tr>
<tr>
<td>2015</td>
<td>$2,181,250</td>
<td>$627,039</td>
<td>$2,808,289</td>
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<tr>
<td>2016</td>
<td>$2,068,064</td>
<td>$522,580</td>
<td>$2,590,644</td>
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<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>$14,643,905</strong></td>
</tr>
</tbody>
</table>
Two Questions

1. Why can’t Tri-State members generate more than 5%?

2. Why can’t Tri-State retire coal faster and add more renewables?
5% Member Generation

- Creates upward rate pressure
- Wholesale Electric Service Contract
  - To increase 5% would need to be renegotiated
- Members can generate above 5%
  - Sell to Tri-State
  - Sell to others
Why Can’t We Do More, Faster?

- Creates upward rate pressure
  - Adding generation above our incremental cost increases rates
    - Current Class A rate: ~ 7 cents/kWh
    - Current market rate: ~ 3 cents/kWh
    - Current incremental cost: ~ 2 cents/kWh

- Wind and solar, despite price reductions in recent years, are still priced above our incremental cost

- Don’t need new capacity until 2025

- Retiring units = accelerated depreciation & closure costs
Summary

- Tri-State is financially strong
- Tri-State & Members are currently leaders in renewable energy and more being done
- Three coal units are being retired
- Added +1000 MW of renewable and natural gas in last 10 years
- Aggressively pursuing RTO membership
  - Operating efficiencies, reduced costs & easier to integrate variable resources (wind and solar)
- Tri-State rate forecast best in last 10 years