Chamisa Energy: Tulia 1 Compressed Air Energy Storage

Renewable Energy Sources in the Ports-to-Plains Region

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Amarillo, TX

Alissa Oppenheimer, Managing Director
Chamisa Tulia Project in Texas

Right Mix of Infrastructure and Natural Resources

- Geology
- Wind
- Water
- Technology
- Electric Transmission
- Gas Pipeline
- Potential Revenue
- Regulation is Right

Proposed Interconnection of Tulia 1 CAES plant to ERCOT 345 kV CREZ system.

- CAES 7-mile double-circuit 345 kV line
- 345 kV CREZ loop from Nazareth to Silverton
- Silverton Collection Station
- Amarillo South to Swisher County SPP 230 kV Line
What is CAES?

Commercially proven in two facilities, Compressed Air Energy Storage (CAES) is efficient, flexible and reliable bulk electric storage.

- Two commercial-scale units have been operating reliably for two decades.
- Can store and generate simultaneously.
- Can optimize sales and purchases of energy and ancillary services.

Compressed air is released, mixed with a small amount of natural gas, and used to fire turbines for generation of electricity when it is most needed and when prices are higher.
PowerSouth Energy Cooperative

CAES Unit

Cavern Wellhead
The Elements Coming Together
Overview of ERCOT

- As the independent system operator for the region, the Electric Reliability Council of Texas (“ERCOT”) is responsible for managing the flow of electric power to 23 million Texas customers
  - ERCOT market covers ~85% of Texas’ overall power usage (~75% of the land area)
  - Schedules power on an electric grid that connects 40,500 miles of transmission lines and more than 550 generation units
  - Public Utility Commission of Texas (“PUCT”) is the principal regulatory authority
- Texas electricity consumption is the largest in the nation
  - Substantially higher demand growth than anywhere else in the country (over 2% compared to less than zero in many parts of the U.S.)

State Electricity Consumption (2011 TWh)

Source: ERCOT, EIA
Let’s Talk About Wind

Wind Projects GINR Overview

Wind Generation Capacity in the Interconnection Request  July 2013

<table>
<thead>
<tr>
<th>Region</th>
<th>No-IA</th>
<th>IA</th>
<th>ERCOT Total</th>
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</thead>
<tbody>
<tr>
<td>Panhandle</td>
<td>7,761</td>
<td>3,489</td>
<td>15,291</td>
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<tr>
<td>West</td>
<td>2,850</td>
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<tr>
<td>Coast</td>
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<td>550</td>
<td></td>
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<tr>
<td>South</td>
<td>2,000</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>1,130</td>
<td>70</td>
<td></td>
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</tbody>
</table>

Source: ERCOT
Site can accommodate:
- 13 Air Storage Caverns
- 4 Air or Gas Caverns
- 4 Gas Storage Caverns

Initial cavern plan will provide 18 hours of air storage capacity for 2 CAES trains

Water is available at economic costs
- Will not use water that otherwise would be used for domestic purposes

Town of Tulia is supportive of the project
- PILOT agreement in place

Anticipated Site Layout

Significant Room For Future Expansion
Summary of the Tulia CAES Project

- Chamisa Energy, LLC ("Chamisa") is developing a 270MW Compressed Air Energy Storage ("CAES") facility ("Tulia I") in Swisher County, Texas

- Chamisa owns the land on which the Tulia I site will be located having acquired the plot following a careful analysis of the surrounding region’s geology, the site’s physical proximity to wind generating resources and the ability to efficiently interconnect to the ERCOT grid

- Tulia I will employ proven CAES technology to capitalize on a compelling market opportunity, as the high-wind-penetrated yet overall resource constrained ERCOT market provides an exceptional platform to capture the full range of economics available to CAES technology, including:
  - Transforming wind, or another renewable, into a fully dispatchable generating resource
  - Serving any of base, intermediate and peak load
  - Providing Ancillary Services
  - Arbitraging on-peak/off-peak energy prices

- The Tulia I team has achieved significant development milestones to date and has a credible development plan for the construction of the facility
Tulia Economic Development

The Facility is to be staffed 24 hours a day 7 days a week. Operating staff is to work in 12-hour shifts on a rotating schedule. The management and maintenance staff is to work a normal weekday schedule and work on nights or weekends, as required. Major maintenance crews will be employed as required.

### Facility Staffing Plan

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<th>Description</th>
<th>Number</th>
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<tr>
<td>Plant Manager</td>
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<tr>
<td>Operations Manager</td>
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<tr>
<td>Shift Operators</td>
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<tr>
<td>Leaching Field Operators</td>
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<tr>
<td>Maintenance Manager</td>
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<tr>
<td>Mechanical Technicians</td>
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<tr>
<td>I&amp;E Technicians</td>
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<tr>
<td>Maintenance Assistants</td>
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<tr>
<td>Groundskeeper</td>
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<tr>
<td>Janitor</td>
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<tr>
<td>Warehouse</td>
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<tr>
<td>Accounting/Payroll</td>
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<tr>
<td>Security</td>
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<tr>
<td>Administrative</td>
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<tr>
<td>Total Staff</td>
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Questions