Farmington Electric Utility System

Water and Natural Resources Committee
Replacement Energy Presentation
July 26, 2018

FARMINGTON ELECTRIC
UTILITY SYSTEM

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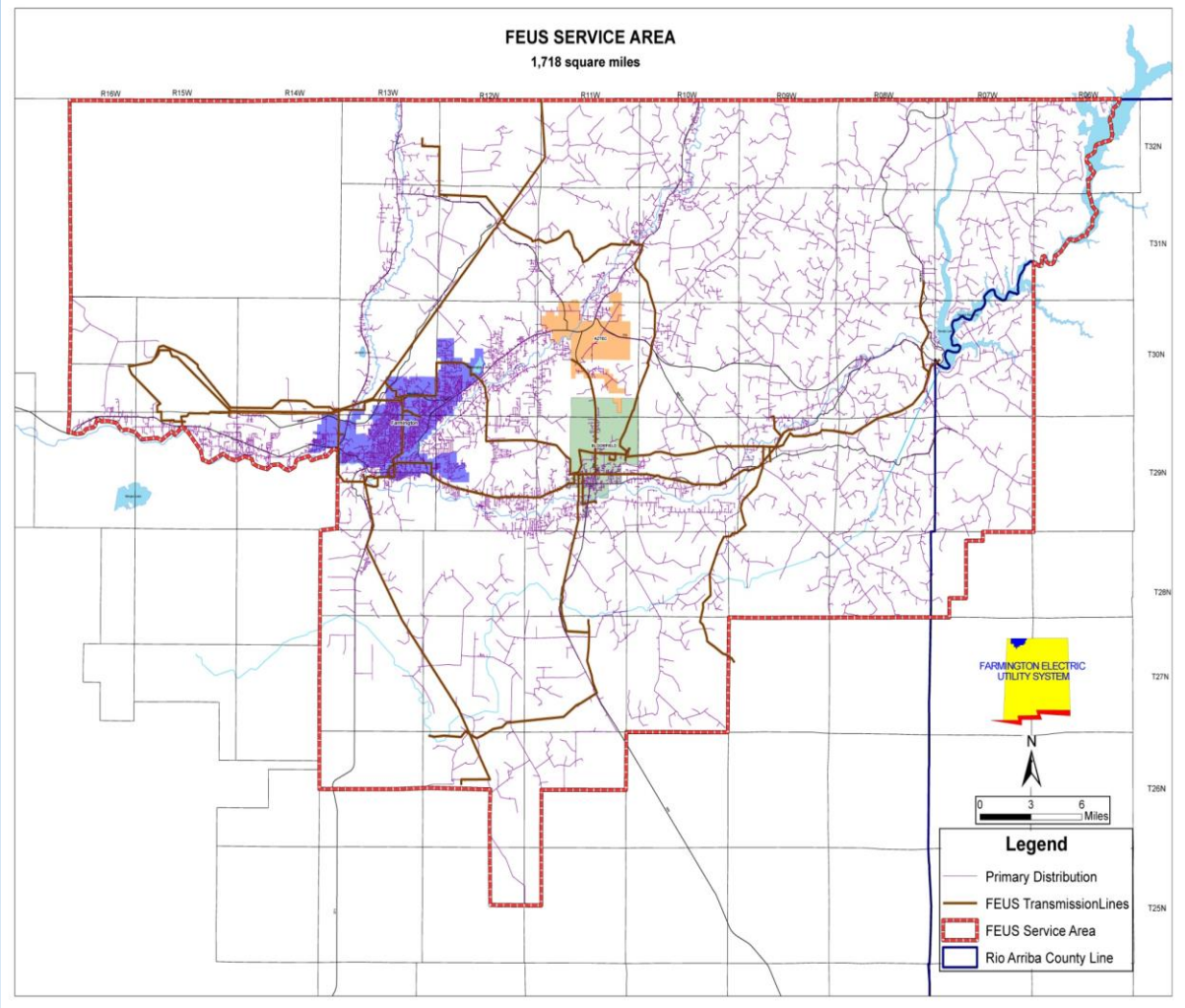
Electric Utility Director

Farmington Electric Utility System Mission

"Safely provide reliable, reasonably priced electricity with operational excellence, exceptional customer service and environmental stewardship."

Farmington Electric Utility System
Key Statistics

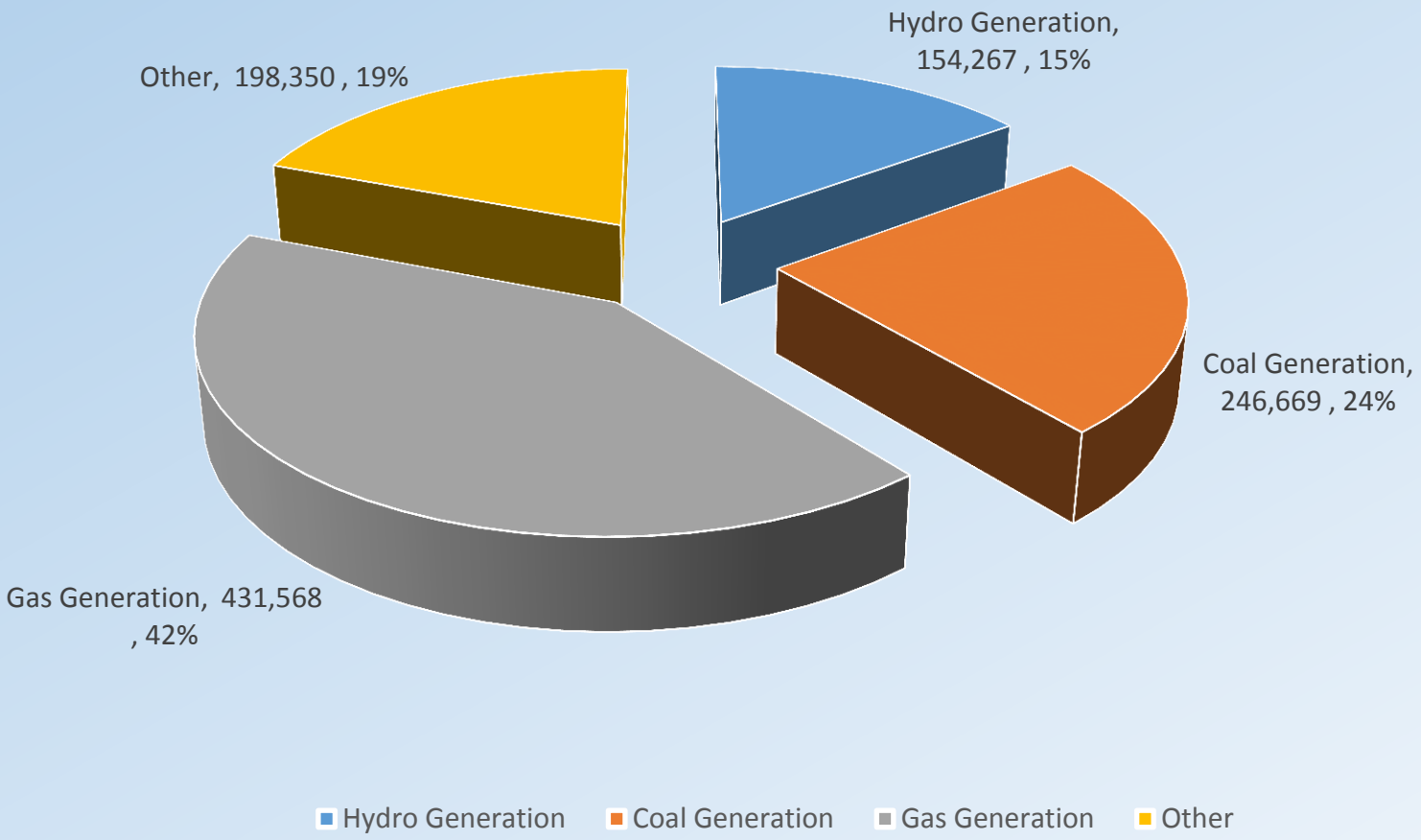
- Municipal Utility
- 178 Budgeted Employees
- 1,718 Square Miles of Service Territory
- 44,772 Metered Customers
- 263 Miles of Transmission Line
- 2,428 Miles of Distribution Line
- 35 Substations
- 4 Generation Plants



Residential rate comparison

	Residential General 500kWh Consumption Includes PCA and Riders	Rate Per kWh	% Higher than FEUS
La Plata Electric Co-op	$84.30	$ 0.1686	53%
APS	$73.50	$ 0.1470	33%
Continental Divide Co-op	$71.00	$ 0.1420	29%
SRP (Ave. Win/Sum)	$68.18	$ 0.1364	24%
Jemez Mountine Co-op	$66.13	$ 0.1323	20%
City of Aztec	$65.75	$ 0.1315	19%
PNM (Ave. Win/Sum)	$62.14	$ 0.1243	13%
SPS (Ave. Win/Sum)	$56.63	$ 0.1133	3%
Farmington Electric Utility	$55.14	$ 0.1103	

2019 FEUS Electric Power Resources

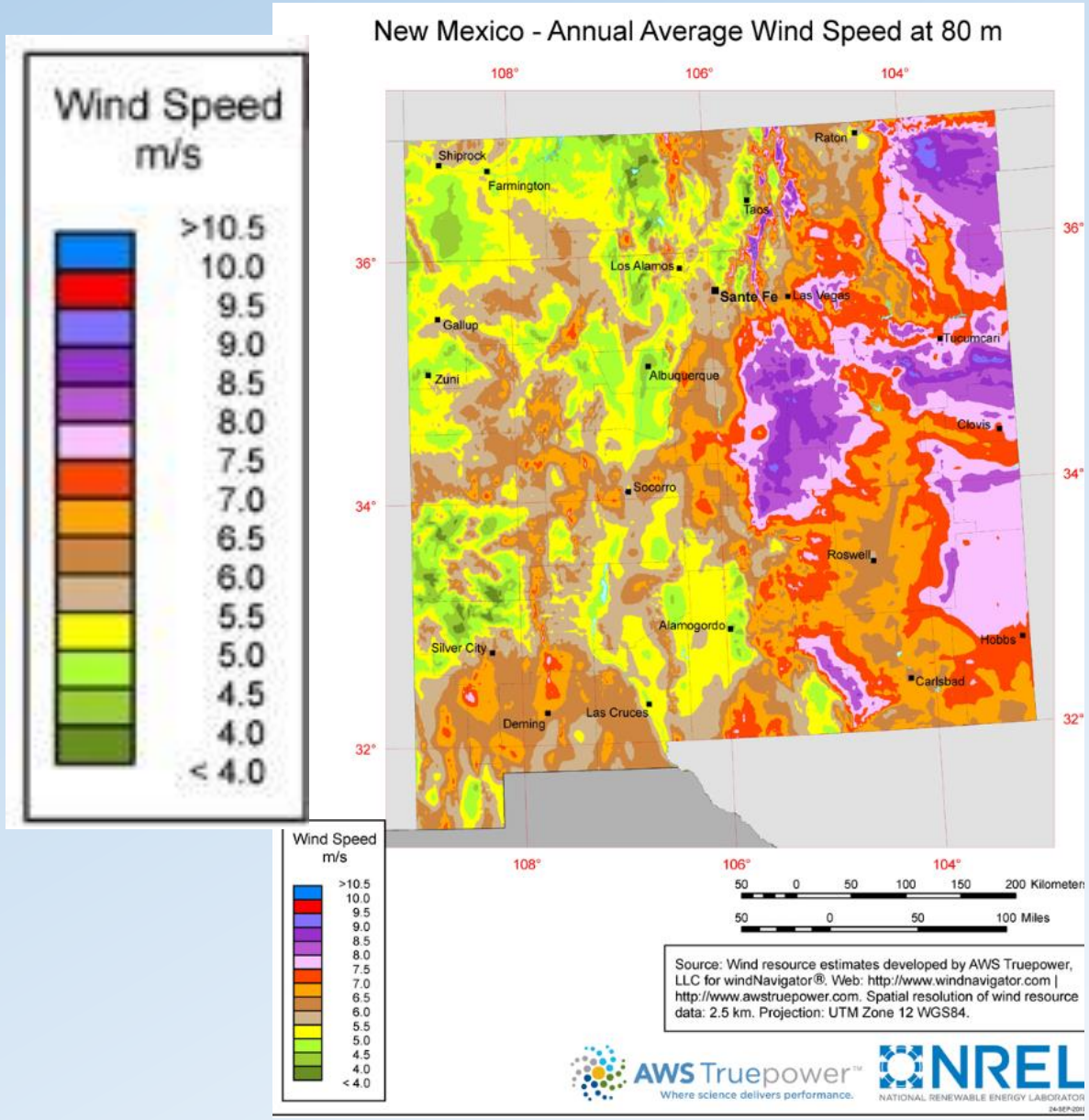


Diversification Thoughts Related to the San Juan Basin

- If coal is retired how are generation options determined for benefit within the San Juan Basin.
- Options for Replacement/Diversification of Energy Generation Supply become:
    - Wind
    - Hydro Pumped Storage
    - Solar
    - Geothermal
    - Gas

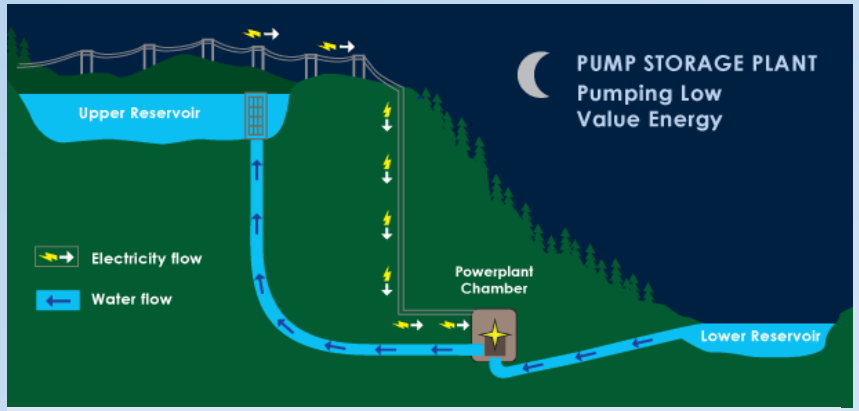
Wind

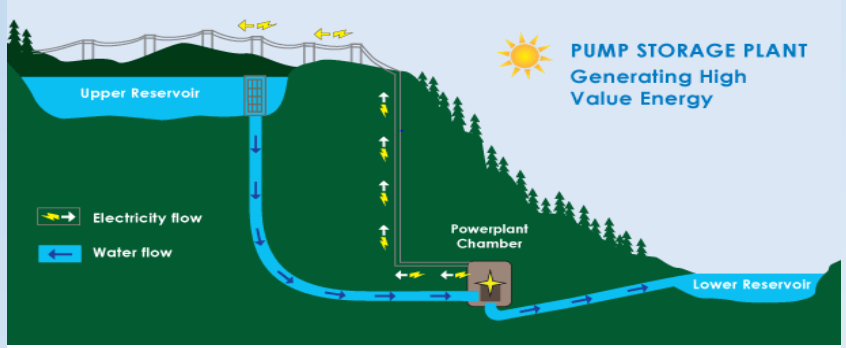
- Low wind speed averages for the region.
  - Utility-scale wind power plants require minimum average wind speeds of 6 m/s (13 mph). *http://www.culturechange.org/wind.htm*
- Limited options for utility scale installation.

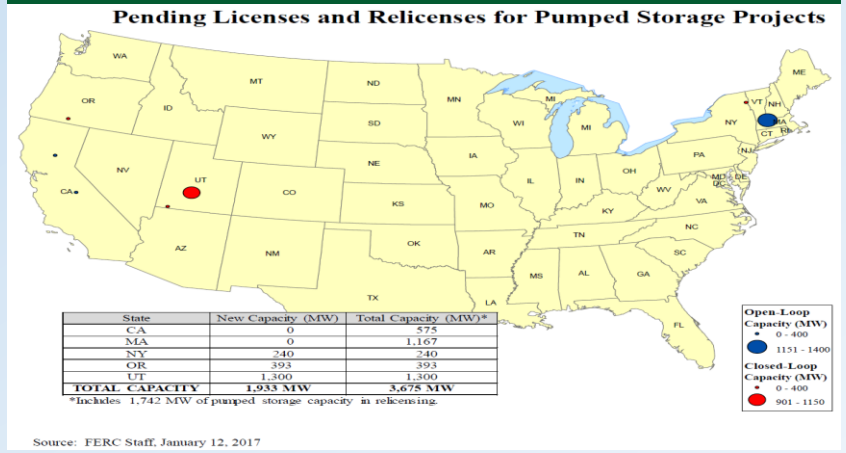


Pumped Storage

- Likely a good candidate based on topography of the area.
- Likely limited amount of installation based on interest.
- Allows load balancing, and reserve capabilities.







State	New Capacity (MW)	Total Capacity (MW)*
CA	0	575
MA	0	1,167
NY	240	240
OR	393	393
UT	1,300	1,300
TOTAL CAPACITY	**1,933 MW**	**3,675 MW**

*Includes 1,742 MW of pumped storage capacity in relicensing.

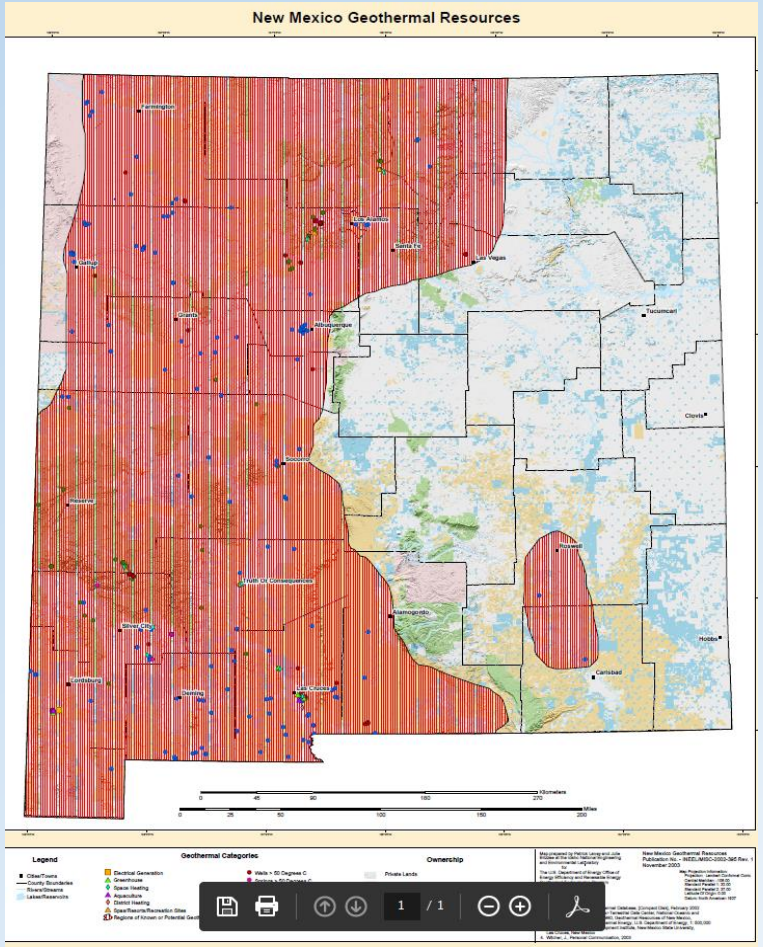
Solar

- Good candidate location for solar installation.
- Limited personal property in relation to public land. Less than 10% San Juan County
- Limited levelized manpower. Does not replace job loss.


San Juan Regional Medical Center Solar Facility

Geothermal

- Is a possibility. (Shading areas of know geothermal resources.) Good capacity factors.
- Likely would be binary or flashed Closed loop design.
- More studies would be needed on viability of resource from an engineering standpoint. And capability on a utility scale.
- Economic evaluation would then be needed for market viability.



NM Geothermal Resources Publication No. INEEL/MISC-2002-395 Rev. 1 November 2003

Gas

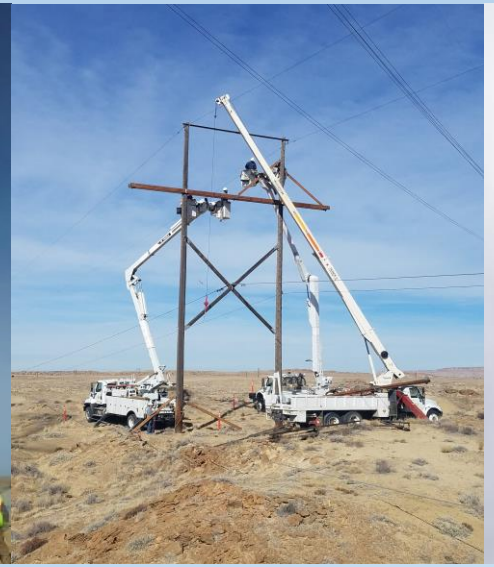
- Largest Interest that has been seen in the area from a FEUS perspective.
- Many projects in consideration/evaluation phases.
- Resource readily available in the region and reduces transportation costs.
- Higher elevation does effect efficiency of some designs, but can be offset based on size of installation. Example large frames with good heat rate.


Bluffview Power Plant, Farmington, NM

Farmington Specific Perspective on San Juan Generating Station Retirement

- FEUS Recently completed an integrated resource plan related to its generation portfolio.
- As a small municipal utility portfolios were evaluated to reduce Stochastic (probability) analysis to 9 portfolios.
- Analysis was performed with assumptions of a San Juan Generating Station (SJGS) year 2022, and year 2027 retirement of Unit 4. FEUS owns 43MW of capacity from this unit.
- The preferred portfolio based on cost, risk, environmental aspects, and operational aspects performed the best under a variety of uncertainties. It was: Installation of 19MW of reciprocating engines in the short term, installation of a 58 MW gas combined cycle plant in when the SJGS retires, and installation of 5 MW of solar in the long term.
- When comparing the two portfolios the end result is a net present value benefit in comparison of $20M for the station to continue operation. Many changes have happened since 2016 when the numbers were first evaluated. This resulted in a rerun of the 2 preferred scenarios, with the benefit being $27M now with new information.
- Reason for continued operational benefit is with a small utility, replacement power generation builds can be expensive based on scale. Deferring capital expense is an improved benefit. Also FEUS has invested into the operation of Unit 4. There remains $26M of assets ($32M if Salvage estimates are not realized) that has been invested that we will not see the full benefit of if SJGS Retires.
- Hence at the direction of the mayor/council to FEUS, we have provided notification of preference of continued operation of SJGS to participant owners.

San Juan County Perspective on Replacement Energy

Questions?

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CITY OF FARMINGTON
NM