



City of Grand Island

Tuesday, August 2, 2022

Study Session

Item -1

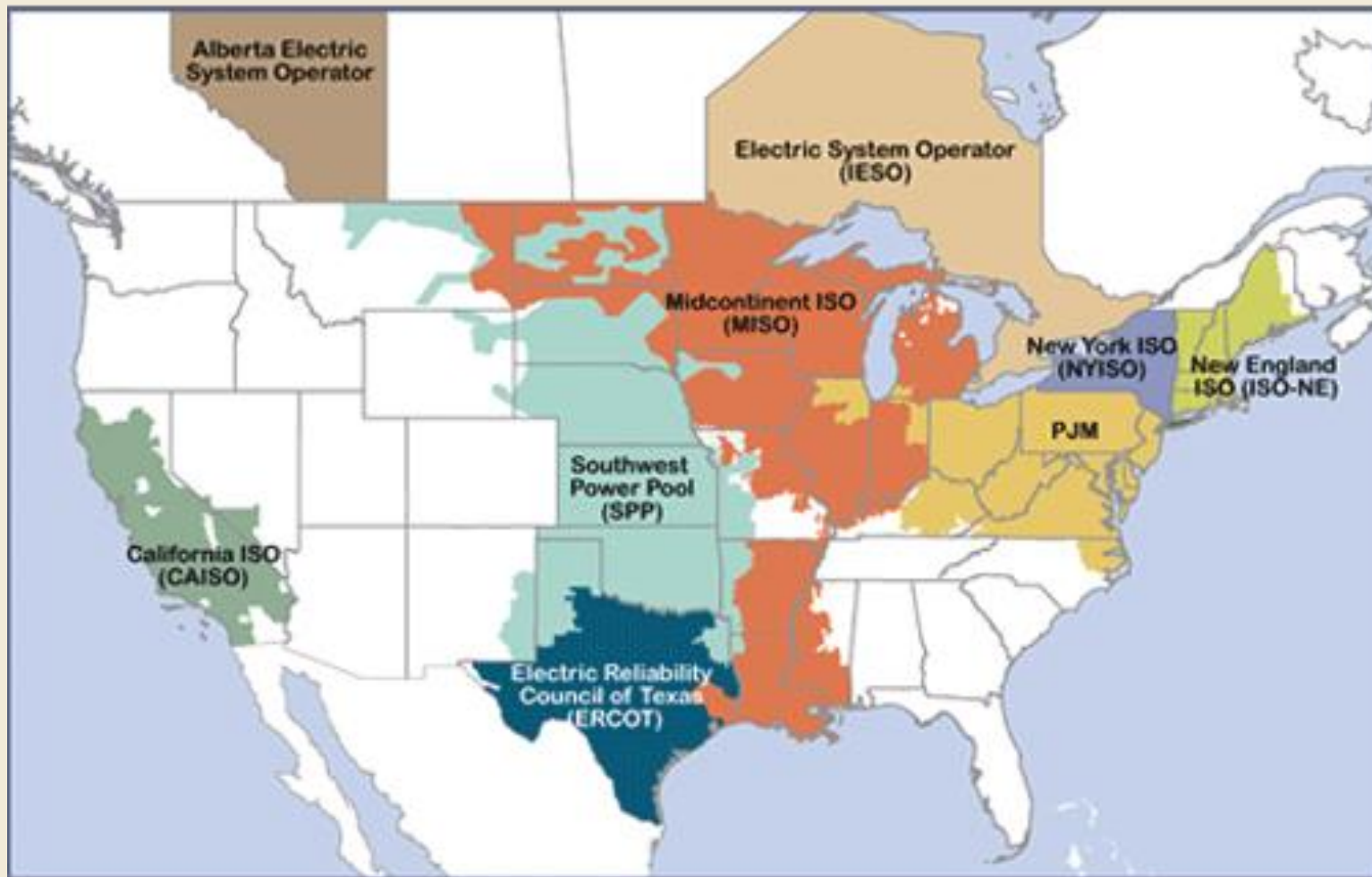
Southwest Power Pool Overview

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Southwest Power Pool Overview

Study Session
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- The Federal Energy Regulatory Commission (FERC) encouraged the voluntary formation of Regional Transmission Organizations (RTO) to administer the transmission grid on a regional basis throughout North America (including Canada). The purpose of the RTO is to promote economic efficiency, reliability, and non-discriminatory practices while reducing government oversight.



Generation: Capacity vs. Energy

Capacity

The amount of power a generating resource is producing at a single point in time, expressed in units of megawatts (MW).

Energy

The amount of power a generating resource produces over a time, expressed in units of megawatt-hours (MWh).

Capacity/Energy Examples

- ➊ A resource with a rated **capacity** of 100 MW, operating at its full rating for 4 hours, would produce **energy** equivalent to the following:

$$100 \text{ MW} \times 4 \text{ hours} = 400 \text{ MWh}$$

- ➋ A resource with a rated **capacity** of 100 MW, operating at 50% of its full rating (50 MW) for 4 hours, would produce **energy** equivalent to the following:

$$50 \text{ MW} \times 4 \text{ hours} = 200 \text{ MWh}$$

Generation: SPP Capacity Requirements

Nameplate Capacity


The capability of a generating resource at its full rated output.

Accredited Capacity

Under SPP rules, each utility must secure **accredited capacity** equal to at least their peak load plus a 12% reserve margin.

Grand Island Generation Units

Grand Island Units


-  Platte Generating Station - 100 megawatt (MW) Coal

-  Burdick Station

 -  GT-1 - 13.8 MW Natural Gas/Oil

 -  GT-2 - 34 MW Natural Gas/Oil

 -  GT-3 - 34 MW Natural Gas/Oil

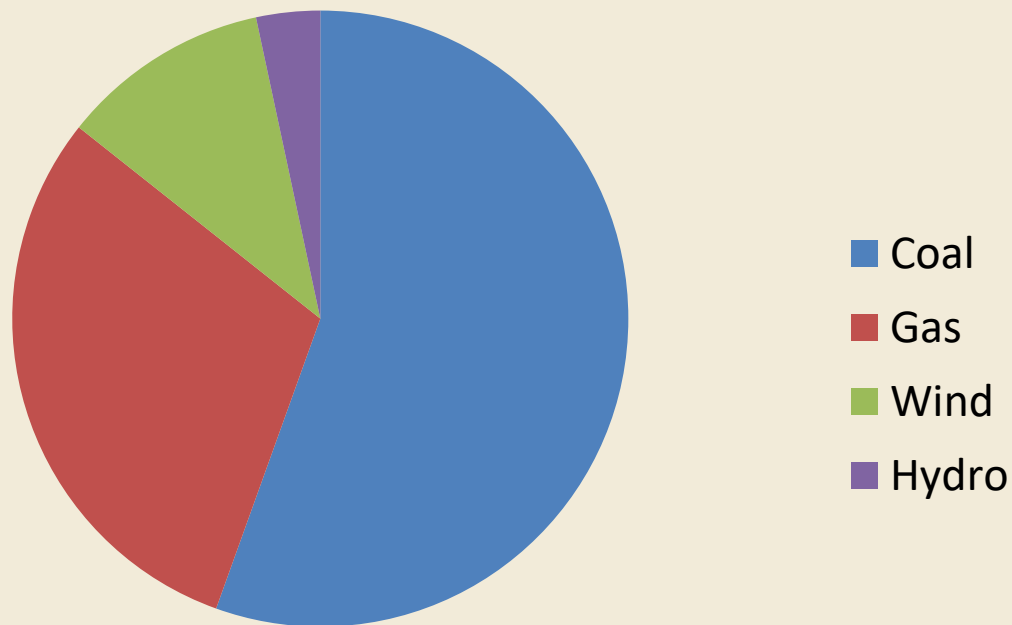
-  Nebraska City 2 - 35 MW Coal

-  Whelan 2 - 15 MW Coal

Grand Island Renewable Generation

- NPPD Power Purchase Agreements with GIUD participation agreements
 - Ainsworth – 1 megawatt (MW)
 - Elkhorn Ridge – 1 MW
 - Laredo Ridge – 1 MW
 - Broken Bow – 1 MW
 - Springview 2 – minimal output – access to data
- Prairie Breeze III (Elgin) – 35.8 MW
- Museum Road Solar – 1 MW
- Western Area Power Association Hydro – 5 to 7 MW

GIUD Generation Ratio

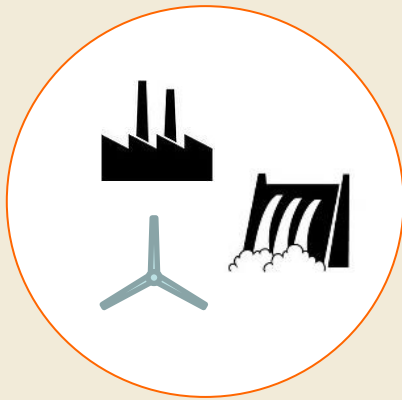


GIUD Capacity

- GIUD Accredited Capacity = 232 MW
- GIUD Current Peak Load = 151 MW
- GIUD Required Capacity (+12%) = 170 MW

Historical Utility Operations

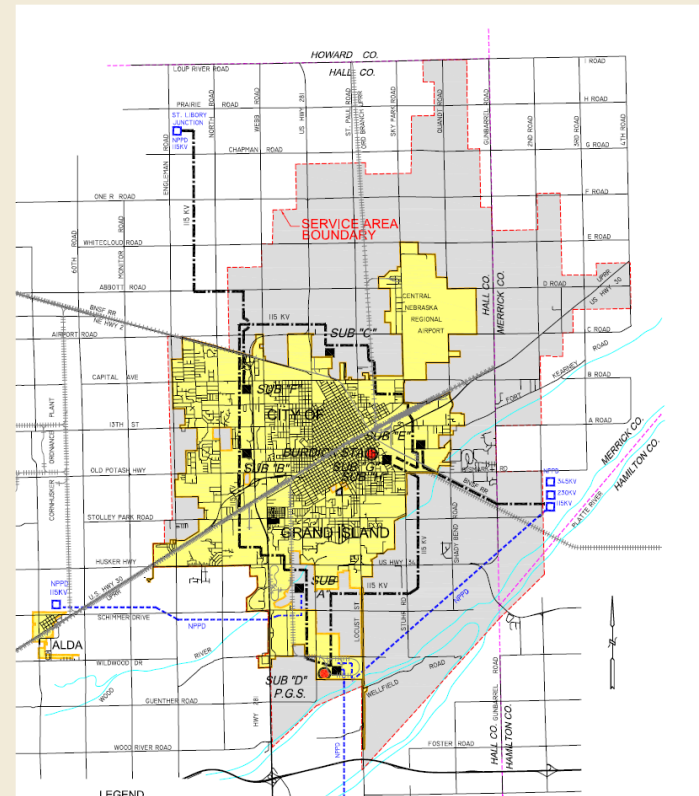
UTILITY GENERATION



ENERGY SALES



UTILITY LOAD



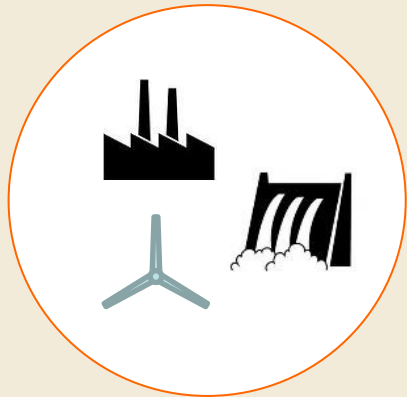
ENERGY PURCHASES

SPP Energy Market

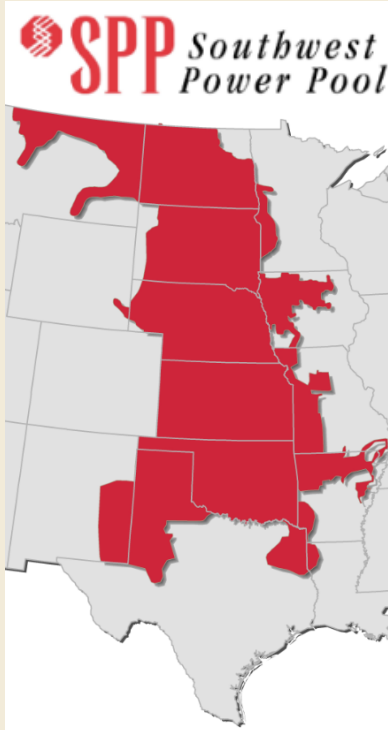
- A utility's portfolio must be constructed to fulfill SPP capacity requirements, but the portfolio's standing in the SPP market goes a long ways toward determining its economic viability.
- Unless out of service, each of a utility's resources must be offered to serve the SPP energy market.

Operations within the Southwest Power Pool (SPP)

UTILITY GENERATION



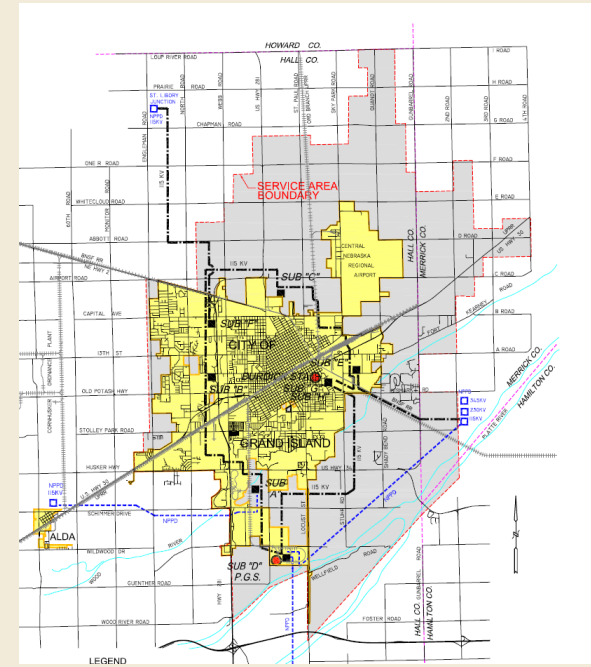
ENERGY
SALES



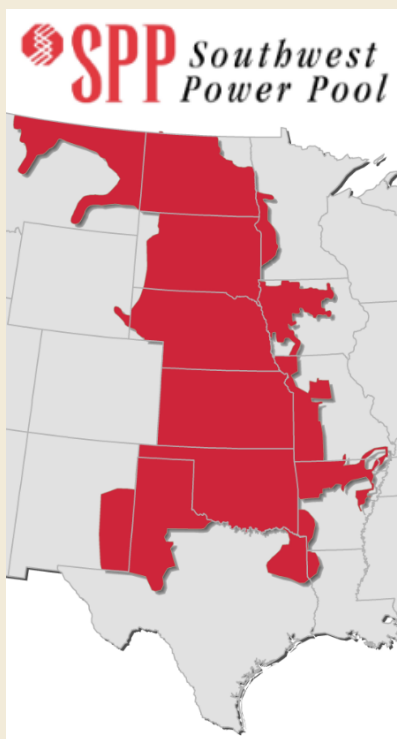
ENERGY
PURCHASES



UTILITY LOAD



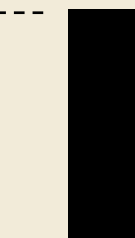
SPP Market Operations



HIGH COST
GENERATION

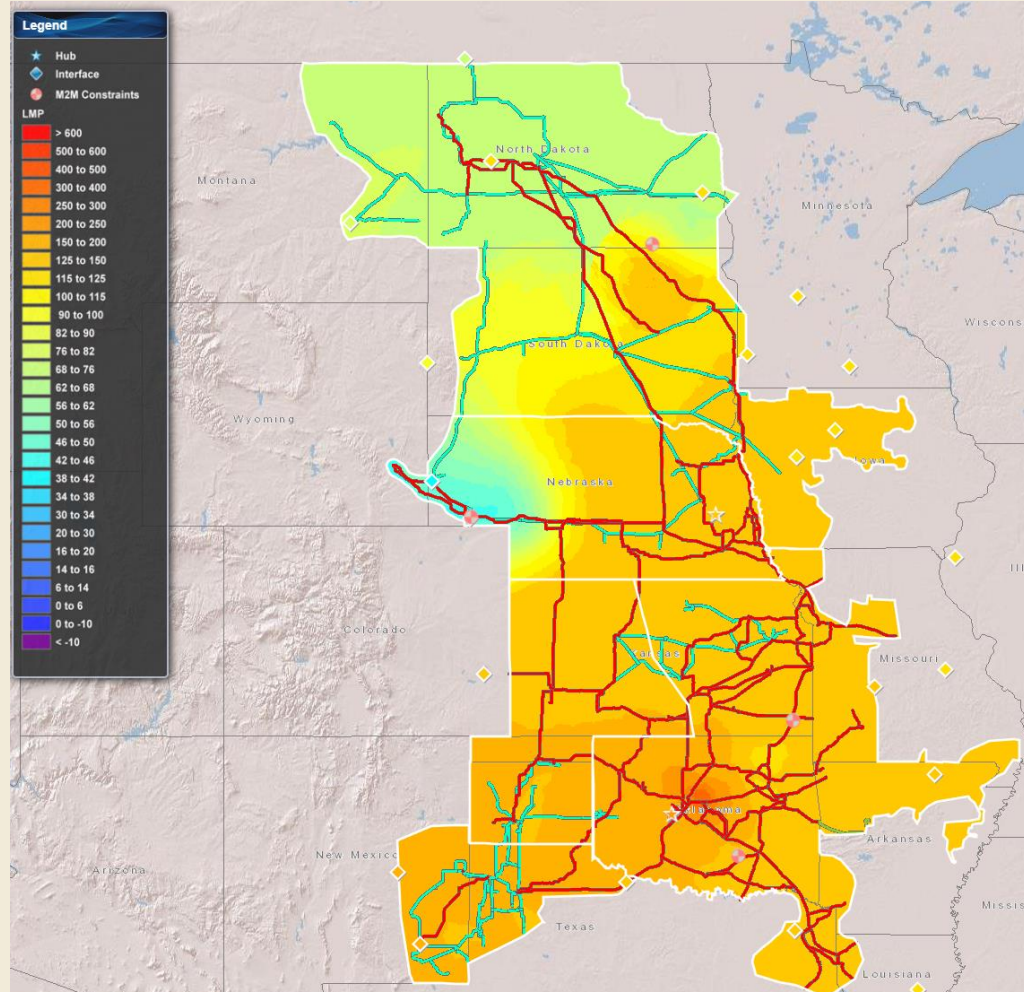
LOW COST
GENERATION

MARKET
PRICE

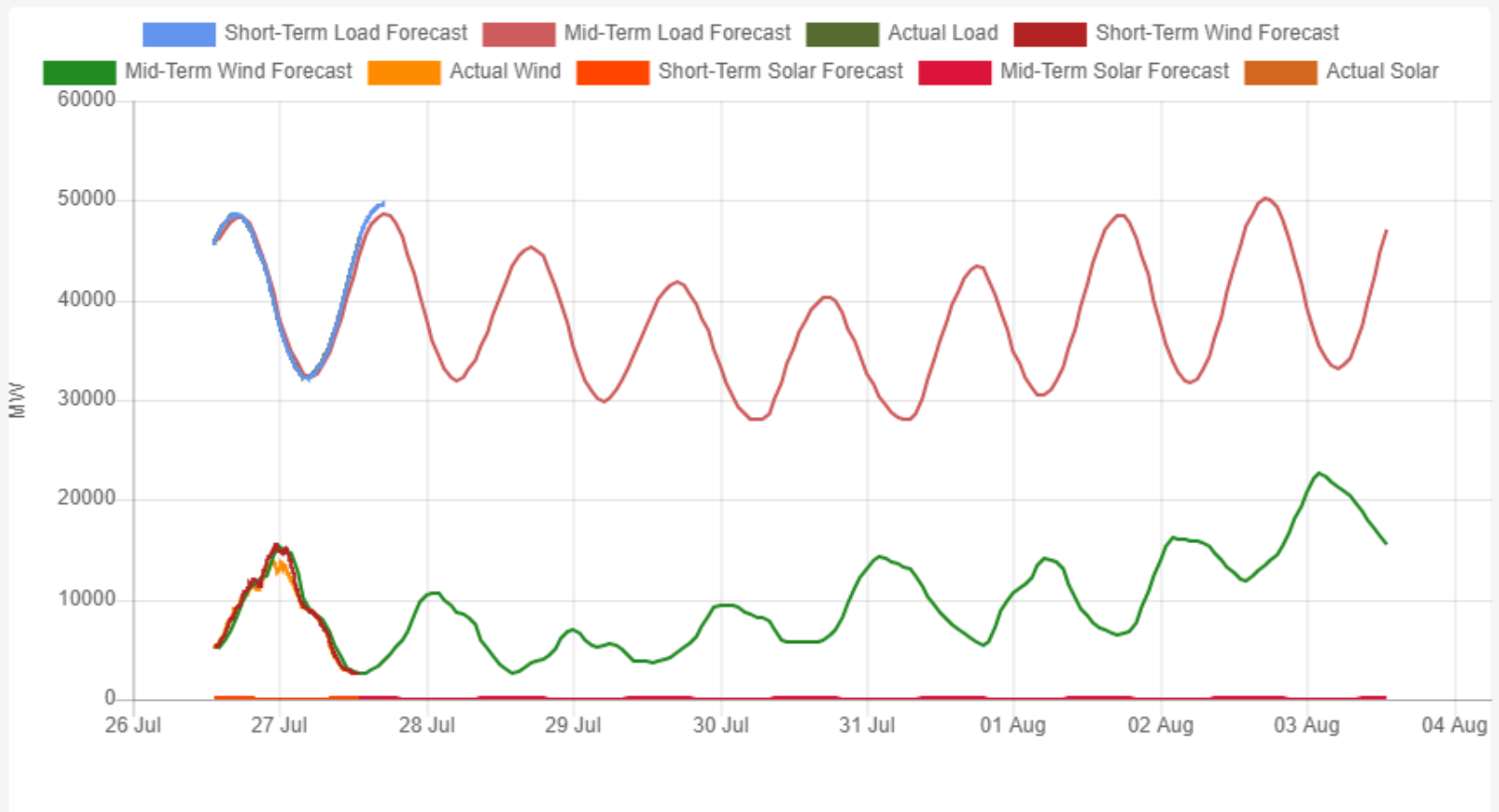


SPP LOAD

SPP Price Contour



SPP Forecast



Questions?