# 2021 SPS New Mexico Integrated Resource Plan: 4th Public Advisory Meeting

March 23, 2021

# Topics For Discussion

- Coal Supply
- Tolk Station Water Supply
- Gas & Power Market Price Forecasting
- Questions and Discussion
- Next Meeting Topics
- Final Public IRP Meeting

# COAL SUPPLY PRESENTATION

**Dana Echter**

**Manager, Fuel Supply Operations**

March 23, 2021

# HARRINGTON STATION

Location: near Amarillo, Texas

- Three coal-fired units: ~1,050 net MW
- Coal sources
  - Low-sulfur Powder River Basin ("PRB") coal mines - North Antelope Rochelle, Antelope and Black Thunder
- Rail Transportation: Burlington Northern Santa Fe (BNSF)
- Trestle unloading system
- 2020 consumption: ~2.1 million tons
- All three units will be converted to gas no later than January 1, 2025

# TOLK STATION

Location: near Muleshoe, Texas

- Two coal-fired units: ~1,082 net MW
- Coal sources
  - Low-sulfur Powder River Basin ("PRB") coal mines - North Antelope Rochelle, Antelope and Black Thunder
- Rail Transportation: Burlington Northern Santa Fe (BNSF)
- Rotary unloading system
- 2020 consumption: ~1.1 million tons

# SPS CONTRACT INFORMATION

TUCO, Inc.

- TUCO is a third-party supplier responsible for managing contracts with coal suppliers, rail transportation and coal handling.
- SPS purchases coal from TUCO at the plant bunkers
- Xcel Energy's Fuel Supply Operations manages the TUCO contract
- The TUCO contracts expire on Dec 31, 2022. These may be extended to coincide with the conversion of Harrington to natural gas.

# TUCO COAL CONTRACT INFORMATION

- Coal suppliers are Peabody Energy (North Antelope Rochelle), Cloud Peak Energy (Antelope) and Arch Coal (Black Thunder)

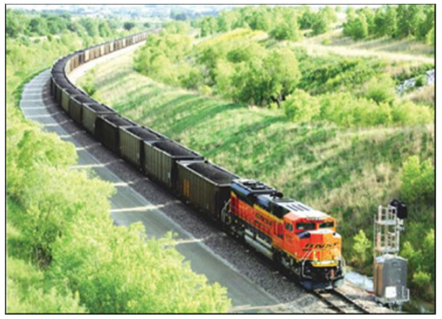
- Coal contracts are fixed price, term and quantity

- Coal supply agreements are short term and expire before the TUCO agreements

# TUCO TRANSPORTATION CONTRACT INFORMATION

Transportation

- Tolk and Harrington served by BNSF Railway
- The Harrington rail agreement expires in Dec 2022
- The Tolk rail agreement expires in Dec 2022
- Include Mileage Based Fuel Surcharges

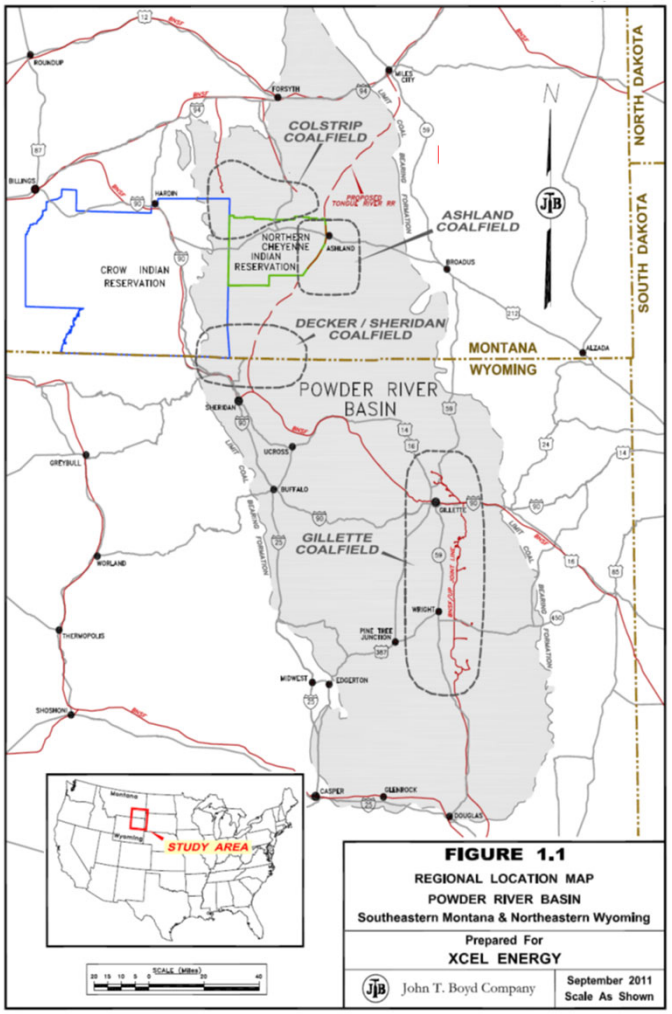


Railcars

- Railcars are provided by long-term lease held by TUCO and expire concurrently with the TUCO Coal Supply Agreements

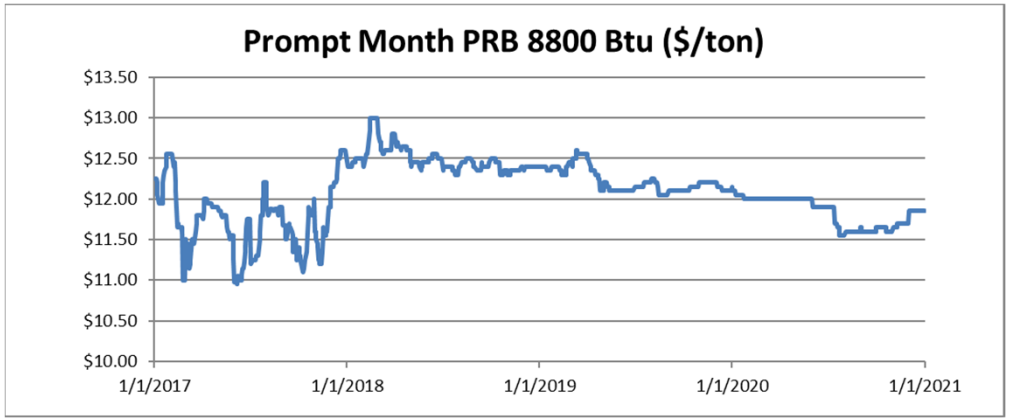
# POWDER RIVER BASIN

- Roughly 300mi x 100 mi
- USGS
  - 140 billion tons of resources in areas of most interest
  - 77 billion tons in Gillette Coalfield alone



# PURCHASE STRATEGY

- Current market is approximately $11.90/ton for 8,800 Btu/lb PRB coal FOB mine




- Keep relatively large open position to be able to react to changes in system operations
- Target is by December, purchase ~60% of upcoming year requirements, ~30% for 2nd year and ~15% for 3rd year.

# TOLK STATION WATER SUPPLY

**Richard L. Belt, P.E., P.H. – Director, Chemistry & Water Resources**

**March 23, 2021**

# Definitions & Background

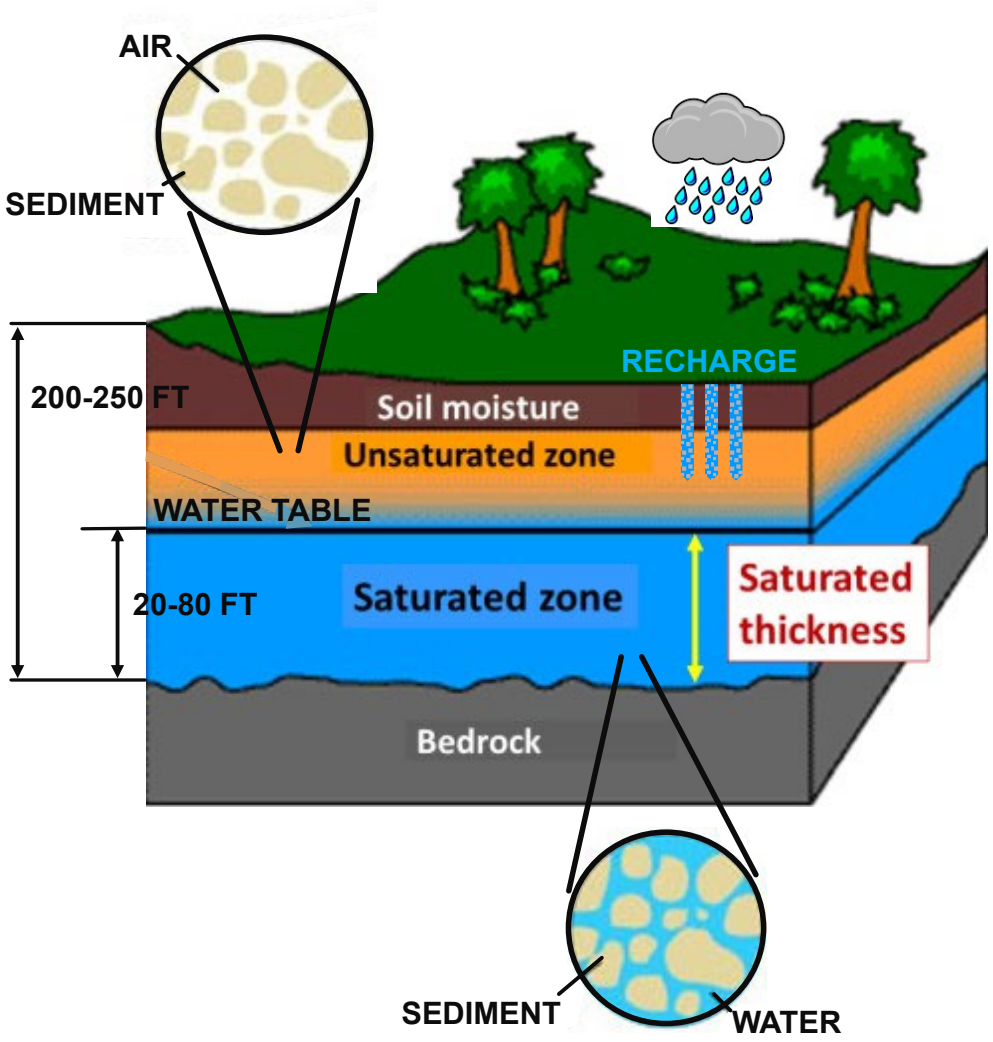
An **aquifer** is a geologic formation which is saturated with water.

The **water table** divides the saturated & unsaturated zones.

**Saturated thickness** is the thickness of the aquifer from bedrock to water table.

**Recharge** is excess water which may percolate to the saturated zone. There is very little aquifer recharge in this part of the Ogallala Aquifer.

High Plains Underground Water District No. 1 is abbreviated as HPWD, throughout.



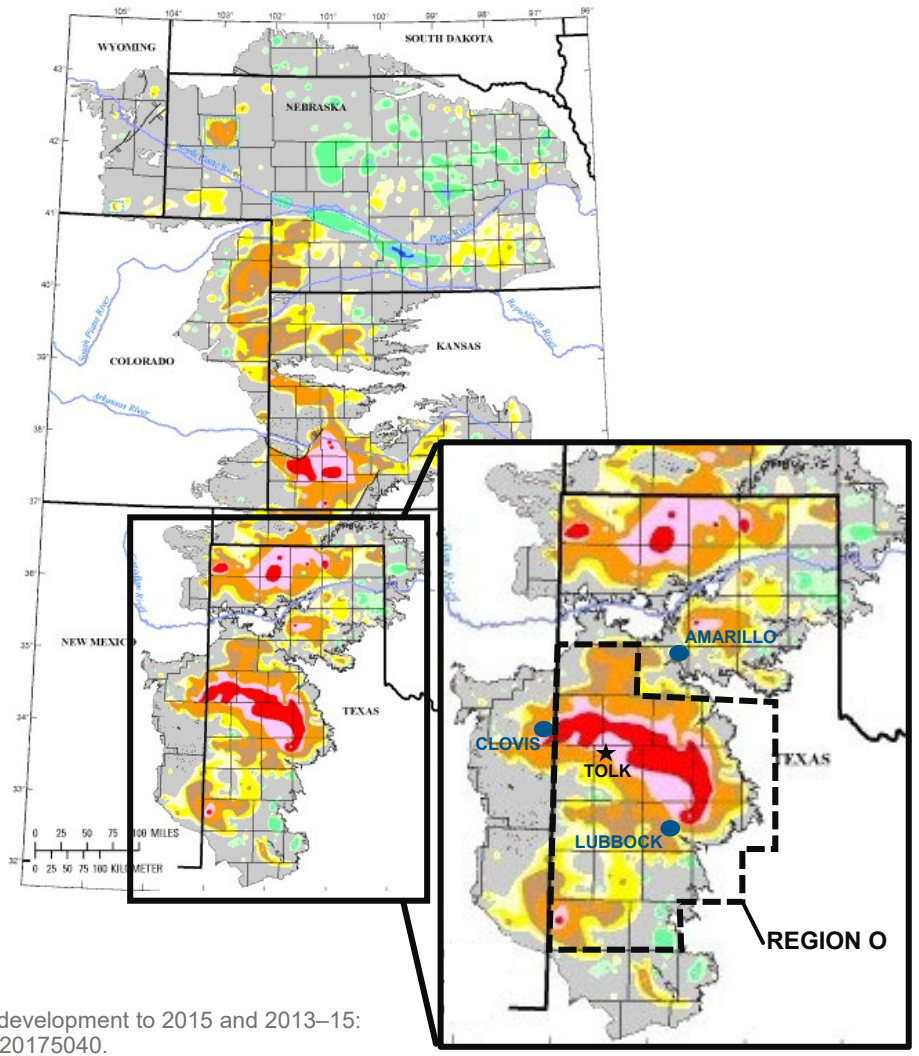
# Ogallala Aquifer Overview

The **Ogallala Aquifer** is one of the largest freshwater aquifers in the world, formed 2M to 6M years ago.

Water filled the aquifer following the most recent ice age and probably earlier.

The Ogallala underlies 8 states and 27% of irrigated land in the U.S.

The aquifer supplies more than 80% of the potable water for 2.3M people residing and working in the lands overlying it.

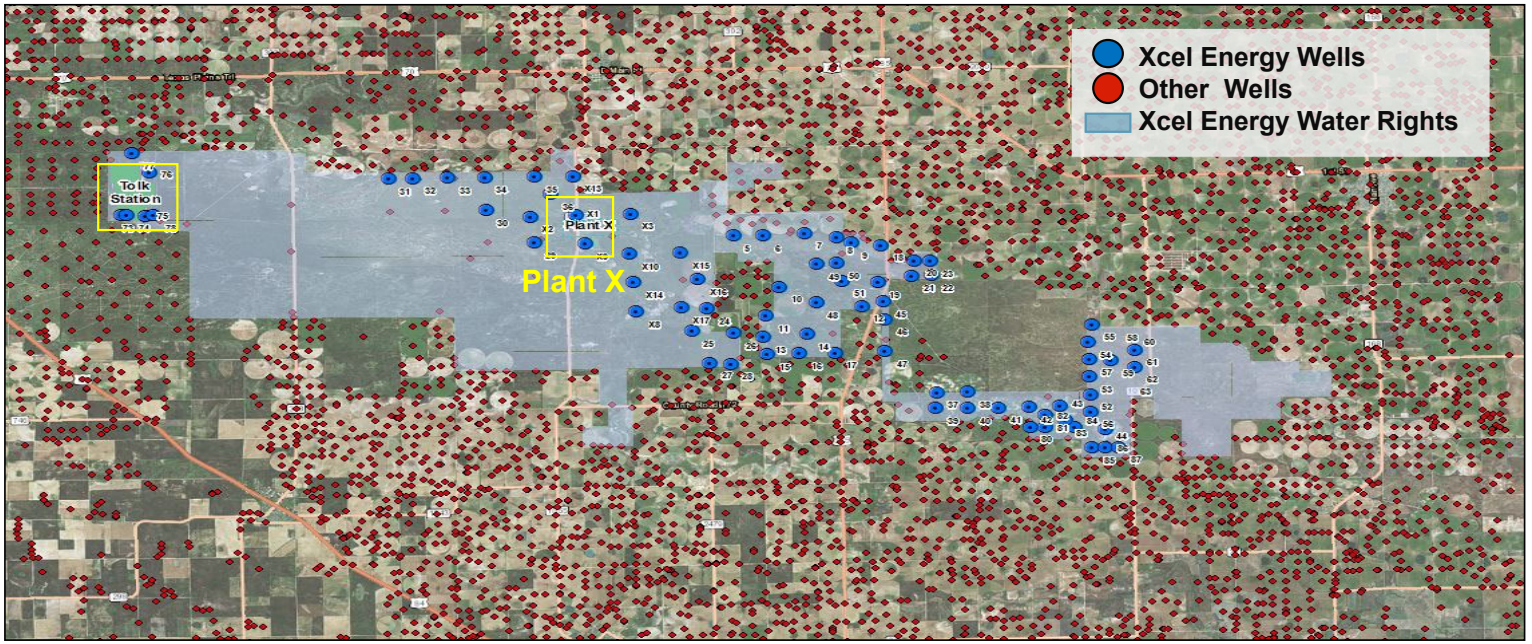



McGuire, V.L., 2017, Water-level and recoverable water in storage changes, High Plains aquifer, predevelopment to 2015 and 2013–15: U.S. Geological Survey Scientific Investigations Report 2017–5040, 14 p., https://doi.org/10.3133/ sir20175040.

# Competition for Water

**Wellfield overview:**

- 50K ac wellfield
- 89 production wells
- ~30 miles from furthest well to Tolk Station




**High Plains Underground Water District No. 1 (HPWD) groundwater production rules limit all users to 18-inches per acre per year.**

**Tolk water use in 2020 equal to approximately 1.29 inches per acre.**

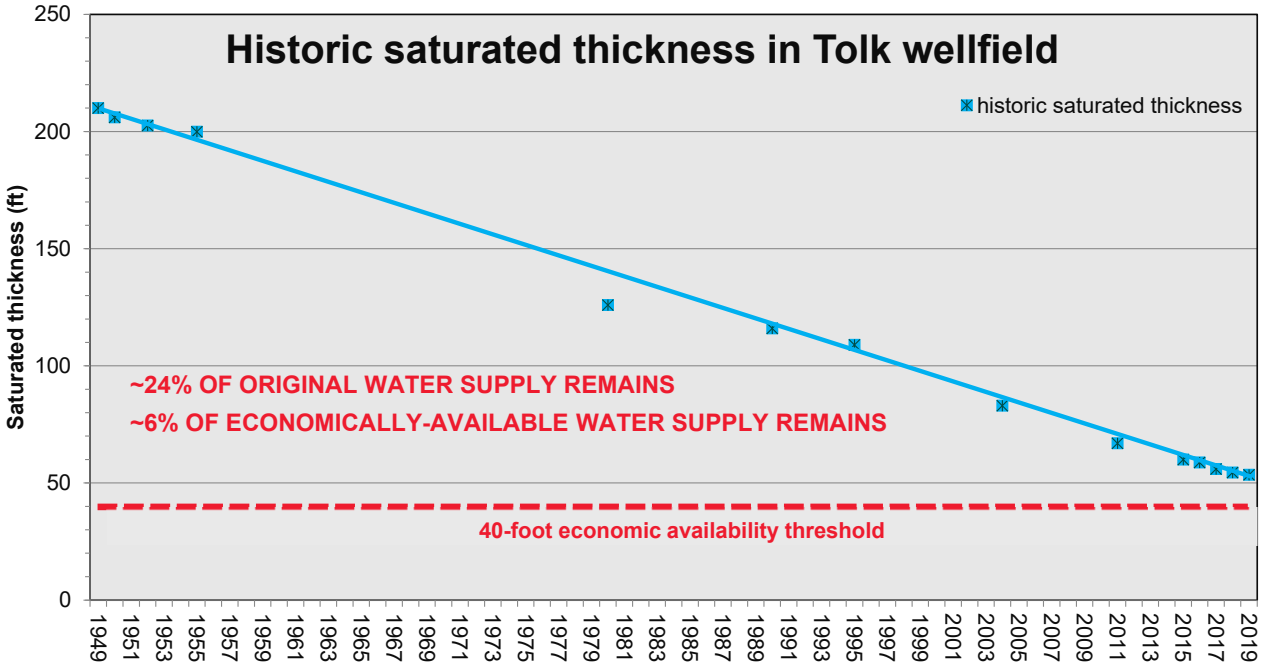
# Tolk Wellfield History

**In Lamb County (HPWD, 2020):**

- 50-ft average saturated thickness
- 13.7-ft average decline since 2010

**Texas Water Development Board Region O planning area:**

- 1.7 million acre-foot annual shortage by 2020
- 2.1 million acre-foot annual shortage by 2070



# Groundwater Production Issues

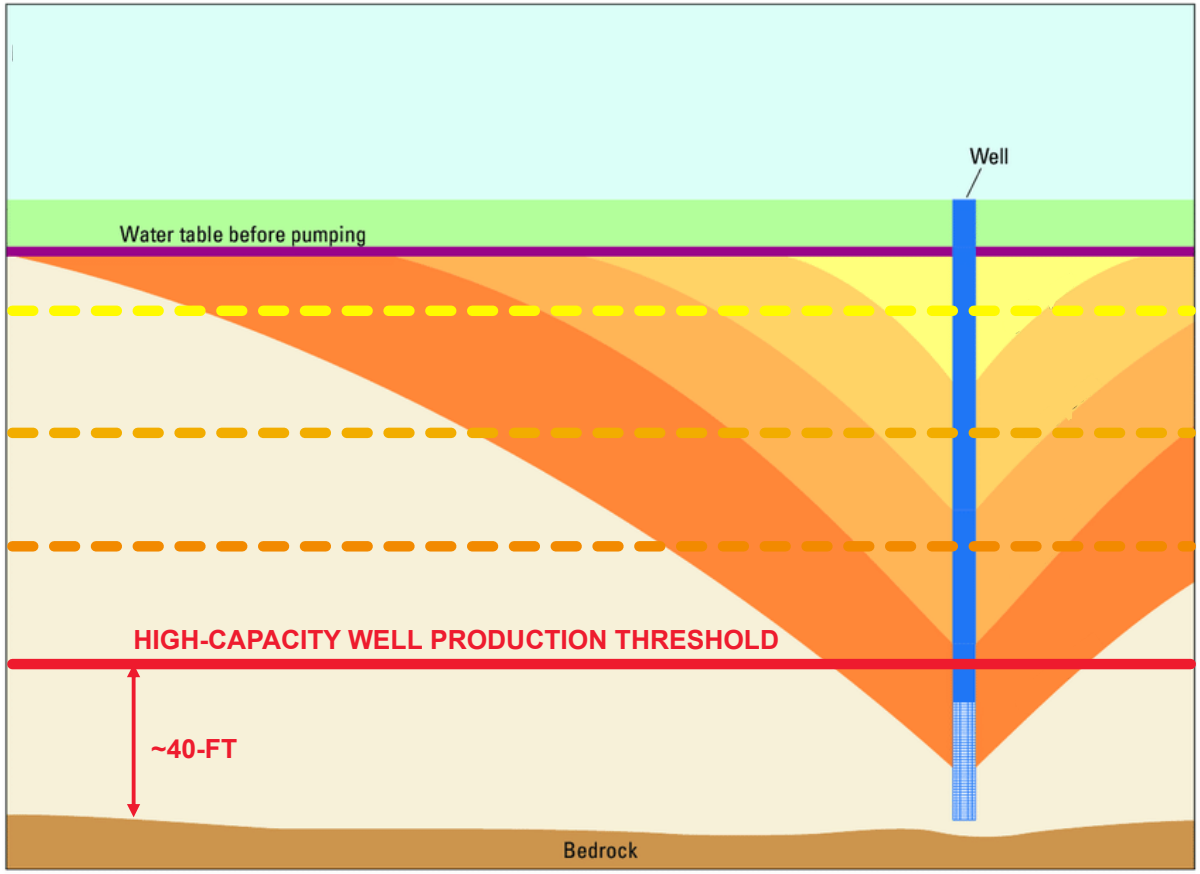
**Each well creates a cone of depression when pumped.**

**Over time, the cone gets deeper until the well is inoperable.**

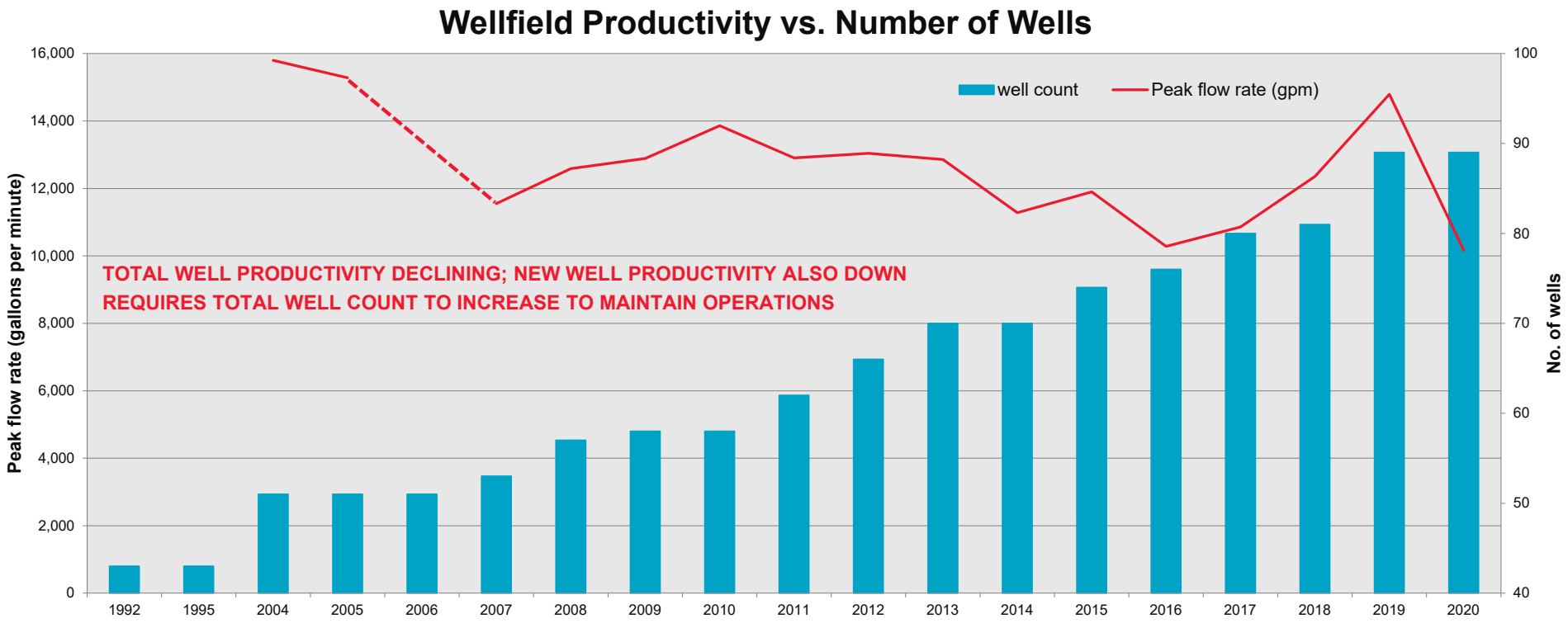
**Multiple wells operating nearby create overlapping cones, drawing down the regional water table.**

**At about 40-ft, high-capacity wells become ineffective => multiple low-capacity wells needed to replace**

**Milkshake analogy.**



# Wellfield Decline



# Tolk Station Plan

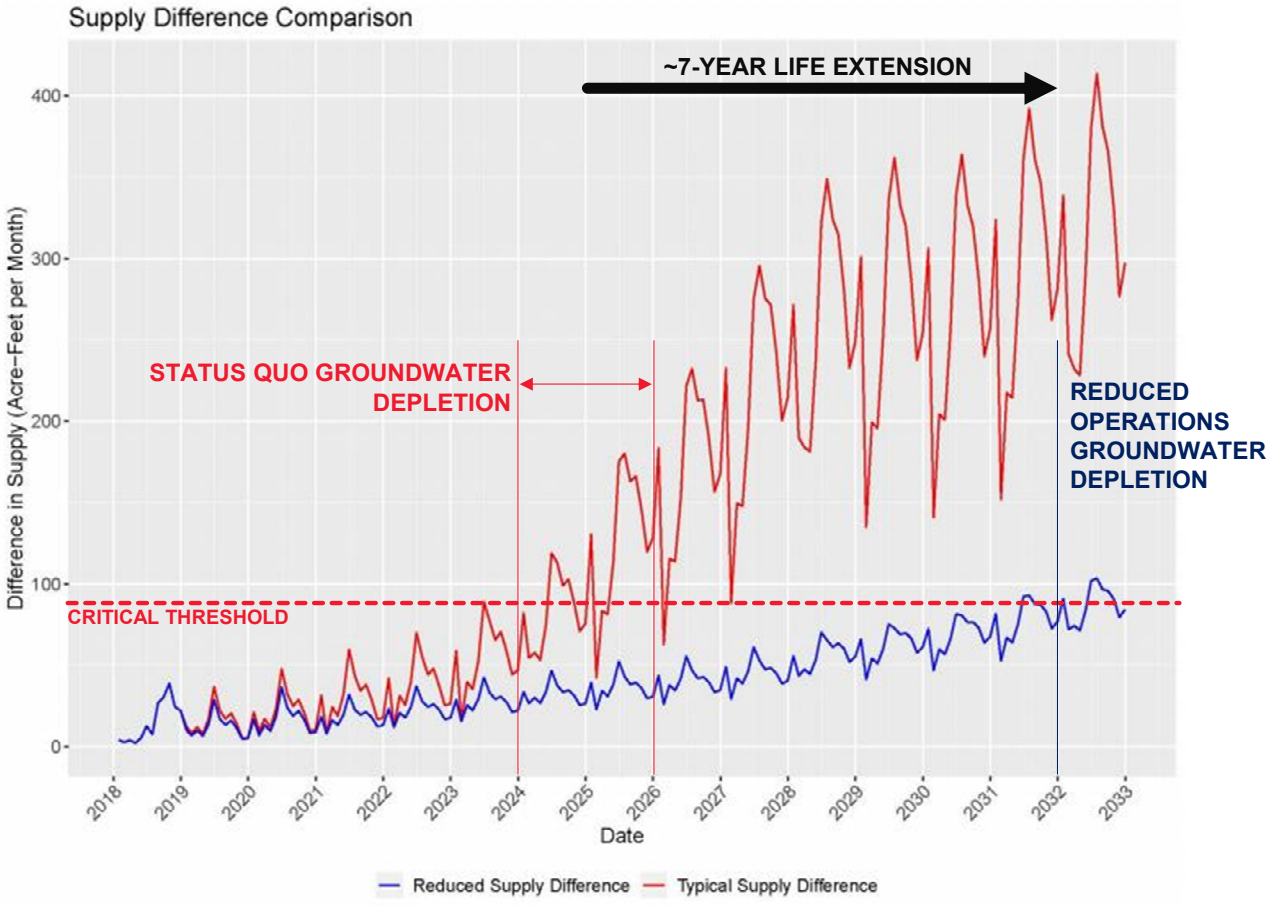
**SPS implemented seasonal generation operations in 2019 to extend plant life to ~2032.**

**Synchronous condensers installed in 2020.**

**Annual groundwater model update to monitor impact of Tolk actions & 3rd party water users.**

**Remaining model uncertainty:**

- Water use by 3rd parties (agriculture)
- Future weather (drought)
- Future electric system requirements



# GAS AND POWER MARKET PRICE FORECASTING

**March 23, 2021**

# Natural Gas Forecasting Methodology

Xcel Energy derives the forecast of natural gas prices semi-annually in spring/fall

Henry Hub Forecast is an average of three consultants' long-term forecasts and the current NYMEX strip

The forecast is fully market based for the first few years, then it transitions into blending NYMEX with the consultants' long-term forecasts as follows:

| Period | NYMEX | IHS | S&P Global | Wood Mackenzie |
|---|---|---|---|---|
| Balance of the year + 2 years | 100% | 0% | 0% | 0% |
| Years 3 and Beyond | 25% | 25% | 25% | 25% |
| | 10 yr trendline extension | | | |

# Consultants' Modeling and Assumptions Differ

- Natural gas supply and demand
- Coal retirements
- Renewable penetration
- Technology improvements
- LNG exports
- Gas pipelines

# Natural Gas Delivered Price

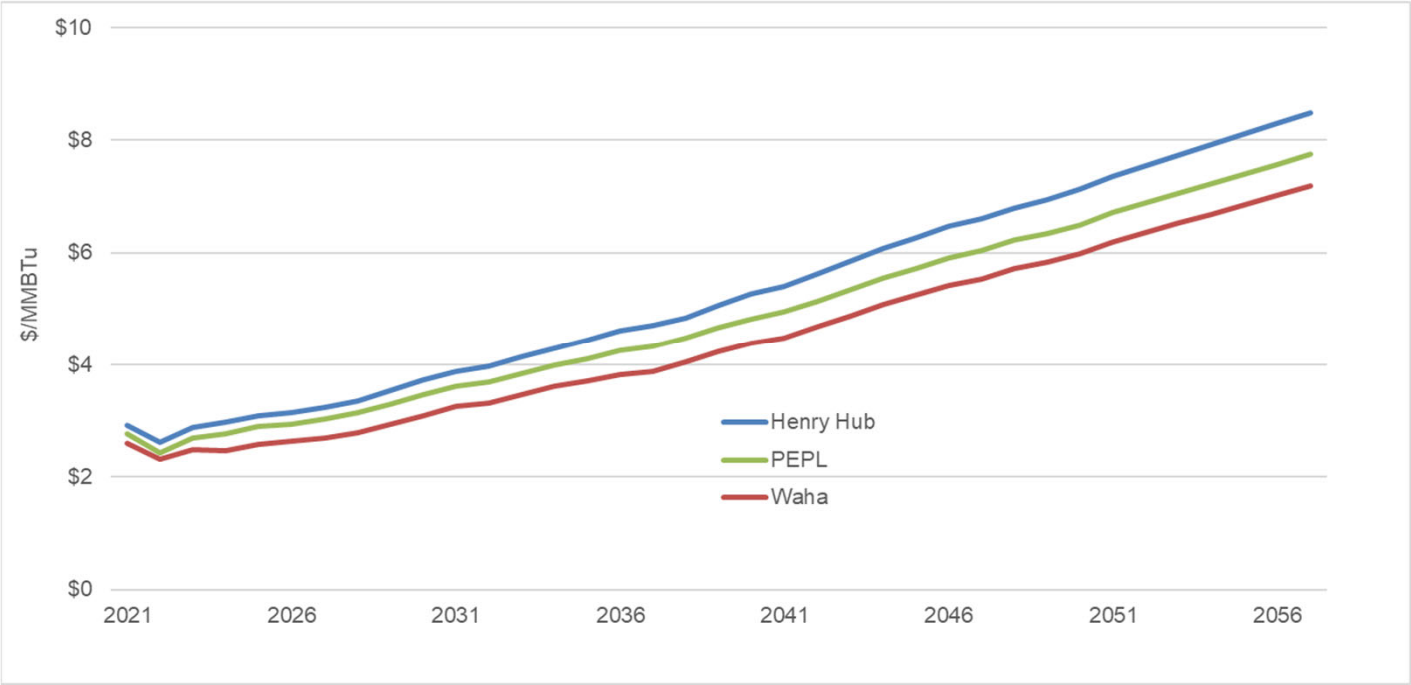
Basis differential is the difference in the gas price at a given hub compared to a benchmark location (Henry Hub)

Henry Hub is adjusted for regional basis differentials and specific delivery costs for each generating unit to develop model inputs

- Data source for basis: IHS Markit, S&P Global and Wood Mackenzie

Recent Natural Gas Price Forecasts

# (Fall 2020)



# Electricity Market Prices

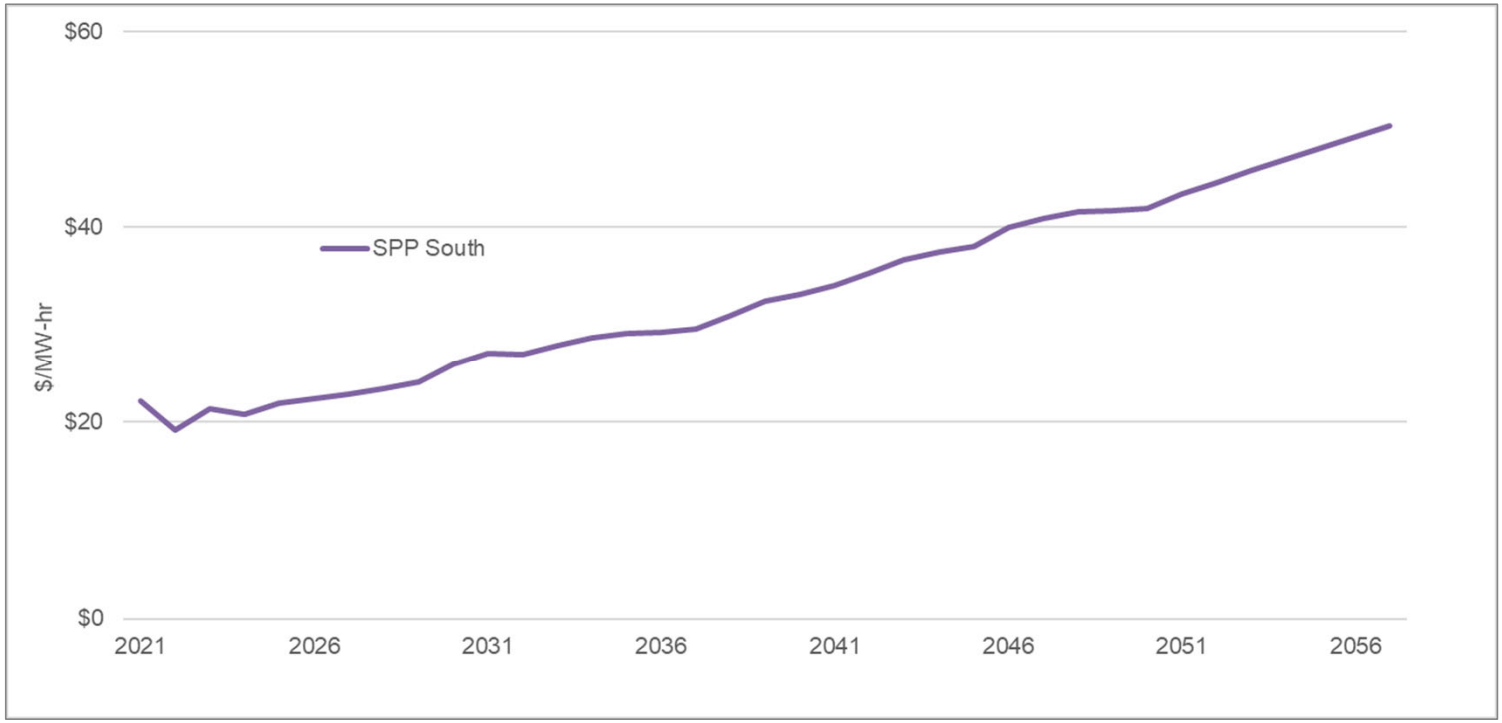
To derive the forecast of monthly on and off-peak prices, the company uses a simple average of long-term implied heat rate forecasts provided by:

- IHS, S&P Global and Wood Mackenzie

The implied heat rates are multiplied by the gas price at a near location to determine the on and off-peak prices ($/MWh)

# Recent Electricity Forecast

## (Fall 2020)



# QUESTIONS & DISCUSSION

# TOPICS FOR THE FINAL MEETING

- Accreditation of Energy Storage
- Energy Storage
- GIA Issues

# NM IRP DETAILS

- Web Page -

  https://www.xcelenergy.com/company/rates_and_regulations/resource_plans/2022_new_mexico_integrated_resource_plan

  ** Note: For the Service Area, click on New Mexico. At the bottom of the page click on the Public Advisory Meeting tab, then click on the date for the first public meeting*

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  - Mario Contreras | Rate Case Manager | *Mario.A.Contreras@xcelenergy.com*

# SPS New Mexico 5th IRP Public Meeting

Date: May 13, 2021

Time: 10:00 AM – 12:00 PM Mountain Time

Location: Zoom Meeting