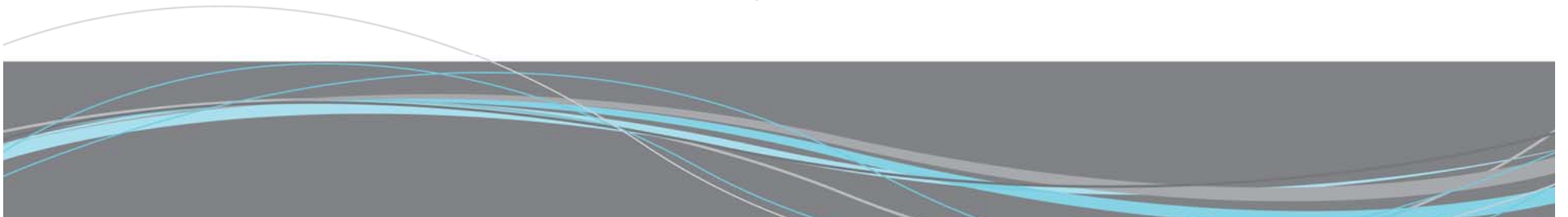


Gas and Power Market Price Forecasting

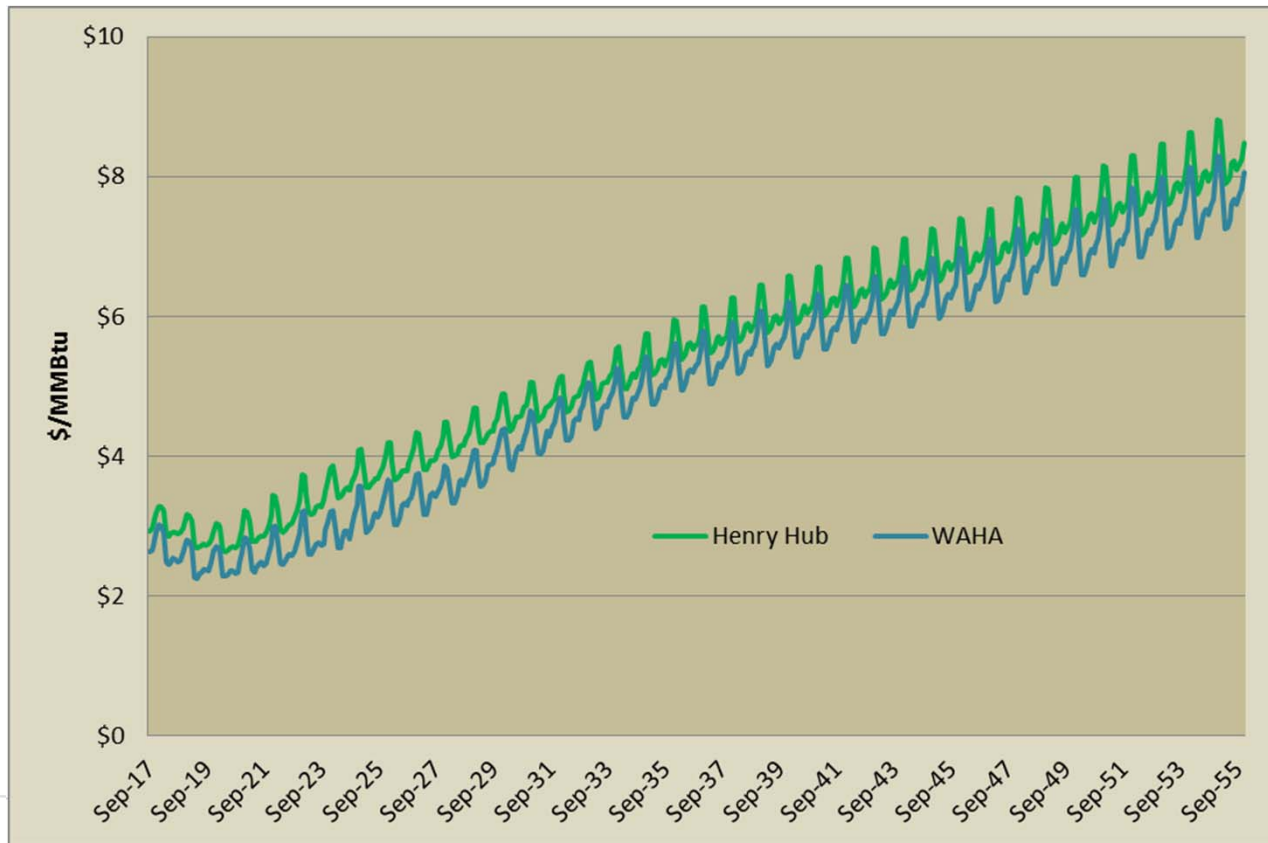
Robin Preston
January 30, 2018



Natural Gas Price Forecasting Methodology

- **Xcel creates forecasts semi-annually in Feb/Aug**
- **Henry Hub forecast “4-Source Blend” is an average of three consultants’ long term forecasts and the current NYMEX strip**
- **Currently consultants forecasts are...**
 - IHS-CERA
 - PIRA
 - Wood Mackenzie

Recent Henry Hub 4-Source Blend Forecast (August 15th, 2017)



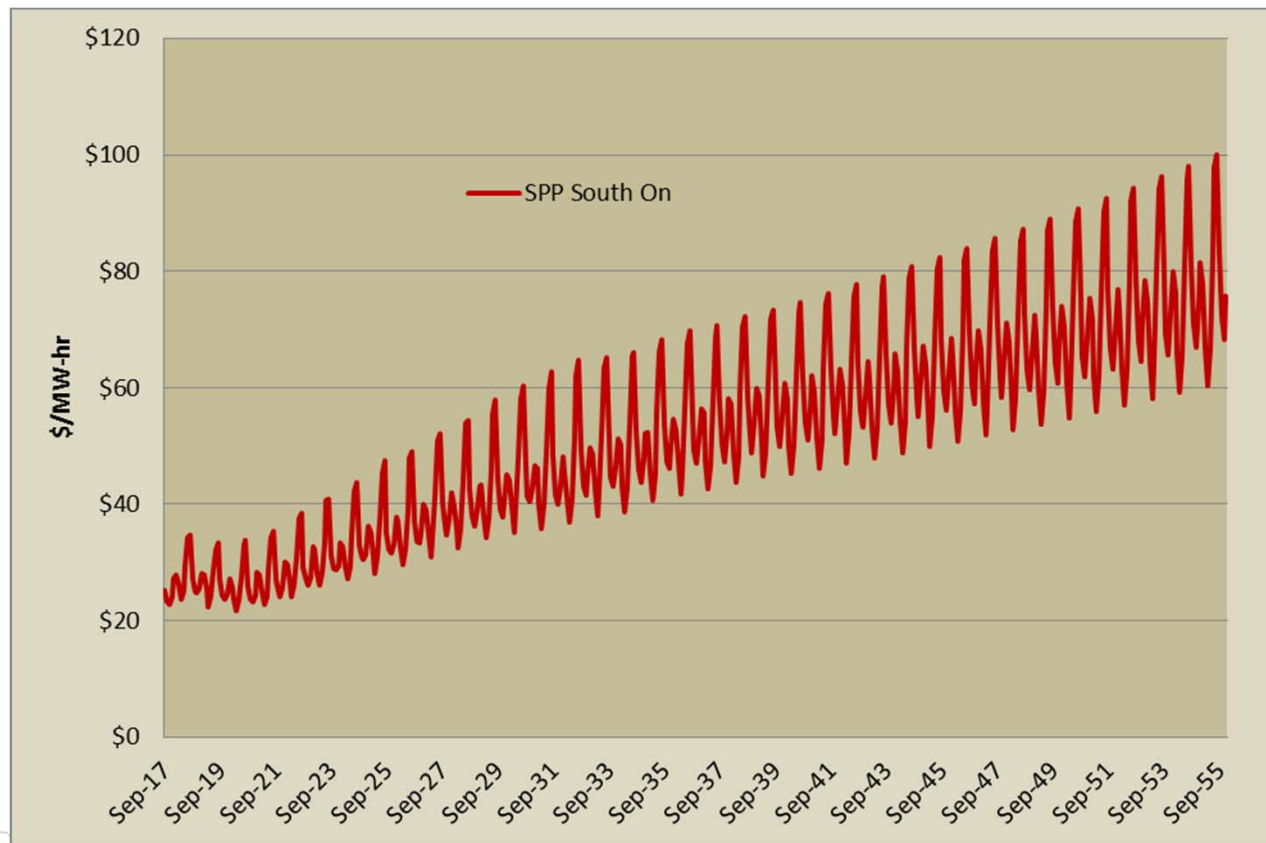
Natural Gas Delivered Price

- **Basis differential is difference in the gas price at a given Hub compared to a benchmark location (i.e. Henry Hub)**
 - Current data sources for basis: IHS-CERA, PIRA & Wood Mackenzie
- **Methodology:**
 - Determine appropriate hub
 - Existing units: Use the hub from where gas is traditionally procured
 - New units: Determine most likely general location of unit and associated hub
 - Add appropriate transportation, storage and fuel surcharges to achieve a delivered price.

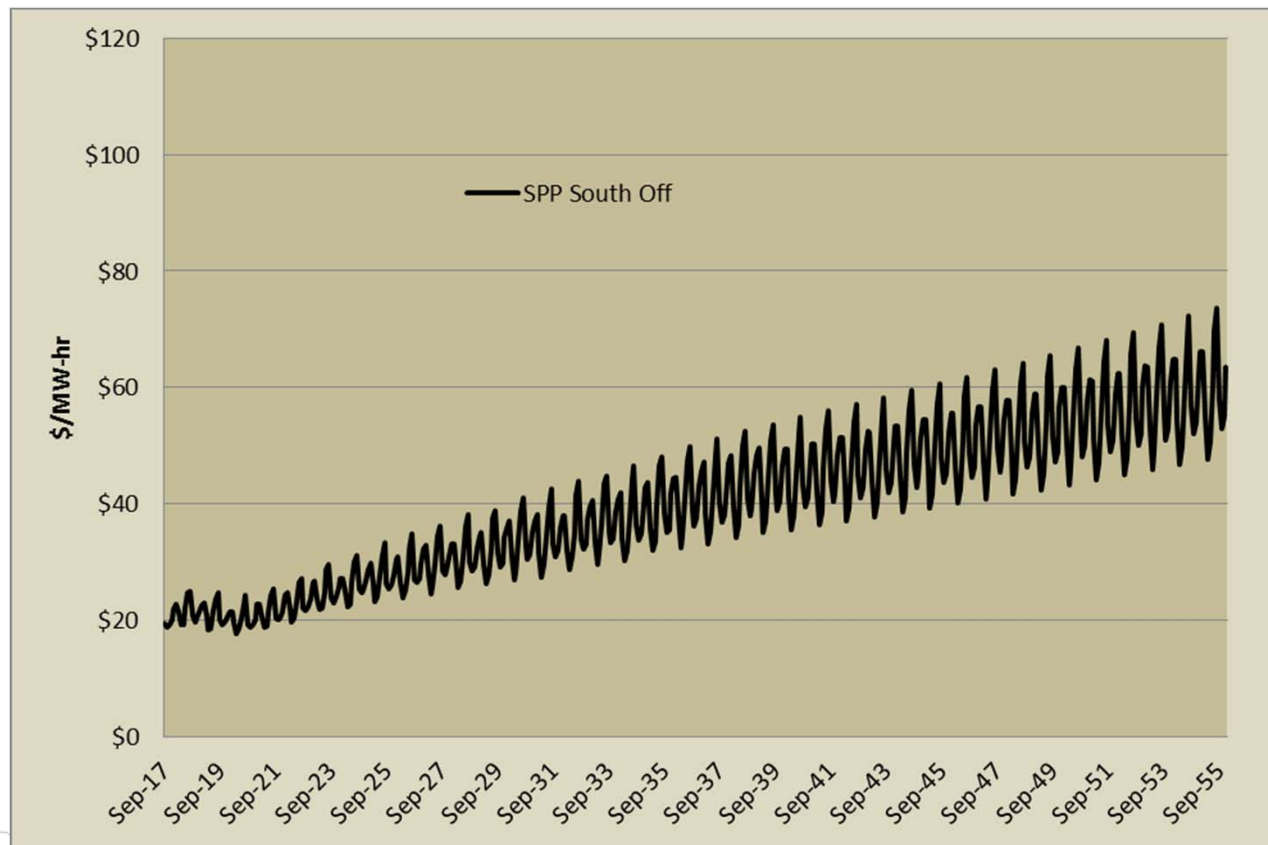
Electricity Market Prices

- Calculate the average of IHS-CERA, PIRA, and Wood Mackenzie implied heat rate forecasts to derive the “heat rate” (per MWh) for a given location.
- Multiply the “heat rate” by the “4-Source Blend” natural gas price to get the \$/MWh price for a given location.

Recent SPP Electricity Forecast – On Peak (Aug. 15th, 2017)



Recent SPP Electricity Forecast – Off Peak (Aug. 15th, 2017)





Emerging Environment Impacts for SPS NMIRP

Dean Metcalf

Manager, Environmental Services and Media Compliance

January 30, 2018

Major Regulations Affecting SPS

Cross-State Air Pollution Rule (CSAPR)

- EPA adopted in 2011 (Xcel made comments and sued EPA)
- Two Main Issues – Texas’ Inclusion and EPA Disapproval of Texas State Plan
- DC Circuit Court Stayed CSAPR - December 30, 2011
- Litigation went from DC Circuit Court to Supreme Court and back
- CSAPR largely upheld, but Texas emission budgets were found to over-control and were remanded to EPA
- CSAPR program took effect January 1, 2015
- EPA made summer NOx budget tighter, and removed Texas from CSAPR limits for annual NOx and SO2 in 2016-17
- Changes in SPS since 2011 (Added Wind and Transmission)
- Compliance Strategy – Dispatch and Allowance Purchase

Major Regulations Affecting SPS (Cont.)

EGU MACT – MATS Rule Regulates

- Mercury (Hg)
- Particulate Matter (PM) – surrogate for toxic non-mercury metals
- HCl – surrogate for all toxic acid gases
- Compliance Strategy - ACl and PM Averaging Plan for H1, H2, H3.
- 2015 Compliance (Tolk and Harrington)

Major Regulations Affecting SPS (Cont.)

Regional Haze

- **BART – Harrington 1 and 2 Eligible**
- **Reasonable Progress – Can apply to all units**
- **2009 Texas submitted RH SIP**
- **2014 EPA proposed RH FIP:**
 - **CSAPR meets BART for Texas**
 - **Reasonable Progress: proposed scrubbers for Tolk Units**
- **2016 EPA adopted final rule:**
 - **Did not finalize BART due to CSAPR remand**
 - **Required scrubbers for Tolk Units**

Major Regulations Affecting SPS (Cont.)

- **SPS appealed rule impacting Tolk to 5th Circuit Court**
- **In 2016, 5th Circuit Court stayed rule**
- **In 2017, EPA requested a remand**
- **Remand granted by 5th Circuit Court, which left stay in effect and is holding litigation until EPA completes reconsideration**
- **EPA plans to address this now that it has completed its BART rule as described below**

Major Regulations Affecting SPS (Cont.)

- **January 2017 - EPA proposed Texas BART rule that included dry scrubbing for Harrington 1 and 2**
- **Xcel submits comments in May 2017**
- **September 2017 EPA adopted a rule for a Texas only trading program based on CSAPR SO₂ budgets. Limits apply to all SPS coal units as a BART Alternative**
- **EPA also adopts rule removing Texas from CSAPR**
- **Environmental advocates have appealed both rules**

Major Regulations Affecting SPS (Cont.)

- **Litigation continues**
- **SPS has intervened in support of EPA's rules**
- **Next regional haze plan for all states is due in 2021**

Major Regulations Affecting SPS (Cont.)

National Ambient Air Quality Standards

- NAAQS for SO₂, Ozone, PM, NO₂
- Areas near SPS plants have been designated attainment for ozone, PM and NO₂
- SO₂ designations complete:
 - Area near Tolk Station meets standard
 - Area near Harrington Station being monitored and area will be designated in 2020
- If designated nonattainment, Texas plan would be due in 2022
- Potential for increased controls at Harrington
- Attainment would be required by 2025

Major Regulations Affecting SPS (Cont.)

Coal Combustion Residuals (CCR) Rules

- Regulation of coal ash as nonhazardous
- Increased landfill construction & monitoring requirements once our ash becomes non-saleable
- Potential to affect ash sales – 100% beneficial use

Major Regulations Affecting SPS (Cont.)

Clean Power Plan – GHG 111(d)

- **2015 final rules for GHG regulation from existing sources**
- **Stayed by Supreme Court in 2016**
- **EPA has proposed to repeal the CPP**
- **Comments due in April 2018**
- **Unknown whether EPA would adopt a replacement rule, or what form that might take**

Major Regulations Affecting SPS (Cont.)

Threatened and Endangered Species

- Sand Dune Lizard
- Lesser Prairie Chicken

Avian Protection

- APP

Major Rules Not Affecting SPS (at this time)

- **CCR – Coal Combustion Residual rule or Ash Rule**
- **316(b) – Water Intake Structure Rule**
- **WOTUS – Waters of the United States**

Recent Issues Affecting SPS

- Gaines Co Plant Permitting
- Wind, Wind, Wind
- City of Amarillo and N/H Wastewater Permit

Questions and Discussion

IRP Information

- Web Page:

https://www.xcelenergy.com/company/rates_and_regulations/resource_plans/sps_2019-2038_integrated_resource_plan

Note: After navigating to the webpage, in the upper left-hand corner of the page, make sure that “New Mexico” is selected. Click on Public Advisory Meeting then click on the link for the second meeting.

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Topics For Future Meetings

- Aging Generation Fleet
- Coal Supply
- Demand-side Management and Energy Efficiency
- Storage

Next Meeting

- **Date:**
 - **Tuesday, March 27, 2018**
- **Time:**
 - **10:00am to 12:00pm (Mountain Time)**
- **Location:**
 - **Webinar meeting**

