2015 SPS Integrated Resource Plan ("IRP")

Public Advisory Meeting #3

Bennie Weeks, Craig Berg, & Brian Fleming

SPS Resource Planning

AGENDA

I. Welcome
II. Gas & Power Markets – Kyle Martinez & Amanda Guerrero
III. Coal Supply – Dana Echter
IV. Demand-Side Management ("DSM") – Shawn White
V. Load Forecasting – Luke Jaramillo
VI. Conclusion
    - Next Meeting
    - IRP Contact Information


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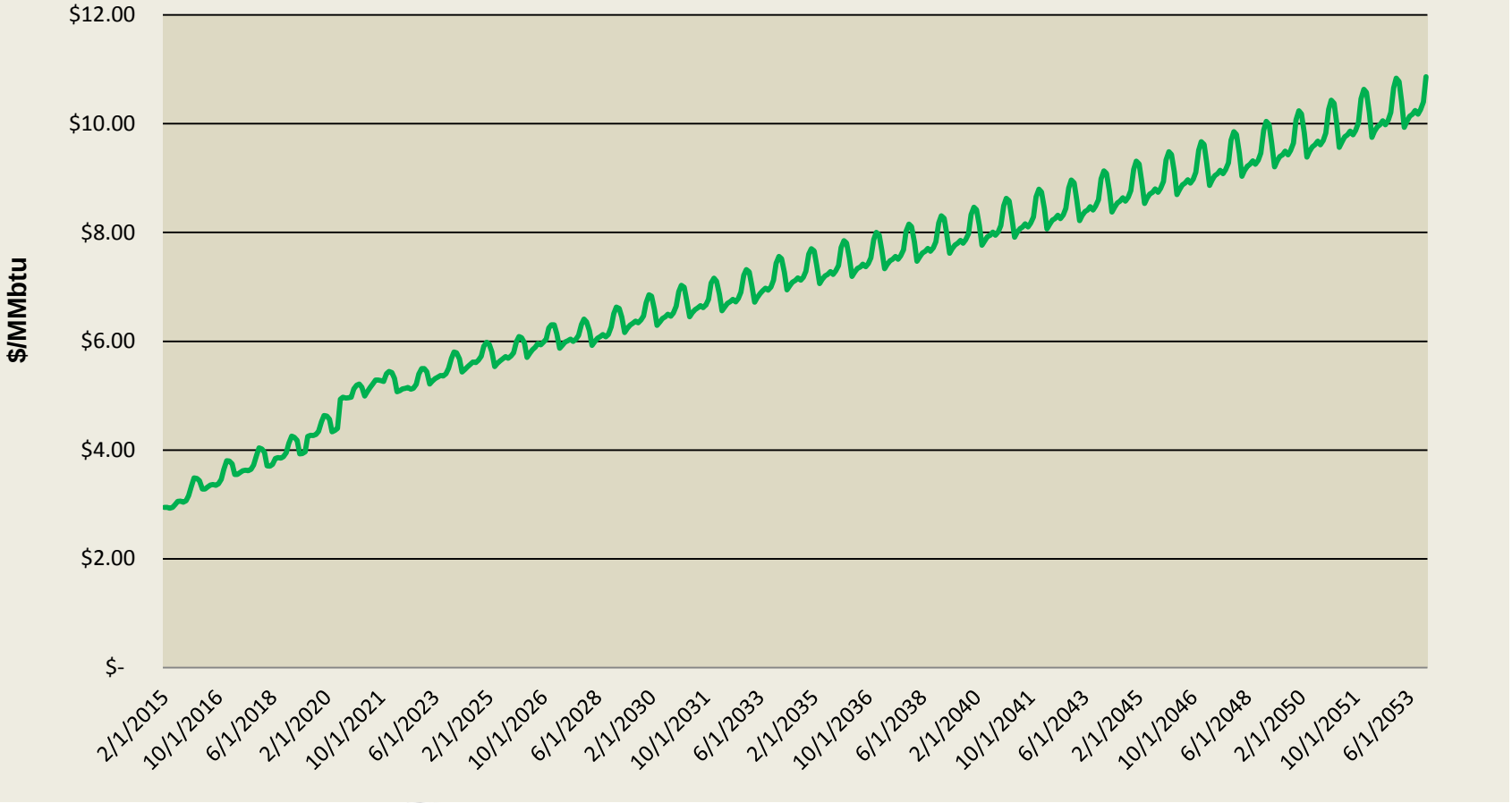
Gas and Power Market Price Forecasting

Kyle Martinez & Amanda Guerrero
Market Pricing Analytics
January 15, 2015

Natural Gas Price Forecasting Methodology

- **Henry Hub forecast "4-Source Blend" is an average of three consultants' long term forecasts and the current NYMEX strip**
- **Forecasts are generally updated semi-annually**
  - **CERA** (April and October)
  - **PIRA** (October)
  - **Wood Mackenzie** (April and October)

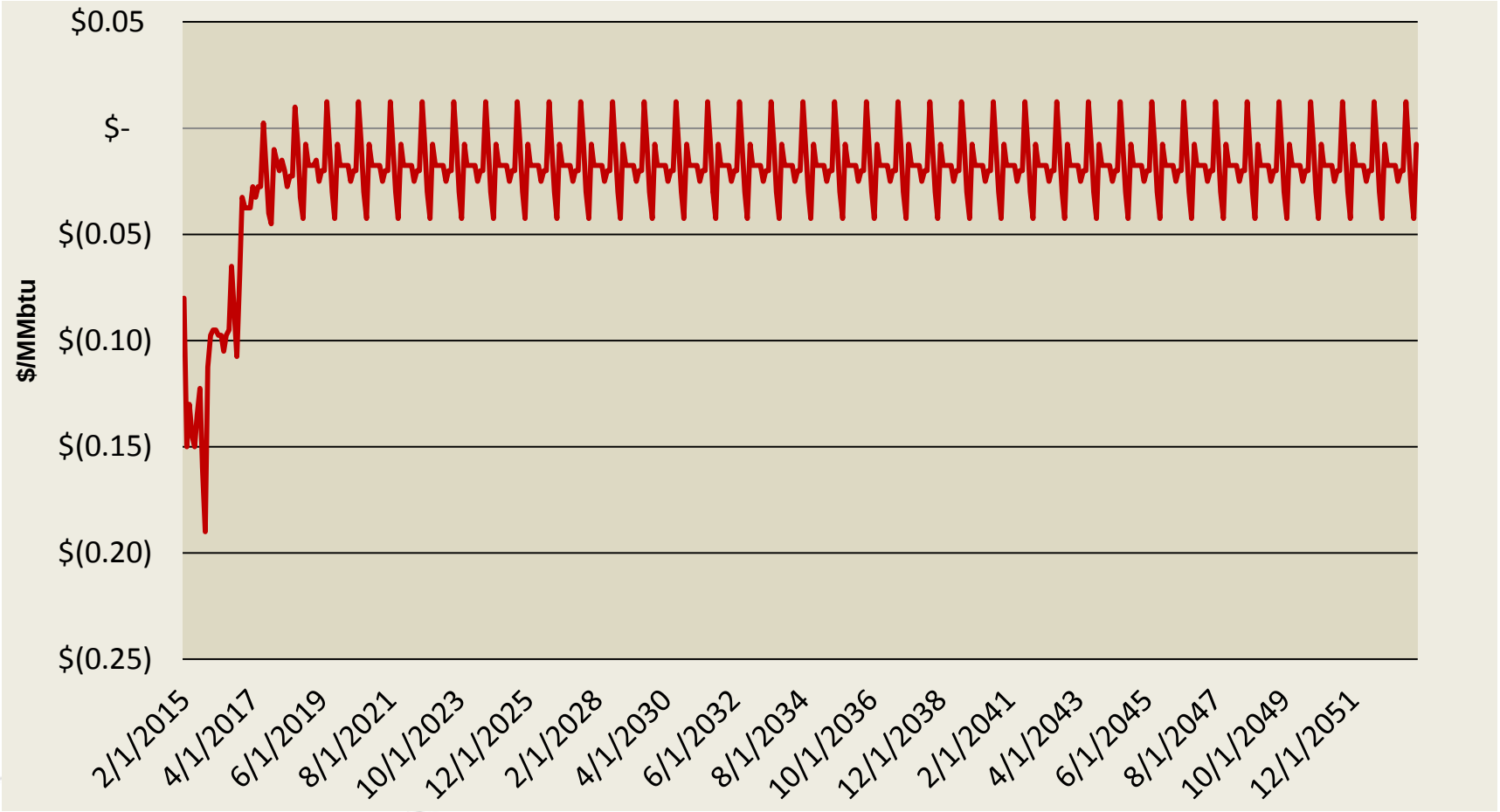
Recent Henry Hub 4-Source Blend Forecast
(Jan. 9, 2015)



Natural Gas Delivered Price

- Basis differential is the current market price
  - Current data source: ICE
- The price from the last year quoted is carried forward through the end of the study period
  - Existing units: Use the hub from where gas is traditionally procured
  - New Units: Determine most likely general location of unit and associated hub
- Add transportation, storage and fuel surcharge to hub forecast for plant delivered cost

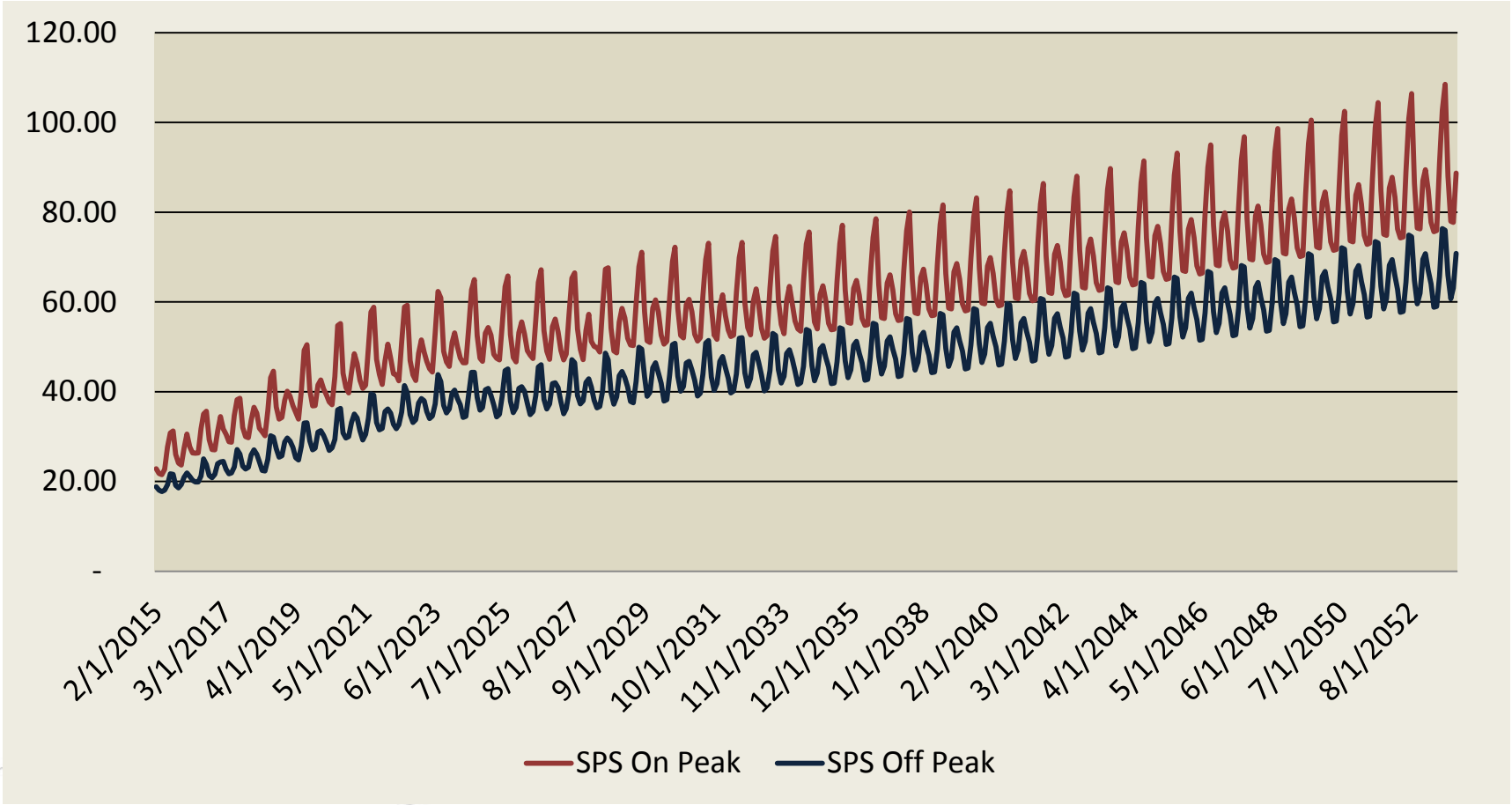
Recent Waha Basis Forecast
(Jan. 9, 2015)



Electricity Market Prices

- Based on the “4-Source Blend” natural gas price and …
- The average of PIRA, CERA, and Wood Mackenzie implied heat rate forecasts to derive the electricity price ($/MWh)
  - Base forecast does not include an embedded CO_2 price

Recent SPP Electricity Forecast
(Jan. 9, 2015)

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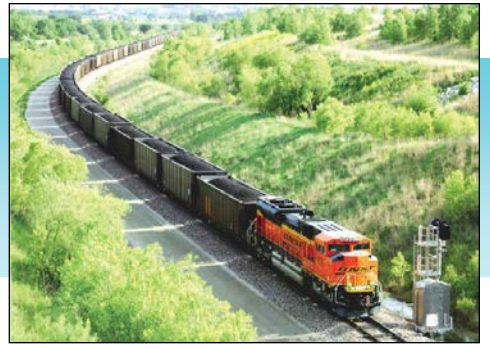


Coal Supply Presentation

Craig Romer
Director, Fuel Supply Operations
January 15, 2015

Coal-Fired Power Plants Statistics

- **Harrington Station: Amarillo, Texas**
  - **Three coal-fired units: 1,066 net MW**
  - **Coal sources**
    - **Low-sulfur Southern Powder River Basin ("PRB") coal mines - North Antelope Rochelle, Antelope and Black Thunder**
  - **Rail Transportation: Burlington Northern Santa Fe (BNSF)**
  - **Trestle unloading system**
  - **Historical average annual consumption: ~4m tons**

Coal-Fired Power Plants Statistics

- **Tolk Station: Muleshoe, Texas**
  - **Two coal-fired units: 1,130 net MW**
  - **Coal sources**
    - **Low-sulfur Southern Powder River Basin ("PRB") coal mines - North Antelope Rochelle, Antelope and Black Thunder**
  - **Rail Transportation: Burlington Northern Santa Fe (BNSF)**
  - **Rotary unloading system**
  - **Historical average annual consumption: ~4m 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 contract expires on Dec 31, 2016 for Harrington and on Dec 31, 2017 for Tolk**

TUCO Coal Contract Information

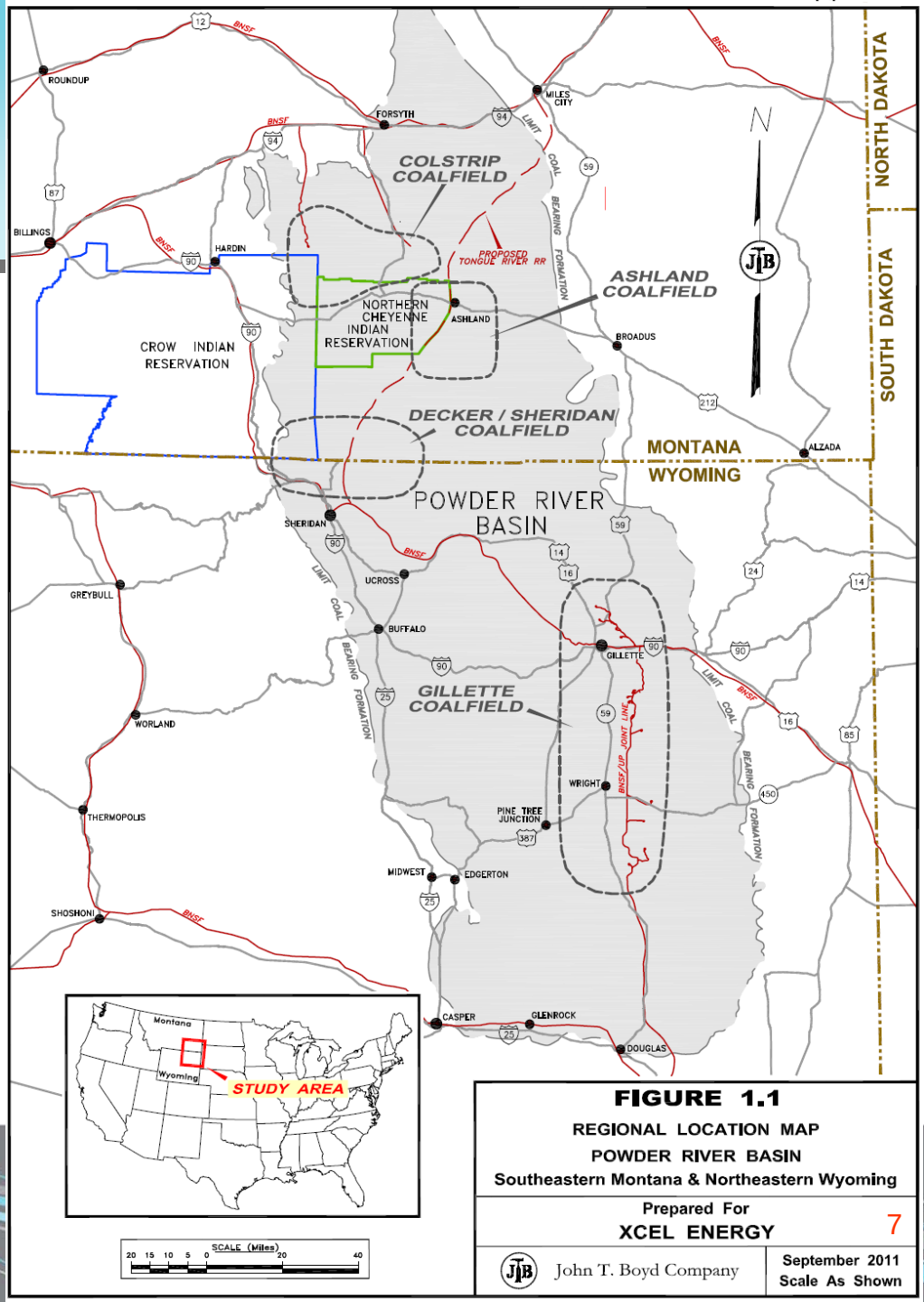
- Coal suppliers are Peabody Energy (North Antelope Rochelle), Cloud Peak Energy (Antelope) and Arch Coal (Black Thunder)
- Coal contracts are fixed price, term and quantity
- Coal supply agreements expire concurrently with the TUCO agreements

TUCO Transportation Contract Information

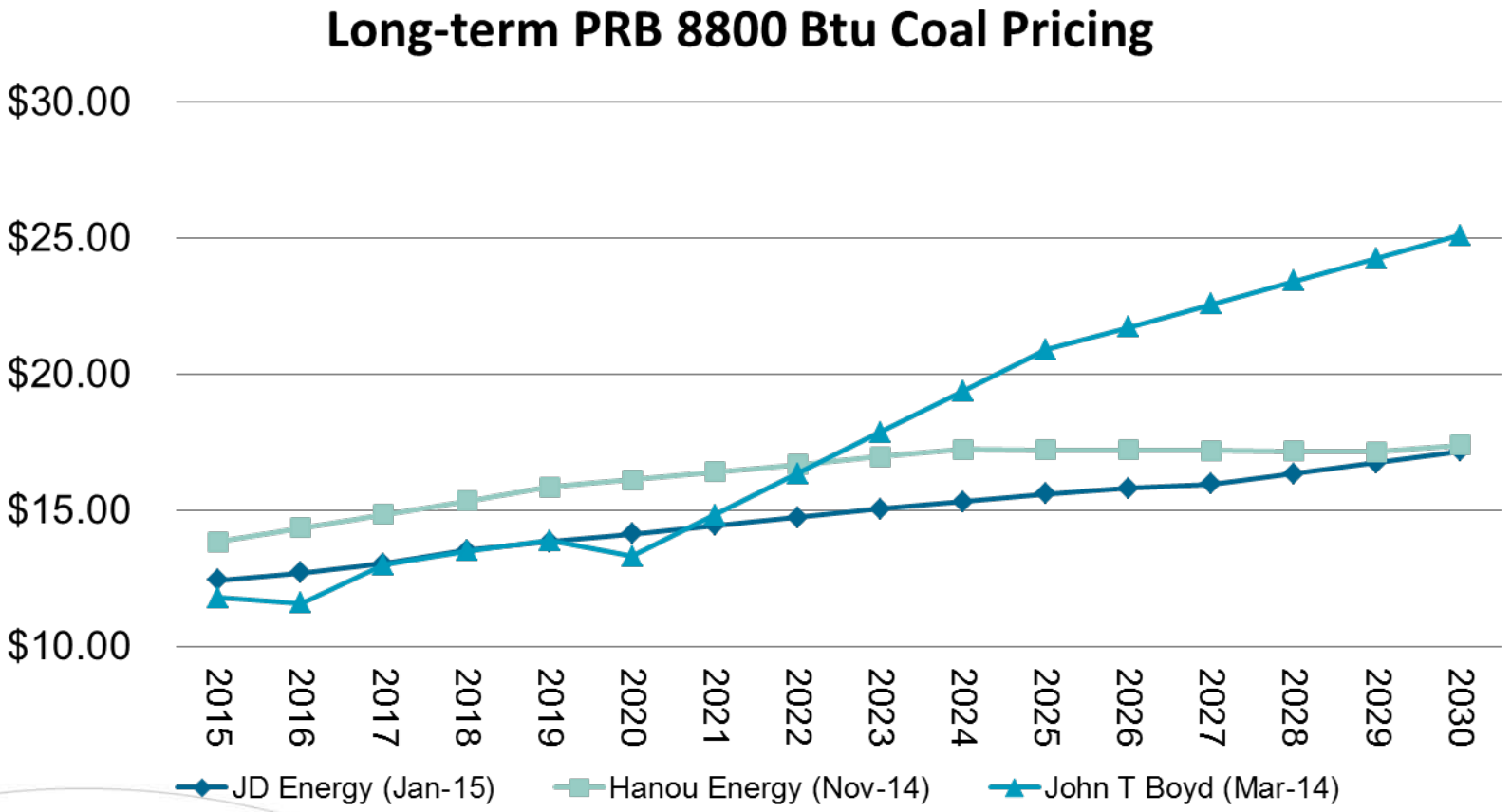
- Transportation
  - Tolk and Harrington served by BNSF Railway
  - The Harrington rail agreement expires in Dec 2016
  - The Tolk rail agreement expires in Dec 2017
  - Current rail contracts include Mileage Based Fuel Surcharges
- Railcars
  - Railcars are provided by long-term lease held by TUCO and expire concurrently with the TUCO Coal Supply Agreements

PRB Map

- Powder River Basin
  - Roughly 300mi x 100 mi
  - USGS
    - 140b tons of resources in areas of most interest
    - 77b tons in Gillette Coalfield alone



Long Term PRB Coal Market Trends



Long-Term Forecasting Methodology for Resource Planning Purposes

- **Coal**
  - **Coal price forecasts result from review and consideration of multiple expert sources including but not limited to JD Energy, John T Boyd and Hanou Energy**
  - **Beyond the term of provided long-term forecasts, an escalation factor is applied to the coal price for the remaining term**
- **Transportation**
  - **Each plant is individually analyzed and a plant-specific delivered price forecast is derived using the forecasted coal prices**
  - **Known contracted transportation costs are used and upon contract reopeners or extensions are adjusted to reflect known transportation market conditions and experience with rail rates in the company's other regions**

SPS Coal and Transportation Risks

- The most significant risk is the current regulatory environment and the uncertainty about rules and regulations affecting coal generation
- PRB demand and pricing has the potential to be affected by CSAPR and other environmental rules and legislation
- Rail pricing could be higher with new contracts to be in place starting in 2017 and 2018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Load Management and Energy Efficiency

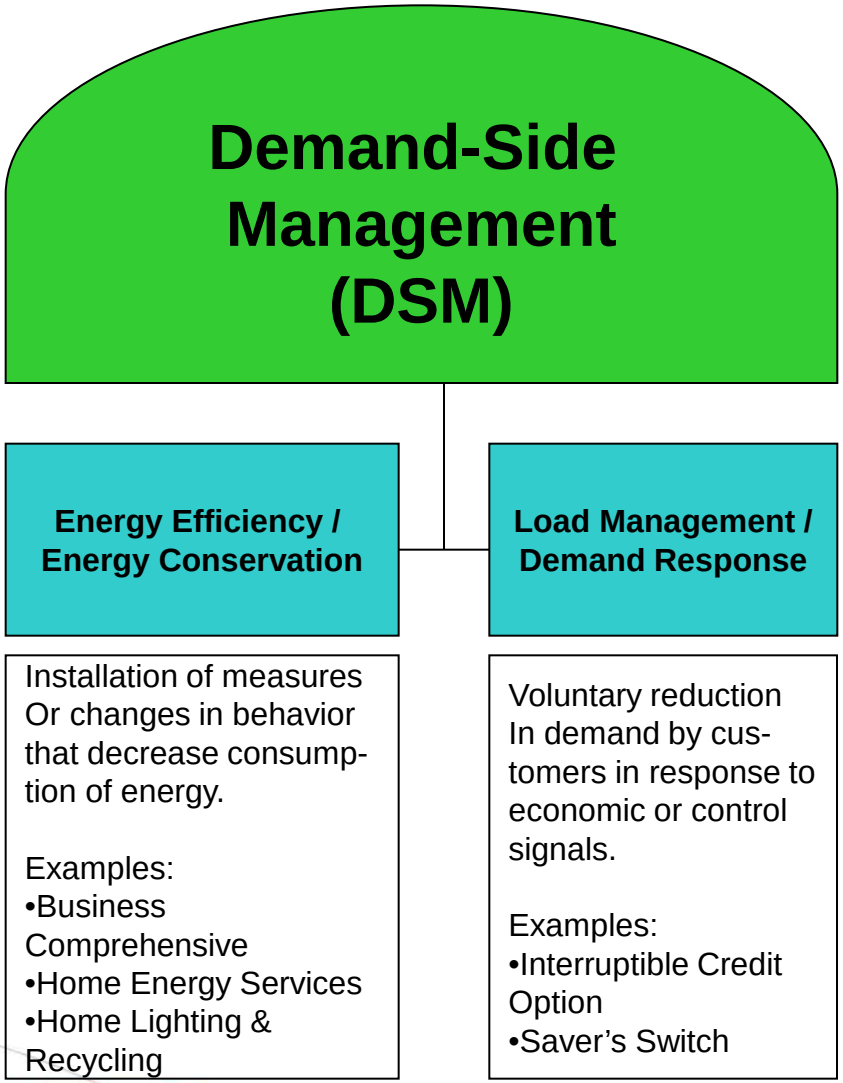
Southwestern Public Service
New Mexico
Presented by: Shawn White

Overview

- Historical & Forecasted Performance
- 2014 & 2015 Programs*
  - Load Management Programs
  - Energy Efficiency Programs
- 2014 Program Performance

* Programs approved on June 25, 2014 in Case No. 13-00286-UT

Demand-Side Management (DSM)



Historical / Forecasted Performance

SPS Achieved/Forecasted Savings Achievement				
Year	Net Gen. GWh Achievement/Forecasted	Net Customer GWh Achievement/Forecasted	% of 2005 Retail Sales*	Demand Savings - MW (Generator - EE Only)
2008	3.767	3.355	0.089%	0.256
2009	15.758	14.136	0.466%	2.682
2010	26.019	23.231	1.086%	6.403
2011	39.284	35.642	2.036%	6.439
2012	37.123	33.336	2.925%	9.524
2013	41.916	37.674	3.929%	10.405
2014	32.162	29.621	4.719%	8.181
2015	33.186	30.564	5.463%	8.441
2016	28.926	26.640	6.155%	7.357
2017	28.926	26.640	6.865%	7.357
2018	28.926	26.640	7.576%	7.357
2019	28.926	26.640	7.799%	7.357
2020	28.926	26.640	8.000%	7.357

**2005 retail sales were 3,750.469 GWh*

Load Management Programs

	Load Management				
2014 & 2015 Filed Forecast	**Annual Forecasted Electric Participants**	**Annual Forecasted Electric Budget**	**Annual Forecasted Net Generator kW**	**Annual Forecasted Net Generator kWh**	**Annual Forecasted Utility Cost Test Ratio**
Residential Saver's Switch	945	$432,268	809	24,490	2.83
Saver's Switch for Business	82	$129,604	87	560	1.00
Interruptible Credit Option	2	$29,970	881	7,584	9.92
Total	**1,029**	**$591,842**	**1,777**	**32,634**	**13.75**

Energy Efficiency Programs

2014/15 Residential & Business Programs

	Residential & Business Programs				
2014 & 2015 Filed Forecast	**Electric Participants**	**Electric Budget**	**Net Generator kW**	**Net Generator kWh**	**Utility Cost Test Ratio**
Residential					
Energy Feedback Pilot	13,565	$218,114	1,093	4,160,198	1.64
Evaporative Cooling Rebates	385	$252,592	398	196,648	3.10
Home Energy Services	1,753	$1,696,392	459	2,748,524	1.34
Home Lighting & Recyling	79,000	$1,385,351	1,353	9,252,844	2.17
Refrigerator Recycling	650	$133,648	64	574,529	1.37
School Education Kits	2,500	$116,751	28	889,705	2.94
Residential Segment Total	**97,853**	**$3,802,848**	**3,395**	**17,822,448**	**1.93**
Business Comprehensive	**444**	**$2,866,942**	**2,366**	**15,622,290**	**4.18**

2014 Program Year Performance – Residential, Business & LM Programs*

	Residential, Business & LM Programs			
2014	Electric Participants	Electric Budget	Net Generator kW	Net Generator kWh
Residential				
Energy Feedback Pilot	12,038	$190,221	1,093	3,345,344
Evaporative Cooling Rebates	132	$114,381	289	334,353
Home Energy Services	1,603	$1,389,227	750	3,600,000
Home Lighting & Recyling	137,479	$1,494,445	2,258	14,500,000
Refrigerator Recycling	515	$110,883	43	401,216
School Education Kits	2,654	$121,833	26	791,200
Residential Segment Total	**154,421**	**$3,420,990**	**4,459**	**22,972,113**
Business Comprehensive	**373**	**$3,189,751**	**1,222**	**9,165,952**

* Savings are Claimed Savings. M&V Verification process expected to be complete by May 1, 2015
** Excludes costs associated with administrative line items

Timelines for 2014 & 2016 Plans

- 2014 Plan Filed August 28, 2013
  - Budget $7,883,614
  - Forecasted Portfolio Savings of:
    - 33.5 GWh
    - 7.5 MW
- 2016 Plan to be filed no later than May 1, 2015
- 2016 Plan Approval Expected Q4 2015

Contact Information

- **Shawn White: (612) 330-6096, shawn.m.white@xcelenergy.com**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Southwestern Public Service Company

Sales and Load Forecasting

New Mexico Resource Plan Public Advisory Meeting

January 15, 2015

Agenda

- Energy and peak demand forecasting process
- Economic and demographic assumptions
- Weather assumptions
- Energy and peak demand forecast results
- SE New Mexico oil development
- Demand-side management impacts
- Forecast scenarios

Forecasting Process

- 30-year forecasts of monthly customers, sales and peak demand are developed using primarily regression analysis
- Retail sales are forecast by major rate class and by state
- Retail peak demand is forecast at the aggregated company level
- Wholesale sales and peak demand are forecast by individual customer

Regression Analysis

- Use statistical relationships between monthly sales or demand and explanatory variables such as economics, weather, customers, and price of electricity. Once a statistical relationship is established from historical data, the relationship is applied to the forecast of the explanatory variables to derive a sales or demand forecast. This process is referred to as regression analysis.
  - For example: Residential sales = *f* (number of customers, weather, household income)
- Strengths: industry standard, robust, test results, defines relationships, adaptable/flexible
- Weaknesses: historical relationships can change, limited by available data, extremes can create challenges

Other Methodologies

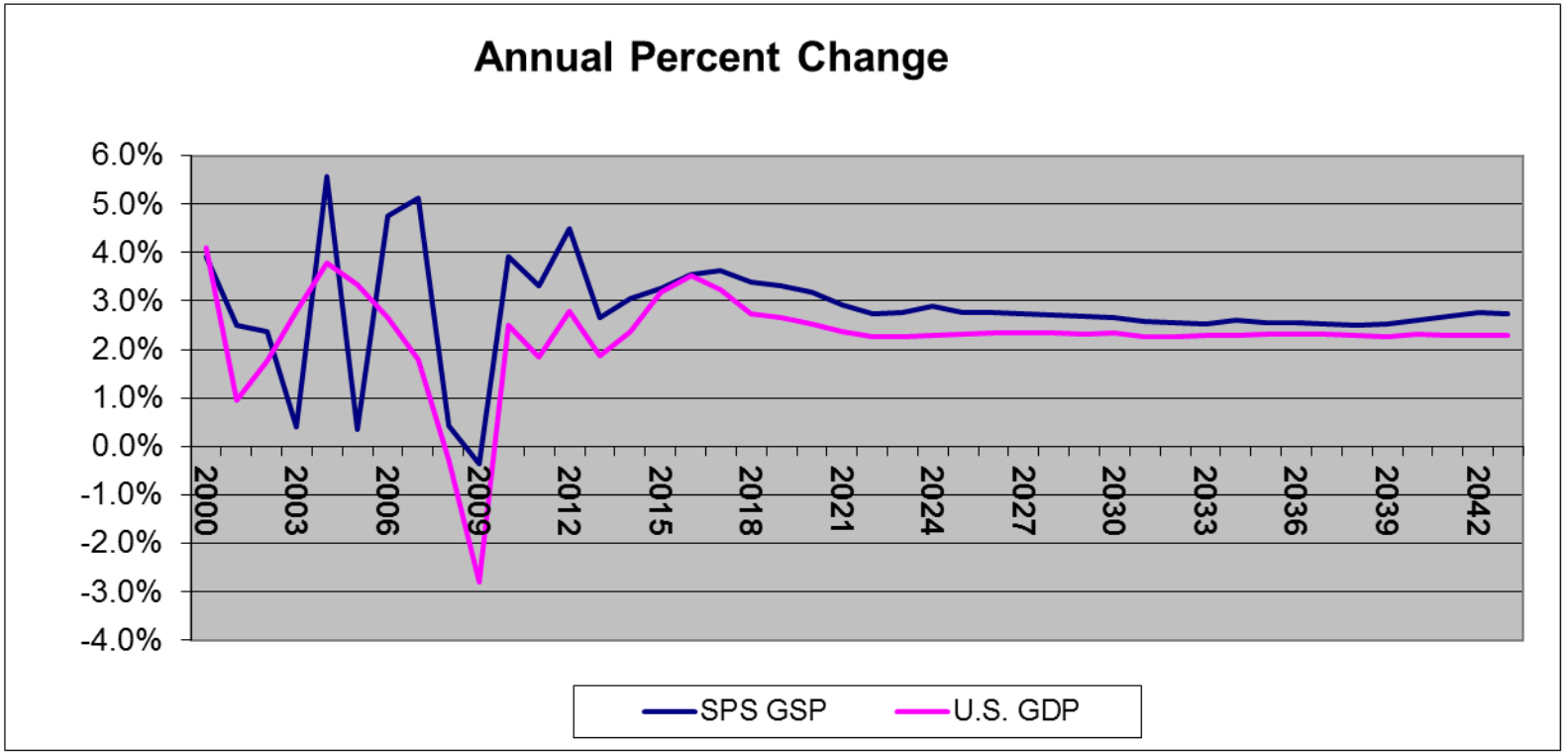
- Load factor analysis
- Historical trends
- Contractual requirements
- Exogenous adjustments

Economic and Demographic Assumptions

- Economic and demographic data obtained from IHS Global Insight, Inc. (both historical and forecast) for U.S., state, metropolitan areas and counties. County level data aggregated to service territory.

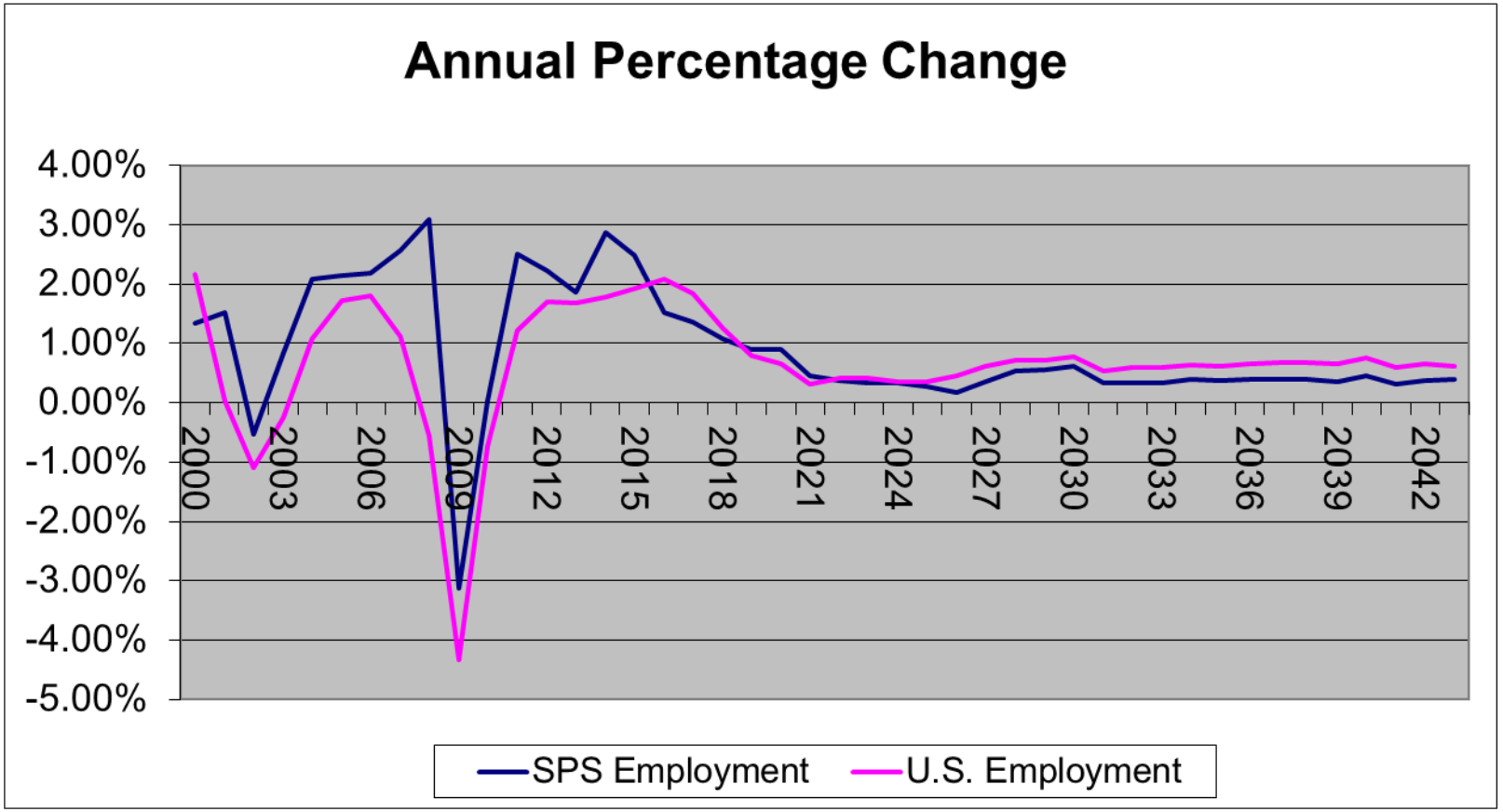
- Economic and demographic variables used in modeling include: employment, households, personal income, Gross Domestic Product (GDP), Gross State Product (GSP), population, and oil prices.

U.S. GDP and SPS GSP Growth

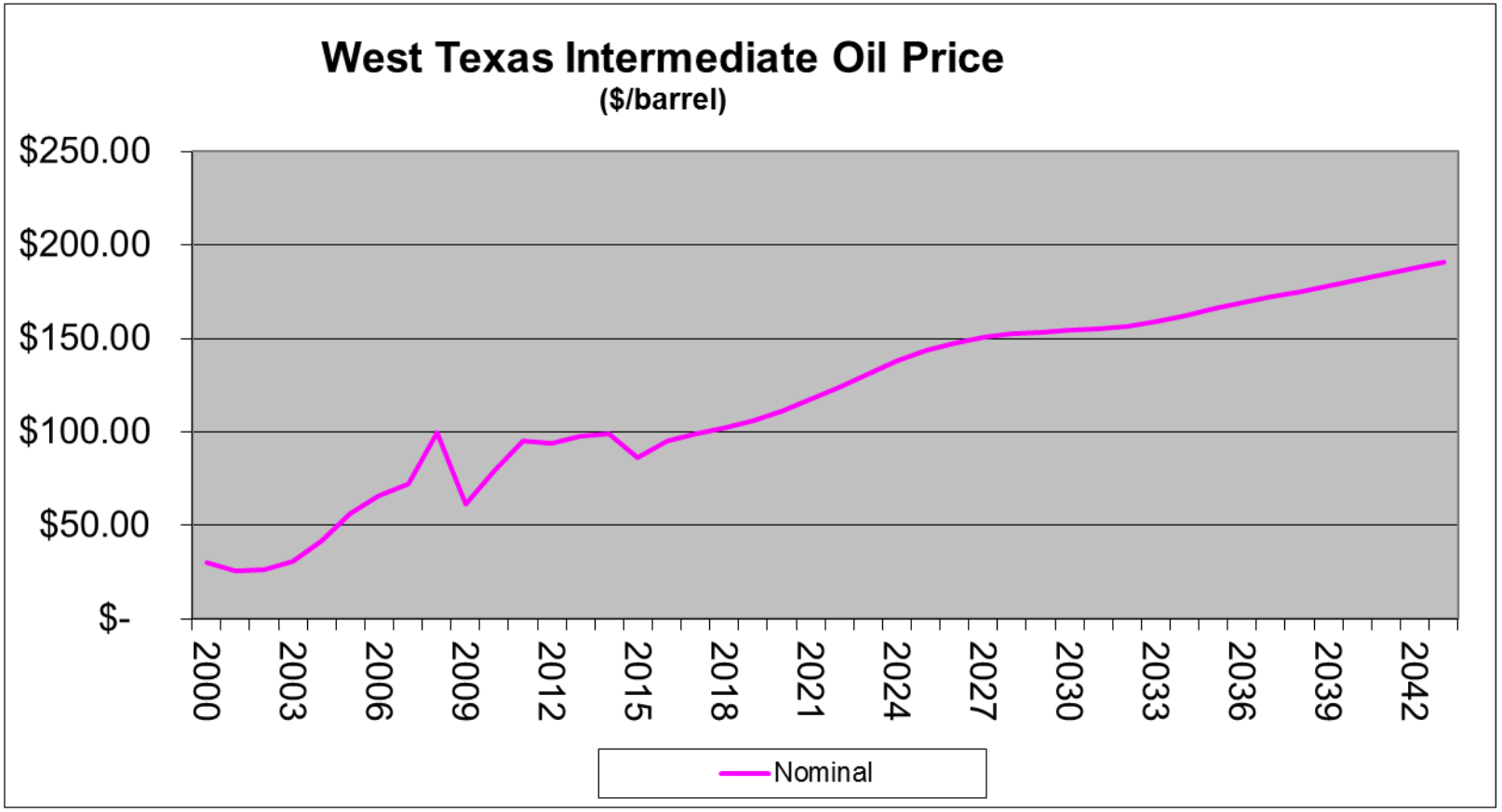


The energy sector is a boom for the SPS service territory economy.

Job Growth


Annual Percentage Change
4.00%
3.00%
2.00%
1.00%
0.00%
-1.00%
-2.00%
-3.00%
-4.00%
-5.00%
2000
2003
2006
2009
2012
2015
2018
2021
2024
2027
2030
2033
2036
2039
2042
SPS Employment
U.S. Employment

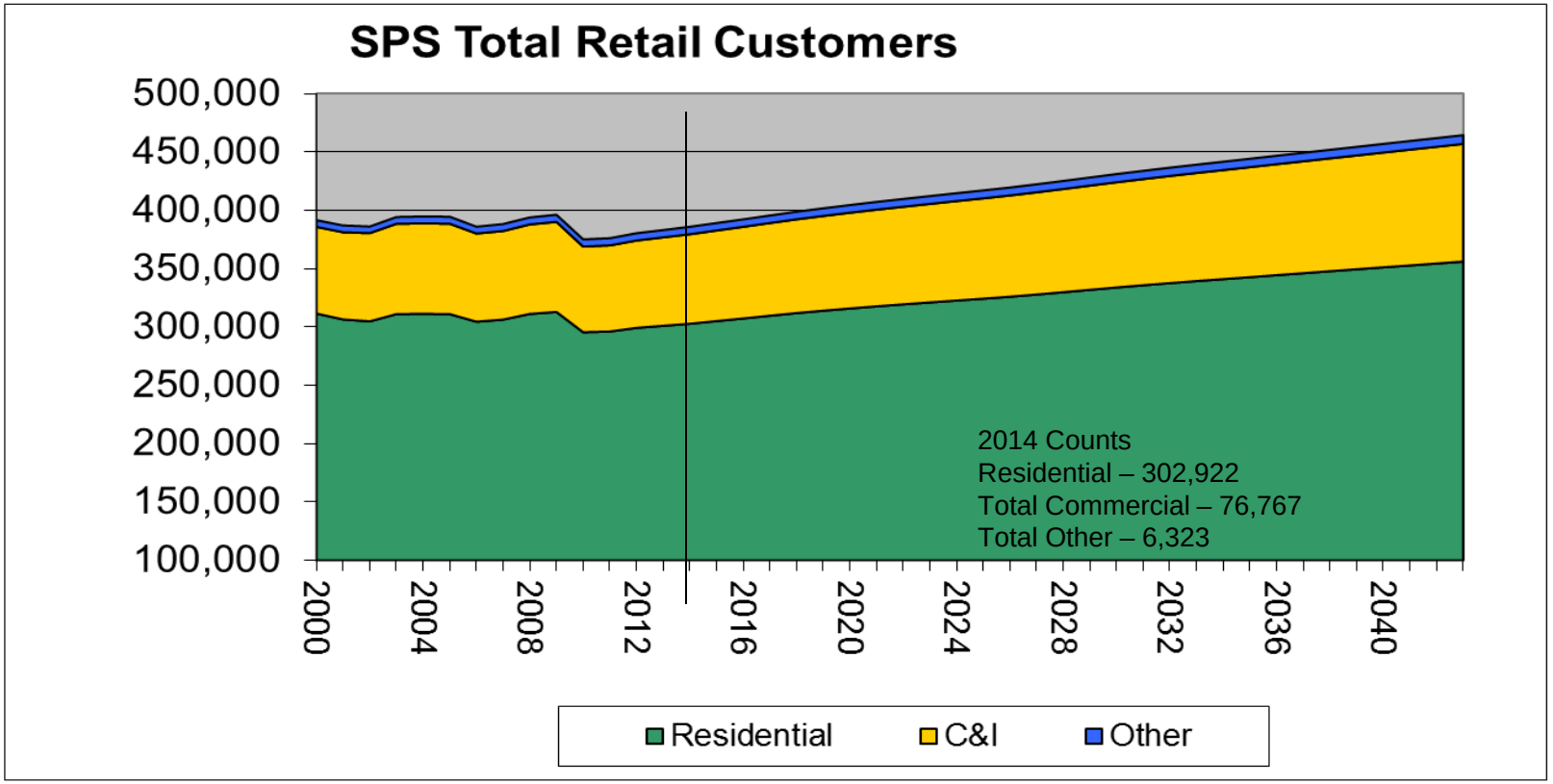
Oil Prices


West Texas Intermediate Oil Price
($/barrel)
$250.00
$200.00
$150.00
$100.00
$50.00
$-
2000
2003
2006
2009
2012
2015
2018
2021
2024
2027
2030
2033
2036
2039
2042
Nominal

Weather Assumptions

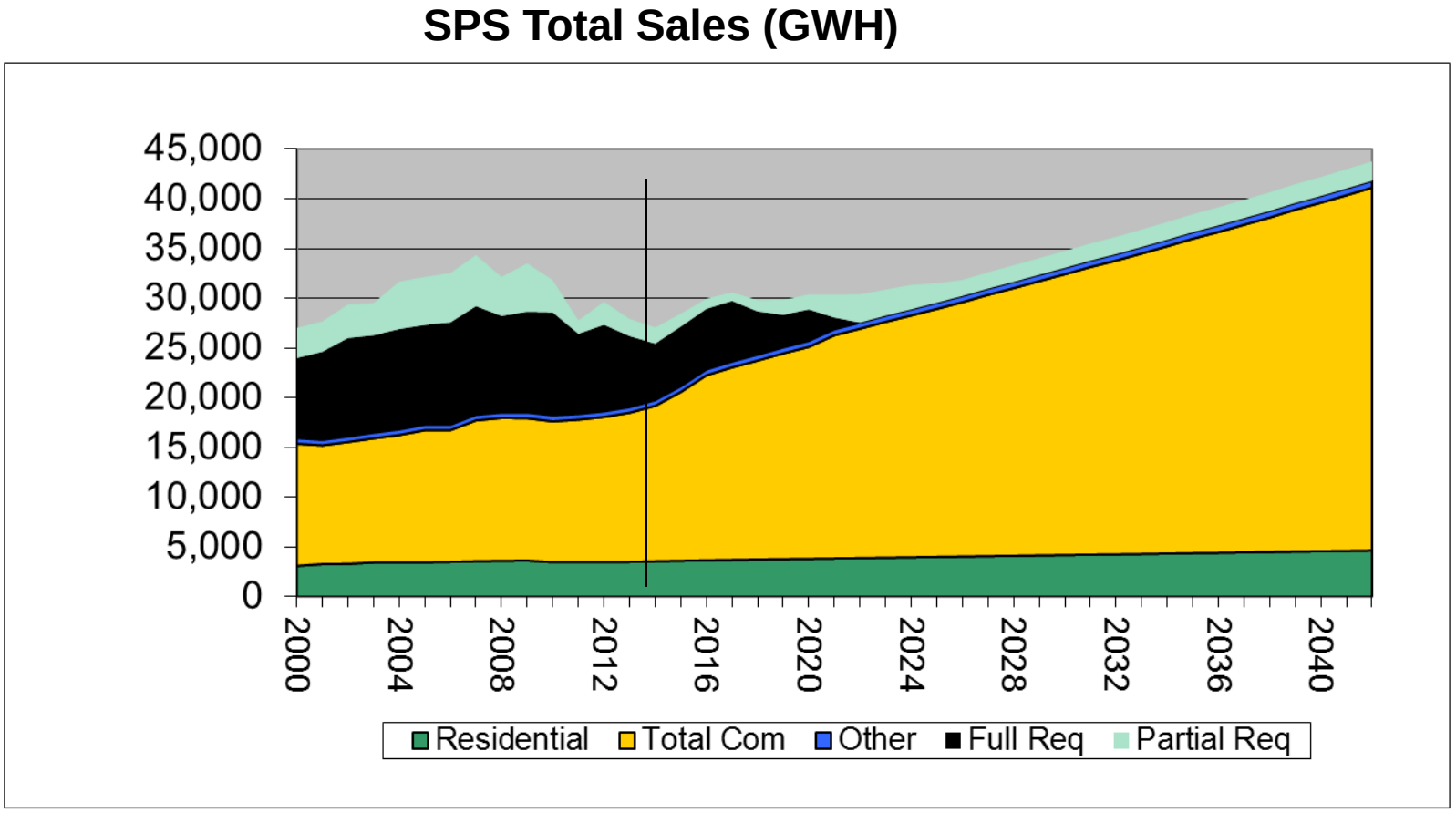
- Weather data collected from NOAA for Amarillo, Lubbock, and Roswell
- Forecast assumes normal weather defined as 30-year rolling average
- Includes temperature, Heating Degree Day (HDD), Cooling Degree Day (CDD), and precipitation
- Historical sales and peak demand are weather normalized for variance analysis

Customer Forecast



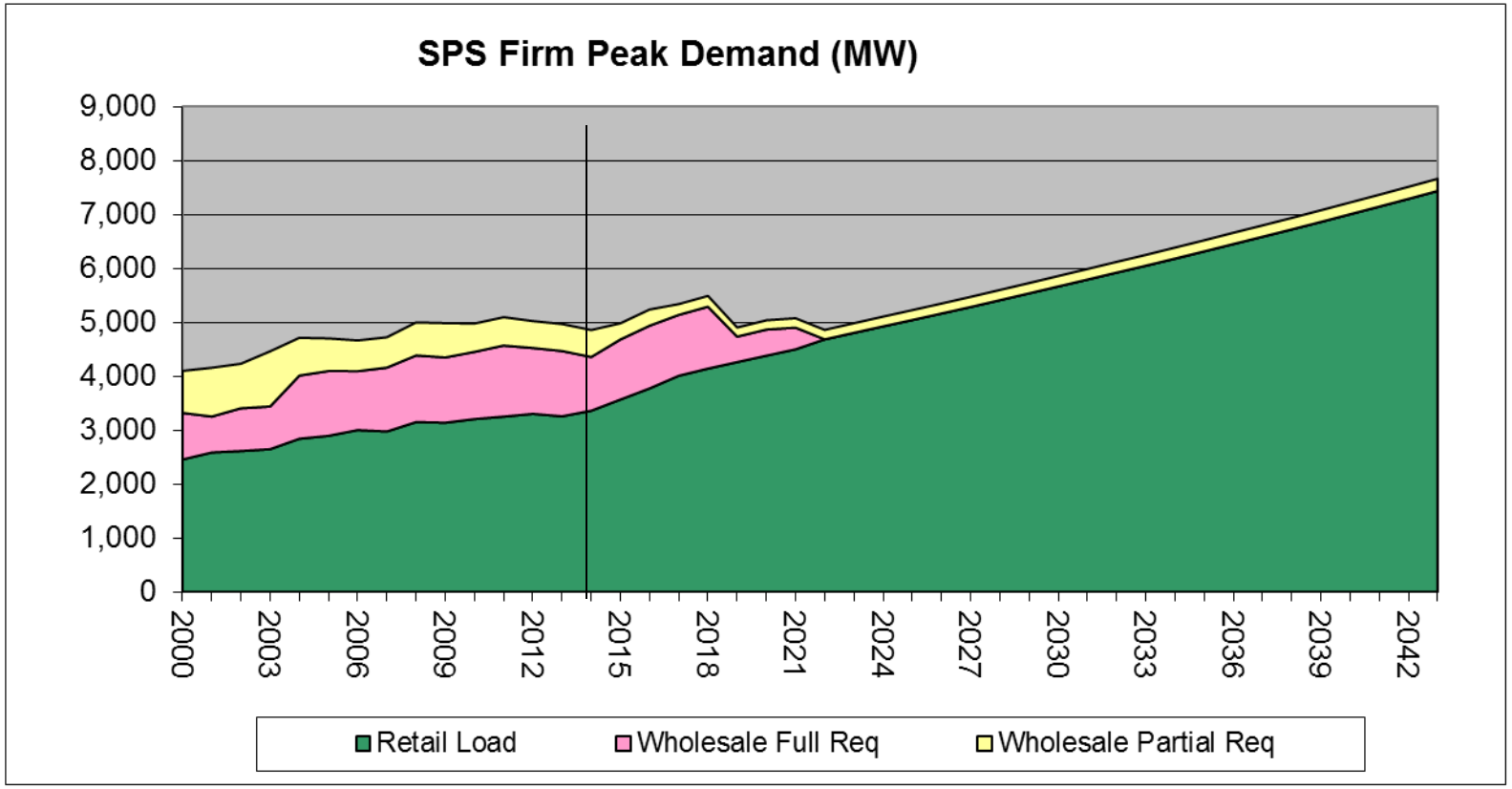
Retail Avg. Annual % Ch. 2010-2014 = 0.7% 2015–2043 = 0.6%

Sales Forecast



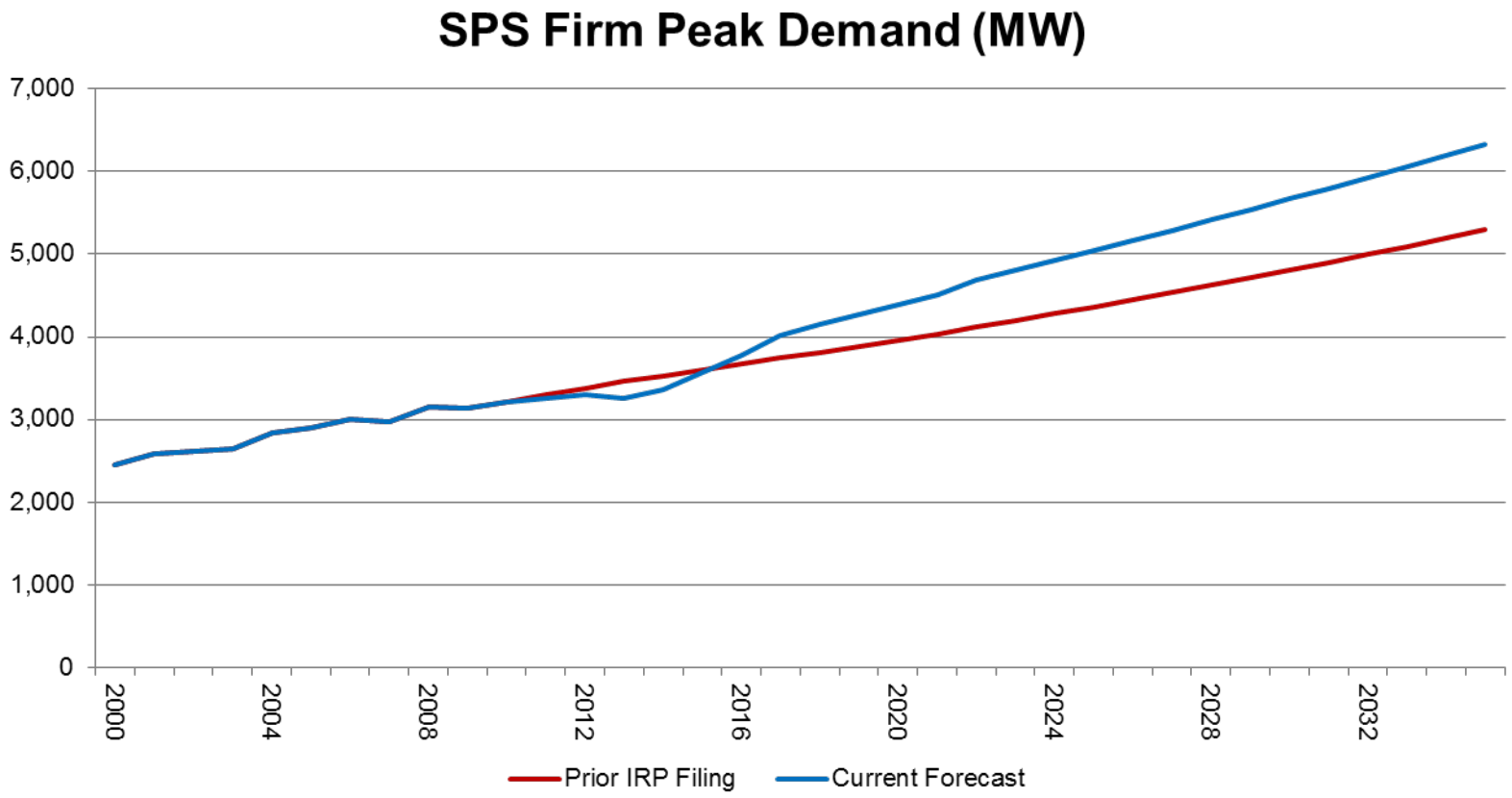
Retail Avg. Annual % Ch. 2011-2014 = 1.5% 2015–2043 = 2.7%

Peak Demand Forecast



Retail Avg. Annual % Ch. 2011-2014 = 1.1% 2015–2043 = 2.7%

Peak Forecast Comparison



Expected Load Scenarios for SE NM

		Peak Load (MW)									
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Base Case	Oil/gas	33	66	99	132	165	198	231	262	295	328
	Non Oil/gas	47	127	127	127	199	199	199	199	199	199
	Total	80	193	226	259	364	397	430	461	494	527
Mid Case	Oil/gas	49	99	148	197	246	296	345	394	443	493
	Non Oil/gas	47	127	127	127	199	199	199	199	199	199
	Total	96	225	275	324	445	494	544	593	642	691
High Case	Oil/gas	66	132	198	264	330	396	462	528	594	660
	Non Oil/gas	47	127	127	127	199	199	199	199	199	199
	Total	113	259	325	391	529	595	661	727	793	859

Note: Slide from “Customer Developments and the Electric Infrastructure in Southeast NM” presentation, July 17, 2013 to the New Mexico Public Regulation Commission.

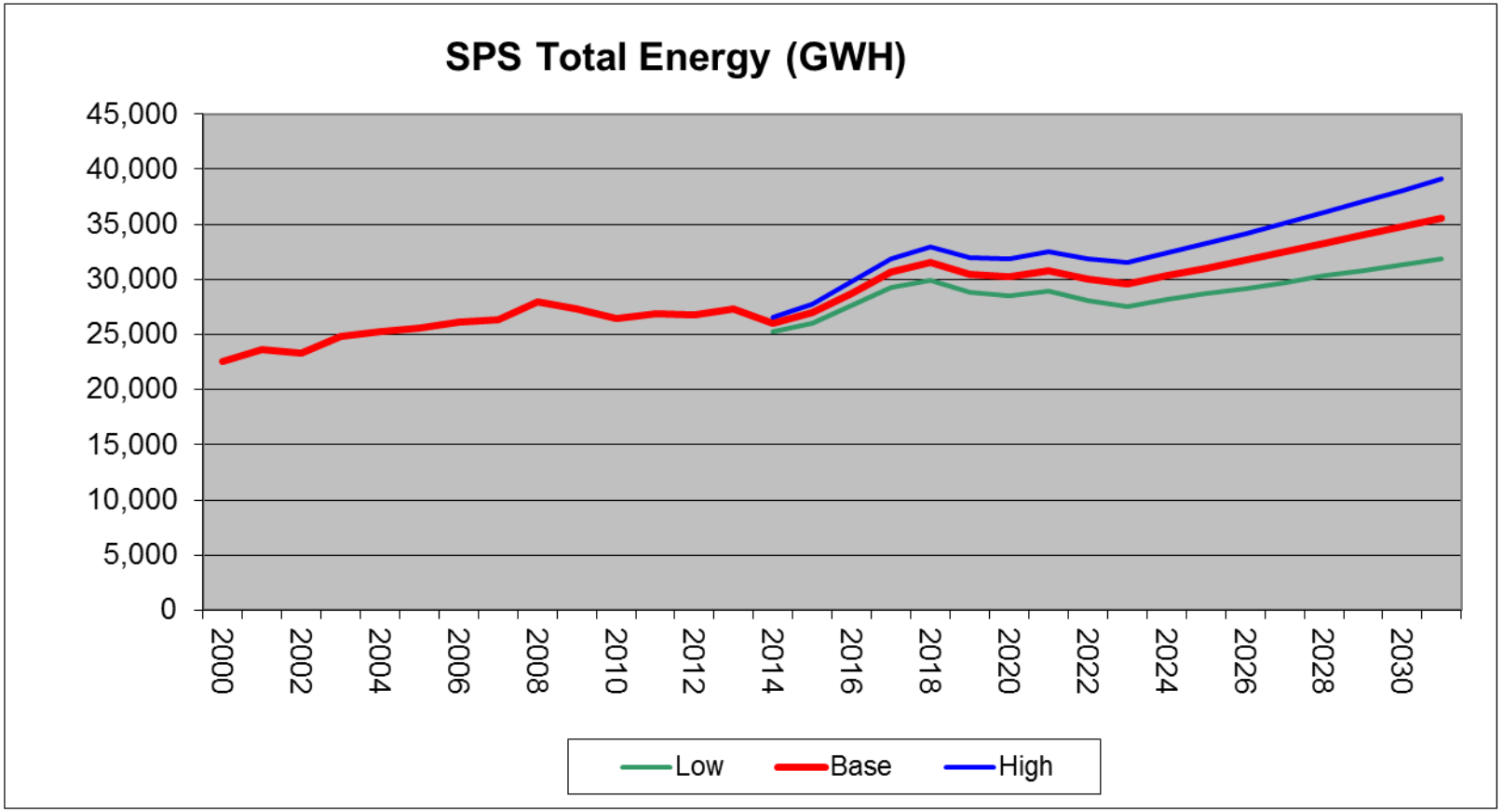
Demand-Side Management

- Sales and peak demand forecasts are adjusted to account for expected incremental DSM savings
- DSM savings are based on legislated mandates
- Residential programs: CFLs, air source heat pumps, and cooling
- C&I programs: business lighting, cooling, motor replacement, and custom projects

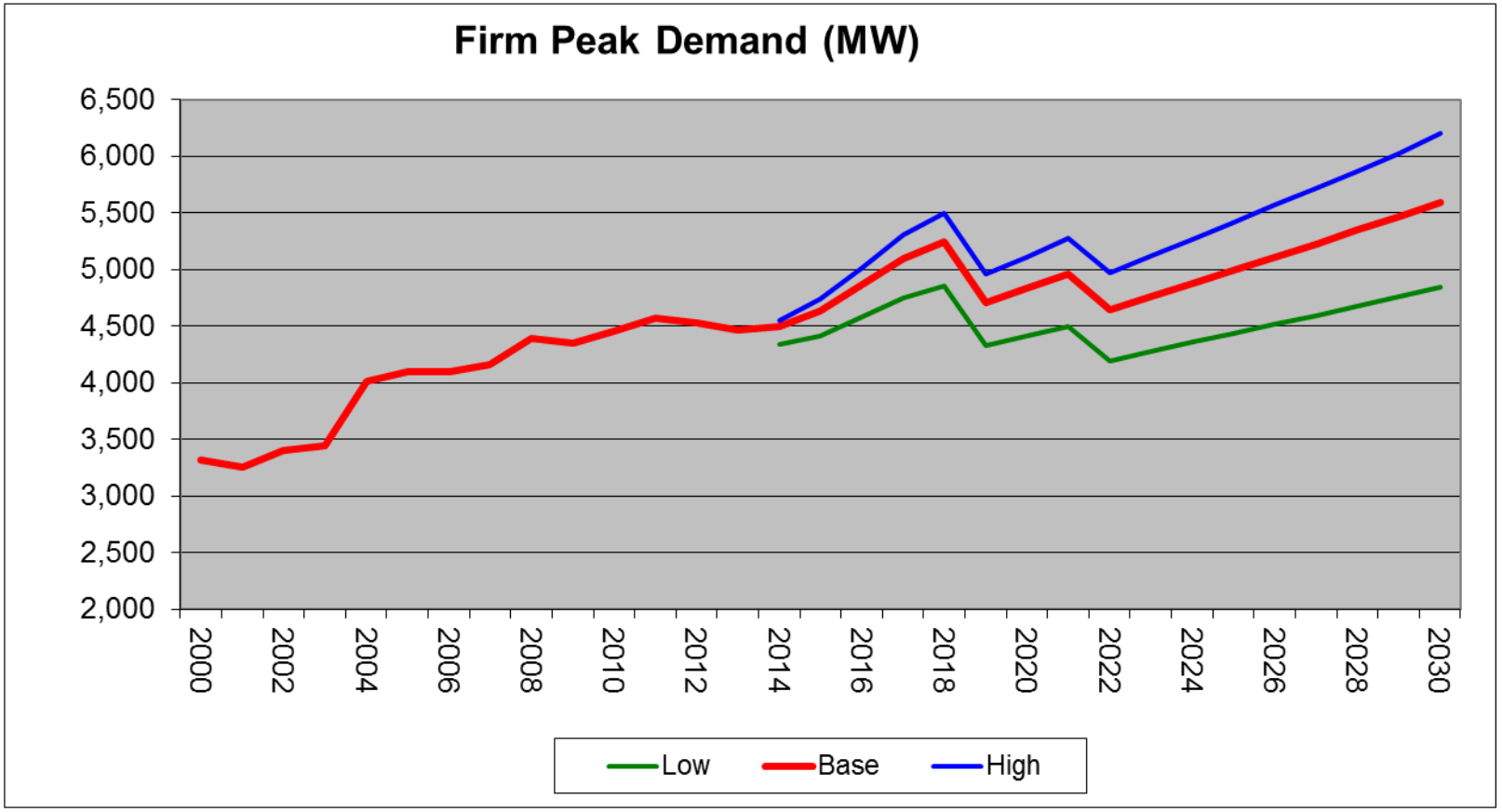
Forecast Scenarios

- Probability distributions are developed by conducting Monte Carlo simulations on the main drivers (e.g., weather and economics) of energy and peak demand forecasts
- Low-growth scenario is equivalent to the 15th percentile probability distribution
- High-growth scenario is equivalent to the 85th percentile probability distribution

Energy Forecast Scenarios



Peak Demand Forecast Scenarios

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Conclusion

IRP Information

- **Web Page**
  - www.xcelenergy.com/Company/Rates_&_Regulations/Resource_Plans

- **Brian Fleming – Xcel Energy/SPS Contact**
  - **Address - 600 S. Tyler, Suite 2900, Amarillo TX 79101**
  - **Phone - (806) 378-2460**
  - **Email – brian.fleming@xcelenergy.com**

Next Meeting

- **Date:**
  - **Thursday, March 12, 2015**
- **Time:**
  - **10:00am to 12:00pm (Mountain Time)**
- **Location:**
  - **Webinar meeting**


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