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Memorandum

From the office of
Chairman Tom Forese
Arizona Corporation Commission
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Arizona Corporation Commission
DOCKETED

APR 7 2017

DOCKETED BY

TO: Docket Control

DATE: April 7, 2017

FROM: Chairman Tom Forese's Office

SUBJECT: Docket No. E-00000C-17-0039

Attached are presentations that were given at the Special Open Meeting Workshop on Thursday, April 6, 2017 at 10:00 am concerning Coal Markets. We are submitting the presentations to this docket as they have information relating to the Navajo Generating Station and may be of public interest.

CERTIFICATION OF SERVICE

On this 7TH day of APRIL, 2017, the foregoing document was filed with Docket Control as CORRESPONDENCE FROM CHAIRMAN TOM FORESE and copies of the foregoing were mailed on behalf of the Commissioner to the following who have not consented to email service. On this date or as soon as possible thereafter, the Commission's eDocket program will automatically email a link of the foregoing document to the following who have consented to email service.

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OVERVIEW OF COAL GENERATION IN THE U.S.

Arizona Corporation Commission

Coal Generation Workshop

Bryan Galli
Peabody Energy
Group Executive & Chief Marketing Officer

Key Takeaways

Peabody

- Coal expected to remain major part of the U.S. energy mix
- Coal holds advantage to other fuels for affordability, reliability and stability
- States benefit from diversity of fuel sources and use of coal for substantial baseload generation
- Peabody the largest private-sector coal company
  - Emerged from Chapter 11 protection

Peabody: World's Largest Private-Sector Coal Company

- Operating model includes:
  - Americas and Australia business units
  - Marketing/Trading services function
  - Lean and scalable corporate structure
- U.S. operating regions:
  - Powder River Basin (PRB)
  - Illinois Basin (ILB)
  - Southwest
  - Colorado
  - Australia Met and Thermal
- Leading voice in:
  - Sustainable mining
  - Energy access
  - Clean coal technologies

23 operations
In U.S. and Australia

$4.7 billion
2016 Revenues

5.6 billion
Tons Proven/Probable Reserves

~6,700
Skilled Employees Globally

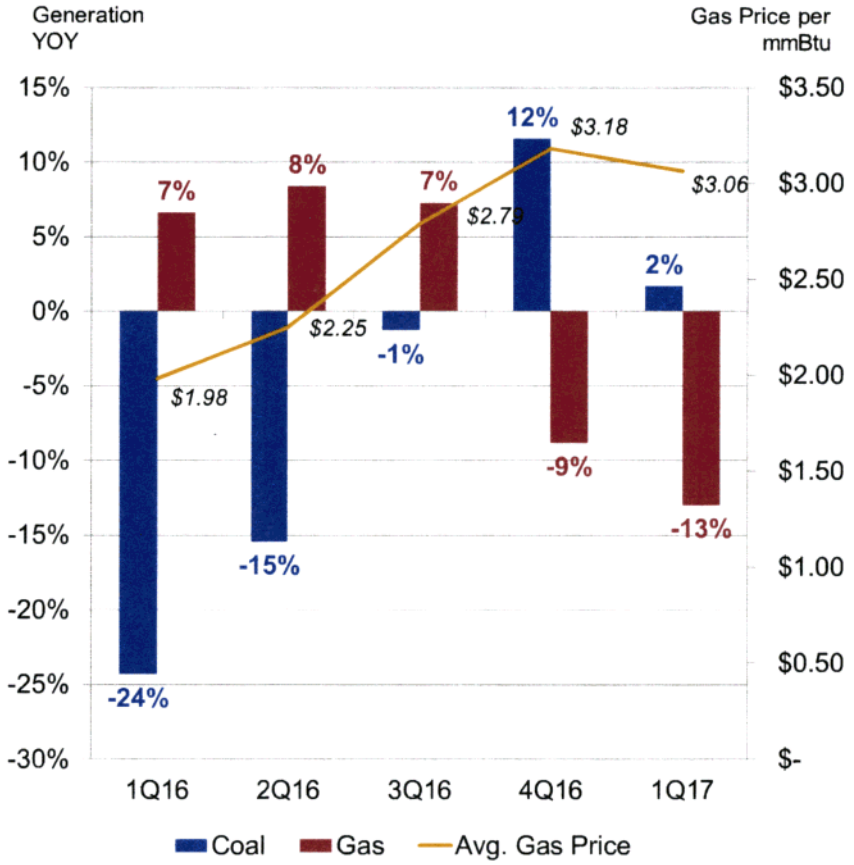
25+ countries
Served by Peabody

Note: Information as of the year ended Dec. 31, 2016. Proven and probable reserves reflect estimated amounts as of Dec. 31, 2016.

U.S. Coal Generation Strengthens with Higher Gas Prices

- 2017 utility coal consumption responding to higher natural gas prices
- Utility demand projected to decline 5 to 15 million tons from 2016 to 2021
  - ~50 GW of plant retirements expected by 2021, largely offset by higher plant operating levels
- Coal forecasted to continue to supply nearly 30% of U.S. electricity demand by 2021

U.S. Quarterly Coal and Gas Generation

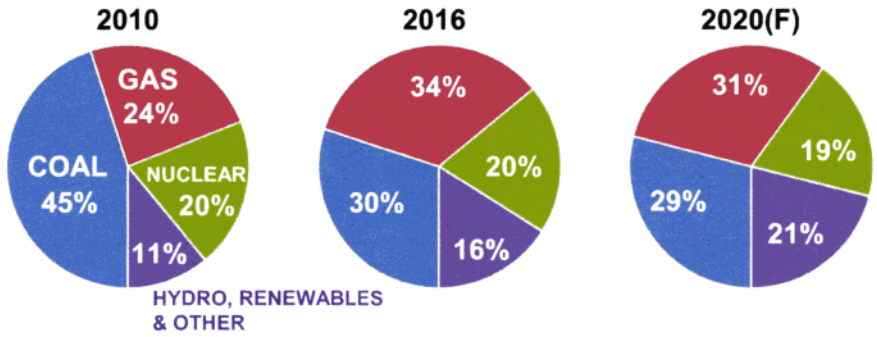


Source: EIA, Bloomberg, industry reports and Peabody Global Energy Analytics. Coal's competitiveness with natural gas is very plant specific and highly dependent on a number of factors, including transportation costs

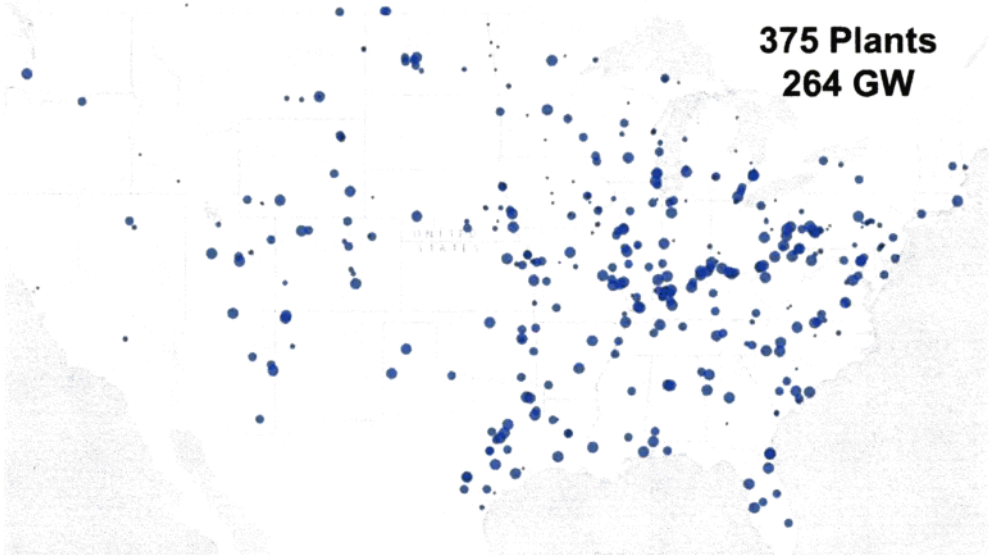
U.S. Generation and Coal

Coal to Remain an Important Part of the Energy Mix

U.S. Electricity Generation by Fuel



U.S. Coal Generating Plants



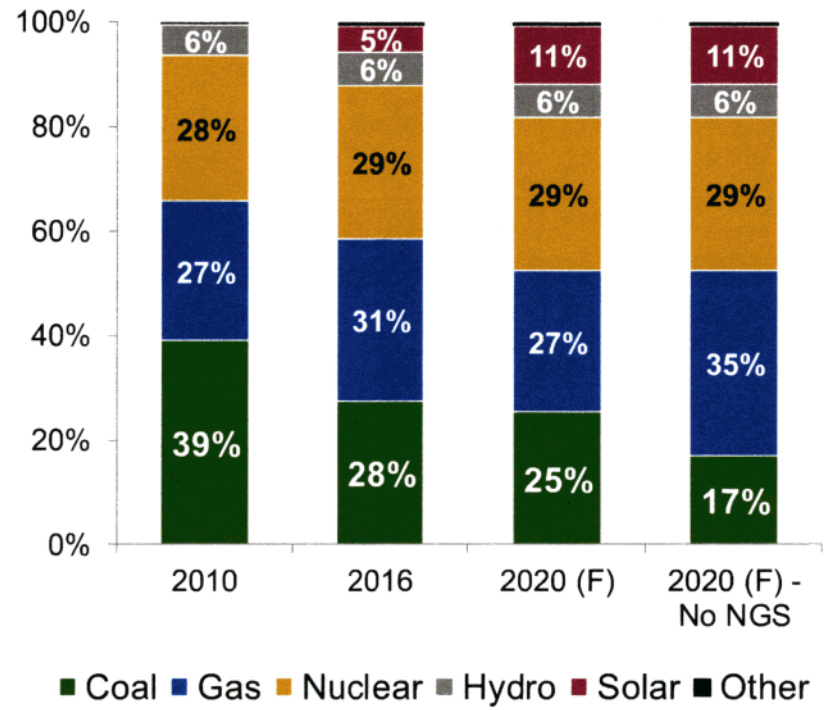
- Coal is expected to continue to supply nearly 30% of U.S. electricity demand by 2021
- Coal share has decreased amid plant retirements, lower natural gas prices and increased renewables
- Coal use is stabilizing as higher gas prices and increased utilization from remaining coal fleet partially offsets continued retirements
- The new administration, Congress agenda to promote pro-growth, tax and regulatory changes are expected to be positive for the coal industry
- Advancing high-efficiency low-emissions (HELE) generation and carbon capture projects remains a priority in any political environment

Source: U.S. Energy Information Administration, Electric Power Monthly, February 2017, Ventyx, and Peabody Global Energy Analytics

AZ Generation and Coal

Arizona's Balanced Portfolio Is At Risk As Coal Plants Close

Arizona Electricity Generation by Fuel



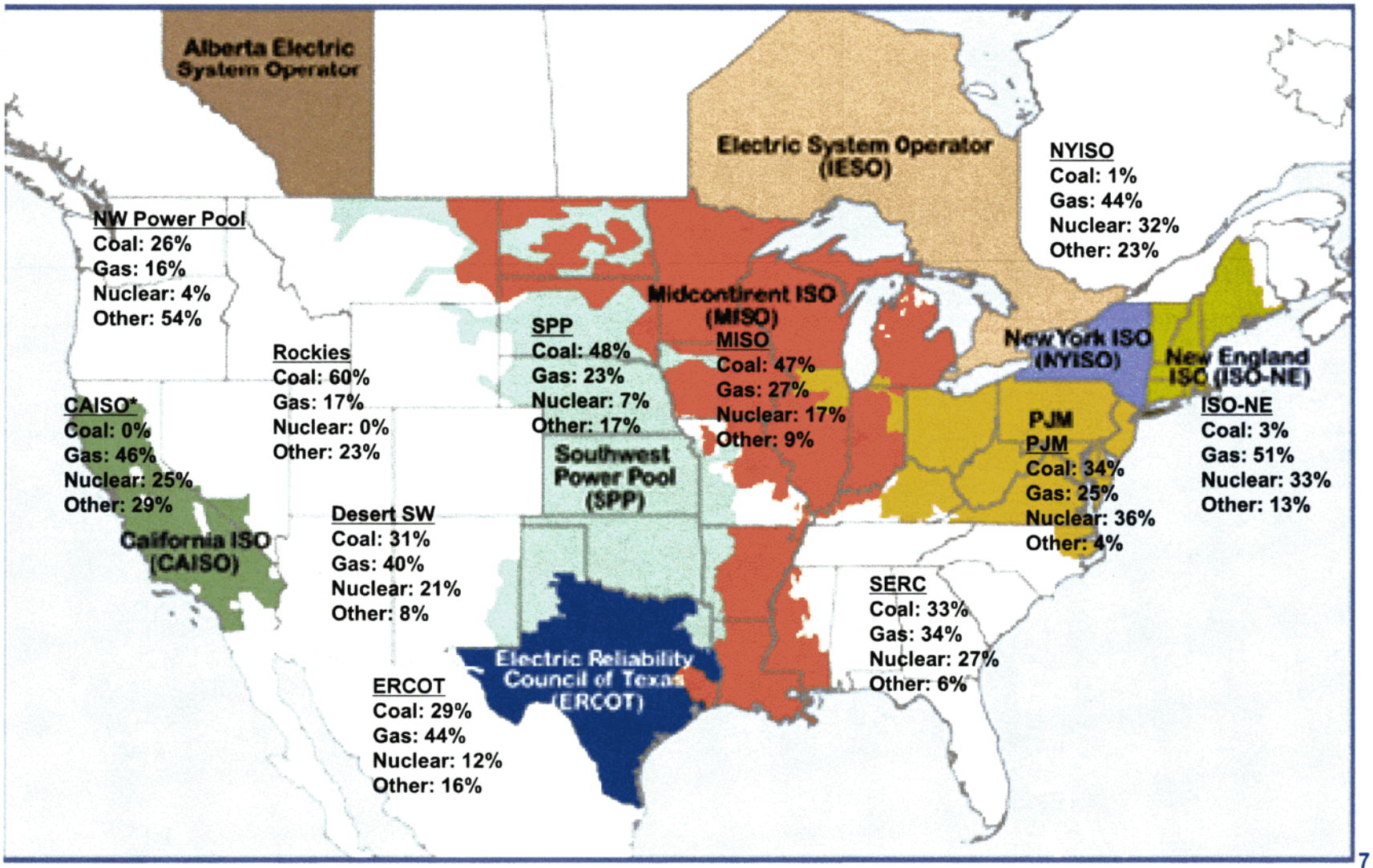
- Arizona currently enjoys a balanced generating portfolio, with ~30% of its power coming from each of coal, natural gas and nuclear
- Coal's share of Arizona's generation has fallen since 2010 with the retirements of units at Cholla and Sundt and lower natural gas prices
- Expectations are for Arizona's generation mix to stay relatively steady through 2020, with solar growth taking share from both coal and natural gas
- Coal's share of generation would fall to 17% in 2020 if all three NGS units were to close, with a greater reliance on gas generation filling in for the lost coal plant
  - This could lead to capacity shortfalls and price increases for consumers

Source: U.S. Energy Information Administration, Net Generation by State by Type of Producer by Energy Source (EIA-906, EIA-920, and EIA-923, U.S. Energy Information Administration, Electric Power Monthly, February 2017, Peabody Global Energy Analytics

U.S. ISO Generation by Fuel Type in 2016

Peabody

Coal Maintains Leading Position in Numerous Regions

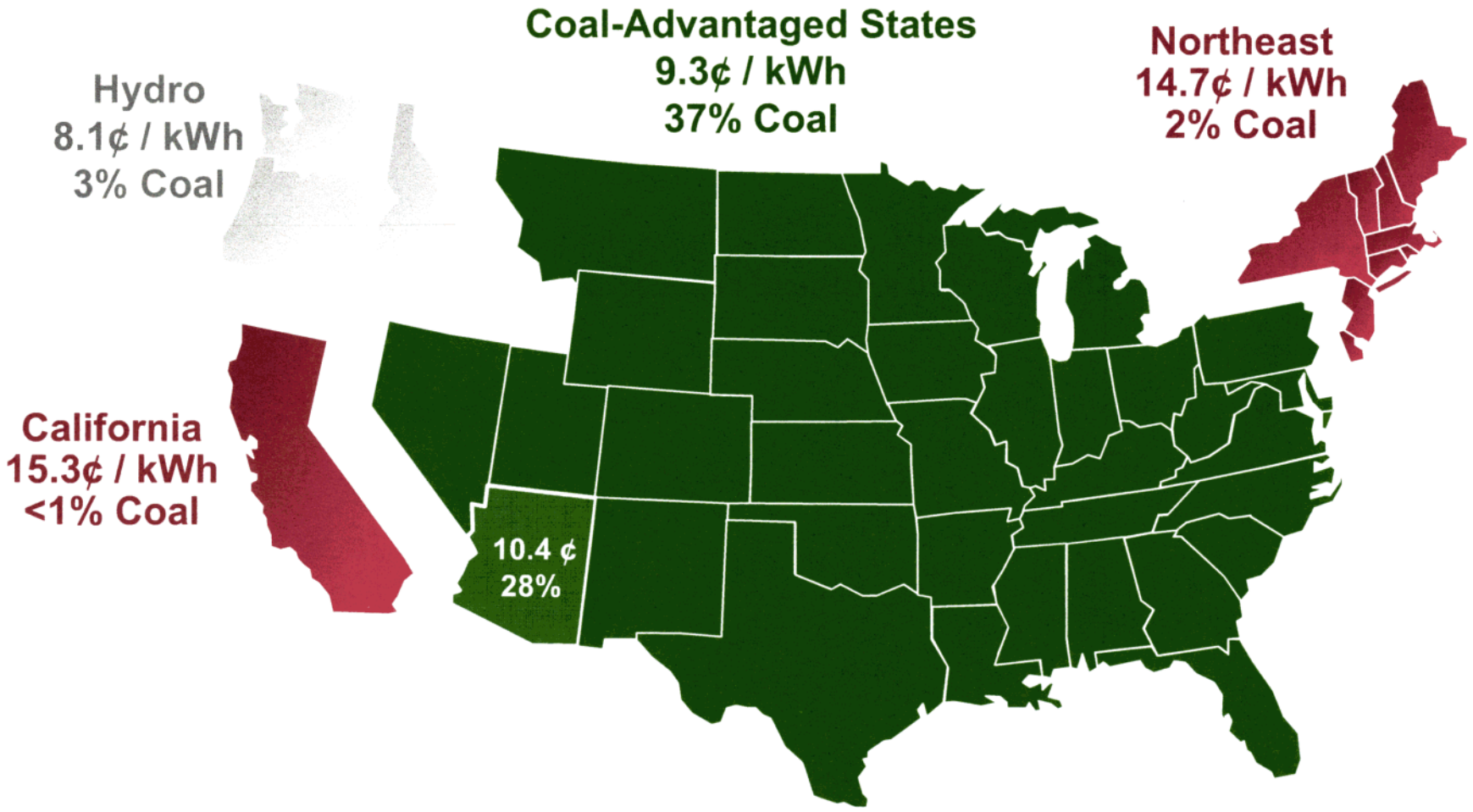


Source: SNL, https://www.misoenergy.org, http://www.ercot.com/, https://www.spp.org/. All data is 2016 with the exception of CAISO which is 2015 EVA data

Key Competitive Advantage of Coal
Low-Cost Electricity

Peabody

Non-Coal State Electric Rates 60% Higher Than Coal-Advantaged States

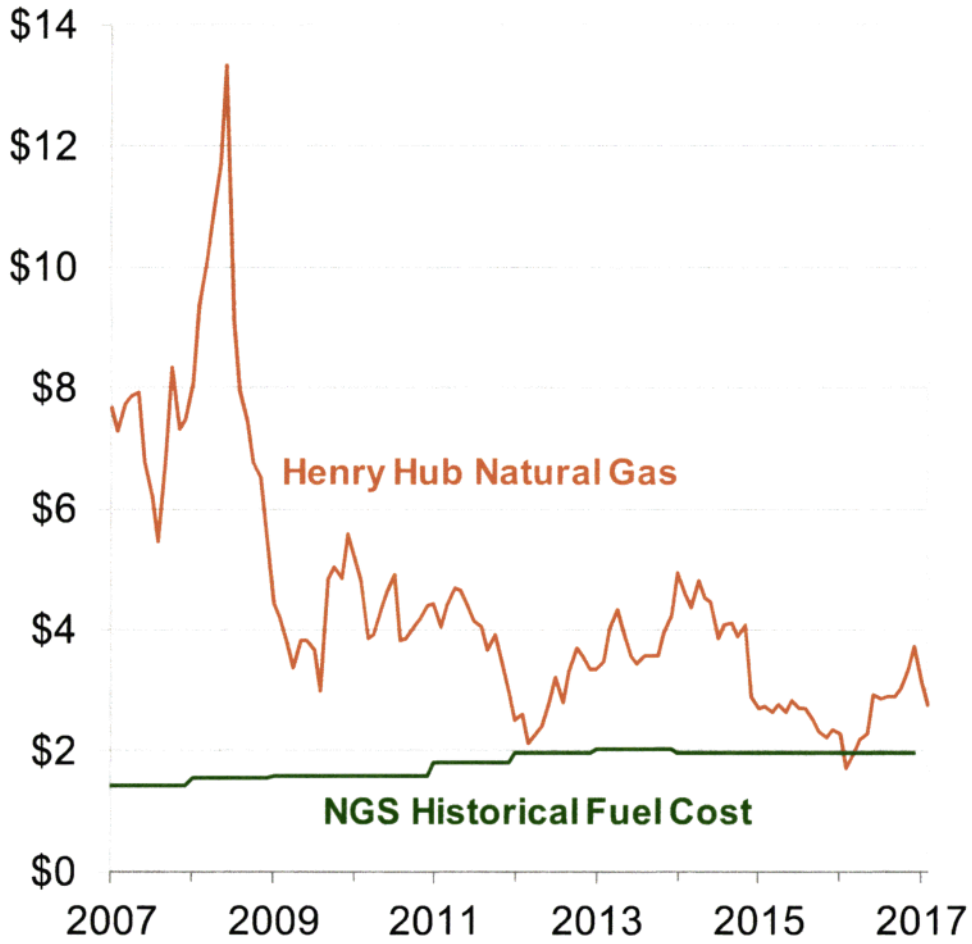


Source: U.S. Energy Information Administration, Electric Power Monthly, February 2017.
2016 average retail electricity prices per kWh. Weighted average of CA and NE states equals 14.9 cents per kWh. ID, OR, WA grouped separately due to hydropower.

Fuel Costs

Coal Is Stable, Reliable Source of Baseload Generation

Coal and Gas Fuel Costs ($/mmBtu)



- Coal cost volatility has been very low; averaging less than ~$2.00/ mmBtu since 2007
- Conversely, gas prices are subject to significant volatility, ranging from $2 - $13/mmBtu
- Coal costs have consistently been more competitive than natural gas
- NGS fueled by coal is home grown and reliable given its proximity to Kayenta mine
- Nearly all of the natural gas consumed in Arizona is imported from other states

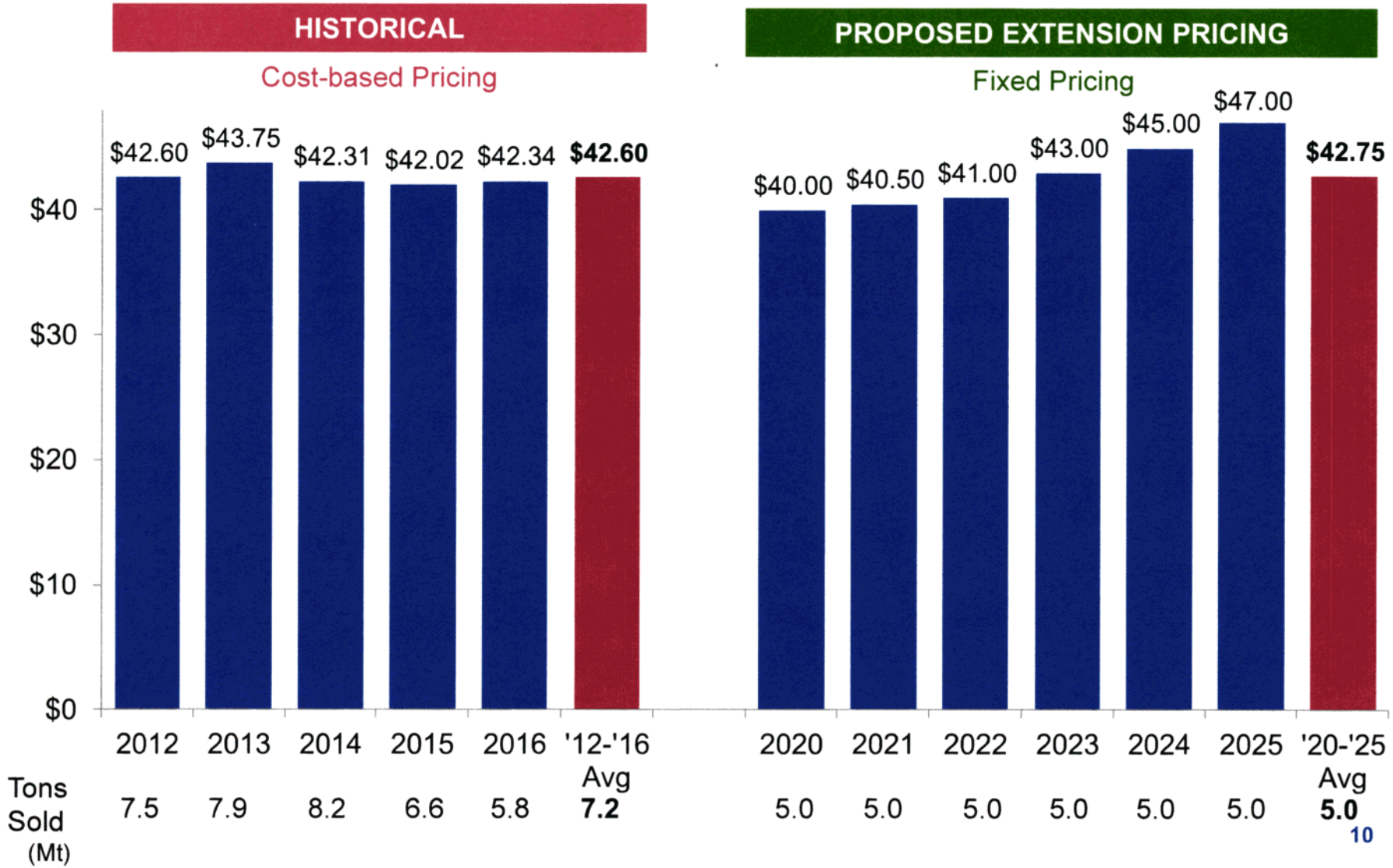
Source: Bloomberg and Peabody

* Assumes average coal plant heat rate (Btu/kWhr) is comparable to simple cycle natural gas plants

Navajo Generation Station

Peabody

Fuel Cost Summary ($ per ton)

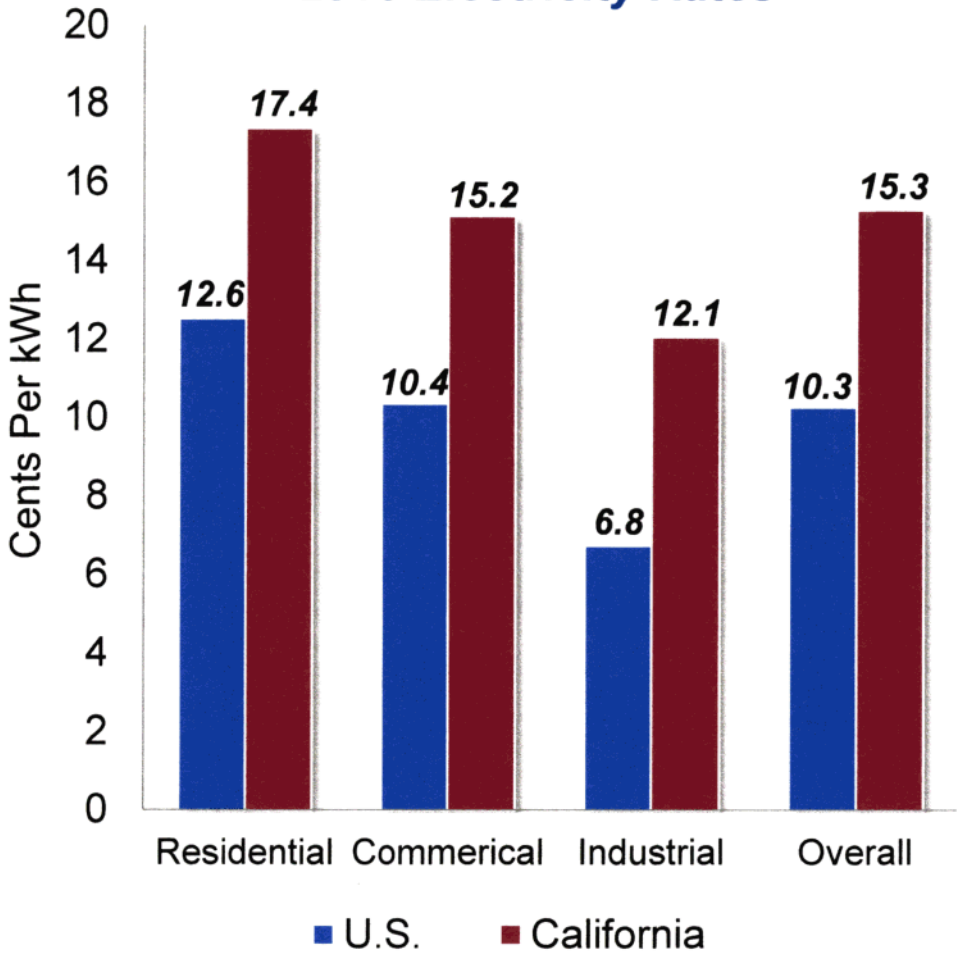


The California Model for Arizona?

Peabody

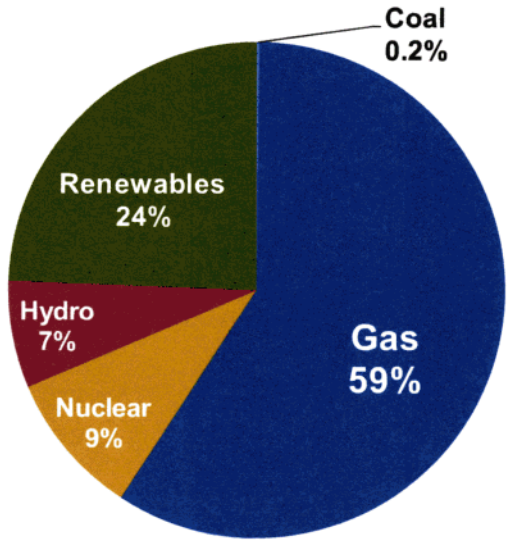
A Cautionary Tale of Forcing Renewables and Energy Taxes

2016 Electricity Rates



- California electric rates are ~50% more than national average and among the highest in the US
- Industrial electricity rates are 78% above average, Residential +38% and Commercial +46%

California Electricity Mix



Source: U.S. Energy Information Administration Electric Power Monthly, February 2017

OVERVIEW OF DESERT SOUTHWEST POWER MARKET AND ECONOMIC ASSESSMENT OF THE NAVAJO GENERATING STATION

ARIZONA CORPORATION COMMISSION

APRIL 6, 2017

DALE PROBASCO
MANAGING DIRECTOR

ROGER SCHIFFMAN
DIRECTOR

NAVIGANT

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STUDY APPROACH

Approach

- We believe Navigant's base case analysis is based on a reasonable and practical set of assumptions and forecasts which are industry centric and include:

  - Navigant Energy Market Outlook (NEMO) market assumptions and price forecast
  - Coal prices provided by Peabody
  - Non-fuel O&M cost information from our proprietary database
  - Current Navajo lease pricing
  - Detailed hourly dispatch analysis
  - Conducted sensitivity analysis for gas pricing, regulation and carbon tax

EXECUTIVE SUMMARY

Navigant Study Results Summary

- Recognizes that NGS:
  - Has demonstrated successful and competitive operations (Net Capacity Factor levels at or above 80%)
  - Is an important and reliable supply resource in Western U.S. power markets
  - Provides capacity to the investor-owned utility partners
  - If shutdown, would require owners to procure replacement capacity and energy
- Analysis concludes that NGS:
  - Remains a low variable cost generating resource (Near the bottom/most efficient part of the dispatch stack)
  - Dispatches at a high level for the short term (2020 – 2029), and the longer term (2020 – 2040)
  - Remains an economically viable generating resource with positive operating margins and cash flow ($700 million energy market NPV). That cash flow would contribute to capital recovery for new plant ownership, and helps to reduce rates for customers under existing ownership
  - Total fuel and operating costs are below energy and capacity market replacement costs (7% lower 2020-2029; 14% lower 2020-2040)
  - Continues to have variable operating costs below regional NGCC resources. Navigant believes Non-Fuel O&M cost savings of $4 million per unit per year are achievable, compared to the median level O&M assumed in our study
- Additional benefits from continued operation include:
  - Regional fuel diversity and risk hedging against volatile natural gas prices. With NGS retirement, natural gas fueled share of generation will increase by 15 percent per year
  - Market price stability
  - Socio-economic value to the region and the Navajo Nation and Optionality value in deferring retirement and/or SCR decisions

EXECUTIVE SUMMARY

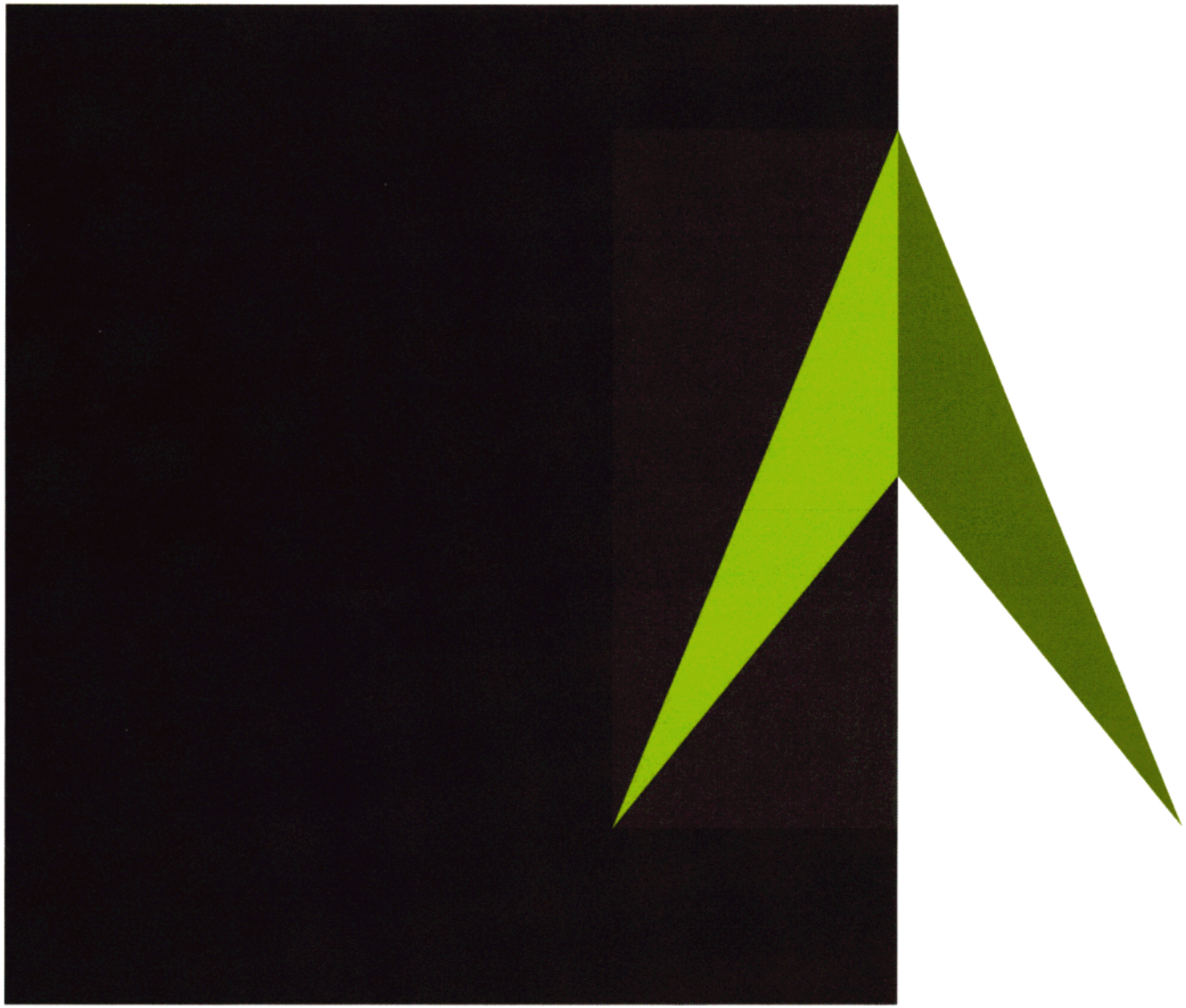
Navigant Study Results Summary (Con't)

- Electric prices in the DSW are expected to rise
  - Increase in price of natural gas
  - Decline in reserve margin
- Natural gas prices are expected to rise
  - Increase in demand from electric generators, industrial load and LNG exports
  - Additional risk from lagging infrastructure
- Arizona natural gas delivery carries more risk than coal supply to NGS
  - All natural gas in Arizona is imported, with 70% of the gas coming from one pipeline (El Paso)
  - Competition for Southwest gas is increasing with over 70% of pipeline gas that comes into Arizona, continuing on to California and Mexico (gas flowing to Mexico is up 50% since 2013)
  - Supply disruption on El Paso pipeline was one of the triggering events for California Energy Crisis in 2000-2001
  - Arizona does not have natural gas storage to buffer price swings and supply disruption
- NGS is expected to continue robust operations
  - No significant operational issues expected
  - Potential for lower costs than used in the Navigant modeling
  - Continued favorable dispatch position

EXECUTIVE SUMMARY

Additional Analysis

- Navigant also reviewed other material related to NGS
  - Completed a review of the NREL NGS plant economics study and believe:
    - The study was narrowly focused on the impact to the Central Arizona Project
    - Market dynamics were completed at a high level of detail
    - The study did not reflect detailed fundamental market analysis
  - Completed a review of an SRP economic study and believe:
    - The study had a very conservative view of natural gas prices (low) and non-fuel O&M costs (high)
    - The study includes substantial increase in Navajo lease cost
    - These three factors strongly influence the study conclusions
  - Desert Southwest region
    - Numerous coal plants are scheduled for retirement
    - Exhibits high capacity margins in the early years but is projected to steadily decline towards equilibrium levels
    - The general trend in energy prices throughout the region mirrors expected real escalation in natural gas prices
    - As reserve margins decline, Navigant forecasts market energy prices will increase by 43 percent between 2020 and 2030, and by 112%, between 2020 and 2040

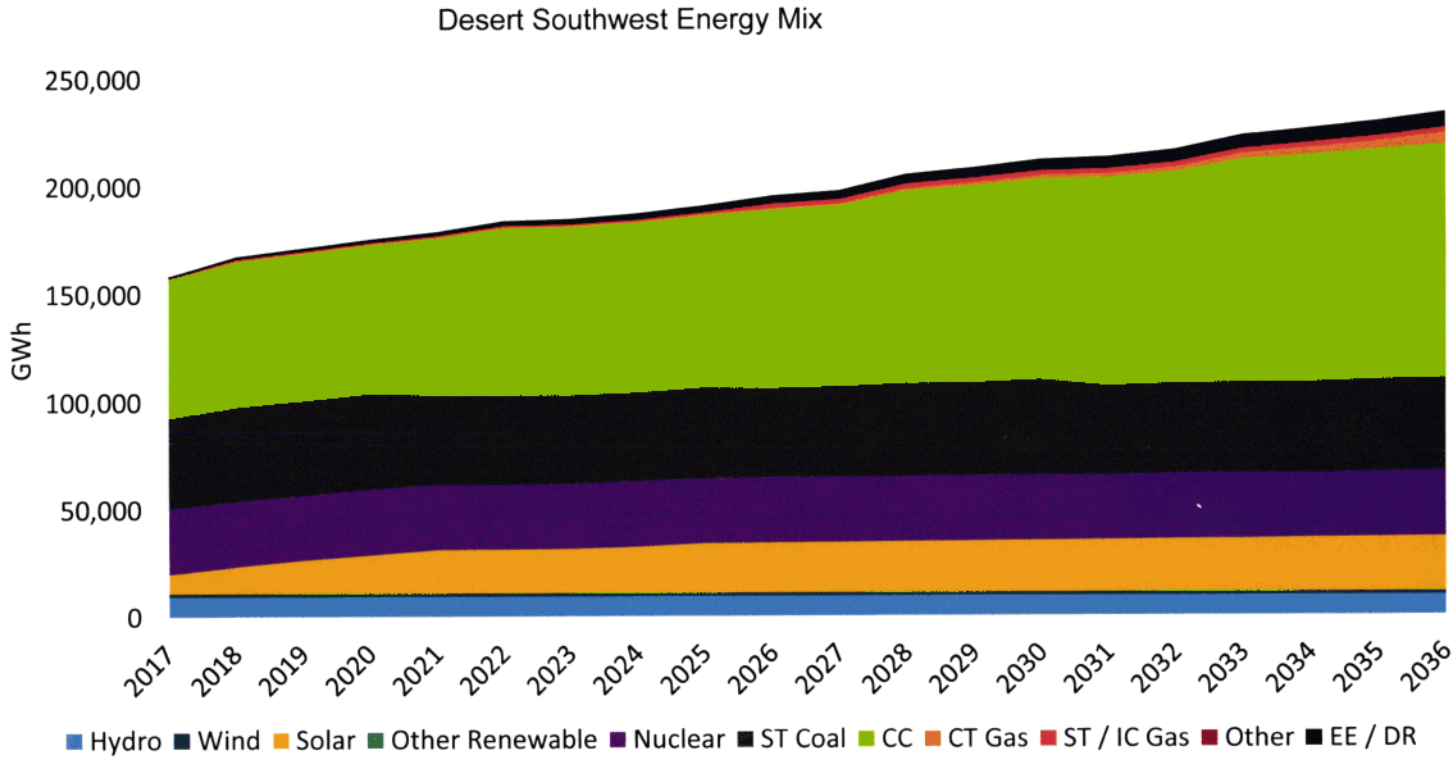


DESERT SOUTHWEST POWER MARKET OVERVIEW

NAVIGANT

DESERT SOUTHWEST MARKET SUMMARY

- The region will see increased generation primarily from natural gas-fueled resources, and from solar resources.
- Generation from coal-fueled resources is projected to stay somewhat stable.
- Remaining coal plants are projected to see higher dispatch/capacity factor.



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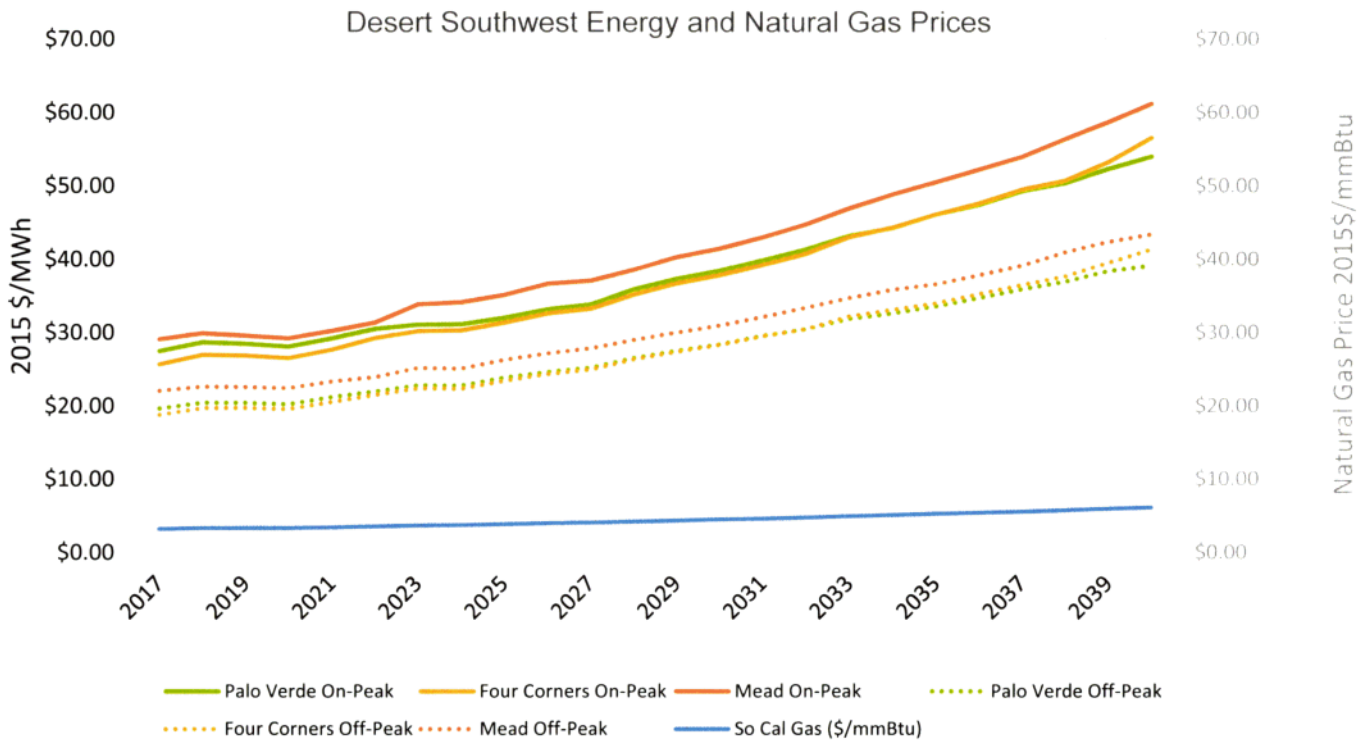
DESERT SOUTHWEST MARKET SUMMARY

- Navigant forecasts natural gas prices to remain relatively flat through 2020, and to then increase. Forecast assumes pipeline expansion will occur to keep pace with demand and supply, which is conservative. In reality, a lag is more likely, with higher and more volatile prices
- Regional energy prices follow a similar trend, staying relatively flat through 2020, then increasing with natural gas prices through time.
- Natural gas-fueled generators are typically the marginal resource in the Desert Southwest energy markets



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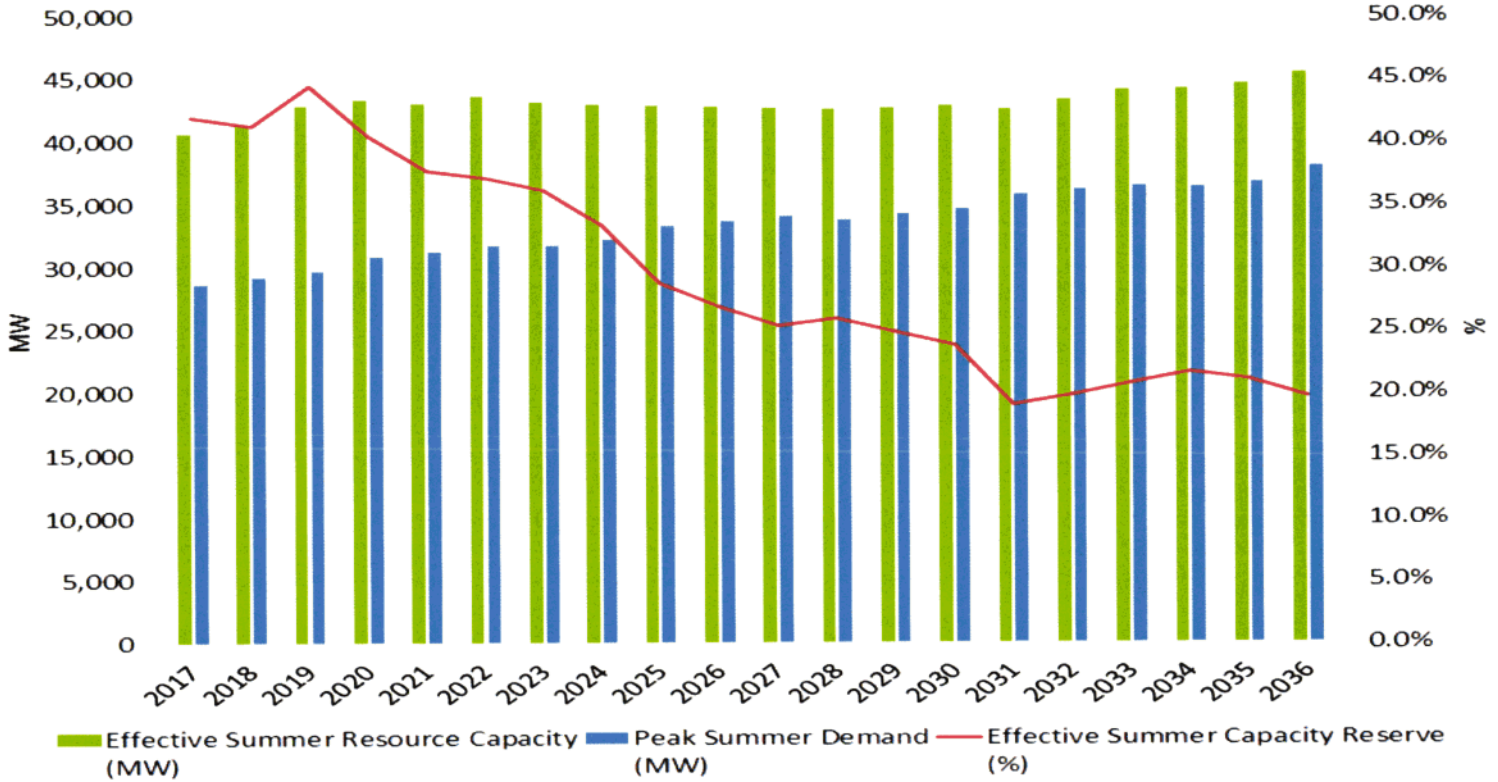
DESERT SOUTHWEST SUPPLY AND DEMAND BALANCE

- DSW exhibits high capacity margins in the early years
- Capacity margins grow tighter with relatively flat reserve capacity, and continued load growth, and is projected to steadily decline toward equilibrium levels in the 20 percent range



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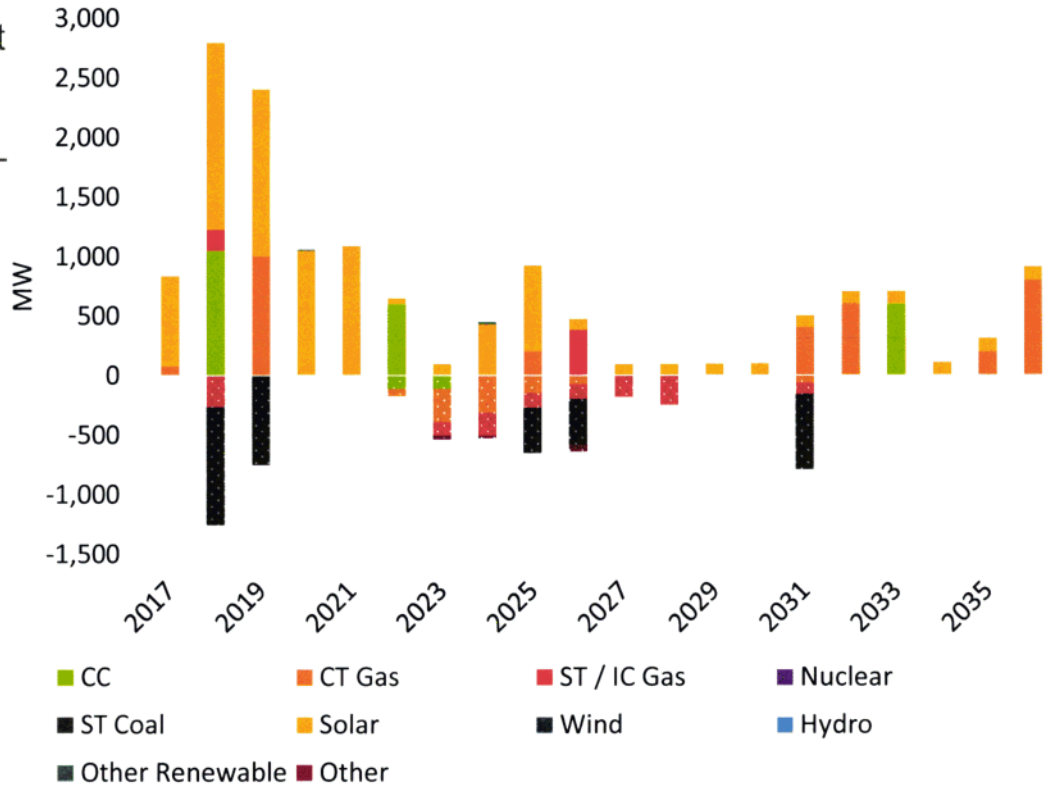
DESERT SOUTHWEST CAPACITY ADDITIONS AND RETIREMENTS

- Retirements consist of coal (including NGS Unit 1), and older GT, IC and ST units
- Additions are natural gas fueled simple and combined cycle, and solar



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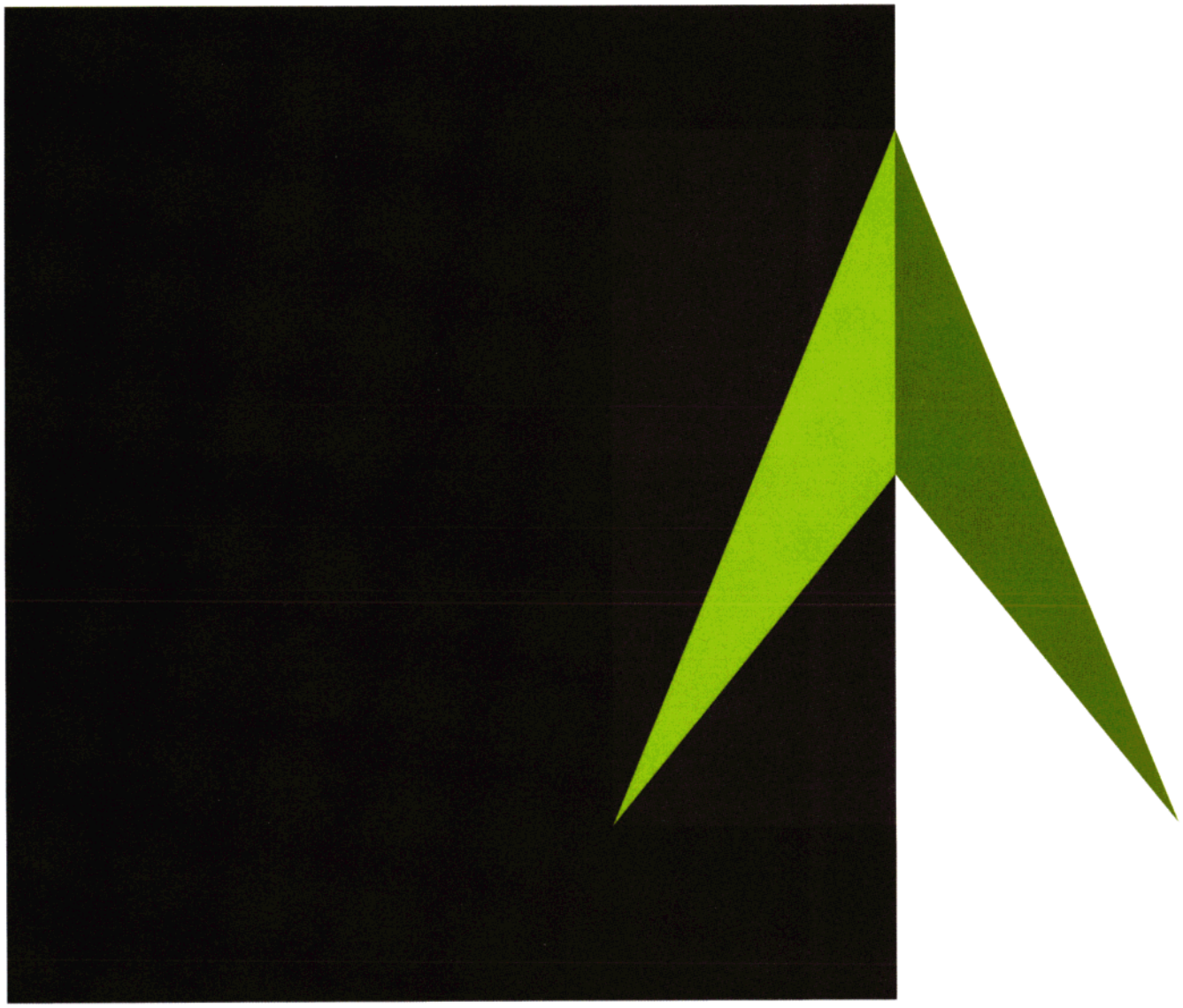

ECONOMIC ASSESSMENT OF NAVAJO GENERATING STATION

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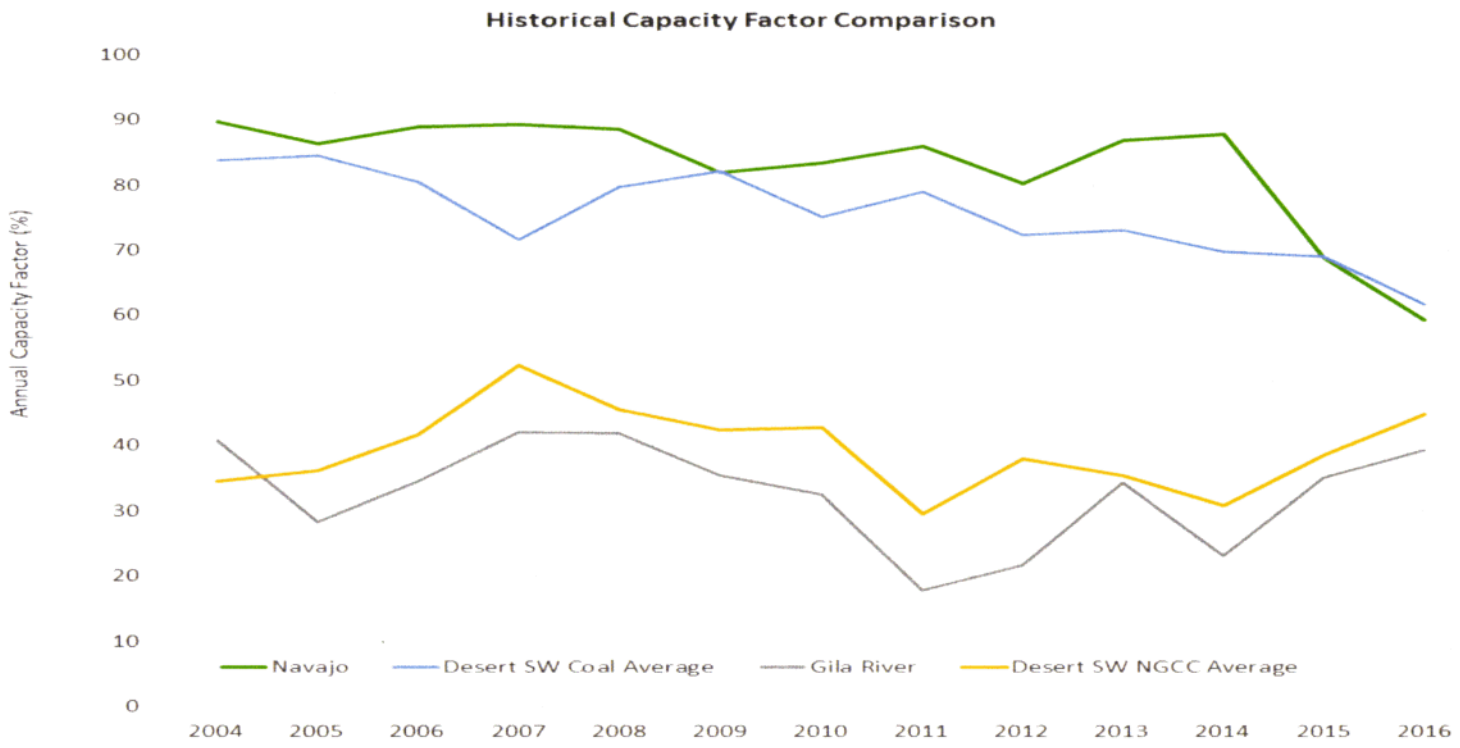
NGS AND OTHERS HISTORICAL CAPACITY FACTOR COMPARISON

- NGS has historically demonstrated successful operations
- Been a key source of electricity in the region
- Coal plants on average have consistently operated at a higher capacity factor than NGCC plants



Data source: Energy Velocity

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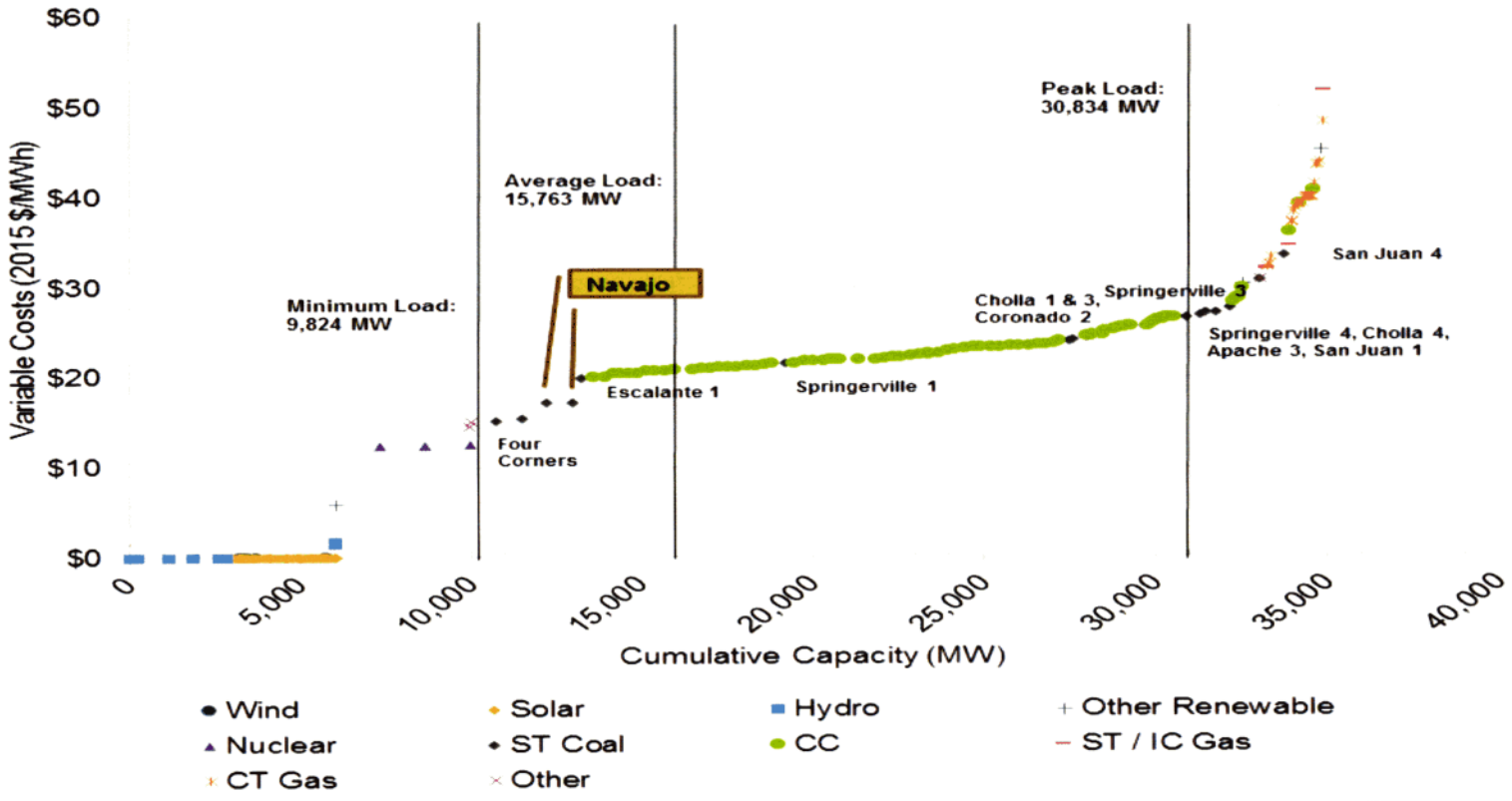
DESERT SOUTHWEST SUPPLY CURVE - 2020

- Navajo is a low cost resource in the region
- NGS is positioned to remain so even with recent declines in gas prices



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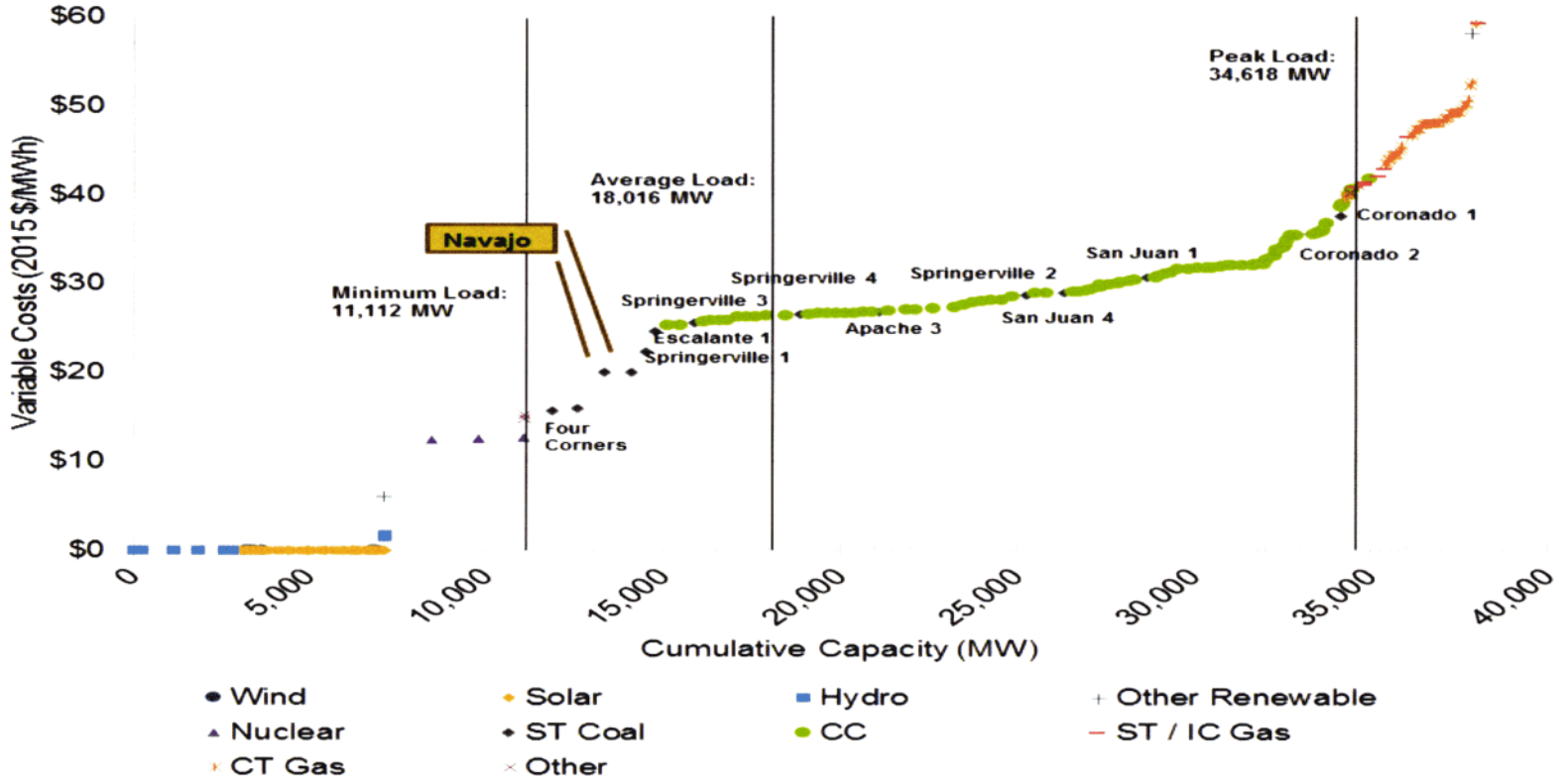
DESERT SOUTHWEST SUPPLY CURVE - 2030

- NGS is positioned to remain a low cost resource in the long term



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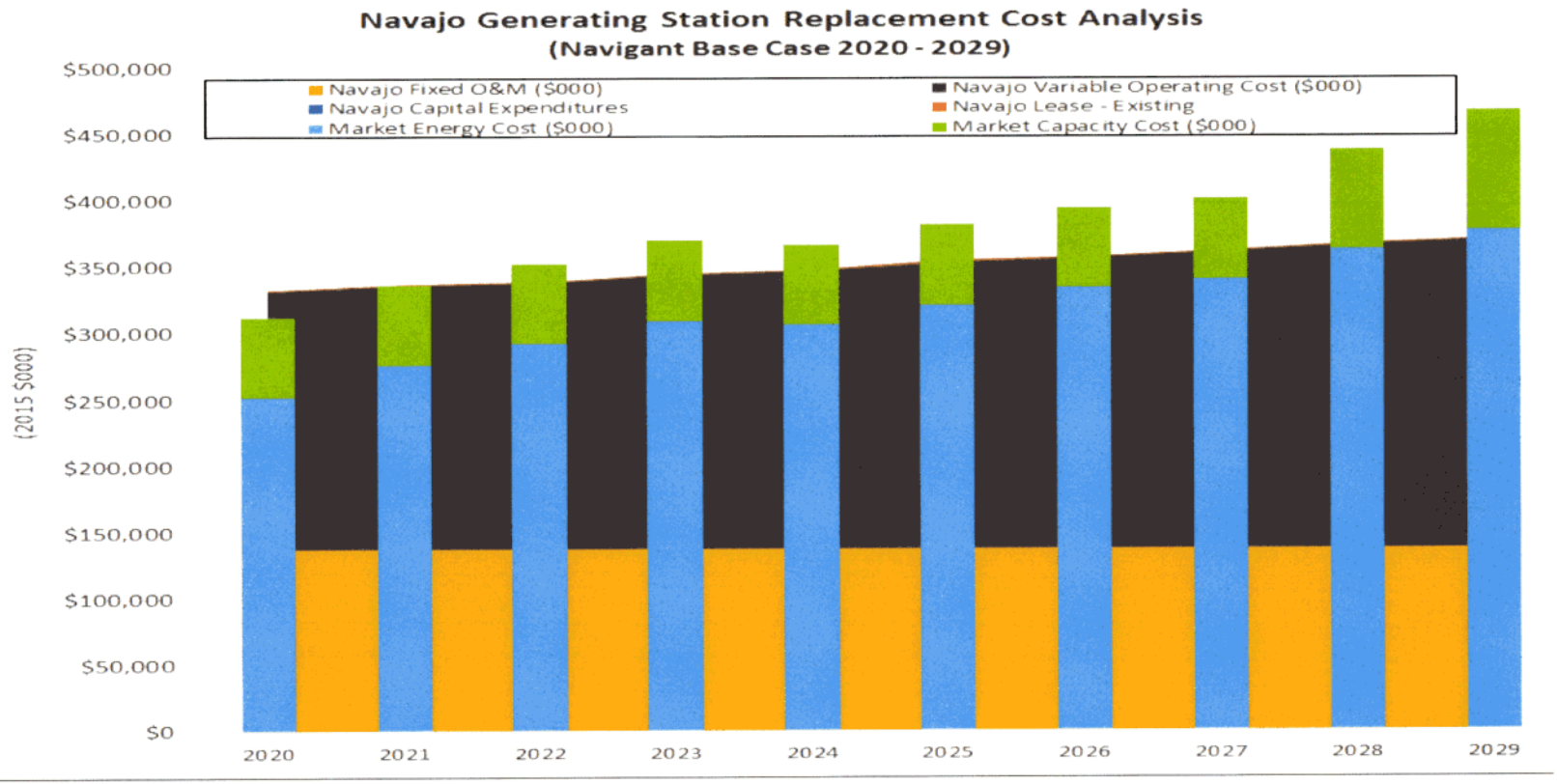
NGS PROJECTED REPLACEMENT COST COMPARISON (2020 – 2029)

- Overall the cost of replacing Navajo is projected to exceed Navajo total fuel and operating cost by **$132 million Net Present Value**
- If Unit 1 stayed online, NGS projected cost savings would exceed $200 million



Note: Assumes Peabody proposed coal prices, with annual $2/ton carry on coal prices 2026 and later. Also assumes current payment level for Navajo lease

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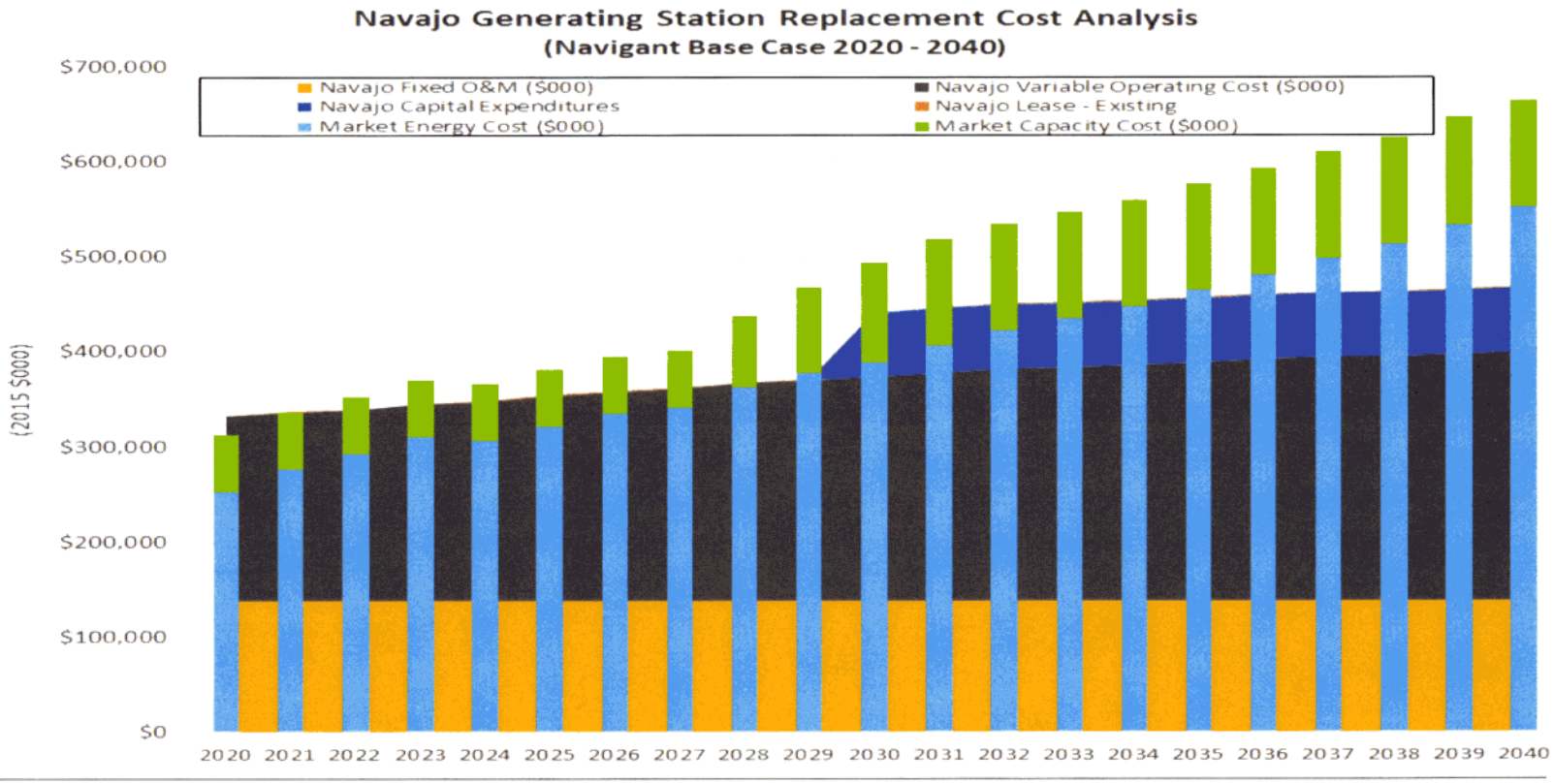
NGS PROJECTED REPLACEMENT COST COMPARISON (2020 – 2040)

- For the longer term, including installation of SCR and baghouse, NGS cost is projected to be **$392 million Net Present Value** below the cost of market replacement of energy and capacity.
- With Unit 1 online, cost savings would exceed $580 million



Note: Assumes Peabody proposed coal prices, with annual $2/ton carry on coal prices 2026 and later. Also assumes current payment level for Navajo lease

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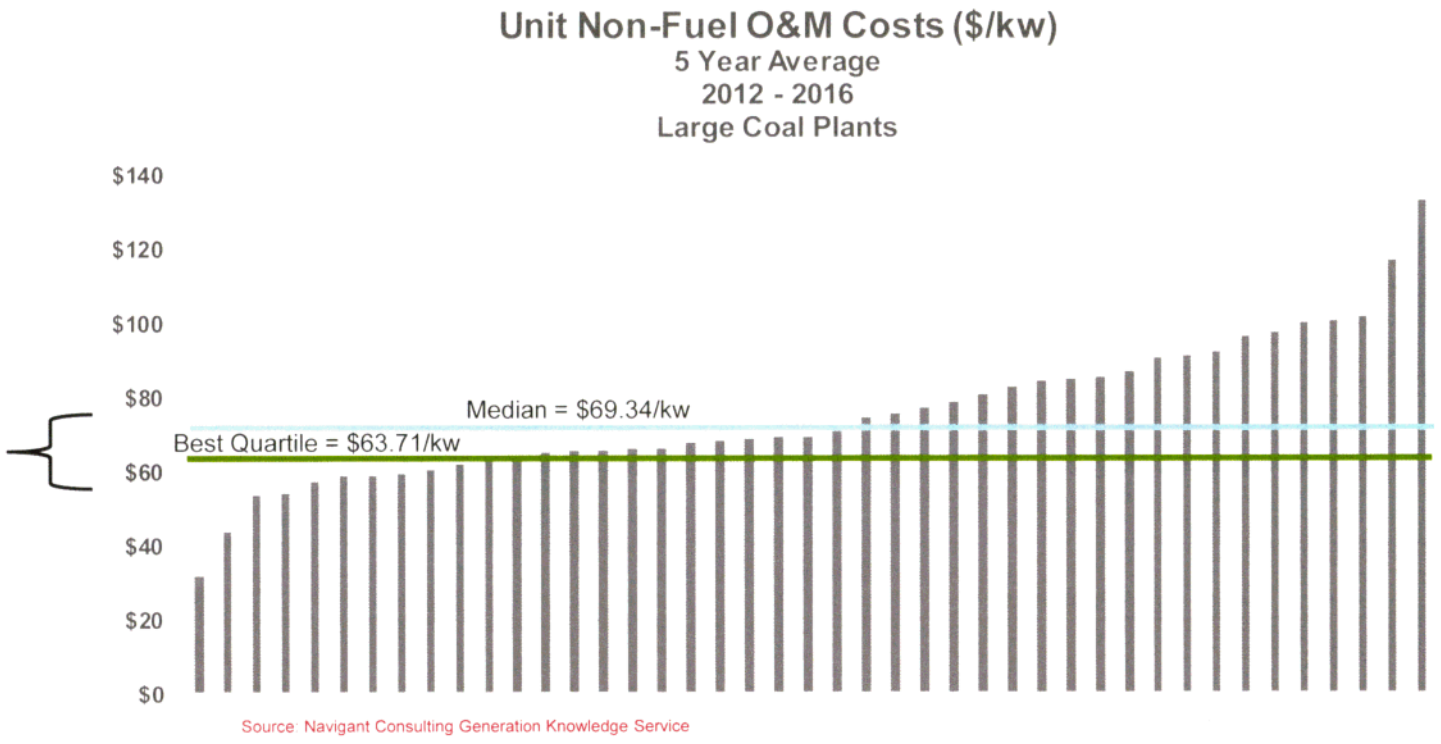
COMPARATIVE NON FUEL O&M COSTS

- Navigant study assumes median level Non-Fuel O&M costs for NGS
- Closing the gap between median and best quartile lowers NFOM by approximately $4 million annually for each unit ($52 million NPV for Units 2 and 3)



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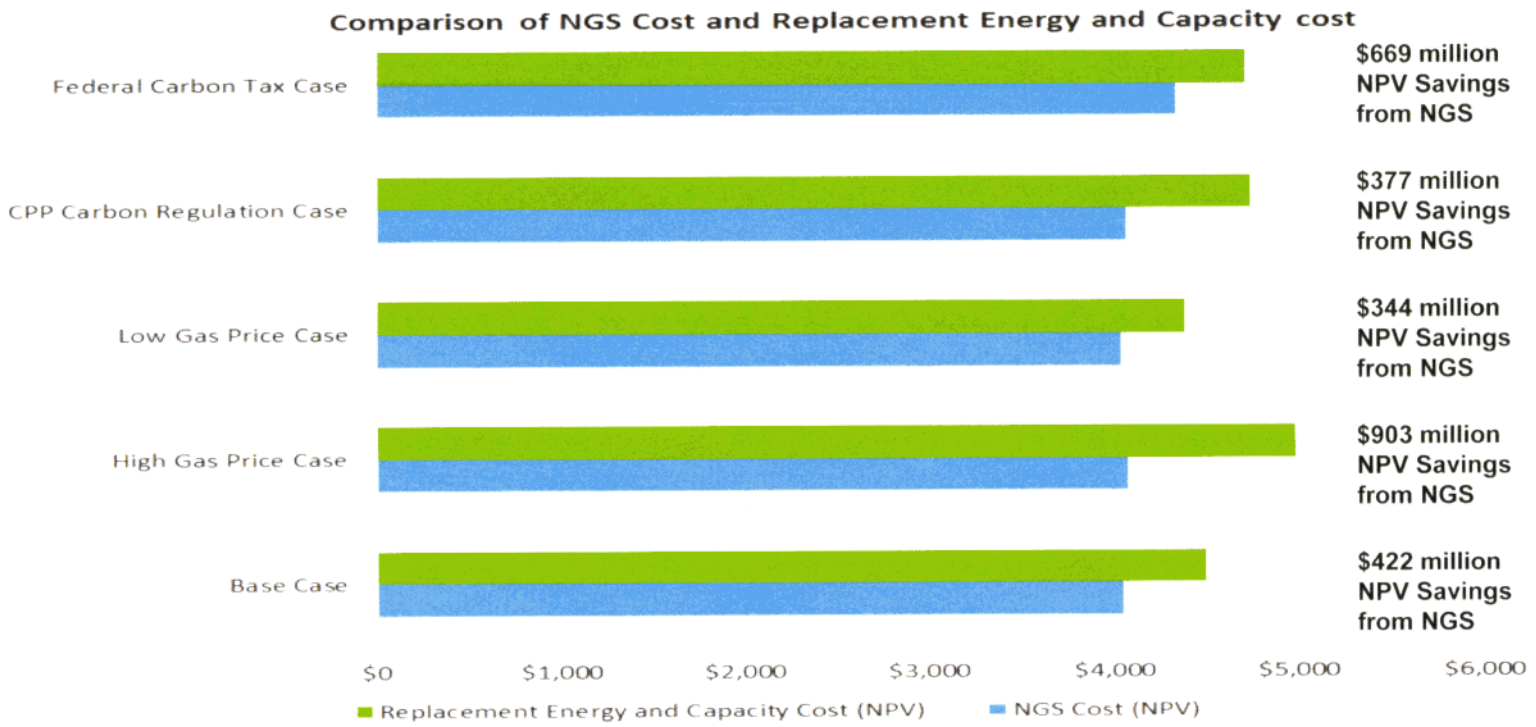
NGS SENSITIVITY CASES

- **Base Case** – Fundamental view of power market conditions based on 2017 Navigant Energy Market Outlook
- **Scenario 1: High Natural Gas Price Case** – Base Case assumptions with higher gas prices
- **Scenario 2: Low Natural Gas Price Case** – Base Case assumptions with lower gas prices
- **Scenario 3: Greenhouse Gas Regulation Case** – Base case assumptions, except it is assumed that federal GHG legislation is enacted so the CO2 costs are explicitly included in forecast energy prices, in a CPP framework. With retirement of Unit 1, NGS is not expected to face additional GHG reduction in order to comply with CPP
- **Scenario 4: Federal Carbon Tax Regulation** – Under this scenario, we assume a federal policy to regulate GHG emissions

COMPARISON OF SENSITIVITY CASE RESULTS

- In each of the sensitivity cases, NGS total operating cost is lower than the replacement cost of market energy and capacity.



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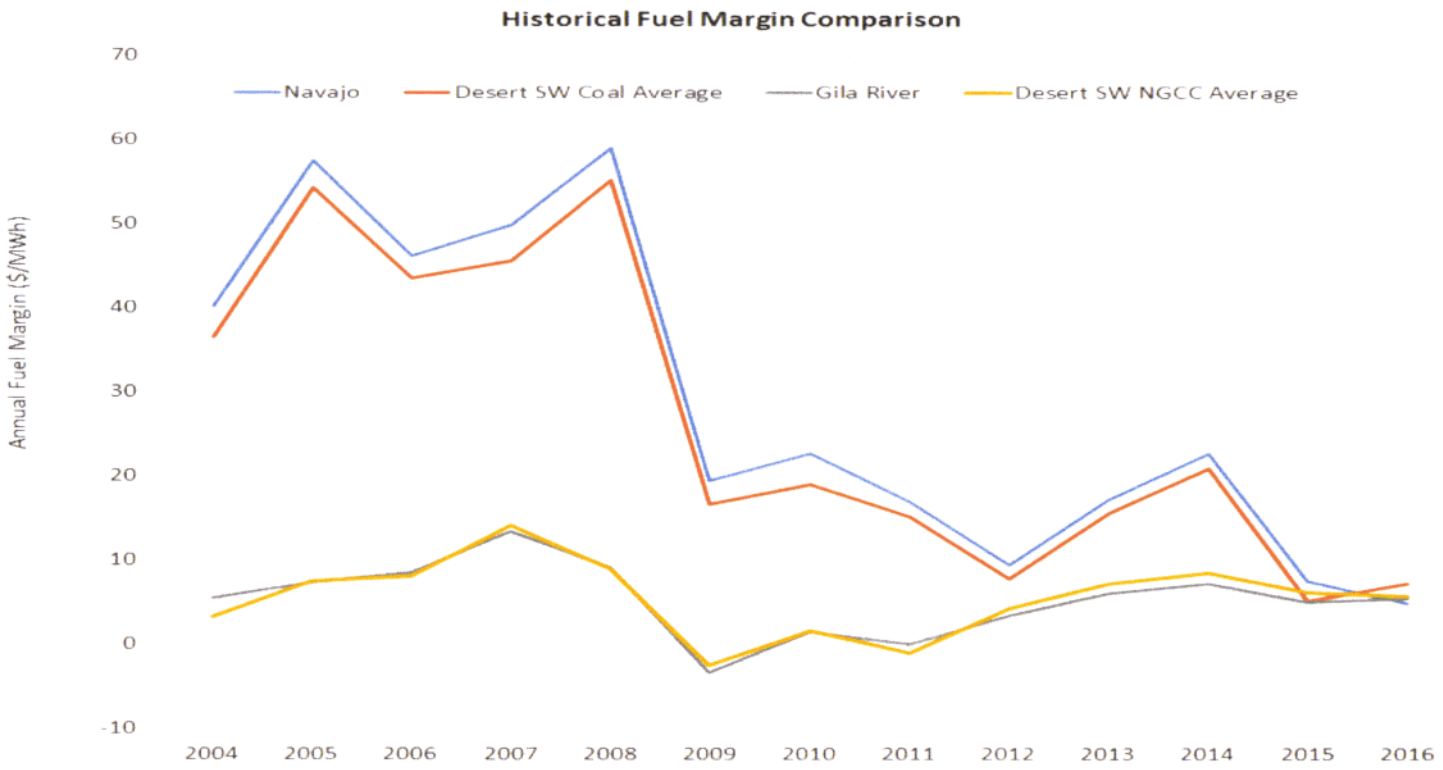
NGS AND OTHERS HISTORICAL FUEL PROFIT MARGINS

- NGS high historical dispatch is consistent with its low cost
- The energy market margin for NGS and other coal resources has declined with gas prices in 2015 and 2016, but is still at or near natural gas margins
- Coal plant margins are expected to rebound with increasing gas prices going forward



Data source: Energy Velocity, Navigant

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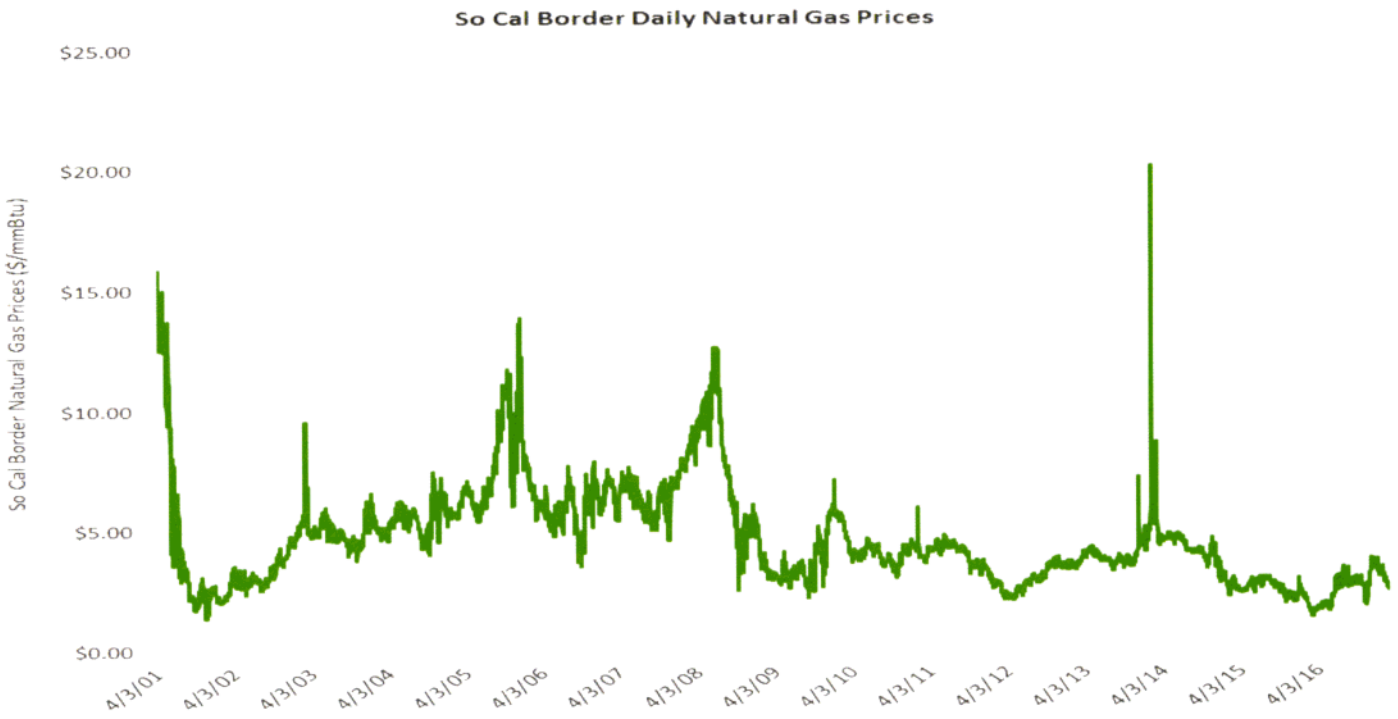
NGS PROVIDES FUEL DIVERSITY BENEFITS

- While current natural gas market conditions have impacted NGS economic outlook, it remains a hedge against natural gas price volatility which occurred even during the shale gas expansion



Data source: Energy Velocity

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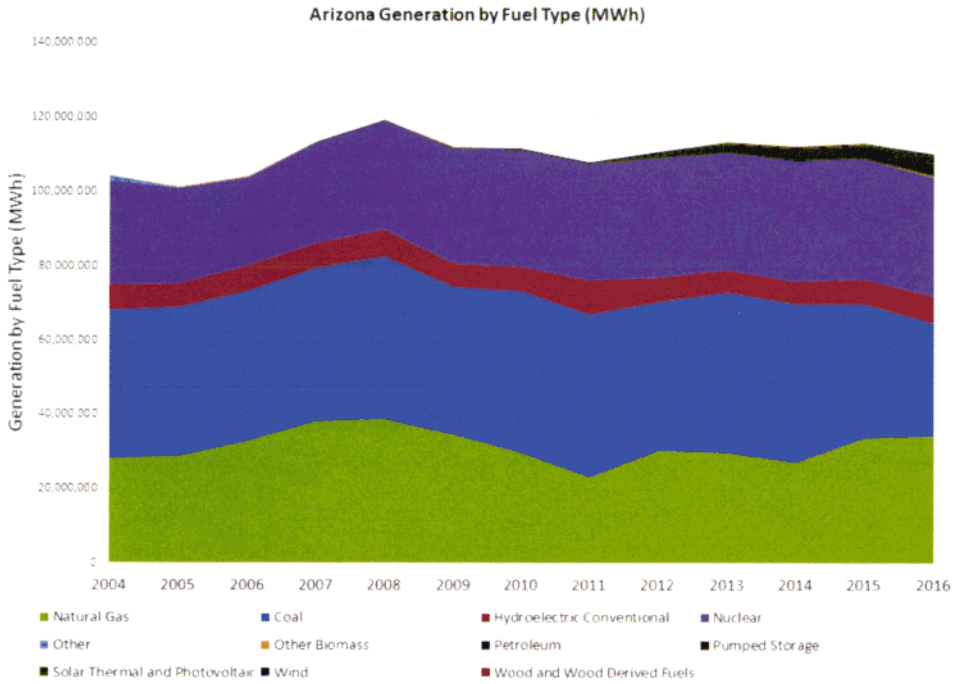
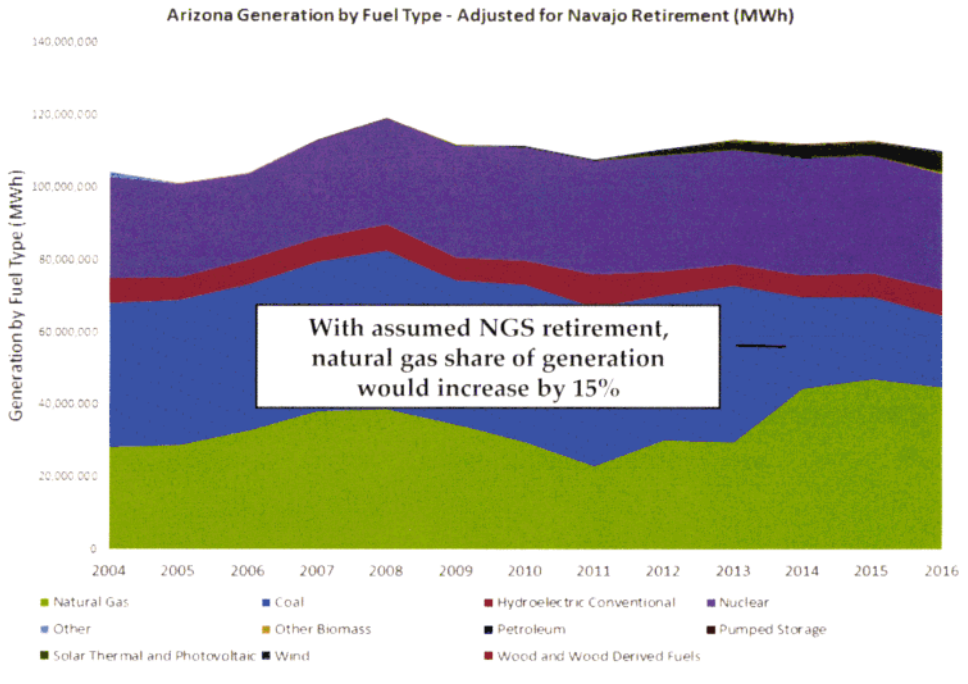
NGS PROVIDES FUEL DIVERSITY BENEFITS





- With San Juan retirement, and potential NGS retirement, the share of natural gas fueled generation in Arizona will increase by 15%, and exceed 40% of total generation. NGS has averaged 15% of AZ generation over 2004-2016 period

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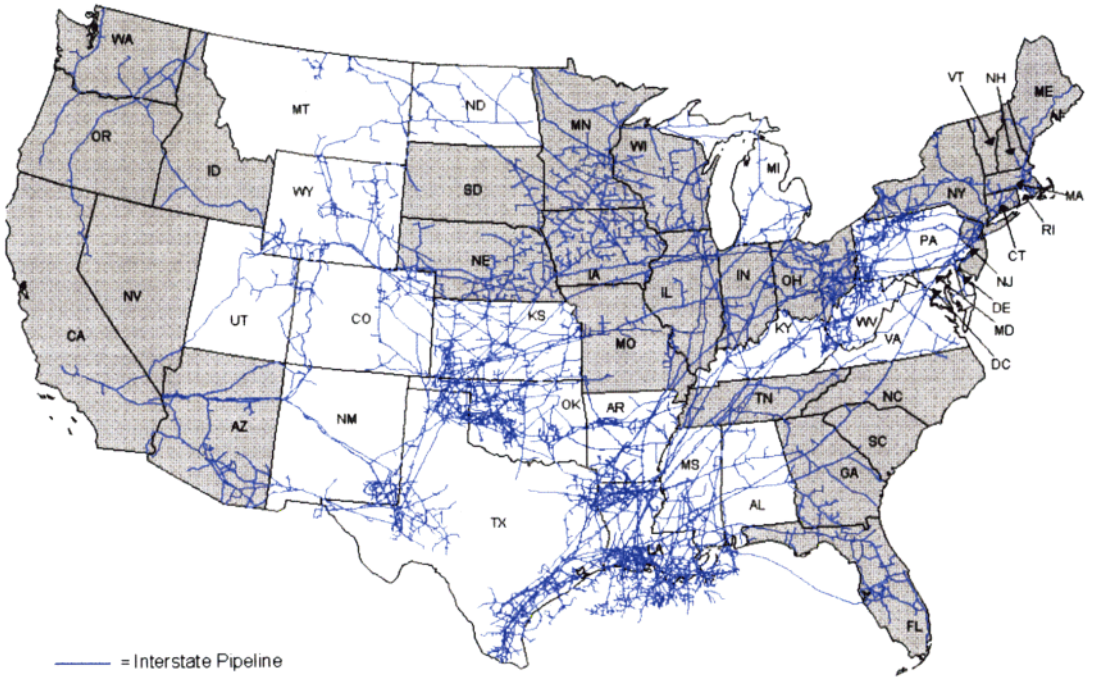
NATURAL GAS CONSIDERATIONS FOR ARIZONA

- Nearly all of the natural gas consumed in Arizona is imported from other states
  - Interstate gas imports are via pipelines that enter Arizona at the New Mexico border.
  - Approximately 70% of the gas that is imported into Arizona comes from one pipeline (El Paso)
  - Competition for Southwest gas is increasing with over 70% of pipeline gas that comes into Arizona, continuing on to California and Mexico
  - Supply disruption on El Paso pipeline was one of the triggering events for California Energy Crisis in 2000-2001
- The amount of gas that comes into Arizona and goes into Mexico is up 50% from 2013
- Arizona has no natural gas underground storage capacity, and has attempted to build storage fields to buffer against supply disruptions, but have encountered financial and environmental issues.



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NATURAL GAS MARKET OUTLOOK METHODOLOGY

What's Included in Navigant's Gas Outlook Release?

Market Fundamentals

Demand
- Multi-Sectoral
- State/Province or Region
- US, CAN & MEX

Supply
- Shale, Conventional & Other
- By Play, Basin or Region
- US, CAN & MEX

Prices
- Monthly Average Daily Spot price
- Over 90 Market Points
- US & CAN

Infrastructure

Storage
- Over 200 Storage Facilities
- Capacity and Volumes
- US, CAN & MEX

LNG
- Imports & Exports by Terminal
- Volumes and Capacity
- US, CAN & MEX

Pipeline
- Over 400 Inter/Intrastate Pipelines
- Capacity and Volumes
- US, CAN & MEX

NATURAL DEMAND GROWTH IS PROJECTED TO BE ROBUST

Navigant projects robust growth in natural gas demand, from several key sectors

- Industrial Sector (7.7 Bcf/d driven by petrochemicals, methane, fertilizer, etc. are key growth sectors)
- Net exports to Mexico (5.6 Bcf/d)
- LNG exports (9.9 Bcf/d, from facilities already under construction)

Natural gas production expected to increase in variety of areas, most notably the Marcellus shale fields

Navigant's forecast conservatively assumes pipeline expansion will occur on pace with demand growth and expanding production. Historically, there has been a lag in pipeline expansion, which will lead to increased natural gas price volatility and higher prices

US Natural Gas Balance	2016	2020	2025	2030	2035	2040
Total Dry Production	74.4	90.2	96.3	101.1	104.5	110.7
Marcellus	17.1	23.3	27.9	30.8	31.1	31.5
Utica	3.4	4.6	5.5	6.1	6.2	6.3
Eagle Ford	4.6	7.6	8.6	9.3	9.9	10.5
Haynesville	3.9	5.4	5.8	6.1	6.4	6.9
Bakken	1.3	1.9	2.4	2.8	3.0	3.2
Barnett	3.3	3.3	3.0	2.8	2.7	2.7
Fayetteville	2.4	3.3	3.1	3.1	3.1	3.3
Woodford	2.5	3.0	3.7	4.5	5.1	5.9
Others	35.9	38.0	36.3	35.8	36.8	40.3
Net LNG Import	-0.2	-9.2	-10.1	-10.1	-10.1	-10.1
Net Pipeline Import	1.6	-2.8	-3.3	-4.4	-4.6	-4.6
Net Pipeline Import from Mexico	-3.9	-6.5	-7.3	-8.4	-9.0	-9.5
Net Pipeline Import from Canada	5.6	3.7	4.0	4.0	4.3	4.9
Net Storage Withdrawal	0.0	-0.1	0.0	0.0	0.0	0.4
Balancing Items	-0.2	0.0	0.0	0.1	0.1	0.1
Total Supply	75.6	78.2	82.9	86.7	89.8	96.5
Total Demand	75.6	78.2	82.9	86.7	89.8	96.5
Total Delivery to Consumers	68.8	70.2	74.7	78.2	81.1	87.4
Residential	12.3	12.7	12.6	12.5	12.4	12.3
Commerical	8.7	9.1	9.2	9.2	9.2	9.3
Industrial	20.7	22.9	24.4	25.6	27.0	28.4
Electric Power	26.8	24.6	26.0	26.7	26.6	30.4
Vehicle	0.3	0.9	2.5	4.2	5.9	7.1
Lease & Plant Fuel	4.1	4.7	4.8	4.8	4.9	5.2
Pipeline Use	2.7	3.3	3.5	3.6	3.7	3.8

Data source: Navigant 2017 NEMO

UNITED STATES LNG EXPORT OUTLOOK IS ROBUST

Navigant Forecasts:

- **10 Bcfd** US LNG **exports** by 2022
- **US LNG exports** to represent about **12%** of **US** total NG **demand** by 2022
- **Forecast assumes LNG projects under construction**
- **Other LNG projects** appear promising

Sabine Pass, LA

- 2 trains on stream in 2016 (1.38 Bcfd)
- Around 60 cargoes of LNG in 2016; most went to Asia and Latin America
- 3 more trains between 2017 and 2019

Cameron LNG, LA

- 2 additional trains approved by FERC in May 2016
- DOE export approval July 2016 for 1.4 Bcfd
- In construction and on stream 2018

Freeport LNG,TX

- 3 trains under construction (1.7 Bcfd)
- 1 additional train filed to FERC in May 2015 (0.9 Bcfd)
- On stream 2019

Corpus Christi, TX

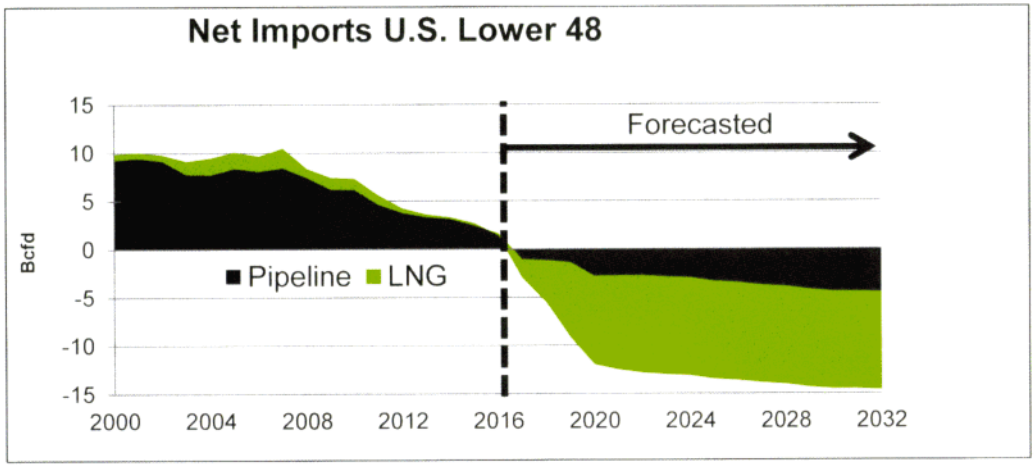
- 2 trains under construction (1.1 Bcfd)
- 3 other trains planned
- On stream 2018

Cove Point, MD

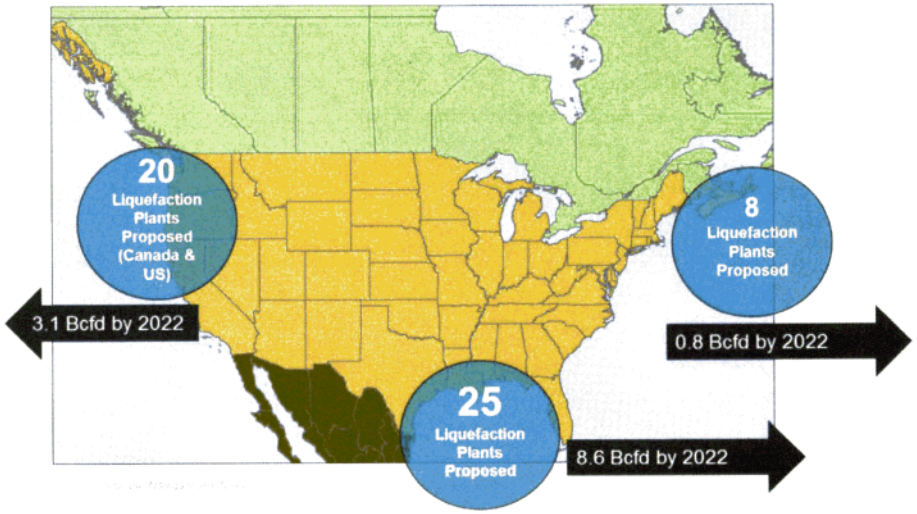
- 1 train under construction (0.77 Bcfd)
- Next project On stream in late 2017

NATURAL GAS MARKET WILL BE INFLUENCED BY EXPORT ACTIVITY

By the end of 2016, the United States has become a Net Exporter (by Pipe and by Ship) of Natural Gas for First Time Since 1957 (60 Years Ago)



North American Proposed/Under Construction LNG Export Projects



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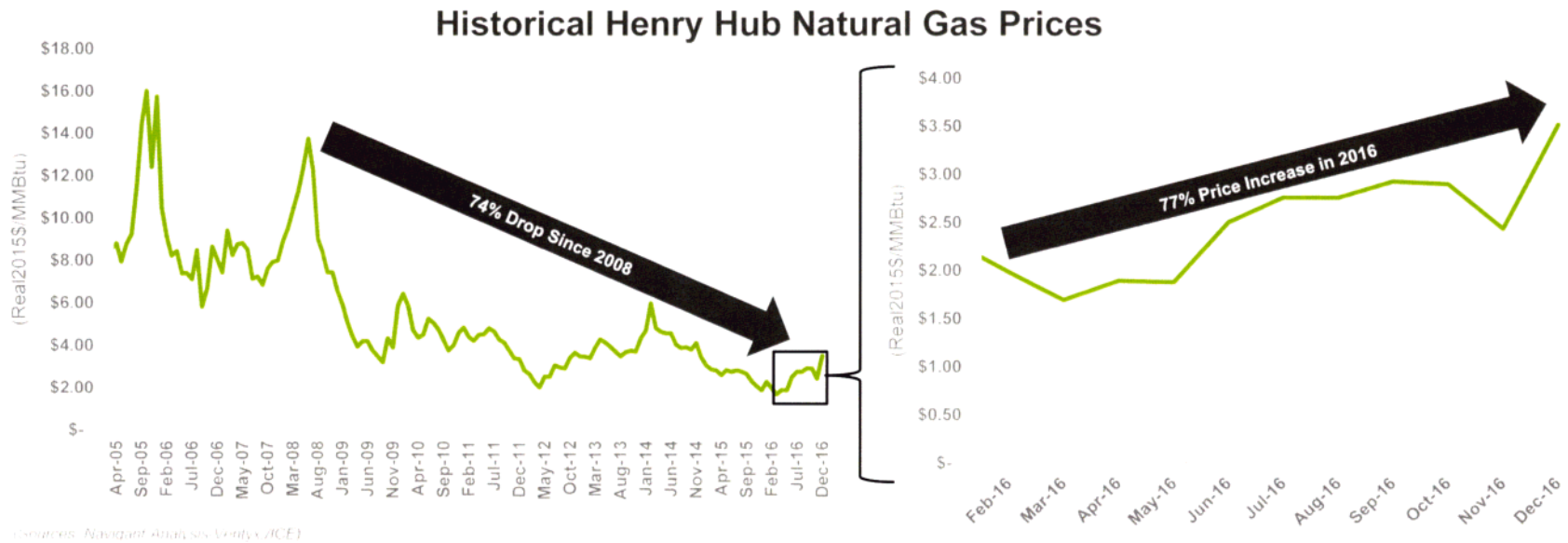
NATURAL GAS PRICES IN THE UNITED STATES

- On increased supply, natural gas prices have declined since 2008, which has lowered energy costs to US consumers in all sectors
- Yet natural gas prices have shown signs of recovery in 2016 – in the future – how high?



Sources: Navigant analysis; Platts; ICE

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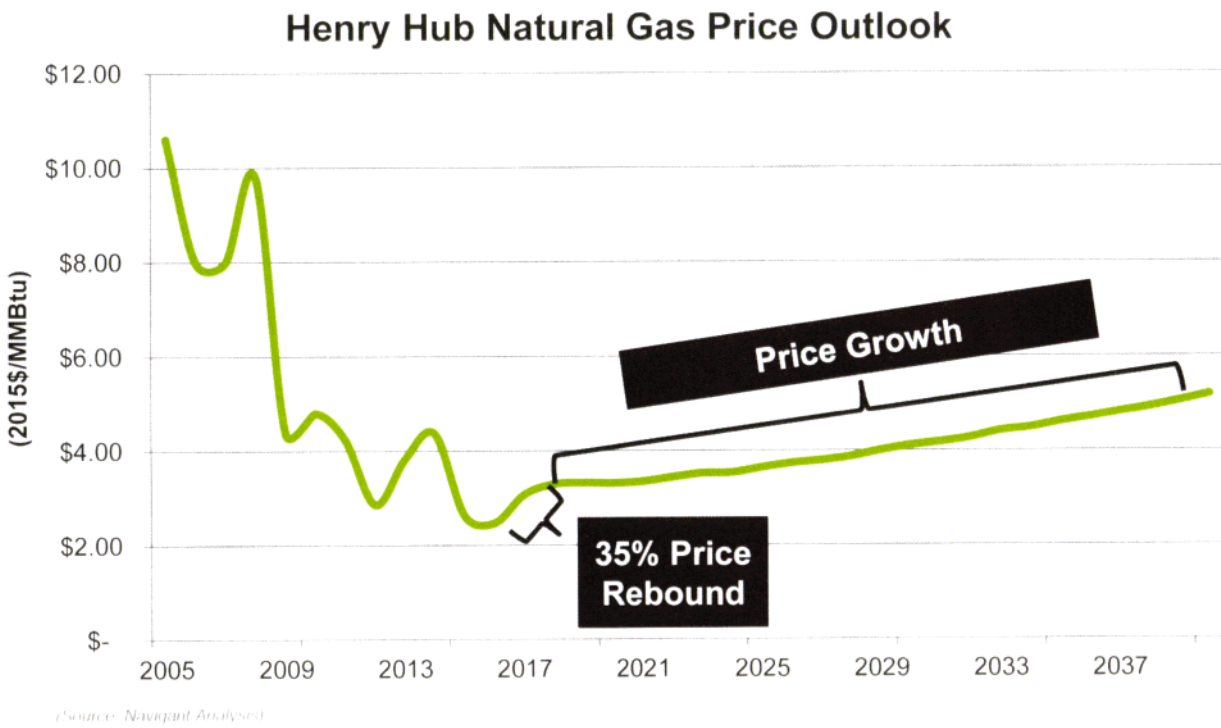
WINTER 2017 OUTLOOK HIGHLIGHTS: PRICE GROWTH – HOW HIGH/FAST

- Natural gas price growth is driven by:
  - Increased industrial demand
  - Increased demand for electricity generation
  - LNG and Mexico Exports
- Natural gas-fueled generators are typically the marginal resource in the Desert Southwest energy markets



(Source: Navigant Analysis)

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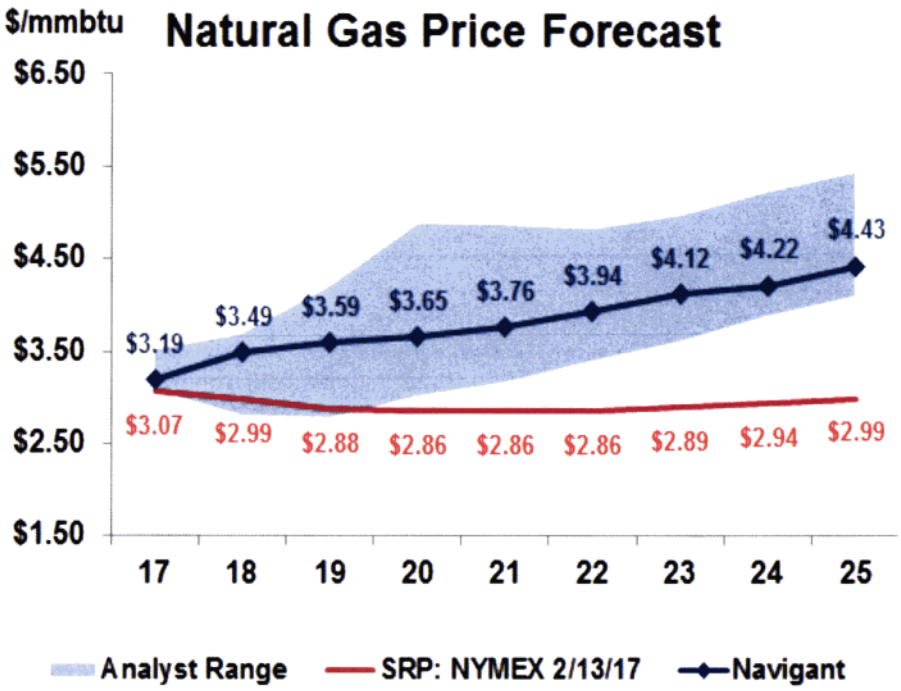
NAVIGANT NATURAL GAS PRICE FORECAST IS MID-RANGE COMPARED TO OTHER FORECASTS

Henry Hub $/mmbtu								
	2018	2019	2020	2021	2022	2023	2024	2025
Navigant	**3.49**	**3.59**	**3.65**	**3.76**	**3.94**	**4.12**	**4.22**	**4.43**
SRP NYMEX 2/13/	**2.99**	**2.88**	**2.86**	**2.86**	**2.86**	**2.89**	**2.94**	**2.99**
3rd Party Summary								
3rd Party Average	3.21	3.47	3.69	3.69	3.85	4.04	4.27	4.64
3rd Party Min	2.80	2.78	3.02	3.15	3.39	3.62	3.89	4.10
3rd Party Max	3.70	4.22	4.90	4.88	4.83	4.97	5.23	5.45
Range	0.90	1.44	1.88	1.73	1.44	1.35	1.34	1.36

Navigant's natural gas price forecast is in middle of the range of alternative forecasts in the industry. Use of the NYMEX price strip as a long-term outlook for natural gas prices is uncommon in the industry, and results in a much lower natural gas price forecast



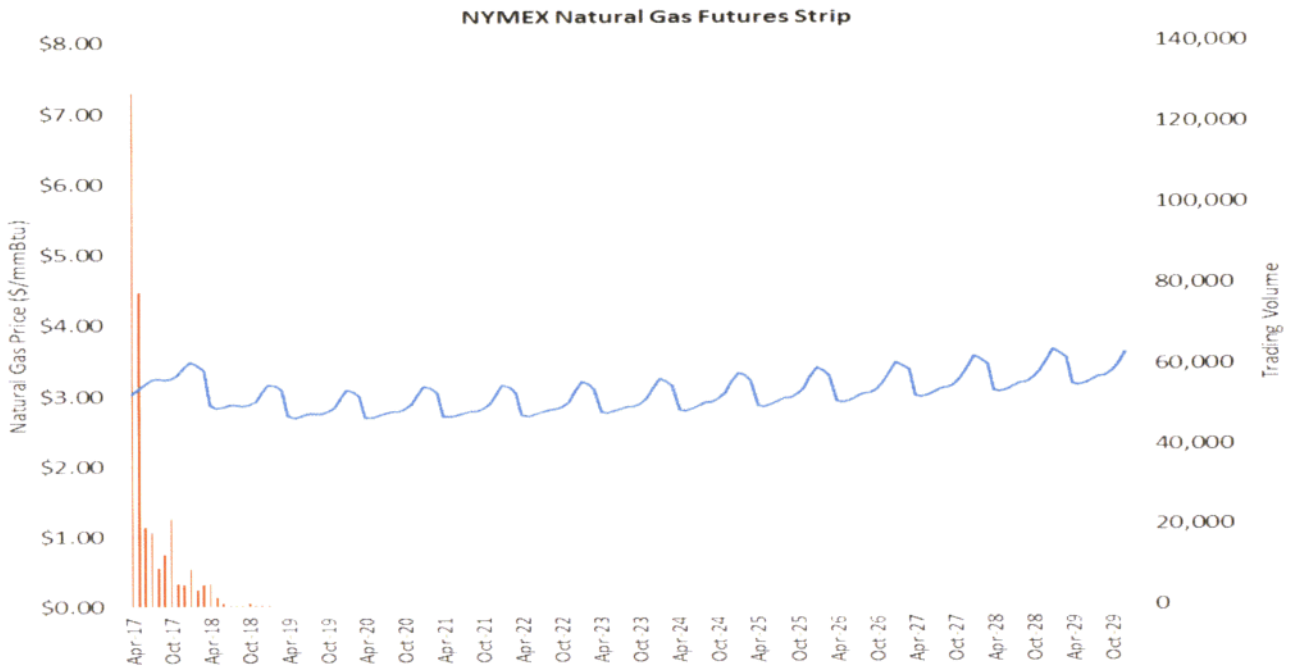
- *Data Source for Analyst Forecasts - Peabody*

OBSERVATIONS ON SRP NGS ECONOMIC ANALYSIS

A key driver of SRP's analysis is the assumption that NYMEX futures prices for natural gas are reflective of long-term natural gas price expectations

- NYMEX Henry Hub Futures have little to zero trading volume after the first 18 months.
- For that reason, Navigant's preference is to complete detailed fundamental modeling of natural gas prices, which allows more detailed assessment of changing supply and demand conditions

SRP's study also reflects relatively high values for the Navajo lease payments, post 2019, and doesn't appear to reflect material reductions in Fixed O&M costs at NGS, in moving from 3 generating units to 2.



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REVIEW OF NREL NAVAJO STUDY

Navigant completed a review of the National Renewable Energy Laboratory report entitled *Navajo Generating Station and Federal Resource Planning: Volume I, Sectoral, Technical and Economic Trends,* dated November, 2016 (NREL NGS Report). There are a number of areas in which the assumptions, and methodology employed in the NREL study, raise questions about the ultimate conclusions.

- The NREL NGS Report discusses potential impacts of NGS early retirement but does not complete a direct comparison of whether it is economic to maintain operations or shut-down NGS.
- The NREL study does not segment costs that Central Arizona Project ("CAP") could "avoid" through shutdown of NGS, compared to the total all-in cost. As such, the study approach differs from traditional cost/benefit studies done in the power industry. In a traditional study, the economics of NGS would be examined by comparing its avoidable operating costs, to the market prices for both energy and capacity.
- The NREL NGS report overstates NGS fuel costs by about $5/MWh.
- NREL develops a statistical model of wholesale electricity prices in the Desert Southwest, which is calibrated based on historical relationships, and does not reflect structural changes affecting the energy market.
- NREL's analysis of replacement capacity for NGS appears incomplete. The report concludes that adequate surplus capacity exists in the Desert Southwest to replace NGS, but it doesn't assign any capacity costs to procuring that capacity, and doesn't assess how much of that capacity is likely to remain available moving into the future. Developing estimates of the capacity value of NGS, and the cost to replace that capacity, is an important component of any study examining the long-term economics of the plant, and the NREL analysis appears incomplete in this area.

CONCLUSIONS

The current analysis results demonstrates the following key aspect regarding NGS:

- NGS has demonstrated the ability to meet the energy needs of the DSW market
  - High reliability
  - High usage/dispatch
  - Competitive pricing
- While the generation industry is changing, successful transition forces us to move forward in a way that maintains system reliability with competitive pricing managing the level of disruption
- We believe our analysis uses a reasoned approach
  - Our market and gas price forecasts are within a band of other industry price forecasts
  - Coal costs based on pricing offered by Peabody
  - Operating costs are based on industry median data but we believe can likely be improved upon (anticipate $8 million/year lower costs)
  - Capacity factors in line with historical performance
- The results of our independent analysis demonstrate that NGS can effectively compete in the DSW market in the short term & long term
  - Expectations of continued reliability
  - Competitive pricing to support high levels of dispatch
  - Support the price stability of the DSW market
  - Provide an effective hedge against gas price volatility
- Associated benefits will also be realized
  - Minimizes the economic impact to the Navajo Nation
  - Provide other economic benefits to the geographical area

DISCUSSION MATERIALS

Selected Preliminary Perspectives on NGS

Selected Preliminary Perspectives on NGS

Lazard Expertise in the Power & Utilities Industry	• **Lazard is the leading advisory firm dedicated to the Power & Utilities Industry; we are the longest-standing independent advisory firm and have been in business for ~170 years** – Strong legacy and relationships with key clients across the Industry – Significant experience across the power generation sector; has advised Dynegy, Invenergy, NRG and TXU/EFH, among others – Lead financial advisor on landmark deals within the Industry – Proven track record representing governmental clients and counterparties to the government • Represented the Tennessee Valley Authority and the Department of Energy, among other domestic governmental clients – Offers clients independent, transaction-agnostic advice with an emphasis on excellence, intellectual rigor, integrity and creativity • **Lazard welcomes the opportunity to assist Peabody and NGS' key stakeholders in reaching a resolution that maintains NGS in operation as a coal-fired generation facility and is beneficial to ratepayers, stakeholders/shareholders and other beneficiaries**
Perspectives on NGS and on Coal-fired Generation	• **Lazard has reviewed the facts at hand, as well as the Navigant report, and believes there is merit in NGS maintaining operations as a coal-fired generation facility** – Low variable cost power generator that should remain competitive and dispatch at a high capacity factor in the medium- and long-term—as natural gas prices rise, the competitiveness of NGS should only be enhanced vis-à-vis other sources of generation – Reliable source of supply, providing beneficial fuel diversity in the Desert Southwest power market – Provides significant baseload capacity to SRP and investor-owned utility partners – Trump Administration supportive of the coal industry (*e.g.*, executive order to roll back the U.S. EPA Clean Power Plan) • **NGS currently provides a monetary benefit to ratepayers vis-à-vis replacement generation** – Book value of NGS seemingly immaterial relative to the cost of replacing its power/capacity (*e.g.*, newly constructed energy facility or PPA) • Depreciated asset vs. new-build/PPA for rate making purposes – Provides a hedge/limits customer's exposure to natural gas price volatility – Cost of decommissioning NGS could potentially negatively impact ratepayers

Selected Preliminary Perspectives on NGS (cont'd)

Perspectives on NGS and on Coal-fired Generation (cont'd)	• **Closure of NGS would have a material economic/social impact on the Navajo Nation/Hopi Tribe** – NGS and Kayenta employ ~800 people, most of whom are Native American – Curtailment of lease payments and royalties • **Maintaining fuel diversity, which includes the provision of coal-fired generation, is essential to ensure integrity of electric grid** – Coal-fired generation is a low-cost, stable baseload generating resource – Fuel diversity based on coal allows for a more secure supply owing to either the fuel source generally being located on site or very nearby, or the fuel being sourced and secured on-site over the long-term; avoids relying on congested transportation networks and/or other intermittent resources • Renewable resources are intermittent (*e.g.*, sun is not always shining, wind is not always blowing) • Natural gas prices inherently volatile—Polar Vortex in 2014 caused natural gas prices to spike to ~$120/MMBtu and ~$33/MMBtu in New York and New England, respectively
NGS' Operational Efficiency	• **Lazard believes there could be opportunities to run NGS more efficiently and achieve operational savings that could further enhance the competitiveness of the facility** • **While SRP is a good and respected operator, non-regulated independent power producers are generally more focused on facility-level profitability and minimizing non-fuel O&M costs (*e.g.*, operating profit solely dependent on expanding margins)** – Benchmarking of NGS vs. facilities of similar characteristics operated by independent power producers validates this assertion – While some operational efficiencies may imply personnel reductions, an outcome that maintains NGS in operation as a coal-fired generation facility, even at the expense of some jobs, would likely be preferable to the complete shutdown of the facility and the Kayenta mine • **There is a narrow but highly-capable universe of potential partners that could be additive to the operations of NGS** • **Furthermore, while difficult to quantify without further due diligence, there may be opportunities to optimize NGS' dispatch profile (i.e., more aggressively market the facilities' power), as well as opportunities to rationalize the capital investments made in the facility** – Opportunities can be explored to dispatch the facility on a merchant basis to complement the existing contracted energy margin of the facility

Selected Preliminary Perspectives on NGS (cont'd)

Potential for Change of Ownership	• **There is potential for a change of ownership at NGS, albeit such change would need to be premised on the satisfactory resolution of key issues, such as:** – Lease negotiations in a way that provides a path for the economical operation of the facility – Medium- to long-term PPA for all-or-part of NGS' capacity – Key agreements/arrangements (*e.g.*, coal-supply agreement, CAP agreement) – Environmental regulatory relief to ensure long-term competitiveness of NGS – Transfer of legacy reclamation liabilities • **Importantly, a change of ownership in NGS could be pursued concurrently with a change of operator and, in certain instances, a new ownership group could bring operational capabilities and novel ideas to improve energy margins (i.e., independent power producers)** – Potential to capitalize on evolving market dynamics in the Desert Southwest, particularly in respect of renewables and the redesign of the Western Power Market—participate in the energy imbalance market by providing a baseload resource for reliability vis-à-vis intermittent renewable generation
Perspectives on Sale Process for NGS	• **Marketing a coal-fired generation facility in the current environment is not without challenges; specifically, a process to sell NGS would need to be tailored such that it allows potential buyers to have sufficient interaction with all the stakeholders at hand[1]** • **While the universe of buyers is limited, there exist sophisticated investors, such as independent power producers, private equity firms and other financial investors, that could drive returns that meet/exceed investment thresholds** • **The universe of potential buyers could also potentially be comprised of current NGS stakeholders/shareholders increasing their ownership stake (*e.g.*, Bureau of Reclamation) or taking a direct or indirect ownership stake (*e.g.*, Peabody) in the facility** • **In order to run a process that benefits all stakeholders, Lazard would require full access to all necessary information to perform comprehensive diligence and analysis and would need to be an integral part of the negotiations of the key issues that would need to be resolved before undertaking a sale process** • **Assuming satisfactory resolution of the key issues at hand, Lazard believes a period of 3-4 months would be necessary to enter into a definitive agreement with a potential buyer of NGS (n.b., not all issues would need to be fully resolved before launching a sale process; sufficient clarity regarding a path forward would likely be acceptable to provide buyers with an ability to form a perspective on NGS)**

1 Lazard is not aware of a situation where the current owners have attempted to sell NGS.