

# POWERING GROWTH DELIVERING VALUE

# PINVACLE WEST

CAPITAL CORPORATION

UBS Utilities and Natural Gas Conference | March 1, 2016



### FORWARD LOOKING STATEMENTS

This presentation contains forward-looking statements based on current expectations, including statements regarding our earnings guidance and financial outlook and goals. These forward-looking statements are often identified by words such as "estimate," "predict," "may," "believe," "plan," "expect," "require," "intend," "assume" and similar words. Because actual results may differ materially from expectations, we caution you not to place undue reliance on these statements. A number of factors could cause future results to differ materially from historical results, or from outcomes currently expected or sought by Pinnacle West or APS. These factors include, but are not limited to: our ability to manage capital expenditures and operations and maintenance costs while maintaining high reliability and customer service levels; variations in demand for electricity, including those due to weather, the general economy, customer and sales growth (or decline), and the effects of energy conservation measures and distributed generation; power plant and transmission system performance and outages; competition in retail and wholesale power markets; regulatory and judicial decisions, developments and proceedings; new legislation or regulation, including those relating to environmental requirements, nuclear plant operations and potential deregulation of retail electric markets; fuel and water supply availability; our ability to achieve timely and adequate rate recovery of our costs, including returns on and of debt and equity capital investments; our ability to meet renewable energy and energy efficiency mandates and recover related costs; risks inherent in the operation of nuclear facilities, including spent fuel disposal uncertainty; current and future economic conditions in Arizona, including in real estate markets; the development of new technologies which may affect electric sales or delivery; the cost of debt and equity capital and the ability to access capital markets when required; environmental and other concerns surrounding coal-fired generation, including regulation of greenhouse gas emissions; volatile fuel and purchased power costs; the investment performance of the assets of our nuclear decommissioning trust, pension, and other postretirement benefit plans and the resulting impact on future funding requirements; the liquidity of wholesale power markets and the use of derivative contracts in our business; potential shortfalls in insurance coverage; new accounting requirements or new interpretations of existing requirements; generation, transmission and distribution facility and system conditions and operating costs; the ability to meet the anticipated future need for additional generation and associated transmission facilities in our region; the willingness or ability of our counterparties, power plant participants and power plant land owners to meet contractual or other obligations or extend the rights for continued power plant operations; and restrictions on dividends or other provisions in our credit agreements and ACC orders. These and other factors are discussed in Risk Factors described in Part I, Item 1A of the Pinnacle West/APS Annual Report on Form 10-K for the fiscal year ended December 31, 2015, which you should review carefully before placing any reliance on our financial statements, disclosures or earnings outlook. Neither Pinnacle West nor APS assumes any obligation to update these statements, even if our internal estimates change, except as required by law.



### **VALUE PROPOSITION**

We are executing on our financial and operational objectives ...

### **Financial Strength**

- Consolidated earned ROE more than 9.5% (weather-normalized) through 2016
- Annual dividend growth target of 5%, subject to declaration at Board of Director's discretion
- Strong credit ratings and balance sheet
- Rate base growth of 6-7% (2014-2018); investing in a portfolio that is flexible, responsive, reliable and cost-effective

### Leverage to Economic Growth

• Arizona's long-term growth fundamentals remain largely intact, including population growth, job growth and economic development

### **Operational Excellence**

- Top quartile ratings in Customer Satisfaction, Reliability and Safety
- APS operates the Palo Verde Nuclear Generating Station, the largest nuclear plant in the United States
- Disciplined cost management

... while also advocating to ensure Pinnacle West and Arizona have a sustainable energy future

#### **Modern Grid**

• At the forefront of utilities studying and deploying advanced infrastructure to enable reliable and cost-efficient integration of emerging technologies into the grid and with customers

### **Proactively Addressing Rate Design**

• Working with Arizona Corporation Commission and key stakeholders to modernize rates

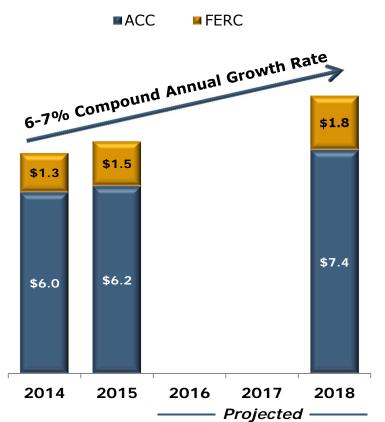


# **RATE BASE**

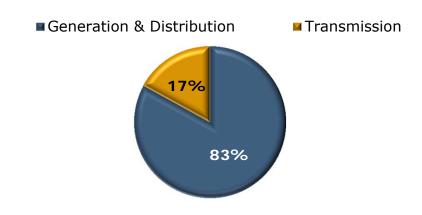
# APS's revenues come from a regulated retail rate base and meaningful transmission business

#### APS Rate Base Growth





### Total Approved Rate Base



	ACC	FERC
Rate Effective Date	7/1/2012	6/1/2015
Test Year Ended	12/31/2010*	12/31/2014
Rate Base	\$5.7B	\$1.3B
<b>Equity Layer</b>	54%	58%
Allowed ROE	10.00%	10.75%

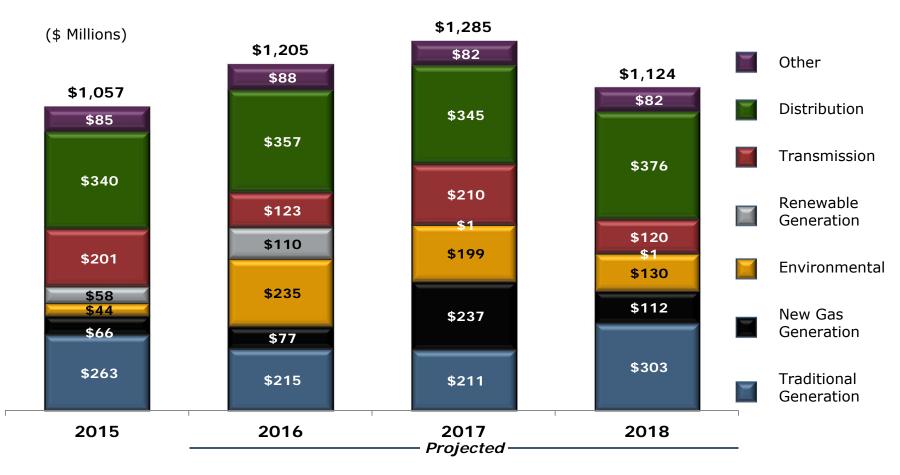
<sup>\*</sup>Adjusted to include post test-year plant in service through 3/31/2012

Rate base \$ in billions, rounded



# CAPITAL EXPENDITURES

# Capital expenditures are funded primarily through internally generated cash flow

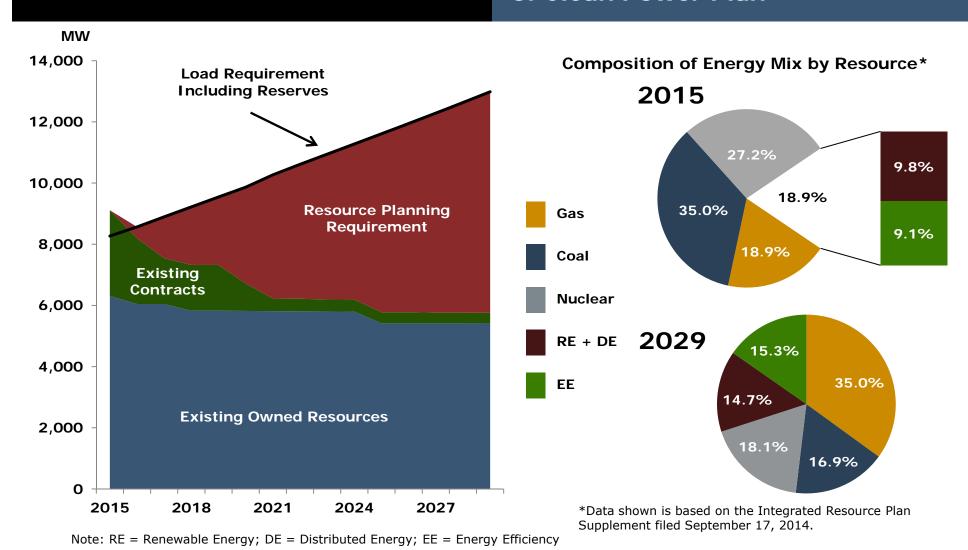


- The table does not include capital expenditures related to El Paso's 7% interest in Four Corners Units 4 and 5 of \$3 million in 2015, \$27 million in 2016 and \$20 million in 2017.
- 2016 2018 as disclosed in 2015 Form 10-K.



### **RESOURCE PLANNING**

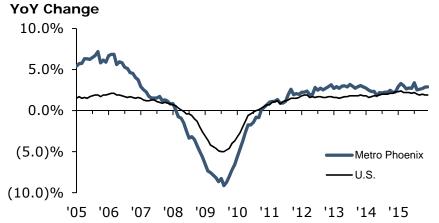
ACC adopted revised IRP filing schedule; final IRP due April 2017 to allow time to consider impacts of Clean Power Plan



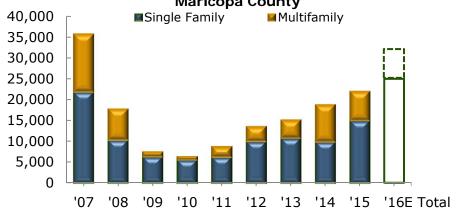
# ECONOMIC INDICATORS

# Arizona and Metro Phoenix remain attractive places to live and do business





# Single Family & Multifamily Housing Permits Maricopa County



- Construction, healthcare, tourism, financial activities, business services, and consumer services adding jobs at a rate above 3%
- ✓ Arizona ranked 1<sup>st</sup> for projected job growth
  - Forbes September 2015
- Phoenix ranked 1<sup>st</sup> in tech industry job growth over last 2 years (tied with San Francisco)
  - CBRE September 2015
- Phoenix ranked 6<sup>th</sup> for commercial real estate investment (3<sup>rd</sup> excluding Texas cities)
  - Situs RERC, August 2015



# THE GRID IS EVOLVING — INCREASINGLY DYNAMIC AND COMPLEX

- Grid stability, power quality and reliability remain the core of a sustainable electrical system
- APS is at the forefront of utilities designing and planning for the electric grid
- Rates need to be modernized to enable advanced technologies and to reflect the true cost of service

# Drivers for Change

# The Modern Grid

# APS Laying Foundation for the Future

- Traditional grid built for one-way flow
- Technology advancements (storage, home energy management)
- Changing customer needs and demands
- Proliferation of distributed solar energy, which does not align with peak

- New technologies to enable two-way flow
- Proactive vs. reactive operations and maintenance
- Modern rate structure
- New ways to interact with customer
- Mobility for our field personnel
- Smarter, more flexible realtime system operations
- Support consumer products and services
- Addresses cybersecurity

- Solar R&D initiatives
  - Solar Partner Program
  - Solar Innovation Study
- Smart meters fully deployed
- Investing in peaking capacity upgrades (Ocotillo)
- Evaluating storage
  - · Battery pilot investments
  - Microgrids (Marine Corps Air Station Yuma)
- Software upgrades for distribution operations and customer service
- Ensuring our people have the relevant skill sets



# SOLAR PARTNER PROGRAM

Learning how to efficiently enable the integration of rooftop solar and battery storage with our grid

#### Overview

- Installing 10 MW of APS-owned residential PV systems on 1,500 homes
- Advanced controllable inverters that can vary power output depending on grid conditions
- Includes 4 MW of grid-tied battery storage on 2 of the participating feeders
- Collect and analyze real time data on energy production, energy usage, power regulation capabilities and curtailment options
- Participating customers receive monthly bill credits through 20-year life

#### Benefits

- Study system benefits (i.e. strategic deployment orientation, advanced inverters, etc.)
- Provides support for advanced rate structure
- Provides an alternative for customers who cannot afford solar or do not want a lease

### Expected timeline

- Installations through mid-2016
- Technology evaluation in 2016/2017





# SOLAR INNOVATION STUDY

Examining the integration of behind the meter advanced technologies with demand-based rates

#### Overview

 Installing APS-owned residential PV systems on 75 homes with various configurations of battery storage, energy efficiency, demand controls and smart thermostats connected to a cloud based energy management system



- Identify effective technology packages that can shift load and minimize grid challenges
- Gain insight into customer behavior and preferences in use of 'next generation' demand control and load shifting technologies
- Identify strategies to support sustainable growth of renewable resources
- Inform rate design in development of modernized demand based residential rates

#### Expected timeline

- Design and installation in 2016
- 5-year study



# ADVANCED METERING INFRASTRUCTURE (AMI 2.0)

#### Overview

- APS began deploying advanced "smart" meters in 2006, reaching full deployment with 1.2 million meters in 2014
- In 2015, APS started replacing 140,000 end-of-life meters with advanced meters

#### Benefits

- Building a more interoperable advanced metering infrastructure
- New network with ability to support Smart Grid and Distribution Automation devices
- Improves outage and restoration communications with customers
- Provides support for advanced rate structure
- More than 1.7 million AMI avoided field orders since 2011

### Expected timeline

- Q1 2015 - Q2 2016



# OCOTILLO POWER PLANT (TEMPE, AZ)

#### Overview and Benefits

- Maintains system reliability through retirement of aging steam units
- Replacement units more efficient and meet need for fast-ramping capability
- Aids integration of renewables
- Estimated cost: \$500M
- Expected timeline
  - Early 2016: Project start2019: Project completion

Existing



New

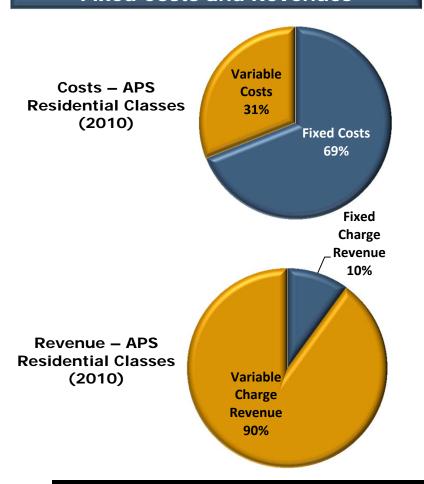


Site Capacity (MW)	Current	Future
(2) Westinghouse 110 MW steam units - constructed 1960	220	Retire
(2) Westinghouse 55 MW combustion turbines - constructed 1972/73	110	110
Install 5 GE 102 MW combustion turbines	0	510
Total	330	620
Not site capacity increased by 20	00 1/1//	



# RATE DESIGN MODERNIZATION

# Rate Changes Needed to Align Fixed Costs and Revenues



### **Components of Modern Rates**

#### Demand Rate

- Charge for maximum kW draw in any hour of the month; appropriate for recovering fixed costs that vary with the customer's max load (versus kWh)
- Provides customer option to save using solar, battery, Energy Efficiency, or other technologies
- APS has 117,000 residential customers (11%) on a demand rate

#### Fixed Charge

- Charge that does not vary with peak or energy use
- APS currently has basic service charge to cover metering, billing, etc. as well as the LFCR-DG charge for solar customers, effective January 1, 2014

#### • Energy (kWh) Rate

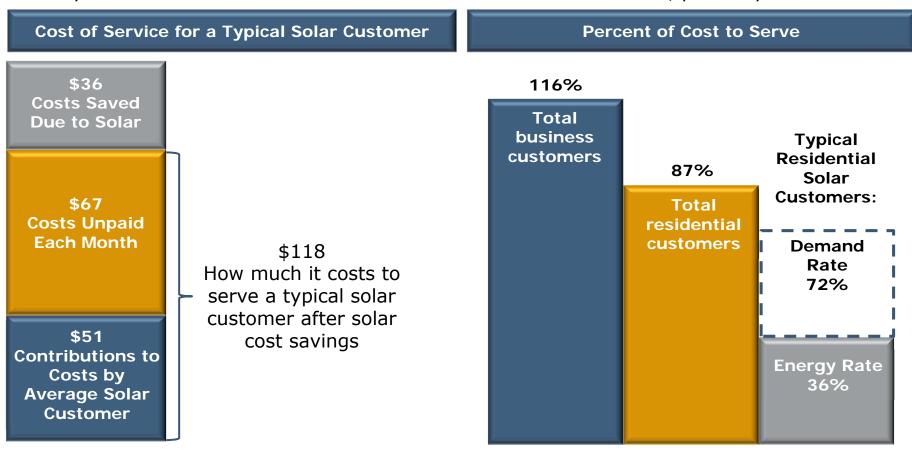
- Rate that recovers costs through a kWh rate, regardless of how the costs are incurred, examples are Time of Use (TOU) and inclining block
- TOU Rate:
  - Customer energy price varies by the time of the day; onpeak hours in current rates not aligned with system peak
  - APS has high TOU adoption with over 50% of residential customers on a TOU rate; however retail rates should be more aligned with production costs



# APS COST OF SERVICE ANALYSIS

# Results show customers with solar do not pay entire cost to serve

- Cost of Service study shows specific costs incurred to deliver electric service to customers
- Study credits solar customers the measurable costs that APS avoids, primarily reduced fuel



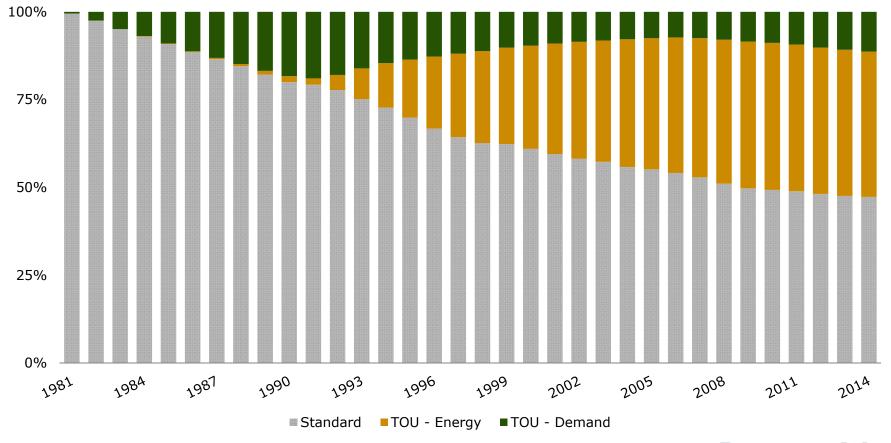
Note: Study is based on financial and load information from 2014, the most recent full year available.



# APS RATE DESIGN: A SOLID FOUNDATION TO BUILD ON

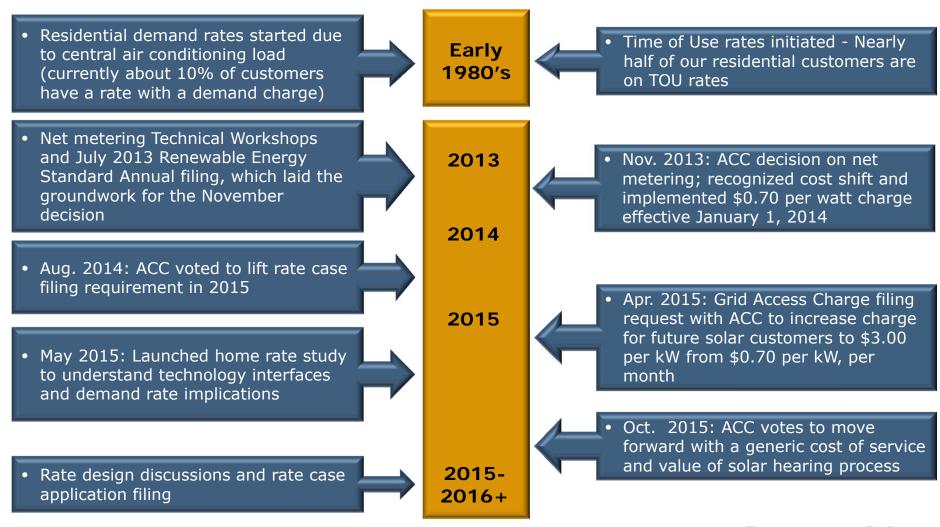
Over 50% of APS residential customers are already on time-of-use rates, including 11% on demand rates

APS residential customer base has grown from 400,000 in early 1980's to over one million today





### **KEY DATES FOR RATE DESIGN**



### **ENVIRONMENTAL PLAN**

# Regional Haze compliance is the biggest driver of environmental spend over the next few years

	Regional Haze / BART (SCR)	Mercury and Other Hazardous Air Pollutants (ACI + Baghouse)	Coal Combustion Residuals	Cooling Water Intake Structures – CWA 316(b)
EPA Ruling	Announced in 1999, with site-specific requirements announced more recently	MATS compliance by April 2015, with potential for one-year extension	Announced on December 19, 2014 (Subtitle D)	Announced in May 2014
Four Corners Units 4 & 5	Approximately \$400M for SCRs in 2016-2018 (does not include CAPEX related to El Paso's 7% interest)	\$0	APS estimates that its share of incremental costs to comply with the CCR rule for Four Corners is	Immaterial
Cholla Unit 3	On September 11, 2014, APS announced a proposal to close Unit 2 by April 2016 and stop burning coal at the other APS-owned units (1 and 3) by the mid-2020's. If EPA does not approve the plan, SCR for Unit 3 would cost approximately \$100 million.	\$8M	approximately \$15 million, and its share of incremental costs for Cholla is approximately \$85 million.  APS expects to incur certain of these costs during 2016-2018 timeframe.	\$0
Navajo Plant Units 1-3	Up to ~\$200M for SCRs and baghouses  On July 28, 2014, EPA issued the final BART rule incorporating the better-than-BART alternative proposed by SRP and others	Approximately \$1 million	Approximately \$1 million	To be determined

Clean Power Plan: On August 3, 2015, the U.S. EPA issued its final rules to reduce carbon dioxide emissions from fossil fuel-fired power plants including those on Tribal lands. APS is reviewing the rules, while working closely with other utilities, the Arizona Department of Environmental Quality, the ACC, tribal officials and other impacted stakeholders to determine how best to proceed. On February 9, 2016, the U.S. Supreme Court granted a stay of the Clean Power Plan pending judicial review, which temporarily delays compliance obligations.

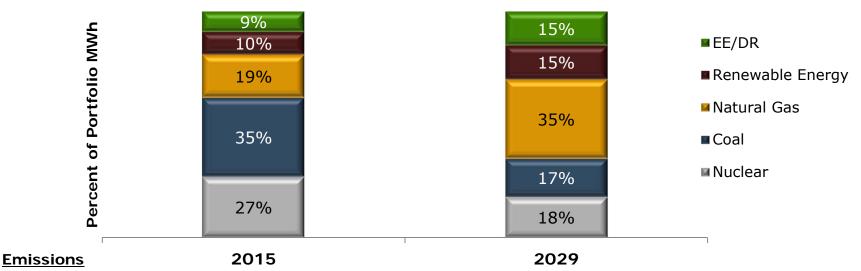
Note: Dollars shown at ownership. Estimates as of December 31, 2015.

- Cholla: Unit 1 is not BART-eligible; Unit 2 retired on October 1, 2015; Unit 4 is owned by PacifiCorp.
- The MATS Rule has been remanded to the D.C. Circuit Court.
- SO<sub>2</sub> NAAQS and greenhouse gas-related costs will be determined based upon EPA rule makings, with no spend occurring before 2016.
- ACI = Activated Carbon Injection; NAAQS = National Ambient Air Quality Standard; SCR = Selective Catalytic Reduction control technology



### **COAL FLEET STRATEGY**

APS's proactive approach to reducing emissions leads to coal's expected share of the energy mix being reduced to 17%



- 820 MW of coal has been retired including 560 MW at Four Corners Units 1-3 in 2013 and 260 MW at Cholla Unit 2 as of October 1, 2015.
- Four Corners: 2013 transaction to purchase Southern California Edison's ownership in Units 4 and 5 and closure of units 1, 2 & 3 leads to expected reductions of emissions; particulates are expected to decline by 43%, NOx by 36%, CO2 by 30%, mercury by 61% and SO2 by 24%.
- Cholla Power Plant: Closure of Unit 2 as of October 1, 2015 will reduce mercury emissions by 51%, particulates by 34%, NOx by 32%, and CO2 and SO2 by 23% each. We also announced plans to work with the U.S. EPA to stop burning coal at our remaining Cholla units by the mid-2020s
- Navajo Generating Station: Plan proposed by a group of stakeholders, including SRP, the operating agent, was approved by the EPA in 2014. The plan will achieve even greater NOx emission reductions than the EPA's proposal
- Participated in Carbon Disclosure Project since 2006
   Source: Data shown is based on the Integrated Resource Plan Supplement filed September 17, 2014



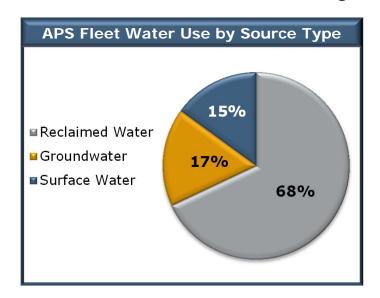
### **WATER STRATEGY**

APS, and Palo Verde in particular, has provided national and international leadership on the use of reclaimed water for power generation

**Vision**: To secure and maintain a sustainable and cost-effective supply of water to enable reliable energy production for APS customers

**Mission**: To develop and implement a strategic water resource management program that will provide APS timely and reliable information to manage APS's water resources portfolio in support of the safe and efficient generation of electricity for the long-term

Water Intensity Metric: Introduced in 2014 for power provided to APS customers – includes annual goals and is reported on monthly



Each APS power plant has unique water strategies, developed to promote efficient and sustainable use of water

- APS has identified both primary water supplies and contingencies for each plant in order to ensure reliable long-term operation, even in times of possible shortage, such as extended drought
- Palo Verde is the only nuclear plant in the world that does not sit on a large body of water, instead it uses treated effluent from several area municipalities, recycling approximately 20 billion gallons of wastewater each year



# **ARIZONA CORPORATION COMMISSION**

### **Terms to January 2017**



Bob Burns (R)



Bob Stump (R)\*



Andy Tobin (R)

### **Terms to January 2019**



Forese (R)



Doug
Little (R)
Chairman

#### **Other State Officials**

ACC Utility Division Director - Tom Broderick RUCO Director - David Tenney



<sup>\*</sup> Term limited - elected to four-year terms (limited to two consecutive)

# **2016 KEY DATES**

ACC Key Dates	Docket #	Q1 Q2		Q3	Q4
Key Recurring Regulatory Filings					
Lost Fixed Cost Recovery	E-01345A- 11-0224	Jan 15			
Transmission Cost Adjustor	E-01345A- 11-0224		May 15		
Renewable Energy Surcharge	TBD			Jul 1	
APS Rate Case Filing	E-01345A- 16-0036		Jun 1		
Resource Planning and Procurement	E-00000V- 15-0094	Mar 1: Preliminary IRP filed Mar: All source RFP issued (tentatively)			Oct 1: File updates to preliminary IRP*
Value and Cost of Distributed Generation	E-00000J- 14-0023	Feb 25: DG Methodologies & supporting testimony filed	Apr 7: Rebuttal testimony and alternate proposals due Apr 15: Pre-hearing Apr 18: Hearing, to be completed by May 6		
ACC Open Meetings	-	ACC Open Meetings Held Monthly			
Other Key Dates	Docket #	Q1 Q2 Q3			Q4
Arizona State Legislature	n/a	In session Jan 11- End of Q2			



Nov 8:

General

Aug 30: Primary

**Elections** 

<sup>\*</sup> April 2017: Final IRP due

# APS NOTICE OF INTENT TO FILE RATE CASE APPLICATION

- APS intends to file rate case application on June 1, 2016, using adjusted test year for the twelve months ended December 31, 2015
  - 120 days' Notice of Intent filed on January 29, 2016
- APS will propose new rates go into effect on July 1, 2017
- Rate case matters include:
  - Residential rate redesign
  - Revenue per customer decoupling mechanism
  - Deferral of costs related to the Ocotillo Modernization projects
  - Deferral of costs related to Environmental Protections (SCRs at Four Corners)
  - Adjustor mechanisms



# ARIZONA ELECTRIC UTILITIES GENERAL RATE CASES

## UNS Electric Docket # E-04204A-15-0142

Hearing (Mar 1, 2016)

Application filed May 5, 2015

Direct testimony - ex rate design, cost of service (Nov 6, 2015)

Direct testimony - rate design, cost of service (Dec 9, 2015)

Rebuttal testimony (Jan 19, 2016)

Surrebuttal testimony (Feb 23, 2016)

Rejoinder testimony (Feb 29, 2016)

Pre-hearing (Feb 26, 2016)

### **Sulphur Springs Valley Electric Cooperative Docket # E-01575A-15-0312**

Application filed Aug 31, 2015
Direct testimony - ex rate design, cost of service (Mar 18, 2016)
Direct testimony - rate design, cost of service (Apr 1, 2016)
Rebuttal testimony (Apr 15, 2016)
Surrebuttal testimony (May 4, 2016)
Rejoinder (May 11, 2016)
Pre-hearing (May 13, 2016)
Hearing (May 17, 2016)

## Tucson Electric Power Company Docket # E-01933A-15-0322

Application filed Sep 4, 2015

Direct testimony – ex rate design and cost of service (Jun 3, 2016)

Direct testimony – rate design and cost of service (Jun 24, 2016)

Rebuttal testimony (Jul 25, 2016)

Surrebuttal testimony (Aug 18, 2016)

Rejoinder testimony – (Aug 25, 2016)

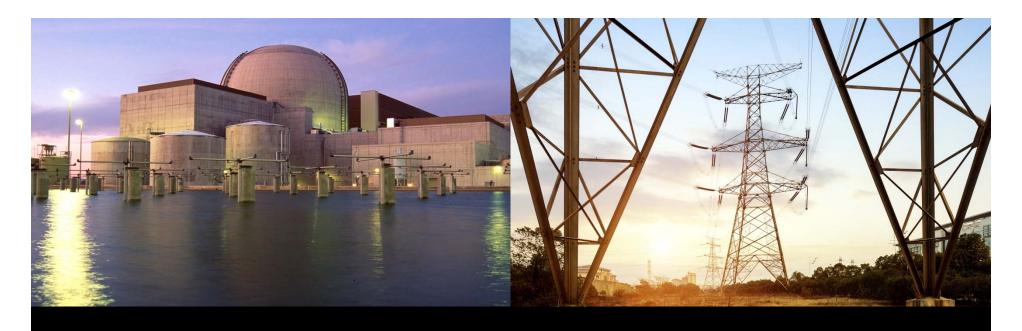
Pre-hearing (Aug 25, 2016)

Hearing (Aug 31, 2016)

### Trico Electric Cooperative Docket # E-01461A-15-0363

Application filed Oct 23, 2015
Direct testimony - ex rate design, cost of service (May 4, 2016)
Direct testimony - rate design, cost of service (May 25, 2016)
Rebuttal testimony (Jun 22, 2016)
Surrebuttal testimony (Jul 8, 2016)
Rejoinder (Jul 15, 2016)
Pre-hearing (Jul 18, 2016)
Hearing (Jul 19, 2016)





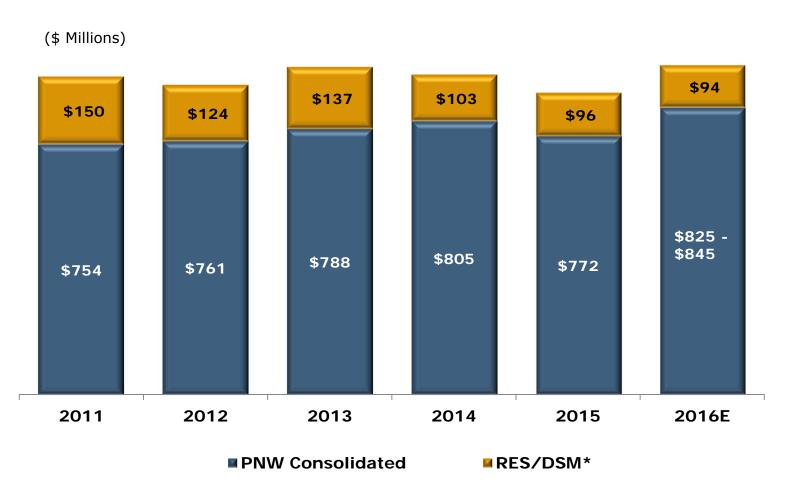
# **APPENDIX**

# PINACLE VEST



# OPERATIONS & MAINTENANCE OUTLOOK

# Goal is to keep O&M per kWh flat, adjusted for planned outages



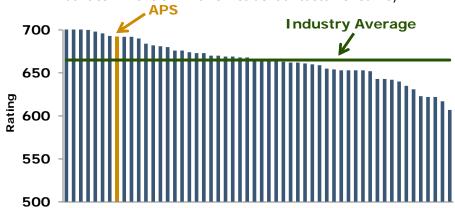
<sup>\*</sup>Renewable energy and demand side management expenses are offset by adjustor mechanisms.



### **OPERATIONAL EXCELLENCE**

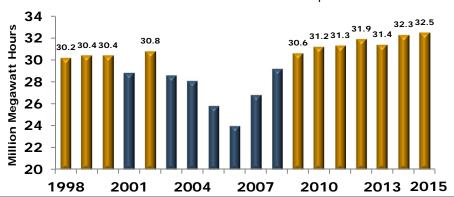
#### **Customer Satisfaction**

Ranked 8<sup>th</sup> highest nationally among 54 large investor-owned electric utilities in 2015 J.D. Power residential customer survey.



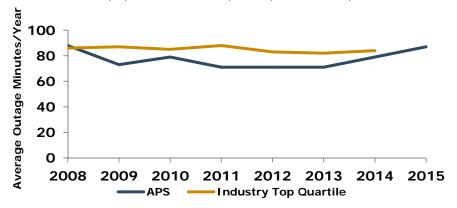
### Palo Verde

Palo Verde has exceeded its own record for generation - 32.5 million megawatt-hours annual production in 2015. Palo Verde is the only plant in the U.S. to exceed 30M MW annual production.



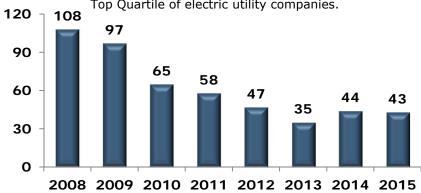
#### **Lowering Outage Time Per Customer**

Top quartile in industry over past several years.



#### **Safety**

APS achieved another safe year in 2015. APS ranks in the Top Quartile of electric utility companies.





# FINANCIAL OUTLOOK

# Key Factors & Assumptions as of February 19, 2016

•	·
Assumption	Impact
Retail customer growth	<ul> <li>Expected to average about 2-3% annually</li> <li>Modestly improving Arizona and U.S. economic conditions</li> </ul>
Weather-normalized retail electricity sales volume growth	<ul> <li>About 0.5-1.5% after customer conservation and energy efficiency and distributed renewable generation initiatives</li> </ul>

#### Gross Margin - Related to 2012 Retail Rate Settlement

Assumption	Impact
AZ Sun Program	<ul> <li>Additions to flow through RES until next base rate case</li> <li>First 50 MW of AZ Sun is recovered through base rates</li> </ul>
Lost Fixed Cost Recovery (LFCR)	<ul> <li>Offsets 30-40% of revenues lost due to ACC-mandated energy efficiency and distributed renewable generation initiatives</li> </ul>
Environmental Improvement Surcharge (EIS)	<ul> <li>Assumed to recover up to \$5 million annually of carrying costs for government- mandated environmental capital expenditures</li> </ul>
Power Supply Adjustor (PSA)	• 100% recovery as of July 1, 2012
Transmission Cost Adjustor (TCA)	<ul> <li>TCA is filed each May and automatically goes into rates effective June 1</li> <li>Beginning July 1, 2012 following conclusion of the regulatory settlement, transmission revenue is accrued each month as it is earned.</li> </ul>
Four Corners Acquisition	Four Corners rate increase effective January 1, 2015

**Potential Property Tax Deferrals (2012 retail rate settlement):** Assume 60% of property tax increases relate to tax rates, therefore, will be eligible for deferrals (Deferral rates: 50% in 2013; 75% in 2014 and thereafter)

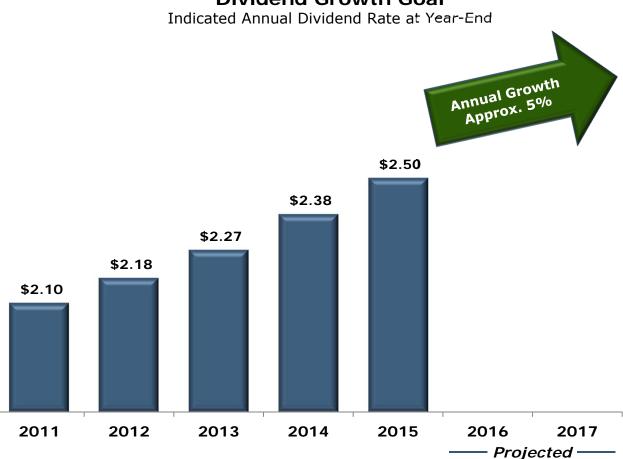
**Outlook Through 2016:** Goal of earning more than 9.5% Return on Equity (earned Return on Equity based on average Total Shareholder's Equity for PNW consolidated, weather-normalized)



# **DIVIDEND GROWTH**

# Pinnacle West's annual dividend is \$2.50 per share; targeting ~5% annual dividend growth

#### **Dividend Growth Goal**

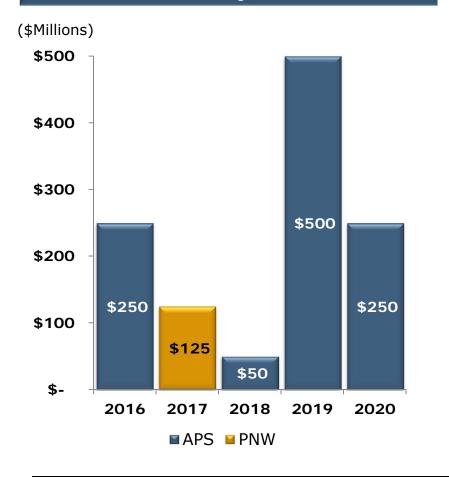


Future dividends subject to declaration at Board of Directors' discretion.



### **BALANCE SHEET STRENGTH**

### **Debt Maturity Schedule**



### **Credit Ratings**

• A- rating or better at S&P, Moody's and Fitch

### **2016 Major Financing Activities**

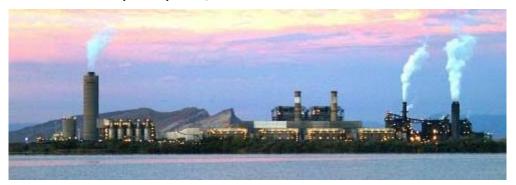
- Currently expect up to \$650 million of longterm debt, including issuance to refinance \$250 million of debt maturing in August
- In addition, there will be several tax-exempt series remarketed or refinanced

We are disclosing credit ratings to enhance understanding of our sources of liquidity and the effects of our ratings on our costs of funds.



### **FOUR CORNERS POWER PLANT**

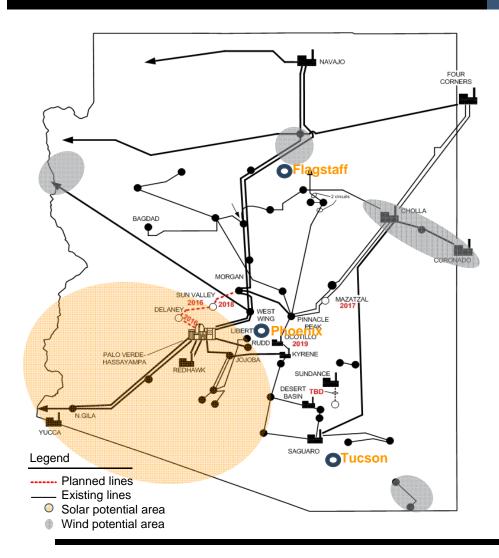
- On December 30, 2013, APS and Southern California Edison ("SCE") completed previously announced transaction whereby APS agreed to purchase SCE's 48% interest in Units 4 and 5 of Four Corners
  - Final purchase price: \$182 million
  - APS will continue to operate Four Corners and now has total interest of about 970 MW
- APS filed Four Corners-specific revenue requirement on docket 11-0224
  - On December 19, 2014, ACC passed the rate rider (\$57.05 million), new rates effective January 1, 2015; appeal pending
- APS notified EPA that the Four Corners participants selected the BART alternative requiring APS to retire Units 1-3 by January 1, 2014 and install and operate Selective Catalytic Reduction ("SCR") control technology on Units 4-5 by July 31, 2018
  - APS has obtained the environmental permit to allow the installation of the SCRs; construction expected to begin in 2016
  - Estimated environmental compliance: Approximately \$400 million, primarily in 2016-2018





### **APS TRANSMISSION**

Strategic transmission investment is essential to maintain reliability and deliver diversified resources to customers



- 10-Year Transmission Plan filed January 2016 (115 kV and above)
  - 110 miles of new lines
- Also includes:
  - Delaney-Palo Verde 500kV (2016)
  - Delaney-Sun Valley 500kV (2016)
  - Sun Valley-Trilby Wash 230kV (2016)
  - Morgan-Sun Valley 500kV (2018)
  - North Gila-Orchard 230kV (2021)
- Projects to deliver renewable energy approved by ACC
- Transmission investment diversifies regulatory risk
  - Constructive regulatory treatment
  - FERC formula rates and retail adjustor



# BRIGHT CANYON ENERGY – TRANSMISSION GROWTH

#### **BRIGHT CANYON ENERGY**

Pinnacle West subsidiary formed to pursue new growth opportunities



#### **TRANSCANYON**

A 50/50 Joint Venture formed with BHE U.S. Transmission, subsidiary of Berkshire Hathaway Energy, to pursue transmission opportunities in the western United States



WECC = Western Electricity Coordinating Council

# ARIZONA'S RENEWABLE RESOURCE AND ENERGY EFFICIENCY STANDARDS

#### Renewable Energy (RES) Requirements

- Portion of retail sales to be supplied by renewable resources
  - 6% by 2016
  - 15% by 2025
- Distributed energy component
  - 30% of total requirement



APS on track to exceed 2016 requirement

### **Energy Efficiency Requirements**

- Cumulative savings from energy efficiency programs must be equivalent to 22% of annual retail sales by 2020
- Annual milestones in place to measure progress toward cumulative 2020 goal
  - 9.5% by 2015
  - 22% by 2020



**APS on track to meet target** 



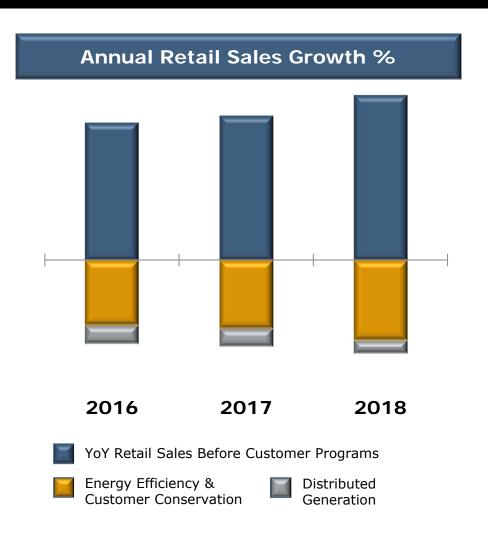
# RETAIL SALES IMPACT FROM ENERGY EFFICIENCY AND DISTRIBUTED GENERATION

#### **Distributed Generation (DG) Impact**

- DG makes up 0.5% or less of the negative impact to retail sales growth as shown in the chart
- Average residential rooftop solar system produces 10,000 – 12,000 KWh per year (average metro-Phoenix customer's usage is nearly 15,000 KWh)

The difference between customer growth and weather-normalized retail sales, mostly driven by EE and DG, has averaged around (1.0)% over the last four years, with some larger quarterly variances.

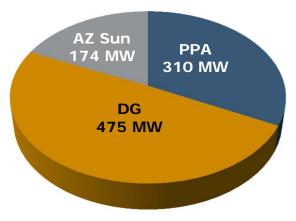
2015: (0.5)% 2014: (1.4)% 2013: (1.8)% 2012: (1.0)%





# **APS IS A LEADER IN SOLAR**

#### **APS Solar Portfolio**



AZ Sun includes 4 MW of other APS owned utility scale solar; Distributed Generation (DG) includes 15 MW of APS owned

PPA is primarily 250 MW Solana Concentrated Solar Facility

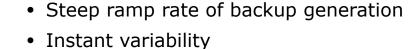
AZ Sun Projects	Capacity	Developer	Actual COD*	
Paloma	17 MW	First Solar	Sep 2011	
Cotton Center	17 MW	Solon	Oct 2011	
Hyder Phase 1	11 MW	SunEdison	Oct 2011	
Hyder Phase 2	5 MW	SunEdison	Feb 2012	
Chino Valley	19 MW	SunEdison	Nov 2012	
Yuma Foothills Phase 1	17 MW	AMEC	Jun 2013	
Yuma Foothills Phase 2	18 MW	AMEC	Dec 2013	
Hyder II	14 MW	McCarthy	Dec 2013	
Gila Bend	32 MW	Black & Veatch	Oct 2014	
Desert Star	10 MW	McCarthy	Sep 2015	
Luke Air Force Base	10 MW	McCarthy	Sep 2015	
Total	170 MW			
As of Dec 31, 2015		* Commercial Operation Dat		

AZ Sun represents a total capital investment of 675 million, or 3,970kW average for the 170 MW portfolio

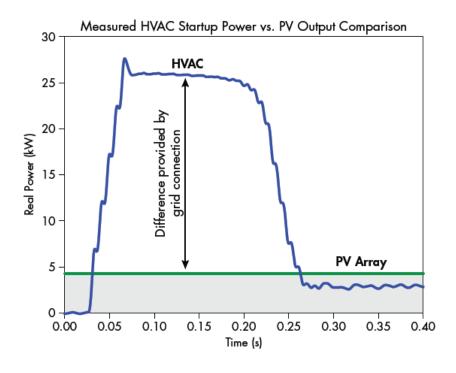


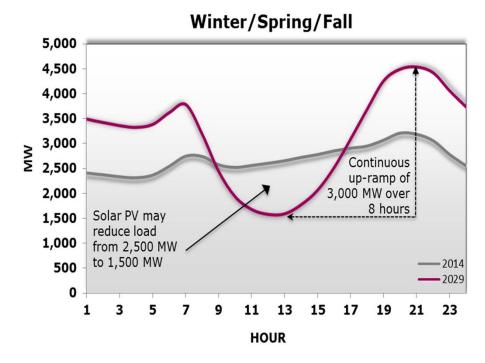
# OPERATIONAL CONSIDERATIONS WITH INCREASED VARIABLE GENERATION

The grid provides real-time voltage and power needed to start air conditioners and other motors loads (for typical AC unit)



• Voltage control at distribution level



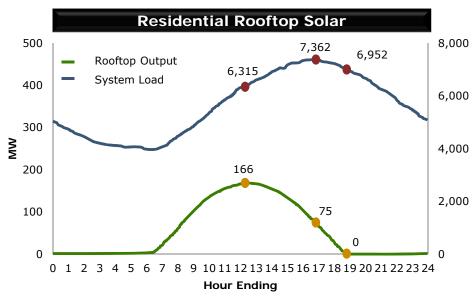


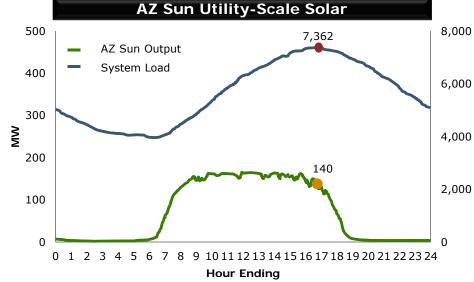


# RESIDENTIAL VS. UTILITY-SCALE SOLAR

### Performance at system peak

#### On August 15th, APS customers hit "peak demand" for 2015 using more than 7,300 MW of electricity





- Noon: Customer demand still increasing; rooftop solar peaks and begins to decline
- 5PM: Customer demand peaks; rooftop solar producing at 38% of total capacity
- 7PM: Rooftop output at zero, but demand still above 6,900 MW of power

- Solar panels at 8 of the AZ Sun plants rotate to track the sun, achieving highest production earlier in the day and maintaining it later
- At peak demand, utility-scale solar producing at nearly 80% of total capacity



# **GENERATION PORTFOLIO\***

	Plant	Location	No. of Units	Dispatch	COD	Ownership Interest <sup>1</sup>	Net Capacity (MW)
NUCLEAR 1,146 MW	Palo Verde	Wintersburg, AZ	3	Base	1986-1989	29.1%	1,146
	Cholla	Joseph City, AZ	2	Base	1962-1980	100	387
COAL 1,672 MW	Four Corners	Farmington, NM	2	Base	1969-1970	63	970
	Navajo	Page, AZ	3	Base	1974-1976	14	315
GAS - COMBINED CYCLE	Redhawk	Arlington, AZ	2	Intermediate	2002	100	984
1,871 MW	West Phoenix	Phoenix, AZ	5	Intermediate	1976-2003	100	887
GAS - STEAM TURBINE 220 MW	Ocotillo	Tempe, AZ	2	Peaking	1960	100	220
	Sundance	Casa Grande, AZ	10	Peaking	2002	100	420
	Yucca	Yuma, AZ	6	Peaking	1971-2008	100	243
GAS / OIL COMBUSTION TURBINE	Saguaro	Red Rock, AZ	3	Peaking	1972-2002	100	189
1,088 MW	West Phoenix	Phoenix, AZ	2	Peaking	1972-1973	100	110
	Ocotillo	Tempe, AZ	2	Peaking	1972-1973	100	110
	Douglas	Douglas, AZ	1	Peaking	1972	100	16
	Hyder & Hyder II	Hyder, AZ	-	As Available	2011-2013	100	30
	Paloma	Gila Bend, AZ	-	As Available	2011	100	17
	Cotton Center	Gila Bend, AZ	-	As Available	2011	100	17
	Chino Valley	Chino Valley, AZ	-	As Available	2012	100	19
SOLAR	Foothills	Yuma, AZ	-	As Available	2013	100	35
189 MW	Distributed Energy	Multiple AZ Facilities	-	As Available	Various	100	15
	Gila Bend	Gila Bend, AZ	-	As Available	2015	100	32
	Luke Air Force Base	Glendale, AZ	-	As Available	2015	100	10
	Desert Star	Buckeye, AZ	-	As Available	2015	100	10
	Various	Multiple AZ Facilities	-	As Available	1996-2006	100	4
	Total Generation Capacit	у					6,186 MW

<sup>\*</sup> As disclosed in 2015 Form 10-K. <sup>1</sup> Includes leased generation plants



# **PURCHASED POWER CONTRACTS\***

	Contract	Location	Owner/Developer	Status <sup>1</sup>	PPA Signed	COD	Term (Years)	Net Capacity (MW)
	Solana	Gila Bend, AZ	Abengoa	IO	Feb-2008	2013	30	250
	RE Ajo	Ajo, AZ	Duke Energy Gen Svcs	IO	Jan-2010	2011	25	5
SOLAR	Sun E AZ 1	Prescott, AZ	SunEdison	IO	Feb-2010	2011	30	10
310 MW	Saddle Mountain	Tonopah, AZ	SunEdison	IO	Jan - 2011	2012	30	15
	Badger	Tonopah, AZ	PSEG	IO	Jan-2012	2013	30	15
	Gillespie	Maricopa County, AZ	Recurrent Energy	IO	Jan-2012	2013	30	15
	Aragonne Mesa	Santa Rosa, NM	Ingifen Asset Mgmt	IO	Dec-2005	2006	20	90
WIND 289 MW	High Lonesome	Mountainair, NM	Foresight / EME	IO	Feb-2008	2009	30	100
	Perrin Ranch Wind	Williams, AZ	NextEra Energy	IO	Jul-2010	2012	25	99
GEOTHERMAL 10 MW	Salton Sea	Imperial County, CA	Cal Energy	IO	Jan-2006	2006	23	10
BIOMASS 14 MW	Snowflake	Snowflake, AZ	Novo Power	IO	Sep-2005	2008	15	14
BIOGAS	Glendale Landfill	Glendale, AZ	Glendale Energy LLC	IO	Jul-2008	2010	20	3
6 MW	NW Regional Landfill	Surprise, AZ	Waste Management	IO	Dec-2010	2012	20	3
INTER-UTILITY 540 MW	PacifiCorp Seasonal Power Exchange	-	PacifiCorp	IO	Sep-1990	1991	30	480
540 IVIVV	Not Disclosed	Not Disclosed	Not Disclosed	IO	May-2009	2010	10	60
HEAT RATE OPTIONS 150 MW	Call Option	-	Not Disclosed	IO	Oct-2005	2007	10	150
CONVENTIONAL	CC Tolling	Not Disclosed	Not Disclosed	IO	Mar-2006	2007	10	514
TOLLING 1,074 MW	CC Tolling	Not Disclosed	Not Disclosed	IO	Aug-2007	2010	10	560
DEMAND RESPONSE 25 MW	Demand Response	Not Disclosed	Not Disclosed	IO	Sep-2008	2010	15	25
	Total Contracted Cap	pacity						2,418 MW

<sup>\*</sup> As disclosed in 2015 Form 10-K.  $^{1}$  UD = Under Development; UC = Under Construction; IO = In Operation



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