EXECUTIVE SUMMARY

The 2014 Resource Plan at a Glance

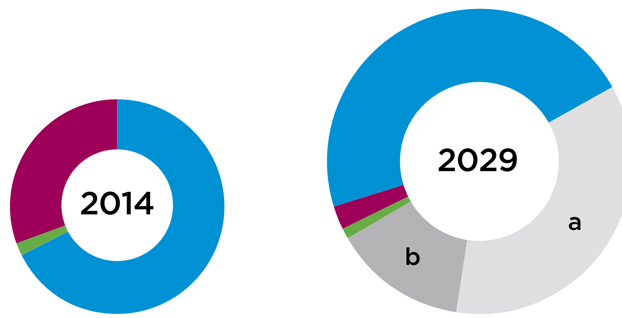
The 2014 Integrated Resource Plan (2014 IRP) lays out how APS is planning to meet the projected nearly 13,000 MW resource requirement within its service territory by 2029. When combining load growth with contract expirations and unit retirements, APS anticipates needing over 6,600 MW of additional resources. To meet that need, APS evaluated several combinations of resource options in compliance with the Arizona Corporation Commission (ACC) Resource Planning and Procurement Rules, and Renewable Energy and Energy Efficiency Standards. The 2014 IRP details the inputs that went into the portfolio evaluation process, including a broad array of resources, costs and environmental variables, and the analytical framework used in the evaluation. The conclusion of this process was clear: low natural gas prices combined with the cost of environmental regulations and increases in self-dispatching solar generation will favor highly flexible natural gas resources over traditional baseload resources. Continued investment in advanced grid technologies is expected to provide further flexibility to the APS system.

2014-2029 (PROJECTED)

FUTURE ADDITIONAL RESOURCES:
6,613 MW AT PEAK MET WITH

a. New Utility-Scale Resources
   - Natural Gas - **4,205 MW**
   - Renewable Energy - **425 MW** (818 MW Nameplate Capacity)

b. New Customer Resources
   - Energy Efficiency - **1,447 MW**
   - Distributed Energy - **261 MW** (722 MW Nameplate Capacity)
   - Demand Reponse - **275 MW**



Exisitng Customer Resources
Existing Contracts
Existing Utility-Scale Resources
a New Utility-Scale Resources
b New Customer Resources

2014	2029
8,124 MW	**12,982 MW**
peak requirement	peak requirement
100% met with	**50%** met with
existing resources	existing resources

Figure ES-1 - 2014 vs. 2029 Peak Requirements

INVESTING IN ARIZONA'S ENERGY FUTURE

ENERGY PORTFOLIO INVESTMENT

$13.6 billion

Planned to secure sufficient assets to meet requirements under the Selected Portfolio

TRANSMISSION INVESTMENT

$496 million

Needed to support reliability, coordination, aging infrastructure and integration of renewable energy

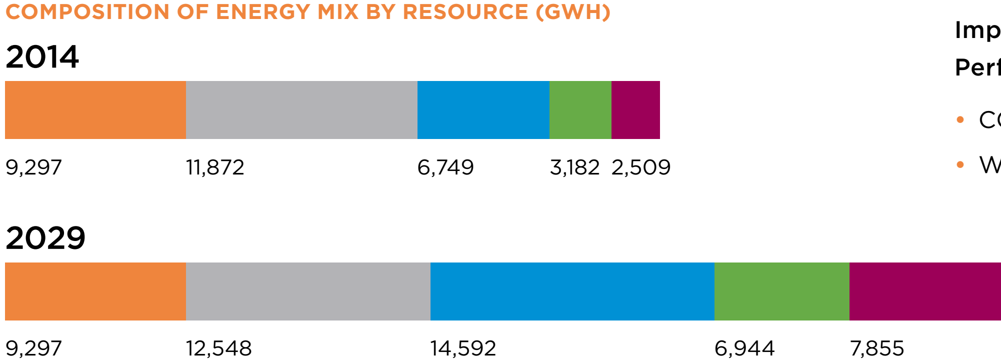
ADVANCED GRID INVESTMENT

$300 million

Planned to support reliability, integrate distributed energy and emerging technologies

HOW THE PORTFOLIO MAY CHANGE

COMPOSITION OF ENERGY MIX BY RESOURCE (GWH)



Nuclear Coal Natural Gas Renewable Energy Energy Efficiency

Figure ES-2 - 2014 vs. 2029 Energy Mix

Improves Environmental Performance:

- CO2 Intensity ▼ **14%**
- Water Intensity ▼ **24%**

Portfolio Selection

APS analyzed four portfolios before arriving at the Selected Portfolio as the most reasonable mix of resources for the 2014 IRP. The analysis focused on flexibility, reliability, cost, environmental impact and risk, among others.

The following table summarizes the analysis of the portfolios, including criteria considered for each. All portfolios include modernizing the Ocotillo power plant to support Valley reliability and renewable energy integration.

TABLE ES-1 - 2014 IRP PORTFOLIO SELECTION

2014 IRP PORTFOLIOS CONSIDERED	SELECTED PORTFOLIO	ENHANCED RENEWABLE PORTFOLIO	COAL REDUCTION PORTFOLIO	COAL-TO-GAS CONVERSION PORTFOLIO
Description	Modernize Ocotillo; continue coal operations; EE and RE compliance	Modernize Ocotillo; continue coal operations; EE compliance; RE well above compliance	Modernize Ocotillo; replace Cholla with gas and renewable generation; EE compliance; RE slightly above compliance	Modernize Ocotillo; convert Cholla to gas operation; EE and RE compliance
RESOURCE CONTRIBUTIONS (2029 PEAK CAPACITY CONTRIBUTION / % ENERGY MIX)				
Nuclear	1,146 MW / 18.1%	1,146 MW / 18.1%	1,146 MW / 18.1%	1,146 MW / 18.1%
Coal	1,932 MW / 24.5%	1,932 MW / 23.4%	1,285 MW / 16.9%	1,285 MW / 16.9%
Natural Gas	7,137 MW / 28.5%	6,933 MW / 21.9%	7,749 MW / 35.0%	7,784 MW / 36.1%
Renewable Energy & Distributed Energy	1,088 MW / 13.6%	1,298 MW / 21.3%	1,117 MW / 14.7%	1,088 MW / 13.6%
Energy Efficiency & Demand Response	1,722 MW / 15.3 %	1,722 MW / 15.3%	1,722 MW / 15.3%	1,722 MW / 15.3%

WHY THE SELECTED PORTFOLIO WAS CHOSEN

Resource planning does not establish a guarantee of future conditions or develop a transactional roadmap. Rather, the IRP process enables APS to develop long-term plans and evaluate which resource options may be appropriate given today's forecasts of future energy needs, resource costs and associated uncertainties. In the formulation of the 2014 IRP, uncertainties regarding environmental regulation and the evolving nature of the electric industry significantly influenced the selection process. The Selected Portfolio was chosen because it provides the most reasonable combination of overall economic performance, and flexibility in the generation fleet to support grid reliability, integrate renewable energy and manage uncertainties. Moving through the Planning Period, circumstances governing current assumptions and forecasts will undoubtedly change and will be updated in future resource plans, potentially shifting the preferred portfolio.

Emerging Trends Altering Industry

Across the country and throughout the world, the electric utility industry is changing. Technological advancements, regulatory requirements and increasing levels of variable generation are reshaping not only how and where APS generates energy, but also how customers use it. Important for APS is the growth of solar generation, one of the fastest-growing energy sources in the Company's service territory. Solar generation adds environmentally-friendly energy when the sun shines, and it also requires a responsive, supportive electric grid and additional flexible resources to balance the system in order to continue meeting customers' energy needs reliably.

Conventional resources, such as coal and nuclear, have provided steady, reliable generation to Arizonans for decades, but due to their relatively inflexible operation, traditional baseload resources will begin to be challenged. Natural gas, propelled by technological innovation in its exploration and extraction, will play an increasingly important role in transforming the resource portfolio into one that is more flexible and responsive to the needs of customers, as well as the broader electric grid.

APS is transitioning toward an energy resource portfolio that is not just reliable and cost-effective, but increasingly flexible and responsive

VARIABILITY REQUIRES FLEXIBILITY

Over the long run, integrating the next generation of energy assets will require more than just an increasing role for natural gas. An adaptation of current systems is also needed. The energy infrastructure in place today was designed to flow power to customers. Now, and increasingly in the future, power is not only flowing to customers, but is also flowing from customers and is challenging the scope of today's grid. This change is ushering in new platforms—a broader spectrum of energy resources, a two-way, real-time communication network to support them, and a smarter energy system to integrate them. Managing and meeting these challenges will guide the industry in developing needed assets, integrating advanced technologies and adding responsiveness to conventional resource fleets, including at APS. To make the development and implementation of these advancements possible, a comprehensive effort towards greater flexibility will be needed across the entire energy spectrum, including utilities, customers, regulators and other stakeholders.

CUSTOMERS: APS'S ENERGY PARTNERS

As the industry navigates through these changes over the coming decades, the call for adaptability will become increasingly clear. Innovation will continue to redirect the narrative and in doing so, refocus options. Already, the changes have been significant. Electric grids are making it possible for customers to generate electricity not only for their own use but also for sale back to the grid. Distributed generation, as well as energy efficiency, is transforming customer relationships into that of energy partners. Demand response is also enabling customers more control over when their energy is delivered and at what price points. In virtually every phase of the energy process, APS's interaction with customers has deepened and that trend is projected to continue.

2014 RESOURCE PLAN: KEY ELEMENTS

The 2014 IRP is organized across six broad sections: **(a) Executive Summary –** discusses changes in the energy industry and the increasing need for flexibility in responding to those changes, **(b) IRP Overview –** discusses steps included in the preparation of the IRP, **(c) Needs & Resources –** identifies the resource need and resources to fill that need, **(d) Planning Inputs & Other Considerations –** includes an overview of analytical inputs used in the portfolio selection model, **(e) Determining the Most Reasonable Plan –** lays out how those inputs were utilized in the portfolio selection process and **(f) 2014-2018 Action Plan –** details the 2014-2018 Action Plan

Change Has Already Transformed the Portfolio

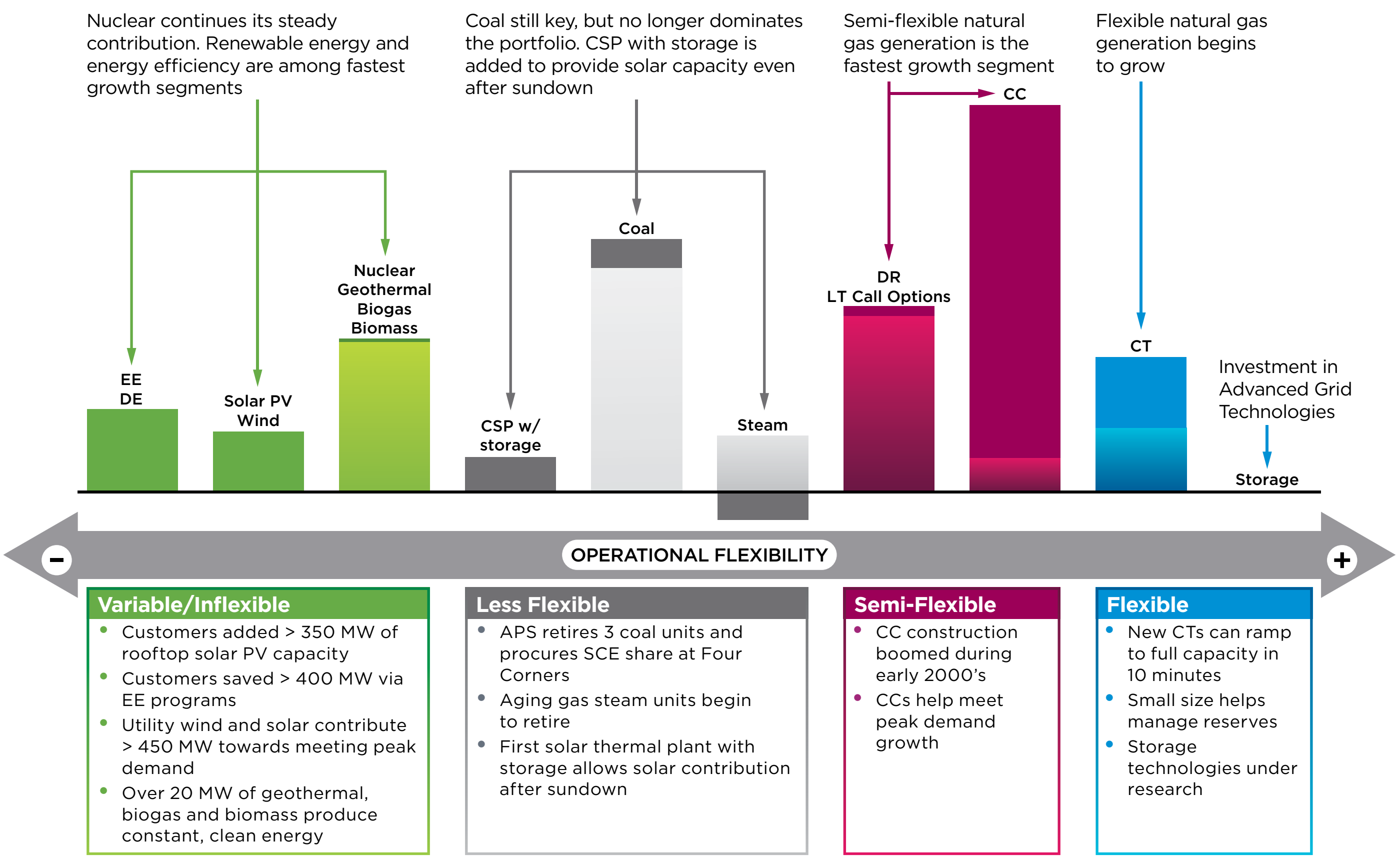
ASSET CLASSIFICATIONS TO FIT THE TIMES

To better reflect the changing environment, APS has developed a method of viewing asset classifications based on operational flexibility.

- **Variable/Inflexible** – These are assets that cannot be dispatched flexibly. In some cases, resources in this group are variable and dispatch themselves, such as solar and wind, and also require additional operational flexibility from other generation resources. With the exception of nuclear, energy production of this group is not fully managed by APS. Resources include nuclear, energy efficiency, distributed solar PV, utility-scale solar PV, wind, geothermal, biogas and biomass.
- **Less Flexible** – Less flexible assets have limited capability to adjust output in response to other resources or system needs. Resources include coal, older steam plants and solar with storage capabilities.
- **Semi-Flexible** – Semi-flexible assets are able to adjust output to help integrate variable resources and can generally respond to system needs. These assets however, have relatively limited stopping and starting capabilities. Resources include combined cycle units and market purchases.
- **Flexible** – This group of assets is able to start and adjust output quickly, and is capable of multiple starts/stops per day. Flexible assets complement variable resources and respond to system needs quickly. Resources include combustion turbines and eventually, storage.

2000 – 2014

RENEWABLE ENERGY AND ENERGY EFFICIENCY MORE PROMINENT IN PORTFOLIO



Darker areas above the line represent resource additions
Darker areas below the line represent resource retirements/contract expirations
Refer to the Glossary and Table of Acronyms for terms used in this chart

Figure ES-3 - 2000–2014 Asset Classification

Continuing the Evolution to 2029

15 YEARS MAKES A DIFFERENCE: FROM 2000 TO TODAY

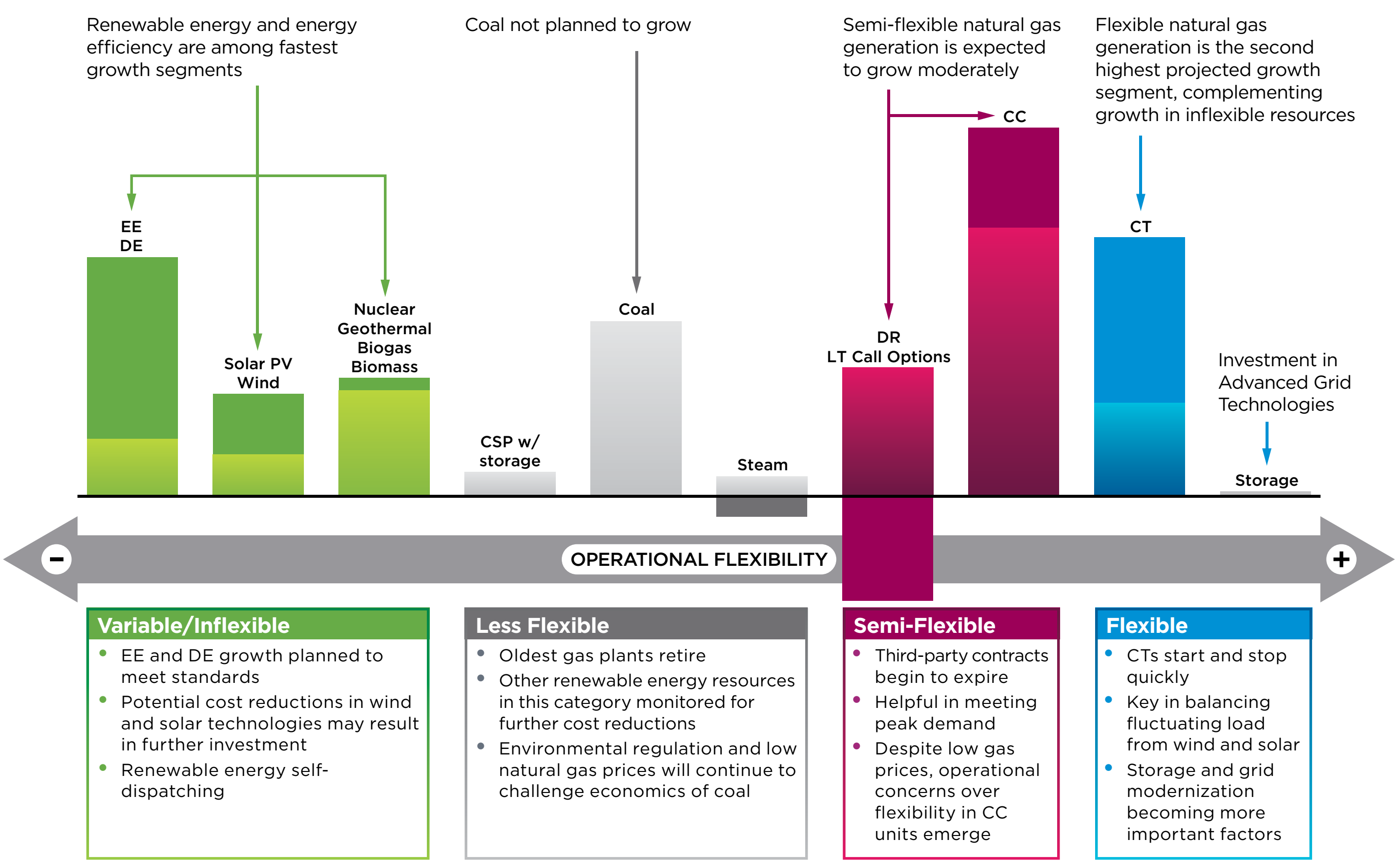
- **Variable/Inflexible** - Fifteen years ago, APS had limited variable/inflexible resources. Today, this category is projected to have the highest growth of the analyzed portfolios.
- **Less Flexible** - Once the dominant asset group, coal and natural gas steam resources are not projected to have growth.
- **Semi-Flexible** - Semi-flexible resources have evolved from being a small contributor to the largest asset class.
- **Flexible** - Projected growth in these assets complements the variable/inflexible group, an important concept moving forward.

BALANCED PORTFOLIO GROWTH AT BOTH ENDS OF THE FLEXIBILITY SPECTRUM POSITIONS APS FOR THE FUTURE

At the end of the current 15-year Planning Period, operating conditions are expected to be considerably different than they are today. Increases in variable generation will require corresponding increases in highly flexible, complementary resources to provide APS with the tools to manage an increasingly evolving energy system.

2014 – 2029

MORE FLEXIBILITY IN GENERATION AND GRID TECHNOLOGIES REQUIRED



Darker areas above the line represent resource additions
Darker areas below the line represent resource retirements/contract expirations
Refer to the Glossary and Table of Acronyms for terms used in this chart

Figure ES-4 - 2014–2029 Asset Classification

Solar Energy's Influence

As distributed energy penetration increases across the region, so does its influence on conventional power generation. The discussion below details how customer power consumption patterns may change if distributed energy penetration growth rates continue to increase, and how APS is positioning its conventional generation fleet to respond.

From a net customer demand perspective, the dips in the following charts indicate the portion of the day when solar PV produces energy and how that production does not align with peak power consumption. Solar PV energy can significantly reshape net consumption patterns. Due to the misalignment of solar production with peak energy consumption, the resulting residual demand that APS and other utilities must meet requires generation that is able to start up in the morning, shut down by mid-day to accommodate the increase in solar production, and then start back up in the evening as the sun sets and solar production shuts down. This dual-peak nature of net customer demand will require a significantly more flexible and responsive resource portfolio across the region and may drive competition for natural gas resources.

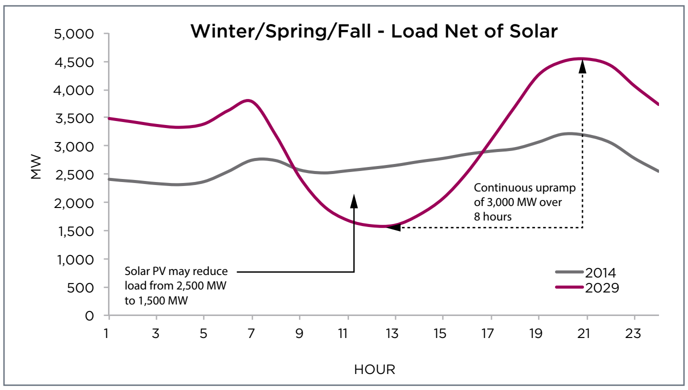


Figure ES-5 - Winter/Spring/Fall - Load Net of Solar

- As the forecast progresses to 2029, the peak hour will shift to later in the day as solar production decreases
- Solar PV may reduce minimum load to 1,500 MW from 2,500 MW
- Lower midday demand may result in over-generation conditions during certain hours
- Increased need for system voltage support
- Future generation technology needs change

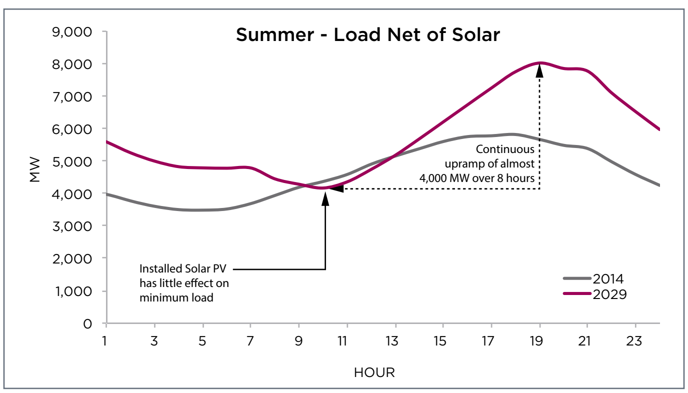


Figure ES-6 - Summer - Load Net of Solar

- As more solar PV is installed, its contribution to peak diminishes, resulting in customers essentially paying twice for resources—once for rooftop solar and again for the utility resources to meet peak demand once the sun sets
- Greater need for system visibility and two-way communication

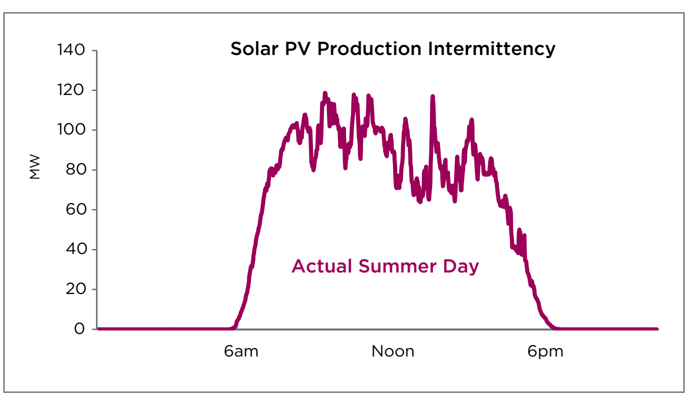


Figure ES-7 - Solar PV Production Intermittency

The graph on the left depicts minute-by-minute production from solar resources and illustrates how solar energy's output must be complemented by conventional resources and supported by the grid.

- As solar penetration increases, reliance on conventional resources and grid responsiveness will also increase
- Forecasting becomes critical in order to manage appropriate reserve margins

Flexible Generation: A Complementary Resource

Most power plants operating today are relatively inflexible, meaning they cannot easily accommodate the variability of renewable and customer resources to ensure a continuous power supply. This has not yet impacted system reliability for APS, because customer demand has been largely predictable and levels of variable resources are still a modest percentage of the overall energy mix.

However, the potential growth of renewable energy—particularly in solar-rich areas such as Arizona—is significant and transformative. Supply intermittency is projected to be a greater factor in day-to-day power operations and will require complementary resources, such as quick-starting combustion turbine natural gas generation, to respond quickly to changes on the electric grid while continuing to reliably meet customer demand.

CHARACTERISTICS OF FLEXIBLE GENERATION

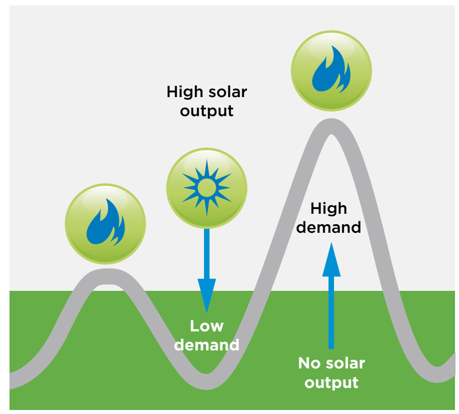
Variability is not new. Over the past century, power system operators have developed mechanisms to manage sudden changes in demand, unscheduled outages and transmission contingencies. The variability of these types of events is ad hoc by nature and successfully managed through reserve margins and thorough planning. The variability from renewable generation, however, is more profound—it is a permanent and growing part of the energy system. To address this development, responsive operational capabilities must be deployed. Flexible generation assets, forming part of a diverse portfolio, will help balance the grid by bridging the gap between conventional and renewable resources and enabling further integration of variable energy sources as they continue to grow.

KEY CHARACTERISTICS OF FLEXIBLE RESOURCES INCLUDE:

- **Fast ramp rates:** Ramp rates depict how fast power plants can increase (ramp up) or decrease (ramp down) generation to balance the system. To support renewable energy generation, flexible assets must ramp quickly; they also must be able to start and stop quickly, sometimes several times a day.
- **Short start-up times:** The shorter the start-up time, the faster a power plant can supply energy into the grid. Customer demand and renewable generation are both variable, going in opposite directions in the afternoon and early evening hours when customers increase power consumption as solar power production decreases. With the growth in solar PV generation, the impacts of cloud cover on the grid will magnify. Quick-starting, flexible generating capacity effectively bridges these gaps.

OCOTILLO MODERNIZATION PROJECT

Ocotillo's central location in the Phoenix Metro area and proximity to customer demand is ideal for placement of flexible generation on the transmission system. In 2016, APS plans to begin construction on a project modernizing the Ocotillo Power Plant in Tempe to enhance its contribution to system reliability in the APS service territory. The proposed project consists of replacing two 1960s-era steam generators with five quick-start natural gas combustion turbine units with capacities of 102 MW each. Scheduled to begin commercial operation in 2018, the Ocotillo Modernization Project will provide cleaner, more efficient megawatt-hours, maintain grid reliability and add beneficial operational flexibility.



Flexible generation assets help balance the grid by bridging the gap between traditional and renewable resources

START-UP TIMES - HOURS FROM COLD-START TO MAXIMUM OUTPUT

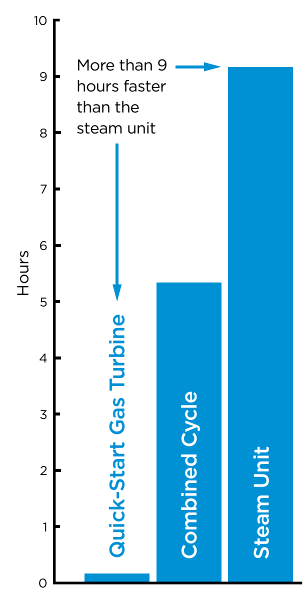


Figure ES-8 - Comparison of Start-Up Times

The Need for a Modernized and Flexible Grid

Adding more adaptable generation is just one factor in managing projected growth. Creating more flexible transmission and distribution systems and accounting for greater customer involvement contribute as well. Grid modernization merges these elements together, and once fully implemented, will redefine how energy is generated, measured and delivered. Through a complex network of sensing and communication devices, modernized grids are projected to create a real-time energy dialogue among sources of energy, customers and various grid components to keep everything in balance. In the face of greater resource intermittency, that dialogue will improve efficiency, reliability, resiliency and security of the energy system.

The grid is already adapting, but further innovation will be needed in the coming years. In recognition of that need, APS anticipates investing more than $300 million in smart grid technology through 2025. This is just the beginning of the process, not only for the Company but also for customers. Longer-term, utility-scale and customer-sited generation systems will communicate through a network designed to meet the following goals:

- **Maintain reliability** – As distributed generation and other forms of renewable energy grow to meet customer energy demand, monitoring and maintaining stable system operating conditions including voltage is becoming more important to ensure a balanced grid.
- **Empower customers** – The two-way flow between customers and utilities is opening doors to real-time operations unprecedented in this industry's history. Smart grid systems increase situational awareness, letting utilities know about changes in customer demand, enabling quicker response.
- **Integrate resources** – While the cost to operate renewable energy assets is less variable than conventional generation, the energy output of these resources is more variable. High degrees of fluctuation can and do occur, and real-time communication between conventional and renewable energy resources is needed to dynamically manage voltage, compensating VAR flows, and overall system reliability.

In the face of greater intermittency, investments in advanced grid technologies will be needed in order to provide greater operational visibility, system reliability and overall system efficiencies

STORAGE

In addition to these technologies, the industry, including APS, is reviewing energy storage options to take advantage and leverage supply/demand imbalances by being able to store energy during low demand periods, and releasing that energy when customers need it most. As part of that effort, initial deployments are being developed to assess the performance of various storage technologies to determine their suitability in meeting customer needs and supporting the overall resource portfolio.

TO MEET THESE GOALS, APS IS CURRENTLY DEVELOPING AND/OR IMPLEMENTING A NUMBER OF ADVANCED TECHNOLOGIES INCLUDING:

- Advanced Operational Platforms
- Automated Switches
- Communicating Fault Indicators
- Advanced Analytics
- Substation Health Monitors
- Communication Infrastructure
- Downed Conductor Detection
- Advanced Metering Infrastructure
- Phasor Measurement Units
- Network Protectors

2014–2018 Action Plan

While other components of the 2014 IRP elaborate on a wide range of developments and uncertainties and contemplate how various resource portfolios might best address them, the Action Plan lays out specific activities anticipated to occur in the near-term, designed to position APS for the challenges ahead.

AGAINST THAT BACKDROP, APS ESTABLISHED SEVEN DISTINCT PRIORITIES FOR THE 2014-2018 TIMEFRAME:

- **Transition resource portfolio while ensuring an adequate supply of resources** – By 2018, load is projected to grow almost 1,100 MW while resources to meet that growth will decline largely due to the expiration of just under 1,400 MW in purchased power contracts. The combination of these circumstances will have a significant impact on the portfolio. By 2017, APS anticipates needing to add 360 MW of additional capacity. This need is anticipated to grow to over 700 MW by 2018. To fill the gap, APS plans to utilize a combination of market-based solutions, along with highly flexible generating capacity at Ocotillo. These needs are in addition to resource contributions anticipated from the Energy Efficiency and Renewable Energy Standards.
- **Update conventional generation resources** – As with many utilities across the U.S., portions of APS's fleet are aging beyond their useful life. One way APS is addressing this issue is the modernization of the Ocotillo Power Plant in Tempe. The project, consisting of replacing two 1960s-era steam generators with five quick-start gas turbine units of 102 MW each, will generate cleaner, more efficient energy and improve visual conditions. Scheduled to begin operating in 2018, the new combustion turbine technology will support grid and operational reliability at the heart of APS's load center and complement increases in solar generation capacity. Permitting and CEC filings are planned for 2014.
- **Continue expansion of renewable generation** – Renewable energy resources, and APS's ability to effectively integrate and forecast their variability in production, are focal points of the 2014 Resource Plan, and the Action Plan is no exception. APS customers now benefit from solar capacity across the state, including the new Solana Generating Station, which combines concentrating solar power technology with thermal storage to generate energy even after the sun sets. During the next five years, that trend is expected to continue as APS and its customers are anticipated to pursue further installations of solar technologies.
- **Add transmission resources** – In order to continue accessing markets and the benefits they provide customers, APS will need additional transmission resources. In APS's 10-year transmission plan filed in January 2014, several key transmission projects are outlined that not only provide for increased system reliability, but also enable greater access to the Palo Verde markets through additional import capability into APS's service territory. In addition to these projects, longer term, APS will be evaluating other transmission access into its service territory.
- **Evaluate and decide on remaining coal fleet** – With the purchase of SCE's interest in the Four Corners Generating Station complete, APS will be continuing its evaluation of coal by examining the merits of further investment in the Cholla and Navajo units. Key to this analysis will be penetration of solar PV and its impacts on the need for operational flexibility, natural gas prices and the impacts of environmental regulations. Completion of analysis and a decision regarding Cholla is expected by 2016, followed by Navajo before 2019.
- **Continue implementation of customer resources** – APS has several customer-side resources that include distributed energy, energy efficiency and demand response. Over the next five years, the Company plans to continue working with customers to optimize the value of these programs to the overall portfolio.
- **Invest in advanced grid technologies** – Over the Action Plan Period, APS plans to invest $170 million in advanced grid technologies; including communication infrastructure, voltage management, automated switching, asset health monitoring, and operational platforms. The investment will support grid overall reliability and the integration of renewable energy and emerging energy technologies.