



## FAQs and Definitions - OPPD's Integrated Resource Plan *Updated November 30, 2016*

### ***Integrated Resource Planning***

#### **(1) Q: What is an Integrated Resource Plan (IRP)?**

The plan is a road map for meeting OPPD's mission and is required by the Western Area Power Administration (WAPA). It helps us determine how we will generate power in the future. We utilize a comprehensive, forward-looking decision support tool for evaluating resource options to meet our objectives at the lowest cost. The process considers supply-and-demand resource options, risk and fuel, power and technology costs associated with various resource plan outcomes.

As Management completes the IRP, there are a number of strategic directives that must be considered; SD-2 Competitive Rates, SD-4 Reliability, SD-7 Environmental Stewardship, SD-9 Resource Planning, SD-11 Economic Development, SD-13 Stakeholder Outreach and Communication and SD-15 Enterprise Risk Management.

#### **(2) Q: What is WAPA?**

WAPA stands for Western Area Power Administration. WAPA is one of four power marketing administrations within the U.S. Department of Energy whose role is to market and transmit wholesale electricity from multi-use water projects. The service area encompasses a 15-state region of the central and western U.S.

WAPA sells power to customers such as Federal and state agencies, cities and towns, rural electric cooperatives, public utility districts, irrigation districts and Native American tribes. These customers, in turn, provide retail electric service to millions of consumers in the West. As a component of their energy delivery contract, WAPA requires an Integrated Resource Plan be filed every 5 years for hydroelectric power.

#### **(3) Q: OPPD has several energy partners. Why does OPPD only supply an integrated resource plan to WAPA and not the others?**

WAPA is OPPD's only Federal energy partner and the only partner who requires an IRP as part of our contractual commitment to them. The other partners do not require a plan.

#### **(4) Q: How often does OPPD review generation needs?**

The utility industry is experiencing dynamic change at an accelerated pace. For that reason, OPPD regularly reviews resource options based on market conditions and our contractual commitment to the Western Area Power Administration (WAPA). We assess generation mix, Purchase Power Agreements (PPA) and Demand Side Management Programs to evaluate supply-and-demand resource options.

All reviews are based on market conditions, load requirements, legislation, research and pace of value for our customers.

## **Portfolio Clarification**

### **(5) Q: Portfolios refer to megawatts (MW) – please help me understand the impact of the megawatts discussed in each portfolio.**

Portfolios refer to 160-426 MW of wind and 100 MW of utility grade solar.

To put that in perspective, 400 MW of electricity can power approximately 120,000 average Nebraska homes. Additionally, 1MW of utility grade solar requires approximately 6 acres of land or about 6 football fields.

### **(6) Q: What is Utility Grade Solar?**

A utility grade solar facility generates solar power on a large scale, as opposed to residential solar.

### **(7) Q: How does battery storage work?**

Utility scale battery storage can serve multiple roles supporting the electricity grid including both energy storage and regulation support. Energy storage allows for the storage of electrical generation during times of excess generation (or low usage) and the use of the stored energy during periods of high demand or constrained generation. An example of this would be storage of excess wind generation during the night at a time of low energy usage and the use of that energy during the day when energy usage is at its highest. Regulation support allows for greater control of the quality of power by balancing intermittent resources such as wind or solar.

### **(8) Q: Why does the Pink Portfolio cost more if that portfolio is adding the least amount of generation?**

Portfolio pink has a higher net present value cost due to the fact that there is less renewable generation added compared to the other portfolios. As a result of adding less generation, there is less energy available for sale into the Southwest Power Pool market. In this scenario, having less energy available for sale increases the total cost of operating the portfolio.

### **(9) Q: What is the reliability of each portfolio?**

Each portfolio meets the Southwest Power Pool's (SPP) system capacity reserve requirements. This ensures that each of the portfolios has the ability to serve OPPD's maximum system demand, plus an additional 12% reserve margin.

### **(10) Q: If OPPD is committed to no general rate increase for 5 years, why shouldn't we just go with solar?**

OPPD is committed to no general rate increase for five years, from 2017-2021 (SD-2 Competitive Rates). As part of that commitment, OPPD believes it can achieve its environmental stewardship goal of 30% of retail sales coming from renewable sources (SD-7 Environmental Stewardship). In accordance with each initiative, the District believes the optimal decision is to incorporate lowest cost renewables in order to achieve both goals at the same time (SD-2 and SD-7). If OPPD were to select higher cost renewable generations sources (solar), it would be in direct conflict with SD-2 to achieve rates 20% below the regional average.

### **(11) Q: What do the periodic table symbols mean? (Mercury, Sulfur, Carbon, Nitrogen Oxide)**

- Carbon dioxide is represented with the symbols **C** for carbon and **O<sub>2</sub>** for oxygen as "**CO<sub>2</sub>**."
- Mercury is represented by the periodic table symbol for elemental mercury as "**Hg**."
- Nitrogen dioxide is represented with the symbols for nitrogen, **N**, and oxygen, **O<sub>2</sub>**, as "**NO<sub>2</sub>**."
- Sulfur dioxide is represented with the symbol **S** for sulfur and **O<sub>2</sub>** for oxygen as "**SO<sub>2</sub>**".

**(12) Q: How is the IRP related to the resource planning OPPD did for Fort Calhoun Station?** OPPD's resource planning that resulted in ceasing operations at FCS was a subset of the larger, more integrated process required to produce the IRP. At its core, the IRP is a continuation of the FCS analysis that specifically incorporates the rest of the OPPD generation assets, PPA agreements and Demand Side Management programs. OPPD expects the IRP process to be both more important and more visible as the utility industry experiences dynamic change in a compressed period of time.

**(13) Q: Since the Board voted on Fort Calhoun Station, why aren't they voting on this?**

This is an Integrated Resource Plan that will be filed with WAPA as part of our contractual relationship. The FCS decision also required accounting changes as well as short term capacity additions. When we bring the next phase of addition (i.e. Wind contracts), the Board will be voting on those contracts.

**(14) Q: How is OPPD meeting its 300 MW DSM goal?**

In 2014, OPPD made the commitment to proceed down the path of pursuing 300 MW of demand side management (DSM) options by 2023. Our 300 MW DSM goal remains intact, and we continue to offer programs like Residential AC Management, Residential HVAC Rebates, Residential Low Income energy assistance and training programs, Commercial and Industrial Prescriptive Rebates, Commercial and Industrial Customer Rebates, and Commercial and Industrial Interruptible programs. During the 2016 IRP process, it was determined that approximately 46 MW of DSM capacity for commercial and industrial customer have higher projected implementation costs than other options available to OPPD, and we're working to identify other solutions. OPPD remains committed to DSM programs and continues to research other options to achieve our DSM goals cost effectively.

**(15) Q: Have you considered distributed generation options?**

Distributed generation was not included in our modeling at this time. To date, we've seen very limited participation in our net metering rate program; fewer than 100 of our approximately 360,000 customer-owners currently participate in net metering. We continue to monitor energy trends and look ahead to solutions that will provide the most cost-effective, reliable and environmentally sensitive options for our customer-owners. Distributed generation will likely grow in prominence and scalability in the future, and we'll continue to evaluate its fit in our portfolio.

### ***Future Outlook***

**(16) Q: How will the Clean Power Plan affect these portfolios?**

The environmental regulatory future remains highly uncertain and ever-changing. Due to the uncertainty, the portfolios were modeled with a conservative approach that anticipates further regulation on the coal-fired electric generation; the most significant of these regulations is called the Clean Power Plan.

On October 23, 2015, the EPA published a final rule regulating the emission of carbon dioxide ("CO<sub>2</sub>") from existing fossil-fuel fired electric generating units under section 111 of the Clean Air Act.

Also on October 23, 2015, the EPA published a final rule for new, modified, or reconstructed fossil fuel-fired electric utility generating units under section 111 of the Clean Air Act.

These regulations in the aggregate are known as the Clean Power Plan ("CPP"). The CPP requires states to meet interim and final emissions targets on a state-wide basis starting in 2022. The goal is to reduce CO<sub>2</sub> emissions from electric generating units by 32% below 2005 levels by the year 2030. In

addition, the EPA issued a proposed rule which provides two possible programs to be used by states for compliance, a mass-based program, or a rate-based program. States could allow their fossil fueled generating units to use a number of measures to meet those goals, such as heat rate improvements, unit retirements, and renewable energy.

Numerous legal challenges to the CPP have been filed and consolidated in the United States Court of Appeals for the District of Columbia Circuit. On February 9, 2016, the U.S. Supreme Court entered an order staying the implementation of the CPP pending further proceedings. Oral arguments were heard before the District of Columbia Circuit Court on September 27, 2016. The cost of compliance will not be known until judicial proceedings have been concluded and the District can evaluate the final regulatory requirements and its options related thereto.

**(17) Q: Why is OPPD focusing on the 5-year plan?**

OPPD has important near-term decisions to make. We are committed to continually revisiting generation options. As energy technologies mature and as we learn more about the legal status of the Clean Power Plan, we will be able to adjust accordingly.

**(18) Q: What happens after the 5-year no general rate increase?**

After the five years, no general rate increase period concludes and OPPD would continue its efforts to provide affordable, reliable and environmentally sensitive energy services to our customers. This effort would include avoiding future rate increases whenever possible but ultimately would depend on regulations, customer usage patterns, technology costs and a variety of other macroeconomic factors.

**(19) Q: Is OPPD still committed to demand-side management (DSM) programs?**

Yes. Demand-side management programs are designed to reduce energy consumption and/or peak load by incenting customers to invest in efficient equipment or reduce their usage during periods of high electricity demand.

All four portfolios concluded that 46 MW of the planned 300 MW DSM programs are uneconomical and should be re-evaluated at this time. The DSM megawatt reduction was solely related to a planned commercial demand-response program not yet implemented.

OPPD's intent is to continue with existing commercial and residential programs, which promote demand response and energy efficiency. In addition to existing programs, OPPD will continue to seek innovative and cost effective demand side management programs that can provide sustainable alternatives.

**Residential:**

- **CoolSmart:** Achieves demand reductions by cycling and curtailing central AC units by way of a remote-controlled switch. As of September 2016, OPPD has 40,340 active switches and can control 57.8 MW, when needed.
- **HVACSmart:** Provides incentives for high efficiency HVAC equipment and Certified High Performance Homes (HERS scores (home energy rating system) of 65 or lower (lower the better).
- **SmartSteps:** Provides home management education and subsidized energy efficiency measures to income-qualified customers.

## Commercial and Industrial:

- **Custom Rebates:** Provides incentives to qualifying projects based upon measures where electrical demand reductions are unique to their specific deployment.
- **Prescriptive Rebates:** Provides customer incentives to purchase energy efficient measures that have predetermined electrical demand reduction values.
- **Business Interruptible Rates:** Firm interruptible tariffs with customers for periodic curtailments at times of system peak demand.

## (20) Q: What is OPPD's commitment to solar?

OPPD's Integrated Resource Plan has shown that utility grade solar (>100 MW) is not economically competitive with other generation sources at this point in time and the inclusion of utility grade solar would be contrary to SD-2 at this time.

OPPD plans to keep solar as an option in our perpetual resource planning going forward and will look at solar at the pace of its value.

## Definitions

**Base load** - The minimum amount of electric power delivered or required over a given period of time at a steady rate. (EIA glossary)

**Battery storage** – A battery (or cell) used for storing electrical energy. A voltaic battery consisting of two or more storage cells.

**Capacity** - The maximum electric output that a generator is capable of reliably producing in a given hour when needed. OPPD's capacity includes its own fleet of generators, along with purchase agreements for additional capacity from other generators. - From "Role of Natural Gas" on OPPDtheWire.com

**Clean Power Plan** - The final rule promulgated by EPA on October 23, 2015, that provides Carbon Pollution Emission Guidelines for Existing Stationary Sources for Electric Utility Generating Units.

**Combined cycle unit** - An electric generating unit that consists of one or more combustion turbines and one or more boilers with a portion of the required energy input to the boiler(s) provided by the exhaust gas of the combustion turbines(s). (EIA)

**Combustion turbine** - A gas turbine, also called a combustion turbine, is a type of internal combustion engine. It has an upstream rotating compressor coupled to a downstream turbine, and a **combustion** chamber in-between.

**Demand-side management (DSM)** - A utility customer action that reduces or curtails end-use equipment or processes. DSM is often used in order to reduce customer load during peak demand and/or in times of supply constraint. DSM includes programs that are focused, deep, and immediate such as the brief curtailment of energy-intensive processes used by a utility's most demanding industrial customers, and programs that are broad, shallow, and less immediate such as the promotion of energy-efficient equipment in residential and commercial sectors. (EIA)

**Distributed resources** – Distributed energy resources (DER) are smaller power sources that can be aggregated to provide power necessary to meet regular demand.

**Electricity generation** – The process of producing electric energy or the amount of electric energy produced by transforming other forms of energy. It is commonly expressed in kilowatt hours (kWh) or megawatt hours (MWh). (EIA)

**Energy** – The actual generated megawatt-hours (MWh) utilized to meet customer needs. - From “Role of Natural Gas” on OPPDtheWire.com)

**Fuel mix** – The combination of fuels (coal, wind, natural gas, nuclear, hydropower, fuel oil, geothermal, landfill gas, biomass) or other technologies used to generate electricity. Fuel diversity helps ensure stability and reliability in electric supply. Worldwide, utilities’ fuel mixes vary based on availability and procurement costs in their geographic locations.

**Generation** – Electricity generated from fossil fuels, nuclear power plants, hydro power plants (excluding pumped storage), geothermal systems, solar panels, biofuels, wind, etc.

**MATS – Mercury and Air Toxics Standard** - These rules set technology-based emissions limitation standards under sections 111 (new source performance standards) and 112 (toxics program) of the 1990 Clean Air Act amendments for mercury and other toxic air pollutants.

**PPA – Purchase Power Agreement** - A bilateral, legally binding agreement between two parties where one party buys power and the other party provides power over an extended period of time.

**SPP – Southwest Power Pool** - A bilateral, legally binding agreement between two parties where one party buys power and the other party provides power over an extended period of time.