



Western
Area Power
Administration

Integrated Resource Planning at WAPA

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Federal Utility Partnership Working Group

Presentation Overview

- Overview of Western Area Power Administration
- Renewable Resources for Federal Agencies Program
- WAPA's Integrated Resource Planning Program (IRP)
 - IRP Case Studies



What is WAPA?



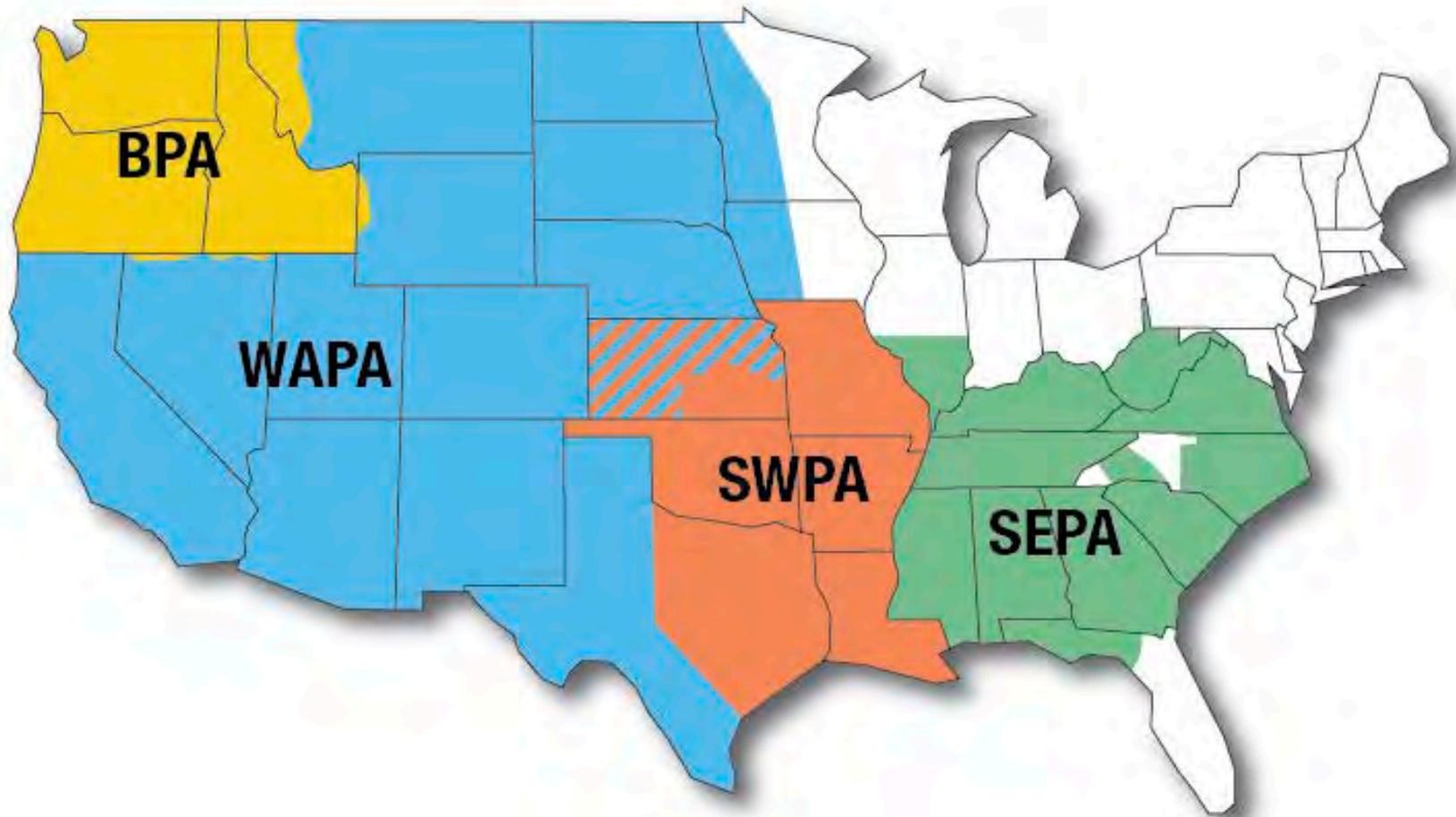
Part of DOE



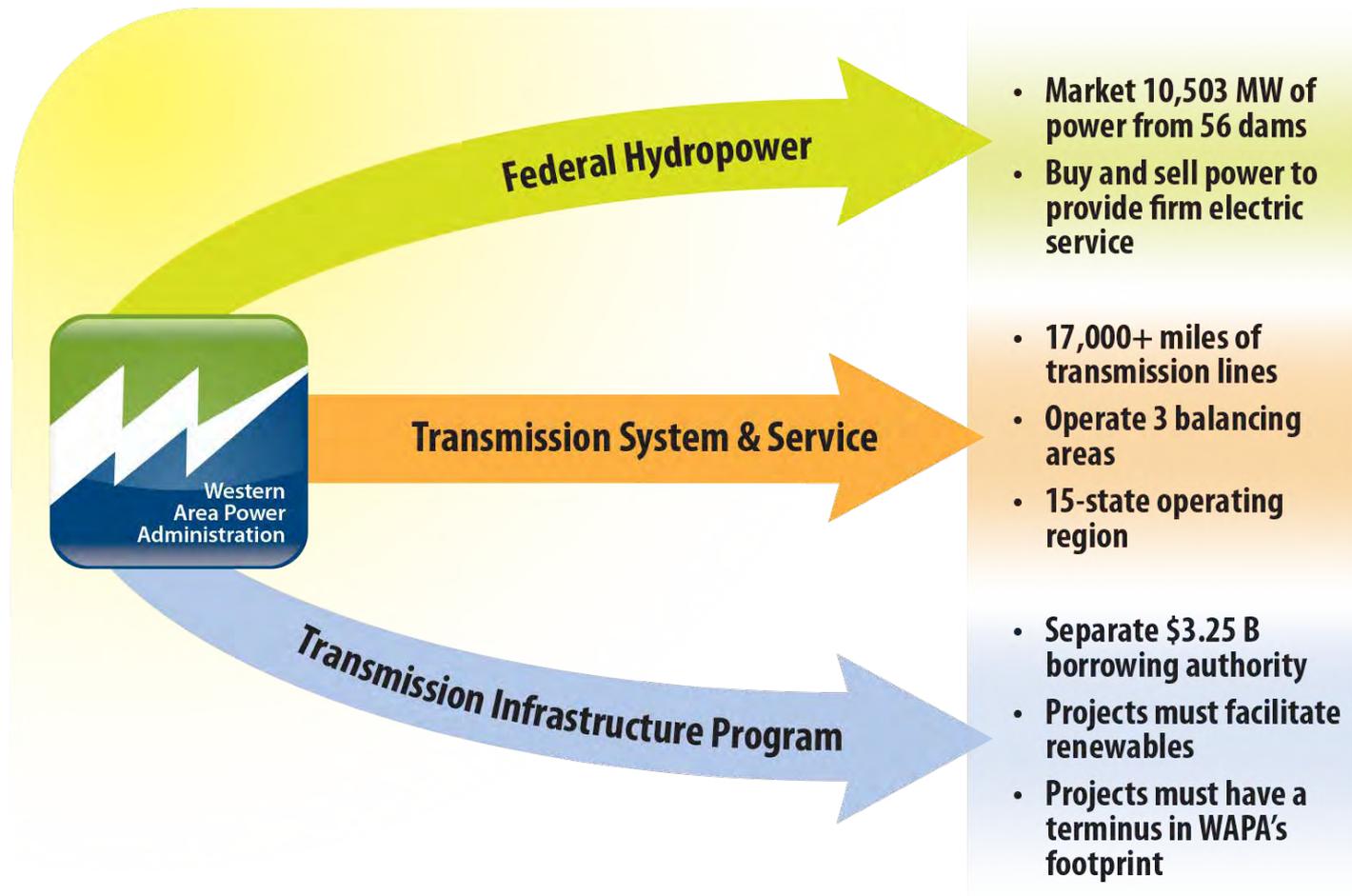
- One of four PMAs under DOE
- Wholesale electricity supplier
- 3% of Western Grid



Power Marketing Administrations



Three lines of business



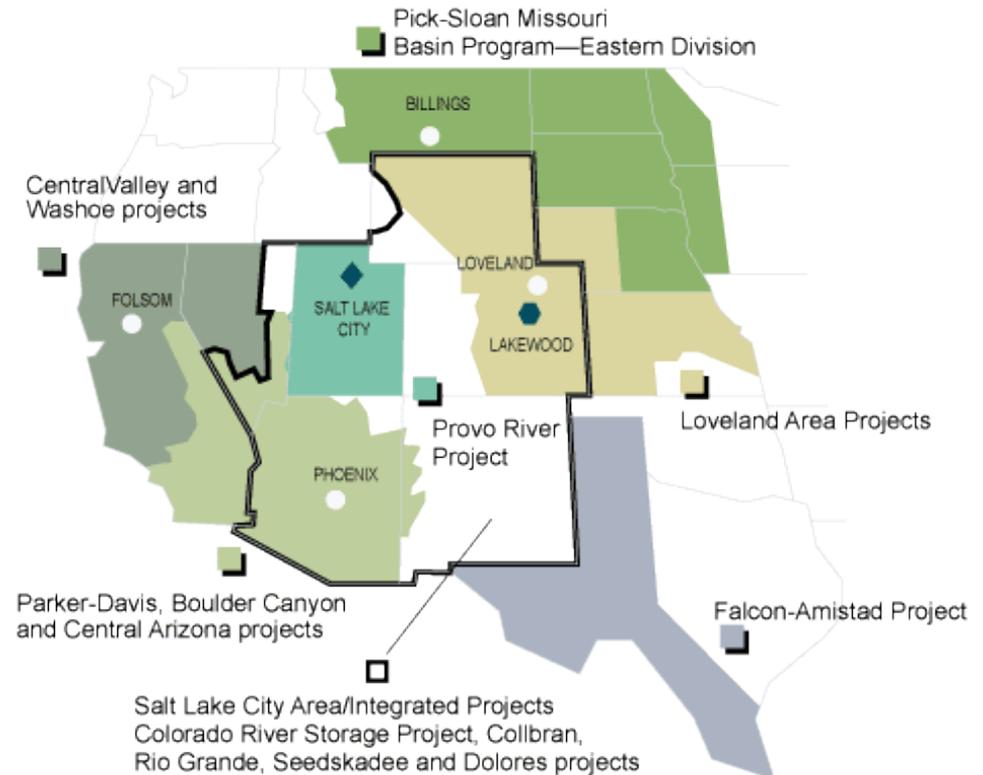
Customer focused

- Nearly 700 customers
 - Cities and towns
 - Rural electric cooperatives
 - Irrigation districts
 - Public power districts
 - Federal and state agencies
 - Native American tribes
- Preference entities under the 1939 Reclamation Reform Act



WAPA's hydropower projects

- Power marketed on a project-specific basis
- Marketing plans developed through public processes
- Normally consist of:
 - Marketing criteria
 - How power is sold
 - Allocation criteria
 - Who receives power
 - No total load requirement



Our role in providing energy



- Market clean hydropower
- Transmit it to customers
- Control parts of the energy grid
- Manage interties
- Provide open access to transmission



WAPA's services

- Firm electric
- Energy management and marketing
- Energy and resource planning
- Transmission
- Interconnection
- Ancillary



Renewable Resources for Federal Agencies

- Provide technical support to federal agencies in meeting their renewable energy goals
- Increase options for acquiring renewable resources, i.e., RECs, RE, Onsite RE
- Power Marketing Authority to facilitate the development of on-site renewable energy projects



WAPA's Contractual Authority to Assist Federal Agencies

- Reclamation Project Act of 1902, 32 § 388
- Economy Act, Title 31 U.S.C. § 1535
- Reclamation Project Act of 1939, 53 Stat. 1187
- Flood Control Act of 1944, 58 § 887
- DOE Organization Act of 1977, 91 § 565
- Energy Policy Act of 1992 (Public Law 102-486)



Legislation to Support IRP

- EAct of 1992
 - IRP requirements
- WAPA's Energy Planning and Management Program (EPAMP)
 - 10 CFR Part 905
 - Effective October 24, 1995
 - Revised in 2000 and 2008



Goals of EPAAct and EPAMP

- Promote efficient electric energy use by WAPA customers
- Establish a framework for extension of existing firm power resource commitments in support of customer IRPs



IRP Definition

- A planning process for new energy resources that evaluate the full range of alternatives, including new generating capacity, power purchases, energy conservation, cogeneration and district heating and cooling applications, and renewable energy resources, to provide adequate and reliable service to electric consumers.



4 IRP Options

- Full Integrated Resource Plan
- Minimum Investment Report
- Small Customer Plan
- Energy Efficiency/Renewable Energy Report



IRP Requirements

- Take into account necessary features for system operation such as diversity, reliability, dispatchability and other risk factors
- Take into account the ability to verify energy savings
- Treat demand and supply resources on a consistent and integrated basis
- Consider electric resource needs.



IRP Requirements, Continued

- Identify resource options
- Identify resource options evaluated
- Make details on resource comparisons available upon request
- Describe the resource options chosen
- Include an action plan
- State the time and period the action plan covers



IRP Requirements, Continued

- Be updated and resubmitted to WAPA when the time period expires
- Identify the actions the customer expects to take in accomplishing the IRP goals
- Provide milestones to evaluate accomplishment of identified actions
- Estimated energy and capacity benefits for each action planned



IRP Requirements, Continued

- To the extent practical, minimize adverse environmental effects of new resources and document these efforts in the IRP
- Provide ample opportunity for full public participation
- Include a brief description of public involvement activities and responses to public comments
- Make documentation on the public participation process available upon request



IRP Requirements, Continued

- Governing body of member based associations must approve the IRP
- Sign the IRP or pass a resolution approving the IRP
- Conduct load forecasting
- Make load forecasting data available upon request
- Describe measurement strategies for options identified in the IRP
- Identify a baseline from which benefits of the IRP are measured
- Make performance validation data available upon request



IRP Schedule

- Initial IRPs must be submitted no later than one year after signing a contract for power
- Updated and amended IRPs are due every five years after initial approval
- Annual progress reports are due within 30 days of the anniversary date



How to Submit an IRP

- Online data collection system (recommended)
- Electronic copy
- Hard copy



Annual Progress Reports

- Describe accomplishments achieved under the action plan
- Include projected goals
- Implementation schedules
- Energy and capacity benefits
- Renewable energy developments achieved as compared to those anticipated



Criteria For Approval

- Does the submitted IRP satisfactorily address the criteria in the regulations?
- Is the plan reasonable given the size, type, resource needs, geographic area, and competitive situation of the customer?



Accepting Other Plans

- WAPA will accept and approve other plans that are responding to federal, tribal or state initiatives as long as it complies with the requirements of 10 CFR Part 905



Review and Approval

- Notify the submitting entity of acceptability within 120 days
- Provide notice of deficiencies
- Establish a resubmittal due date not to exceed nine months
- Penalties for noncompliance



Desert Southwest Region, U. S. Air Force Small Customer Plan

Headquarters Air Force Civil Engineer Center (HQ AFCEC) provides support to 19 installations within WAPA's footprint for energy use reduction, utility acquisition and cost control to meet Energy Policy Act requirements.

Action Plan Summary:

- Replace brown power with 240 MW and 624 MWh of proposed renewable power through third-party investment
- Provide a \$76M renewable investment to be combined with an anticipated third-party renewable investment of \$1.4B for 2015 through 2019
- Install advanced meter reading systems to help change consumer habits and reduce energy use
- Other goals include energy audits, lighting retrofits and HVAC system upgrades

Special Projects:

- Nellis – 19 MW photovoltaic array
- Edwards – \$4.5M lighting retrofit for an estimated annual savings of \$0.9M
- Minot – Modern direct digital control system upgrade for all HVAC systems for an annual savings of 9,378 MWh



Rocky Mountain Region, Fort Carson – Small Customer Plan

Fort Carson manages and oversees the utility consumption for Fort Carson Army Garrison located just south of Colorado Springs, Colorado.

Action Plan Summary:

- Fort Carson is focused on reducing the energy use intensity for the Installation.
- 2003 baseline of 125.3 KBTU/SF
- Reduce its energy use intensity to 104.8 KBTU/SF in 2013 or more than a 17% reduction
- The goal for 2015 is 30% reduction and over 50% reduction by 2020.
- Designated a Net Zero pilot energy site and striving to meet that goal by 2020. As of 2013, approx. 3.5% of Fort Carson's energy is from on-site renewable; another 40% is renewable from a wind power purchase

Special Projects:

- 3 MW central power, heat and cooling plant. Construction of facilities will include the necessary electrical system upgrades.
- 1.7MW of photovoltaics
- Fort Carson is currently completing a \$6M, 3MW smart, secure micro-grid using back-up generators, 1 MW of solar PV and 440 kWhs of bidirectional vehicle battery storage.



Sierra Nevada Region, DOE – Integrated Resource Plan

DOE, Northern California Sites Electric Power Consortium provides for the power supply arrangements for Lawrence Livermore National Laboratory (LLNL), Lawrence Berkeley National Laboratory (LBNL), SLAC National Accelerator Laboratory, and Site 300.

Action Plan Summary:

- The Consortium sites planned to reduce their demand through replacement of existing equipment/fixtures related to HVAC, lighting, computer hardware, distribution lines and substations.
- Energy audits are used improve energy efficiency at site facilities.
- Plans for new buildings and renovations include day lighting, active solar, smart and time-of use metering, cool roofing, other energy-efficient technologies and LEED standards.
- Per the president’s March 25, 2015, Executive Order on Planning for Federal Sustainability in the Next Decade, the Consortium’s goal is for energy portfolio to include 20% renewable energy by fiscal year 2020.

Special Projects:

- 3.3 MW solar facility located on 10 acres at LLNL and used at LLNL. SNR entered into a PPA with the vendor on behalf of DOE to purchase the generation. LBNL and Sandia National Laboratory are partners in this facility.
- The Consortium purchases REC’s through WAPA’s Renewable Resources for Federal Agencies program to help satisfy various federal requirements.



Colorado River Storage Project, Los Alamos National Laboratory

Los Alamos National Laboratory (LANL) is one of the largest science and technology institutions in the world, conducting research in many fields including national security, space exploration and renewable energy.

Action Plan Summary:

- LANL is focused on implementing site sustainability measures including replacing the original steam plant and developing a photovoltaic installation.
- All new buildings in the planning process are designed to achieve net-zero energy beginning in FY 2020.
- LANL is working towards the goal of 30% electric consumption from renewable electric energy by FY 2025. They have already achieved 24% in FY 2016 by installing a low flow turbine and purchasing renewable energy credits.
- LANL has a goal of metering all individual buildings for electricity, gas and water to more accurately assess demand and identify potential losses.
- LANL has an annual goal of a 20% reduction in petroleum consumption, and achieved 25% in 2016 by right-sizing the fleet and investing in more energy efficient vehicles.

Special Projects:

- 10 MW Photovoltaic power plant, planned to start generating in FY 2020
- Replacement of central steam plant with combined heat and power plant providing 40MW on average
- LANL collaborated with Los Alamos County on a 3MW Abiquiu Low Flow Turbine and an additional 1MW photovoltaic plant



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