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Comments of the American Wind Energy Association on the Western Area Power Administration's Defining the Future Initiative

Submitted via email: JOT@wapa.gov

The American Wind Energy Association¹ (AWEA) appreciates the opportunity to submit these written comments on the Western Area Power Administration's (WAPA) [Defining the Future Initiative](#). After providing some general context, these comments will provide several recommendations for reforms to WAPA's operations and business practices that will improve reliability, benefit consumers and improve the integration of variable resources like wind energy.

General

The assets of the federal power marketing administrations (PMAs) were built with taxpayer dollars, and the PMAs continue to receive ongoing U.S. taxpayer support through such mechanisms as annual appropriations and borrowing authority from the U.S. Treasury. Therefore, it is entirely appropriate for WAPA and its public assets to play a role in advancing our nation's broader energy interests, including the deployment of renewable energy.

Additionally, WAPA is a part of the U.S. Department of Energy and the Executive Branch, and therefore it is reasonable to ask that WAPA's actions and policies help advance the Administration's broader energy goals. At a minimum, WAPA should not undermine and/or frustrate those goals. And, as long as the actions are consistent with WAPA's underlying statutes, WAPA should make an effort to support them.

WAPA and its customers do not exist on an electrical "island." Events outside the WAPA system can impact WAPA and its customers, and events inside the WAPA footprint can affect other grid operators and their customers. Improved coordination with other grid operators is essential in maintaining reliability and in lowering costs to customers.

The 15 states either wholly or partially within the WAPA service area have over 30,000 MW of wind power, representing approximately \$60 billion in capital investment and 65% of all the wind built to date in the U.S. The capital investment from wind projects has helped reinvigorate the manufacturing sector in the region with the creation of 128 manufacturing facilities in 13 of the 15 states in WAPA's service area. In 2011 alone, the wind industry was responsible for over 30,000 good paying manufacturing, construction and other jobs in these states

The 4,400 MW of wind presently under construction in this 15-state region represent approximately 1/2 of all wind projects in development in the U.S. These projects will yield another \$8 billion in investment in America, as well as produce clean energy and jobs in in the high plains and western states. For rural economies in these WAPA service area states, the investments result in annual economic benefits

¹ AWEA is the national trade association representing a broad range of entities with a common interest in encouraging the deployment and expansion of wind energy resources in the United States. AWEA's members include wind turbine manufacturers, component suppliers, project developers, project owners and operators, financiers, researchers, renewable energy supporters, utilities, marketers, customers and their advocates.

including more than \$210 million in county property taxes and close to \$90 million in lease payments to landowners – an important factor for continuing the region’s rich heritage in farming and ranching.

In addition to the strong economic development rationale for WAPA to take steps to improve the integration of wind energy, as will be discussed in greater detail below, the actions AWEA is urging WAPA to take will benefit reliability and WAPA’s customers even in the absence of integrating additional wind energy.

The proposed reforms are standard practice for most other large grid operators in the U.S. They are not radical, but instead are common, tested, validated and effective. Further, the reforms are not just about, or even primarily about, improving the integration of renewable energy. The operating reforms would also benefit WAPA’s customers, improve reliability, and bring WAPA’s operations into the 21st Century. In short, the proposed reforms are common sense and not a departure from WAPA’s missions.

Some have claimed that WAPA’s enabling statutes limit its fundamental mission to providing electricity at cost-based rates -- equal to the cost of generation and transmission – and, therefore, these reforms would be inconsistent with that mission. Even assuming for the sake of argument that WAPA has such a limited statutory authority, the reforms AWEA is recommending would not interfere with WAPA’s mission to market and transmit reliable, cost-based hydroelectric power, and related services to preference customers at the lowest possible rate consistent with sound business principles. To the contrary, the reforms would

- Reduce costs to preference customers by capturing the economies of scale in the electric sector;
- Not fundamentally alter WAPA’s traditional rate structures;
- Not shift decisions about WAPA and the federal hydropower projects from which it sells power to DOE; and,
- Primarily benefit customers within WAPA’s service territory, consistent with WAPA’s historic "beneficiary pays" principle.

The greatest threat to WAPA’s preference customers is not having access to affordable and reliable power in the future due to WAPA’s failure to make sensible investments, such as the grid reforms proposed herein.

AWEA’s proposed reforms will help ensure the efficient operation of its electrical system and allow it to transport and deliver such power, including hydroelectric, at the lowest possible rates. The reforms are also consistent with one of WAPA’s three primary goals laid out in its Strategic Plan to: “Contribute to creating a more reliable, flexible and robust U.S. energy infrastructure.”² In addition, the reforms would advance one of WAPA’s ten FY12 targets: “Explore renewable integration opportunities.”³

Operating Reforms

(1) Energy Imbalance Market

An Energy Imbalance Market (EIM) is a key reform for allowing the numerous power systems in the Western U.S. to operate more efficiently and on a more coordinated basis. An EIM allows changes in supply and demand in one grid operating area to be netted out with opposite changes in other grid operating areas at frequent intervals. The benefits of improved coordination go well beyond integrating renewable energy at lower cost, as all consumers will benefit.

It is important to understand that an EIM would not eliminate the bilateral energy transactions that are the norm in the West. Rather, it would supplement them. Initial operating conditions each hour would still be based on traditional bilateral transactions.

² Available at <http://ww2.wapa.gov/sites/western/newsroom/pubs/Documents/StrategicPlan11.pdf>.

³ Available at http://ww2.wapa.gov/sites/western/newsroom/pubs/Documents/FY12_Targets.pdf

A recent study⁴ done for the Western Governors' Association acknowledges that an EIM would reduce operating costs, improve reliability, and make more efficient use of the transmission system, thus benefitting consumers, by:

- Using a larger pool of resources to manage imbalances than is currently available, thus reducing costs and benefitting consumers;
- Operating the transmission system based on real-time power flows rather than on reserved capacity;
- Reducing the steepness of ramps and number of times fossil units need to be cycled on and off in order to counterbalance variability, which will save on fuel and transmission costs with savings passed along to consumers;
- Allowing fewer flexibility reserves to be held, by each balancing authority, thus reducing costs and benefitting consumers;
- Reducing the expensive regulation reserves that need to be held by each BA, thus reducing costs and benefitting consumers;

A number of studies have analyzed the costs and benefits of (EIMs), and all have concluded that the benefits of well-designed EIMs greatly exceed the costs. The Western Electricity Coordinating Committee's (WECC) cost-benefit analysis found that with an existing entity implementing a well-designed EIM, the net benefits for consumers would be at least \$60 million per year. The annual operational costs would be around \$80 million, in addition to one-time startup costs of \$67 million. Under that scenario, the initial startup costs would be recouped in just over a year, and the EIM would yield 10-year net benefits of between \$550 million and \$1.46 billion.⁵ Combining separate cost analyses by SPP and CAISO and a benefit analysis by NREL confirms that an EIM would yield net benefits of around \$1.5 billion over the first ten years.⁶ The higher range of benefits is achieved with broader participation. That is one of the reasons why WAPA's participation is important.

Real-world experience also proves that the benefits of an EIM greatly exceed the costs. SPP launched its EIM in February 2007, and the benefits have exceeded SPP's already high expectations. SPP's analysis in 2005 calculated the cost of operating SPP's EIM for the first ten years to be \$212.5 million, while the benefits over that ten-year period to be around \$600 million.⁷ That analysis was based on estimated benefits of \$86 million for the EIM's first year, and the actual benefit was even higher at \$103 million.⁸ SPP has reported to WECC that they believe the reliability benefits of their EIM market exceed the economic benefits. The reported EIM benefits discussed above do not include these very substantial reliability benefits.

Customers would benefit from an EIM even in the absence of renewable generation, as an EIM allows all changes in supply and demand on the power system, such as factory equipment coming on and offline and consumers turning appliances on and off, to be accommodated more efficiently and at lower cost. In fact, NREL's analysis indicates that most of the expected savings of an EIM are realized by better accommodating changes on the grid unrelated to the addition of wind energy.⁹

⁴ *Meeting Renewable Energy Targets in the West at Least Cost: The Integration Challenge*, June 10, 2012, Available at: http://www.westgov.org/index.php?option=com_joomdoc&task=doc_download&gid=1610 (WestGovs)

⁵ Available at

<http://www.wecc.biz/committees/EDT/EDT%20Results/EDT%20Cost%20Benefit%20Analysis%20Report%20-%20REVISED.pdf>

⁶ See <http://www.westgov.org/PUceim/webinars/05-10-12/EIMresults.pdf>,

<http://www.westgov.org/PUceim/documents/fnl-SPPEIMce.pdf>,

<http://www.westgov.org/PUceim/documents/CAISOcewa.pdf>

⁷ Available at <http://www.spp.org/publications/CBARevised.pdf>

⁸ Available at <http://www.spp.org/publications/Present%20&%20Future%20Market%20Benefits.pdf>

⁹ <http://www.westgov.org/PUceim/webinars/07-24-12/EIMallocation.pdf>

An EIM can function well in the absence of a Regional Transmission Organization, and participation in an EIM would not cause entities that are currently outside FERC's jurisdiction to become jurisdictional.

Further, contrary to the fears raised by some stakeholders, an EIM would not be a full wholesale energy market and would not eliminate existing transmission arrangements.

(2) FERC Order 764 regarding integration of variable energy resources

Separately, WAPA should comply with FERC Order 764, the final rule on integrating variable energy resources, which was issued in June 2012. FERC Order 764 requires all transmission service providers to offer transmission scheduling at intervals of 15-minutes or faster, or another reform that provides equal or greater benefits by allowing the power system to operate more flexibly.¹⁰ More frequent scheduling benefits the system as a whole, not just renewable energy. For example, faster scheduling intervals:

- Allow generators to better manage imbalance penalties;
- Give transmission providers more accurate information for operation and unit commitment;
- Allow more efficient use of available transmission capacity and harmonization of known events (i.e. plants going offline) with information in the scheduling system; and
- Allow operators to fully use the inherent flexibility of the existing generation fleet, thus reducing reserve requirements and ancillary service needs.¹¹

FERC Order 764 also says that non-jurisdictional entities' compliance with the Order is required as a condition of maintaining the status of their safe harbor tariff or otherwise satisfying the reciprocity requirements of Order No. 888.

Compliance with the reforms identified in Order 764 would enable WAPA to require future wind plants to provide output and meteorological data, as long WAPA incorporates the information in its grid operations. Incorporating wind forecasts and outage information in grid operations will result in reduced operating costs which is beneficial to all in the WAPA footprint. Additionally, if in the future WAPA were to propose to charge wind generators a larger wind integration cost than other technologies, they must first demonstrate that they are using the wind energy forecasting to reduce the cost of operating its power system.¹²

(3) Sub-hourly generator dispatch

In addition, WAPA should establish sub-hourly generator dispatch, which would significantly increase the flexibility and efficiency of its power system by allowing power plants to change their energy output within the hour. In much of the West today, grid operators arbitrarily hold power plants' output constant over the course of an hour and rely on expensive reserve generation to accommodate changes in electricity supply and demand. An EIM is one way to implement faster generator dispatch, though it can be done without an EIM.

(4) ACE diversity interchange

WAPA should improve coordination with other balancing areas in the West. One way improve coordination would be through the implementation of an Area Control Error diversity interchange program in which energy imbalances are netted out with neighbors. An EIM would create this coordination and allow imbalances to be netted out, though it can also be done without an EIM.

(5) Dynamic scheduling into and out of WAPA balancing areas

¹⁰ Order 764, 139 FERC ¶ 61,246 at P 2.

¹¹ WestGovs, Page 11

¹² FERC. at 4.

WAPA should allow dynamic scheduling of wind generation into and out of balancing areas. This allows generators to meet real-time loads in another BA, provide supplemental regulation to balance generation and load, and provide reserve sharing. According to the WGA report¹³, dynamic transfers may result in more efficient use of generating resources, can provide access to geographic diversity of wind and solar projects thus reducing variability, can improve market opportunities, and lower overall generation costs.

(6) Dynamic line ratings

WAPA should install dynamic line rating devices on congested transmission lines and implement dynamic line rating. This step would improve reliability by providing WAPA with more accurate information about the reliability limits of transmission lines, and allows existing power lines to be more fully utilized. This can also be achieved through increased monitoring of transmission lines with phasor measurement units (PMUs) and other devices to allow operation closer to physical limits.

(7) Reconductoring

In addition, WAPA should reconductor congested lines with advanced conductors to increase continuous and contingency ratings.

(8) Ancillary services

Finally, WAPA should facilitate greater access for competitive ancillary services providers, incentivizing existing and new sources of flexibility to provide their services

Reforming Business Practices

(1) FERC Order 1000 regarding transmission planning and cost allocation

WAPA should comply with FERC Order 1000 regarding transmission planning and cost allocation, which will result in WAPA continuing to participate and, indeed, expand its role in state, regional and interconnection-wide transmission planning. Improved regional and interregional cooperation on transmission planning will provide opportunities to consider the benefits of geographic diversity of renewable development across the West and Midwest, facilitate more cost-effective integration of renewable energy, improve reserve sharing, identify potentially more efficient and cost-effective transmission solutions, and ensure all transmission customer needs are considered.

(2) WAPA Upper Great Plains should join an RTO

Through the workshop process, AWEA became aware of the current, joint-effort between WAPA Upper Great Plains, Heartland, and Basin Electric to evaluate joining an RTO. AWEA is supportive of this effort, and would encourage WAPA to implement greater transparency and encourage broad stakeholder participation as the study progresses, as the results will impact many more than just the three entities engaged in the study.

AWEA is supportive of WAPA's decision to participate in either SPP or MISO; however, AWEA believes MISO's expertise in integrating renewable energy and access to MISO's large pool of generating assets and balancing capabilities would benefit WAPA and its customers.

Joining a robust RTO would also reduce pancaked transmission rates, which would benefit WAPA's customers and generators in/around the Upper Great Plains footprint.

¹³ WestGovs, Page 26

(3) Conditional firm transmission service

AWEA urges that WAPA establish a conditional firm product in line with the product offered by the Bonneville Power Administration. A key feature of the Bonneville offering that makes it more workable than the long-term non-firm offering from WAPA is the Bonneville offering is firm (except during the limited instances in which it is not available) and that makes a big difference to investors. By contrast, WAPA's product is non-firm. Bonneville's conditional firm product also bounds the curtailment risk for its customers, allowing them to calculate, understand, and assess the financial impacts of that risk. WAPA's non-firm product is always curtailed along with other non-firm customers and therefore is too risky.

The success of the Bonneville offering can be seen in the following statistics:

- Bonneville has offered 1345 MW of conditional firm in the last three years;
- 1145 MW of offers were accepted while 200 MW of offers were ultimately declined;
- Of the 1145 MW accepted, 320 MW have been subsequently converted to firm PTP contracts;
- The remaining 825 MW have been firmed up on a monthly basis all but two months in the last three years;
- There have been no curtailments of conditional firm;
- The 825 MW of conditional firm is providing BPA with \$14 million per year in revenue.

(4) Stimulating Upgrades and Expansions of WAPA's Transmission System

WAPA has two programs to stimulate investment in upgrades and expansions of its transmission system: \$3.25 billion in borrowing authority via the Recovery Act of 2009 and Section 1222 of the 2005 Energy Policy Act which provided for third-party funding. While the former has received more than 200 applications, only a handful of applications have been submitted to take advantage of Section 1222 – largely because the enabling legislation did not provide sufficient clarity about what third-parties could expect in return for making an investment in WAPA's system. Both programs have been structured to ensure that the rights and rates applicable to “preference customers” are not negatively impacted. To date, only two Recovery Act project have been authorized (with a few more pending) and no Section 1222 projects have been accepted. In both cases, parties interested in working with WAPA have been frustrated by WAPA's inability to act despite those parties' willingness to compensate WAPA for any services provided by WAPA and meeting WAPA's unusually restrictive requirements with regard to the ownership of facilities and right-of-way.

AWEA would encourage WAPA to take advantage of the interest and funding available from third-parties to upgrade and expand its transmission system, particularly in those cases that do not impact preference customers and where the third-parties are willing to assume all of the development risk at their own risk and expense. To this end, AWEA encourages WAPA to expedite its evaluation of projects and provide clarity on the rights that would accrue to third-parties that fund upgrades or expansions of WAPA's transmission system, including shared-ownership. Third-party financing can expedite the transmission project development process in two ways. First, third-party funds can be used directly for financing a project. Second, because federal PMAs have eminent domain authority over state lands within their jurisdiction, siting barriers can also be lifted.

(5) Purchases of renewable energy

Through the Renewable Resources for Federal Agencies program and other means, WAPA should purchase more renewable energy on behalf of wholesale customers and federal agencies and meet the requirements of Section 203 of EPAct 2005. WAPA should consider purchasing renewable energy on behalf of its customers under a long-term PPA, perhaps on an aggregated basis, rather than only allowing it to purchase replacement power when water levels are not adequate to meet the WAPA allocation needs.

(6) Pancaked rates

Eliminating multiple transmission charges (“rate pancaking”) for transporting power across the many utility systems interconnected with WAPA transmission facilities will reduce delivered power costs and save consumers money.

(7) Interconnection queue reform

WAPA should streamline interconnection queues by allowing variations and flexibility in wind facility design rather than requiring that studies be restarted if a wind facility makes design changes that do not materially impact the study.

WAPA should consider grouping interconnection requests by time and location to use resources more effectively and allow developers to use third-party contractors to complete the studies. In general, WAPA needs to speed up processing of interconnection studies.

(8) Integrated Resource Planning

While WAPA requires integrated resource plans to be filed by its preference customers, many of these plans could be brought up to date, substantively improved, and Western could use them to facilitate reaching large project scales and favorable economics for projects in which preference customers could jointly participate. Too many of WAPA’s preference customers lack plans that address their current requirements in today’s rapidly changing electric industry circumstances. Many customer organizations lack planning staff that have the knowledge, time available, and tools to create plans that customer organizations need. WAPA could provide more support and assistance to them so the plans would be worth more to both customers and WAPA.

Many of the plans filed with WAPA are thin on substance and lack attention to all the new and diverse resource choices that the best plans include. WAPA could help to provide customers’ plans with more information and data for consideration by customers’ boards of directors and managements, leading to more informed decisions that could avoid large scale mistakes and resulting customer-owner costs.

There are a few outstanding examples of WAPA’s customers entering into joint development projects to reach project scales that bring the lowest possible costs. But there are many examples of customer organizations “going it alone” and achieving less than favorable project scale and costs. WAPA’s planning requirements could be an opportunity to bring like-minded customers together to achieve projects of scale and favorable costs.

(9) Reform WACM Integration Rates

Western’s WACM balancing area service tariff includes a wind integration charge that it levies on customer organizations that employ wind energy. This rate lacks a proper engineering cost basis, as is detailed in a publication that provides a thoroughgoing critique of the rate and details its lack of justification¹⁴. WAPA should reform this tariff immediately.

¹⁴ http://www.consultkirby.com/files/WindPower_2006_Tariff.pdf