DRAFT RECOMMENDATIONS from the
JOINT OUTREACH TEAM

U.S. Department of Energy and Western Area Power Administration

January 22, 2013

COMMENTS OF WESTERN GRID GROUP
and
WESTERN PUBLIC INTEREST ORGANIZATIONS

Western Grid Group ("WGG") and the undersigned western Public Interest Organizations[1] respectfully submit the following comments on the Joint Outreach Team's Draft Recommendations for ways that federally-owned transmission assets operated by the Western Area Power Administration can help facilitate transition to a more resilient and flexible grid.

WGG is a non-profit initiative, staffed primarily by former commissioners and staff of western state Public Utility Commissions, dedicated to developing policies to accelerate the transition to a more secure and sustainable electric sector. Since 2003, WGG has worked in the Western Interconnection to expand transmission access for and utilization of wind, solar geothermal and other clean energy technologies.

WGG has been and continues to be actively involved in regional and sub-regional transmission planning across the Western Interconnection. WGG played central roles in formulating, shaping and coordinating California's Renewable Energy Transmission Initiative and Tehachapi Collaborative Study Group; the Western Renewable Energy Zone initiative and the Clean and Diversified Energy Initiative of the Western Governors Association; and Renewable Energy Zone-

[1] Nevada Wilderness Project, Sonoran Institute and Western Resource Advocates. Western Resource Advocates is a non-profit environmental law and policy organization with offices in Colorado, Utah, Arizona, Nevada, New Mexico, Wyoming and Idaho. The Sonoran Institute's mission is to inspire and enable community decisions and public policies that respect the land and people of western North America. The Institute works toward a shared community vision of lasting conservation and prosperity through civil dialogue, collaboration and applied knowledge. The Nevada Wilderness Project, based in Reno, NV, works as a catalyst for wildlife habitat conservation, wilderness preservation, and smart development of renewable energy.

Transmission planning initiatives in Arizona, Colorado, Nevada, New Mexico and Utah. In early 2009, WGG encouraged the US Department of Energy (DOE) to stimulate interconnection-wide transmission planning. WGG has subsequently organized and continues to support non-utility stakeholder participation in the Regional Transmission Expansion Plan initiative under which WECC and the Western Governors' Association, supported by DOE funding, are developing long-term expansion plans for the Western Interconnection.

I. COMMUNICATIONS

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II. STRUCTURE OF THESE COMMENTS

Our comments are divided into three sections. The first puts opportunities to improve WAPA practices into the context of grid evolution, both nationally and in the western U.S., and finds them not fully responsive to the challenges of the Defining the Future Initiative. The second identifies immediate steps WAPA could take to improve operations that are not addressed by JOT Draft Recommendations. The third section includes specific comments on JOT Draft Recommendations.

III. JOT DRAFT RECOMMENDATIONS NOT FULLY RESPONSIVE TO CHALLENGES OF "DEFINING THE FUTURE" INITIATIVE

Modernization of the grid is a prerequisite for improving reliability, reducing costs for consumers, increasing security and defending against cyber-attack. WGG commends the Department of Energy, Western, and the Joint Outreach Team for bringing these challenges to public consideration and for identifying decision points.

Secretary Chu's March 16, 2012 memo to Western and other federal PMAs called on these agencies to provide leadership to build a more secure and sustainable electric sector for our country. The Secretary proposed that this leadership would

better implement existing transmission authorities, improve rate designs, expand cooperation with other utilities, and improve Congressional oversight to speed infrastructure investments.

The November 16, 2012 Draft Recommendations from the DOE-Western Joint Outreach Team are not responsive to Secretary Chu's call for leadership, and they do not represent a sufficient response to the issues facing Western and the U.S. electric sector. They call almost exclusively for additional study on issues that have been thoroughly investigated. While a few issues may require further study, recommendations can focus primarily on straightforward actions that will improve reliability and reduce costs now, without further delay.

Western Grid Group's Clean Energy Vision study, "*Western Grid 2050: Contrasting Futures, Contrasting Fortunes,*" and related policy papers outline steps for improving reliability and reducing grid costs while reducing carbon emissions 80 percent by 2050, the goal set by the best climate science available.[2] The West can evolve what Secretary Chu called a "sustainable" electric system by gradually replacing coal and most gas generation with portfolios emphasizing energy efficiency, demand resources, wind, solar, geothermal, biomass and Combined Heat and Power, integrated together with 21st century communications and control technologies. WAPA's huge reach in the center of the Western Interconnection makes it and the federal transmission assets it manages key to any such evolution. But the JOT recommendations do not even mention carbon reduction or consider other key drivers of electric system evolution. Rather than accepting the Secretary's challenge to lead, they consign WAPA to a reactive role defending the status quo against improved operating practices having broad public benefits.

"*Western Grid 2050*" notes that investment in the electric sector in the western eleven states will total more than $200 billion by 2030. This investment can include automating dispatch and transmission system operation, virtually consolidating Balancing Areas and modernizing communications and control—or it can reinforce Business as Usual, keeping tariff barriers, overbuilding conventional generation and maintaining the current operational balkanization of the grid. Obtaining the greatest return on this investment for the public, western states and the country requires the West's utilities, including the PMAs, to work together, to minimize cost impact on consumers and maximize reliability and operational benefits. While the JOT recommendations call on Western to investigate its own

[2] Available at: www.westerngrid.net

investment requirements, and to cooperate with other electric sector entities, the recommendations lack attention to the scale and challenges of funding and implementing the investments required over the next twenty years. Instead of the limited and passive role suggested by the JOT, recommendations more responsive to the challenges of evolving a more secure and sustainable electric system would encourage Western to reduce liabilities and risks, bring previously competing entities together, and get in better position to respond both to uncertainties and opportunities.

Most Western states have minimum renewable energy standards, and the most significant markets are busily increasing them. These standards reflect strong public support for more wind and solar generation. Renewable energy project economics are clear: large-scale projects in the best resource areas produce the lowest cost power. Where good or better resources are tapped at scale, utility and commission experience in the West shows that renewable energy can be obtained at a savings to customers, particularly if attention is paid in the economic evaluation to the future costs, risks, and liabilities for fuel. Since fuel costs typically flow directly to consumers through fuel cost adjustment provisions, it is in the public's interest to minimize future fuel costs by investing capital in fuel-free generation, thereby substituting capital for fuel. Western has a history of bringing the benefits of fuel-free hydro power to certain classes of entitled consumers. Yet JOT recommendations do not charge Western with responsibilities to recapitulate its history by bringing fuel-free wind and solar either to its entitled customers, or to cooperate with other entities to achieve project scope and scale to bring such resources to the region at the lowest cost.

EPA health-related regulations are likely to require the electric sector to internalize pollution, water and land impact costs that it has been accustomed to impose on the public and the environment. Planning and implementing least cost responses to these changing regulatory requirements will challenge the electric sector, including Western. Adequate recommendations would focus on these challenges, and position Western to lead toward least cost compliance. Yet these issues are largely missing from the JOT draft.

A technology revolution, inspired by cost and productivity gains in computing, information technology and communications is pounding on the electric sector's door. Silicon Valley investors are putting their money to work to improve consumer sovereignty, expand consumer choices, and increase end use and system

efficiency. Major gains in efficiency and demand management are being reported by electric utilities in the West, gains that are bending load growth forecasts down and reducing planning requirements for new generation across the region. Utilities in the region are struggling to meet surging demand for consumer-owned or –sited generation, typified by residential and commercial PV installations. Large consumers are avid to move to clean energy so they can control their fossil fuel costs, risks, and liabilities.[3] As technology changes, consumers have more ability to decide the levels, conditions, and terms for electricity production and consumption. The DOD is rapidly moving its bases in the West to be grid independent, so they can withstand cyber attacks and continue their military missions during system outages, rejoining the grid when it is repaired.[4] Yet JOT Draft Recommendations ignore these factors, just when grappling with them must be at the center of WAPA operations and planning. This is the more urgent because it appears that Western's incentives for entitled customers actually encourage them *not* to drive for efficiency gains. Instead of avoiding these issues, JOT recommendations would better serve the country and the region by emphasizing actions available to benefit its system, entitled beneficiaries, and end use consumers.

IV. PRIORITY IMPROVEMENTS NOT INCLUDED IN JOT DRAFT RECOMMENDATIONS

In comments submitted to the DOE-WAPA Joint Outreach Team on August 17, 2012, Western Grid Group identified, in order of their likely impact on reliability and cost of electric service in the West, ten specific things WAPA could do to improve operations, along with the costs and benefits of each. We commend the JOT for addressing several of these measures in its Draft Recommendations, including:

- Development of an Energy Imbalance Market;
- 15-minute scheduling and dispatch;
- Expanded and more consistent emphasis on Integrated Resource Planning; and
- Simplified, streamlined and standardized interconnection procedures.

[3] Utah's Senate Bill 12, for example, will allow Adobe and other server farm owners to acquire their own generation sources; the local utility will provide the services needed for such customers to deliver their generation to their loads.

[4] For example, Ft. Bliss in New Mexico and Ft. Carson in Colorado are leading the Army's move to zero net energy status, where they produce as much electricity as they consume.

We offer comments on the ways JOT proposes that WAPA address these measures in Section V of this document.

JOT Draft Recommendations do not, however, address several other straightforward actions WAPA could take immediately to better meet the challenges of the Defining the Future Initiative. As identified in WGG's August 17, 2012 comments, these include:

- Buy replacement power to make up for hydropower shortfalls from wind, solar and geothermal generators instead of from coal units.
- Accelerate consolidation of adjacent WAPA Balancing Authority Areas in the Western Interconnection. Institute joint dispatch by improving information flow and coordination among operators of all generation resources so that the value of the system is optimized. These are a pre-requisite for reducing regulation reserves across the region; for realizing the benefits of dynamic scheduling and dynamic transfers; and for taking advantage of the opportunities of a Combined Transmission System.
- Offer Conditional-Firm transmission service.
- Develop non-wires solutions that incorporate the value of location-specific energy efficiency, demand resources and distributed generation. This can help reduce congestion and the need for new infrastructure. This complements JOT Draft Recommendations for Rate-Setting Methodologies.
- Employ environmental and cultural data compiled by WECC/TEPPC Environmental Data Task Force in regional and sub-regional planning. Adopt WECC Regional Transmission Expansion Plan (RTEP) model of stakeholder involvement in transmission planning.
- Work with the US Bureau of Reclamation to operate the Mt. Elbert hydroelectric pumped storage plant to provide regulation.

Each of these steps complements measures identified in JOT Draft Recommendations. Costs and benefits associated with each are outlined in WGG's August 17, 2012 comments referenced above. We urge JOT to incorporate them into its final recommendations.

V. COMMENTS ON JOT DRAFT RECOMMENDATIONS

The following comments refer to individual practices outlined in JOT Draft Recommendations.

A. Rate-Setting Methodologies

JOT recommends further study of Western's rates and rate-making methods.[5] We support this review, and call special attention to ancillary service rates in Western's WACM service area. In 2003-2005, this service area implemented an ancillary services rate that flagrantly discriminates against wind projects that Western's preference customers add to generation portfolios within the balancing area. The discrimination flows from rate-setting methods that bear no relation to costs of providing service. To be just and reasonable, these rates must be changed to reflect actual costs.

Western implemented this rate over the objections of their wind-owning preference customers, against the advice of leading power systems researchers from the National Renewable Energy and Oak Ridge National Laboratories, and despite the comments of the American Wind Energy Association and West Wind Wires (the former name of Western Grid Group now filing these comments). Comments on the WACM ancillary charge rate on wind from AWEA and WWW, and from NREL and ORNL are incorporated by reference here. NREL researchers subsequently published a paper detailing the methodological flaws that underpin the WACM ancillary service charge rate.[6] We ask that Western's regulation and frequency response rates be reviewed and revised to conform to current FERC orders and best utility practices.[7]

In June 2012, Western Governors adopted a handbook detailing nine

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[5] "Conduct a study of the transmission and ancillary services rates charged by each Western-owned transmission project. Determine the feasibility and the appropriate level of potential consolidation of transmission rates from the bottom up, i.e., intra-regionally, inter-regionally, or Western-wide. Western would engage in a robust, collaborative process with customers, tribes, and stakeholders to determine whether a business case exists to consolidate transmission rates intra-regionally, inter-regionally, or Western-wide.

[6] Kirby, B, Milligan, M., "Cost-Causation-Based Tariffs for Wind Ancillary Service Impacts." Conference Paper NREL/CP-500-40073, June 2006. Found at: http://www.nrel.gov/docs/fy06osti/40073.pdf

[7] Proposed Rate Adjustment for Regulation and Frequency Response Service for Rocky Mountain Service Region (RMR) June 20, 2005 Federal Register notice. (70 FR 117, pages 35424-6.) Additional reference to these rates, and the affect that comments had only in delaying them is at: http://regulations.vlex.com/vid/power-rates-loveland-area-projects-22722625

approaches for reducing integration costs, "Meeting Renewable Energy Targets at Least Cost: The Integration Challenge."[8] In its review of ancillary services rates, we request that Western explain in detail the steps it will take to implement each of the nine "least cost" integration mechanisms explained in this paper. None of these nine steps to least cost integration were considered in setting WACM rates, and the rate that was set does not include attention to them. These approaches are now widely seen as best practices. A new rate should take all of them into account. Doing so will likely reduce rates for ancillary services in WACM by a very large percentage.

B. Integrated Resource Planning

Western calls its customer Integrated Resource Planning (IRP) process the Energy Planning and Management Program (EPAMP). JOT recommends that Western evaluate EPAMP guidelines to ensure Western-wide uniformity of administration, conduct periodic outreach, and institute a quality control effort to ensure customer plans are complete. This recommendation doesn't go far enough. Uniform application of imperfect criteria can only produce suboptimal outcomes. The criteria themselves are out of date and should be revised to look at the planning horizon of the next 10-20 years.

WAPA's IRP criteria were adopted in 2001, during the era of electric industry restructuring (aka deregulation). That era has run its course. IRP has been reestablished as the central mechanism for comparing energy efficiency, demand resources, Combined Heat and Power, renewables, fossil and hydro generation, in order to select the best mix of resources for their needs.

WAPA's March 30, 2001 posting in the Federal Register itself recognized the need for ongoing reconsideration of the criteria: Section 114 EPAct and § 905.24 of the final rule state that regulations may be changed to reflect changes in technology, needs, or other developments.

One example of an outdated criterion is: "(iii) Considerations that may be used to develop potential options include cost, market potential, consumer preferences, environmental impacts, demand or energy impacts, implementation

[8] At: www.westgov.org under "recent reports"

issues, revenue impacts, and commercial availability."[9]

These considerations should not be optional. Resource alternatives should be compared by taking all these factors into account, quantitatively to the extent possible. Environmental impacts should include the effects of carbon emissions on climate disruption and anticipate climate damage mitigation costs.

Revisiting these criteria should include a survey of the state-of-the-art of IRP practiced by both customer-owned and investor-owned utilities, as well as inclusive participation of all WAPA stakeholders. The Northwest Power and Conservation Council approach to IRP has proven to be very effective in keeping power costs low and minimizing environmental impacts. We recommend WAPA propose NPPC guidelines as the baseline for revisiting EPAMP IRP criteria.[10]

C. Intra-Hour Scheduling

Intra-hour transmission scheduling and generation dispatch is a pre-requisite for integrating increasing amounts of Variable Generation (VG) resources at least cost. Shorter scheduling intervals allow system operators to more efficiently utilize balancing resources and ancillary services, which reduces operating costs ultimately paid by consumers. Equally as important, the ability to schedule energy closer to flow reduces VG forecast error. Improved forecast accuracy enables system operators to make more economic unit commitment decisions, and to more efficiently utilize balancing resources, both of which reduce operating costs and save consumers money. Costs associated with modernizing transmission scheduling infrastructure or with any increased generator cycling would be offset by increased unit commitment efficiencies and reduced VG integration costs.

Utility systems everywhere are preparing to operate with higher penetrations of Variable Generation, distributed and customer-sited resources and new Demand Resources such as electric vehicles. Faster scheduling and automated transmission system operation is necessary to reliably operate our evolving systems at least cost.

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[9] Federal Register Notice - 10 CFR Part 905 – Final Rule Effective May 1, 2000 http://ww2.wapa.gov/sites/western/es/irp/Documents/EPMP_10CFR.pdf

[10] See http://www.nwcouncil.org/energy/powerplan/6/default.htm for NPPC's 6th (2010) Northwest Power Plan.

To this end, FERC Order 764 (June 22, 2012) requires transmission providers to offer 15-minute scheduling. (It also gives transmission providers the option to propose approaches superior to 15-minute scheduling). Even though many Western customers are not FERC-jurisdictional, tariff reciprocity provisions effectively require all transmission providers to prepare to provide intra-hour scheduling.

The reliability improvements and cost savings produced by scheduling at shorter intervals and automating transmission system operation have been demonstrated by the many utilities across the country that have instituted these improvements. Bonneville Power Administration, for example, reduced its balancing reserves 34% by moving from hourly scheduling to 30-minute scheduling.

With these benefits established, Western should develop a plan and timetable for implementing 15-minute scheduling across its system. Financing investments in the hardware, software and training that 15-minute scheduling requires constitutes a real barrier to implementing it. Western's plan should address financing mechanisms directly. It may be possible, for example, to redirect some of Western's Transmission Investment Program (TIP) funds to provide loans or guarantees for investments in scheduling hardware and software, with loans repaid from operating cost savings realized from faster scheduling.

D. Implementation of ADI, RBC, DSS

Western should move swiftly to fully implement ADI, RBC and DSS. These tools will help make Western's operations more efficient and increase the utilization of its existing transmission assets, benefitting customers. The benefits and costs of these mechanisms have been thoroughly evaluated and, contrary to JOT Draft Recommendation, need no further study by Western.

Reliability Based Control (RBC)

JOT Draft Recommendations indicate that Western is participating in field trials but that "full implementation is contingent on WECC and NERC approval." The timing of this approval is not specified. At a minimum, Western should request WECC and NERC to establish an expected approval date. Western should then immediately set a target date for full implementation.

ACE Diversity Interchange (ADI)

Development of ADI began in 2006 when BAs in the Pacific Northwest entered into an MOU (and later an Agreement) to develop the software tool. ADI has been thoroughly tested and is well understood by utilities in the West and across the U.S. Many utilities within Western's footprint, including Arizona Public Service Company and Salt River Project, already use ADI to share Area Control Error.

The timeframe stated for ADI is to "start analysis within 12 months." As ADI has been operational for many years and has proven benefits, there is no need for further study. Western should move to participate in ADI immediately.

Dynamic Scheduling System (DSS)

Nineteen western BAs signed an agreement to develop DSS in 2010, with half of them planning to implement it that year. Given that more than half of the BAs in the Western Interconnect have signed up to provide dynamic scheduling services, it does not make sense that Western should wait 18 months to start analysis of this system, as suggested in the JOT Draft Recommendation.

The Joint Initiatives team promoting DSS explains that, "With DSS, it should take only minutes to establish a dynamic schedule, while it currently takes a couple months and about $50K to establish the telecommunications and changes to control systems necessary for a new dynamic schedule today. DSS is expected to greatly reduce the barriers to generators that could participate in the regulation and balancing energy market, making their operating flexibility available to assist in the integration of variable generation."

As DSS can help provide critical balancing and regulation services at a greater speed and lower cost, it would be prudent for Western to move as fast as possible to implement DSS for use by its customers.

E. Energy Imbalance Market Initiatives

Western should take a leadership role in implementing an EIM for the benefit of users of its system and of consumers across the West. Further study will waste resources and delay reliability improvements and cost savings derived from an EIM.

Likely ranges of EIM costs and benefits have been studied over the past two years, by WECC and NREL, and by several individual utilities. Input assumptions and modeling results have been transparent and discussed in dozens of public

meetings across the region. Additional analysis is underway by the Northwest Power Pool, using assumptions intended to better capture hydro system operation and power contract constraints. FERC is undertaking a study, in December 2012-January 2013, to evaluate the reliability benefits of an EIM. Further study is unlikely to produce materially different results or improve the basis for decisions to participate in an EIM.

JOT evaluation of the limitations, costs and liabilities of current hourly scheduling, inter-BA coordination and reserves management practices is sound. This evaluation, which is in line with the results of many other studies of western grid operational practices, justifies moving forward to work out the details of how best to organize the EIM. Agreement to participate can of course be contingent on adoption of mechanisms to ensure that benefits are allocated fairly, any cost shifts are accounted for properly and unintended consequences are avoided. Western can best advance the interests of its customers and stakeholders if it takes the lead in helping establish the EIM.

Western should join with the utilities and Balancing Areas who support formation of an EIM, establish a timeline for getting the EIM in to operation, and work with all deliberate speed to agree on the details of how best to structure and operate this market.

Western should work with Congress to amend the provisions of its Transmission Infrastructure Program (TIP) funding authorization to allow TIP funds to be used to pay EIM start-up costs for utilities in the WAPA footprint. The faster scheduling and automated transmission system operation and generator dispatch needed for participation in an EIM will require utilities to upgrade system control and IT hardware, software and training. Many publicly-owned utilities have identified investment costs of these upgrades as barriers to their participation in an EIM. TIP funding, paid back from cost savings produced by EIM efficiencies, could remove this cost barrier to EIM start-up.

VI. CONCLUSION

JOT Draft Recommendations focus on 14 operational and policy issues as candidates for improving WAPA operations. Acting on them will help improve

reliability and reduce costs of electric service for customers across the West. WGG commends JOT for identifying these measures. Our comments identify other operational issues that complement those recommended by JOT and which would provide additional reliability and cost benefits across the western U.S.

By focusing on additional study rather than on implementation plans for actually improving WAPA practices, however, JOT Draft Recommendations threaten to delay delivering the benefits of improvements in any of the areas identified.

As it develops final recommendations, we respectfully request that the Department of Energy and Western Area Power Administration consider replacing the many studies proposed in the Draft Recommendations with specific plans to change the identified operational practices. Doing so will contribute materially to development of a more modern, secure and resilient grid.

Respectfully submitted,

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