

Electricity Advisory Committee

MEMORANDUM

TO: Honorable Patricia Hoffman, Assistant Secretary for Electricity Delivery and Energy Reliability, U.S. Department of Energy

**FROM: Electricity Advisory Committee (EAC)
Richard Cowart, Chair**

DATE: June 6, 2013

RE: Recommendations on Interconnection-Wide Planning.

Summary and Recommendation of the Electricity Advisory Committee

The EAC commends the interconnection-wide planning efforts to date funded by the Department of Energy (DOE). This funding provided the first of its kind interconnection-wide planning efforts in the Eastern Interconnection, and bolstered the existing interconnection wide efforts in the west and Texas. The process allowed for greater stakeholder input across governmental and private sectors.

The EAC recommends that DOE work with each group to facilitate their continued efforts with clear objectives and governance and assist the groups in arranging their own funding mechanisms either through established mechanisms, by proposal to DOE, or by other means. To the extent that other funding is not forthcoming, we encourage DOE to protect the very substantial return on its initial investment here by responding positively to well-grounded proposals from the interconnection-wide planning groups.

Evolution of Transmission Planning Efforts

To address the need for robust and reliable transmission and distribution networks, long term planning is essential. Transmission planning was historically conducted at the level of individual, vertically-integrated electric utilities, with various degrees of coordination provided at the power pool and Regional Reliability Council levels. Restructuring of the electric power sector and other developments over the past 25 years have prompted an evolution in how transmission planning is conducted.



In 1996 the Federal Energy Regulatory Commission (FERC or the Commission) issued Order No. 888 regarding Open Access Transmission. To remedy anticompetitive practices that existed in the electric industry at the time, FERC ordered public utility transmission providers to unbundle their generation and transmission businesses and to offer non-discriminatory access to transmission lines they owned, operated, or controlled. FERC encouraged (but did not require) the formation of independent transmission system operators (ISOs) as one way to satisfy the open access requirement. In addition, FERC set forth minimum requirements for transmission planning and encouraged (but again did not require) utilities to engage in joint and regional transmission planning with other utilities and customers.

FERC Order No. 2000, issued in 1999, was the next step. In this order FERC encouraged transmission-owning utilities to voluntarily form regional transmission organizations (RTOs) that would have the authority to develop transmission plans and pricing structures for operating the grid on a regional basis.

After nearly a decade of experience with implementing Order No. 888, FERC made significant modifications in 2007 via Order No. 890. The Commission required each public utility transmission provider, including ISOs and RTOs, to develop a transmission planning process that satisfies nine principles and to clearly describe that process in an Open Access Transmission Tariff. The Order No. 890 transmission planning principles are: (1) coordination; (2) openness; (3) transparency; (4) information exchange; (5) comparability; (6) dispute resolution; (7) regional participation; (8) economic planning studies; and (9) cost allocation for new projects. In Order No. 890, the Commission also stated that a coordinated regional planning process could not succeed unless all transmission owners, including non-public utilities, participated. If non-public utility transmission providers do not participate, the Commission could exercise its authority under the Federal Power Act (FPA) to require them to provide transmission services on a comparable and not unduly discriminatory or preferential basis.

In 2011, FERC issued Order 1000, a sweeping rule that impacts many aspects of transmission planning and development and includes provisions addressing a broad host of issues including the right of first refusal and cost allocation. The order also builds upon many of the transmission planning principles established in Order 890 including requirements that transmission needs driven by public policy requirements be evaluated in regional transmission plans and that transmission providers in neighboring regions coordinate to determine if there are more cost-efficient solutions to their mutual transmission needs. As discussed below, these aspects of FERC Order 1000 could fit well with some aspects of interconnection-wide planning efforts, initially ARRA-funded.

Interconnection-Wide Planning Efforts

There are three synchronous interconnections serving the continental United States: one in the west, one in Texas, and one in the east.

The Western Electricity Coordinating Council (WECC), formed in 2002¹, is responsible for regional transmission planning across the entire Western Interconnection through its Transmission Expansion Planning Policy Committee (TEPPC). TEPPC's three main functions include: (1) overseeing database management; (2) providing policy and management of the planning process; and, (3) guiding the analyses and modeling for Western Interconnection economic transmission expansion planning. These functions complement but do not replace the responsibilities of WECC members and stakeholders to develop and implement specific expansion projects. WECC is also a designated regional reliability organization (RRO), with authority delegated to it from the North American Electric Reliability Corporation (NERC). This delegation allows WECC to fund its reliability activities, including transmission planning, through charges imposed on users of the grid. Within the Western Interconnection, a number of sub-regional planning groups (SPGs) conduct transmission planning on a more local, sub-regional basis. The SPGs provide a “bottom up,” localized perspective on transmission planning that complements WECC’s “top down” look at regional transmission planning across the entire interconnection.

The Electric Reliability Council of Texas (ERCOT) became the first ISO in the United States in 1996. ERCOT is responsible for transmission planning and grid operation in the Texas Interconnection, while the Texas Reliability Entity (TRE) is the NERC-delegated authority responsible for monitoring and enforcing compliance with reliability standards. Like WECC, ERCOT recovers its operating costs, including those for transmission planning, through charges on grid users.

The situation is more complicated in the Eastern Interconnection, because no one entity has responsibility for reliability or grid operation throughout the Interconnection. This also means that no single entity has the authority to charge fees or collect money to fund interconnection-wide planning efforts. Consequently, in recent years there has been some transmission planning conducted by ISOs and RTOs at the regional level, but it wasn't until 2009, when a consortium of Eastern Interconnection Planning Authorities representing over 95% of the interconnection load formed the Eastern Interconnection Planning Collaborative (EIPC), that any attempt at interconnection-wide planning was undertaken. EIPC chose to conduct initial interconnection wide analyses and planning efforts in concert with DOE when funding was provided by the American Reinvestment and Recovery Act of 2009 (ARRA).² EIPC Planning Authorities intend to self-fund continuing interconnection-wide planning, but stakeholder structure and participation as well as study methodologies and scope might vary from those used while ARRA-funded.

¹ WECC is the successor organization to the Western Systems Coordination Council (WSCC) formed in 1967.

² DOE Funding Opportunity DE-FOA-0000068 , <https://www.fedconnect.net/FedConnect/?doc=DE-FOA-0000068&agency=DOE> , <http://energy.gov/articles/secretary-chu-announces-efforts-strengthen-us-electric-transmission-networks>

ARRA Funding of Interconnection-Wide Planning Efforts

DOE's Office of Electricity Delivery and Energy Reliability is supporting interconnection-wide planning efforts using authority and funding provided through the ARRA. Two types of grants were awarded in roughly equal amounts. "Topic A" grants fund the work of transmission planners to analyze options for alternative electricity supplies and the associated transmission requirements. A portion of Topic A funds is set aside for travel costs and other expenditures necessary to enable representatives of non-profit, non-governmental organizations (NGOs) and state consumer advocates to participate in the development of interconnection-level analyses and plans. "Topic B" grants support the work of states and state agencies to develop coordinated interconnection priorities and planning processes, and to likewise participate in the development of interconnection-level analyses and plans. These grants will provide \$60 million of funding over a four-year period: \$30 million in the Eastern Interconnection, \$26.5 million in the Western Interconnection, and \$3.5 million in the Texas Interconnection.

In the west, ARRA funding made it possible for WECC to launch an expanded Regional Transmission Expansion Planning (RTEP) effort and to support broader stakeholder involvement than otherwise would occur under its previous planning processes. These activities, managed by [TEPPC](#), will evaluate long-term regional transmission needs that factor in variables including electric demand, generation resources, energy policies, technology costs, impacts on transmission reliability, and emissions. The resulting transmission plans will provide high quality, credible information on transmission infrastructure requirements to decision makers at all levels.

The Western Governors' Association received Topic B funding to conduct regional transmission planning policy and resource assessments. Among its specific commitments, WGA is expected to continue developing its Western Renewable Energy Zone (WREZ) analysis, coordinate energy purchasing from the WREZs, and foster interstate cooperation for renewable energy generation and transmission.

In Texas, ERCOT is using the ARRA funding to supplement its existing long-term planning process, with increased participation from regulatory and NGO stakeholders in the development of future scenarios for study, evaluation of a wider range of future scenarios, more detailed analysis of likely market resource development for each scenario, operational analysis of system reliability needs with high levels of intermittent generation, and development of a long-term (20-year) transmission framework for the interconnection. The ARRA also provided funding for the initial studies and analyses performed by the Eastern Interconnection Planning Collaborative (EIPC), which had recently come into existence and for the subsequent formation and activities of the Eastern Interconnection States' Planning Council (EISPC), which provided significant input and leadership to the EIPC Stakeholder Steering Committee for these efforts. The EIPC consists of 26 regional planning authorities within the interconnection that are recognized by NERC. Eight of these committed to act as principal investigators for the ARRA funded, DOE project. The

EIPC modeled the impact on the grid of various policy options determined to be of interest by state, provincial and federal policy makers and other stakeholders. This work will build upon, rather than replace, the current local and regional transmission planning processes developed by the planning authorities and associated regional stakeholder groups. Those processes will be informed by the EIPC analysis efforts including the interconnection-wide review of the existing regional plans and development of transmission options associated with the various policy options.

EISPC comprises public utility commissions, Governors' offices, energy offices, and other key government representatives. The goal of the Council is to provide consistent and coordinated direction to the analyses and planning activities of EIPC and the regional planning authorities. Significant state input and direction increases the probability that the outputs of those planning activities will be useful to the state-level officials whose decisions may determine whether proposals that arise from such analyses become actual investments.

The knowledge and perspective gained from this work will inform policy and regulatory decisions in the years to come and provide critical information to electricity industry planners, states and others to develop a modernized, low-carbon electricity system.

Summary of Comments Received on Interconnection-Wide Transmission Planning

Seeking to provide effective guidance, members of the EAC have reached out to participants in each of the three interconnection-wide planning processes to explore a potential role for the EAC in recommending a path forward for DOE. To do so, three key questions were posed:

- (1) What benefits have been realized thus far from these processes?
- (2) Should similar activities continue? In particular, what do you envision or would like to see going forward from such efforts?
- (3) What funding mechanisms and level of funding might be appropriate in the future?

We received feedback on these issues from individuals spanning the interconnections, including the WECC; the State/Provincial Steering Committee (SPSC) in WECC; the Western Interstate Energy Board (WIEB); the EIPC Stakeholder Steering Committee (SSC); the EISPC; and the ERCOT Long Term Study Task Force (LTSTF).

In the feedback we received from these participants, several common themes emerged:

- There was a broad recognition of the analytic value of these processes, and the important role of long-term transmission planning and coordination between regions. Several participants underscored the importance of long term scenario analysis for providing valuable information over a broad set of futures. Several emphasized finding common elements among scenarios and analyzing the opportunity cost of utilizing increasingly scarce rights of way. Other respondents highlighted the value of these processes in providing regulators and policy makers with information on transmission

impacts related to state and federal policy initiatives. But despite these somewhat different choices of emphasis, the feeling was broadly shared that these processes were valuable and that some elements should continue.

- Many commented that the broad participation achieved in these transmission planning processes provided considerable value by promoting new interactions between disparate stakeholders. A participant from ERCOT praised the DOE-funded Project Facilitator for increasing stakeholder involvement, and respondents from the East noted that interactions between EISPC and EIPC allowed planning authorities and state regulatory stakeholders to better understand one another's interests and concerns. There was a widespread recognition that broader stakeholder engagement was a positive outcome for the processes in general, and several respondents felt that participation of non-traditional groups such as consumer advocates and NGOs was particularly valuable.
- Several participants in the Eastern and Western Interconnections felt that FERC Order 1000 and its requirements for interregional coordination and public policy could motivate the continuation of some interconnection-wide activities such as the development of planning assumptions, data and modeling. Furthermore, some expressed the opinion that future activities should continue to be complementary to and congruent with existing regional planning, and should avoid duplicating or replacing existing transmission planning processes focused on regional reliability.

Not surprisingly, the comments reflected the regions' diversity of structure and prior experience with interconnection-level coordination. For example, ERCOT is already the sole planning authority in its territory, and therefore routinely undertakes planning at the interconnection-wide level. By contrast, the Eastern Interconnection is a system that extends into 39 states, the District of Columbia and large portions of Canada, in which little or no interconnection-wide planning had previously taken place. Also, the EIPC membership included 26 of the planning authorities in the East. The situation in the West was somewhere in between these cases, since there were numerous planning entities involved in the DOE-funded effort. By contrast, the WECC process was built upon a history of West-wide collaboration through numerous prior planning activities such as the WREZ, and sub-regional entities such as the Southwest Regional Transmission Association (SWRTA), and the Western Regional Transmission Association (WRTA), which eventually merged with WSCC to create WECC.

Based on these regional differences:

- Eastern participants felt that EIPC and EISPC delivered substantial value by establishing this first Eastern Interconnection-wide process and providing a forum for the development of new relationships between disparate stakeholders across the interconnection and among various sectors.

- In the West and ERCOT, these processes were well established, so the discussion of benefits was focused more on strengthening existing planning efforts and broadening stakeholder engagement.
- Feedback from participants in WECC and ERCOT also highlighted the need to address specific issues like variable generation integration, grid flexibility and robustness, variable energy resource forecasting, risk analysis, and extended droughts.
- Comments from ERCOT also mentioned the role of federal funding in the development and integration of new tools and models into the region's planning process to better address some of these challenges.
- Finally, many respondents felt the inclusion of public policy was a critical element of these processes.

Participants from the West felt that a central goal of future processes should be transparent, inclusive and objective work products. They suggested this could be accomplished through robust, broad based participation in open processes and consistent, consensus-based assumptions that are vetted through broad-based stakeholder processes. Further, they expressed the view that interconnection-wide, long-term transmission analysis through open processes provides a reliability check on regional transmission plans, counteracts the natural tendency for balkanization of planning, and provides a stronger feedback loop between utility integrated resource planning (IRP) and regional transmission planning. Those interviewed indicated that future funding is the subject of continued discussion within and between interconnections, but that no firm conclusions have been drawn thus far. It is likely that some Planning Authorities (PA's) will undertake a subset of these activities under the auspices of FERC Order 1000 compliance, and EIPC has already launched a work plan for 2013 and 2014 independent of external funds. However, it is likely that additional funding sources will be needed to continue the full range of activities that stakeholders identified. While PA's in some regions may opt to provide a venue for stakeholder processes that are analogous to existing ISO/RTO stakeholder proceedings, funds to facilitate consistent and meaningful participation among a broad set of stakeholders will need to be identified.

In conclusion, there was a strong consensus among respondents that these processes have been valuable, and that some of the activities undertaken as part of these interconnection-wide endeavors should continue beyond the sunset of the current DOE funds, which occurred on [date]. This feedback indicates broad-based support for the information generated and the increased stakeholder participation achieved in these interconnection-wide processes. Many participants envision a role for future interconnection processes in addressing specific power sector challenges, and those in the East and West saw a significant potential for a subset of future efforts to dovetail with FERC Order 1000 compliance activities. It is likely that additional funding sources will need to be identified to continue the full range of activities described here, and ongoing dialog within and

between regions and their stakeholders will be required to reach a conclusion on those issues.

EAC Recommendation

The EAC commends the interconnection-wide planning efforts to date funded by the Department of Energy (DOE). This funding provided the first of its kind interconnection-wide planning efforts in the Eastern Interconnection, and bolstered the existing interconnection wide efforts in the West and Texas. The processes allowed for greater stakeholder input across many governmental and private sectors.

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