Friends with Benefits: Options for Mutually Beneficial Cooperation in Non-ISO Regions

The challenges associated with improving grid function and ensuring consumer value are universal, whether addressed in the context of an ISO or not. There are advantages and disadvantages to each approach.

by Rich Sedano, Carl Linvill, Camille Kadoch, and Elizabeth Watson

At the February 2013 winter meetings of the National Association of Regulatory Utility Commissioners (NARUC), the Sunday Morning Collaborative featured a panel discussion that included commissioners from both the Federal Energy Regulatory Commission (FERC) and state regulatory commissions, as well as representatives of regional transmission organizations (RTOs), independent system operators (ISOs),[1] and utilities – both members and non-members of ISOs. The discussion, though wide-ranging, was limited by time and the complexity of the subject matter, but in the main focused on the pros and cons of ISO membership.

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Among the advantages of joining an ISO are the many services they provide centrally for a market area, including efficient central dispatch, reduced reserve requirements, real-time energy markets, frequency regulation, and a variety of other ancillary services. One utility participant in the meeting noted that

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[1] In the interest of brevity, we will henceforth refer to Independent System Operators (ISOs) interchangeably with Regional Transmission Organizations (RTOs).

her utility chose to join an RTO because it had acquired a great deal of wind, which it needed to integrate with a wider array of resources than it possesses. Another chose to join because it had excess generation it wished to market and that the ISO provided the only realistic means to do so. A third needed to accommodate a relatively large amount of wind generation that had located in its service area. In each of these instances, ISOs were seen as essential mechanisms, by virtue of the quantity and diversity of resources connected in their system and the variety of services they offer. The ISO also offers participants a functioning organization for which a complex system of rules and operating, planning, and cost-sharing protocols are already developed. This may be seen as beneficial or limiting, depending on one's point of view.

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Those utilities present that chose to join, as well as those who were still considering it, were also clear about the financial and other burdens that go along with joining an RTO or ISO. These include the large direct costs of membership; the proliferation of committee, task force, and work group meetings, for which members must have skilled representatives or risk being uninformed and unable to represent their interests effectively; this can require a significant expansion of technical and professional staff. Finally, even if a utility is adequately represented at the many RTO or ISO meetings, there is necessarily a loss of autonomy.

Those utilities that may prefer to piece together efficient, cost-saving arrangements with other utilities outside the structure of an ISO may do so. While this approach provides the opportunity to tailor the design of a portfolio of arrangements, it also introduces the burden of negotiating the applicable set of rules and protocols with their partners, no easy task. Some utilities are in the unenviable situation of wanting to join an ISO, but due to a lack of interest by other proximate utilities, have no choice but to incur the cost and burden of pursuing these efficiencies through negotiated arrangements.

As panelists discussed the advantages and disadvantages of joining an ISO, it was apparent that the challenges associated with improving grid function and ensuring consumer value were universal, whether addressed in the context of an ISO or not. Addressing these challenges effectively can add value for a wide range of industry structures and operations, as well as meeting contingency events.

Grid operators are charged with providing reliable power to customers in an efficient and cost-effective way, while meeting public policy goals. Changing fossil fuel prices and supplies, along with environmental regulations, are causing a re-evaluation of traditional supply portfolios. The increasing penetration of variable renewable resources requires grid operators to modify traditional practices to ensure that reliability is maintained at least cost. Some utilities have chosen to join ISOs hoping to better meet these challenges, while other utilities and balancing authorities are working by choice or necessity outside the purview of an ISO to address these issues. Installation of advanced information, communications, and electrical control technologies; changes to operating rules and practices that take advantage of these technologies; and increased intersystem and regional cooperation can all be used to increase reliability and provide needed services at the least cost to consumers within or outside an ISO footprint.

Value is driven by two criteria: improving grid function and consumer value. Function-based developments will identify a need and reward any resource. Value-based developments focus on providing benefit to consumers.

Whatever path is chosen, value will be driven by two criteria: improving grid function and consumer value. Function-based developments will identify a system need and reward any resource, whether supply or demand, which provides the valued service. Consumer value-based developments shift the focus from ensuring the existence of markets toward a focus on providing value to consumers. Every power market in the US is a construct, and properly serves the public interest, rather than commercial market interests. Some market improvements may be achieved by improved operating practices and must await treatment in another article. This article explores the essential characteristics of interstate and control area cooperation among systems, with the aim of providing the most benefit to consumers and advancing public policy goals in two key areas: (1) integration of variable renewable resources with the existing system at least cost and (2) improving regional planning. We will focus on consolidating balancing authorities (BAs), and enabling faster scheduling, broadening energy imbalance trading, facilitating flexible resource exchange, and coordinated resource procurement and transmission planning.

The inclusion of demand-side resources, including demand response and energy efficiency, as potential resources in any system increases grid functionality and reduces costs. Demand side resources are least-cost resources and important for determining a given region's need for interregional resources. Various ISOs have advanced demand response initiatives, and have integrated demand response into regional markets. Demand response due to state and regional initiatives had a potential reduced peak production of 66, 351 MW in 2012, which represents a 25% increase in demand response from 2010.[2] This increase is due in part to a 26% increase in demand response acquired by wholesale entities, such as regional ISOs.[3]

Regional efforts for coordinated planning and energy efficiency are not as widely used

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[2] Federal Energy Regulatory Commission. (December, 2012). Assessment of Demand Response and Advanced Metering, Staff Report. Available at: http://www.ferc.gov/legal/staff-reports/12-20-12-demand-response.pdf.

[3] *Id.*

throughout the US, but no less important. The contribution of energy efficiency and demand response to meeting integration needs within a particular region should be determined at the same time as the interregional solutions discussed below are pursued, because they provide the greatest amount of consumer value and thus are essential to understanding a given region's net need for inter-regional resources.

I. Integration of Renewable Resources at Least Cost

The amount of renewable resources on the grid increases daily. In 2011, more than 12% of all electricity generated in the U.S. was from renewables.[4] Many state renewable portfolio standards are increasing as states set climate goals,[5] requiring system operators to face the task of integrating increasing amounts of variable energy resources. Integrating variable renewable generation can pose a challenge to system operators and can be quite expensive if low-cost tools are left out of the operator's toolbox. However, cooperation among utilities, states, and regions in a few key areas can minimize the cost of meeting this challenge.

While joining an ISO is one way to access improved balancing capabilities, another option is actual or virtual consolidation of balancing areas. Over 100 balancing authorities currently exist in the United States and Canada, with peak loads in each BA ranging from 136,000 MW to just 38 MW.[6] Under existing operating protocols, each BA is responsible for balancing supply and demand within its area at all times. Meeting hard-to-predict variations in customer demand for power has always been a challenge to control area operators. As the use of variable energy resources increases, BAs face the growing challenge of balancing supply with an increasingly variable net demand (total demand net of variable resource generation). Smaller BAs will face greater difficulty in meeting this challenge because, absent relationships with neighboring areas, they have access to a less diverse set of resources.

Increasing access to more diverse variable resources provides three benefits:

- Geographical diversity reduces output variability due to local weather patterns. For example, the aggregate variability of regional wind resources is generally lower than that of individual sites.[7]

[4] Energy Information Administration. (2012). Net Generation by Energy Source: Total (All Sectors), *2001-2011*. U.S. Department of Energy. Available at: http://www.eia.gov/electricity/annual/html/epa_03_01_a.html.

[5] As of March 2013, 29 states and Washington, D.C. have adopted renewable portfolio standards (RPSs), and eight states have renewable portfolio goals. Massachusetts has a 1% annual increase in RPS goals after the 2020 goal of 15% is met. For more information see DSIRE. (March, 2013). Renewable Portfolio Standard Policies. Available at: http://www.dsireusa.org/documents/summarymaps/RPS_map.pdf.

[6] Wolf, M. (May 5, 2010). Overview of Control Area/Balancing Authority Functional Requirements. Available at: http://www.entergy-arkansas.com/content/transition_plan/Functional_requirements_Wolf.pdf

[7] Milligan, M. and Kirby, B. (2007). Impact of Balancing Areas Size, Obligation Sharing, and Ramping Capability on Wind Integration. Golden, CO: National Renewable Energy

- Differing diurnal schedules can ease ramp periods. For example, solar output in eastern Arizona comes on and goes off at different times than solar resources in southern California.
- Increased diversity of variable resource types allows variable output from one area to complement variable output of a neighboring area with differing resources, differing variable resource profiles (e.g. wind and solar), or differing dispatchable renewable energy sources (e.g. geothermal, biomass, solar CSP with storage).

Additionally, larger BAs have access to more dispatchable resources, including conventional generators and demand response to balance a variable net load, leading to lower balancing costs and decreased likelihood of curtailment.

The ability to integrate more renewables is likely to become increasingly important, particularly in areas that rely heavily on fossil fuels, due to federal regulations on carbon dioxide and other emissions. Additionally, increasing the scope of BA areas gives a BA access to more resources, allowing lower cost solutions to be found than would otherwise be available. This holds true even in the absence of increased renewable penetration.

Laboratory. Available at: http://www.nrel.gov/docs/fy07osti/41809.pdf.

> *While joining an ISO is one way to access improved balancing capabilities, another is actual or virtual consolidation of balancing areas.*

A. Opportunities for Mutually Beneficial Exchanges

BAs do not necessarily need to join an RTO or consolidate with another balancing area in order to capture some of these benefits. Instead, BAs can cooperate with neighboring BAs to identify opportunities for mutually beneficial exchanges. Instead of full consolidation, mutually beneficial exchanges allow BAs to be virtually consolidated, pooling some responsibilities while leaving the original BAs intact. Examples of successful cooperation between BAs already exist in the western interconnection, and new arrangements continue to be made.[8] For example, BAs can reduce the burden of balancing variable resources by pooling momentary imbalances between supply and demand through an Area Control Error (ACE) Diversity Interchange.[9] BAs can also

[8] Utilities in the Southeast are also outside of a formal RTO or ISO structure, and negotiated agreements are also possible there to compensate for the absence of RTO or ISO services. To date, few such arrangements have been negotiated, so we focus on the Western Interconnection here. For more information on southeastern cooperation potential see: EPRI (2011, October) DOE: Integrating Southwest Power Pool Wind Energy into Southeast Electricity Markets. Available at: http://www.uwig.org/doe_spp_wind2sem.pdf.

[9] ADI or ACE Diversity Interchange is the pooling of Area Control Errors (ACEs) to take advantage of control error diversity (momentary imbalances of generation and load). By pooling their ACEs, the participants expect to be able to: (1) Reduce control burden on individual control areas; (2) Reduce sensitivity to resources with

better coordinate their existing relationships through faster scheduling and faster energy trading. Finally, BAs can participate in energy imbalance markets (EIMs) in order to access least cost solutions to energy imbalances.

Each of these examples represents a mutual exchange of benefits between BAs, which facilitates the integration of variable resources, provides value to consumers, and is already in practice. Given the immediate need to address the flexible ramping capacity needs in high variable energy resource (VER) penetration regions like California, a further evolution of regional exchange that would facilitate least cost integration is the possibility of flexibility resource exchanges.[10] While the concept is receiving attention in the Northwest Power Pool (NWPP) investigation of regional resource exchanges, no formal proposal is on the table.[11]

potentially volatile output such as wind projects; (3) Reduce unnecessary generator control movement; and, (4) Realize improvements in Control Performance Standards. For more information see ACE Diversity Interchange Pilot Project available at: http://www.oasis.oati.com/PPW/PPWdocs/ADI_040107.pdf

10 California ISO. (March 2, 2012). 2013 Flexible Capacity Procurement Requirement. Available at: http://www.caiso.com/Documents/2013FlexibleCapacityProcurementRequirementProposalSupplement.pdf.

11 Damiano, P. (May 20, 2013). Draft Sensitivity Cases and Parsing. Seattle, WA: NWPP MC Members Initiative. Available at: http://www.nwpp.org/user_documents/052013_NWPP_MC_Business_Case_Presentation_-_Open_MC_Meeting_May_20.pdf

1. ACE Diversity Interchange[12]

ACE Diversity Interchange (ADI) is one form of cooperative agreement that increases reliability and provides consumer value through regional cooperation. ADI has been used in various regions in North America since the 1980s, including the Northeast Power Coordinating Council, Midcontinent ISO, and the Southwest Power Pool.

The Western Electricity Coordinating Council's (WECC) ADI was implemented in 2007 in order to reduce the control burden on individual balancing areas, reduce each area's sensitivity to resources with volatile output, reduce unnecessary generator control movement, and improve control performance. Area control error (ACE) measures momentary (typically 4-second) imbalances between load and generation (or scheduled and actual output) in a balancing area. BAs are required to calculate, manage, and report ACE in accordance with NERC standards. Simplistically described, ADI electronically combines the ACEs of all participating balancing areas so that over-generation in one balancing area can compensate for under-generation in another balancing area. This sharing reduces the burden of system control on an individual BA because it allows participants to manage the group's combined control error collectively. The ADI algorithm was designed so that it does not negatively impact entities that operate in the Western Interconnection but are not an ADI Participant. It also ensures that those who

12 Information in this section is based upon personal communication with Carol Opatrny, Project Manager for the ACE Diversity Interchange.

are participating are not negatively impacting each other.

ADI was originally implemented in the West as a pilot project among Idaho Power Company, NorthWestern Energy, PacifiCorp-East, and Pacificorp-West control areas, and hosted by British Columbia Transmission Corporation (now, BC Hydro). For a BA to participate, its area must be within the Western Interconnection and adjacent to and interconnected with at least one other participating BA area. The number of participants has varied over time. The program was suspended in mid-December 2009 for a little over one year due to concerns over one participant's modeling of ADI. Operations have resumed and continued uninterrupted since March 9, 2011. While each participant measures the benefits of ADI differently, program benefits are reported to far outweigh the costs, which in 2013 totaled $23,000 per participating BA.

An EIM aggregates the variability of generation and load over many BAs, reducing the total amount of reserves required, and allows participants to use the lowest cost resources available.

2. Intra-hour Scheduling and Bilateral Transactions

BAs can more effectively integrate variable resources by implementing faster scheduling of resources. For example, FERC Order 764, issued in June 2012, requires that transmission providers offer intra-hourly scheduling to mitigate imbalance charges when generators know that their output will change within the hour in order to integrate variable energy resources at least cost. In the West, the Joint Initiative, an effort between WestConnect, Columbia Grid, and Northern Tier Transmission Group, has worked to develop a Dynamic Scheduling System (DSS), which was implemented in 2011.[13] The DSS establishes advanced communications between BAs in order to allow intra-hour and dynamic (at any granularity) scheduling between multiple BAs. The ability to schedule resources within the hour allows generators to minimize imbalance payments, maintaining reliability while reducing costs for customers.

Faster scheduling presents the opportunity for faster and more frequent transactions. The Joint Initiative has worked to enable intra-hour bilateral transactions through its Intra-Hour Transaction Accelerator Platform (I-TAP), also implemented in 2011. I-TAP allows participants to purchase, sell, and schedule energy on an intra-hour basis down to one minute granularity. In 2012, 18 entities were participating in I-TAP.[14] The ability to

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[13] Participants as of July 2011 include: NV Energy, PacifiCorp, BPA, Puget Sound Energy, Portland General Electric, Chelan, Grant, Tacoma, Seattle, PSCo, Avista, BC Hydro, Idaho Power Company, SWTransco and WAPA. See: WECC, Joint Initiatives Update. Presented at WECC Board Meeting, September 22, 2011. Available at: http://www.wecc.biz/committees/BOD/09212011/Lists/Presentations/1/12-Joint%20Initiative%20Update-Wallis.pdf

[14] Joint Initiative (February 2, 2012). *Joint Initiative Update.*

complete near real-time bilateral transactions allows BAs to correct imbalances utilizing resource options from neighboring regions without implementation of a formal market or centralized dispatch of balancing resources. In this way, the I-TAP platform allows BAs to participate in bilateral trading to address energy imbalances. While I-TAP and DSS are both worthy projects, they have been lightly used to date and it appears a critical mass of players in the West will need to implement intra-hour scheduling capabilities before these tools can better address the integration problem.

3. Energy Imbalance Market

An Energy Imbalance Market (EIM) establishes a market mechanism for resolving intra-system imbalances between resources and load. An EIM aggregates the variability of generation and load over many BAs, reducing the total amount of reserves required, and allows participants to use the lowest cost resources available in the market to balance demand and supply across the BAs. This in turn creates the opportunity for entities within participating BAs to take advantage of incremental and decremental flexibility in resources offered by participants in other BAs.[15] A 5-minute EIM offers opportunities for multilateral exchange among a larger number of partners, thus offers greater optionality and market liquidity than exchanges that are limited to bilateral exchanges occurring in longer scheduling period (e.g., 30-minute scheduling). Implementation of an energy imbalance exchange over a region of any size also leads to some reduction in reserve requirements and ramping demand.[16] This would include not only a more efficient dispatch of ramping and other flexible capabilities inherent in some existing fossil generation, but also more efficient use of variable generation.

In a recent study for WECC, Energy and Environmental Economics (E3) concluded that increased utilization of variable generation is worth from $8 million to $90 million per year.[17] An EIM can help reduce congestion problems and provide more efficient use of existing infrastructure. More efficient use of existing infrastructure may sound trivial, but another study by E3 concluded that increasing transmission utilization of one major transmission path by just 100 MW is worth $0.9-1.9 million per year.[18]

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15 Northwest Power Pool. (2012). Market Assessment and Coordination Committee (MC): Purpose, Objectives and Timeline. Available at: http://www.midcseminar.com/Presentations/Gaines_Mid_C_Presentation_2012.pdf.

16 King, J; Kirby, B; Milligan, M; and Beuning, S. (October, 2011). Flexibility Reserve Reductions from an Energy Imbalance Market with High Levels of Wind Energy in the Western Interconnection. Golden, CO: National Renewable Energy Laboratory. Technical Report NREL/TP-5500-52330. Available at: http://www.nrel.gov/docs/fy12osti/52330.pdf, at. 56.

17 Stout, J. (July 26, 2011). Why an Energy Imbalance Market Will Make the Western Interconnection More Reliable. Mariner Consulting Services, Inc. Available at: http://www.westerngrid.net/2011/07/26/how-a-westwide-eim-helps-reliability/. It is difficult to assign a specific dollar value to reliability benefits associated with an EIM due to the speculative nature of what outages might be avoided by various reliability improvements.

18 Stout, 2011.

The EIM recently approved by FERC[19] between the California ISO and PacifiCorp would provide centralized dispatch for imbalances within the combined California ISO and PacifiCorp control area footprint. To solve imbalances, the EIM would use a 5-minute security-constrained economic dispatch that respects transmission and reliability constraints to dispatch balancing resources every five minutes. The EIM would be voluntary for all entities and would not represent a centralized dispatch or coordinated unit commitment of energy resources.[20]

The EIM recently approved by FERC between the California ISO and PacifiCorp would provide centralized dispatch for imbalances within the combined California ISO and PacifiCorp control area footprints.

Each of these mechanisms represents a mutually beneficial exchange between BAs in order to expand functionality and consumer value. Many other mechanisms for mutually beneficial exchanges exist across the country. This variety of mechanisms gives BAs the opportunity to address the unique regional challenges of integrating variable energy resources at least cost without necessarily committing to ISO membership.

II. Regional Planning

Regional planning provides many opportunities for improving efficiency and consumer benefit. In the municipal planning sector generally, benefits from regional approaches to planning and coordination of services derive from utilizing available structures and capacity within regional organizations[21] and from the efficient pooling of resources. Regional energy planning, spanning communities or states, can provide similar efficiencies and consumer benefits. Regional planning for transmission, resource planning and procurement, and coordination of operations are all areas where pooling regional resources can reduce costs and lead to more effective and durable plans that improve upon isolated, organization-by-organization planning and decision-making.

A. Coordinated Regional Transmission Planning

Many analysts recognize the need to maintain, upgrade, and expand the transmission system over the coming years.[22]

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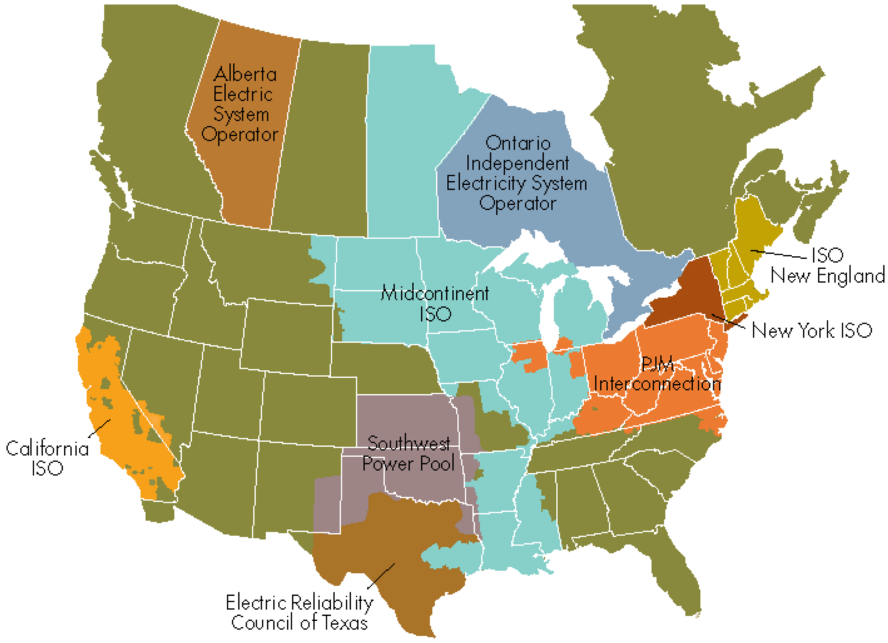
19 Order Accepting Implementation Agreement, FERC Docket No. ER13-1372-000 (June 28, 2013). FERC to implement ISO-PacifiCorp energy imbalance market. (July 5, 2013) *Electric Light and Power*. Available at: http://www.elp.com/articles/2013/07/ferc-to-implement-iso-pacificorp-energy-imbalance-market.html

20 The EIM distinguishes between resources needed to correct energy imbalance and energy resources generally. While LSEs would continue to schedule their own energy resources, the EIM would use a central dispatch for balancing resources only.

21 Association of Wisconsin Regional Planning Commissions. (2011). The Benefits of Regionalism. Available at: http://www.awrpc.org/Regionalism.html

22 Pfeifenberger, J.P. (2012, August 8)"Transmission Investment Trends and Planning Challenges," *The Brattle Group, Inc., presented at the EEI Transmission and Wholesale Markets School, Madison, WI*. Available at:

System operators need to find the least-cost solution to transmission operations in order to provide the best value to consumers. ISOs achieve this by planning ahead for regional transmission needs, not just the needs of individual utilities. However, there are methods to achieve improved regional transmission planning outside of ISOs.



First, coordinated planning among a group of contiguous entities with balancing authority responsibilities can provide direct cost savings by allowing for the identification and implementation of transmission solutions that are more effective than those identified by a collection of individual areas. Second, coordinated transmission planning between regions[23] has direct and indirect system benefits. System benefits include reduced congestion costs; greater access to regional ancillary services and flexible capacity resources; increased access to least-cost renewable resources; and greater flexibility to respond to contingency events. Finally, coordinated transmission planning can increase awareness of regional power developments and opportunities, including non-transmission alternatives.[24]

One example of broader coordinated transmission planning is WECC's 10-Year Regional Transmission Plan, which provides information on expected future transmission and generation in the Western Interconnection under a variety of assumptions. Its objective is to provide information to support decision-makers in determining whether, where, and

http://www.brattle.com/_documents/UploadLibrary/Upload1073.pdf.

23 A transmission planning region can be comprised of one transmission company's system, or include two or more utilities working together. Thus the "region" will vary depending on the system or utilities involved.

24 For more information on non-transmission alternatives see: Lyle, T; Socks, M; and Chatt, B. Non-Transmission Alternatives: The Emerging Importance of Regional Planning to the Clean Energy Industry Under FERC 1000. 2012 ACEEE Summer Study on Energy Efficiency in Buildings. Available at: http://www.aceee.org/files/proceedings/2012/data/papers/0193-000257.pdf. But also see: Watson, E. and Colburn, K. (April, 2013) Looking Beyond Transmission: FERC Order 1000 and the case for alternative solutions. *Public Utilities Fortnightly.* Available at: http://www.raponline.org/document/download/id/6533.

when to build new transmission, or to take other related actions to help ensure that the Western Interconnection is reliable, low-cost, efficient, and environmentally sound. As a result of this planning, WECC and NREL studies indicated that wind from Wyoming and Montana may be the most cost effective resource for meeting incremental energy needs in California.[25] There appears to be an economic rationale for building transmission lines from these distant wind generation sites to load centers in California, as that state's renewable standards grow beyond 33%.[26] Planning on a regional level enables all stakeholders, including utilities and states, to make smart, efficient, and cost-effective decisions that will ultimately benefit the consumer with reduced utility bills and improved environmental quality.

While NARUC's Sunday Morning Collaborative session in February excluded talk of FERC Order 1000,[27] the implications for regional coordination in this order present great opportunity for new and constructive regional planning efforts. Order 1000 recognized the benefits of coordinated transmission planning in requiring transmission providers to participate in regional (defined by the FERC as including more than one transmission provider) and interregional transmission planning processes. The order also requires that transmission needs driven by state and federal public policy requirements be considered in these planning processes. In the order, the FERC points out that this coordination will ensure that transmission providers, in consultation with stakeholders, evaluate proposed alternative solutions that may be more efficient or cost-effective than the solutions identified in the plans of individual transmission providers. "This, in turn, will provide assurance that rates for transmission services on these systems will reflect more efficient or cost-effective solutions for the region."[28] FERC Order 1000 requires greater coordination in transmission planning in order to provide greater value for consumers.

WestConnect is one subregional transmission planning organization that recently

25 Western Electricity Coordinating Council. (September, 2011). 10-Year Transmission Plan, Plan Summary. Available at: http://www.wecc.biz/library/StudyReport/Documents/Plan_Summary.pdf, pages 30-33. See also Hurlbut, D., McLaren, J., Gelman, R., (2013, September 5) Beyond Renewable Portfolio Standards: An Assessment of Regional Supply and Demand Conditions Affecting the Future of Renewable Energy in the West. National Renewable Energy Laboratory. Available at: http://www.nrel.gov/docs/fy13osti/57830-1.pdf.

26 While California is well on its way to meeting 33% RPS by 2020 with in-state resources, active legislation in CA to increase the RPS to 51% and results like this WECC study indicate that inter-mountain wind may be a cost-effective piece of the incremental 18% requirement. California appears to be very interested in mutually beneficial exchange opportunities where other states purchase California resources at the same time that California becomes a market for remote renewable resources.

27 FERC commissioners and staff were precluded from discussion of FERC Order 1000 at the time due to on-going contested filings.

28 FERC Order No. 1000, Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities, 18 CFR Part 35 (July 21, 2011) at p.68. Available at http://www.ferc.gov/whats-new/comm-meet/2011/072111/E-6.pdf.

submitted a compliance filing under FERC Order 1000. WestConnect is comprised of transmission providers, including the Southwest Transmission Planning Group (SWAT), the Colorado Coordinated Planning Group (CCPG), and any other subregional transmission planning (STP) group that forms within the WestConnect planning area and wishes to participate. Utility companies in WestConnect work collaboratively to assess stakeholder and market needs and to develop cost-effective enhancements to the western wholesale electricity market. WestConnect prepares a ten year integrated regional transmission plan on an annual basis, which coordinates all transmission plans across the WestConnect planning area.[29] FERC accepted WestConnect's compliance filings subject to additional compliance filings to address other matters.[30]

B. Coordinated Resource Planning

Regional planning is beneficial to customers in other areas as well. The same economies of scale and planning forethought that make sense for system operations – balancing functions, purchasing and coordinating services, and transmission planning – also hold true for resource planning, including thermal and renewable resources, energy efficiency, and demand response.

Regional planning, whether through integrated resource planning (IRP) or similar methods, also provides economic and environmental benefits to customers and to the overall economy. This is a planning process that, if correctly implemented, determines the lowest practical costs at which a utility can deliver reliable energy services to its customers.[31] In general, IRP focuses on minimizing customers' bills rather than on rates; an overall reduction in total resource cost achieved through the efficient use of energy will lower average energy bills. All customers benefit from the lower system costs that IRP achieves.[32]

One example of a regional planning process using IRP is the Northwest Power Planning & Conservation Council (NWPCC), which is required to develop a 20-year electric power plan intended to assure the supply of adequate and reliable energy at the lowest economic and environmental cost to the Northwest. The council released its Sixth Northwest Conservation and Electric Power Plan in February 2010.[33]

The NWPCC assembles a cost-effective portfolio based on a cost curve comparison of all options. As a result of its planning

[29] WestConnect Transmission Planning. See http://www.westconnect.com/planning.php.

[30] FERC *Order on Compliance Filings*, 142 FERC ¶ 61,206 (March 22, 2013). Available at: http://www.ferc.gov/whats-new/comm-meet/2013/032113/E-3.pdf.

[31] Harrington, C. et al. (1994). Integrated Resource Planning for State Utility Regulators. Gardiner, ME: Regulatory Assistance Project. Available at: http://www.raponline.org/document/download/id/817. IRP differs from traditional planning in that it requires utilities to use analytical tools that are capable of fairly evaluating and comparing the costs and benefits of both demand- and supply-side resources. Available at:

[32] *Id.*

[33] Northwest Power & Conservation Council. (February 1, 2010). Sixth Northwest Conservation and Electric Power Plan. Available at: http://www.nwcouncil.org/energy/powerplan/6/plan/.

process and cost comparisons, the NWPCC's regional IRP has pointed the region toward leveraging regional energy efficiency on a large scale, which has resulted in huge benefits to consumers. Approximately 50% of the growth in demand for electricity in the region since 1980 has been met through energy efficiency, which provides direct benefit to customers through reduced electricity bills. The NWPCC's plan noted that utilities benefited as well; as the region gained more experience in acquiring energy-efficiency, the utilities' costs declined dramatically. In the process, consumers in the region saved billions of dollars—$2.3 billion in 2008 alone.[34] Regional power planning enables utilities to identify and leverage all available resources in the region to the best effect for customers.

C. Coordinated Renewable Resource Procurement

Beyond regional resource planning, regions can also coordinate on resource procurement. A new example of regional procurement planning is the New England States Committee on Electricity's (NESCOE) "Coordinated Competitive Renewable Power Procurement Plan." In this initiative, the six Northeastern states will "consider identifying, through joint or separate but coordinated competitive processes, those resources that have the greatest potential to help meet the region's renewable energy goals at the lowest 'all-in' delivered cost to consumers – the cost of generation and transmission combined."[35]

New England states collaborated to launch this initiative as a result of two important realizations: (1) that renewable resources in and around New England could be developed at lower "all-in" cost to consumers than would be incurred by building transmission lines to move equivalent amounts of renewable power from other parts of the country; and, (2) while competitive markets have met demand for renewable resources, mechanisms such as power purchase agreements would be necessary to bring new renewables to fruition for the future.

The Procurement Plan is viewed as a means to "aggregate demand for renewable power and enhance buying power; stimulate the market for renewable resources; and provide value to renewable project developers by creating larger revenue streams that might not otherwise be possible.[36] Using competitive processes cooperatively may, therefore, facilitate development of cost-

[34] Northwest Power & Conservation Council. (2010). Energy Efficiency – 30 years of Smart Energy Choices. Available at: http://www.nwcouncil.org/media/29753/2010_03.pdf.

[35] New England States Electricity Committee. (August 10, 2012). Coordinated Competitive Renewable Power Procurement Draft Work Plan. Available at: http://nescoe.com/uploads/Coordinate_Procure_Work_Plan_-_Comment.pdf. This plan is the result of a July 2012 Resolution by the New England Governors, which directed NESCOE to develop and implement a work plan to implement competitive coordinated procurement of renewable power.

[36] The development of new renewable resources is contingent upon long-term financing, primarily through power purchase agreements. Recognizing this, the NESCOE Regional Procurement Plan is an effort to promote development of new renewable resources within the region.

effective, low-carbon renewable electric generation in and around the region."[37] Pending final legal and stakeholder input, the six New England states plan to issue a solicitation for renewable power by the end of 2013.[38] Regional renewable procurement can provide many values to participating states and consumers. Coordinating the procurement of power for a group of utilities or states allows for a larger, and potentially more steady, funding stream to support renewable resource development in the region. Thus, while one utility or state might need a small amount of renewable power, which would offer less attractive market for renewable generators to provide, aggregating the needs of several utilities or states would enable developers to build renewable generation in the region at a lower cost than a single utility or state could do. The broader, multi-system process would also enable more strategic planning for future renewable generation growth.[39]

III. Conclusion

While some utilities have chosen to join ISOs to take advantage of increased cooperation and coordination as well as new technologies to meet the challenges associated with increasing amounts of variable energy resources, others are either unwilling or unable to join an ISO. Other utilities have not found that the benefits of joining an ISO justify the costs and burdens. Others would like to join an ISO but the reluctance of neighboring utilities has proven to be a barrier to their joining. Fortunately, non-ISO utilities with any of these perspectives have opportunities to work outside the formal structure of an ISO to improve reliability and add consumer value. Non-ISO utilities can coordinate or consolidate their responsibilities – either actually or virtually – to integrate variable energy resources effectively and provide cost mitigating options to electricity system consumers.

Many options exist. The ones chosen should depend on the systems' needs, values, and structures. Utilities and BAs in non-ISO regions, or even within ISO regions, can identify mutually beneficial exchanges that allow them to integrate variable energy resources more effectively by increasing access to diverse resources and pooling responsibilities.

Regions have many means to work together to provide consumer value by coordinating plans for transmission, supply, and demand resources. They will succeed by improving reliability and minimizing costs if they make changes focused on functionality and consumer value. □

[37] Supra footnote 17 at p.2.

[38] New England States Committee on Electricity. (April 1, 2013). Coordinated Competitive Renewable Power Procurement: *Status Update*. Available at: http://www.nescoe.com/uploads/Status_Update_April_2013.pdf.

[39] States are not precluded from moving forward individually ahead of the multistate process. Extension of the federal tax credit for wind power through the end of 2013 will likely incentivize some states to move forward quickly.