Northwest **Power** and **Conservation** Council

May 3, 2016

MEMORANDUM

TO: **Power Committee**

FROM: **Tina Jayaweera, John Ollis**

SUBJECT: **Creation of Demand Response Advisory Committee**

BACKGROUND:

Presenter: John Ollis, Tina Jayaweera

Summary: As part of the Council's work on implementing the Seventh Power Plan, staff has developed a draft issue paper on the role of a demand response advisory committee and the development of a proposed system integration forum. Staff is proposing that the Council release this issue paper for a public comment period at the May Council meeting in order to receive feedback from regional stakeholders before the advisory committee charter is approved by the Council.

Staff will discuss the issue paper at the Power Committee meeting and seek a recommendation from the Committee to the Council to release the issue paper for comments. The full Council will discuss this as part of Council Business.

Relevance: The formation of a demand response advisory committee, including the consideration of enabling technologies such as smart grid, is recommended in the Seventh Power Plan's Action Plan, item COUN-1.

Workplan: A.2 Demand Response

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Background: The Action Plan (Chapter 4) of the Seventh Power Plan can be found on the Council's website http://www.nwcouncil.org/media/7149934/7thplanfinal_chap04_actionplan.pdf

More Info: The tentative schedule for the demand response advisory committee formation is as follows:

- May 10, 2016 – Power Committee: Discussion of issue paper and recommendation to Council to release for public comments
- May 11, 2016 – Council Business: Discussion and decision on release of issue paper for public comments

If Council approves release of issue paper, then:

- May 12, 2016 - June 17, 2016: Public Comment Period
- July 12, 2016 – Power Committee: Summary of comments received by close of comment period
- July 13, 2016 – Council Meeting: Council decision to approve charter for demand response advisory committee

Attachments:
Draft issue paper
Presentation
See also: Decision memo in Council Meeting packet

Demand Response Advisory Committee and System Integration Forum

May Power Committee Meeting

Northwest Power and Conservation Council

Action Item: COUN-1

- **Form Demand Response Advisory Committee.** [Council] A major finding of the Seventh Plan is that the region would benefit from the development of demand response (DR) resources. To facilitate this, the Council should establish a Demand Response Advisory Committee to assist in the identification of strategies to overcome regional barriers to DR implementation and the quantification of DR potential. The scope of this committee's activities should be to facilitate the deployment of demand response resources in the region by serving as a forum for sharing program experience and data. This committee should be chartered by the Council by the end of FY2016. In drafting the charter, technologies that enable or function in a similar fashion to demand response should be considered, such as distributed standby generation, distributed energy storage, transactive energy, and other specific "smart grid" or "grid edge" technologies.

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What do these terms mean?

- **Distributed Standby Generation**: customer-sited small (often <1 MW) generators used by utility during peak periods and/or for contingency reserves.
- **Distributed Energy Storage**: Customer-sited battery or other storage systems, often coupled with on-site generation
- **Transactive Energy**: Means of using economic signals or incentives to engage all the intelligent devices in the power grid—from the consumer to the transmission system—to get a more optimal allocation of resources

Terms, cont.

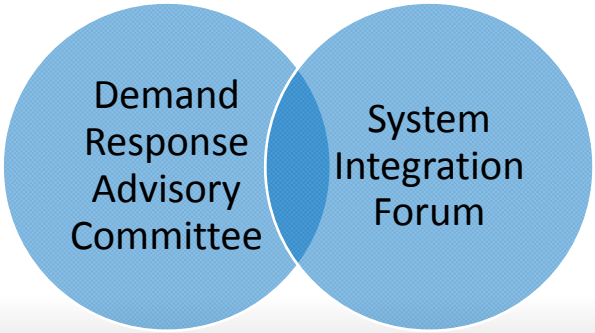
- **Smart Grid**: An electrical grid which includes a variety of operational and energy measures including smart meters, smart appliances, renewable energy resources, demand response, and energy efficiency resources. Electronic power conditioning and control of the production and distribution of electricity are important aspects of the smart grid.

All Part of DR Advisory Committee?

- Distributed energy storage and distributed standby generation have many similar attributes to some demand response, utility-scale storage & generation
  - Resource expertise could readily be in Generating Resources, Demand Response, or Demand Forecast Advisory Committees
  - A consistent approach to adding these resources to grid operation not likely captured by GRAC, DRAC or DFAC experts operating independently
- Smart grid and transactive energy are enabling technologies, and not resources *per se*
  - Grouping these with DR might limit their scope and can dilute the focus of a DR advisory committee

Proposal

- Create Demand Response Advisory Committee *and* a System Integration Forum



Demand Response Advisory Committee

- Initially, focus on *barriers* to implementation of demand response
  - Members primarily include mid- to upper-level management at utilities, policy makers, BPA, implementers, researchers, public interest groups
- Later, focus on *supply curve* development
  - Members primarily include program managers, BPA, implementers, researchers, public interest groups

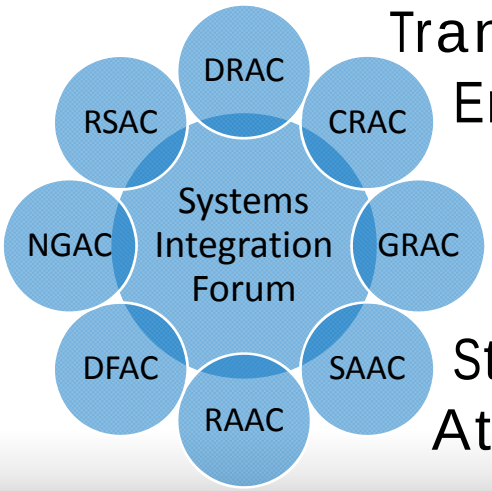
What is a System Integration Forum?

- A venue to focus on integration enabling technologies or attributes
- Will provide a more structured approach to deal with other pivotal cross-advisory committee topical areas
- Overarching coordination to ensure that there is not a significant disconnect between advisory committees

Advisory Committees + Forum

Smart Grid

Transactive Energy



Storage Attributes

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9

Review on COUN-1

- Allows DRAC to be focused on demand response
- Smart grid and transactive energy have separate venue for consideration in power plan development

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10

Other Questions

- Role of SIF with Council?
  - Participants in the SIF provide recommendation to the full Advisory Committees, who in turn advise Council staff
- Is there a member list?
  - No specific membership, draw from other advisory committees and non-advisory committee experts depending on the topic
- Why a forum and not an Advisory Committee?
  - Limit proliferation of advisory committees
  - Allow for more diversity of topics covered
  - Precedent for using a "forum" as a way to efficiently approach important topics leading up to the Power Plan (Wind Integration Forum)

Northwest **Power** and **Conservation** Council

May 12, 2016

Dear Interested Party:

The Council invites your comments on the accompanying issue paper on forming the demand response advisory committee.

The formation of a demand response advisory committee, including the consideration of enabling technologies such as smart grid, is recommended in the Seventh Power Plan's Action Plan,[1] item COUN-1, which states:

> **COUN-1 Form Demand Response Advisory Committee.** [Council] A major finding of the Seventh Plan is that the region would benefit from the development of demand response (DR) resources. To facilitate this, the Council should establish a Demand Response Advisory Committee to assist in the identification of strategies to overcome regional barriers to DR implementation and the quantification of DR potential. The scope of this committee's activities should be to facilitate the deployment of demand response resources in the region by serving as a forum for sharing program experience and data. This committee should be chartered by the Council by the end of FY2016. In drafting the charter, technologies that enable or function in a similar fashion to demand response should be considered, such as distributed standby generation, distributed energy storage, transactive energy, and other specific "smart grid" or "grid edge" technologies.

The issue paper outlines a proposed approach to forming this committee and how best to incorporate emerging technologies, such as those highlighted in the action item. The paper also proposes that the Council convene a System Integration Forum to enhance the evaluation and analysis of emerging technologies that could potentially reduce the cost of integrating existing and new resources with customer demands The Council expects to finalize a charter and recruit members for the Demand Response Advisory Committee by mid-July 2016. The timeline for convening the System Integration Forum is early 2017.

[1] http://www.nwcouncil.org/media/7149934/7thplanfinal_chap04_actionplan.pdf

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Comments may be submitted to comments@nwcouncil.org or by mail to the Council's address below through June 15, 2016. You can also arrange to meet with staff if you prefer to provide comments in person.

Thank you for your interest in the Council and its work.

Sincerely,

Steve Crow
Executive Director

Enclosure: Issue Paper: Demand Response Advisory Committee Scope

Issue Paper: Demand Response Advisory Committee Scope

May 2016

Introduction

This issue paper set forth a proposal to form a Demand Response Advisory Committee to advise the Council on issues associated with achieving the Seventh Power Plan's goal for development of demand response resources. It also proposes the formation of System Integration Forum to enhance the Council's evaluation and analysis of emerging technologies that could potentially reduce the cost of integrating existing and new resources with customer demands.

Demand Response Advisory Committee

One of the key findings from the Seventh Power Plan is the region needs to develop capacity resources to meet its growing demands. One resource identified to meet this capacity need is demand response (DR).The analysis indicates a minimum of 600 MW of additional DR resources would be cost-effective to develop as soon as possible; significantly more than currently developed or planned. However, the region has limited commercial experience with DR and thus there is a general lack of understanding and confidence in how to effectively deploy these resources.

The Council proposes the formation of a demand response advisory committee (DRAC), whose role will largely be to focus on demand response implementation, barriers, and supply curve development. The scope of the DRAC will include:

(A) Assisting the Council in identifying technical, cost, environmental, institutional, and other barriers to the development of demand response resources.

(B) Assisting the Council in developing policies and actions to resolve barriers to the development of demand response resources.

(C) Assisting the Council by providing feedback and suggestions for improving the effectiveness of the demand response resource development programs and activities in the region.

(D) Assisting the Council in implementing elements of the Seventh Plan demand response action plan.

(E) Assisting the Council in assessing: 1) the current performance, cost, and availability of demand response resources; 2) technology development trends; and 3) the effect of these trends on the future performance, cost, and availability of demand response resources.

(F) Assisting the Council in development of the Eighth Plan's assessment of regional demand response potential.

(G) Assisting the Council in development of the Eighth Plan's demand response action plan.

For the initial period, the DRAC will focus on understanding the barriers to development of demand response in the region and how best to leverage existing infrastructure to expand demand response programs (items (A) through (D) above). This will help the region develop a common understanding of demand response and what will be required to implement the Seventh Plan. Upon charter renewal (anticipated summer 2018), the DRAC will likely shift focus to more technical aspects of demand response, leading to supporting the Council in development of the supply curves for the Eighth Power Plan (items (E) through (G) above).

System Integration Forum

There are emerging opportunities that can be used to integrate existing resources more effectively across the grid. Some of these offer the potential for complementing DR and other capacity-focused resources. For example, the advent of lower cost energy storage technologies along with the wide-spread adoption of “smart grid” and “transactive energy” could both expand the options for demand response and reduce their cost.

Currently in the region, most wholesale power is sold in hourly, or scheduled in heavy and light load period blocks of power. Neither of these time frames match either variable energy resource output or instantaneous power system load. While some of the uncertainty regarding weather impacts and consumers’ actions that produce this mismatch can be mitigated via more granular scheduling and dispatch practices (as are implemented in other regions), uncertainty remains. This remaining uncertainty requires system integration, in the form of resources that are flexible enough to provide intra-schedule balancing, as well as frequency support, contingency power, and other services. Traditionally, due to cheap, abundant, and flexible hydropower in the region, there has been little market for resources that derive much of their value from system integration. In other regions without significant amounts of flexible hydropower, there are more mature markets for services such as frequency support and contingency reserves.

While DR is one resource with system integration value, it is not the only resource providing an explicit system integration impact that results in limiting regional energy costs. If the region achieves the Council’s conservation targets, the regional power system is anticipated to be broadly sufficient on an average energy basis through 2021 (per the Seventh Power Plan). However, with the potential need to integrate more renewables due to increases in state renewable portfolio standards and the announced retirement of resources that currently provide some system integration, the regional power system may be approaching its limits to adequately provide both the peaking and flexibility capability needed for a reliable power supply. In the recent past, gaps in regional system integration need have been filled by adding flexible fossil fuel generation resources built close to a transmission line with available capability. With a continued focus on emissions reduction and market conditions that lead to increasing costs of building traditional resources like fossil fuel generation (e.g. low market prices that lead to less revenue offsetting expenses), there is a need to evaluate alternatives. Some of these alternatives include energy storage (distributed and utility-scale), distributed generation (renewable and not), smart grid, and transactive energy.

Given this, the Council is recommending the formation of a forum that will focus on how to incorporate the evaluation of potential system integration technologies into various aspects of the power system to improve planning, analysis, and modeling from a holistic perspective. This forum is intended to provide a venue for members from all of the Council's advisory committees to coordinate on power system attributes that might apply across many resource types. For topics that either clearly, or may involve, more than one advisory committee, a meeting of a System Integration Forum will be called. That meeting will focus on the topic to ensure it is appropriately considered for the power plan. Additional experts will be invited to help in this consideration as needed. The advisory committees will then incorporate any results or recommendations from the forum into their work.

Questions for reviewers

1. Is the scope of the proposed demand response advisory committee sufficient?
    a. Do you agree with the focus of the advisory committee in both the near- and long-term?
2. Is it appropriate to convene a separate forum to discuss smart gird, storage, and other enabling technologies?
    a. Do you agree that a forum is the appropriate venue for these topics (versus an advisory committee)?