UM 1460 – Straw Proposal for Utility Smart Grid Planning
October 22, 2010

Background

The Oregon Public Utility Commission (Commission) initiated Docket No. UM 1460 in December 2009. The purpose of the investigation is to determine appropriate guidelines for utility Smart Grid (SG) planning, particularly addressing the contents of an SG Plan (SGP), the submission schedule, Commission review, and use of a Plan in subsequent Commission proceedings.

Staff Straw Proposal (Proposal) and its Purpose

On September 27, 2010, Staff circulated a list of potential topics and held a public workshop (Workshop) with interested parties to discuss the scope of this proceeding. Based on input received during the workshop and our judgment of a reasonable scope for the proceeding, Staff has developed the attached straw proposal. The straw proposal should not be interpreted as an initial Staff position on the issues in this proceeding. Instead, the straw proposal is a tool to help facilitate and focus the comments of all parties to this proceeding. The straw proposal provides parties with an organized framework that they can use, and simple descriptive policy proposals that they can react to in their Opening Comments. In Opening Comments, parties are encouraged to indicate their support or opposition to the proposed policies, propose modified policies, or recommend new policy proposals. Parties should provide the rationale and justification for their policy recommendations.

Organizational Issues

There are many issues surrounding SG, some within and some beyond the scope of this docket. The straw proposal focuses on issues grouped into three categories. These categories are:

I. *Goals and Guidelines for all Smart Grid Plans*
This section of the Proposal raises questions about the overall goals of this docket and what ought to be the goal(s) of the SG Plan. This section also proposes an approach to each of several issues that participants at the Workshop argued warrant a common approach across utilities.

II. *Smart Grid Plan Structure and Content*
This is by far the largest section of the Proposal. It contains proposed approaches and questions in the following areas: Introduction/Overview of the SGP; Timeframes for the SGP; SGP Estimated Benefits and Costs; Systems Reliability; Treatment of Customer Related Data; F. Education and Information - Customer

Energy Use Management; Communications and IT Infrastructure; Cyber and Physical Security; Distribution of SGP Benefits and Costs, SG Enabled Pricing Options; and Risk and its Mitigation.

III. *Smart Grid Plan Submission, Review, and Use in Future Proceedings*
This section of the Proposal describes approaches and raises questions about SGP submission schedule and frequency; update requirements; Commission review of the SGP; and the use of an SGP in subsequent Commission proceedings.

Further Discussion and November 3, 2010 Workshop
The schedule for this docket includes a public workshop on the straw proposal on November 3, 2010, 9:30 – 3:30, in the Small Hearing Room here at the OPUC. The purpose of this workshop is to discuss the straw proposal. Staff will answer questions about the purpose and use of the straw proposal as well as specific policies in the straw proposal.

In the interim, feel free to contact staff directly with any comments and questions you may have.

Robert J. Procter
Sr. Economist
Electric Rates and Planning
Oregon Public Utility Commission
550 Capitol St. NE, Salem OR 97308
(503) 378-3738
Robert.Procter@state.or.us

OPUC STRAW PROPOSAL FOR UM 1460:
DEVELOPMENT OF SMART GRID OBJECTIVES AND ACTION ITEMS

Staff seeks your comments and suggestions on the following proposals.

I. Goals and Guidelines for all Smart Grid Plans[1]

A. Goal and Sub-Goals for This Docket

There was one primary goal for this docket discussed at the September 27 Smart Grid (SG) Workshop (Workshop). That goal is to develop a framework to guide utility development of its Smart Grid Plan (SGP). A part of this goal includes SGP submission requirements, Commission review, and the use of the SGP in subsequent Commission proceedings. At the Workshop, participants discussed related issues, including what goals ought to be established for the SGP itself.

Staff suggests that the goals of the SGP include:

1. Identify and discuss promising investments in SG technology, programs and protocols that utilities are investigating;
2. Show a timeline for implementing SG technologies, programs and protocols investigated that a utility recommends for adoption;
3. Address SG-related concerns such as privacy, security and obsolescence;
4. Present, at a high level, the utility's best current thinking regarding business cases for implementing SG technologies and programs in terms of traditional utility obligations such as reliability, quality of service, compliance with statutory mandates (such as Renewable Portfolio Standard) and cost effectiveness; and
5. Inform future commissions in subsequent proceedings.

[1] On December 18, 2009, the Commission adopted Order No. 09-501 that mandates utilities file a report describing the rationale for making a non-advanced grid investment. This report is to be filed prior to making such an investment. The Order includes a definition of a non-advanced grid technology and what demonstrations the utility is required to make in that report. Submitting a Smart Grid Plan does not meet the filing requirements in that Order.

B. Guidelines for Issues Common to All SGPs

1. *Access, Control, and Use of Customer Information*

[NOTE: This is a placeholder proposal on a very important issue. What are your views on the most effective way for the Commission to proceed on the larger issue of customer privacy?]

Data covered by this section include meter data (consumption, voltage readings, etc.), usage data (a subset of meter data), billing data, and customer data (from in-premises control devices). Hereafter, all the above are referred to as Data.

The SGP should identify which federal, state, or other Data privacy standards have been adopted. The SGP should indicate where the utility plans a different approach than any of the available standards. The SGP should also identify how the utility plans to assure that its network does not become an access point for others seeing any of these Data[2].

2. *Opt in, Opt out, or Mandatory Program Participation*

For programs contained in the SGP, the utility should identify those programs for which the utility intends to require customer participation and provide the reasons for such a requirement(s). The utility should also identify where it is proposing to use opt in or opt out customer participation choices and the reason for the selection.

3. *Treatment of Obsolescence Risk*[3]

The SGP should identify and discuss obsolescence risks that may arise from actions in the SGP. The SGP should identify the degree of obsolescence risk, quantify it if possible, and discuss mitigation measures.

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[2] Data may be aggregated and released without customer prior approval, only if there is no way to associate Data to a particular customer.

[3] Obsolescence risk arises only when a durable asset is being replaced and a portion of the capital cost of the asset being replaced has not yet been fully recovered through rates.

4. *Utility Energy Management in Customer's Home or Business*

If the utility proposes to participate in the market for customer energy use management hardware or software, Staff recommends that the Commission not allow any of the costs to be recovered from ratepayers. This part of the SGP should also assure that the utility is complying with Direct Access rules contained in Code of Conduct rules (OAR 860-038-0500 through 860-038-0640). Further, the utility should work to assure that any devices or software it is involved in installing allow for interoperability with third-party hardware and software. This limitation does not apply to section II (F) below.

II. SGP Structure and Content

A. SGP[4] Content - Overview

The SGP should include the following sections: Introduction/Overview of the SGP; Timeframes for the SGP; SGP Estimated Benefits and Costs; Systems Reliability; Treatment of Customer Related Data; Education and Information - Customer Energy Use Management; Communications and IT Infrastructure; Cyber and Physical Security; Distribution of SGP Benefits and Costs; SG Enabled Pricing Options; and Risk and its Mitigation.

B. Timeframes for the SGP

The SGP should use a 20-year planning horizon. The SGP should include an Action Plan that should identify actions the utility intends to take during the first five years of the SGP. The SGP should also identify potential actions, measures and programs over two additional time periods: a mid-term period (years 6-10) and a long-term period (years 11-20). The SGP is expected to contain more detail in the Action Plan than for the mid- and long-term planning horizons. If the utility is contemplating on instituting any pilots as part of its Action Plan, it will be important for the utility to identify the length of the pilot, what is the needed participation, what the purpose(s) are

[4] Throughout this document, SGP means the utility's initial filing as well as the annual updates to that initial filing. Since it addresses the SGP, it also includes the Action Plan.

of the pilot, and the estimated cost of the pilot. More information about SGP submissions is contained in the section on Submission Schedule.

C. SGP Estimated Benefits and Costs[5]

The SGP should include detailed information about potential benefits and costs of actions included in the SGP with special attention paid to those actions in the Action Plan. Staff encourages utilities to separate benefit and cost detail into logical groupings, such as along functional lines (generation, transmission, distribution, customer level). Staff also encourages utilities to separate costs within a category in a logical way, such as between capital and ongoing expenses.

It may not be possible to collapse all likely benefits and costs into dollars and cents. Some of the benefits that may be difficult to quantify or monetize include: (1) improved reliability, (2) better access by customers to their energy use information; and, (3) the opportunity for price schedules that better reflect the costs of utility service. The SGP should include discussions, and when possible, estimates of these types of benefits.

D. Systems Reliability[6]

System reliability covers the electric system components and all the communications and data components required to assure and improve both continued power deliveries and power quality. Staff anticipates that this section will discuss only those system reliability issues that are associated with SG actions, plans, and pilots included in the SGP.

Staff encourages the utility to separate its Action Plan along functional lines (generation, transmission, distribution, customer level). Within each functional line, the SGP should provide sufficient detail to allow the

[5] For purposes of the SGP, costs include, but need not be limited to, the capital, operating, and depreciation costs of all hardware, software, customer education, and security-related actions included in the SGP.
[6] Systems reliability means not only assuring power delivery, but also power quality and the ability of the system to react to potential problems before they occur and recover from problems after they occur. It also refers to communications and all information systems.

Commission to reach a conclusion that it is reasonably likely that the Action Plan will improve system utilization and reliability as described in the SGP. The factors staff will use to make this determination may include, but are not limited to, the following: adoption of national standards, evidence of its success at other utilities, and success of the actions in pilots at the utility submitting the SGP.

The SGP should include the rationale for the actions contained in the Action Plan. It should also include a discussion and rationale for actions the utility investigated and rejected. It will be important for the utility to address what standards it is considering adopting that bear on the issue of system reliability. Information contained in this section should be developed in conjunction with the section on Communications and Information Technology (IT) infrastructure as there is likely to be significant overlap between these two sections. Some examples of actions at the distribution level that are intended to improve reliability include, but are not limited to, the following: automatic circuit reconfiguration; improved fault location; dynamic system protection for two-way power flows and distributed resources; dynamic volt-VAR management; and conservation voltage optimization.

The SGP should explain the choice of any standards or technologies that are not recommended by the National Institute for Standards and Technology (NIST) Smart Grid Interoperability Framework.

The SGP should also discuss actions (along with any actions investigated and rejected), including but not limited to, those designed to enhance customer distributed resource interconnection, coordinated management of distributed resources, optimized electric vehicle charging, and dispatch of electric vehicle storage. To the extent it is relevant, each SGP should also address reliability and system awareness enhancements at the transmission level and its participation in regional efforts. Such enhancements include,

but are not limited to, the following: wide area (Phasor) measurement and wide scale outage recovery.

E. Treatment of Customer Related Data

The SGP should contain a statement that it conforms to the allowable uses and restrictions for data consistent with what are determined in I (B) (1) above.

F. Education and Information - Customer Energy Use Management

This section should identify and describe customer education efforts focused on helping the customer to better understand and use SG technologies, consistent with Section I(B)(4). If appropriate, this section may also include details about utility activities working with retailers and vendors aimed at educating customers about other information, equipment, and software that may help them better manage their electricity use. It should also discuss how the utility plans to enhance interactivity with customers. By this, Staff means the degree to which the system implementing the application helps the power system and its users react to each other's needs. The SGP should include information about how the utility plans to collaborate with stakeholders in the design of consumer education programs and in the development, targeting, and delivery of program-specific information or tools.

The SGP should include a discussion of actions the utility is considering that would allow customers to securely retrieve usage data directly and in near-real-time from an in-premises device. This objective may require that any in-home device that connects to the utility's meter be certified or approved to comply with cyber-security standards or operational characteristics so that the meter data are not compromised.

G. Communications and IT Infrastructure

This section of the SGP should include sufficient detail (including cost) to allow the Commission to determine the adequacy of the utility's communications and IT planning to support SG actions. Staff encourages the utility to organize this information along functional lines (generation, transmission, distribution, customer level).

Staff recommends that the SGP include a thorough discussion of each of the following design issues as they relate to its proposed communications and IT actions: (1) Capacity (bandwidth) -- the ability of a communications link to carry data, including the impact of factors such as latency, data volume, and event rate; (2) Technical maturity and risk -- the level of certainty that the technology will meet the requirements of the application; (3) Openness and "standardization"[7] – Open technologies lack barriers to implementation or integration, and have few or no royalties or license fees; (4) Reliability – the degree to which systems associated with the application can automatically recover from power, communications and component failures, in order to minimize the impact on the customer and the systems; (5) Manageability -- the degree to which devices, systems, and data must be configured, synchronized, tracked, diagnosed, and/or maintained in order to implement the application—manageability includes the ability to measure the health and the performance of the system; (6) Upgradeability -- the degree to which the devices and systems that implement the application can be changed to adapt to future conditions; and (7) Scalability -- the degree to which the application's system(s) will permit future expansion.

The SGP should also identify what Federal Energy Regulatory Commission (FERC) and Federal Communications Commission (FCC) standards and proposed NERC and/or NIST standards for communications protocols are being adopted. The SGP should indicate where planned investments might

[7] "Standardization" is the degree to which the technologies used to implement the application are recognized by official organizations and the user community.

be inconsistent with these standards and the likely implications. The SGP should explain the choice of any standards or technologies that are not recommended by the NIST Smart Grid Interoperability Framework.

H. Cyber and Physical Security

For purposes of the SGP, the utility should identify steps it is taking to ensure that SG actions are intended to maintain adequate levels of security. By security, Staff means the system's[8] ability to withstand both physical and electronic attacks.[9] [10]

The SGP should also identify which FERC, NERC, and/or NIST security standards it has adopted. The SGP should indicate where planned investments might be inconsistent with these standards. The SGP should identify cases where the utility or the Western Electric Coordinating Council (WECC) plans to apply to the FERC for exemptions to adopted standards or where either party plans to challenge proposed standards. The SGP should also identify how the utility plans to protect Critical Energy Infrastructure Information (CEII).

Providing the information requested in this section should not require the utility to identify the details of its security plans nor its vulnerabilities or the specific details of its security measures.

I. Distribution of SGP Benefits and Costs

The SGP should address the possible (estimated) distribution of benefits and costs to customer groups from actions proposed in the SGP. Part of this discussion should identify potential impacts on vulnerable populations. In addition, Staff recommends that the utility stay alert to, and advise the Commission of, potential or actual threats to any of its businesses that

[8] System, means both the electric delivery components (e.g.: generation, sub-stations, etc.) as well as all the supporting communications and IT technologies, including those systems involved in customer data collection, management, billing, and the like.
[9] This definition is from the Illinois Collaborative.
[10] This section should only focus on security issues associated with SG related actions contained in the SGP.

currently contribute revenue for cost recovery[11]. The SGP should also identify (including a cost estimate) what SGP actions require customer investments to fully realize any benefits identified in the SGP. The Commission's acknowledgement of an SGP will not be dependent on the content of this section.

J. SG-Enabled Pricing Options

The SGP should assess the applicability of price-based demand response alternatives and plans for introducing them in the next five years. The SGP should also assess the potential benefits and costs of deploying Advanced Meter Infra-structure (AMI) within the Action Plan timeframe. The SGP should include a discussion of whether AMI deployment will occur and if the conclusion is that AMI will not be deployed, the SGP should articulate the basis for this conclusion. If the utility has not enacted dynamic pricing (DP) or price-based demand response in its service area, the SGP should discuss the utility's plan to implement it.

K. Risk and its Mitigation

The SGP should identify financial and operational risks that arise from actions in the SGP. This discussion should include such issues as potential for, and cost of, risk mitigation, risk exposure absent mitigation and how SG actions either cause, or exacerbate, an existing risk. The discussion should include steps the utility plans to take in an effort to reduce these risks. Staff encourages the utility to separate these risks sub-sections: Generation; Transmission; Distribution; Customer Level.

[11] At this time, Staff does not have a list of such threats. These issues did arise with direct access legislation and rules (see OAR Chapter 860, Division 38) retail de-regulation. They have also occurred in other regulated industries, such as telecommunications, as its industry structure changed. With that said, one example would be a high-efficiency, low-cost natural-gas fuel cell that generated electricity and provided space heat and water heat at a lower overall cost than traditional utility service.

III. SGP Submission, Review, and Use in Future Proceedings

A. SGP Submission Schedule and Submission Frequency

Pacific Power, Idaho Power, and Portland General Electric should be required to meet these filing requirements.

The utility will file an SGP within six months of the Commission's Order in this docket. This first SGP should cover 20 years, (i.e.: 2011 - 2031), and the Action Plan should cover a 5-yr period (i.e.: 2011 - 2016), beginning on the SGP submission date.

Unless parties agree to a staggered schedule[12], a second SGP will be due no later than June 30, 2014. Utilities may submit this second plan at any time during the 2012-2014 timeframe. It should also cover a 20-yr period beginning no later than June 30, 2015, and the 5-yr Action Plan begins on the submission date. A utility should file its third SGP no later than four years from the second submission, and the 5-yr Action Plan begins on the submission date.

During each year of the Action Plan, the utility should submit an Annual Update of its initial SGP filing by the 12-month anniversary date of the SGP filing date. The update should include: (a) all changes to the SGP and a discussion of reasons for the changes, and (b) inform the Commission of Action Plan implementation.

Towards the end of the five year period for the third SGP, Staff will submit a report to the Commission on the SG planning effort. As part of that report, Staff will make a recommendation about next steps.

[12] If utilities, Staff, and other stakeholders reach agreement on a staggered schedule, they may file a request with the Commission for a schedule that has the final utility filing its second SGP on or before June 30, 2015.

B. SGP and Annual Update Review

Upon receipt of the SGP, a schedule should be established to enable the Commission to issue a final decision in no more than 180 days. That schedule should allow for Staff review, including comments from all parties, and a hearing.

The Commission may acknowledge the SGP as submitted or it may withhold acknowledgement and make recommendations to the utility that, if adopted, will achieve Commission acknowledgment of the SGP. Acknowledgement of the SGP has the same meaning and effect as it does for the Integrated Resource Plan.

Staff will give the Annual Updates a focused review to determine whether significant changes have occurred in either the utility's proposed actions or its implementation of its Action Plan. Staff recommends that the utility summarize the update at a Commission public meeting. If Staff determines that the Annual Update does not include significant changes from the acknowledged SGP, the Annual Update will be included as part of the original filing. If there is a significant change, Staff will summarize its finding at the same Commission public meeting where the utility summarizes its update. These Staff conclusions and any utility responses will then become part of the original filing.

Dated at Salem, Oregon this 22nd day of October, 2010

Robert J. Procter
Sr. Economist
Electric Rates & Planning
Oregon Public Utility Commission

CERTIFICATE OF SERVICE

UM 1460
Straw Proposals

I certify that I have this day served the foregoing document upon all parties of record in this proceeding by delivering a copy in person or by mailing a copy properly addressed with first class postage prepaid, or by electronic mail pursuant to OAR 860-13-0070, to the following parties or attorneys of parties.

Dated at Salem, Oregon, this 22nd day of October, 2010.

Kay Barnes

Kay Barnes
Public Utility Commission
Regulatory Operations
550 Capitol St NE Ste 215
Salem, Oregon 97301-2551
Telephone: (503) 378-5763

UM 1460
Service List (Parties)

BARRY T WOODS **(W)** ATTORNEY AT LAW	5608 GRAND OAKS DR LAKE OSWEGO OR 97035 woods@sustainableattorney.com
***DEPARTMENT OF JUSTICE** JANET L PREWITT **(W)** ASSISTANT AG	 NATURAL RESOURCES SECTION 1162 COURT ST NE SALEM OR 97301-4096 janet.prewitt@doj.state.or.us
***OREGON DEPARTMENT OF ENERGY** VIJAY A SATYAL **(W)** SENIOR POLICY ANALYST	 625 MARION ST NE SALEM OR 97301 vijay.a.satyal@state.or.us
ANDREA F SIMMONS	625 MARION ST NE SALEM OR 97301-3737 andrea.f.simmons@state.or.us
CITIZENS' UTILITY BOARD OF OREGON GORDON FEIGHNER**(W)** ENERGY ANALYST	 610 SW BROADWAY, STE 400 PORTLAND OR 97205 gordon@oregoncub.org
ROBERT JENKS EXECUTIVE DIRECTOR	610 SW BROADWAY, STE 400 PORTLAND OR 97205 bob@oregoncub.org
G. CATRIONA MCCRACKEN LEGAL COUNSEL/STAFF ATTY	610 SW BROADWAY, STE 400 PORTLAND OR 97205 catriona@oregoncub.org
RAYMOND MYERS ATTORNEY	610 SW BROADWAY, STE 400 PORTLAND OR 97205 ray@oregoncub.org
KEVIN ELLIOTT PARKS STAFF ATTORNEY	610 SW BROADWAY, STE 400 PORTLAND OR 97205 kevin@oregoncub.org
JOHN STURM LAW CLERK	610 SW BROADWAY, STE 400 PORTLAND OR 97205 john@oregoncub.org
COMMUNITY ACTION PARTNERSHIP OF OREGON JESS KINCAID**(W)** ENERGY PARTNERSHIP COORDINATOR	 PO BOX 7964 SALEM OR 97301 jess@caporegon.org

DEPARTMENT OF JUSTICE	
MICHAEL T WEIRICH ASSISTANT ATTORNEY GENERAL	BUSINESS ACTIVITIES SECTION 1162 COURT ST NE SALEM OR 97301-4096 michael.weirich@doj.state.or.us
IDAHO POWER COMPANY	
CHRISTA BEARRY**(W)**	PO BOX 70 BOISE ID 83707-0070 cbearry@idahopower.com
JAN BRYANT	PO BOX 70 BOISE ID 83707-0070 jbryant@idahopower.com
LISA D NORDSTROM ATTORNEY	PO BOX 70 BOISE ID 83707-0070 lnordstrom@idahopower.com
MICHAEL YOUNGBLOOD MANAGER, RATE DESIGN	PO BOX 70 BOISE ID 83707 myoungblood@idahopower.com
MCDOWELL RACKNER & GIBSON PC	
ADAM LOWNEY**(W)**	419 SW 11TH AVE, STE 400 PORTLAND OR 97205 adam@mcd-law.com
WENDY MCINDOO OFFICE MANAGER	419 SW 11TH AVE., SUITE 400 PORTLAND OR 97205 wendy@mcd-law.com
LISA F RACKNER ATTORNEY	419 SW 11TH AVE., SUITE 400 PORTLAND OR 97205 lisa@mcd-law.com
NORTHWEST ENERGY COALITION	
STEVEN WEISS**(W)** SR POLICY ASSOCIATE	4422 OREGON TRAIL CT NE SALEM OR 97305 steve@nwenergy.org
PACIFIC POWER & LIGHT	
MICHELLE R MISHOE **(W)** LEGAL COUNSEL	825 NE MULTNOMAH STE 1800 PORTLAND OR 97232 michelle.mishoe@pacificorp.com
PACIFICORP	
DOUG MARX**(W)**	PO BOX 39 MIDVALE UT 84047 douglas.marx@pacificorp.com
PACIFICORP, DBA PACIFIC POWER	
OREGON DOCKETS**(W)**	825 NE MULTNOMAH ST, STE 2000 PORTLAND OR 97232 oregondockets@pacificorp.com

PORTLAND GENERAL ELECTRIC DOUG KUNS RATES & REGULATORY AFFAIRS **(W)**	121 SW SALMON ST 1WTC0702 PORTLAND OR 97204 pge.opuc.filings@pgn.com
PORTLAND GENERAL ELECTRIC COMPANY J RICHARD GEORGE **(W)**	121 SW SALMON ST 1WTC1301 PORTLAND OR 97204 richard.george@pgn.com
PUBLIC UTILITY COMMISSION MAURY GALBRAITH	PO BOX 2148 SALEM OR 97308 maury.galbraith@state.or.us
SMART GRID OREGON ROBERT FRISBEE **(W)**	111 SW 5TH AVE, STE 120 PORTLAND OR 97204 rfrisbee@si-two.com
ROY HEMMINGWAY	111 SW 5TH AVE, STE 120 PORTLAND OR 97204 royhemmingway@aol.com
PHIL KEISLING	111 SW 5TH AVE, STE 120 PORTLAND OR 97204 pkeisling@gmail.com