



Puget Sound Energy, Inc.  
P.O. Box 97034  
Bellevue, WA 98009-9734

July 13, 2018

***Filed via WUTC Web Portal***

Mr. Mark L. Johnson  
Executive Director and Secretary  
Washington Utilities and Transportation Commission  
P.O. Box 47250  
Olympia, Washington 98504-7250

**RE: Compliance with WAC 480-90-238 and WAC 480-100-238  
2019 Integrated Resource Plan Work Plan**

Dear Mr. Johnson:

Attached please find the Work Plan for Puget Sound Energy's ("PSE's") 2019 Integrated Resource Plan ("IRP"). It is filed pursuant to the Washington Utilities and Transportation Commission IRP rules under WAC 480-90-238(4), (5) and WAC 480-100-238(4), (5). The Work Plan includes public participation and anticipated timing, summary of methods for assessing resources, and an outline of IRP content.

Public participation in PSE's 2019 IRP is underway. PSE hosted the first IRP Advisory Group ("IRPAG") meeting on May 30, 2018. As outlined in the attached Work Plan, PSE plans to host a series of Technical Advisory Group ("TAG") meetings in addition to IRPAG meetings during this IRP cycle. The IRPAG meetings are designed to facilitate the public sharing information with PSE. The TAG meetings will provide an opportunity for engagement with industry experts. Everyone is invited to attend IRPAG and TAG meetings. PSE looks forward to continuing a robust public participation process that enhances transparency and provides the details necessary to develop a well-supported IRP. PSE will file the final IRP by July 15, 2019.

Please contact Phillip Popoff, Manager, Integrated Resource Planning, at (425) 462-3229 or Nate Hill, Manager, State Regulatory Initiatives, at (425) 457-5524 for additional information about this filing. If you have any other questions please contact me at (425) 456-2142.

Sincerely,

*/s/ Jon Piliaris*

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Director, Regulatory Affairs  
Puget Sound Energy  
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Attachment: Work Plan

# **PUGET SOUND ENERGY**

## **2019 Integrated Resource Plan**

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### **Work Plan**

July 13, 2018

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## **PURPOSE OF THE INTEGRATED RESOURCE PLAN**

PSE continues to invest in a long-term resource planning process to inform and guide the company's resource acquisition processes consistent with the letter and spirit of Washington Administrative Code (WAC) 480-90-238 and WAC 480-100-238. Puget Sound Energy's (PSE; company) Integrated Resource Plan (IRP) is a plan for meeting forecasted annual peak and energy demand, plus some established reserve margin, through a combination of energy supply, conservation, and other demand-side resources.

PSE's IRP analysis integrates demand-side and supply-side resources to meet the growing energy needs of its customers for the lowest reasonable cost.

The IRP:

- Examines the many energy resource options available to PSE, including the maximum amount of new energy supply PSE can acquire through energy efficiency
- Makes a thorough, objective assessment of the benefits, costs, and risks associated with each energy-supply option
- Analyzes the region's population and economic trends, including a forecast of PSE customers' natural gas and electricity needs two decades into the future
- Evaluates political and economic policies and trends and their potential impact on energy production, usage, and availability
- Assesses commercially available conservation, including load management, as well as an assessment of currently employed and new policies and programs needed to obtain the conservation improvements
- Considers resource cost, market-volatility risks, demand-side resource uncertainties, resource dispatchability, resource effect on system operation, risks imposed on ratepayers, public policies regarding resource preference adopted by Washington state or the federal government, and cost of risks associated with environmental effects including emissions of carbon dioxide

## **PURPOSE OF THE IRP WORK PLAN**

PSE develops a work plan to outline the IRP content and methods PSE will use to assess potential resources. The work plan also outlines PSE's approach to public involvement, including timing and extent.

The work plan meets the requirements listed in WAC Sections 480-90-238(4) and 480-100-238(4), the natural gas and electric IRP rules, and Section 480-90-238(5) and 480-100-238(5).

## **PUBLIC PARTICIPATION PROCESS**

Through PSE's planning process, the company gathers input and feedback from external stakeholders to develop an accurate IRP that meets regulatory and legal requirements. The objectives of this public participation process include:

- Gathering input necessary to inform the IRP's approach, assumptions, and recommendations
- Complying with regulatory requirements for stakeholder engagement
- Improving transparency and stakeholder experience

PSE is updating the 2019 public participation process to achieve these objectives. The public participation process for the 2019 IRP will build on lessons learned from the 2017 IRP process, including feedback from the Washington Utilities and Transportation Commission (WUTC).

### Stakeholder input structure

The new process includes two advisory groups:

- **IRP Advisory Group (IRPAG):** This group will be a continuation of the prior IRP stakeholder group and will include ratepayers and members of the public. IRPAG meetings will provide stakeholders an opportunity to learn more about the IRP through broad discussions on topics such as scenarios and results of analysis and will be designed to facilitate the public sharing information with PSE. Dialogue with stakeholders provides PSE with broader perspectives about the future than PSE would have on its own, improving PSE's planning process.
- **Technical Advisory Group (TAG):** This group will bring technical experts together to help PSE improve its planning processes, methods, and assumptions. The TAG will focus on technical issues and include dialogue at a level of detail that will allow PSE to advance modeling efforts. In the interest of transparency, members of the public, including IRPAG participants, may observe TAG meetings. PSE will provide members of the public, including IRPAG participants, an opportunity to engage on the technical topics at the conclusion of each TAG.

PSE staff will bring IRPAG input to the TAG for their consideration and to inform their feedback to PSE.

PSE will recruit individual stakeholders from the 2017 IRP to participate in the IRPAG or TAG as needed. IRPAG meetings are open to all members of the public. TAG membership is by invitation or request. PSE will communicate clear agendas before the meetings. Both groups are advisory bodies and do not make

final decisions on the content of the IRP. PSE bears full responsibility for filing an IRP with the WUTC that complies with WAC 480-90-238 and WAC 480-100-238.

Appendix A shows the anticipated timing of the various TAG and IRPAG meetings during PSE's 2019 IRP cycle.

Appendix B is the draft charter for the IRPAG.

Appendix C is the draft charter for the TAG.

## **METHODS FOR ASSESSING RESOURCES**

### Overview of analytical approach

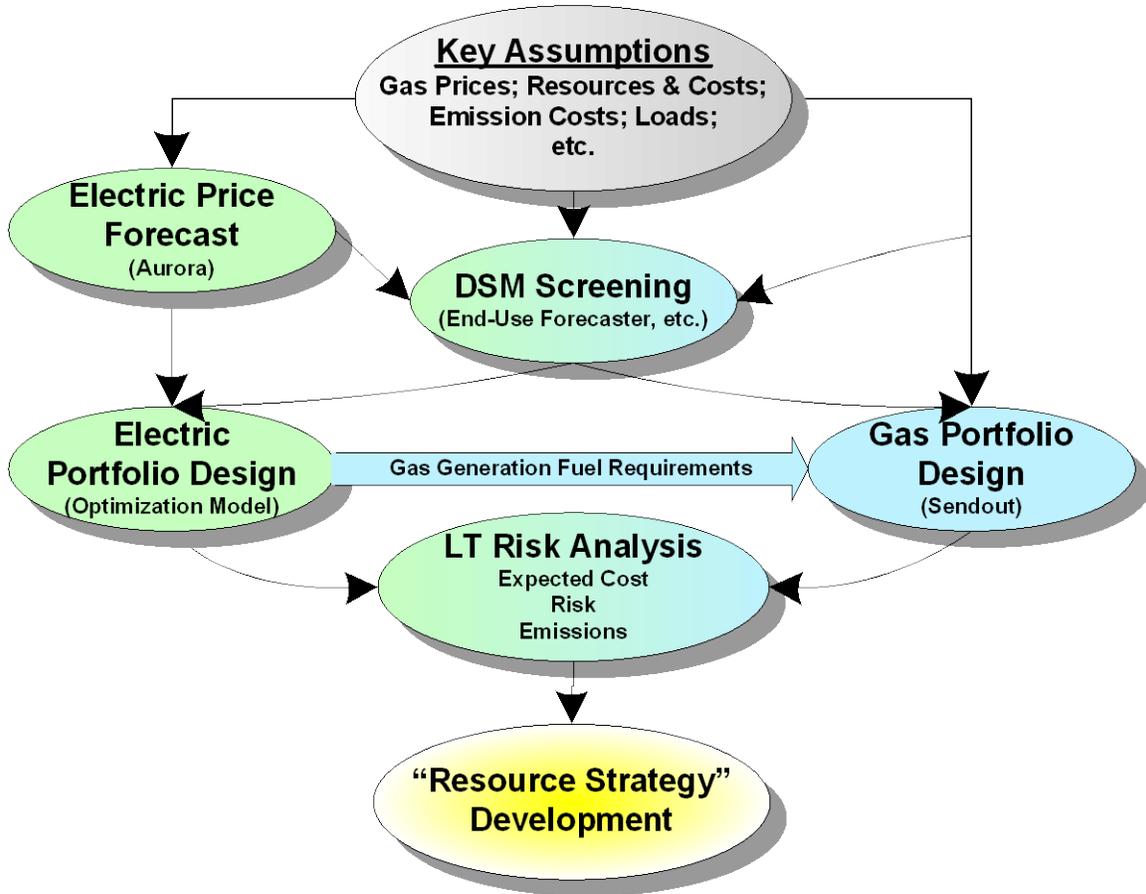
PSE's demand-side and supply-side resource analyses are well integrated, as are the company's electric and gas resource planning efforts.

PSE will use the same processes to address uncertainty as it has used since 2003. Potential futures will be reflected in scenarios that will have different fuel prices, carbon costs, resource costs, environmental policies, etc. Sensitivities will also be used. Sensitivities are similar to scenarios, but focus on impact of one variable, i.e., sensitivity analyses examine implications of key variables "all else equal" such as changing natural gas prices or the resource additions in a portfolio. Understanding how different potential futures and factors affect resource strategies, costs, emissions, and risks is the focus of this analysis.

Stochastic analysis will be used in addition to deterministic scenario and sensitivity analysis. Stochastic analysis helps PSE understand the impact on the risk and volatility of costs that different resource types may have on the company's long term portfolio.

The diagram below illustrates how PSE plans to perform the quantitative analysis for this 2019 IRP.

## Resource Planning Portfolio Analysis Process



### 2019 IRP CONTENT OUTLINE

The following is a draft outline of the 2019 IRP. PSE may revise the organizational structure based on results of analysis and IRPAG and TAG feedback through the planning process.

1. Executive Summary and Resource Plan
  - a. Electric Resource Plan
  - b. Gas Sales Resource Plan
  - c. Action Plans
  - d. Developing the Plan
  - e. Electric Plan
  - f. Electric: Results Across Scenarios/Sensitivities
  - g. Other Considerations

- h. Gas Plan
  - i. Gas Results Across Scenarios
- 2. Key Analytical Assumptions
  - a. Key Inputs
  - b. Scenarios/Sensitivities
  - c. Stochastic Assumptions
  - d. Input Matrices
  - e. Summary Table of Scenarios and Sensitivity Assumptions
- 3. Load Forecasts
  - a. Overview
  - b. Methodology: Electric and Gas, Energy and Peaks
  - c. Key Assumptions
  - d. Results: Load Forecasts
  - e. Sensitivities to Normal Energy Forecasts Examined—Possible Impacts of Climate Change
- 4. Electric Analysis
  - a. Electric planning environment, economic environment, policy requirements and influences, and resource considerations
  - b. Resource Needs
  - c. Resource Alternatives
  - d. Analytic Methodologies
  - e. Results
  - f. Key Findings and Insights
- 5. Gas Analysis
  - a. Gas planning environment, economic environment, policy requirements and influences, and resource considerations
  - b. Gas Resource Needs
  - c. Existing Resources
  - d. Resource Alternatives
  - e. Analytic Methodologies
  - f. Results
  - g. Key Findings and Insights
- 6. Delivery System Infrastructure Planning
  - a. System Overview
  - b. Infrastructure Investment Drivers
  - c. Planning Process
  - d. 2019-2029 Infrastructure Plans
  - e. Challenges and Opportunities

#### Appendices

- A. Public Participation
- B. Legal Requirements and Other Reports
- C. Environmental and Related Regulatory Matters
- D. Electric Resource Alternatives
- E. Demand Forecasting Models
- F. Regional Resource Adequacy Studies

- G. Wholesale Market Risk
- H. Operational Flexibility
- I. Regional Transmission Resource
- J. Demand-Side Resources
- K. Renewables
- L. Electric Analysis

# **PUGET SOUND ENERGY**

## **2019 IRP Work Plan**

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### **Appendix A Anticipated IRPAG and TAG Meetings**

## Draft IRP stakeholder meeting schedule

Meeting dates are tentative and subject to change.

Date	Group	Topic
May 30, 2018	IRPAG	<ul style="list-style-type: none"> <li>• IRP general process awareness</li> <li>• Charter development</li> <li>• Carbon discussion</li> <li>• Stakeholder concern discussion</li> </ul>
July 26, 2018	TAG	<ul style="list-style-type: none"> <li>• Electric resource costs</li> <li>• Work Plan</li> </ul>
August 28, 2018	IRPAG	Present on general awareness about and approach to and for considerations for: <ul style="list-style-type: none"> <li>• Electric resource costs</li> <li>• Load forecasts and preliminary power and gas prices and gas resource costs</li> <li>• Work plan</li> <li>• Stakeholder concerns</li> </ul>
September 25, 2018	TAG	Preliminary power and natural gas prices and natural gas resource alternatives and costs
October 11, 2018	IRPAG	Present on general awareness about and approach to and considerations for: <ul style="list-style-type: none"> <li>• Planning standards, effective load carrying capability (ELCC) and resource needs</li> <li>• Conservation</li> <li>• Sub-hourly flexibility</li> <li>• Stakeholder concerns</li> </ul>
October 30, 2018	TAG	Resource needs, resource adequacy modeling, and ELCC
November 13, 2018	TAG	Conservation
November 27, 2018	TAG	Transmission and distribution
December 11, 2018	TAG	Sub-hourly flexibility value of different resources
April 23, 2019	IRPAG	<ul style="list-style-type: none"> <li>• Resource needs</li> <li>• Stakeholder concerns</li> </ul>
February 12, 2019	TAG	Portfolio analysis results
May 21, 2019	IRPAG	Draft IRP
May 30, 2019	TAG	Draft IRP

# **PUGET SOUND ENERGY**

## **2019 IRP Work Plan**

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### **Appendix B Integrated Resource Plan Advisory Group Charter**

# **Integrated Resource Plan Stakeholder Advisory Group**

Draft Charter  
June 2018

This charter outlines the purpose and expectations for the Puget Sound Energy (PSE) Integrated Resource Plan Advisory Group (IRPAG). The IRPAG participants will review, provide feedback on, and affirm a revised version of this charter at their second meeting.

## **ABOUT THE INTEGRATED RESOURCE PLAN**

An Integrated Resource Plan (IRP) is a utility plan for meeting forecasted annual peak energy demand—plus some established reserve margin—through a combination of energy supply, conservation, and other demand-side resources.

Washington Utility and Transportation Commission (WUTC) requires PSE to submit an IRP on a biennial basis, consistent with WAC 480-100-238 and WAC 480-90-238. Every two years, a team of in-house economists, energy specialists, environmental advocates, demographers, and other experts develops a new IRP. PSE knows these forecasts will change as conditions change.

The IRP:

- Examines the many energy-resource options available to PSE, including the maximum amount of new energy supply PSE can acquire through energy efficiency
- Makes a thorough, objective assessment of the benefits, costs, and risks associated with each energy-supply option
- Analyzes the region's population and economic trends, including a forecast of PSE customers' natural gas and electricity needs two decades into the future
- Evaluates political and economic policies and trends and their potential impact on energy production, usage, and availability
- Assesses commercially available conservation, including load management, as well as assessing currently employed and new policies and programs needed to obtain the conservation improvements
- Considers resource cost, market volatility risks, demand-side resource uncertainties, resource dispatchability, resource effects on system operation, risks imposed on ratepayers, public policies regarding resource preference adopted by Washington state or the federal government, and cost of risks associated with environmental effects

## **PURPOSE OF THE IRPAG**

The IRPAG is an opportunity for the public to provide input on and contribute to the IRP. IRPAG meetings will be designed to facilitate the public sharing information with PSE about the IRP. IRPAG participants may provide input related to demand, public interest in conservation, and other IRP-related topics.

The following areas will be addressed in IRPAG meetings:

- Stakeholder areas of concern and interest
- Overview of the analytical framework
- Results of portfolio modeling

The IRPAG is an advisory body and does not make final decisions on the content of the IRP. In addition to the IRPAG, there will be a Technical Advisory Group (TAG). The TAG will have an opportunity to review IRPAG input and consider it in their feedback to PSE. In the interest of full transparency, IRPAG participants may observe, but not participate in TAG meetings.

PSE sent a letter invitation to all tribes in PSE's service territory to participate in the IRPAG or TAG as appropriate.

## **ROLES AND RESPONSIBILITIES**

IRPAG participants will:

- Participate in meetings between May 2018 and June 2019
- Represent their organization's interests, not their personal objectives, if attending on behalf of an organization
- Review background materials provided in advance of meetings
- Engage in positive, productive communication with other participants, facilitator, and project staff
- Communicate disagreement respectfully
- Provide advice and input on how PSE can engage other community members as applicable to IRP-related topics

The facilitator will:

- Provide all IRPAG participants with a meaningful opportunity to participate in discussions
- Remind IRPAG participants of their roles and responsibilities and the group's purpose
- Keep meetings focused on the agenda
- Work with the project team to prepare meeting agendas
- Start and end meetings on time, unless the IRPAG agrees by unanimous vote to extend the meeting time

The project team will:

- Provide any applicable background materials and presentations at [www.pse.com/irp](http://www.pse.com/irp) in advance of meetings to inform their input
- Translate concerns and interests from the IRPAG into IRP modeling and share them with the TAG; if an area of concern will not be addressed, the project team will explain why not
- Plan and develop background materials to support IRPAG understanding and engagement
- Share information to IRPAG participants so that they may provide informed input
- Provide clear information about how PSE makes decisions with the IRPAG input
- Be present and available at IRPAG meetings to answer questions and inform the discussion
- Coordinate meeting logistics
- Hold all meetings at transit- and ADA-accessible venues
- Provide call-in options for IRPAG participants who are unable to participate in person
- Summarize the outcomes of the IRPAG meetings in meeting summaries and distribute draft summaries to IRPAG participants for review within three weeks of the meeting
- Post final versions of the meeting summaries online at [www.pse.com/irp](http://www.pse.com/irp)

## MEETING GUIDELINES

- The facilitator will make it possible for all IRPAG participants to ask questions and provide comments that pertain to the agenda items being discussed.
- The facilitator will review the agenda at the beginning of each meeting for group agreement. The facilitator will take requests for additional agenda changes into consideration.
- Discussions will allow for respectful disagreement.
- Meetings will begin and end on time.
- At the meetings, IRPAG participants will:
  - Share the available speaking time
  - Focus on successfully completing the agreed-upon agenda
  - Avoid side discussions when others are speaking
  - Voice concerns and complaints at the meeting, not outside the meeting
  - Put cell phones on silent

## MEETING SUMMARIES

- The project team will prepare a written summary of the discussion and comments following each meeting.
- Meeting summaries will describe areas of agreement and disagreement and clarify where and why there is a disagreement. The meeting summaries will state all points of view clearly and fairly.
- The project team will post meeting summaries at [www.pse.com/irp](http://www.pse.com/irp) within two weeks of the meeting.

## COMMUNICATIONS

In the interest of streamlining communications, Michele Kvam (or her delegate), will liaise between the project team and the IRPAG. Outside of meetings, if an IRPAG participant would like to communicate with the rest of the group, they may send Michele an email ([michele.kvam@pse.com](mailto:michele.kvam@pse.com)) for distribution to the IRPAG. Michele may choose to bundle this email with other emails to the IRPAG.

IRPAG participants should not represent themselves as speaking for the IRPAG unless directed by the group to do so. IRPAG members should not represent themselves as speaking for PSE under any circumstances. This working rule in no way restricts individual IRPAG participants, in their capacity as community members, from interacting with elected officials, the media, or community organizations.

## PRELIMINARY MEETING SCHEDULE

Date	Content
May 30, 2018	<ul style="list-style-type: none"> <li>• IRP general process awareness</li> <li>• Charter development</li> <li>• Carbon discussion</li> <li>• Stakeholder concern discussion</li> </ul>
August 28, 2018	Present on general awareness about and approach to and for considerations for: <ul style="list-style-type: none"> <li>• Electric resource costs</li> <li>• Load forecasts and preliminary power and gas prices and gas resource costs</li> <li>• Planning standards, effective load carrying capability (ELCC), and resource needs</li> <li>• Stakeholder concerns</li> </ul>
October 11, 2018	Present on general awareness about and approach to and for considerations for: <ul style="list-style-type: none"> <li>• Planning standards, effective load carrying capability (ELCC), and resource needs</li> <li>• Conservation</li> <li>• Transmission and distribution</li> <li>• Sub-hourly flexibility</li> <li>• Stakeholder concerns</li> </ul>
April 23, 2019	<ul style="list-style-type: none"> <li>• Resource needs</li> <li>• Stakeholder concerns</li> </ul>
May 21, 2019	<ul style="list-style-type: none"> <li>• Draft IRP</li> </ul>

# **PUGET SOUND ENERGY**

## 2019 IRP Work Plan

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### Appendix C Technical Advisory Group Charter

# Integrated Resource Plan Technical Advisory Group

Draft Charter  
June 2018

This charter outlines the charge of and expectations for the Puget Sound Energy (PSE) Integrated Resource Plan Technical Advisory Group (TAG). The TAG members will review, provide feedback on, and affirm this charter at their first meeting.

## ABOUT THE INTEGRATED RESOURCE PLAN

An Integrated Resource Plan (IRP) is a utility plan for meeting forecasted annual peak energy demand—plus some established reserve margin—through a combination of energy supply, conservation, and other demand-side resources.

Washington Utility and Transportation Commission (WUTC) requires PSE to submit an IRP on a biennial basis, consistent with WAC 480-100-238 and WAC 480-90-238. Every two years, a team of in-house economists, energy specialists, environmental advocates, demographers, and other experts develops a new IRP. PSE knows these forecasts will change as conditions change.

The IRP:

- Examines the many energy-resource options available to PSE, including the maximum amount of new energy supply PSE can acquire through energy efficiency
- Makes a thorough, objective assessment of the benefits, costs, and risks associated with each energy-supply option
- Analyzes the region's population and economic trends, including a forecast of PSE customers' natural gas and electricity needs two decades into the future
- Evaluates political and economic policies and trends and their potential impact on energy production, usage, and availability
- Assesses commercially available conservation, including load management, as well as assessing currently employed and new policies and programs needed to obtain the conservation improvements
- Considers resource cost, market volatility risks, demand-side resource uncertainties, resource dispatchability, resource effects on system operation, risks imposed on ratepayers, public policies regarding resource preference adopted by Washington state or the federal government, and cost of risks associated with environmental effects including emissions of carbon dioxide

## CHARGE OF THE TECHNICAL ADVISORY GROUP

TAG members have technical expertise in energy resourcing, transmission, utilities, conservation, and economics. They consider stakeholder input and other information sources in providing recommendations to PSE. TAG members represent a balance of industry and conservation expertise.

The members of the TAG are charged with providing input on:

- Conservation
- Electric resource costs and performance assumptions
- Natural gas resource costs and performance assumptions
- Resource adequacy modeling and effective load carrying capability (ELCC)
- Local system planning: transmission and distribution
- Portfolio analysis
- Sub-hourly portfolio flexibility analysis
- Other topics that may emerge as part of the IRP process

In addition to the TAG, there will be an Integrated Resource Plan Advisory Group (IRPAG). The TAG will have an opportunity to review IRPAG input and consider it in their feedback to PSE. In the interest of full transparency, IRPAG members may observe, but not participate in TAG meetings.

## MEMBERSHIP

Membership in the TAG is by invitation only and at PSE's discretion. PSE will select TAG members based on defined criteria, including:

- Competencies or work experience in one or more items for input in the section above
- Demonstrated ability to contribute productively in a group setting

The following organizations will be invited to nominate specific individuals to participate in each TAG. Individual members may, with prior PSE agreement, send a proxy to a TAG meeting.

- Alliance of Western Energy Consumers
- Office of the Attorney General Public Counsel Unit
- Climate Solutions
- County and local governmental agencies from throughout PSE's service territory
- Individual or groups of tribes from throughout PSE's service territory
- Invenergy
- The NESCO Group
- Northwest Energy Coalition
- Northwest Gas Association
- Northwest Pipeline
- Northwest Power Consulting
- The Northwest Power and Conservation Council

- Orion Renewable Energy Group
- Puget Sound Energy Conservation Resource Advisory Group (CRAG)
- Renewable Energy Coalition
- Renewable Northwest Project
- The Sierra Club
- UniEnergy Technologies, LLC
- The Washington State Department of Commerce
- Washington Utilities and Transportation Commission

In addition to the organizations listed above, PSE will consider individuals and representatives from other organizations provided they have technical competencies and experience in the material addressed by the TAG.

## **ROLES AND RESPONSIBILITIES**

TAG members will:

- Serve as subject-matter experts
- Participate in TAG meetings between July 2018 and June 2019
- Review background materials in advance of meetings, including stakeholder input from IRPAG meetings
- Engage in positive, productive communication with other TAG members, facilitator, and project team members
- Review and provide written comments on the draft IRP
- Communicate disagreement respectfully

The facilitator will:

- Create meeting structures and lead meetings in ways that provide all TAG members a meaningful opportunity to participate in discussions
- Remind TAG members of their charge, roles, and responsibilities
- Keep meetings focused on the agenda
- Work with the project team to prepare meeting agendas
- Start and end meetings on time, unless the TAG agrees by unanimous vote to extend the meeting time

The project team will:

- Provide background materials, presentations, and data to TAG members in advance of meetings to inform their input
- Be present and available at TAG meetings to answer questions and inform the discussion
- Coordinate meeting logistics
- Hold all meetings at transit- and ADA-accessible venues
- Provide call-in options for TAG members who are unable to participate in person
- Summarize the outcomes of the TAG meetings in meeting summaries and distribute draft summaries to TAG members for review within three weeks of the meeting
- Post final versions of the meeting summaries online

## MEETING GUIDELINES

- The facilitator will make it possible for all TAG members to ask questions and provide comments that pertain to the agenda items being discussed.
- Discussions will allow for respectful disagreement.
- Meetings will begin and end on time. If agenda items cannot be completed on time, the TAG can decide by majority agreement to extend the meeting.
- At the meetings, TAG members will:
  - Share the available speaking time
  - Focus on successfully completing the agreed-upon agenda
  - Avoid side discussions when others are speaking
  - Voice concerns and complaints at the meeting, not outside the meeting
  - Put cell phones on silent
- Persons who are not members of the TAG may attend meetings as observers, but may not participate in group discussion and deliberations unless called upon by the facilitator.
- The public will be able to attend the meetings.

## MEETING SUMMARIES

- The project team will prepare a written summary of the discussion and comments following each meeting.
- Meeting summaries will describe areas of agreement and disagreement and clarify where and why there is a disagreement.
- The meeting summaries will state all points of view clearly and fairly.
- PSE will distribute a draft meeting summary to TAG members for review within two weeks of the meeting.
- The project team will post final versions of the meeting summaries online.

## COMMUNICATIONS

In the interest of streamlining communications, Michele Kvam (or her delegate), will serve as the arbiter of communications between the project team and the TAG. Outside of meetings, if a TAG member would like to communicate with the rest of the group, they may send Michele an email ([michele.kvam@pse.com](mailto:michele.kvam@pse.com)) for distribution to the TAG. All TAG materials will be available online at [www.pse.com/irp](http://www.pse.com/irp).

TAG members should not represent themselves as speaking for the TAG unless directed by the group to do so. TAG members should not represent themselves as speaking for PSE under any circumstances. This working rule in no way restricts individual TAG members, in their capacity as community members, from interacting with elected officials, the media, or community organizations.

## PRELIMINARY MEETING SCHEDULE

Meeting	Content
Meeting #1 July 26, 2018	<u>Electric Resource Costs</u> <ul style="list-style-type: none"> <li>• Present overview of updated IRP public and stakeholder participation process</li> <li>• Review outcomes of stakeholder input from IRPAG kickoff meeting (May 30, 2018)</li> <li>• Present how resource costs are used in the IRP</li> <li>• Review draft cost results by resource type and provide feedback</li> </ul>
Meeting #2 Mid- to late September 2018	<u>Preliminary Power and Natural Gas Prices and Natural Gas Resource Alternatives and Costs</u> <b>F18 Load Forecast</b> <ul style="list-style-type: none"> <li>• How the load forecast is used in the IRP</li> <li>• Temperatures utilized</li> <li>• Methodology and challenges</li> <li>• Results</li> </ul> <b>Power Prices</b> <ul style="list-style-type: none"> <li>• Present methodology concerning development of power prices</li> <li>• Present draft power prices</li> </ul> <b>Gas Prices</b> <ul style="list-style-type: none"> <li>• Present methodology concerning development of power prices</li> <li>• Present draft power prices</li> </ul> <b>Gas Resource Costs</b>
Meeting #3 Late October 2018	<u>Resource Needs, Resource Adequacy Modeling, and Effective Load Carrying Capability (ELCC)</u> <ul style="list-style-type: none"> <li>• Review updated electric and gas utility load forecast results and methodology</li> <li>• Review resource adequacy models and analytical processes, along with results</li> <li>• Review ELCC analysis for intermittent resources, energy limited resources, and short-term wholesale market</li> <li>• Review reexamination of PSE's gas planning standard and forecast of gas resource needs</li> <li>• Review electric resource needs: capacity, energy, and renewable</li> </ul>
Meeting #4 Mid-November 2018	<u>Conservation</u> <ul style="list-style-type: none"> <li>• Presentation of draft potential assessment results</li> </ul>

Meeting	Content
Meeting #5 Late November 2018	<u>Transmission and Distribution</u> <ul style="list-style-type: none"> <li>• Review system planning assumptions</li> <li>• Review T&amp;D stakeholder process</li> </ul>
Meeting #6 Mid-December 2018	<u>Sub-Hourly Flexibility Value of Different Resources</u> <ul style="list-style-type: none"> <li>• Overview of how results of this analysis feed into the portfolio modeling</li> <li>• Sub-hourly analytical framework, models, and key assumptions</li> <li>• Results of analysis for each alternative examined</li> </ul>
Meeting #7 Early to mid- February 2019	<u>Portfolio Analysis Results (Gas and Electric)</u> <ul style="list-style-type: none"> <li>• Detailed overview of electric and gas utility portfolio models</li> <li>• Results of portfolio optimization analysis for all scenarios</li> <li>• Overview and results of stochastic risk analysis</li> <li>• Detailed overview of gas portfolio model</li> <li>• Results of optimization analysis for all scenarios</li> <li>• Next Steps</li> </ul>
Meeting #8 Mid- May 2019	<u>Draft IRP</u> <ul style="list-style-type: none"> <li>• Present high level results of the 2019 IRP</li> <li>• Collect feedback on the draft and request any comment within two weeks of the publication of the draft</li> </ul>