Integrated Grid Planning

Solution Evaluation & Optimization Working Group Meeting

September 20, 2019
Agenda

♦ Welcome & Introductions
  ♦ WG Ground Rules

♦ Review Solution Evaluation & Optimization Working Group (SEOWG):
  ♦ Role & Objectives
  ♦ Deliverables
  ♦ Schedule

♦ IGP Planning and Procurement Process Discussion

♦ Next Steps
Ground Rules

♦ Chatham House Rule will apply – no personal or organizational attribution will be made to any comments/feedback provided during the meeting by any participant nor in written documentation.

♦ Working group meetings, and other information exchanges are intended solely to provide an open forum or means for the expression of various points of view in compliance with antitrust laws.

♦ Under no circumstances shall engagement activities be used as a means for competing companies to reach any understanding, expressed or implied, which tends to restrict competition, or in any way, to impair the ability of participating organizations to exercise independent business judgment regarding matters affecting competition or regulatory positions.

♦ Proprietary information shall not be disclosed by any participant during any industry engagement meeting or information exchange. In addition, no information of a secret or proprietary nature shall be made available to industry engagement participants.

♦ All proprietary information which may nonetheless be publicly disclosed by any participant during any industry engagement meeting or information exchange shall be deemed to have been disclosed on a non-confidential basis, without any restrictions on use by anyone, except that no valid copyright or patent right shall be deemed to have been waived by such disclosure.
The purpose of the Solution Evaluation and Optimization Working Group is to **identify needed grid services** and review and make recommendations regarding the transparent evaluation and optimization method used to fairly assess proposed solutions from the solution sourcing procurement process.

- Identify and define additional capacity, ancillary and T&D non-wires alternative services (collectively “Grid Services”) in support of IGP Solution Sourcing for the 1st IGP cycle.

- Develop a **transparent evaluation method** of assessing the technical fit of proposed solutions from the “3Ps” – pricing, programs, and procurement on a comparative apples-to-apples basis. This will require the ability to assess combinations of solutions to address an identified need if solutions meeting partial requirements are allowed.

- Develop a **transparent optimization method** to assess any combined value for proposed solutions that potentially address more than one identified resource/grid need and in relation to other solutions addressing discrete needs identified.

- For each evaluation method:
  - Discuss how contributions to RPS and reductions in greenhouse gas emissions affect the value of a proposed solution.
  - Discuss how each evaluation method may be informed by Soft Launch and provide learnings to other Market WG activities.

- Foster collegial, balanced discussion to achieve shared understanding of the competitive procurement process, and to build common ground through iterative discussion and feedback.
SEOWG Deliverables & Schedule

1. Description of the methodology to be used to identify capacity, energy, ancillary service needs
   ➢ Due 1/8/2020

2. Description of the evaluation methodology to be used for the initial system market test portfolio (RFP Part 1) and specifically how potential resource acquisitions will impact transmission system needs & Non-wires opportunities
   ➢ Due 1/8/2020

3. Description of the evaluation methodology for T&D Non-wires RFP
   ➢ Due 2/12/2020

4. Description of the evaluation methodology to be used for system resources in RFP Part 2
   ➢ Due 2/12/2020

5. Description of the optimization methodology to be used for proposed solutions that may address multiple resource/grid needs
   ➢ Due 2/12/2020
SEOWG Deliverables

♦ Deliverables for each step
  ♦ Drivers
  ♦ Inputs
  ♦ Outputs
  ♦ Methodology
Review of Previous SEOWG Meeting

♦ Review of IGP process and working group’s role
♦ Panel discussion of various utilities presenting their methodologies and lessons learned for NWA DER solicitation evaluation and planning
♦ Discussion on evaluating proposed solutions that have non-uniform contract term lengths and in-service dates
♦ Initial discussion using a Soft Launch NWA needs example on how to evaluate possible bids
Today’s Objective

- Overview of the Resource & Ancillary Services Needs and Initial Portfolio Evaluation process steps
  - Purpose & Drivers
  - Inputs
  - Outputs
  - Methodology

Today’s discussion will be used to develop a detailed annotated outline describing the proposed methodologies and processes. This outline will be distributed after the meeting for stakeholder review and further feedback and will be the basis for follow-on discussion via conference call.
Identifying and Quantifying System Needs
Resource and Ancillary Service Needs

Purpose & Drivers

- Identify the quantity and timing of future capacity, energy and ancillary services ("CEAS") needed under forecast assumptions
- Solve for needs determined by planning criteria, RPS targets, environmental compliance
- Planned assumptions to include the Stage 2 RFP final award group to reduce uncertainty in future needs
Resource and Ancillary Service Needs

**Inputs**

- Forecasted assumptions (sales, DER, EE, EV, fuel, resource cost)
- Planned assumptions (Filed and approved for Stage 1 RFP projects, Stage 2 final award group)
- Unit characteristics (min/max capacity, heat rate, ramp rate, etc.)
Resource and Ancillary Service Needs

**Outputs**

- Quantity and timing of resources (capacity and energy) and ancillary services (regulating reserve, ramp reserve, FFR) in 5 year increments through 2045
- CEAS needs are developed in a technology and resource capability agnostic manner
- Informs RFP Part 1 procurement needs:
  - Allows bidders to indicate interest in projects with short development times that may meet 2025 needs
  - Allows bidders to indicate interest in projects with longer development time for procurement needs beyond first 5 years
Resource and Ancillary Service Needs

Proposed Methodology

♦ Determine required capacity, energy, and residual regulating reserve and ramp needs in a two part process

1. Initial assessment using a capacity expansion model in 5 year increments
2. Portfolio verification using an hourly production simulation for all years in the planning horizon

♦ Results of the production simulation to be analyzed for residual FFR needs
Initial Portfolio Evaluation Process
Initial Portfolio Evaluation

Purpose & Drivers

- Create portfolio of potential projects to further assess interconnection needs & NWA opportunities at the transmission level
- Identify proposed project locations
- Check that projects are compliant with RFP Part 1 qualifications and requirements
Initial Portfolio Evaluation

Inputs

♦ Same inputs as the resource and ancillary services needs process step

♦ Amount, costs, operating characteristics, and timing of future, incremental resources and services replaced by proposed amounts, timing, indicative costs, proposed services (CEAS) and proposed operating characteristics submitted in response to RFP Part 1
Initial Portfolio Evaluation

Outputs

♦ Representative portfolios of potential resources and ancillary services provided by market test
  ♦ Evaluate portfolios that consider resources that can provide multiple services (i.e. CEAS)
  ♦ Initial indication of the potential for mix of proposed resources that can meet forecast CEAS needs at lowest evaluated cost

♦ Indication of the market’s willingness to fulfill the need:
  ♦ May be more or less than the amount needed in the time that it is required
  ♦ Market interest and indicative costs for projects that may address future needs beyond the current procurement cycle also informs the forecast in the next IGP cycle
  ♦ Location of proposed projects informs analysis of potential transmission system impacts, resultant needs and potential Non-Wires Alternative opportunities
Initial Portfolio Evaluation

Proposed Methodology

♦ Using similar approach as CEAS needs step
♦ Two part process using capacity expansion model with verification using a production simulation
♦ Production simulation used to inform transmission needs for the resource portfolio
Resource & Ancillary Service Needs:

- We are proposing identifying CEAS needs in 5 year increments over a 25 year planning horizon (developed at the start of each IGP cycle)
  - Is the proposed 5 year increment appropriate?
Discussion

- Initial Portfolio Evaluation:
  - What are your thoughts on evaluating resource portfolios that include individual resources that can provide multiple services (i.e. CEAS)?
  - How should long lead time projects with operation dates beyond first 5 years be considered in the initial evaluation of proposals submitted in RFP Part 1?
Next Steps

♦ Meeting notes and the slide deck will be posted on the IGP website

♦ Use the discussion from today’s meeting to draft an outline for further comment
  ♦ To be emailed to working group attendees
  ♦ Feedback will be reviewed at the next SEOWG meeting

♦ Please send any additional comments on today’s discussion to:
  ♦ IGP@hawaiianelectric.com and Christopher Lau (christopher.lau@hawaiianelectric.com)
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<td>Review of new evaluation and optimization methods for 1\textsuperscript{st} IGP cycle</td>
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Mahalo!