

Distribution Planning and Grid Services Joint Working Group Meeting 2: IGP Soft Launch

March 26, 2019

8:00 am – 1:30 pm

ASB 1 and WebEx

Attendees

Andrew Schwartz, Tesla

Benjamin Lee, SCE

Brandon Tolentino, SCE

Dana Cabbell, SCE

Carl Wilkins, Quanta

Carlito Caliboso, Yamamoto-Caliboso

David Morris, Yamamoto-Caliboso

Chris DeBone, Hawaii Energy Connection

Jack D., ConEd

Damian Sciano, ConEd

Dale Murdock, Dale A Murdock Consulting

Daniel Haughton, APS

Daniel Lewis, SolarEdge

Corinne Chang, HE

Amanda-Joy Viramontes, HE

Jon Shindo, HE

Alan Hirayama, HE

Marc Asano, HE

Rich Barone, HE

Nohea Hirahara, HE

Lisa Giang, HE

Blaine Hironaga, HE

Christopher Kinoshita, HE

Christopher Lau, HE

Randal Lui-Kwan, HE

Paul De Martini, Newport Consulting

Keith Block, Hawaii Energy

Caroline Carl, Hawaii Energy

Dave Parsons, PUC

Tad Glauthier, PUC

Gina Yi, PUC

Maria Tome, PUC

Samantha Ruiz, PUC

Steven Rymsha, SunRun

Nathan Wyeth, SunRun

Jesse Bryson, Advanced Microgrid Solutions

Nguyen Le, Shifted Energy

Jerry Mount, Fair Horizon Energy Capital

Douglas Staker, Enel X

Jim Baak, STEM

Jason Prince, Rocky Mountain Institute

Mandy Ishii

Agenda

8:00 – 8:15 am	Introductions
8: 15 – 9:15 am	Panel 1
	Dana Cabbell, Southern California Edison (20 min via webex)
	Jesse Bryson, Advanced Microgrid Solutions (20 min in-person)
	Panel Q&A (15 min)
9:15 – 10:15 am	Panel 2
	Damian Sciano, Consolidated Edison (20 min)
	Douglas Staker, Enel X (20 min)
	Panel Q&A (15 min)
10:15 – 10:30 am	Break
10:30 – 12:05 pm	Panel 3
	Chris DeBone, Hawaii Energy Connection (20 min in-person)
	Daniel Haughton, Arizona Public Service (20 min via webex)
	Jim Baak, STEM (20 min via webex)
	Nathan Wyeth, Sunrun (20 min in-person)
	Panel Q&A (15 min)
12:05 – 1:30 pm	Panel 4
	Jason Prince, Rocky Mountain Institute (20 min via webex)
	Q&A (5 min)
	Working Lunch: Working Group Discussion of Learnings

Notes for this Meeting

Notes provided for this meeting will highlight key points and takeaways from each speaker's presentation, summarize the Q&A sessions and the discussion of learning which occurred at the end of the meeting. For more information from each presentation, please refer to the slides posted on the IGP Public Website.

Introduction

- Lessons learned from today will help to structure the upcoming NWA RFP.
- May continue Soft Launch WG meetings to discuss NWAs more broadly. This is to address questions and concerns such as:
 - Learning more about other NWA opportunities
 - Insight into hosting capacity
 - Looking more at transmission and distribution needs beyond peaking capacity
- Market concerns such as how tariffs will compliment NWA solicitations will be addressed in other WGs.

Panel 1

Dana Cabbell, Southern California Edison, “Selecting Deferral Projects, DER Operational Requirements, and Smart Inverters to Meet Grid Services”

- Shared distribution needs process for all California utilities.
- Initial Deferral Screens
 - Technical: capacity, voltage, reliability and resiliency
 - Timing: evaluation, procurement, operational requirements, and consideration for PUC review. Projected need 4-5 years in the future.
- SCE 2018 Prioritization Metrics
 - Cost Effectiveness – cost-per-MWh of traditional capital projects
 - Forecast Certainty – higher priority for nearer term needs with less historical volatility
 - Market Assessment – hosting capacity within project footprint provides sufficient opportunity to defer need
- Review of Joint IOU Smart Inverter White Paper
 - Six key messages around
 - Location and volume
 - Timing of response
 - Availability
 - Coordination
 - Grid Modernization
 - Standards
- Review of underlying technical and operational requirements of the Newbury 66/16kW Substation and Circuits NWA need. Includes GIS map and peak hourly MW need chart.

Jesse Bryson, Advanced Microgrid Services

- AMS is a Software as a Service (SaaS) company that uses an AI platform to enable trading of energy assets in wholesale energy markets.
- Review of their 50 MW local capacity requirement (LCR) project with SCE.
 - 2.2 GW need opened after closure of the San Onofre gas plant.
 - AMS selected as 1 of 3000 offers.
 - Created a virtual power plant (VPP) with Tesla Powerpacks behind the meter of commercial and industrial customers.
 - Optimize batteries to reduce demand charges and participate in energy arbitrage with time of use rate.
 - Calls from utility can be 4 hours per day. Anytime from 8am – 6pm on weekdays
 - Customers received benefits through reduced demand charges and energy arbitrage/TOU rate
 - 10-year contract with host customer.
 - Lease payments to aggregator company.

- Payback and capital financing works with these contract terms and requirements.
- Lessons Learned:
 - Flexibility in the procurement process was critical to success.
 - Started with standard form contracts and templates, but allowed for negotiation of unique needs and services being provided. Especially since different providers were offering unique services or tariffs.
 - Close coordination between procurement and T&D engineers needed to prevent local constraints on the T&D system.
 - Process created a battle over customers.
 - All the service providers were trying to recruit the same customers for their services. This created customer confusion.
 - Requires significant upfront customer education and a more customer friendly procurement process.
 - Suggest partnering with specific vendor(s) and working together to solve the issue and meet with customers. Select vendor / service provider first and then find customers.
 - Consideration for regulatory approval timelines. CPUC approvals took 2 years.

Q&A

- Customer recruitment issues
 - C&I customers only (for AMS)? Yes. At the time, there were no residential solutions.
 - Currently, there is one solution targeting R customers. Anticipate the same challenges to occur.
 - C&I customers usually have account representatives which helps with education and outreach.
- More details on 10-year financing
 - Customer vs. utility payments in total for financing
 - Dependent on value from bill savings
 - For example, stacking value from peak reduction plus better tariffs will result in better value.
 - Work with financier on performance metrics and bill savings.
 - (In California) more success with solar + storage to take advantage of SGIP and ITC credits.
- Communications between utilities and customer assets?
 - Operational challenges with communications between DERs and utilities.
 - Currently modeling protocols off traditional asset standards such as DNP 3.0.
 - California is moving from DNP 3.0 to IEEE 2030.5, a new standard between utilities and DER.
- Procurement process and timelines

- From launch to execution less than 1 year; approximately 9-10 months.
- More regulatory work done up-front to structure the RFO.
- Initial regulatory approval estimated to take 1 year.
 - Then decision was appealed which led to a rehearing.
 - Decision then went to court but was rejected.
 - Total of 2 years for the approval process.
- Bids were submitted without securing customers.
- Three revenue streams to do the NWA project: utility contract for services, lease payment (i.e., customer bill savings), and incentives.

Panel 2

Damien Sciano, Consolidated Edison, “Con Edison Distributed Planning and the use of NWS”

- As part of REV, need to describe how planning works and how DERs will be integrated.
- Observing an overall flattening of system load growth
 - Preparing for EV growth, which will open more opportunities for NWAs.
 - NWA could be less risky, especially if load decreases.
 - Able to make more granular investments before having to commit to a large investment like a new substation.
 - Other alternatives are always considered first, such as, reconfigure circuits, increase transformer cooling or upgrade components, or upgrade conductors.
- DER penetration at 3% and projected to go to 5% in the near-term.
- NY BCA Handbook describes BCA methodology.
- Network (distribution system) configuration results in more benefit at the substation level rather than co-locating at load centers.
- Go to www.coned.com/nonwires for listing of solicitation opportunities.
- Hosting Capacity Maps displays NWA layer.
- Lessons learned from the Brooklyn-Queens Demand Response (BQDM) deferral project
 - Screen bidders to make sure they can deliver.
 - Create contractual milestones. i.e. need to have customer agreements in place and have the ability to install equipment.
 - Performance incentives and penalties – penalty from one bidder could be used as incentive to another.
 - Be descriptive, not prescriptive in the contract RFP. RFP should describe what is needed but should also be technology agnostic.
 - Diversify the portfolio.

Douglas Staker, Enel X

- Need to evolve rate design to incentivize solutions.

- For example, move from the typical monthly peak demand charge to a daily standby charge plus day-ahead hourly needs.
 - Daily demand charge reduction for load shaping, especially when not called to respond to a contingency event.

Q&A

- Some consideration for procuring / developing more (reserve margin) around what the need might be.
 - May oversubscribe to make sure capacity needs can be met.
 - With the BQDM project, continued to procure resources within a portfolio. For example, pursue energy efficiency first since it is generally the most readily available resource while working on larger procurements.
- Working towards DERMS that will help contribute to edge of grid voltage and VAR support. Effectiveness is dictated by penetration levels.
- Regarding lengths of contracts, share tips for success from utility and developer perspectives.
 - PPAs for distributed generation and storage are generally 10 years.
 - Want projects to persist for 10 years to align with the planning period and to have the ability to count on those projects for a length of time.
 - From the developers perspective, with a 10 year contract, able to get lower rate (from financiers). 10 years seems to be the right blend.

Panel 3

Chris DeBone, Hawaii Energy Connection, “Hawaii Energy Connection Demonstration Phase Project for Provision of Grid Services Using Demand-Side Resources”

- Targeted three grid services
 - Regulating reserves
 - Fast frequency response (FFR)
 - Capacity / load shift
- Deployed assets on existing DER customers
 - Residential customers
 - Installed 5kW battery per customer. 12-25 kWh each.
 - AC-coupled Iguana battery with existing DER system.
 - Deployed E-GEAR energy management system (EMS).
 - Cloud-based monitoring
 - Autonomous, local control
- Presentation shows details on testing protocols and results of performance for the targeted services.
- Lessons Learned
 - Customer internet is not a reliable source of communication.

- Issues with customer's interest (latency due to competing needs such as steaming media) makes customer internet unreliable for grid services that require fast response time.
- Grid services that are not autonomous require good communications. If the service being provided is autonomous (i.e. TOU or day-ahead scheduling), may be able to use customer wi-fi.
- Anticipate that communications to DER systems will be an issue for the industry for a while.
 - Additional feedback: PGE are experiencing similar communications issues with their residential DER customers.
- Reserve grid services must be available 24/7. For example, if a battery is to provide FFR, it needs to keep some reserve charge available in case of an event.

Jim Baak, STEM, "Using AI to Unlock Energy Storage Value for Grid Services"

- For bidders, good data and information about the need are key. Need detailed info on load, load shapes, etc.
- Bidders prefer 10 year contracts. 1-2 year contracts make it difficult to sign up customers.
- Need reasonable and consistent performance measurement and evaluation.
 - Evaluate based on capacity actually deployed rather than contracted capacity to account for delays due to things beyond developers control
- Common-sense rules for dual participation/incrementally
 - Provide appropriate compensation for Value-of-Service provided.
- Reasonable metering and interconnection requirements
 - Length of time for interconnection
 - Export vs. non-export rules
 - Allow storage to do storage controls (internal) instead of net-meter controls. Prefer to do software / firmware controls.
- Avoid baselines when possible.
 - Commonly used for DR programs. Prefer using direct metering for storage.
- Fire/Building code restrictions will limit amount of storage deployed, especially indoors and in the residential portfolio.
- Evaluate portfolio of DER rather than individual resources.

Daniel Haughton, Arizona Public Service, "APS DER and Non Wires Alternative"

- APS interconnects 1400 DER applications / month.
 - Anticipate 4100 MW of DER by 2032 as part of their latest IRP update.
 - Currently at 1030 MW customer DER and 769 MW utility-scale renewables.
- Shared background on Punkin Center NWA.
 - Distribution line deferral.

- 20 miles of conductor to a remote location.
- Radial line with no adjacent feeders.
- Primarily residential loads with loads concentrated at the end of line
- NWA Solution – installed 2 MW, 8 MWh battery at load center.
- Lessons Learned
 - Procurement
 - Understand and define specific requirements such as size, duration, configuration, and validation and testing protocols.
 - Look for long-term sustainable solutions
 - Planning and Operations
 - Need to plan to operate through abnormal and emergency conditions with loss of NWA solution. i.e. what happens when you have abnormal conditions such as faults?

Nathan Wyeth, SunRun, “Residential Solar + Storage for Non-Wire Alternatives”

- Residential storage can be fully dispatchable. i.e. for ramp rate reduction and peak shaving, can be aggregated to deliver desired outcome. Not necessary to be a customer tariff to keep it simple for the customer.
- Large impact per home. Typical self-consumption is 18 kWh. Could have 5kW per home to be aggregated upwards.
- Duration
 - Can be a long duration solution. i.e. 12-hour load served with excess solar and energy storage discharged till midnight.
- More data shared will result in better responses from vendors.
 - Share 8760 data
 - Accurate granular GIS maps
 - Show drivers for load forecasts
 - Describe grid topology
 - Better to show hour-by-hour MW need in a table format to help with dispatch modeling instead of a visual graph that needs to be estimated by eye.
- Better to target assets for grid service programs as they are deployed for DER customers.
 - Avoid modifying the contract later. Customer may not be interested in modifying their contract or system later.
- Coordinate with aggregators to manage complexity.
 - Levelize costs to customers
 - Coordinate modular needs stacking especially for residential customers.

Q&A

- Has the cost per kWh of a service been easy to communicate to customers?

- As an alternative to paying based on performance per customer, do as a bonus payout each year levelized across all customers in the aggregation base.
- Why is cell signal the way to go? What about bandwidth issues?
 - ACG signal is not bandwidth heavy.
 - Need reliability since pinging every x-seconds.
- Experience with customer wi-fi availability and reliability?
 - With residential systems, customers lose interest over time and do not maintain their communications.
 - With commercial systems, most systems are local autonomous.
- How would NWAs address long duration needs such as a 10 hour solar plus evening peak, especially on cloudy days?
 - Most solutions are in the 2-4 hours. But could add more storage capacity and do a portfolio dispatch mix to achieve longer term duration.

Panel 4

Jason Prince, Rocky Mountain Institute, “IGP Soft Launch – Best Practices for NWS RFPs and Contracting”

- Conducted survey of NWA RFP design and contracting practices.
- Key Findings
 - RFP design and process
 - Get developer feedback
 - Technically acceptable and cost-effective bids. Getting as many bids as possible is better.
 - Cross-section of RFP contracts
 - Existing templates can be modified
 - Refer to RMI’s NWA Playbook
- Developing NWA RFPs
 - Process
 - Pre-screen vendors based on commercial readiness
 - Partner with other providers to give a comprehensive solution. Utility could help facilitate vendor partnerships.
 - Communicate to all bidders why they were or were not selected to go forward.
 - Technical
 - Data rich descriptions
 - Maps and charts
 - Clearly articulate the problem to solve
 - Include customer demographics and load profiles. Mix of C, I and R in the area, area density, etc.
 - Solution performance attributes

- Establish and communicate clear solution evaluation criteria up front. i.e. what is going into the BCA with clear calculations and qualitative metrics.
 - Address incrementing and avoid double-counting.
 - Pro-forma contracts with reasonable allocation of risks.
 - Performance guarantees need to be in place but can be flexible.

Q&A

- Big numbers for NWAs on a small geographic section
 - Diversity in accounts is a benefit. Smooth out risks by using technology diversity.
- Lines blurred between integrator and developer
 - This is common. Does the utility want one entity that provides turnkey solutions vs. the utility as the integrator with solutions from multiple developers?
- Portfolio Evaluation – how different utilities perform technical and economic evaluation?
 - How to screen portfolio and bids to get a manageable amount of bids?
 - How to evaluate single opportunities vs. a portfolio of opportunities?
 - Would need to have optimization software to do “integrator of integrators”.
 - Evaluation is still an art, no known software that can do this. Ideally you would have an optimization software that can evaluate every combination of bids.
 - Refer to:
 - NY BCA Handbook
 - Rhode Island BCAs

De-Brief Session and Key Takeaways

- Access to EPRI documents referred to in today’s presentations?
 - Most of the reports require an EPRI subscription. The California communications report is public.
- Conveying cost of wires infrastructure to understand what is competitive?
 - May put in a number to beat (avoided cost number) in Phase 2 RFPs. Need to understand what is being displaced and its value.
- What are the next steps leading up to the Soft Launch RFP release?
 - Meeting #3 will go over the technical needs.
 - Meeting #4 will be a RFP template review and pre-bidders conference.
 - Then RFP will be released and a Bidders Conference will be held.
- Send information in of other experiences and insights with NWAs to us (IGP email).
- Intend to have contract with the RFP release.
 - Plan to release draft RFP and draft contract for review in preparation for the May release meetings and date.
- Reiterating that the Soft Launch is a demonstration.

- This is being done to learn and take lessons forward through the IGP Process. This RFP is not the final going forward.
- Themes and Commonalities
 - Standards and communications, cybersecurity – these will need attention going forward.
 - Interconnection process – how do we align these procurements with interconnection considerations?
 - APS provided good maps of better places to connect with better NWA feasibility.
 - Should continue to look at standards going forward.
 - Simplified structure for DEMS to communicate with DR.
 - Continue to evolve this and leverage communication protocols from industry.