White Paper

# Procuring Distribution Non-Wires Alternatives: Practical Lessons from the Bleeding Edge

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## Shareables

- We see growing industry interest in distribution non-wires alternatives (NWA) that can reduce costs, improve reliability, and provide system benefits.
- Utilities are trying to work out critical commercial and contract issues that can make the difference between NWA success and failure.
- Utilities can get an edge by leveraging emerging ideas around issues like sample pro forma agreements, coordination with other tariff programs, trigger/dispatch and notification requirements, and others.

## Executive Summary

Utilities, regulators and other industry participants are increasingly interested in distribution-level non-wires alternatives (NWA). When deployed in certain grid areas, NWA can yield benefits to distribution utilities in the form of "deferred/avoided distribution capital, improved voltage management, improved reliability and resilience, and reduced losses."[1] This means that NWA have the potential to decrease overall cost and rate pressure, help achieve reliability targets, and improve program effectiveness by channeling distributed energy resources (DERs) to areas of the system where they provide net benefits (as opposed to the essentially random DER deployment that occurs under most tariff structures currently).

[1] Paul De Martini, Dale Murdock, Brenda Chew, Steve Fine, *Missing Links in the Evolving Distribution Markets*, p. 5

That is why many utilities are considering demonstration projects to test NWA benefits for their systems.

There are two basic kinds of challenges that utilities must work through in considering distribution-level NWA. One is to develop a clear and consistent framework for determining when NWA solutions are suitable for addressing a system need,[2] as well as for evaluating proposed NWA solutions against traditional "wires" approaches.[3] The other has gotten far less attention, but can be no less important: putting in place the right commercial terms and provisions to mitigate risk and ensure that the DERs in a NWA solution deliver the grid services to which they are committed. Getting these issues right can make the difference between a successful NWA demonstration that unlocks new benefits and revenues and an inconclusive or unsuccessful project.

EXHIBIT 1. EMERGING PROCUREMENT BEST PRACTICES

- ✓ Provide Useful Customer and System Data
- ✓ Provide Anticipated Device Trigger/Dispatch and Notification Requirements
- ✓ Use Demonstration Projects to Explore Subsequent Commercial Terms
- ✓ Give DER Providers the Right Amount of Lead Time
- ✓ Coordinate with Other Programs and Markets
- ✓ Offer a Vendor Pre-Qualification Process
- ✓ Use Sample Pro Forma Agreements to Explore the Optimal Commercial Standards

As utilities consider demonstration projections, they should think carefully about how to leverage lessons from states that are on the leading edge of figuring out these commercial issues around how to make distribution NWA work, as summarized in Exhibit 1. These approaches can significantly improve the effectiveness of a given project, and create a pathway toward a scalable model for the future.

[2] Such frameworks have been developed through a regulatory proceeding in states such as California, where a Locational Net Benefits Analysis framework was approved by the California Public Utilities Commission in 2016, and New York, whose regulator approved a Benefit Cost Analysis Framework also in 2016. Some states may have a locational value framework as applied in a Value of Solar proceeding, such as in Minnesota.

[3] The analytical needs for conducting this kind of evaluation have been discussed elsewhere, recently in *ICF's DER Optimization: Cost-effective Utility Solutions with Energy Efficiency, PV, and Storage.*

  

**Who's Procuring NWA Right Now?**

- **California:** state Demand Response Auction Mechanism (DRAM), state energy storage mandate and various utility storage procurements, several other utility NWA projects
- **New York:** various utility REV demonstration projects including Brooklyn-Queens Demand Management (BQDM)
- **Massachusetts and Rhode Island:** DemandLink™ utility programs
- **Connecticut:** various small-scale clean energy projects (including energy efficiency and energy)

## The Current State of Distribution System NWA Procurement

Utilities and others are increasingly interested in the question of whether NWA solutions can lower costs and provide system benefits, but very few have direct experience. Some utilities have pushed the envelope in developing NWA procurements (*see call-out box*[4]), often in tandem with regulators who support greater leveraging of DER solutions for system needs. But most utilities that operate outside a handful of states are in the position of approaching distribution NWA as a first-time venture, mostly in the context of utility demonstration projects.

The first hurdle in considering an NWA demonstration is analytical — determining locations where there is a need that can be met through an NWA, and with a positive benefit-cost ratio according to whatever benefit frameworks are appropriate.[5] In our paper *DER Optimization: Cost-effective Utility Solutions with Energy Efficiency, PV, and Storage,* we showed how our integrated analysis framework can help utilities realize these benefits by identifying optimal DER configurations.

The other hurdle comes when utilities seek to design the actual procurement process itself. While utilities have ample experience with procuring core products and services, the procurement process can be significantly more complex for newer NWA products that lack maturity and therefore pose greater commercial and operational risk. There are significant issues to be worked out in terms of DER performance, commercial terms, RFP design, provision of data, and potential participation in the wholesale market. Lessons learned from states like California and New York can be valuable guides to approaching these issues and designing efficient and scalable procurement. Crafting demonstrations with scalable approaches will be valuable in a future with a larger expected volume of NWA contracts, which will require standardized products with consistent, standard offer terms and conditions. This is why utilities should begin thinking ahead during the demonstration design phase about processes that not only benefit current procurement, but develop capabilities for refining and ultimately scaling NWA procurement activities up to cost-effective, streamlined, and commonplace elements of integrated utility planning.

[4] Greentech Media webinar, *Building Blocks to a Successful Non-Wires Alternatives Strategy*, November 29, 2016

[5] Note: because of the focus on the procurement process, this paper assumes that utilities have addressed the need for consistent frameworks for determining when NWA solutions are suitable for addressing a system need, as well as for evaluating proposed NWA solutions against traditional "wires" ones. It also assumes that regulators have taken sufficient action to remove the disincentive that vertically-integrated utilities have to forgo capital expenditure, so that utilities have an interest in pursuing NWA.

  

## Procurement Best Practices

### 1. Provide Useful Customer and System Data

Utilities can attract higher-quality solicitation responses by providing relevant customer and system data in solicitations. As the Joint Utilities of New York observed in the recent Supplemental Distributed System Implementation Plan (DSIP) filing, "establishing a common set of system data points to be provided in NWA solicitations, including information about the timing, location, and size of the reliability need, will help DER providers assemble more informed bid responses."[6] Similarly, customer data such as demographics (e.g. the percentage of residential, commercial and industrial customers in the need area) and current participation rates in existing utility programs may inform prospective responses. Utilities may find an open stakeholder process useful for ascertaining the most critical data needs from the marketplace.

### 2. Provide Anticipated Device Trigger/Dispatch and Notification Requirements

Utilities should provide as much information as possible in the solicitation regarding approximately how frequently the sought resource will be dispatched in a given season, and how much advance notice will accompany the trigger notification. DER providers need this information to evaluate a solicitation opportunity because DER technologies vary by their ability to respond quickly to utility activation signals ("triggers"), as well as to sustain the same level of performance over an extended time frame. For this reason, the Competitive Solicitation Framework Working Group (CSFWG) in California noted the difficulty in executing contracts in past DER competitive solicitations without providing an indication of "how frequently or under what conditions the resources will be dispatched", especially since the resource provider would be responsible for any performance penalties assessed by the wholesale operator.[7]

Utilities currently have an opportunity to test out different types of notification requirements while DER penetrations are relatively low. In a future with higher DER penetrations, however, utilities should anticipate needing to both refine these requirements as well as deploy more robust device monitor and control technologies that enable bidirectional communication with a large number of DERs. California's Smart Inverter Working Group, which seeks to drive the deployment of smart inverters with advanced communication and other standardized capabilities in the state's Rule 21 interconnection tariff, is a good example of how regulators and utilities can begin pursuing technologies that facilitate optimal device trigger and notification practices.[8]

[6] Joint Utilities of New York, *Supplemental Distributed System Implementation Plan*, New York Public Service Commission Case 16-M-0411, November 1, 2016, p. 104

[7] Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Gas and Electric Company, *Competitive Solicitation Framework Working Group Final Report*, October 2, 2014, p. 48. http://drpwg.org/wp-content/uploads/2016/07/2016-08-01-CSFWG-Final-Report-Joint-Competitive-Solicitation-Framework-Working-Group.pdf

[8] "Smart Inverter Working Group," California Public Utilities Commission, http://www.cpuc.ca.gov/General.aspx?id=4154

  

### 3. Use Demonstration Projects To Explore the Development of Potential Future Commercial Terms

Demonstration projects are typically used to investigate how a resource performs under real-world conditions, and for how long. There is typically less focus, however, on exploring the feasible commercial terms (*e.g.* settlement structures, performance penalties) that will ultimately be required to scale the NWA solution up to full-fledged commercial operation. Utilities should use their low-risk demonstration projects not just as a vehicle for field testing a resource's technological viability, but as an opportunity to proactively experiment with applicable commercial terms. For example, the Joint Utilities of New York (JU) are using the lessons from current NWA pilot projects to develop lists of desirable DER performance attributes, but have noted that more operational experience is needed before these attributes can be translated into performance requirements (i.e. commercial terms).[9]

Once utilities have gained sufficient experience with operating various types of resources for extended periods of time, they may consider developing broader technology-neutral commercial standards that accommodate any commercially-viable resource that fits the desired profile. This relative commercial maturity is observed in California, where the California Public Utilities Commission (CPUC) recently directed the CSFWG to develop a technology-neutral pro forma contract[10] based on the results of upcoming utility pilot projects.[11]

### 4. Give DER Providers the Right Amount of Lead Time

The "lead time" of the NWA solicitation's publication is a critical parameter for utilities to consider: too much lead time may render the original need determination inaccurate, while too little lead time increases the pressure to find a commercially viable solution and increases the risk of falling back on a traditional wires solution. It can also drive up project costs, as observed during SCE's expedited energy storage procurement to mitigate the Aliso Canyon gas leak.[12] Finally, as SCE noted in its comments to the CSFWG, near-term distribution needs may also require "a streamlined DER procurement approval process."[13] The optimal lead time will vary depending on the utility and nature of the need, but three to four years is likely a good initial rule of thumb.

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[9] Joint Utilities of New York, *Supplemental Distributed System Implementation Plan*, p. 106

[10] Pro forma agreements stipulate a variety of key operational and commercial conditions, such as required device availability, procedures for verifying actual device performance, and mechanisms for seller payment, invoicing and settlement.

[11] It should be noted, however, that the group did not previously reach a majority consensus on the principle of technology neutrality. See CPUC Rulemaking 14-10-003, http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M169/K669/169669077.PDF

[12] "As Aliso Canyon Gas Shortage Looms, Southern California Looks to Energy Storage," Greentech Media, June 2, 2016. Last accessed March 15, 2017. https://www.greentechmedia.com/articles/read/as-aliso-canyon-gas-shortage-looms-southern-california-looks-to-energy-stor

[13] *Southern California Edison's Comments on Competitive Solicitation Framework Working Group Final Report*, October 2, 2014, p. 9. http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M166/K471/166471226.PDF

The required lead time can be expected to decline in the future, because utilities will improve at anticipating their needs in advance, and because the marketplace will get better at responding quickly.[14]

### 5. Coordinate with Other Programs and Markets

As the volume of active NWA contracts increases in the marketplace, DER providers will seek to capture as many revenue streams as possible, including from other utility and wholesale tariff programs, as well as from potential future markets for distribution services. Utilities should review their rules regarding the participation of a single resource in multiple programs and markets for the following reasons:

1. **Double-counting.** Utilities should review their program participation rules to ensure that delivered NWA services are incremental to those already being realized under existing utility programs. Double-counting could arise if a demand response aggregator participates both in a residential load control program and in a targeted NWA opportunity in the same area, for example.
2. **Resource over-commitment.** Similarly, utilities should review their program participation rules to ensure that the dispatch signals received by a resource participating as an NWA do not conflict with those it might receive as a participant in additional utility programs.
3. **Coordination issues with wholesale market programs.** Tariffs for aggregated DER participation in wholesale markets are currently in various stages of development across the country[15] and are prompting similar discussions of incrementality and over-committing. Utilities should coordinate with wholesale entities to study the implications of dual resource participation in retail and wholesale markets.

### 6. Offer a Vendor Pre-Qualification Process

A vendor pre-qualification process can save both the utility and vendors time by allowing vendors to demonstrate their commercial viability and acceptance of utility commercial terms and payment structures once, rather than for every solicitation response.[16] This process can help utilities manage a large number of bidders and improve process scalability. Con Edison used a simple pre-qualification process in its Brooklyn-Queens Demand Management program (BQDM) to gauge intent to bid, which was positively received by auction participants and helped the utility evaluate bids more quickly.

[14] This is consistent with National Grid's initial engineering review, which seeks projects with at least a three year lead time (see http://www.ripuc.org/eventsactions/docket/4545-NGrid-Presentation-DemandLink-Pilot_5-14-15.pdf), as well as with the Joint Utilities of New York NWA Suitability Criteria, which acknowledge that "the NWA solicitation and implementation process may need to begin up to 60 months before the required system need for the largest projects"(*see Supplemental DSIP* p. 56).

[15] See CAISO tariff (https://www.ferc.gov/CalendarFiles/20160602164336-ER16-1085-000.pdf), FERC Notice of Proposed Rulemaking (https://www.ferc.gov/whats-new/comm-meet/2016/111716/E-1.pdf) and the Joint Utilities of New York – New York Independent System Operator (NYISO) working group.

[16] Other DER products, such as new combinations of several different technologies, would go through the regular approval process.

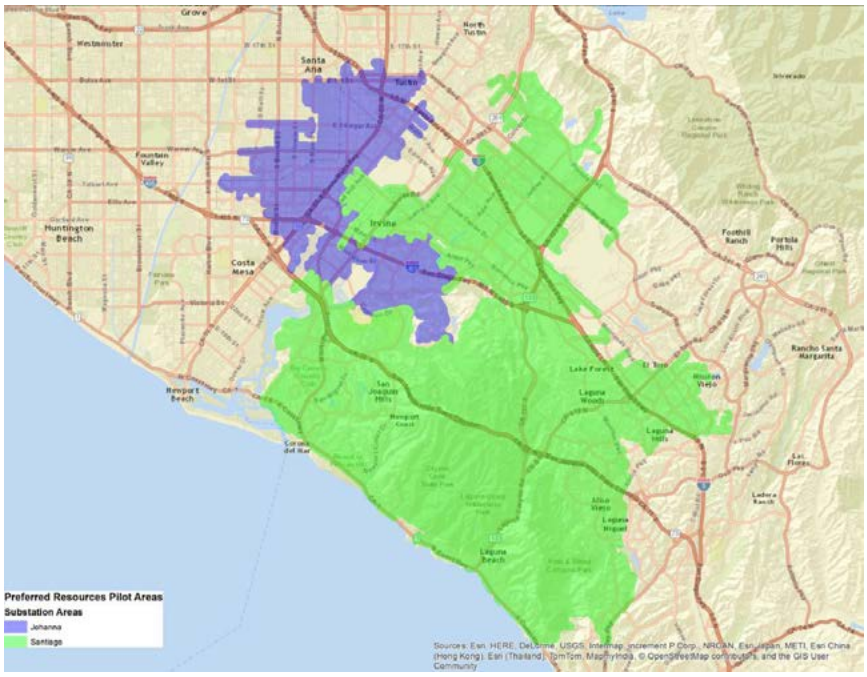
  

Some of the other Joint Utilities plan to explore this approach. SCE has also suggested a similar idea, in which bidders pre-qualify based on credit and collateral requirements, and maintain their place on the list based on their performance.[17]

### 7. Use Sample Pro Forma Agreements to Explore the Optimal Commercial Standards

Utilities that have gathered sufficient lessons from demonstration projects should include sample pro forma agreements in solicitations as a starting point for negotiating optimal commercial and operation performance standards with DER providers. This is a convenient way for the utility to further learn about products in the marketplace while laying the foundation for future productive commercial relationships with DER providers. It can also help utilities drive more competitive, efficient and timely procurement outcomes with DER providers.

EXHIBIT 2. MAP OF SUBSTATION AREAS IN SCE'S PREFERRED RESOURCES PILOT




Source: SCE (see footnote)

As an example, SCE's recent Preferred Resources Pilot auction sought to test whether commercially and technologically viable NWA solutions could be procured for targeted load relief in certain areas (*pictured, see Exhibit 2 above*[18]). Its second solicitation round provided detailed sample pro forma agreements specific to each DER product type, information which is typically only provided to short- listed bidders. These agreements proposed settlement terms, measurement and verification procedures, reward and penalty clauses, and more. SCE believed that "[A] transparent, collaborative negotiation with buyers

[17] *Southern California Edison's Comments on Competitive Solicitation Framework Working Group Final Report*, p. 11.

[18] Image source: https://www.sce.com/wps/wcm/connect/be311929-764f-4302-bfef-4039b3fb8b56/j-s-overview-map.pdf?MOD=AJPERES

and sellers at the table would result in a more workable contract as opposed to developing a 'take it or leave it' contract for new product pro forma contracts." Accordingly, SCE allowed bidders to suggest revisions to these terms in order to gather direct experience with bidder commercial preferences and priorities. However, SCE chose not to develop a pro forma agreement for the solar-plus-storage product because it recognized the product's technological characteristics were not sufficiently understood at the time of the solicitation.

## Conclusion

The recommendations above, draw from industry experience to-date, can help utilities procure NWA solutions more efficiently and smoothly, in order to make demonstrations more effective and scalable beyond pilot projects to full-fledged operational portfolios. In order for NWA to mature into a commonplace utility practice, however, greater coordination across the utility's distribution system planning, grid operations and market operations (i.e. procurement) functions is imperative. In addition, while attractive in concept, NWAs still need to be proven in practice as a reliable and cost-effective solution to distribution grid engineering challenges. Finally, it should be remembered that distribution system NWAs are primarily an interim means of accelerating DER deployment in order to meet public policy and regulatory goals. As utility system planners gain more operational experience with DERs and begin to work more closely with utility grid and market operations teams, they will gradually consider DER less as a non-wires "alternative" and more as one of several "traditional" solutions for meeting grid needs.

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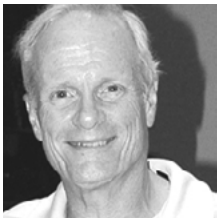

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