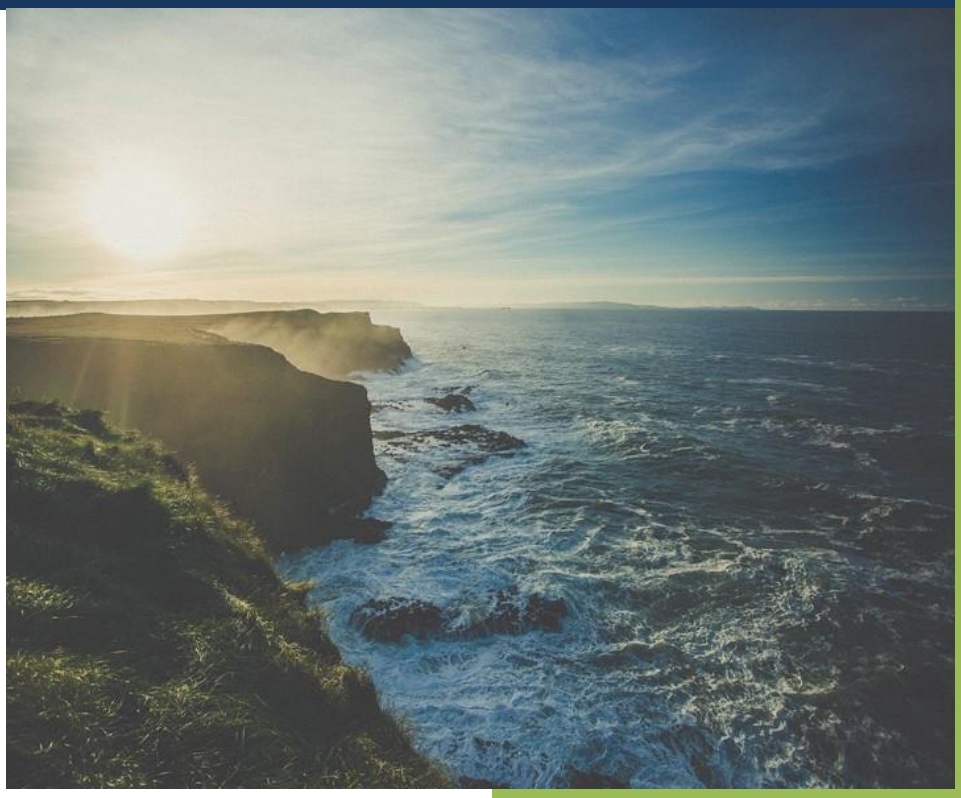
NWA Opportunity Evaluation
Survey of Current Practice



Prepared for

Hawaiian Electric Co.

March 2020

pacific energy INSTITUTE

Acknowledgments

NWA Opportunity Evaluation, Survey of Current Practice, was prepared for Hawaiian Electric in support of their Distribution Planning Working Group (DPWG) that is an integral part of the Hawaiian Electric Integrated Grid Planning initiative.

This survey is based on a review of regulatory filings, expert reports as well as presentations by Advanced Microgrid Solutions, Arizona Public Service, ConEdison, Enel-X, the Rocky Mountain Institute, Southern California Edison, STEM and SunRun at the Hawaiian Electric Symposium held on March 26, 2019[1]. Individual interviews were subsequently held with utilities in California, New York and New England to gain additional insight into current practices. This survey also includes Hawaiian Electric's proposed methodology that was applied in their Soft Launch.

This survey report was developed by Paul De Martini and Andrew De Martini of the Pacific Energy Institute.

Disclaimer:

The views and opinions of the authors expressed herein do not necessarily state or reflect those of the Hawaiian Electric Company or the Pacific Energy Institute's Fellows and Advisory Board.

[1] Symposium presentations are available online at: https://www.hawaiianelectric.com/documents/clean_energy_hawaii/integrated_grid_planning/stakeholder_engagement/working_groups/soft_launch/20190326_igp_soft_launch_wg_meeting_presentation_materials.pdf

Contents

Introduction

This survey was conducted in support of the Hawaiian Electric Integrated Grid Planning development efforts. Specifically, this report centers on their Distribution Planning Working Group efforts to develop a systematic method to address the incorporation of non-wires alternatives (NWA) into the planning process.[2] This survey focuses on the initial distribution NWA opportunity evaluation (aka, screening) methodology currently in practice.

For context, non-wires alternatives generally are non-traditional solutions that may defer, delay, or avoid traditional transmission and distribution (T&D) investments (e.g., a new substation or feeder). Non-traditional solutions can include a single solution or combinations of solutions at the grid-scale or distributed level such as, solar PV, other renewable generation, energy storage, energy efficiency, and demand response (incl. price responsive demand), among others. The following NWA definition was developed by the DPWG adapting several aspects from developed by Navigant[3], DOE[4] and others.[5]

> *An electricity grid project that uses non-traditional transmission and distribution (T&D) solutions, such as distributed generation (DG), energy storage, energy efficiency (EE), demand response (DR) and grid software and controls, to defer or avoid the need for conventional transmission and/or distribution infrastructure investments.*

A number of states and utilities are investigating or have NWA pilots underway that have been the focus of other reports.[6] This survey, however, examines the process and methods employed in a distribution planning process to systematically assess NWA opportunities that may lead to procurement and/or program for DER based services. Seven regulatory jurisdictions have been identified in which evaluation criteria are employed to identify those NWA opportunities that will most likely be successful. This survey was conducted through a literature review, information shared by national subject experts in Hawaiian Electric's symposium on March 26, 2019 and subsequent interviews. This survey attempts to summarize the current state of practice in 2019, but given the nascent stage of NWA utilization, criteria may continue to evolve.

This survey looks at the initial evaluation of opportunities for DER to provide services to defer or avoid specific distribution grid upgrades identified in a long-term planning process (e.g., 3 to 10-year horizon plan). Utilities in the regulatory jurisdictions surveyed assess one or more of the following opportunities:

1. Distribution Investment Expenditure Deferral

---

[2] Non-transmission alternatives (NTA) are required to be considered under FERC Order 1000 and explicitly in several states including Hawaii and Maine. Also, DERs have the opportunity to provide bulk system ancillary services in most ISO/RTO markets and in Hawaii.

[3] B. Feldman, Non-Wires Alternatives: What's up next in utility business model evolution, Utility Dive, July 12, 2017

[4] Electricity Advisory Committee, Recommendations on Non-Wires Solutions, DOE, October 17, 2012

[5] SEPA, PLMA & E4TheFuture, "*Non-wires Alternatives: Case Studies from Leading US Projects*", 2018

[6] Reports and articles by RMI, SEPA, Navigant, ICF, GTM and others, for example.

2. Distribution Reliability Expenditure Deferral
3. Distribution Voltage Management Expenditure Deferral
4. Grid Resilience Expenditure Deferral

The majority of potential NWA opportunities in practice (not including pilots) to-date, have involved deferring/avoiding specific physical infrastructure investment related to 1 and 2 above. Specifically, NWAs nationally have primarily focused on local capital upgrade projects driven by load growth and/or increasing hosting capacity ("System Expansion" in **Error! Reference source not found.**, below).

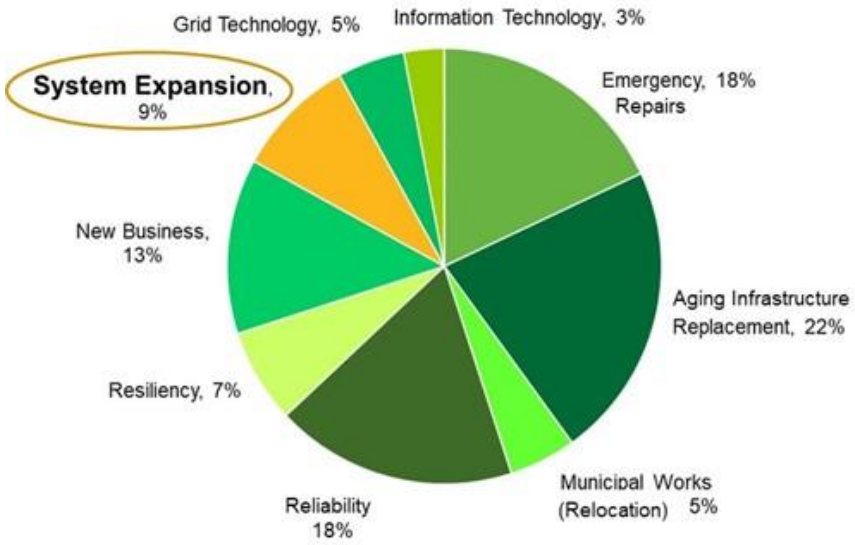


Figure 1: Typical Utility Distribution Capital Budget Allocation

NWA opportunities are specific to a need identified through a longer-term (3 to 10-yr) distribution planning process. The grid needs are locational in nature and have stringent performance requirements necessary to defer the "wires" alternative. This is because if the NWA doesn't perform there is no back-up solution as the wires project wasn't built. This may result in overloads that cause outages, equipment damage and/or public safety issues from equipment failures.

Figure 2 below summarizes the potential range of distribution grid services for NWA under consideration nationally in distribution planning. The service descriptions are based on Hawai'i DPWG discussion leveraging references from California's Competitive Solicitation Working Group.[7]

[7] California Competitive Solicitations Framework Working Group https://drpwg.org/sample-page/ider/

Service	Description	Performance Requirements	Locational	System-wide	In Practice
Distribution Capacity Deferral	Load-modifying or supply services that DER provide via dispatch of output (MW) or reduction in load that is capable of reliably and consistently reduce loading on identified distribution infrastructure.*	High Service Level Requirements	✓		Yes
Distribution Reliability	A supply and/or load modifying service capable of improving local distribution reliability under abnormal conditions. Specifically, this service reduces contingent loading of grid infrastructure to enable operational flexibility to safely and reliably reconfigure the distribution system to restore customers.**	High Service Level Requirements	✓		Yes
Distribution Voltage-var Support	Incremental steady-state and dynamic voltage management services beyond interconnection requirements to avoid incremental related grid investment.*	High Service Level Requirements	✓		No
Resiliency	Load-modifying and/or supply based services, including microgrids, capable of improving system or local resiliency to the benefit of all customers.*	High Service Level Requirements	✓	✓	No

pacific energy INSTITUTE

* Adapted from CPUC defined NWA services
** Hawaii NWA service definition

Figure 2: Distribution Grid Services

As such, NWA opportunities require alignment of grid needs and DER service capabilities, costs and performance to be successful. Lessons from initial NWA pilots and sourcing across the US are that not all distribution projects are suited for cost-effective deferral. The development of NWA opportunity evaluation processes and criteria have been developed and incorporated into distribution planning processes in response.

The following discussion summarizes the state of practice in each of seven jurisdictions in alphabetical order; California, District of Columbia, Hawai‘i, Maine, New Hampshire, New York, and Rhode Island.

California

In 2019, the California Public Utilities Commission (CPUC) updated the Distribution Investment Deferral Framework (DIDF) and requirements for the Grid Needs Assessment (GNA) and the Distribution Deferral Opportunity Report (DDOR).[8] This ruling establishes an ongoing annual process to identify, review, and select opportunities for third party-owned distributed energy resources (DERs) to potentially defer or avoid traditional distribution capital upgrades through competitive solicitation. The California goal is that any deferral candidate project that can be cost effectively deferred through DERs should be deferred."[9]

The DIDF process (Figure 3) is intended to provide a systematic evaluation of "opportunities to deploy cost-effective DERs that are incremental to the 'autonomous growth' levels of DERs that are expected to be deployed as a result of Commission-administered tariffs and programs and/or customer preferences."[10]

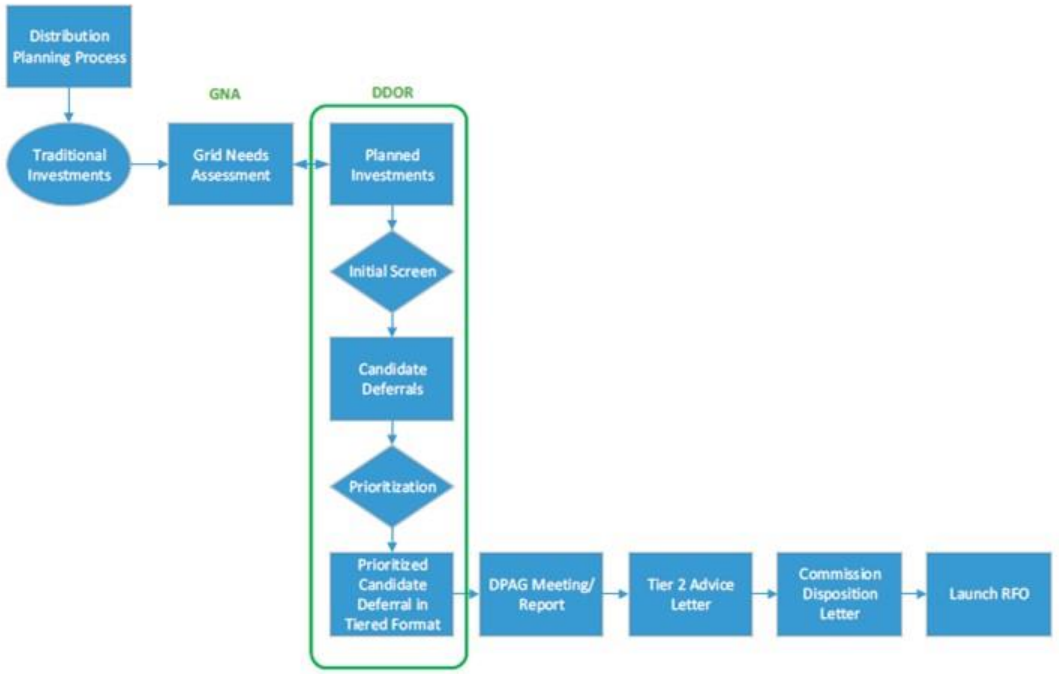


Figure 3 California Distribution Investment Deferral Framework Process

The California process begins with the annual distribution planning assessment of incremental grid needs and related planned investments. These are documented in a GNA. The grid needs are then evaluated using the DIDF screens and prioritization methods to:

[8] CPUC ruling, R.14-08-013, et al., Administrative Law Judge's Ruling Modifying the Distribution Investment Deferral Framework Process. May 19, 2019

[9] Id.

[10] SCE, 2019 Distribution Deferral Opportunity Report. August 15, 2019. p.3

- Identify most likely candidate projects, and
- Prioritize qualified opportunities for procurement

The opportunity screening involves both a technical and timing screen. The technical assessment of the requirements of specific need is assessed in the context of one of the four defined NWA services (e.g., capital deferral, reliability back-tie, voltage management, and resilience) adopted in California. To-date, the opportunities identified and prioritized have been T&D capital deferral. The timing of the grid need is assessed in relation to the time to conduct a procurement, including contract negotiation, and obtain regulatory approval.

Following this screen, opportunities are prioritized based on 3 metrics: Cost-Effectiveness, Forecast Certainty, and Market Assessment to create a deferral shortlist. California's approach to cost-effectiveness prioritization using a locational net benefit analysis considers both potential MW and MWh values over a 10-year horizon. The methodology is rather complex in the context of the simple minimum dollar threshold for a T&D project employed in other states. Interestingly, for the purpose of prioritization SCE reduces the calculated values to a 0 or 1 (i.e., low or high).

The forecast certainty metric is meant to assess if a grid need is actually going to need a deferral project. Distribution level forecasts often have significant uncertainty given changes in proposed timing and scale of real estate developments, customer adoption of DER and other factors. Unlike system level forecasts that benefit from the law of large numbers, distribution forecasts involving individual feeders and substation transformers can be impacted by a smaller number of customers and factors.

The market assessment metric evaluates the potential for a DER solution to be developed to meet the grid need requirements. This assessment may include whether, for example, sufficient existing customers are located in the area of need that may participate in a solution or land is available for community based DER installation.

The screen and prioritization metrics are sorted into an NWA procurement priority tier. The utilities prioritize the opportunities into 3 or 4 tiers. Tiers 1-3 are common for the three California utilities as described below. The CPUC adopted PG&E's method of "relative ranking of projects to avoid suggesting one project or another will be successful."[11]

The resulting opportunity evaluation and resulting prioritized opportunities are documented in the DDOR. The DDOR includes the system need underlying the candidate grid projects and related location, timing, performance requirements and wires solution avoided cost information.

As noted, the CPUC has allowed some variation for the utilities to adapt the prioritization to their service areas. The following is a brief discussion of the SCE and PG&E evaluation methods.

[11] CPUC ruling, R.14-08-013

SCE

SCE's grid planning identifies those incremental potential upgrades after all current grid capacity and load balancing strategies have been maximized. SCE's NWA opportunity evaluation is summarized as follows.

Timing and Technical Screens

SCE applies a timing screen to assess the time required to defer potential investment in relation to the procurement-approval timing. This time is calculated based on procurement duration (incl. contract negotiation), interconnection processes, regulatory approval and DER solution implementation. SCE expects this process to take place over a 3-year period before the project will be fully operational.

The technical screen assesses whether or not an NWA solution would be able to fulfill all of the specific grid service requirements for any one of the four services that may apply. Therefore, firstly, is the incremental grid need in one of the four distribution service categories, and second, is it likely that an NWA could meet the specific performance requirements associated with the need.[12]

Prioritization Metrics

Cost-effectiveness: as required by CPUC, SCE considers both the LNBA in MW related to the capacity and in MWh the energy needs to defer the candidate deferral project. However, SCE notes that there is a potential bias due to likely differences of magnitude when these two factors are combined into a single indicator for cost effectiveness. As such, SCE normalizes these factors individually between 0 and 1. "The smallest LNBA value in MW/MWh gets a score of 0 and the largest LNBA value in MW/MWh gets a score of 1. In the end, both normalized LNBA values are summed up to a cost‐effectiveness score."[13]

Forecast Certainty: SCE uses near-term forecasts are better predictors of load patterns instead of historical load information to assess grid deferral projects. SCE considers "a nearer‐term need is typically considered having relatively higher certainty comparing with a longer‐term need. In addition, factors such as the status of environmental review, possible regulatory hurdles, and the status of design and construction of the load growth projects are taken into consideration to evaluate the likelihood of an expected load growth project materializing in the expected timeframe. The likelihood of these projects is assigned to five categories (i.e., very likely, likely, neutral, unlikely, and very unlikely) based on available information and engineering

[12] http://www3.sce.com/sscc/law/dis/dbattach5e.nsf/0/F8F550647FB95BBE8825845F0063A27F/$FILE/R1408013-SCE%20Amended%202019%20GNA%20and%202019%20DDOR%20Reports%20(Public).pdf (Pages 8&9)

[13] http://www3.sce.com/sscc/law/dis/dbattach5e.nsf/0/F8F550647FB95BBE8825845F0063A27F/$FILE/R1408013-SCE%20Amended%202019%20GNA%20and%202019%20DDOR%20Reports%20(Public).pdf

judgment as needed."[14] Unlike PG&E, SCE doesn't place a high importance on historical SCADA data availability to assess forecast certainty.

Market assessment: evaluates the possibilities that DER can successfully meet the grid need to defer the candidate T&D projects. Based on SCE's experience they identify the duration of the grid need as a critical success factor for a cost‐effective DER solution. The longer the duration of the need, the more challenging it is to develop a cost‐effective DER solution. Also, that there is more opportunity to procure sufficient DERs to meet a grid need in a larger geographical area compared to a limited area. SCE created a quantitative "index of capacity needs per affected circuit". This involves assessing whether DERs can be interconnected on more circuits to meet the need on the assumption that more interconnection opportunities will more likely result in sufficient DERs to defer that project.

SCE then organizes the potential deferral projects into 3 Tiers: [15]

- Tier 1: Recommended project for NWA procurement
- Tier 2: Projects with increased uncertainties around the potential success of an NWA procurement
- Tier 3: Projects that should not be considered for deferral

These are graphically represented in SCE's 3 tier red-yellow-green table below.

Tier	Project	Cost Effective	Forecast Certainty	Market Assessment
1	Nogales 66/12 (D)			
	Lockheed 66/16 (D)			
	Sun City 115/12			
	Mira Loma 66/12 (D)			
2	Newhall 66/16 (D)			
	Crater 66/16 (D)			
	MacArthur 66/12 (D)			
	Mariposa 66/12 (D)			
	Moorpark 'A' 220/66 (S)			
	Saugus 'C' 220/66 (S)			
	Elizabeth Lake 66/16 (D)			
	Elizabeth Lake 66/16 (D)			
3	Vera 66/12 (D)			
	Hathaway 66/12			
	Rector 220/66 (S)			
	Springville 220/66 (S)			
	Garnet 115/33 (D)			
	Lindsay 66/12 (D)			
	Live Oak 66/12 (D)			
	Mira Loma 220/66 (S)			

Figure 4: Example SCE Project Prioritization Table

[14] Id.
[15] Id.

PG&E

PG&E uses the same timing and technical screens as SCE.

Prioritization

PG&E assesses the three prioritization criteria, Cost Effectiveness, Forecast Certainty and Market Assessment somewhat differently than SCE.

Cost Effectiveness: PG&E complies with the CPUC requirements to estimate the Locational Net Benefit Analysis (LNBA) value:

- Estimated LNBA ($/kW-yr.) (Deferral value for each year of deferral)
- Estimated LNBA/kWh ($/kWh-yr.) (Ratio of LNBA value to kWh need per year)

The 5-year deferral value is the sum of the Net Present Values (NPV) of the 1-year deferral value of the proposed solution for the first five years. The 1-year deferral value of the proposed solution is the sum of the 1-year deferral value of the equipment capital cost and the operations and maintenance (O&M costs) associated with the new equipment that would have been added if the traditional projects had been built.

PG&E's approach is largely based on the avoided cost of the traditional wires project, as is the case in the Northeast and proposed in Hawai'i. This is because the DER providers' cost of participating in a procurement process plus the solution implementation costs cannot exceed an NWA opportunity value. DER provider's feedback on the cost-effectiveness to participate in an NWA procurement is the reason most states have minimum project avoided cost thresholds for NWA opportunities.

Forecast Certainty: Determines if projects will actually be needed in a particular year and location. Given the inherent uncertainty of distribution level load forecasts, "PG&E places high importance on the ability to the use SCADA to validate the existing load and therefore a strong foundation for the forecast. This component is given the most weight in the Forecast Certainty Metric."[16] PG&E also considers the number of customers who could participate in DER solution within this metric.

Market Assessment: Considers how likely DER can be sourced to reliably fill service requirements.[17]

- Days/Year (number of days per year DER would need to be available to provide solution)
- Number of Grid Needs (Number of different locations, normally number of circuits, that DER's would need to be located in order to solve grid need)
- Hours/Day (Maximum number of hours per day DER needs to be available to solve grid need)

[16] CPUC, Approval of PG&E's Request for Approval to Issue Competitive Solicitations for Distributed Energy Resource (DER) Procurement for Electric Distribution Deferral Opportunities, Advice Letter 5688-E. December 19, 2019.
[17] Id.

- Overcapacity (%) (Percent overload on the device or circuit)

Using these three prioritization criteria, PG&E evaluates each grid need (incl. wires solution) for an opportunity for a successful NWA in a relative ranking employing 4 tiers.

The figure below summarizes PG&E's 4-tier system in which the first 3 tiers are similar to SCE with a 4th tier to identify opportunities that have already been sourced.

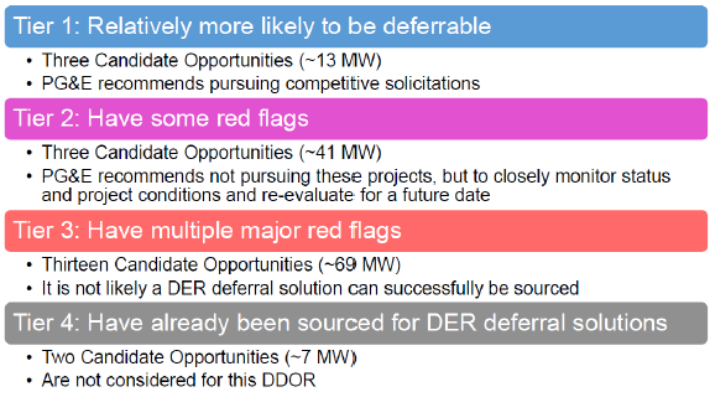


Figure 5: PG&E 4 Tier NWA Opportunity Prioritization

Similar to SCE, PG&E presents its NWA opportunity evaluation in a color-coded prioritization table as in the excerpt below.[18]

Tier	Candidate Deferral	In-Service Date	Deficiency (MW)	Prioritization Metrics		
				Cost Effectiveness	Forecast Certainty	Market Assessment
1	New Lammers Feeder	6/1/2021	1.5			
	Huron Bank 1	4/1/2021	3.7			
	Santa Nella Bank 1 and New Feeder	5/1/2022	5.4			
2	Santa Teresa Substation	5/1/2021	30.3			
	Dolan Road Bank 1	5/1/2021	6.0			
	Estrella Substation	5/1/2024	4.9			
3	Bogue Feeder	6/1/2021	1.7			
	Calflax Bank 2	4/1/2023	3.9			
	Brentwood 2104	5/1/2021	5.8			
	Pueblo Bank 3	6/1/2022	17.5			
	Camp Evers 2107	5/1/2022	1.2			
	Salinas 1102	12/1/2022	2.2			
	Oceano 1108	1/1/2022	1.9			
	San Leandro U 1107	12/1/2021	0.5			
	SF H 1107 (Martin)	12/1/2022	1.8			
	SF H 1108 (Martin)	12/1/2022	1.4			
	New Dairyland Feeder	4/1/2022	8.0			
	Alpaugh 1102	4/1/2024	18.9			
	New FMC Feeder	6/1/2023	4.0			
4	Gonzales Bank 3	5/1/2021	2.0			
	Llagas Substation	5/1/2022	5.2			

Figure 6: PG&E 2019 NWA Opportunity Prioritization Table

[18] Id.

District of Columbia

DC Commission

The Public Service Commission of the District of Columbia (PSC DC) in a recent order[19] considered the opportunity for NWAs to defer a proposed Pepco substation. The order, describes multiple factors that were considered by the commission.

First, whether an NWA could potentially address the identified grid need "to reliably manage peak demands on the distribution system caused by extreme (hot) weather as well provide sufficient capacity in all hours of the year including manage related N-1 contingencies."

Second, whether sufficient responsive demand and storage solutions could be developed in densely populated, urban locations on the over-loaded feeders forecast. This included consideration of the new National Fire Protection Association ("NFPA") 855, Standard for the Installation of Stationary Energy Storage Systems[20] that will require more space around each battery, thus requiring more land for the overall project.

Third, the PSC DC considered whether customer-owned storage resources would provide sufficient reliable operation to serve normal peak demand as well as during contingencies. This included a consideration of controllability, robustness of communications as well as adequate maintenance by nonutility owners that could present reliability challenges.

The PSC DC also, in contrast to other NWA versus wires solution opportunity evaluations, considered additional benefits regarding the specific Mt. Vernon substation "wires" proposal. This included benefits that the new substation would increase hosting capacity to meet renewable goals, improve service reliability and local job creation.

The order approving the substation project only addressed the specific proposal and the PSC DC provided that "a consensus-based NWAs planning process is necessary to ensure adequate and reliable incorporation of DERs into Pepco's distribution system."

[19] FC 1144, Order No. 20274, dated December 20, 2019 https://edocket.dcpsc.org/apis/api/filing/download?attachId=89309&guidFileName=fcdaeaa9-2776-42eb-af01-b527de008f12.pdf

[20] https://catalog.nfpa.org/NFPA-855-Standard-for-the-Installation-of-Stationary-Energy-Storage-Systems-P20704.aspx?icid=D533

Hawai‘i

Hawai‘i Commission

In 2018, the Hawai‘i Public Utility Commission reiterated its expectation that the distribution system planning processes “must evolve to explicitly include the locational benefits of customer-sited distributed energy resources and evaluate on a comparable basis as utility alternatives as part of any economic justification for distribution system upgrades.”[21] The commission further directed Hawaiian Electric (HECO) to “strive to make their non-wires alternatives analysis more transparent and thorough.”[22]

Hawaiian Electric

HECO has developed a distribution planning methodology to identify grid needs that are the basis for the NWA opportunity evaluation. The proposed approach is an adaptation of the current NWA opportunity assessment best practices across the U.S. using a 3-step approach. This 3-step methodology that incorporates 1) an initial NWA Opportunity Screen, 2) NWA Opportunity Sourcing Evaluation and 3) an Action Plan. The initial opportunity screen is intended to quickly and simply identify “qualified” and “non-qualified” T&D opportunities based on technical requirements and timing of need. The second step further evaluates and prioritizes the “qualified opportunities” in terms of the grid project avoided cost (economics), uncertainty regarding timing and/or scope of need, and an assessment of market potential to support a procurement or other sourcing option such as programs and pricing. The results inform the T&D Action Plan. This 3-step approach is illustrated in Figure 7 below.

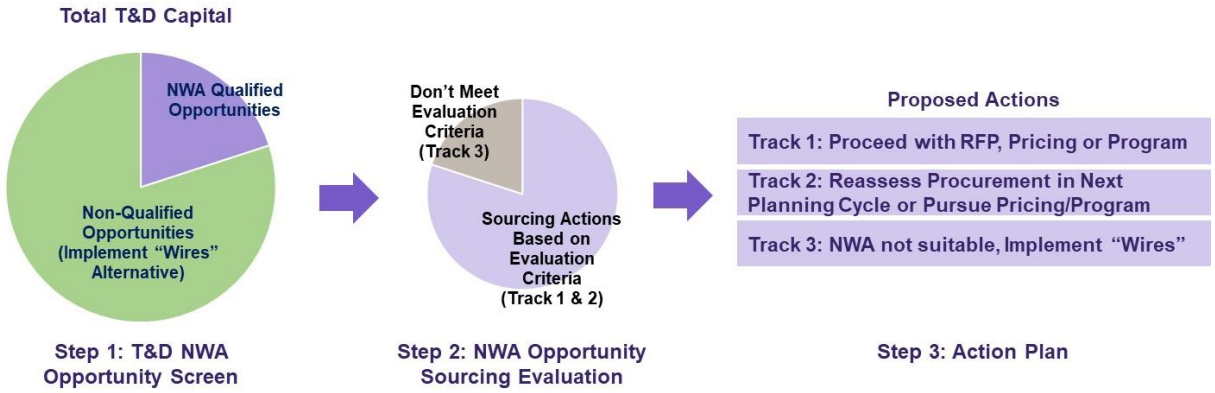


Figure 7: HECO NWA Opportunity Evaluation Methodology

[21] HPUC Docket No. 2018-0055 Decision and Order No. 36288 Ka'aahi Substation, p.22

[22] HPUC Order No. 30725 Docket No. 2018-0165, Proceeding To Investigate Integrated Grid Planning

Step 1: T&D NWA Opportunity Screen

The intent of this first step is to categorize all T&D capital budget projects by applying an opportunity screen to identify those T&D projects that are most suitable for further NWA opportunity evaluation. As discussed with stakeholders and identified by other states, certain T&D projects with the greatest NWA opportunity include the following four grid needs categories:

1. Expansion of distribution system capacity to meet load and/or hosting capacity needs (i.e., new substation, new feeders, reconductoring)
2. Reliability requirement for circuit back-tie upgrade deferral
3. Distribution voltage/reactive power support (potential future service, not yet defined)
4. Enhancing system resilience (potential future service, not yet defined)

As HECO has identified in the IGP, consistent with best industry practices, these types of T&D needs may be met by new NWA grid services, including T&D capacity deferral service, Reliability back-tie service, Voltage/Reactive Power service and Resilience service. These four types of T&D needs will form the initial screen.

HECO adopted a similar approach used in other states to exclude certain T&D projects that cannot or are unlikely to be deferred/avoided by DER. These include projects to comply with public works requests for line/pole relocation or undergrounding due to street widening, re-location clauses, or overhead to underground conversions. Also, emergency and preventative equipment and infrastructure replacement to restore/avoid outages, avoid catastrophic failures and ensure public safety. For example, DER is not a substitute for physical apparatus such as circuit breakers, relays, transformers that may need to be replaced due to asset condition. Or, necessary to replace damaged or failed equipment/poles/conductor. Additionally, new customer requests for new physical connection to the electric grid do not lend themselves to effective NWA options.

Timing of the grid need is also an important factor. Sufficient lead time is required to allow for a procurement (incl. contract negotiations) or program development, regulatory approval and NWA solution deployment by the in-service date required by the forecasted operational date to meet the grid need. Based on the Companies' experience with sourcing other grid services consistent, stakeholder feedback and consistent with industry practice - a starting point of 2-year lead time is being used.

The step 1 screen identifies all T&D opportunities within HECO's capital budget into 2 groups:

- T&D Projects with NWA opportunity involving one or more of the of the four grid needs categories described above, and
- T&D Projects that address "required" needs outside of the four NWA opportunity categories.

This step can be done in conjunction with the HECO's annual capital budgeting process to ensure consistency is applied across the enterprise. Those T&D Projects identified as required in

this initial screen will be pursued as utility "wires" solution in the appropriate regulatory approval procedure (i.e., general rate case or GO7 application).

Focusing on the most viable NWAs by segmenting opportunities by these specific capital project types is employed in every state currently pursuing NWAs.

Step 2: NWA Opportunity & Sourcing Evaluation

HECO's methodology adapts aspects of the California[23] evaluation criteria to enable a more nuanced assessment and consideration of other sourcing options such as programs and retail pricing. The four criteria that used to evaluate NWA opportunities are:

- **Performance Requirements** in relation to engineering/operational performance requirements of the identified T&D grid need
- **Forecast Certainty** of the forecast scope and timing of the grid need.
- **Project Economics** will be assessed on the deferral value of a qualified T&D capital project and any other relevant avoided costs to determine sourcing options.
- **Market Assessment** is based on assessing the potential for successful NWA procurement versus programs or retail pricing options in the immediate local area related to the grid need.

The criteria are further explained below:

Performance Requirements

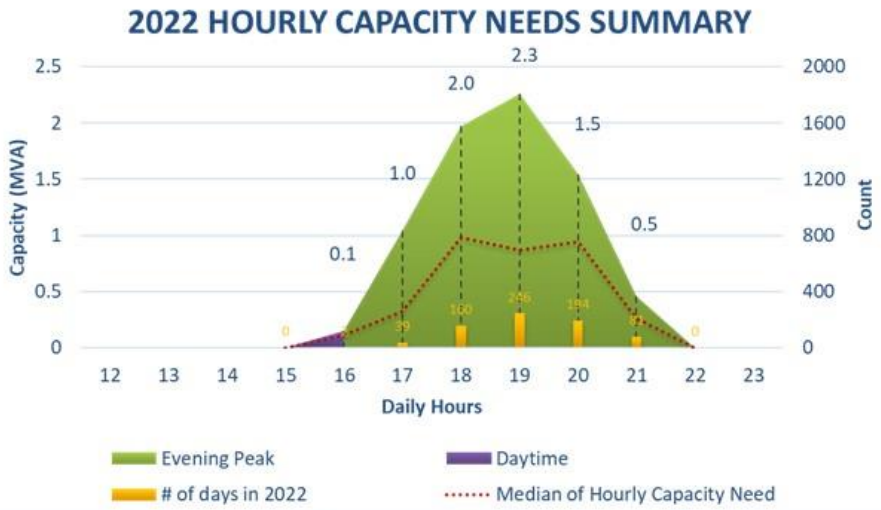
Performance requirements criteria is used to determine whether NWA solutions can reasonably meet the performance requirements of the identified grid need (capacity expansion, reliability back-tie, voltage/reactive power or resiliency). Projects that target critical needs with high operational risks are more likely to require more stringent performance requirements and contract terms for NWA solutions.

The grid need is clearly described as illustrated in Figure 8 below along with supporting engineering and operational analyses as provided in the Soft Launch[24] and case examples[25].

[23] California PUC Decision on the Distribution Investment and Deferral Process (D.18-02-004)

[24] DPWG Meeting August 8, 2019 "Review of Soft Launch Opportunity" presentation: https://www.hawaiianelectric.com/documents/clean_energy_hawaii/integrated_grid_planning/stakeholder_engagement/working_groups/distribution_planning/20190808_dpwg_meeting_presentation_materials.pdf

[25] DPWG Meeting October 9, 2019 "Review of T&D NWA Opportunity Identification & Evaluation Process" presentation: https://www.hawaiianelectric.com/documents/clean_energy_hawaii/integrated_grid_planning/stakeholder_engagement/working_groups/distribution_planning/20191009_dpwg_meeting_presentation_materials.pdf



Zone	Capacity (MVA)	Energy (MWH)	Delivery Months	Delivery Hours	# of days per year
Daytime	0.1	0.1	Oct.	3PM - 4PM	2
Evening Peak	2.3	7.3	Apr. - Dec.	4PM - 9PM	246

Figure 8: Example Engineering Analysis & Performance Requirements

These performance requirements are intended to provide as complete a picture as possible of the grid need and operational performance required of solutions to transparently inform stakeholders.

Forecast Certainty

Forecast certainty criteria evaluates the grid need in relation to the forecast certainty of the need in terms of scope and timing.

While a quantitative metric for forecast certainty is not feasible, HECO considers qualitative factors such as, but not limited to:

- Is the forecast driven by actual electric service requests? Which would signal moderate to high certainty depending on the stage I'd the development process the developer is in (i.e., advanced stage of design, marketing/sales of the development is on-going)
- Is the forecast driven by conceptual or high-level master plans? Which would signal low to moderate certainty of the actual load materializing.
- Steady historical trends of load growth (I.e., caused by increased customer adoption of electric vehicles or air conditioning) which would signal moderate certainty.

Grid needs identified beyond 5 years with high uncertainty may benefit from a targeted program leading up to the longer term need to potentially avoid or reduce the future distribution investment. This may have the benefit of a longer "runway" for a program to ramp up leading up to the longer term identified need.

Project Economics

T&D project economics will be used to prioritize evaluate opportunities for procurement, programs and/or pricing and to identify opportunities that are unlikely to be cost effective. The project economics include the deferral value of a qualified T&D capital project and any other relevant avoided costs. Based on stakeholder feedback, projects with an economic value (i.e., capital cost) of $1 million or greater will be pursued for NWA procurement. Projects with an economic value less than $1 million may be considered for targeted DER programs to address specific NWA needs.

Market Assessment

The market assessment criteria will initially assess three two aspects in terms of procurement/program sourcing options:

- Technical potential based on number of customers available for behind-the-meter solutions and land availability for ahead-of-the-meter solutions
- Complexity of potential market solutions in relation to the complexity of the grid need
- Supplier and solution diversity to ensure competitiveness and reliability

The opportunity for a DER based alternative is dependent upon sufficient existing or new customers and/or land availability in the appropriate locations associated with the circuits and/or substation/s to develop an NWA solution sufficient to meet an identified grid need. Also, as procurements are intended to foster competitive solutions it is beneficial to identify whether sufficient customers and/or land opportunity exist to support competitive proposals from more than one provider. These factors will be used to assess the potential success of an NWA procurement/program and any mitigations that may be needed to improve successful outcome for customers. For instance, as proposed by stakeholders, a targeted NWA program may provide a better outcome for a new residential development than a procurement.

Step 3: T&D Action Plan

The NWA Opportunity Evaluation & Prioritization above results in a T&D Action Plan that assigns specific T&D projects into one of 3 Action Plan tracks. Competitive procurement of NWA opportunities are the primary means of sourcing opportunities $1 million or greater. However, based stakeholder discussion HECO sought to expand the potential for NWAs by including the option for programs and pricing for opportunities under $1 million and for those opportunities that do not lend themselves to procurement, such as new real estate developments. As such, this sourcing approach explicitly incorporates the option for programs and/or rate mechanisms in Track 2, to expand the potential for NWA solutions for grid needs less than $1 million in economic value.

Track 1: Procurement of large certain opportunities (i.e., >$1 million in economic value with in-service need in 2-5 years), with high likelihood of NWA success for procurement (i.e., performance and market)

Track 2: Reassess Procurement if factors indicate reevaluating in the future for potential procurement (i.e., > $1 million in value and timing and uncertainty of grid need). Or, pursue program if opportunity is certain with >$1 million in value (but cost-effective for customers) and

performance can likely be met. Pricing is also an option if the economic value is below <$1 million and potential timing is sufficient to account for customer adoption which may be longer than a targeted program.

Track 3: Non-Qualified Opportunities are those that have criteria (e.g., performance, timing, or economics) that cannot be reasonably met by NWA solutions. In these instances, the "wires" solution will be implemented.

The Action Plan will include a summary list of T&D project opportunities evaluated and the proposed course of action on solutions for each grid need as illustrated in Figure 9. Also, a discussion of the supporting evaluation for each NWA opportunity will be provided.

Track	Grid Need	Performance Requirements	Timing	Forecast Certainty	Market Assessment	Economic Assessment
1	Project A	5hr Peak Load Reduction	Jan 2023-Dec 2027	High	High	$4 million Avoided Cost
2	Project B	4hr Peak Load Reduction	Jan 2024-Dec 2028	Medium	Medium	$750,000 Avoided Cost
3	Project C	16x7 Load Reduction	Jan 2023-Dec 2027	High	Low	$250,000 Avoided Cost

Figure 9: T&D NWA Opportunity Evaluation

Maine

The Maine legislature passed the Act to Reduce Electricity Costs through Non-wires Alternatives.[26]

This law requires each investor-owned transmission and distribution utility to produce an annual sub-transmission and distribution plan that identifies any specific needs and related "wires" projects. This annual planning study must:

A. Analyze system needs for the next 5 years and provide a schedule of proposed projects and associated costs;
B. Describe system capacity and load by substation and circuit; and
C. Identify corresponding planned and anticipated growth-related investments.

The NWA opportunity screening criteria are summarized below:

Non-wires alternatives will be considered if:

A. A small transmission project or a distribution project is estimated to cost $500,000 or more; or
B. A distribution project estimated to cost less than $500,000 and there is a reasonable likelihood that an NWA would be more cost-effective than the proposed distribution project.

The Maine commission is to develop specific exclusionary criteria for small transmission projects and distribution projects not suited for NWA, including but not limited to the following criteria identified in the Law:

A. Necessary for redundant supply to a radial load;
B. Necessary to address maintenance, asset condition or safety needs;
C. Necessary to address stability or short circuit problems; or
D. Required to be in service within one year based on the controlling load forecast.

Central Maine Power (CMP) and Emera filed their evaluation criteria in 2019 in compliance with the new law.

Central Maine Power

CMP's Non-Wire Alternatives Process Document[27] describes in great detail the NWA evaluation methodology to address capacity and load growth related T&D needs. The following is sourced from the CMP document to avoid mischaracterization. CMP employs NWA opportunity suitability criteria to efficiently screen T&D system needs into the following two categories:

[26] Maine Law LD 1181, An Act To Reduce Electricity Costs through Nonwires Alternatives: https://legislature.maine.gov/legis/bills/bills_129th/chapdocs/PUBLIC298.rtf

[27] CMP, Non-Wire Alternative Process Document, March 2019 Docket No. 2018-171

- **Potentially Suitable**: There is a reasonable likelihood that an NWA could provide a cost-effective solution and therefore it should be considered a viable option
- **Not Suitable**: There is no reasonable likelihood that an NWA could provide a cost-effective solution and therefore no further consideration is recommended

CMP describes Potentially Suitable opportunities that may be candidates for NWA consideration generally as, steady state performance deficiencies (thermal and voltage) if:

- Wires solution cost exceeds $1 Million dollars,
- Time until the improvements are needed is sufficient to complete an NWA solicitation process, and
- Identified need addresses one of the following types of conditions:
  1. Transmission Normal System Violations (N-0): a transmission facility that is projected to be moderately overloaded (i.e. below the LTE[28]1 rating) under normal system conditions (i.e. no outages or facilities out of service).
  2. Transmission Contingency System Violations (Line out Conditions, N-1 and N-1-1):
  3. Transmission reliability deficiencies that meet all of the following conditions (deficiencies driven from scheduled maintenance outages are not required to meet the conditions listed below):
     a. Does not result in voltage collapse (single or multiple contingency, N-1 and N-1-1)
     b. Single contingency (N-1) thermal loading remains below the STE[29] rating
     c. Multiple contingency (N-1-1) thermal loading remains below the DAL[30] rating
  4. Distribution Normal and Contingency System Violations (N-0, N-1): Distribution substation and circuit thermal and voltage violations under N-0 and N-1 conditions.

CMP identified as generally Not Suitable the following types of grid needs cannot be practically addressed by an NWA:

1. Performance deficiencies included in Section A if the solution time of need is deemed urgent by CMP and time does not allow for an NWA solicitation and analysis.
2. Transmission Severe Reliability Violations (or Line out Conditions, N-1 and N-1-1) including any of the following:
   a. Voltage collapse (single contingency, N-1) (multiple contingency, N-1-1). Scheduled maintenance voltage collapse conditions could potentially be suitable for NWA solutions as the first outage is pre-planned and posturing of the system will occur.
   b. STE violations (single contingency, N-1)
   c. DAL violations (multiple contingency, N-1-1)
3. Loss of Customer Load: Any loss of customer load resulting from system contingences including violations of the Maine Safe Harbor loss of load criterion (i.e. customer load loss is not practically mitigated with an NWA)
4. Asset Condition: replacement of equipment due to the age and/or condition of the equipment

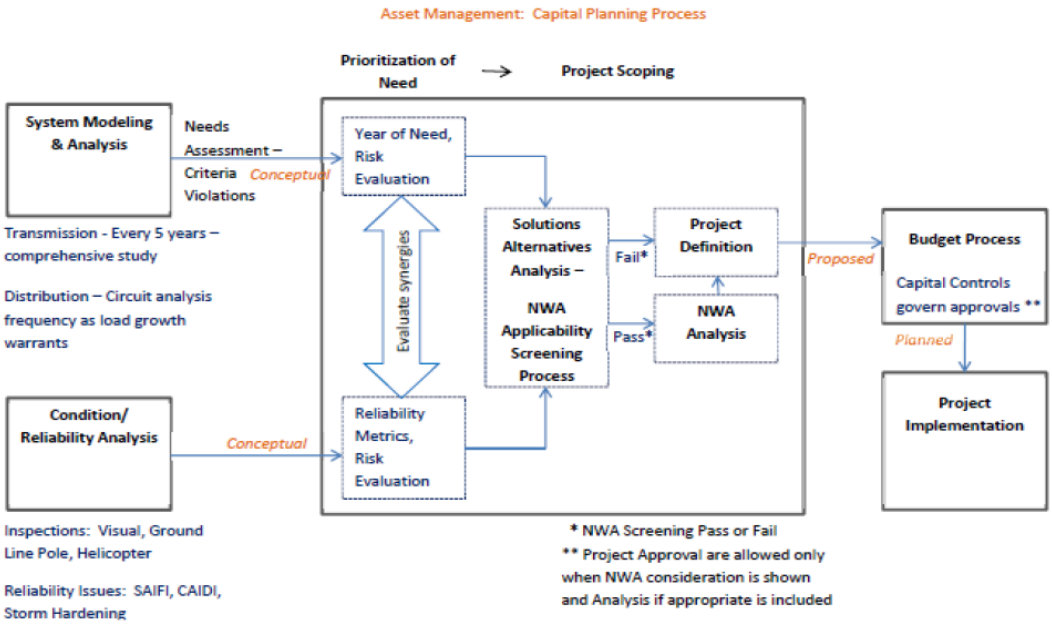
[28] LTE: Long Term Emergency Rating
[29] STE: Short Term Emergency Rating
[30] DAL: Drastic Action Limit Rating

5. Transmission Non-Steady State Performance Deficiencies: including any of the following:
   a. Stability (Dynamic or Voltage)
   b. Power Quality (e.g. motor starting induced voltage flicker)
   c. Protection Systems
   d. Short Circuit
   e. Geomagnetic Disturbance mitigation
6. Customer Interconnection Related Facilities: driven by a request for new or upgraded service (e.g. load or generation interconnection)
7. Minor Deficiencies: a deficiency that will require a wires solution with a cost estimate of a $1 Million dollars or less.

Emera

Emera describes[31] their process more simply to "filter the NWA solution matrix down to options that match system need requirements. The primary parameters that feed into this analysis include level and hours of peak load reduction required. This is determined by evaluation of system load data in comparison to system needs." Emera's T&D capital planning process is shown below (Figure 10).

Figure 10: Emera Maine T&D Capital Planning Process



Additionally, the adaptation of the Law's screening criteria is incorporated into their engineering planning process flow (Figure 11)

[31] Emera, Transmission and Distribution Capital Planning Process Including Non-Wires Alternatives Screening Process and Criteria. March 27, 2019. Docket No. 2018-00171

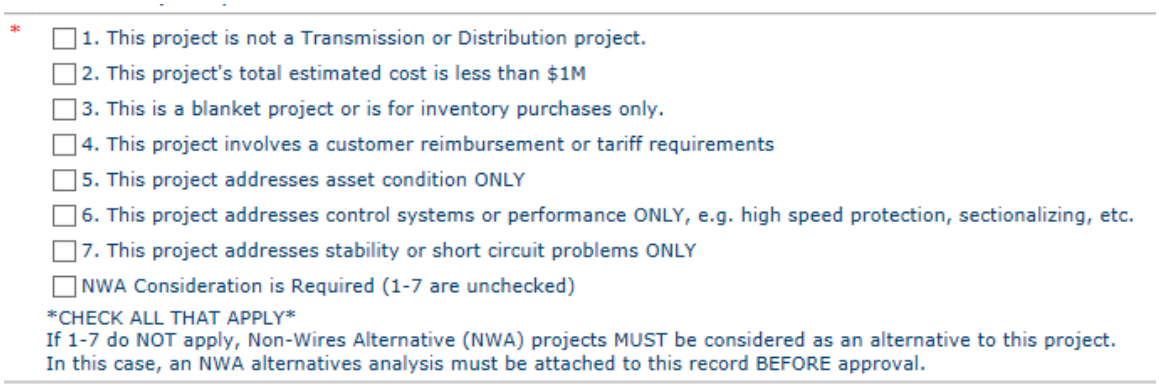


Figure 11: Emera Planning Process Suitability Filter

New Hampshire

New Hampshire doesn't currently have NWA regulation, but National Grid (aka, Liberty Utilities) has pursued consideration of NWAs as part of their Least Cost Integrated Resource Plans.[32] Similar to National Grid's approach in other service areas, they first conduct a grid assessment where they identify potential areas of improvement on the grid while also capturing the demand forecast. After the assessment is complete, National Grid then identifies potential projects that broadly meet their identified needs and screens them for compatibility within their NWA suitability criteria.

National Grid defines non-wires alternative solutions in New Hampshire as "initiatives that may reduce, avoid, or defer the need for investment in distribution facilities through actions that reduce peak demand via targeted energy efficiency and load control programs, or increase peak generation via distributed generation." NWAs may include "energy efficiency programs, demand response and load control programs, and DG programs that complement and improve operation of existing transmission and distribution systems, and that individually or in combination defer the need for upgrades to the transmission and/or distribution system."

As part of grid planning process, an analysis is performed to adequately assess the needs and potential wires and NWA solutions. This includes screening potential NWA opportunities for initial feasibility, according to the following criteria:

- Distribution deficiency is not based on asset condition;
- Distribution deficiency needs to be addressed in no less than two years, allowing for development of an NWA solution;
- Wires solution, based on engineering judgement, will likely cost more than $0.5 million, providing sufficient cost savings to evaluate and implement an NWA solution;
- Wires solution will likely start construction at least 24 months in the future, providing sufficient time to evaluate and implement an NWA solution; and
- An NWA solution would be for less than 20% of the total load in the area of the distribution deficiency.

Figure 12 below summarizes National Grid's NWA Opportunity Evaluation criteria in New Hampshire.

[32] Liberty Utilities (National Grid), Docket No. DE 16-097 Least Cost Integrated Resource Plan January 15, 2016 https://www.puc.nh.gov/Regulatory/Docketbk/2016/16-097/INITIAL%20FILING%20-%20PETITION/16-097_2016-01-15_GSEC_DBA_LIBERTY_LCIRP.PDF

Liberty's NWA Evaluation Process[15]	
Step	**Description**
Review Demand Forecast	Review demand forecasts prepared for each substation, sub-transmission line, and feeder under extreme weather scenarios to determine if capacity is adequate to meet demand under normal and contingency configurations
Review T&D Deficiencies	Develop a list of distribution deficiencies based on planning criteria.
Screen Projects based on Screening Criteria	• Distribution deficiency is not based on asset condition; • Distribution deficiency needs to be addressed in no less than two years, allowing for development of a NWA solution; • Wires solution, based on engineering judgement, will likely cost more than $0.5 million, providing sufficient cost savings to evaluate and implement a NWA solution; • Wires solution will likely start construction at least 24 months in the future, providing sufficient time to evaluate and implement a NWA solution; and • A NWA solution would be for less than 20 percent of the total load in the area of the distribution deficiency.
Evaluate NWA solutions for technical feasibility	Review potential NWA solutions for technical feasibility: alternatives that have successfully reduced, avoided or deferred a wires solution in the region

Figure 12: National Grid (Liberty) New Hampshire NWA Evaluation Process (Source: NEEP)

National Grid describes their screening criteria as providing "a threshold of acceptance for non-wires projects stemming from the planning process that seeks to maximize the in-service life and utilization of existing assets." National Grid also noted that "a non-wires solution is often determined to be infeasible or noncompetitive when one wires solution can address a combination of issues that includes asset condition. For example, wires solutions typically address a combination of load capacity, reliability, and asset condition issues." This approach in New Hampshire is consistent with National Grid's other service territories as illustrated in their simplified grid planning process diagram[33] below.

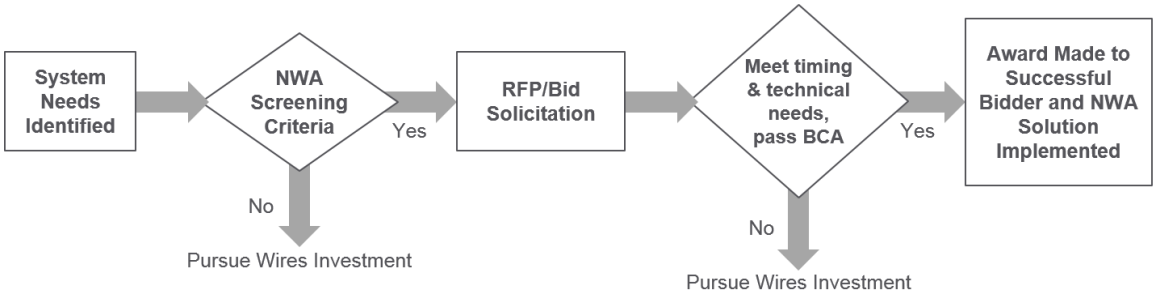


Figure 13: National Grid Planning Process

[33] National Grid NWA website: https://www.nationalgridus.com/Business-Partners/Non-Wires-Alternatives/Planning-Process

New York

On March 9, 2017, the Public Service Commission ("Commission") issued its Order on Distributed System Implementation Plan Filings, which requires five filings related to the development of distributed system platform ("DSP") capabilities to achieve Reforming the Energy Vision ("REV") goals.1 In May 2017, the Joint Utilities of New York filed a refinement to their Suitability Criteria for non-wires alternatives that have been incorporated into the utilities' annual capital planning and budgeting process.[34]

"In New York each utility has a sourcing team who works with planning engineers and other utility staff to more precisely define the system needs and further develop the NWA opportunities. This includes prioritizing the identified NWA opportunities consistent with the prioritization approaches included in the capital planning process and further developing the timing of the issuance of an RFP to address these opportunities." (Page 9)

Identifying potential opportunities for NWA starts with a grid needs assessment as an integral part of the T&D planning analysis. The goal of the T&D analysis is to identify areas of need and then identify potential solutions to address those needs. The potential solutions include both wires and non-wires alternatives. The NWA opportunities are screened using a four-part suitability criterion:[35]

- Effectiveness in meeting the need,
- Cost,
- Implementation timing, and
- Risks associated with each option

These NWA Suitability Criteria are part process to identify qualified opportunities and source NWA solutions within the traditional planning process. The three steps are NWA Opportunity Identification, NWA Sourcing Development, and NWA Solicitation.[36] NWA Opportunity identification refers to the identifying potential NWA projects that can meet the identified needs from the planning process, particularly with the location and timing of the need. The NWA Sourcing Development refers to the collection of data from potential projects that centers on its viability/reliability. The NWA Solution Solicitation stage refers to the procurement of the NWA.

[34] Joint Utilities of New York, Joint Utilities' Supplemental Information on the Non-Wires Alternatives Identification and Sourcing Process and Notification Practices. May 8, 2017. Case 16-M-0411 http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7B5DA604B3-9CDA-45D3-8642-92A4C4171787%7D

[35] Id.

[36] Id.

The goal of the NWA Suitability Criteria is to provide, "…a list of traditional infrastructure projects that are candidates for NWA solutions."[37] In order for a project to pass through the NWA Suitability criteria filter, it must meet the appropriate standards for, "…project type, timeline, and cost. Proposed projects are classified into broad categories of utility projects to determine overall sense of applicability. These categories are based on the type of work needed, such as new business, system expansion, risk reduction, and asset replacement.

From a timing perspective, the utility must indicate it can procure the NWA and implement it prior to when a solution is needed on the T&D system. The cost suitability criteria of a utility project are used to determine if an NWA solution is cost-competitive."[38]

The potential solutions that meet the standard criteria are then prioritized again based on timing and need. It is important to note that the risks associated with each potential project are magnified based on the timing of the need. This, however, doesn't mean that system needs that require more immediate solutions will lower standards to fill these needs with NWA solutions. In fact, more immediate solutions will likely require much stricter requirements to ensure system safety and reliability.

"Viable NWA opportunities are prioritized based on the timing of the system need, with near-term opportunities tied to more urgent needs moving to the RFP stage ahead of those opportunities with needs further out in the planning horizon. The level of operational and execution risk assigned to a single solution, or portfolio of solutions, is correlated to the designated timeline to meet the planning need. Projects that target critical needs with high operational risks are more likely to require more stringent performance requirements and contract terms for NWA solutions. NWA opportunities identified through the planning and NWA Suitability Criteria processes that are prioritized for solicitation to occur within the current twelve-month planning process are typically advanced to an RFP by the sourcing team."

"For example, the sourcing team may develop relevant customer demographic data, historical and forecast loads, and other geographic data to clarify and potentially quantify the load reduction potential at a particular substation or region of the grid associated with a system need."

Each utility adapted the common suitability framework to their specific circumstances. The criteria employed by Con Edison and Nation Grid are shown below in Figures 13 and 14 respectively.

[37] Id.
[38] Id.

Criteria	Potential Elements Addressed	
Project Type Suitability	Project types include Load Relief and Reliability. Other types have minimal suitability and will be reviewed as suitability changes due to State policy or technological changes.	
Timeline Suitability	Large Project	36-60 months
	Small Project	18-24 months
Cost Suitability	Large Project	Greater than or equal to $1M
	Small Project	Greater than or equal to $500K

Figure 14: ConEdison NWA Suitability Criteria

Criteria	Potential Elements Addressed	
Project Type Suitability	• Project types include Load Relief or Load Relief in combination with Reliability. Other categories have minimal suitability and will be periodically reviewed for potential modifications due to State policy or technological changes.	
Timeline Suitability	**Large Project** (Projects that are on a major circuit or substation and	• 36 to 60 months
	Small Project (Projects that are feeder level and below)	• 18 to 24 months
Cost Suitability	**Large Project** (Projects that are on a major circuit or substation and	• No cost floor
	Small Project (Projects that are feeder level and below)	• Greater than or equal to $450k

Figure 15: National Grid New York NWA Suitability Criteria

Rhode Island

RI Legislation

In 2006, Rhode Island passed the Comprehensive Energy Conservation, Efficiency, and Affordability Act which established a policy where utilities are required to invest in cost-effective energy solutions for a more efficient grid. The law requires electric distribution companies (namely, National Grid) to develop an annual "System Reliability Procurement" (SRP) Plan, which must consider "non-wires alternatives" (NWAs) including energy efficiency measures, distributed generation and demand response measures. The distribution utility is required to assess whether NWAs can cost-effectively defer distribution (and potentially transmission) system investments.

RI Commission

The Rhode Island Least Cost Procurement Standards (LCP)[39] require that the electric utility identify transmission and distribution (T&D) systems needs and projects that meet certain screening criteria for potential NWA solutions that reduce, avoid, or defer traditional T&D wires solutions within the SRP.

Electric Distribution System Needs are defined in Rhode Island as:

> *"Electric distribution system needs shall include, but are not limited to: system capacity (normal and emergency), voltage performance, reliability performance, protection coordination, fault current management, reactive power compensation, asset condition assessment, distributed generation constraints, and operational considerations. Note that not all system needs can be addressed by NWAs."*

The 2017 LCP updated an earlier version of the standard related to "Assessment of Applicability of NWAs." The updated criteria language is provided below.

A. Identified electric distribution system needs that meet the following criteria will be evaluated for potential NWAs that could reduce, avoid, or defer a transmission and distribution (T&D) wires solution over an identified time period.
    i. The need is not based on asset condition.
    ii. The wires solution, based on engineering judgment, will likely cost more than approximately $1 million; the cost floors may vary across different project types and time frames.
    iii. If load reductions are necessary, then they are expected to be less than twenty
    iv. (20) percent of the relevant peak load in the area, or sub-area in the event of a partial solution, of the defined need.
    v. The start of wires alternative construction is at least thirty (30) months in the future.

[39] RI PUC, Least Cost Procurement Standards. June 2017. http://www.ripuc.org/eventsactions/docket/4684-LCP-Standards-FINAL.pdf

vi. At its discretion, the distribution company may consider and, if appropriate, propose a project that does not pass one or more of these criteria if it has reason to believe that a viable NWA solution exists, assuming the benefits of doing so justify the costs.

B. If the distribution company determines that an NWA cannot defer the entire T&D project, the distribution company is encouraged to examine the application of NWAs to avoid or defer part of the overall scope of the project. This shall be referred to as 'partial' or 'hybrid' NWA. The distribution company will review reduction of the discrete portions of the entire T&D plan.

National Grid

National Grid (aka, Narragansett) applies the LCP standards including the NWA opportunity screening criteria in its "Plan Development" step (Figure 16) in the distribution planning process as part of their SRP.[40]

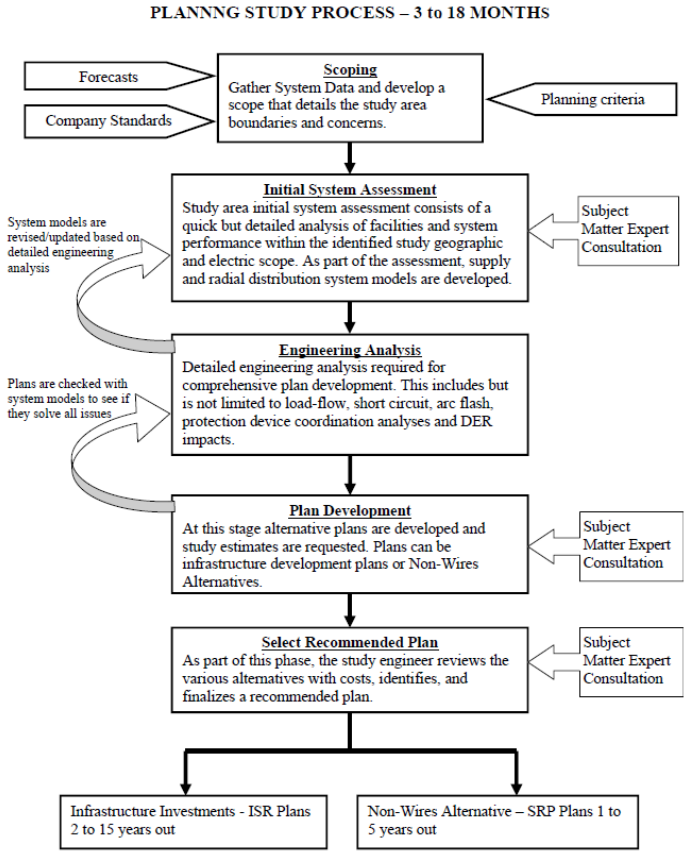


Figure 16: National Grid RI Distribution Planning Process

[40] 2019 System Reliability Planning Report, National Grid, October 2018 http://www.ripuc.org/eventsactions/docket/4889-2019-NGrid-SRPReport(10-15-18).pdf

Summary

Based on the survey and observation of industry analysts, the use of NWAs for distribution grid needs is at an early stage of utilization. The industry is still learning and refining approaches to improve upon the early mixed success to-date.[41] However, commonalities are emerging from these early states' and utilities' learnings that provide valuable insights for Hawai'i's success. The following are key findings from this survey on NWA opportunity evaluation processes and criteria.

Distribution Planning Process

- Integrate NWA opportunity evaluation into standard, open and transparent utility T&D planning processes to encourage the effective engagement of market participants to best meet regulatory and utility-level objectives.[42]
- Not all identified T&D needs are suitable for NWAs[43]
    - NWA opportunities to-date have initially addressed grid needs for capacity increases, and have identified reliability, voltage/reactive power and resilience for future consideration.
    - Exclusions include T&D capital projects involving break-fix, outage replacements, aging infrastructure replacement, infrastructure relocation or customer service connections.
- T&D planning processes can efficiently support non-wires solutions if simple, clear screening criteria and relative prioritization are used to determine when alternatives should be considered for a given need.[44]

NWA Opportunity Evaluation

- NWA opportunity evaluation processes focus on identifying high-confidence recommendations for DER solicitations that are likely to result in successful, cost-effective investment deferrals.[45]
- The type of T&D need, timeframe for in-service date, and reference T&D project cost are common criteria employed by all jurisdictions surveyed to evaluate NWA opportunities.
- Evaluation of opportunities are done on a technology agnostic, comparable basis as utility alternatives as part of the economic justification for distribution system upgrades.[46]

[41] Reported in 2019 California DDORs, and based on initial NWA procurement results by SEPA, 2018 and ICF, 2019
[42] RMI, 2018 and SEPA, 2018
[43] Statutes and Regulatory findings in California, District of Columbia, Maine, Rhode Island
[44] Id.
[45] CPUC Decision on the Distribution Investment and Deferral Process (D.18-02-004)
[46] HPUC Order No. 30725 Docket No. 2018-0165, Proceeding To Investigate Integrated Grid Planning

NWA Sourcing Strategy

- States/utilities first consider no-to-low cost (capital) operational (e.g., circuit reconfiguration, phase balancing, etc.) options as well as low cost grid technology alternatives (e.g., sensing & analytics, power flow controllers, etc.) as an alternative to traditional capital projects.
- Procurements may not be best suited for all NWA opportunities (e.g., smaller value projects, reaching certain customer classes, and/or new real estate developments)
    - Targeted EE/DSM Programs are often employed before considering procurement
    - DER Services tariffs are under discussion in a few states
- Information regarding an NWA opportunity should be shared with stakeholders, including engineering analysis and requirements needed to assess the opportunity.

Additionally, the survey identified several themes regarding the evaluation criteria. As noted above, the type of T&D need, timing for in-service date, and reference T&D project cost are common criteria. Most states have developed simple clear criteria based on stakeholder input. California has created a very complex methodology that, in practice, effectively centers on the same simple criteria as used in the Northeast and proposed in Hawai'i. That is, the type of grid needs and the related performance requirements are primarily considered. Also, the timing for in-service includes consideration of the procurement/program development process, regulatory approval and implementation timelines. Lastly, a minimum size of an NWA opportunity based on the avoided capital cost of the traditional wires project in the context of a procurement.

A more complex quantitative approach, in practice, does not necessarily identify more NWA procurement opportunities than the simpler methods employed in most states. Based on the 7 states surveyed, NWA opportunities for procurement averaged approximately 1-2% of all T&D capital projects and about 5-10% of initially qualified distribution upgrade projects. This doesn't mean that DER cannot provide NWA, only that procurements are limited in their application. In many states, the use of targeted DSM programs is pursued in addition to, or before considering NWA procurements.

Based on these insights drawn from the survey and practitioners, simplicity and flexibility appear to be important considerations in development of NWA opportunity evaluation criteria. Simplicity regarding the ability to implement fairly on a repeatable process and to provide clarity to the market. Flexibility in terms of enabling opportunities to pursue viable NWAs through other sourcing means than all or nothing procurements. That is, incorporating consideration of the role that programmatic options may provide for opportunities that might otherwise not make sense economically for a procurement, for example.