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April 4, 2019

RFP #2019-003

REQUEST FOR PROPOSALS

Locational Value of Distributed Generation (LVDG) Study Consultant

Prospective Consultants:

The New Hampshire Public Utilities Commission (Commission or PUC) is seeking proposals from qualified firms or individuals to perform a study to determine the distribution-level locational value of distributed generation (DG). The study will consider the value of avoided or deferred distribution investment costs due to capacity constraint mitigation at a number of to-be-determined distribution system locations within New Hampshire's three regulated electric distribution utility service territories. The results of the study will inform future net energy metering (NEM) tariff development proceedings before the Commission.

Pertinent dates and information:

1. Electronic proposals must be received by the Commission no later than 4:30 p.m. on April 30, 2019. The electronic copy must be in PDF (portable document file) format.
2. Proposals should be submitted to:

Juli Pelletier, Business Administrator
New Hampshire Public Utilities Commission
21 S. Fruit Street, Suite 10
Concord, NH 03301-2429
RFP@puc.nh.gov

3. In addition to the electronic submission, prospective bidders must submit six (6) additional paper copies to the address above, which must be postmarked no later than April 30, 2019.
4. Prospective consultants may submit written inquiries about this RFP by e-mail to RFP@puc.nh.gov no later than 4:30 p.m. EST on April 19, 2019. Inquiries and responses will be posted on the PUC's website at: www.puc.nh.gov/home/requestforproposal.htm. The subject line of the e-mail must state the following: RFP #2019-003 Locational Value of Distributed Generation Study Consultant.

5. Follow-up conferences/interviews will be scheduled as needed. In the event an interview is scheduled, you will hear from Ms. Pelletier and may return calls for the sole purpose of scheduling an interview at (603) 271-6008.
6. An Evaluation Team consisting of Commission Staff (Staff) and/or other qualified personnel will be established to evaluate responses (Proposals) to this RFP submitted by prospective consultants (Proposers).
7. From the date of the release of this RFP until awards are made, all communications with personnel employed by or under contract with the Commission regarding this RFP is forbidden, unless first approved by the point of contact identified above. All inquiries concerning this RFP, including, but not limited to, requests for clarification, must be submitted by e-mail to Juli Pelletier, Business Office Director at RFP@puc.nh.gov. The subject line of the e-mail must state the following: RFP #2019-003 Locational Value of Distributed Generation Study Consultant. No phone calls, please.

I. BACKGROUND

The Commission is an administrative agency with executive, legislative, and quasi-judicial powers. The Commission's primary responsibility is as an arbiter between the public utilities and their ratepayers. Proceedings in this regard address such areas as public utility rates, financing, terms and conditions of utility service, quality of service, safety and reliability, eminent domain matters, public utility exemptions from local zoning ordinances, public utility franchises, utility crossings of public lands and waters, wholesale relationships between utilities, rulemakings, and consumer complaints. The Commission's regulatory authority over most telephone utilities was limited by legislation enacted in 2012. The Commission performs other roles and functions as specified in relevant state statutes.

In [Order No. 26,029](#), issued in Docket DE 16-576 on June 23, 2017 (June 2017 Order), the Commission approved the adoption of a new alternative net energy metering tariff, designed to be in effect for a period of years while additional data is collected and analyzed, pilot programs are implemented, and a value of distributed energy resource study (VDER Study) is conducted.

The June 2017 Order also required the development of non-wires alternative (NWA) pilot programs focused on DG system deployment to avoid or defer utility distribution system upgrades. In [Order No. 26,124](#), issued on April 30, 2018, (April 2018 Order), the Commission ordered Staff and the parties to suspend development of NWA pilot programs and instead focus on determining the locational value of DG to the utility distribution system through study and analysis of relevant data. The Commission also indicated that the locational value analysis might be addressed either through a separate study or within the scope of the VDER study, "depending on which approach is determined to be most effective and efficient."

Commission Staff conducted a series of stakeholder working group sessions to develop a study scope and timeline for the locational value study. On November 30, 2018, Staff filed its proposed [Locational Value of Distributed Generation \(LVDG\) Study Scope and Timeline](#). On February 20, 2019, after receipt of public comment, the Commission issued [Order No. 26,221](#) (February 2019 Order), which found that the scope and timeline

of the proposed LVDG study was reasonable and appropriate, with a number of specific clarifications and modifications, and directed Staff to engage a consultant to perform the LVDG study. The LVDG Study Scope and Timeline has been updated to reflect the directives of the February 2019 Order, and a further clarification included in Order No. 26,227 (March 20, 2019). The final study scope and timeline is provided as Appendix A to this RFP. That document provides the primary basis for the general scope, methodology, and timeline for the LVDG study which is the subject of this RFP.

Proposers will be expected to be familiar with the contents of the filings and scoping document noted above.

II. SCOPE OF SERVICES AND DELIVERABLES

The consultant will be hired and supervised by the Commission to perform a study to determine the distribution-level locational value of DG for a number of to-be-determined locations within the three regulated electric distribution utility service territories in New Hampshire. Please refer to Appendix A to review the approved study scope, general methodology, and timeline, including modifications directed by Commission in the February 2019 Order and the clarification included in Order No. 26,227.

The consultant selected to conduct the study will, at the direction of and in consultation with Commission Staff, be required to perform the following tasks:

- a. The consultant shall conduct meeting(s) with Commission Staff and the LVDG study working group as specified in Appendix A.
 1. Participate in bi-monthly meetings with the LVDG Study stakeholder working group to provide status updates and answer questions during the study process.
 2. Participate in other stakeholder working group meetings convened by Staff in connection with a major step in the study process, even if that meeting would be held sooner than would otherwise occur on a bi-monthly schedule.
- b. The consultant shall conduct relevant investigation and analysis and prepare a LVDG study report as described in Appendix A.
 1. Work directly with the three regulated electric distribution utilities.
 2. Prepare, deliver, and present a final study report.

In addition to submitting a Proposal covering the services listed above, Proposers must provide separate quotes for the following optional study adders:

1. Study Adder 1: Analysis of a forward-looking 6 to 10-year timeframe, in addition to the base study review timeframe which includes five years of past investment and five years of forward-looking projections.
2. Study Adder 2: Assistance with development of a flexible, accessible valuation model that can be used to evaluate a variety of NEM-eligible technologies beyond the scope of the LVDG study, including how, or if, existing, open access tools such as, PNNL's GridPIQ or GridLab-D, or

NREL's REopt Lite could be used.

At the conclusion of the work, the consultant will make available to the Commission summaries of significant workpapers and source documents as requested.

III. CONFIDENTIALITY

Each Proposer agrees to maintain confidential all information to which it has access until such time as it is instructed otherwise by the Commission. A Proposal must remain confidential until the effective date of any contract resulting from this RFP. A Proposer's disclosure or distribution of Proposals other than as permitted by the Commission will be grounds for disqualification.

IV. COMPONENTS OF THE PROPOSAL

The following is a list of the information to be provided in the Proposal. Proposers should respond to all areas listed below, in the order listed, and conclude with a separate section on cost estimates for the base scope of work, as well as a separate cost estimate for each Study Adder identified in Section II above.

1. Letter of Transmittal: Include name of Proposer, contact information for, and signature of, proposed consultant. (1 page)
2. Corporate/Company Information: Information concerning its corporate/company history, i.e., how many years in business, corporate officers or company principals, location of branch offices, professional and business association memberships, current or prior engagements involving substantive areas similar to those described in this RFP, the parties it represented in such engagements, the scope of work it performed in such engagements, and the conclusion and recommendations it made publicly in connection with such engagements. (1 page)
3. Proposed Scope of Work and Schedule: Describe the essential elements of the proposed services, including a description of the Proposer's plan to conduct and complete LVDG study, with the scope, methodologies, and timeline as described in Appendix A.
4. Relevant Qualifications and Experience of Personnel Assigned: Detailed description of the Proposer's relevant experience with respect to the proposed scope of services, including a list of all personnel who will be assigned to this engagement, including the project manager (if applicable), and detailed resumes (in an appendix) and summaries of each individual reflecting his or her relevant experience, the nature of his or her specific responsibilities, and the positions publicly advocated by the Proposer in connection with any such similar engagements. During the course of the work, the Commission must approve in writing any substitutions or changes in personnel assigned to perform the work. (no more than 3 pages, not including the resumes of the key personnel)
5. References: A list of up to three references for work performed which is similar in scope or content to that proposed, preferably within the past three years. (1

page)

6. Statement of Disclosure: Identification and description of any existing or potential conflicts of interest, including those that arise as a result of relationships or affiliations with utility companies under the jurisdiction of the Commission, other industry participants, trade associations, or advocacy organizations or groups that participate in or represent active stakeholders in the commercial and industrial solar equipment manufacturing, sales, or installation industries.
7. Detailed Budget Proposal: A detailed cost proposal that identifies the hourly rate for personnel and any associated expenses, to include:
 - a. A separate detailed cost proposal to perform the base scope of work, including a breakout of the expected cost of analysis per site for Steps 2-3, with that estimate labelled “Base Bid Budget.”
 - b. A separate detailed cost proposal to perform Study Adder 1: Year 6-10 analysis, with that estimate labelled “Adder 1 Budget.”
 - c. A separate detailed cost proposal to perform Study Adder 2: Model Assistance with Development, with that estimate labelled “Adder 2 Budget.”

V. SELECTION CRITERIA

Cost is a consideration but may not be the determining factor in the selection. In addition to cost, the Commission will also consider the following criteria, and assign a corresponding point score, where a maximum score for all criteria would be 100 points and any proposal with a total aggregate point score of less than 65 points will not be considered for selection.

1. Qualifications, technical expertise, certifications, knowledge and practical experience that the organization or individual possesses, including that of the staff and any subcontractors assigned to the engagement, providing services directly relevant to the specified scope of services, including utility distribution system design and planning, locational value analysis, net energy metering of solar and hydroelectric facilities, renewable energy systems development and operation, and non-wires alternative evaluation. (Maximum Point Score: 35)
2. General experience and qualifications in providing similar services in New Hampshire as well as other states and to other utility commissions or regulatory agencies, including similar current or prior engagements and the positions publicly advocated in connection with such engagements. (Maximum Point Score: 25)
3. Cost of consulting services and expenses, including the competitiveness of the proposed fees and/or hourly rates and any proposed discounts or other benefits. (The Commission reserves the right to negotiate lower fees or a different hourly rate structure than proposed, with any selected firm(s) or individuals.) (Maximum Point Score: 20)
4. Ability to work effectively in New Hampshire, including accessibility and proximity to, and familiarity with, the State. (Maximum Point Score: 10)
5. Overall responsiveness to the requirements of the RFP, including completeness,

clarity, and quality of Proposal, including proposed allocation of resources and time to critical tasks and schedule. (Maximum Point Score: 10)

VI. TERM OF CONTRACT

The term of the contract will be for a period of 12-18 months.

VII. GENERAL PROPOSAL CONDITIONS

1. Proposals must be typed and double-sided. Proposals that are incomplete or unsigned will not be considered. Electronic Proposals must be received by the Commission no later than 4:30 p.m. EST on April 30, 2019. The electronic copy must be in PDF (portable document file) format. In addition to the electronic submission, prospective bidders must submit six (6) additional paper copies which must be postmarked no later than April 30, 2019. Proposals must be addressed to Juli Pelletier, Business Administrator, New Hampshire Public Utilities Commission, 21 South Fruit Street, Suite 10 Concord, NH 03301-2429, and to RFP@puc.nh.gov.
2. Proposers may submit written inquiries about this RFP by e-mail to RFP@puc.nh.gov no later than 4:30 p.m. EST on April 19, 2019. Inquiries and responses will be posted on the PUC's website at www.puc.nh.gov/home/requestforproposal.htm. Please note that answers to questions are carefully considered and may require several days before they are posted. It is strongly recommended that Proposers review the RFP in its entirety as soon as possible to allow the PUC time to answer questions and to allow the Proposer time to complete the Proposal.
3. The Commission reserves the right to cancel or withdraw this RFP, to reject or accept any or all Proposals, to reject or accept all or any part of any Proposal, to determine what constitutes a conforming Proposal, to waive irregularities that it considers not material to the Proposal, to award the Proposal solely as it deems to be in the best interest of the State, to contract for any portion of the Proposals submitted and to contract with more than one Proposer if deemed necessary. Notwithstanding any other provision of this RFP, this RFP does not commit the Commission to award a contract.
4. This RFP and all information relating to this RFP (including, but not limited to, fees, contracts, agreements, and prices), are subject to the laws of the State of New Hampshire regarding public information and state procurement of goods and services.
5. The Commission reserves the right to amend or modify this RFP at its discretion, prior to the Proposal submission deadline. In the event of an amendment or modification of this RFP, the State, at its sole discretion, may extend the Proposal submission deadline, as it deems appropriate.
6. Proposals must be valid for sixty (60) days following the deadline for submission of Proposals.

7. By submitting a Proposal, a Proposer agrees that in no event shall the Commission be either responsible for or held liable for any costs incurred by the Proposer in the preparation of or in connection with the Proposal, or for work performed prior to the effective date of any resulting contract.

VIII. CERTIFICATES

Proposers will be required to provide the following certificates prior to entering into a contract:

Secretary of State's Office Certificate of Good Standing ("CGS")	Individuals contracting in their own name do not need a CGS. Business organizations and trade names need a CGS, except for nonresident nonprofit corporations.
Certificate of Vote /Authority ("CVA")	Individuals contracting in their own name do not need a CVA. Business entities and trade names need a CVA.
Certificate of Insurance	Certificate of Insurance form attached with insurance coverages required under the contract. Modifications of insurance coverage required will be specified in the contract.
Workers' Compensation	Contractor must demonstrate compliance with or exception from RSA 281-A (and if applicable, RSA 228:4-b and RSA 21-I:80, and any other applicable laws or rules).

IX. FORM OF CONTRACT

1. The terms and conditions set forth in Form P-37 (v. 5/8/15) General Provisions Agreement (available at: <http://www.puc.nh.gov/Home/requestforproposal.htm>) are part of the Proposal and will apply to any contract awarded to the Proposer.
2. Any contract resulting from this RFP shall not be deemed effective until the initial term and any ability to renew are approved by the Governor and Council, and subsequent options to renew may be exercised in writing by the Commission.
3. Any contract awarded through this RFP will expire on a date which is 12-18 months following its effective date, as negotiated with the consultant. The Commission at any time, in its sole discretion, may terminate the contract, including any renewals, or postpone or delay all or any part of the contract, including any renewals, upon written notice to the engaged consultant.
4. When responding to this RFP, please include your ability to comply with Paragraph 14 of the Form P-37 General Provisions Agreement, "Insurance," referenced in subparagraph IX.1 above. Please note that the

Commission will allow substitution of professional liability insurance for part or all of the per occurrence comprehensive general liability insurance coverage. In addition, excess liability insurance in an equal amount may be substituted for up to \$1,000,000 of the per occurrence comprehensive general liability or professional liability insurance coverage. The State reserves the right to further waive or modify the insurance requirements in Paragraph 14 based on Proposals submitted.

X. FINANCIAL INFORMATION AND PUBLIC POSTING REGARDING RFPs

1. Pursuant to the relevant statutes and regulations, all responses to this RFP shall be considered confidential until the award of a contract. At the time of receipt of Proposals, the State will post the number of responses received with no further information. No later than five (5) business days prior to submission of a contract to the Governor and Council pursuant to this RFP, the Commission will post the name and rank or score of each Proposer. If the Contract does not require Governor and Council approval, the Commission shall disclose the rank or score of the Proposals at least five (5) business days before final approval of the contract. All such postings may be viewed on the PUC's website at (<http://www.puc.nh.gov/Home/requestforproposal.htm>).
2. The content of each Proposal will become public information upon the effective date of any resulting contract. Any information submitted as part of a response to this RFP may be subject to public disclosure under RSA 91-A. In addition, in accordance with RSA 9-F:1, any contract entered into as a result of this RFP will be made accessible to the public online via the website Transparent NH: (<http://www.nh.gov/transparentnh/>). Accordingly, business financial information and proprietary information such as trade secrets, business and financial models and forecasts, and proprietary formulas, may be exempt from public disclosure under RSA 91-A:5, IV. If you believe any information being submitted in response to a request for proposal, bid, or information should be kept confidential as financial or proprietary information, you must specifically identify that information in a letter to the Commission, and should mark or stamp the materials as "CONFIDENTIAL." Marking of the entire Proposal or entire sections of the Proposal (e.g., pricing) as confidential will neither be accepted nor honored.
3. Notwithstanding any provision of this RFP to the contrary, contractor pricing will be subject to disclosure upon approval of the contract. The State will endeavor to maintain the confidentiality of portions of the Proposal that are clearly and properly marked as confidential. If a request is made to the State to view portions of a Proposal that the Proposer has clearly and properly marked as confidential, the State will notify the Proposer of the request and of the date upon which the State plans to release the records. A designation by the Proposer of information it believes exempt from disclosure does not have the effect of making such information exempt. The State will determine the information it believes is properly exempted from disclosure. By submitting a Proposal, the Proposer agrees that, unless the Proposer obtains a court order, at its sole expense, enjoining the release of the requested information, the State may release the requested information on the date specified in the State's notice without any liability to the Proposer.

XI. ETHICAL REQUIREMENTS

From the time this RFP is published until a contract is awarded, no Proposer shall offer or give, directly or indirectly, any gift, expense reimbursement, or honorarium, as defined in RSA 15-B, to any elected official, public official, public employee, constitutional official, or family member of any such official or employee who will or has selected, evaluated, or awarded an RFP, or similar submission. Any Proposer that violates RSA 21-G:38 shall be subject to prosecution for an offense under RSA 640:2. Any Proposer who has been convicted of an offense based on conduct in violation of this section, which has not been annulled, or who is subject to a pending criminal charge for such an offense, shall be disqualified from bidding on this RFP, or similar request for submission and every such Proposer shall be disqualified from bidding on any RFP or similar request for submission issued by any State agency. A bidder that was disqualified under this section because of a pending criminal charge which is subsequently dismissed, results in an acquittal, or is annulled, may notify the Department of Administrative Services, which shall note that information on the list maintained on the State's internal intranet system, except in the case of annulment, the information, shall be deleted from the list.

APPENDIX A

**LOCATIONAL VALUE OF DISTRIBUTED GENERATION
STUDY SCOPE AND TIMELINE**

New Hampshire Locational Value of Distributed Generation Study Scope

This document describes the study parameters and methodology for the distribution-level Locational Value of Distributed Generation (LVDG) study as approved with modifications specified in Order No. 26,221 issued on February 20, 2019 in Docket DE 16-576.

Study Objectives

Pursuant to Commission Order No. 26,124, issued in Docket DE 16-576, Development of New Alternative Net Metering Tariff and/or Other Regulatory Mechanisms and Tariffs for Customer-Generators, this study will focus on the locational value of distributed generation (DG) to the utility distribution system through analysis of relevant data.

The Order directs the working group to evaluate alternative study designs and methodologies to address the potential locational value of DG on the utility distribution system. It states that such locational value may result from capital investment avoidance or deferral, and operating expense reduction or deferral, such as through equipment life extension or lower maintenance and labor costs.

This analysis will inform the Value of Distributed Energy Resources (VDER) study, as well as the Commission's evaluation of future net energy metering (NEM) tariff development. The study results are not intended to pre-determine future NEM tariff design or applicable rates, but rather to inform further NEM tariff development proceedings before the Commission. In addition, determining locations and costs of avoided or deferred capacity investments may be relevant in a number of other contexts before the Commission, such as grid modernization, future utility rate cases, and future Least Cost Integrated Resource Plans.

Study Parameters

Relation to Value of Distributed Energy Resources (VDER) Study

Due to the significant differences in the type and level of analysis required for a distribution-level LVDG, the LVDG study will be conducted as a separate analysis from the VDER study. Findings from the LVDG study will be used in conjunction with the VDER study to inform future NEM tariff development and DG compensation proceedings.

Technologies Considered Within Study Scope

Because the study will be performed within the context of the NEM docket, study analysis will focus on DG that is eligible for NEM and is interconnected to a New Hampshire regulated distribution

utility (i.e., Eversource, Unitil, and Liberty Utilities), including solar, hydroelectric, and solar paired with energy storage. Per Commission Order 26,221, the study will assume future solar facilities will use “smart inverters” but will not assume inverters are dispatched or otherwise managed in the aggregate.

The study will not include analysis of load reduction approaches, such as demand response and energy efficiency as these resources are not eligible for NEM. However, the study results are expected to provide technology-neutral load reduction values organized by time and location. Order 26,221 directs Commission Staff to work with the consultant to develop and make available, if possible, a flexible and accessible valuation model that may be used to evaluate a number of NEM-eligible technologies other than those what are the focus of the study.

Eligible Avoided or Deferred Investment Costs

The LVDG study will consider the value of avoided or deferred distribution investment costs due to capacity constraint elimination at a number of locations on the New Hampshire electrical distribution grid.

Potential avoided or deferred distribution costs related to power quality and lower distribution elements, including distribution transformers and capacitor banks, will be considered on a system-wide level within Section 17 “Distribution Grid Support Services” of the VDER study, and not considered here. The LVDG study is not intended to determine a system-wide value for DG.

Timeframe

The study will examine avoided or deferred investment costs over a ten-year timeframe. The study baseline will review the last five years of load and investment data to establish historical expenditures. Order 26,221 directs Commission Staff to work with the consultant to determine whether an extended study period of a further five-year projection may be included as an additional option at a reasonable cost. It may be appropriate for later years of such an extended study period to be subject to discounting to reflect the greater uncertainty of a longer-term horizon.

Geographic Scope

Unitil, Eversource, and Liberty Utilities distribution asset locations.

Distribution System Analysis Level

Subtransmission (13kV-69kV), Substation, and Distribution Circuits.

Load Growth Projections

Conduct a baseline analysis utilizing load growth projections as developed by each utility for its planning processes, if available and to the extent possible. The study will incorporate both a high-load growth scenario and a low-load growth scenario to define sensitivity parameters around the baseline analysis. Order 26,221 encourages Commission Staff to work with the consultant to

determine whether heat pumps and other electric equipment, as well as the potential effects of greater than anticipated economic growth, should be included in the assumptions used for the high-load growth scenario analysis. The low-load growth scenario will account for potential increases in levels of energy efficiency, conservation, and demand response, or for slower than expected economic growth.

The LVDG study consultant is permitted to recommend the use of a counterfactual baseline analysis that excludes future projections of historically-observed growth in net-metered DG investment, under Order No. 26,227 (March 20, 2019).

Investment Threshold

The LVDG study scope specifies no minimum investment threshold level for the cost of upgrades that must be met before considering a location for further study. However, the level of analysis is expected to exclude small program investments that are part of a “system benefit initiative,” such as pole top distribution transformers and capacitors. Those small program investments may be included in the separate system-wide VDER analysis currently under consideration. The LVDG study will focus on significant distribution system issues, and planned or potential investments.

Locations and Projects for Review

Projects considered for detailed review will include:

- Locations identified through forward-looking load growth projections and the screening method outlined below using N-0 criteria.
- Locations identified with capacity-related investments through review of five-year historical spending and planning materials.
- Locations with identified N-1 reliability investments due to capacity constraints in five-year historical spending plans and established investments in forward-looking five-year capital investment plans.
- Locations with non-load growth-related investment needs (e.g., asset management) that include increases to capacity may be reviewed in order to examine incremental investment costs due to equipment capacity increases.

Study Approach for New Hampshire LVDG Study

The following steps outline the study scope and methodology:

Step 1. Identifying Locations for Detailed Analysis

The LVDG study will employ a number of methods to identify locations for analysis. It will conduct an analysis on all substations and distribution circuits to identify locations with a high probability of requiring investments over the study timeframe for further review. The analysis will look at the projected load growth forecasts developed utilizing the existing utility distribution planning methodology. A high-load growth scenario, assuming significant beneficial electrification, and a low-load growth scenario, accounting for potential increases in energy efficiency, conservation, and demand response or for slower than expected economic growth, will also be examined as sensitivities. Using utility planning criteria, the analysis will determine where loads are expected to exceed the N-0 design rating of the lowest-rated component of each circuit. The study will also review established N-1 violations to identify capacity-related projected investments for review. That process is outlined in subsection A below. The study will review five years of historical investment information as well, to identify past capacity-related investments for review, as outlined in subsection B below.

A. Projected Violation Screening

(1) Utility Load Growth Forecast

A 5-year load growth forecast will be generated employing each utility's current forecast methodology, if available and to the extent possible. The consultant will use load growth forecasts developed through distribution forecast review and/or through work with utility planning departments as well as Commission Staff input. Utility load growth forecasts will be used as the preferred approach when available. If forecasts need to be developed beyond available utility forecasts, the consultant will work to incorporate weather forecasts, econometric forecasts, DG integration forecasts (unless otherwise recommended by the consultant), as well as known future residential, commercial, and industrial significant load impacts as incorporated in each utility forecasting process.

Identify Violations Using Component Criteria

The consultant will develop appropriate component criteria thresholds through distribution planning materials and forecast review and/or work with utility planning departments to develop a list of distribution circuits, subtransmission, and distribution substation capacities (i.e., components), and their associated peak loading on each location. Distribution assets that are forecasted to exceed normal (N-0) design criteria for capacity will be further reviewed. Identified N-1 violations will be reviewed for circuit, subtransmission, and substation projected forecasts.

In addition to the above screening, the most recent existing planning and other relevant documents will be reviewed to further assist in identifying locations for review. These may include, but are not limited to, utility capital plans and marginal cost of service studies.

B. Identifying Additional Locations for Review

Five years of historical planning and expenditure information will also be reviewed to identify current or recent criteria violations and associated investments related to load growth or reliability-based capacity-constrained locations for review.

Once relevant locations have been identified through the screening process, the consultant will work with utility planning departments and Commission Staff to review each specific location in order to confirm the existence of load-related violations or the need to relieve forecasted overload conditions. That review will determine to what extent existing and projected capacity investments are related to load growth or reliability-based capacity constraints (as opposed to asset management replacements or other unavoidable upgrades), and therefore could be addressed by peak load reduction through DG energy production. Those confirmed locations, or a representative subset, will be used in Step 2.

2. Determining Avoided or Deferred Distribution Investment Costs

Confirmed projected and existing or historical overload locations will undergo a more detailed analysis in order to calculate actual or potential avoided or deferred investment costs. If a detailed load analysis is not feasible for all substations and circuits with confirmed load-growth-related constraints, the consultant will establish a representative subset by first grouping those locations by load shape characteristics (e.g., urban residential, rural residential, urban commercial, similar circuit proxies, etc.), and then selecting a representative sample from each group. This subset of locations will then undergo the more detailed analysis defined below to calculate potential avoided or deferred investment costs.

For each location with projected or historical load-growth or capacity constraint-related concerns, this method would perform analysis to determine the necessary upgrade(s) and investment costs based on modeled load growth projections.

(1) Identify Possible Upgrades and Required Load Reductions

The analysis will identify component upgrades and costs, tracking the utility planning process as closely as possible, as well as load reduction levels required to avoid or defer upgrades. This analysis may include, but is not limited to, the use of load flow analysis software.

(2) Develop Avoided or Deferred Cost Estimates

The consultant will work with each utility to develop investment cost estimates based on the utility's existing study-grade investment cost estimate methodology, which will include the previous five-year historical expenditures data. Equipment replacements will be reviewed to identify possible incremental additional costs associated with equipment capacity increases.

For recent and current investments identified as capacity constraint-related, available existing utility documents will be reviewed to determine investment costs and load reduction that would have been required to avoid violations. Equipment replacements will be reviewed to identify possible incremental additional costs associated with equipment capacity increases.

3. Assigning Values Using Load Profile and Mapping to Generation Profiles

The final step intends to assign values by capacity-constrained hours (i.e., hours of criteria threshold violation). In order to achieve potential avoided or deferred costs, load reduction must be provided at specific peak days and times during the year. Step 3 assigns values by capacity-constrained hours which will allow for further examination of the ability of DG to achieve avoided or deferred costs through load reduction during hours of actual or projected criteria threshold violation.

That analysis will allow comparisons of required load reductions to particular DG generation profiles to determine if a specific DG technology is likely to meet the required load reductions at a location, and therefore will be useful for informing NEM compensation mechanism discussions. This portion of the study will be performed at locations identified through Steps 1 and 2.

(1) Develop Representative Load Profiles

The consultant will work closely with utility planning departments to complete a review using utility information and guidance to determine representative load profiles for the specific selected locations. Additional data collection and analysis may be required to develop accurate load profiles. Representative load profiles will identify hours when load exceeds threshold cutoff (e.g., equipment thermal design rating). Avoided or deferred cost values will be allocated across the duration of required load reduction. Detailed methods for avoided or deferred cost allocation will be developed with the consultant and may include recommended methods outlined in the SEPA white paper, *Beyond the Meter: Addressing the Locational Valuation Challenge for Distributed Energy*.¹

¹ SEPA. (2016). *Beyond the Meter: Addressing the Locational Valuation Challenge for Distributed Energy Resources*. Retrieved from Smart Electric Power Alliance: https://sepa.force.com/CPBase_item?id=a12o000000RNvYdAAL

(2) Map DG Production Profiles to Load Profiles

Finally, a sample of DG electricity production profiles will be developed and mapped against the identified hours of need for each specified location to provide illustrative examples of DG contributions to load reduction. Sample profiles investigated for this study will include DG systems eligible for NEM, including solar, hydroelectric, and solar plus storage.

However, in order to achieve avoided or deferred costs, load reduction must be provided at specific peak days and times during the year and a mechanism must be in place to ensure the DG is available when needed. LVDG study results will be indicative of potential values for associated load reduction, and compensation mechanism discussions should also address reliability and performance issues.

Study Process and Timeline

The consultant and Commission Staff will hold periodic stakeholder working group meetings, not less frequently than bi-monthly, to provide status updates and answer questions during the LVDG study process. In addition, Commission Staff will convene a stakeholder working group meeting in connection with any major step in the study process, even if that meeting would be held sooner than would otherwise occur under the bi-monthly schedule. Commission Staff will also provide to the stakeholder working group certain material documentation, such as any reports and analyses completed in connection with the first two steps of the study process, on an interim basis during the study period.

The LVDG study is anticipated to commence during the second calendar quarter of 2019, following engagement of the study consultant, and to be completed by the end of 2019.