



REQUEST FOR PROPOSALS

VARIABLE ENERGY RESOURCE INTEGRATION STUDY
AND
LOAD VARIABILITY STUDY

Issued: April 28, 2017

Proposal Due: May 19, 2017

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1. INTRODUCTION

NorthWestern Corporation d/b/a NorthWestern Energy (“NorthWestern”) is issuing this Request for Proposal (“RFP”) seeking proposals for consulting services for the performance of a variable energy resource (“VER”) study and a load variability study for NorthWestern’s Montana service territory. NorthWestern’s Representative for this RFP is Frank O’Connor, phone number: (406) 497-3126; e-mail address: frank.o’connor@northwestern.com, mailing address: NorthWestern Energy, 5151 Harrison Avenue, Butte, Montana 59701.

2. GENERAL DESCRIPTION AND RFP SCHEDULE

2.1 GENERAL DESCRIPTION

NorthWestern provides electric supply and delivery service to retail customers in Montana and provides Balancing Authority (“BA”) services. NorthWestern’s supply portfolio has changed significantly in recent years with the additions of hydroelectric and VER. Additionally, NorthWestern has been implementing a new reliability standard referenced as “Reliability Based Control” or “RBC” since March 1, 2016. The Montana Public Service Commission (“MPSC”), in Order No. 6943e entered in Docket No. D2008.8.95, also required NorthWestern to perform a study to evaluate the allocation of the regulation capacity needs. As a result, NorthWestern is seeking proposals associated with the performance of critical system resource and variability studies. A more detailed description of the services is explained in Appendix A of this RFP.

2.2 RFP SCHEDULE SUMMARY

The outline for the RFP process is provided in the following table. The dates and times contained are subject to change by NorthWestern. Any change will be communicated to respondents by e-mail.

ITEM	DATE	TIME (MT)
RFP Issued	April 28, 2017	N/A
Pre-Bid Conference Call	May 5, 2017	9:00 am MDT
Proposal Due	May 19, 2017	5:00 pm MDT
Short List Selection	May 31, 2017	5:00 pm MDT
Short List Presentations –Butte, Montana	June 9, 2017	8:00 am - 5:00 pm MDT
Selection of Respondent for Agreement Negotiations	June 14, 2017	5:00 pm MDT
Agreement Execution	June 21, 2017	5:00 pm MDT

Delivery of VER Integration Study	Phase I. October 2, 2017 Phase II. December 15, 2017 Phase III. February 1, 2018	N/A
Delivery of Load Variability Study	February 1, 2018	N/A

2.3 PROPOSAL SUBMISSION

Respondents must submit proposals to the NorthWestern Representative in electronic format via email. **Complete electronic proposals (in MS Word or pdf) must be delivered to NorthWestern prior to the deadline of May 19, 5:00pm Mountain Time.** Please contact NorthWestern’s Representative with any questions. Please recognize that questions received and responses may, at NorthWestern’s discretion, be distributed with answers and clarifications to all respondents.

3. PROPOSAL REQUIREMENTS

Proposals must be submitted in the format and order indicated below using the appropriate section headers and section numbering. Additional information may be appended to the proposal in additional paragraphs. Alternative proposal requirements may be approved by NorthWestern’s Representative upon request.

3.1 COVER LETTER

The proposal must include a cover letter, summarizing the key terms of the proposal.

3.2 SECTION 1: EXPERIENCE AND TEAM

Respondents must submit detailed information addressing the following requirements:

- Proposals must identify respondent’s project team and the relevant experience of each team member. Proposals must list the respondent’s contact person for addressing questions or comments.
- Proposals must identify respondent’s experience in performing similar studies within the United States in the last 5 years, including reference names and phone numbers, if possible. Please specifically identify experience in performing studies used to allocate jurisdictional costs in FERC proceedings.
- Proposals must include a description of the general methodology used to accomplish the studies needed to meet the scope of work as defined in Appendix A.
- Respondents must identify prior experience presenting testimony and defending integration and cost allocation studies before the Montana Public Service Commission, other state commissions, or FERC.

3.3 SECTION 2: SCHEDULE

The selected respondent must commence services as soon as possible, and achieve completion of the studies by the dates set forth in Section 2.2 of this RFP. Proposals must identify any concerns with completion of the services within the established deadlines.

3.4 SECTION 3: COMPENSATION

Respondents must submit detailed price bid proposals for the following work tasks:

4.1 Variable Energy Integration Study

4.2 Load Variability Study

The proposal must include a schedule detailing the total price and the price for each phase of the requested studies. Proposals must include a schedule of billing rates for additional work beyond the defined study scope of work or subsequent regulatory support. All ancillary costs and any other related costs associated with performing the services must be incorporated into the prices. Upon request, progress payments will be made based on reported achievement of specified milestones. However, final payment will not be made until NorthWestern accepts the service deliverables.

3.5 SECTION 4: SUBCONTRACTORS

Respondents must prepare and submit, as part of its proposal, a list of anticipated subcontractors for the services. Any changes or additions to the list of subcontractors before or after the award of the services must be approved by NorthWestern.

3.6 SECTION 5: MASTER CONSULTING SERVICES AGREEMENT

NorthWestern anticipates entering into a master consulting agreement with the successful respondent, and will execute a statement of service for each identified task upon completion of this RFP process. Additional statements of service may be executed as needed for any extension of the services such as additional reports, services or testimony.

Respondents must submit detailed exceptions and clarifications to the commercial terms and conditions governing the services as part of the proposal. Respondents must also specifically identify any objections to the insurance requirements of the draft agreement in Appendix B. Respondents may either attach a redlined version of the draft agreement to its proposal or specifically identify any exceptions and clarifications. Commercial terms and conditions are subject to negotiation and mutual agreement.

4. EVALUATION CRITERIA

The following criteria will be used to evaluate the responses to this RFP:

4.1 EXPERIENCE AND PERFORMANCE RECORD

4.2 PRICING

4.3 COMPLETENESS OF PROPOSAL

NorthWestern reserves the right to exercise reasonable and prudent judgment in evaluating proposals and may modify the criteria at its discretion.

5. ADDITIONAL PROVISIONS

5.1 RIGHT TO TAKE NO ACTION/NO OFFER

NorthWestern reserves the right to enter into negotiations with more than one respondent or take no action at its sole discretion. This RFP is not an offer by NorthWestern. NorthWestern is not bound to enter into negotiations or execute a definitive agreement with any respondent as a result of this RFP. No binding commitment on the part of NorthWestern to any respondent exists unless and until the parties execute definitive agreements effective in accordance with their terms.

5.2 AUTHORITY TO COMMIT

A respondent's cover letter must be signed by a duly authorized representative of the company. The position held by the signatory must be included, and upon request respondent shall provide evidence of the authority of the individual signing the cover letter and the contractual documents.

5.3 OWNERSHIP AND RETURN OF PROPOSALS

All materials submitted as part of this RFP shall become the property of NorthWestern and will not be returned.

5.4 COST OF RESPONDING

A response to this RFP will be prepared at the sole cost and expense of respondent and with the express understanding that there will be no claims whatsoever for reimbursement from NorthWestern.

5.5 CONFIDENTIALITY AND NONDISCLOSURE

NorthWestern will maintain the confidentiality of any proprietary and confidential information contained in a Proposal, provided that such information is clearly marked as "*Confidential Information*" at the time of initial disclosure. However, NorthWestern, as a public utility, is subject to regulation by the Montana Public Service Commission and the FERC, and may submit information, RFP data or documents as part of any regulatory proceeding. To the extent a respondent desires a protective order for any information to be submitted to a commission, the respondent is solely responsible for preparing and requesting any such protective order. NorthWestern shall notify respondent of any pending disclosure, but is not obligated to participate in any protective order process.

The successful respondent will be required to enter into a commercially reasonable non-disclosure agreement prior to receipt of proprietary data required for the performance of the services.

Appendix A – Detailed Scope of Studies

1.0 System Information

- Changes since NorthWestern’s last integration study:
 - The relevant Compliance Standard is now BAAL exceedance standard or Reliability Based Control (“RBC”)
 - Wind resources have generally not located where predicted in previous studies
 - The existing NorthWestern supply portfolio has changed significantly, including the addition of:
 - Hydroelectric rate based assets,
 - Additional wind VER, and
 - Recent additions of solar PV VER (rooftop, community and QF)
 - NorthWestern’s Transmission Interconnection Queue (“NWE Queue”) has changed significantly from prior studies
 - Load following and Regulation can now be differentiated
 - NorthWestern now uses a portfolio of assets to provide Load Following and BA Regulation, including:
 - DGGs,
 - Basin Creek,
 - Colstrip Unit No. 4 (to a limited degree), and
 - Certain hydroelectric resources.

In Montana Public Service Commission (“Commission”) Order No. 6943e entered in Docket No. D2008.8.95, issued March 20, 2012, the Commission ordered NorthWestern to perform a study to evaluate the allocation of regulation capacity needs. Specifically, the Commission’s interest was primarily the jurisdictional allocation between retail and wholesale customers of 60 MW of regulation that was identified as being required for load and traditional (or non-VER) resources. The Commission also directed that NorthWestern should contemplate further consideration of within-retail and within-wholesale disparities of customer demand for regulation service based on class of service and customer profile. The general circumstances and assumptions at that time were:

- Historically, the 60 MW of Regulation encompassed both Regulation and Load Following capability that had been found to be adequate to meet control performance standards prior to the integration of wind generation on NorthWestern’s system. There was not a defined split of the capacity required for each purpose.
- DGGs was the only NorthWestern owned resource that would provide Regulation and it would provide all 60 MW of the required traditional Regulation.
- DGGs did not provide other ancillary services.
- The 60 MW of traditional Regulation was treated as a “known” value because that was the Regulation capacity for which NorthWestern had contracted from the market for many years prior to meet its Regulation requirements and comply with the CPS2 reliability standard before integration of wind generation on its system.

- The 60 MW provided Regulation and Load Following needs for all customer classes and all traditional resources.
- Empirical data from operating Judith Gap wind farm (135 MW) showed 18-20% Regulation needed to meet the standards.
- The Genivar studies confirmed that the 60 MW of regulation for the Balancing Authority load and the more traditional resources was sufficient to meet the then existing NERC Standards.
- The existing wind resources (144 MW) in 2010 required an additional 37 MW of incremental regulation to meet the then existing NERC Standards.
- The studies showed that the more geographically diverse the wind fleet the lower the regulation requirements for NWE.

1.1 Study Purpose

NorthWestern has identified the following needs to be addressed in these Studies:

- The need to identify requirements for Regulation and Load Following of VER (wind and solar PV) within NorthWestern's BA.
- The need to identify the contributions to Regulation and Load Following requirements of the various resources and customer load classes within NorthWestern's BA.
- The need to identify allocation of BA Regulation and Load Following for Industrial, Commercial, Residential, Choice customer load classes and Electric Cooperatives, and the BA generation resources.
- The need to identify NorthWestern's resources being used to provide Regulation and Load Following and determine jurisdictional allocations for these resources.

2.0 SCOPE OF VER INTEGRATION STUDY

The VER Integration Study is to be delivered in three phases. In the first phase of the study, NorthWestern requires a determination of the amount of flexible resource capacity needed to meet its BA-level BAL-002 requirements. In the second phase, the study must also quantify the additional flexible resources that will be required to integrate additional VER resources (both wind and solar PV) into the NorthWestern BA. In the third phase, the overall integration need must be broken down into regulation and load following by customer class. The scope of the VER Integration Study requested by NorthWestern includes the following elements using the data elements identified below.

2.1 Scope

- Apply definitions consistent with recent FERC rulings for
 - Regulation
 - Load Following
- The study must determine the Regulation and Load Following needs of NorthWestern's current loads and generation for:
 - Phase I: The NorthWestern BA as a whole

- Current loads and Generation Resources
- Include contracted-for generation resources
- Phase II: Additional (new) VER added to NorthWestern’s BA
 - The change in need when incremental amounts are added into the NorthWestern BA
 - Incremental wind (100MW, 200 MW)
 - Incremental solar PV (100MW, 200 MW)
 - New VER will be studied both geographically diverse and non-geographically diverse (based on NWE’s generation interconnection queue).
 - Wind, solar, load and non VER generation studied separately and jointly
- Phase III: Allocation of the BA need, identified in Phase I, to customer classes (loads and generation)
 - Wholesale customers
 - Retail loads
 - Generation by type
 - Thermal
 - Hydro
 - Wind
 - Solar

2.2 Data and Study Requirements

- Utilize NorthWestern load and generation data for the study period. Appendix C includes the current configuration of the Load and General data available.
- Use commercially available wind and solar PV data for new VER
- Use data of sufficient quality to determine allocation of regulating requirements for wind and solar PV VER
- Model the portfolio of assets that NorthWestern uses to provide Load Following and Regulation, including:
 - DGGs,
 - Basin Creek,
 - Colstrip Unit No. 4 (to a limited degree), and
 - Certain hydroelectric resources
- Model ramp up and ramp down Load Following under RBC
- Model NorthWestern operations for meeting RBC
- Model BA Regulation Requirements
- Model within hour fluctuations

2.3 Deliverables

NorthWestern requires that the VER Integration Study contain the following components and deliverables:

- Consultation with NorthWestern during study
- Regular presentations to NorthWestern of results at pre-determined milestones

- Detailed Report for each phase requested
- Phase I of the VER integration study is to be completed by October 2, 2017
- Phase II of the VER integration study is to be completed by December 15, 2017.
- Phase III of the VER integration study is to be completed by February 1, 2018
- Post study Regulatory Support

3.0 SCOPE OF LOAD VARIABILITY STUDY

3.1 Purpose and Scope

The Purpose of the Load Variability Study is to allocate the overall Regulation and Load Following requirements identified in the VER Integration study to NorthWestern's various customer classes in the BA based upon each class' load variability. Customer classes include:

- Generator
- Choice load (wholesale/industrial)
- Cooperative
- Non-choice load
 - Residential/Commercial/Industrial

3.2 Data and Requirements

- Utilize NorthWestern BA Hourly Load Data and sub-hourly (1,5, 10 minute) as available
- Utilize NorthWestern Customer Class Meter Data (as granular as available)
- Utilize Hourly load schedules and/or forecasts
- Use commercially available wind solar data

3.3 Deliverables

NorthWestern requires that the Load Variability Study contain the following components and deliverables:

- Consultation with NorthWestern during study
- Detailed report for the study
- Study completion by February 1, 2018
- Post study regulatory support

Appendix B – Master Consulting Services Agreement

Appendix C – Data Summary Table

NorthWestern Energy BA Load Data Summary

Transmission Substations

PI Data	88
MV90 Data	0
Inadequate or No Data	13
Total	101

Distribution Substations

PI Data	131
MV90 Data	150
Inadequate or No Data	126
Total	407

PI Data Breakdown

Data Units

1 MW	0.1 MW	Total
72	16	88

1 MW decimals

(1 dec = 100s kw; 2 dec = 10s of kw)

0 dec	1 dec	2 dec	Total
46	8	18	72

0.1 MW decimals

(0 dec=100s of kw; 1 dec=10s of kw; 2 dec=kw)

0 dec	1 dec	2 dec	Total
0	1	15	16

Time Intervals

1 sec	4 sec	5 sec	Total
26	4	58	88

PI Data Breakdown

Data Units

1 MW	0.1 MW	Total
111	20	131

1 MW decimals

(1 dec = 100s kw; 2 dec = 10s of kw)

0 dec	1 dec	2 dec	Total
94	0	17	111

0.1 MW decimals

(0 dec=100s of kw; 1 dec=10s of kw; 2 dec=kw)

0 dec	1 dec	2 dec	Total
0	10	10	20

Time Intervals

1 sec	4 sec	5 sec	Total
25	4	102	131

MV90 Data Breakdown

Total	Units	Interval
150	kW	15-min

VER Generation

PI Data	8
MV90 Data	0
Inadequate or No Data	0
Total	8

Non-VER Generation

PI Data	21
MV90 Data	0
Inadequate or No Data	3
Total	24

**PI Data Breakdown
Data Units**

1 MW	0.1 MW	Total
5	3	8

1 MW decimals

(1 dec = 100s kw; 2 dec = 10s of kw)

0 dec	1 dec	2 dec	Total
0	2	3	5

0.1 MW decimals

(0 dec=100s of kw; 1 dec=10s of kw; 2 dec=kw)

0 dec	1 dec	2 dec	Total
0	3	0	3

Time Intervals

1 sec	4 sec	5 sec	Total
3	0	5	8

**PI Data Breakdown
Data Units**

1 MW	0.1 MW	Total
16	5	21

1 MW decimals

(1 dec = 100s kw; 2 dec = 10s of kw)

0 dec	1 dec	2 dec	Total
13	2	1	16

0.1 MW decimals

(0 dec=100s of kw; 1 dec=10s of kw; 2 dec=kw)

0 dec	1 dec	2 dec	Total
0	4	1	5

Time Intervals

1 sec	4 sec	5 sec	Total
10	6	5	21