

Montana Capacity Request for Information (Confidential)

Documentation of RFI Process and Responses
NorthWestern Energy

Butte, MT
April 13, 2019



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1 Executive Summary

As part of its 2018 Montana Electricity Supply Resource Procurement Plan (Plan) process, NorthWestern Energy (NorthWestern) retained HDR Engineering, Inc. (HDR) to conduct a capacity Request for Information (RFI) to support the current Plan efforts. The RFI was issued on July 9, 2018 to 350+ parties including large industrial customers, developers, and utilities in the Pacific Northwest. The purpose of the RFI was to solicit information regarding potentially available resource alternatives for potential inclusion in NorthWestern’s 2018 Plan. A total of 19 responses were received with several respondents submitting multiple options.

Table 1 provides a summary of the responses received. The data presented is “as-reported” by the respondents (minimal evaluation/validation was completed).

Table 1: Summary of Responses

Type	No. of Resp.	Scale			New / Existing	Ownership	PPA	
		Generation	Storage/Demand-Side			Capital Costs	Capacity Cost	Energy Cost
(-)	(no.)	(Size)	(Size)	(Duration)	(-)	(\$/kW)	(\$/kW-yr)	\$/MWh
Energy Storage	5	-	250 kW to 400 MW	2 min. to 9 hours	New	\$1,000 to \$8,000	-	-
Hydro	3	1.5 to 175 MW	-	-	Both	~\$3,100	TBD	TBD
Wind	4	35 to 400 MW	-	-	New	-	-	\$27 to \$36
Wind + Storage	1	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Solar	1	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Solar + Storage	5	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
CT/RICE	6	50 to 200 MW	-	-	New	\$500 to \$2,300	\$70 to \$250	\$3 to \$10
CT/RICE + Storage	2	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Coal	2	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
DR/DSM	2	-	6 kW to 2 MW	2 to 4 hours	New	TBD		

Notes:

- (1) Data is "as-reported" by Respondents.
- (2) Responses included existing assets, project developments, and standalone technologies.
- (3) For cost reporting, "main" capacity cost presented; other costs may be applicable (e.g. O&M costs).
- (4) PPA pricing assumes year 1 costs (escalation not evaluated in detail).
- (5) Production Tax Credit (PTC) and Investment Tax Credit (ITC) treatment not investigated.
- (6) Natural gas PPA energy costs do not include fuel costs (i.e. tolling PPA structure).

NorthWestern retained HDR to administer the RFI. The information and data contained herein is for informational purposes only and intended to inform overall Plan activities.



2 Introduction

NorthWestern Energy (NorthWestern) conducts ongoing supply-side and demand-side planning to meet its customer’s electric capacity and energy requirements in Montana. As part of this planning process, NorthWestern submits an Electricity Supply Resource Procurement Plan (Plan) to the Montana Public Service Commission (Commission). NorthWestern submitted its 2015 Plan to the Commission on March 31, 2016 (Docket No. N2015.11.91). The Commission provided supplemental comments to NorthWestern’s 2015 Plan (dated December 20, 2017). Along with other comments, the Commission suggested that it would be useful for NorthWestern to solicit information regarding the availability of market alternatives and physical capacity resources as part of its next Plan (Supplemental Comment 20).

At the suggestion of the Commission, NorthWestern worked with HDR to develop an RFI process for the purpose of gathering data and information regarding potential capacity products in and surrounding NorthWestern’s Montana service territory to inform the 2018 Plan. The RFI was issued on July 9th, 2018 to a list of potential respondents (Respondents) provided by NorthWestern. A press release occurred on July 9th, 2018.

The purpose of this report is to document the RFI process and to summarize information and data provided by the Respondents. Interpretation of the information and evaluation of the data provided by the Respondents is not included in this report.

3 RFI Development

The RFI document included the following:

- A description of intent and overview of NorthWestern’s service territory. A web link to additional information on the NorthWestern website was included.
- Information on the capacity products of interest and desired information to be provided.
- Schedule of milestone dates, summarized in Table 2 below:

Table 2: RFI Schedule

Activity	Date	Time
Release of RFI	July 9 th , 2018	5:00 p.m. MST
Notice of Intent to Respond	July 18 th , 2018	5.00 p.m. MST
Last Day for Questions	July 25 th , 2018	5:00 p.m. MST
RFI Responses Due	July 30 th , 2018	5.00 p.m. MST
Review of Responses	August, 2018	-

- Information on the response development cycle and submittal process including information on the desired submittal contents.
- Information on the review of responses, confidentiality, cost of responding, NorthWestern’s reservation of rights, and ownership/return of responses.

A Response Data form was included with the RFI as an Excel file for each Respondent to fill out. Data fields included:

- General/Commercial information
- Performance Data
- Operating Characteristics
- Emissions
- Forced Outage Rates/Planned Outage Rates
- Generation – annual production data
- Costs – capital and operating

The issued RFI document and response data form is provided in Appendix A.

4 Issuance

The RFI was issued to 350+ power users and producers that could potentially serve NorthWestern customers' needs within its Montana service territory. This included large industrial customers, utilities in the region, developers, demand-side aggregators, and others. Additionally, the RFI was announced to the general public via a press release to various industry news outlets. Appendix B provides a list of contacts that received the RFI.

5 Communication

The Respondents were instructed to communicate through email to allow for documentation of questions and responses. Emails throughout the process were sent and received using a dedicated email address: NWEMT2018CapacityRFI@hdrinc.com. Any communication received via phone was captured in a follow-up email. A primary point of contact was established for NorthWestern. HDR directed all questions received that were not administrative in nature to NorthWestern to develop appropriate responses. Appendix C provides a list of questions submitted along with responses sent.

6 Responses Received

Out of the 350+ contacts that were issued the RFI, 19 entities provided responses. Several of the Respondents submitted multiple responses. The list of Respondents including point of contact information, date submitted, etc. is provided in Appendix D. Five of the contacts' indicated that they intended to respond but did not end up submitting a response. A follow up email was sent to these contacts.



7 Summary of Responses



Table 3 provides a summary of the responses received. The data provided is “as-reported” by the Respondents (i.e. rigorous evaluation of the responses was not completed), and is redacted to protect proprietary information. Additional information is included in confidential Appendix E. Files received from each Respondent were transmitted to NorthWestern.

Table 3: Summary of Responses (Redacted)

Type	No. of Resp.	Scale			New / Existing	Ownership	PPA	
		Generation	Storage/Demand-Side			Capital Costs	Capacity Cost	Energy Cost
(-)	(no.)	(Size)	(Size)	(Duration)	(-)	(\$/kW)	(\$/kW-yr)	\$/MWh
Energy Storage	5	-	250 kW to 400 MW	2 min. to 9 hours	New	\$1,000 to \$8,000	-	-
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Wind + Storage	1	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]		
Solar	1	[REDACTED]			[REDACTED]			
Solar + Storage	5	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
CT/RICE	6	50 to 200 MW	-	-	New	\$500 to \$2,300	\$70 to \$250	\$3 to \$10
CT/RICE + Storage	2	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]		[REDACTED]	[REDACTED]
Coal	2	[REDACTED]			[REDACTED]		[REDACTED]	[REDACTED]
DR/DSM	2	-	6 kW to 2 MW	2 to 4 hours	New	TBD		

Notes:

- (1) Data is "as-reported" by Respondents.
- (2) Responses included existing assets, project developments, and standalone technologies.
- (3) For cost reporting, "main" capacity cost presented; other costs may be applicable (e.g. O&M costs).
- (4) PPA pricing assumes year 1 costs (escalation not evaluated in detail).
- (5) Production Tax Credit (PTC) and Investment Tax Credit (ITC) treatment not investigated.
- (6) Natural gas PPA energy costs do not include fuel costs (i.e. tolling PPA structure).



Appendix A

Issued RFI





**2018 Montana Capacity
Request for Information**

July, 2018
Revision 0 – For Issue



2018 MONTANA CAPACITY REQUEST FOR INFORMATION

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1.0 INTRODUCTION

1.1 OVERVIEW AND INTENT

NorthWestern Corporation d/b/a NorthWestern Energy (“NorthWestern”) conducts ongoing supply- and demand-side planning to meet its customer’s electric capacity and energy requirements in Montana. As part of this planning process, NorthWestern submits an Electricity Supply Resource Procurement Plan (“Plan”) to the Montana Public Service Commission (“Commission”) outlining plans for its electric portfolio in the context of least-cost, low-risk alternatives for its Montana customers. NorthWestern submitted its 2015 Plan to the Commission on March 31, 2016 (Docket No. N2015.11.91). The Commission provided supplemental comments to NorthWestern’s 2015 Plan (dated December 20, 2017) where, along with other comments, the Commission suggested that it would be useful for NorthWestern to solicit information regarding potentially available resource alternatives for capacity planning as part of its next Plan (Supplemental Comment 20). NorthWestern is issuing this Request for Information (“RFI”) for capacity products as a result of the Commission’s Supplemental Comments to the 2015 Plan and in support of developing its 2018 Plan.

The purpose of this RFI is to gather data and information from RFI respondents (“Respondents”) regarding potential capacity products in and surrounding NorthWestern’s Montana service territory to inform the 2018 Plan. Responses received as part of this RFI process will be for informational purposes only, and NorthWestern does not intend to enter into any commercial negotiations or agreements as a result of this RFI process. After the RFI process is completed, NorthWestern may solicit bids through a competitive Request for Proposals (RFP) process.

1.2 NORTHWESTERN OVERVIEW

NorthWestern serves more than 367,000 residential and business customers with electricity and natural gas service in Montana. In Montana, NorthWestern owns and operates thermal, wind, and hydroelectric generation, and also purchases energy from the market to meet customer load requirements. More information on NorthWestern is available at the company’s web site at www.northwesternenergy.com.

2.0 CAPACITY PRODUCTS OF INTEREST

The following Sections provide an overview of potential capacity products that are of interest to NorthWestern. In general, this RFI is requesting information related to capacity resources that can serve periods of peak demand on NorthWestern’s Montana system. NorthWestern’s primary periods of peak demand occur in the winter months in addition to some summer months. The periods of peak demand are generally served by dispatchable generation resources.

NorthWestern is interested in reviewing capacity products that could potentially serve NorthWestern's Montana system. This could include electric generation, energy storage, and/or demand response ("DR")/demand side management ("DSM") programs as explained further in this document. New or existing resources located in NorthWestern's Montana service territory or in the greater Northwest U.S. region are of interest. The resource does not have to be directly connected, but would be expected to have a viable delivery path to NorthWestern's Montana system.

The discussion provided below for each capacity product type as well as associated information requested is intended to be representative and not all-inclusive. Respondents should provide information for a given capacity product to a level of detail sufficient to provide NorthWestern with a clear, concise understanding of associated attributes. Respondents are encouraged to provide information for other capacity products not specifically identified herein if Respondents believe such products would be beneficial for NorthWestern to review.

2.1 GENERATION CAPACITY

Types of generation capacity could include standalone¹, combinations, or portions of the following:

- Thermal resources (solid, liquid, and/or gaseous fuel)
- Hydroelectric resources
- Non-hydroelectric renewable resources (wind, solar, biomass, etc.)
- Slice of system or slice of asset of one or a combination of those listed above

2.2 ENERGY STORAGE SYSTEM

Energy storage system ("ESS") resources could include standalone, combinations, or portions of the following:

- Battery energy storage systems ("BESS")
- Compressed air energy storage ("CAES")
- Pumped hydro energy storage ("PHES")
- Other energy storage applications

2.3 DEMAND RESPONSE/DEMAND SIDE MANAGEMENT

NorthWestern is interested in understanding information related to potential DR/DSM programs and applications. This could include load reduction from standalone residential, commercial, or industrial customers or an aggregation across multiple customers/customer types. Individual NorthWestern customers, groups of NorthWestern customers, and/or DR aggregators (e.g. administrators) are encouraged to respond to this RFI.

¹ Refer to NorthWestern's 2015 Plan for capacity contributions of various resource types.

2.4 DELIVERY STRUCTURES

Respondents are encouraged to provide information for one or multiple delivery structures (i.e. contract mechanisms) for a potential capacity product. Depending on the type of capacity product, this could include:

- Sale of a portion or of an entire existing asset
- Develop-Transfer (“D-T”)
- Build-Transfer (“B-T”)
- Power purchase agreement (“PPA”) – short and/or long term
- Administration/program management (e.g. for DR aggregator)
- Other contracting mechanisms pertinent to a given capacity product

2.5 DESIRED INFORMATION TO BE PROVIDED

Respondents are requested to provide narrative and supporting data and documentation to thoroughly describe a potential capacity product. NorthWestern requests that Respondents populate applicable portions of the response data form included as Attachment A to this RFI, and that Respondents provide any other applicable data and information to provide a full characterization of the resource or program. Respondents are encouraged to provide multiple response data forms if there are capacity product variations and/or multiple capacity products are being characterized.

Information and data requested by NorthWestern includes, but is not limited to, the following:

- Respondent corporate information and organizational overview
- Experience with similar applications including references, as applicable
- Capacity product attributes including:
 - Type and scale, including, as applicable, description of the process, commercial experience, type of participants (DR), etc.
 - Location, including, as applicable, electric point of interconnection, fuel supply source/interconnection, etc.
 - Vintage and useful life (remaining or predicted)
 - Dispatchability or expected capacity factor (for intermittent resources) and representative daily generation profile (if applicable)
 - Performance including, as applicable, output, heat rate, startup/shutdown durations, ramping capability, etc.
 - Environmental attributes including, as applicable, air emissions, permit limitations, historical compliance, etc.
 - Capital costs/delivered product pricing
 - Historical and/or projected fixed and variable operations and maintenance (“O&M”) costs including, as applicable, program administration costs

- Historical and/or projected operating capability including, as applicable, load reduction capability and associated time of day (DR), operational limitations/curtailments, anticipated degradation or performance improvements, etc.
- Historical and/or projected availability/reliability
- Capacity product deliverability to NorthWestern’s Montana system (capability, agreements in place, and associated costs/fees)
- Capacity product fuel supply, as applicable – level of firmness
- Existing commercial agreements in place
- Overview of terms/form agreement language for a potential agreement in the future, and any other general commercial considerations pertinent to the potential capacity product

The purpose of this RFI process is to inform NorthWestern in their planning process and, as such, Respondents are encouraged to provide additional information not specifically requested herein if such is pertinent to fully describing the capacity product.

3.0 RFI SCHEDULE

An outline of the RFI process is summarized in the table below. The dates and times presented in the summary schedule are subject to change by NorthWestern. Any changes to the RFI schedule will be communicated to potential Respondents by email and will be posted on NorthWestern’s company website.

Activity	Date	Time
Release of RFI	July 9, 2018	5:00 p.m. MST
Notice of Intent to Respond	July 18, 2018	5:00 p.m. MST
Last Day for Questions	July 25, 2018	5:00 p.m. MST
RFI Responses Due	July 30, 2018	5:00 p.m. MST
Review of Responses	August, 2018	-

4.0 RESPONSE DEVELOPMENT CYCLE AND SUBMITTAL

This RFI is being administered by HDR Engineering, Inc. (“HDR”). The following Sections provide relevant contact information and an overview of the response submittal process.

4.1 CONTACT INFORMATION

All communications, including any clarifications and/or questions, should be directed to HDR. HDR’s representative (“HDR Representative”) is:

- Scott Leigh
- Phone: (248) 882-6025
- Email: NWEMT_2018CapacityRFI@hdrinc.com

Email is the preferred method of communication.

4.2 RESPONSE DEVELOPMENT CYCLE

Potential Respondents are requested to submit a notice of intent to respond by email by the date listed in Section 3.0 and directed to the HDR Representative. In this notice (and in the response), Respondents should identify a main point of contact (or contacts) for the RFI process.

Questions and/or clarifications during the development of responses shall be emailed to the HDR Representative. Responses to questions will be provided by the HDR Representative and/or by NorthWestern directly. Responses to questions will be provided as soon as possible after receipt and NorthWestern/HDR plans to respond to/acknowledge all questions by July 27, 2018. Questions and/or clarifications submitted after the “Last Day for Questions” indicated in Section 3.0 may not receive a response.

Respondents should assume that any questions asked, as well as associated responses from NorthWestern/HDR, will be made available to other potential Respondents for information during the response development cycle. If a Respondent desires that a question and the associated response be confidential (not shared with other Respondents), the question must be marked clearly as such. Regardless, NorthWestern/HDR will determine if a portion of all of the contents would be appropriate to be made available to all Respondents (i.e. non-project specific information applicable to the response process). Refer to Section 5.3 for additional provisions regarding confidentiality.

4.3 SUBMITTAL PROCESS

Responses are due by the “Response Due Date” indicated in Section 3.0 of this document. Electronic submittal via email is desired, and responses should be directed to the HDR Representative. Email attachments less than 10 MB are preferred. However, if email attachments larger than 10 MB are required, Respondents should send an email to the HDR Representative and an alternative delivery method will be coordinated.

If Respondent desires to submit a hard copy of the response, it can be directed to:

HDR – Attn: Scott Leigh
5405 Data Court
Ann Arbor, MI 48108

Responses will be accepted if received electronically or post-marked by the “Response Due Date” indicated in Section 3.0; responses received after this date may be discarded.

4.4 DESIRED SUBMITTAL CONTENTS

Respondents are requested to submit informational responses with the following general format and content:

- Cover letter
- Response narrative (refer to Section 2.5)
- Populated response form in native format (Attachment A)
- Any other pertinent information not specifically requested in this RFI that Respondent views as useful for NorthWestern to understand

Respondents are generally requested to submit narrative responses in the format they deem appropriate for this RFI process. Responses should be concise yet comprehensive outlining the Respondent’s capacity product. Respondents are encouraged to provide additional information not specifically requested in this RFI if such is useful for understanding information associated with a given offering.

5.0 ADDITIONAL PROVISIONS

5.1 REVIEW OF RESPONSES

NorthWestern intends to review responses to understand information and attributes of potentially available capacity resources that could provide benefit to its Montana customers. NorthWestern and/or HDR may contact Respondents with questions and/or clarifications during the review.

As a result of the review, NorthWestern may perform some level of portfolio modeling utilizing the information received in response to this RFI to further understand attributes associated with a capacity product.

A summary of responses may be included as part of the 2018 Plan.

5.2 RESERVATION OF RIGHTS – NO ACTION

NorthWestern intends to consider responses to this RFI for informational purposes only and does not intend to enter into commercial negotiations and/or agreements, bi-lateral or otherwise.

NorthWestern reserves the right, in its sole discretion, to terminate this RFI process at any time.

NorthWestern, at its sole discretion, may complete a subsequent RFP process. Responding to this RFI does not guarantee that a Respondent will be included in any subsequent solicitations or processes.

5.3 CONFIDENTIALITY

As this process is being initiated in response to the Commission's Supplemental Comments, NorthWestern may be required to disclose specific information received as part of this RFI process. In addition, NorthWestern will disclose specific information received as part of this RFI process to external consultants engaged to assist NorthWestern (e.g. HDR). If a Respondent desires to keep any specific information submitted as part of its response to this RFI confidential, the Respondent should identify that confidential information in its cover letter. NorthWestern will not attempt to protect any information that is not specifically identified as confidential. Designations by a Respondent that the entire response is confidential are not a valid identification of specific information.

As a public utility, NorthWestern is subject to regulation by the Commission and by the Federal Energy Regulatory Commission ("FERC"). Information received as part of this RFI process may be submitted as part of a regulatory proceeding. The Commission conducts open processes, and any unprotected information included in filings is available to the public. If NorthWestern intends to provide, other than in response to a data request, any specific information to the Commission that the Respondent identified as confidential in its cover letter, NorthWestern will notify the associated Respondent and will seek a protective order for the identified information. If a data request seeks information that a Respondent identified as confidential, NorthWestern will notify the Respondent of the data request as soon as practical after receipt of the data request. If Respondent desires to protect identified information, the Respondent must prior to the due date for NorthWestern's response to the data request, petition the Commission for a protective order. NorthWestern provides no assurance that information contained within responses will be granted protection. Respondents may be required to enter into a confidentiality agreement with NorthWestern if there are any subsequent discussions or solicitations.

5.4 OWNERSHIP AND RETURN OF RESPONSES

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

5.5 COST OF RESPONDING

Responses to this RFI will be prepared at the sole cost and expense of the Respondent and with the express understanding that there will be no claims whatsoever for reimbursement from NorthWestern. Respondents shall bear all costs and expenses associated with preparing and submitting responses whether or not the RFI process is completed or abandoned at any point of the process.

Company Information	
Company Name	
Address	
Contact Name	
Contact Phone Number	
Contact Email	



		Thermal	Renewable	Energy Storage Systems (ESS)	Demand Side Management (DSM) / Demand Response (DR) Products			
					Energy Efficiency	DR	Dynamic Demand	Distributed Energy Resources
General / Commercial								
Type of Generation/Service	type							
Project Location	County, State							
Commercial Operation Date (COD)	year							
Capacity of Existing Offtake Agreements	MW							
Start Date of Existing Offtake Agreements	month, year							
End Date of Existing Offtake Agreements	month, year							
Start of Service Available	month, year							
End of Service Available	month, year							
Electric Transmission/Deliverability								
Point of Interconnection (POI)	County, State							
POI Voltage	kV							
Point of Delivery	(description)							
Delivery Path	(description)							
Required System Upgrades	projects, \$							
Fuel								
Fuel Type	type		Please provide representative daily/annual generation profile					
Fuel Contract	yes/no							
Fuel Supply	firm/interruptible							
Fuel Contract Start Date	month, year							
Fuel Contract End Date	month, year							
Performance (Average Performance over Life of Plant including Degradation)								
Total Nameplate Capacity (per unit / total)	MW / MW							
Available / Offered Nameplate Capacity	MW							
No. of Units / Modules / Turbines	No.							
Net Plant Heat Rate, Higher Heating Value (HHV)	btu/kWh							
Net Annual Capacity Factor / Capability	%							
Duration	hrs							
Size (Capacity x Duration)	MWh							
Cycles Per Day	No.							
Cycles per Year	No.							
Operating Characteristics								
Max Generation (or Storage Limit for ESS)	MW (or MWh)							
Max Generation Heat Rate, HHV	btu/kWh							
Minimum Generation (or Storage Limit for ESS)	MW (or MWh)							
Minimum Generation Heat Rate, HHV	btu/kWh							

Company Information	
Company Name	
Address	
Contact Name	
Contact Phone Number	
Contact Email	

		Thermal	Renewable	Energy Storage Systems (ESS)	Demand Side Management (DSM) / Demand Response (DR) Products				
					Energy Efficiency	DR	Dynamic Demand	Distributed Energy Resources	
Ramp-up Rate (per Unit / Module / Turbine)	%/min								
Ramp-down rate (per Unit / Module / Turbine)	%/min								
Cold Startup Time	minutes								
Warm Startup Time	minutes								
Hot Startup Time	minutes								
Shutdown Time	minutes								
Minimum Operating Time (after startup)	minutes								
Minimum Down Time (after shutdown)	minutes								
Leakage Rate	%/min								
Round-trip (AC to AC) Efficiency (RTE)	%								
Annual Capacity Degradation	%/yr								
Annual RTE Degradation	%/yr								
Cycle Life Rating at 100% Depth of Discharge	cycles to end of life (EOL)								
Cycle Life Rating at 50% Depth of Discharge	cycles to EOL								
No. Cycles Assumed per Day (Associated with Pricing)	cycles								
Charge Rate	kW/min								
Aggregate Demand Side Capacity Reduction / Capability Customer / Facility Characteristics (Expand, if Multiple)	MW								
Facility Type	type								
Capacity Reduction / Capability	MW								
Time of Day / Seasonal	hourly, monthly, etc.								
Emissions									
NOx Emissions (full load)	lb/mmBtu								
CO Emissions (full load)	lb/mmBtu								
CO2 Emissions (full load)	lb/mmBtu								
SO2 Emissions	lb/mmBtu								
Forced Outage Rate (FOR) / Planned Outage Rate (POR)									
Estimated / Historical Effective FOR	%								
Outage Mean Days	days								
Outage Std. Deviation Days	days								
Max Duration	days								
Average Annual Planned Outage Duration	days								
Annual Availability	%								
Generation									
Annual Energy Production Available / Offered / Reduced	MWh								

Company Information	
Company Name	
Address	
Contact Name	
Contact Phone Number	
Contact Email	

		Thermal	Renewable	Energy Storage Systems (ESS)	Demand Side Management (DSM) / Demand Response (DR) Products			
					Energy Efficiency	DR	Dynamic Demand	Distributed Energy Resources
Costs (Provide Forecasts, as Appropriate)								
Capital Cost	\$							
Capacity / DSM Firming / Anticipated Fixed O&M	\$/kW-yr							
Annual Escalation Rate	%							
Energy / Aggregator Reduction / Anticipated Variable O&M	\$/MWh							
Annual Escalation Rate	%							
Other Operating Costs (Provide Breakdown, as Appropriate)	\$/kW-yr							
Annual Escalation Rate	%							



Appendix B

Distribution Log



Name	Email	Company Name
Brian Fadie	bfadie@meic.org	MEIC
Scott Peattie	speatie@tesla.com	Tesla
Angela Shen	angela.shen@edpr.com	EDPR
Ty Severson	tseverson@natrs.com	National Renewable Solutions
Grace Kankindi	grace.kankindi@solsystems.com	SolSystems
Joe Levy	levyj@aol.com	
Eliza Henderson	eliza.henderson@ccrenew.com	Cypress Creek Renewables
Denise Martin	dmartin@proenergyservices.com	ProEnergy
Mark Wenckus	wenckusenergy@gmail.com	Wenckus Energy
Corey Juhl	juhlc@conedceb.com	ConEd
Darren Groenewold	dgronewold@tantalus.com	Tantalus
Megan Sterl	megan.sterl@montana.edu	Montana State University - Bozeman
Brad Deer	bwdeer@yahoo.com	Burns and McDonnell
DeAndrea Salvador	deandrea@retiset.org	RETI
David Fuller	david.fuller@edf-re.com	EDF Renewables
Clint Gerkenmeyer	cegerkenmeyer@energy-northwest.com	Energy Northwest
Becky Turner	rturner@connectgenllc.com	ConnectGen LLC
Travis Delvin	tdevlin@graincraft.com	GainCraft (formerly Cereal Food Processors)
Jason McGimpsey	jason.mcgimpsey@msubillings.edu	Montana State University - Billings
Tom McKenna	tom.mckenna@cbre.com	Saint Vincent Healthcare
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Zach Genta	zach.genta@clenera.com	Clenera Renewable Energy
Zachary Starsia	zstarsia@coronalgroup.com	Coronal Development Services
	ljhamilt@Bechtel.com	





Appendix C

Question/Response Log



ITEMS	FROM	QUESTIONS	DATE	RESPONSE	DATE
1	Tim Chopp @ St.Patrick Hospital	I am sorry I do not understand what I am supposed to do with this.	7/10/2018	The RFI is intended to solicit information about potential capacity products for NorthWestern's Montana service territory including, but not limited to, electric generation, storage, and/or demand response (e.g. load reduction during certain hours of the day). The RFI document provides additional background. You were on a distribution list developed by NorthWestern as an entity that may have interest in providing information related to a potential capacity product. If you do not have this capability or do not wish to provide information, no further action is required.	7/12/2018
2	Cody Carpenter @ Recsilicon	In response to your request, our process operations do not allow for shedding any load due to how our products are made. Therefore, do you still need us to fill out your RFI?	7/11/2018	Thank you for reaching out. Given your operating requirements, you do not need to fill out the RFI.	7/12/2018
3	Tivan Bovington @ Sacagewea L&C LLC	I have 3 Locations maybe more in the State of Montana for Wind Generation. Size 25MW 25MW and 100MW, and there could be more perhaps another 100MW. Can you please call me to explain what exactly this RFI is and how I can best answer your questions. Your form is unclear.	7/9/2018	The form was a supplement to the RFI document, which explains the purpose and intent of the RFI process. The RFI document is attached again to this email in case it was not received initially. If there are additional questions after reviewing the RFI document, please let us know.	7/12/2018
	Tivan Bovington @ Sacagewea L&C LLC	We have a up to a 50MW Battery energy storage systems ("BESS") this may be in one location or in 3 different locations on the Northwestern Energy Grid. I look forward to your call to discuss how to best fulfill this RFI.	7/13/2018	7/14/2018 - Please direct all correspondence to NWEMT_2018CapacityRFI@hdrinc.com. 7/24/18 - As discussed during our recent phone call: <ul style="list-style-type: none"> • The general intent of the RFI is for NorthWestern to gather information in support of their resource planning process for Montana • If multiple developments and/or variations of a single development exist (size, location, term, contract structure, etc.), Respondents are encouraged to submit as many (or as few), with supporting documentation, as they see fit. • The contracting structures listed in RFI Section 2.4 were briefly discussed: <ul style="list-style-type: none"> o D-T generally refers to the sale/purchase of a fully-developed project, ahead of any detailed design and construction taking place o B-T generally refers to the sale/purchase of a project after the project is operable/complete o PPAs could consider various terms, purchase price at a given year, flat or escalating prices, etc. • Email (to this email) is the preferred method for questions and/or clarifications. 	7/24/2018
4	Cory Anderson @ Seattle City Light	A couple of questions jump right out after reading through your Attachments. Seattle City Light currently sells the Northwest Energy Balancing Area the required Operating Reserves for the transmission for the system (through Feb 2019). We have a daily hr swap with the Merchant side of your business, for calendar 2018. Will this RFI capacity replace those operating reserves, or will it be used for other needs? How many MW 's are you looking for, when would you like it to start? How long of a term are you wanting? Will this RFI result in a purchase contract, or only in a new RFP? Would the purchasing entity be the BA or the Marketing side of the company? We have credit and can and do deals with both, but may need to think a bit on how to restructure our business relationships and credit. I am assuming that a long-term firm capacity purchase will receive equal consideration with new build options; is this correct? If we supply information, may we assume some level of confidentiality? Is there an NDA?If we don't supply information, are we precluded from participating in any possible resulting RFP?	7/11/2018	This RFI will be used to seek cost information to support NorthWestern's Montana -2018 Electricity Supply Resource Procurement Plan ("Plan") supply- and demand-side planning portfolio by identifying least-cost and low-risk alternatives to delivery energy to its Montana customers. The RFI is intended to glean information regarding potential capacity products to support NorthWestern's existing portfolio; however, Respondents may provide information with any structure they so desire. Please refer to the RFI document for the type of data needed to participate in the RFI process. NorthWestern would like Respondents to indicate minimum and maximum quantities available as well as for how long (or short) these products are available. As this is just an RFI, specific requirements are not identified. Please state assumptions, technical, commercial, or otherwise, as part of the response. Refer to RFI Section 1.1 (second paragraph) and Section 5.2 (first paragraph) for an overview of NorthWestern's intent for the RFI. Section 5.3 in the RFI document provides guidelines related to the confidentiality practices adopted through this RFI. NorthWestern encourages responses to this RFI to inform the 2018 Plan. Responses, or lack thereof, would not necessarily be a factor regarding participation in any downstream procurement process (if any).	7/16/2018
5	Daniel Handal @ NEXtera Energy Resources, LLC	For the <i>Notice of Intent to Respond</i> , do we need to complete a form or simply state via email that we intent to submit a response?	7/16/2018	a simple email notification of your intent to submit is accepted.	7/17/2018
6	Dave Carscadden @ Saturn Power Inc	I am wondering where I may find the Attachment A mentioned in the RFI?	7/19/2018	{Re-sent attachment A}	7/19/2018

7	Phil Rutkowski @ Wartsila	The background and the spreadsheet are a little general. Pricing for our projects can be size dependent and some of the other information can be site specific (performance, etc.). So was there a specific site that HDR had in mind? Should we fill the spreadsheet out as if we are doing a project in Butte? Is there a size? The more information you can provide, the more realistic the information/ estimates we can provide.	7/17/2018	There is no specific site, as this RFP is seeking information on new or existing resources that are located in NorthWestern's Montana service territory or in the greater Northwest U.S. region. This RFI will be used to seek cost information to support NorthWestern's Montana -2018 Electricity Supply Resource Procurement Plan ("Plan") supply- and demand-side planning portfolio by identifying least-cost and low-risk alternatives to delivery energy to its Montana customers. The RFI is intended to glean information regarding potential capacity products to support NorthWestern's existing portfolio; however, Respondents may provide information with any structure they so desire. Please refer to the RFI document for the type of data needed to participate in the RFI process. NorthWestern would like Respondents to indicate minimum and maximum quantities available as well as for how long (or short) these products are available. If you would like to submit multiple options that is allowed. As this is just an RFI, specific requirements are not identified. Please state assumptions, technical, commercial, or otherwise, as part of the response. Refer to RFI Section 1.1 (second paragraph) and Section 5.2 (first paragraph) for an overview of NorthWestern's intent for the RFI."	7/18/2018
8	Phil Rutkowski @ Wartsila	So my understanding is that this RFI, in reference to capacity, is REALLY for those existing assets that are willing to offer NWE a PPA. This RFI is NOT being used to evaluate whether NWE options for a new build acquisition support the Plan.	7/18/2018	This RFI is not limited to existing assets, it may be any assets that are being planned or developed. This request for information is also not limited to PPA.	7/24/2018
9	Charley Weschler @ Juwi Inc.'s	Juwi Inc. is planning on submitting a solar and storage project in response to the RFI. Are you able to share any annual load profile data to assist Juwi in modeling the best system to meet NorthWestern Energy's capacity needs?	7/20/2018	Please reference the NorthWestern's Electricity Supply Resource Procurement Plan here and also the Docket Number referenced in the RFI document.	7/24/2018
10	Donald Traywick @ ProEnergy	Please clarify: Develop-Transfer and Build-Transfer	7/24/2018	In the context of the RFI document, "Develop-Transfer" generally refers to the sale/purchase of a fully-developed project, ahead of any detailed design and construction taking place. "Build-Transfer" generally refers to the sale/purchase of a project after the project is operable/complete. Note the contract structures indicated in the RFI are just examples of what might be of interest to NorthWestern. As the last bullet states, Respondents are encouraged to provide information as they see fit.	7/27/2018
11	Zach Starsia @ Coronal Energy	(1) Please confirm that participation in the RFI is not required to submit a bid in the subsequent RFP opportunity with NWE. (2) Has NWE considered the "use case" for a battery energy storage system that is coupled with a PV array? (3) Are there particular hours of the day, seasons of the year, or other times of peak demand that may help bidders frame a perspective on an optimized energy storage solution for NWE? (4) Has NWE identified places on their system where storage could be useful in deferring or delaying distribution or transmission upgrades? Where they suffer from voltage/VAR support issues? Any value placed on NERC capacity? (5) If so, what duration battery would that require?	7/25/2018	(1) Confirmed. Participation in this RFI is not a requirement for participating in any future RFPs. (2) NorthWestern will consider all configurations to potentially fulfill its capacity needs. (3) Accredited capacity for resource adequacy or resource flexibility is more dependent on the capability and characteristics of the storage resource. Those capabilities and characteristics of storage better define the value than a roughly estimated forecasted output on an estimated load forecast. (4) Benefits of project locations will be taken into account in the future RFP evaluations. The RFI seeks to understand and identify the estimated availability, estimated cost, and types of resources to support resource adequacy and system flexibility for long term planning. (5) ? Per FERC Order 841, the Regional Transmission Operators ("RTOs") are required to define battery storage requirements by the end of the year. For the plan, NorthWestern will rely on several resource plans and RFP requirements that usually land between 4 or 6 hours of steady output for storage.	7/27/2018
12	Matt Zedler @ Business Development & Strategy	We are a flow battery technology that currently has no projects in your service district but would like to build a couple. Should we still fill in this RFI? Our technology overview is attached.	7/18/2018	We encourage you to participate in the RFI and reference the RFI's documents for guidelines on the type of data to submit with this RFI.	7/19/2018
13	Matt Zedler @ Business Development & Strategy	For this section [General/Commercial], should I then submit information about existing projects we have, or about projects we would like to have in MT?	7/19/2018	Please reference Section 2.5 in the RFI for desired information to be provided.	7/20/2018





Appendix D

List of Respondents

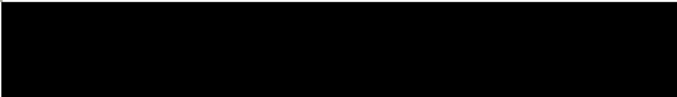



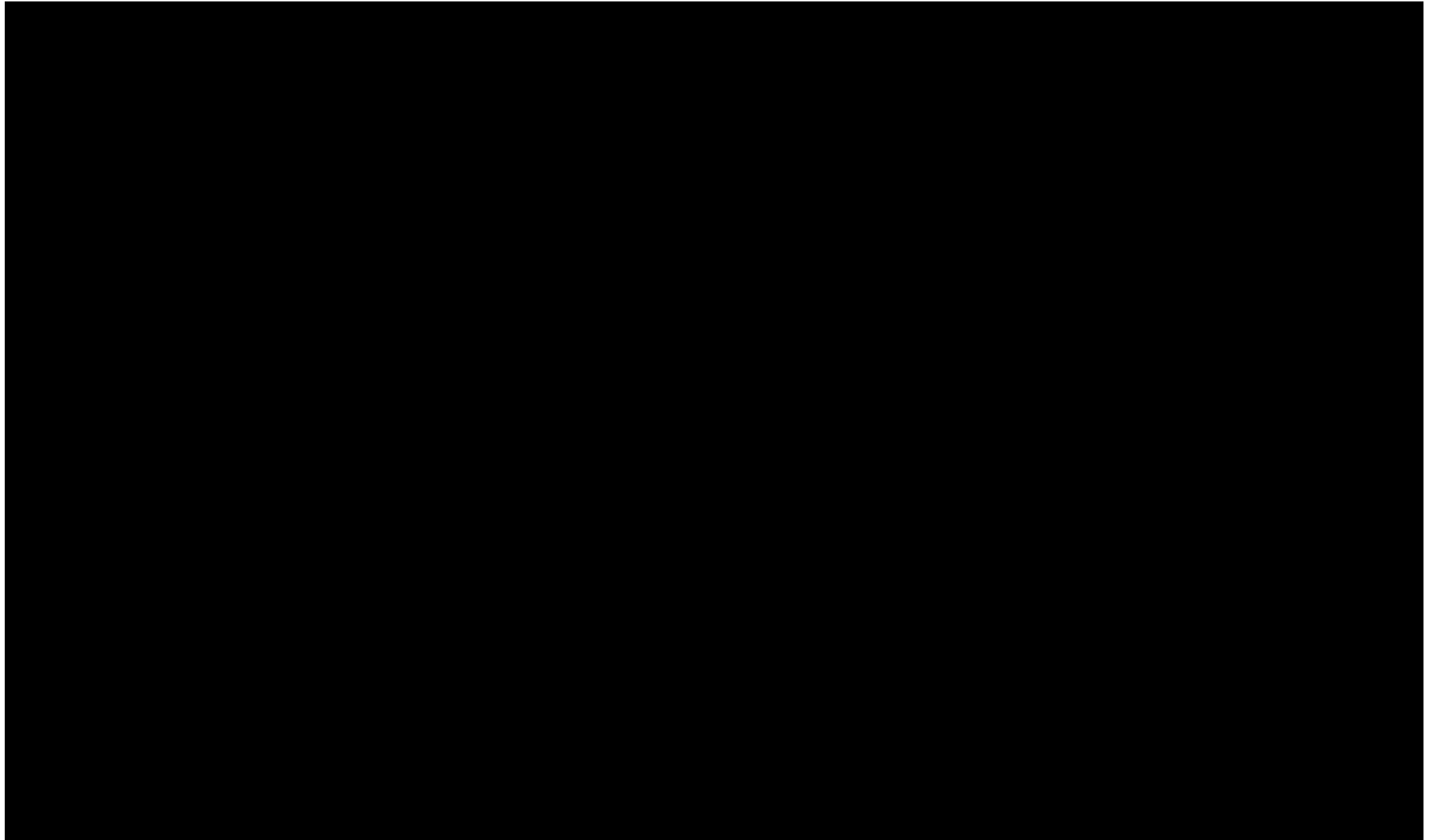
No.	Notice of Intent to Respond Received	Firm	Point of Contact	Email	Phone #1	Phone #2	Response Received
1	7/10/2018	Innovative Solar Systems	J Brandon Olsen	brandon.olsen@innovativesolarsystemsllc.com	828-214-7866	828-424-7884	Have not recieved a response
2	7/11/2018	Broadview/Yellowstone Solar LLC	Mark Klein	mark@marktklein.com	505-249-4855		7/30/2018
3	7/12/2018	Alpine Pacific Utilities Hydro	Justin Ahmann	justin@apec-mt.com			7/27/2018
4	7/16/2018	Avangride Renewables	Paul Sari	paul.sari@avangrid.com	503-423-2043	503-250-3371	7/30/2018
5	7/16/2018	Talen Energy LLC	Sheryl Mayo	sheryl.mayo@talenergy.com	406-533-6863	406-490-0193	7/30/2018
6	7/16/2018	Sunverge Energy Inc	Martin Milani	mmilani@sunverge.com			7/30/2018
			Mark Williams	mwilliams@sunverge.com	650-619-2836		
7	7/17/2018	Absaroka Energy Development Group	Kecie Nice	knice@absarokaenergy.com	406-585-3066		7/30/2018
8	7/17/2018	NextEra	Daniel Handal	daniel.handal@nexteraenergy.com	415-318-5903	561-289-7115	7/30/2018
9	7/18/2018	Malmstrom AFB Contracting	George Strand	george.strand@us.af.mil	406-731-3624		7/27/2018
			Carolyn Lippert Wood	carolyn.wood2@us.af.mil	406-731-4019		
			David Dower	david.dower@us.af.mil	406-731-6900		
			Nancy Coleal	nancy.coleal@us.af.mil	850-283-6295		
			Christina R. Mudd	cmudd@exeterassociates.com	410-992-7500		
10	7/18/2018	Caithness Energy, LLC	Gail Conboy	gconboy@caithnessenergy.com	212-782-0549		7/30/2018
11	7/18/2018	Siemens Energy, Inc	Ed Scott	ed.scott@siemens.com	406-494-1286	406-491-0274	Indicated that they do not plan to submit but would like to be kept in the loop correspondance going forward.
12	7/18/2018	Competitive Power Ventures	Peter Podurgiel	ppodurgiel@cpv.com	781-848-2786	781-405-3442	7/30/2018
13	7/18/2018	Chelan Public Utility District	Holli Krebs	holti.krebs@chelandpud.org	360-225-6086	360-606.3866	7/31/2018
14	7/18/2018	Haymaker Wind LLC	Stacy Gasvoda	sgasvoda@haymakerwind.com	406-565-2870		Submitted via Avangrid
15	7/19/2018	Saturn Power	Dave Carscadden	dave.carscadden@saturnpower.com	519-804-9163x131	519-497-4866	Indicated that they were unable to pull together a response in time but are definitely interested in future RFP or RFQ.
16	7/19/2018	NS2 Energy North America LLC	Padraig Carroll	pcarroll@ns2energy.com	406-534-8272	406-672-4937	7/30/2018
17	7/20/2018	National Renewable Solutions (Grey)	TY Severson	tseverson@natrs.com	763-443-8801		7/30/2018
18	7/20/2018	Juwi Inc	Jessica Ackerman	jackerman@juwiamerica.com	303-953-5180		Indicated that they do not plan to submit
			Charley Weschler	cweschler@juwiamerica.com			
			Sarah Porter	sporter@juwiamerica.com			
19	7/24/2018	ProEnergy	Don Traywick	dtraywick@proenergyservices.com	660-829-5100	713-703-3594	7/30/2018
20	7/25/2018	Stornetic GmbH (Independent Power)	William A Franks	billfranks43@hotmail.com	1-207-467-3017	1-207-329-0653	7/30/2018
21	Not recieved	Sacagewea	Tivan Bovington	TBov@sacagewea-energy.com	203-817-4681		7/13/2018 (some info. received)
22	Not recieved	PW Power Systems, LLC	Kerry McDonough	kerry.mcdonough@pwps.com	860-543-1619		7/30/2018
23	Not recieved	Phillips 66	Lisa King	lisa.king@contractor.p66.com	918-977-5076		7/30/2018
24	Not recieved	Primus Power	Matt Zedler	matt.zedler@primuspower.com	804-651-3544	510-342-7629	7/20/2018

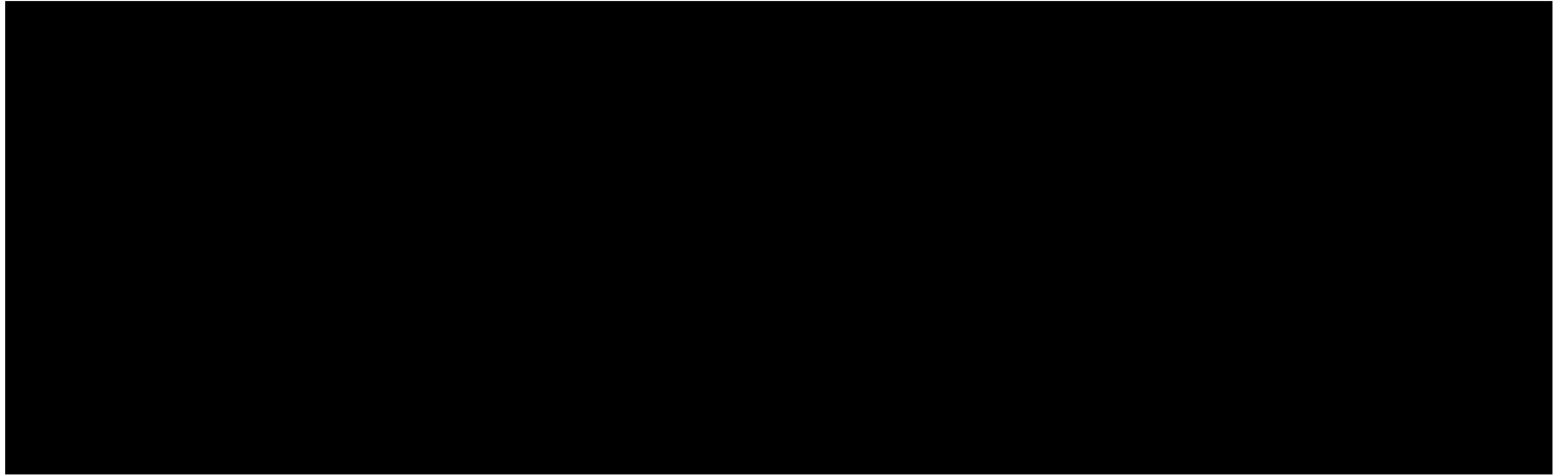


Appendix E

Summary of Responses
(CONFIDENTIAL)







Notes on Costs and other Items from the Responses

Respondent	Notes
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
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Respondent	Notes
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