

## **North Star Energy Storage LLC**

Re: Competitive Resource Acquisition Process for up to 800 Megawatts of Firm Dispatchable Generation,  
Docket Number: E002/CN-23-212

### North Star Energy Storage LLC Surplus Battery Proposal

In response to those Comments of the Minnesota Department of Commerce, Division of Energy Resources dated February 16, 2024, DESRI hereby submits an updated Proposal in clean (Attachment A) and redline (Attachment B) form to address the noted deficiencies in the filing.

1. Minn. R. 7829.2500, Sub. 2—Brief summary of filing on separate page sufficient to apprise potentially interested parties of its nature and general content;
2. Minn. R. 7849.0240 sub. 2 C—Effects of the facility in inducing future development;
3. Minn. R. 7849.0250 A (1)—Discussion of the impact of economies of scale on facility size and timing;
4. Minn. R. 7849.0320 B—Estimated amount of vehicular, rail, and barge traffic due to construction and operation;
5. Minn. R. 7849.0320 E (1), (2), and (3)—Regarding water use: a. Estimated maximum use including: i. Groundwater pumping rate in gallons/minute ii. Surface water appropriation in cubic feet/second b. Estimated groundwater appropriation in million gallons/year; c. Annual consumption in acre-feet;
6. Minn. R. 7849.0320 I—Potential sources/types of audible noise;
7. Minn. R. 7849.0320 J—Estimated work force required for construction and operation;
8. IRP Order, point C 1—Planned maintenance; 9. IRP Order, point C 2— Expected minimum load;
10. 800 FD Order, Metric 32—Provide a climate change analysis of the proposal consistent with the Minnesota Environmental Quality Board's environmental assessment worksheet guidance for developing a carbon footprint and incorporating climate adaptation and resilience;8 11. 800 FD Order, Metric 32—Identifying whether the proposal is located in an environmental justice area using census criteria in Minnesota Statute 216B.1691, subd. 1(e);

***Attachment A***

Updated Proposal in Redline Form of DESRI RENEWABLE ENERGY DEVELOPMENT BID TO NORTHERN  
STATES POWER COMPANY 2023 FIRM DISPATCHABLE PROCEEDING



DESRI RENEWABLE ENERGY  
DEVELOPMENT BID TO  
NORTHERN STATES POWER  
COMPANY 2023 FIRM  
DISPATCHABLE PROCEEDING  
(PUBLIC)

[ ] | [ ] MWac in [ ], MN

DESRI Renewable Energy Development  
[Jonathan.kett@deshaw.com](mailto:Jonathan.kett@deshaw.com)



## Filing Summary (Minn. R. 7829.2500, Sub. 2)

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This Proposal has been developed in response to Minnesota Public Utilities Commission's November 3, 2023 Order Approving Petition and Requiring Compliance Filing. DESRI Renewable Energy Development, LLC, an affiliate of D. E. Shaw Renewable Investments ("DESRI") and its affiliate, North Star Energy Storage LLC, submitted a proposal for the 800 MW of firm dispatchable resources required by Xcel Energy.

The Project has secured land control but is actively working to secure additional land options, and intends to commence state level permitting process in the coming months. The proposed commercial operation date for the Project is [ ].

The North Star Energy Storage facility consists of up to a [ ] MW [ ] hour system located in Chisago County, Minnesota. The existing solar project has been operating for over 7 years, and has an existing Generation Interconnection Agreement with Northern States Power the Midcontinent Independent System Operator for [ ] MW. DESRI is finalizing a submission for a Surplus Interconnection request for an [ ] MW energy storage facility.

### Executive Summary

DESRI Renewable Energy Development, LLC, an affiliate of D. E. Shaw Renewable Investments ("DESRI") is pleased to submit a proposal for the [ ] MWac [ ] Project ("Project"). The Project is a new early-to-mid-stage development asset located in [ ], Minnesota, which will include battery storage technology added as a surplus storage IA to an existing solar photovoltaic facility.

The Project, which is being developed by DESRI and will leverage DESRI's internal expertise as well as strong financing and construction relationships, will provide new storage to Northern States Power Company ("NSP") at scale and close to the Minneapolis Metro load center. DESRI has approximately 10 acres under control and is working on active development of the Project. We are targeting a January 2027 commercial operations date for the Project.

DESRI is one of the leading owner-operators of renewable energy projects in North America. Since its formation in 2011, DESRI has had a successful track record developing, owning, and operating high-quality, utility-scale wind and solar power plants across the U.S., including its current portfolio of 55 operating and in construction projects with more than 3.2 GW of capacity. The DESRI team has significant experience financing renewable projects and has raised more than \$17 billion in project financing, tax equity, mezzanine debt, corporate debt, equity, and other capital for its projects. DESRI is a member of the D. E. Shaw group, a global investment and technology development firm with more than \$60 billion in investment capital as of December 1, 2022, and offices in North America, Europe, and Asia. DESRI is headquartered in New York, NY and Denver, CO.

We are proud to be on the leading edge of renewable energy investing and development in the U.S and to be one of the largest owner and constructors of new renewable projects in the Intermountain West. To date, DESRI has assets that are in development, construction or operations in most of the Midwest, including the 149 megawatt ("MWac") River Fork Solar project, currently in construction in Sheridan & Parma Township, Michigan and the 239 MWac Assembly Solar project, which has been operating for 3 years in Venice and Hazelton Townships in Michigan. DESRI owns and operates the [ ], which sells



energy to NSP (Xcel Energy), and achieved COD in [ ]. In addition, DESRI is currently one of the largest owner and constructor of new renewable assets in the Midwest, where it currently has approximately 680 MWac of projects in operations, 769 MWac of projects in construction and ~2.5 GWac of projects in late-stage development (including through joint ventures). Lastly, we have a commercially operating Arroyo Solar and Storage facility with 300 MWac solar and 150 MWac / 600 MWh of co-located battery storage, and the San Juan Solar and Storage facility with 200 MWac solar and 100 MWac / 400 MWh of co-located battery storage under construction.

DESRI looks forward to working with NSP on the Project and anticipates that its location and development progress will add value to NSP’s system, which can be passed back to its customers. We have marked confidential information in this bid by highlighting it in yellow, and have marked all confidential exhibit materials as “CONFIDENTIAL”. We request that NSP please endeavor to maintain these materials’ confidential nature and alert us to any requirement to share this information outside of the Evaluation Team.

We appreciate the opportunity to bid and look forward to continued discussion on the Project.

Project Summary

Project Name	Location	Capacity (MWac)	BESS (MWh)	BESS Price (\$/kw-month)	PPA Term (Energy Only)	COD
[ ]	[ ], MN					
[ ]	[ ], MN					

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## Development Experience

DESRI Renewable Energy Development (“DESRI”, or “Seller”) is pleased to present [ ], a 50 MWac/200 MWh or 80 MWac/320 MWh co-located battery storage project to NSP for its 2023 RFP (“Project”). The Project is well-sited in Chisago County, CO, close to the Minneapolis Metro Load Center and can be a helpful driver of new energy and economic development in Chisago County. The Project is being bid as a separate tolling agreement structure, and will require an amendment to the existing North Star Solar PPA, with a 20 tolling agreement for storage.

DESRI is a nation-wide developer, owner and operator of new renewable assets and has over 8 GW of contracted, construction and operating assets across 69 projects and 24 states. Our team’s experience spans across early, mid and late stage development, as well as project financing and construction. DESRI has a track record of leadership in the Intermountain West and is currently the largest owner and constructor of projects in the Midwest. To date, DESRI has assets that are in development, construction or operations in most of the Midwest, including the 149 megawatt (“MWac”) River Fork Solar project, currently in construction in Sheridan & Parma Township, Michigan and the 239 MWac Assembly Solar project, which has been operating for 3 years in Venice and Hazelton Townships in Michigan. DESRI owns and operates the 100 MWac North Star Solar Facility, which sells energy to NSP (Xcel Energy), and achieved COD in December 2016. In addition, DESRI is currently one of the largest owner and constructor of new renewable assets in the Midwest, where it currently has approximately 680 MWac of projects in operations, 769 MWac of projects in construction and ~2.5 GWac of projects in late-stage development (including through joint ventures). Lastly, we have a commercially operating Arroyo Solar and Storage facility with 300 MWac solar and 150 MWac / 600 MWh of co-located battery storage, and the San Juan Solar and Storage facility with 200 MWac solar and 100 MWac / 400 MWh of co-located battery storage under construction. A full list of projects owned by DESRI is available in Figure 1 below.

Our team has a track record of delivering successful projects and thus has many repeat utility and corporate customers, and is one of the largest independent owner-operators of renewable energy assets in the United States. DESRI, through affiliated special purpose project entities, such as DESRI Tidewater Development, LLC and Aspen Renewables, is actively developing utility-scale solar projects across the United States.

DESRI is a member of The D. E. Shaw group, which is a leading global alternative asset manager, with more than \$60 billion in investment capital as of December 1, 2022. DESRI is a leader in renewable energy, having raised more than \$17 billion in capital through its renewable energy projects and portfolio companies since 2005. Biographies of relevant project team members are listed below.

### Hy Martin, Chief Development Officer

Hy Martin is Chief Development Officer at DESRI. He has originated, developed, or financed more than 4,000MW of solar, wind, and conventional energy generation projects during his career. Prior to his current position, he was leading the development acquisition team at SunEdison transacting on more than 1,000MW of power generation assets. Hy previously held positions at NRG Energy, a multi-strategy infrastructure fund, and the United States Department of the Treasury. He has more than 15 years of experience in the power generation industry. Hy holds a BS from the University of Virginia, an MPA from Harvard Kennedy School, and an MBA from Harvard Business School.



#### Liz Peyton, Executive Director of Development

Liz Peyton is an Executive Director of Development for D. E. Shaw Renewable Investments. In this capacity, she has achieved financial close for approximately 275 MWac of new solar assets, and secured over 400 MWac in new power purchase agreements, (targeted to be executed by in Q1 2023), in the Intermountain West. Prior to joining DESRI, Liz was a Project Director for Development at NextEra Energy Resources, where she led development for 147 MWac of complex New England solar projects, including the largest solar projects in Vermont and in New England, respectively. Liz has worked through early-stage site diligence and land acquisition, all the way through PPA negotiations, and project construction. Liz holds a B.A. from Boston University and an M.A. from Tufts University. She resides in Denver, CO.

#### Jonathan Kett, Executive Director of Special Projects

Jonathan Kett is an Executive Director of Special Projects for D.E. Shaw Renewable Investments. Within this role, he is focused on utility scale solar, wind and storage projects in regions throughout the United States during both development and construction. Prior to joining DESRI, Jonathan was an asset manager at Invenergy, where he focused on operations and M&A for utility solar, wind and storage throughout North America. Jonathan has worked on greenfielding projects, acquiring projects through M&A, PPA agreements, and managing projects during operations & construction. Jonathan holds an engineering degree from University of Wisconsin – Madison. He resides in Denver, CO.

#### Damon Lao, Director of Engineering

Damon Lau is Director of Project Engineering for D.E. Shaw Renewable Investments. Within this role, he is focused on design optimization of mid to late stage projects and managing EPC designs. Damon has been working in renewables since 2011 working for EPCs, equipment suppliers and project developers. His last 8 years was spent at 8minute Energy and at Shell New Energies developing solar projects in the US and engineering projects globally. Damon holds a mechanical engineering degree from UC Berkeley and is a licensed Civil Engineer in California.

#### Daniel Wang, Director of Transmission

Daniel has a decade of interconnection experience on energy projects, first at Pacific Gas and Electric Company as an Interconnection Manager followed by development work. He has been involved in the achievement of commercial operations for one and a half gigawatts of solar generation across the United States. Daniel received his electrical engineering degree at the University of California, San Diego and his MBA at the University of Southern California.



Project	State	Type	Status	Size (AC)	Size (DC)
Airport	Oregon	Solar	Operating	47	61
Alta Luna	New Mexico	Solar	Operating	25	34
Assembly	Michigan	Solar	Operating	50	72
Assembly II	Michigan	Solar	Operating	110	161
Assembly III	Michigan	Solar	Operating	79	115
Balko	Oklahoma	Wind	Operating	300	0
Belmont	Indiana	Solar	Operating	4	5
Benson Creek	Oregon	Wind	Operating	10	10
Big River	Illinois	Solar	Operating	149	209
Cove Mountain 1	Utah	Solar	Operating	58	75
Cove Mountain 2	Utah	Solar	Operating	122	159
CT Fusion	Connecticut	Solar	Operating	20	32
Cuyama	California	Solar	Operating	40	56
Dressor Plains	Illinois	Solar	Operating	99	135
Drew	California	Solar	Operating	100	138
Durbin Creek	Oregon	Wind	Operating	10	10
Gray Hawk Solar	Arizona	Solar	Operating	55	65
Hunter Solar (UT)	Utah	Solar	Operating	100	130
Huntington (Parent Entity)	Oregon	Wind	Operating	0	0
Iris Solar	Louisiana	Solar	Operating	50	82
Jett Creek	Oregon	Wind	Operating	10	10
Kawaiiloa Solar	Hawaii	Solar	Operating	49	63
Kawaiiloa Wind	Hawaii	Wind	Operating	69	69
Lamesa	Texas	Solar	Operating	50	66
LNGN	Indiana	Solar	Operating	2	2
Marion (Parent Entity)	Indiana	Solar	Operating	0	0
Midway	Texas	Solar	Operating	182	236
Mississippi Solar 2	Mississippi	Solar	Operating	52	74
Mount Signal II	California	Solar	Operating 3rd Party	154	200
North Star	Minnesota	Solar	Operating	100	138
Orchard 1	Oregon	Wind	Operating	20	20
Orchard 2	Oregon	Wind	Operating	20	20
Orchard 3	Oregon	Wind	Operating	20	20
Orchard 4	Oregon	Wind	Operating	20	20
Orchard A	Oregon	Wind	Operating	40	20
Orchard B	Oregon	Wind	Operating	40	20
Portal Ridge (Parent Entity)	California	Solar	Operating	0	0
Portal Ridge Solar B	California	Solar	Operating	20	25
Portal Ridge Solar C	California	Solar	Operating	11	14
Power County (Parent Entity)	Idaho	Wind	Operating	0	0
Power County North	Idaho	Wind	Operating	23	23
Power County South	Idaho	Wind	Operating	23	23
Prairie State	Illinois	Solar	Operating	99	134
Prospector	Oregon	Wind	Operating	10	10
Rancho Seco 1	California	Solar	Operating	11	13
Rancho Seco II	California	Solar	Operating	160	213
Red Horse 2	Arizona	Solar / Wind	Operating	55	76
Red Horse 3	Arizona	Solar	Operating	30	38
Sigurd	Utah	Solar	Operating	80	112
Simsbury	Connecticut	Solar	Operating	26	50
Springbok 1	California	Solar	Operating	108	137
Springbok 2	California	Solar	Operating	165	191
St. James	Louisiana	Solar	Operating	20	35
Willow Spring	Oregon	Wind	Operating	10	10
Willow Springs	California	Solar	Operating	108	132
55				3213	3758



Figure 1 List of DESRI's current operating projects in the U.S.

## Financial Information

DESRI's audited financial statements for 2020, 2021, and 2022 are available in Exhibit 10. We request these materials be treated **confidentially**, given their sensitive nature.

The Project will be financed as a non-recourse project and will utilize both debt and tax equity financing. At this time, it is expected that the Project will utilize the ITC with approximately 40-45% of the Project's financing derived from tax equity investment.

During construction, the Project will be financed using construction debt as well as a tax equity bridge loan, which will comprise approximately 80-90% of the Project's costs, with the remainder being supplied by sponsor equity from an affiliate of Seller. On completion of construction and commencement of operations, the Project's capital stack will include term debt, tax equity financing and sponsor equity. Project development security will be provided from one of DESRI's revolving credit facilities for development projects.

Bidder intends to finance the Project utilizing the project finance markets in a manner similar to our now operating utility-scale projects. If the Project is selected as a winning bid, project equity will be provided by DESRI with third party tax equity and project debt being provided by one or more national banking institutions with which our team maintains relationships. The project finance and construction loan market for high-quality utility-scale solar projects is highly liquid and competitive.

DESRI is an industry leader and one of the most active participants in raising tax equity and project finance for renewable energy projects, having closed approximately \$6 billion in funding commitments for its projects. Since 2005, the team's renewable energy portfolio companies have raised over \$10 billion in senior secured project debt, corporate bonds, tax equity, cash equity, and other sources of funding, as well as \$17 billion raised for energy projects.

An organizational chart representing the Seller's ownership structure are provided in Exhibit 2.

## Project Description and Development Schedule

The Project is a well-sited proposed [ ] MWac energy storage facility. It will be sited on approximately 10 acres of land in [ ], MN. Bidder has engaged Westwood to complete a critical issues analysis for the Project, and they will likely be the Project's primary permitting consultant. The primary Project access will be adjacent to the existing [ ] substation, and our team will engage in permitting activities with the state and county in 2024 – 2025. There is ample land at the site and the project is working to secure additional connected land.

At this time our team feels confident that, pending interconnection timelines and construction of any required network upgrades (i.e., point of interconnection (POI) substations and/or substation yard upgrades), the Project can come online by January 2027. It is expected that the Surplus IA process will yield limited network upgrades. The Project's interconnection and associated transmission will be provided by NSP and the Project intends to enter the interconnection queue in Q1-24.

As described in more detail below, DESRI has many relationships with battery EPC and equipment manufacturers, and is actively procuring over 500 MW of BESS equipment.

The Project has not submitted bids into any other solicitations for new PPAs at this time.

## Project Collection/Transmission Requirements

The Project Team has approximately 10 acres purchased, and is actively negotiating additional land for construction. The Project's contiguous acreage to the existing substation and POI is in place. As such, the Project team is working on a proposed Project lands are currently being used for agriculture.



Figure 2 [ ] Property Aerial Map

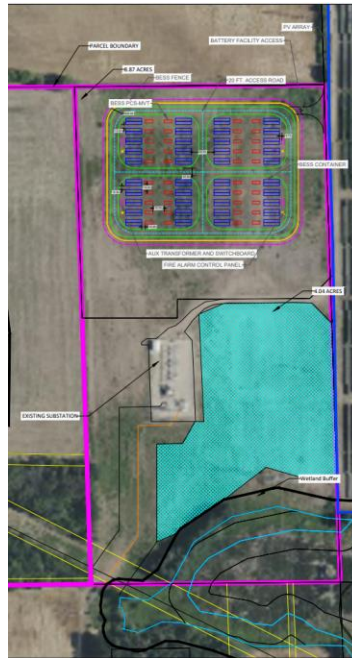


Figure 3 [ ] Layout

## Equipment Description

DESRI will utilize new, tier one equipment for all major parts and equipment for the Project. Given the size of its portfolio, DESRI has strong, active relationships with a variety of tier one owner equipment manufacturers (OEMs) for battery storage equipment, BESS array equipment and project transformers. DESRI is comfortable with the Dynamic Reactive Power Capability requirements to comply with FERC 827 and applicable IEEE Std. 2800 requirements as well as the Ride Through Capability requirements.

DESRI will likely utilize one of the following OEMs for the Project:



- **Battery Storage Equipment:** Similar to Project modules, DESRI and its EPC partners procure batteries at scale. We would likely use Sungrow, Tesla or another tier one supplier.

## Real Property Acquisition Description and Plan

DESRI currently owns 10 acres of land for the BESS. DESRI is actively negotiating rights to land [ ].

At this time, DESRI anticipates that we can fit land within the existing owned land, but may require approximately 1 additional agreements (or amendment to an agreement) to secure adequate land for the facility.

The existing owned parcel is currently being used for substation facilities.

Title reports for the Project's parcels are attached as supporting documents. DESRI anticipates preliminary title work and curative may be required when/if additional parcels are secured.

## Permitting Plan

DESRI has engaged Westwood to prepare a Critical Issues Analysis and permit matrix for the Project, and is actively working to draft submissions for the state permitting process. The Project team, who have experience permitting projects in some of the most complex markets in the US are anticipating an approximately one year permitting timeline to complete these permits.

The Project is not anticipated to need any air quality permits, water discharge permits, or hazardous waste permits.

## Transmission Plan

In addition to its proximity to the Minneapolis Metro area, [ ] is also advantaged in its proximity to strong transmission infrastructure on NSP's system. The Project site interconnects to the [ ] substation 115 kV . Given the surplus status of the filing, and the existing NRIS designation, we do not anticipate material interconnection upgrade costs ([ ]).

## Community/State Reaction Assessment

DESRI has a strong track record of execution in the Midwest, and is currently one of the largest owner and constructor of solar in the Midwest. We have a comprehensive development, financing and construction strategy that yields strong assets that contribute to rural economic development and new construction job creation in the state. DESRI's goal is to be a steward of our relationships with host communities and to contribute positively to ongoing economic development in places where we have developed projects. This requires strong and transparent communication, local stakeholder engagement and consistent follow up.

DESRI's approach to development is as follows:

1. Identify a need for cost-effective, well-sited renewable energy;
2. Find the best resource and delivery point to serve that need;
3. Screen the site for the least environmental impact and least negative impact on the local community. Key screening factors considered include:



- a. Interconnection
- b. Fuel source/resource
- c. Permitability
- d. Constructability
- e. Levelized Cost of Energy.

In the case of [ ], the project is currently on lands being used for the solar substation and agriculture. The Project is sited in a primarily agricultural area with some residential development, but should not be visible from major thoroughfares. In addition, part of the value of the Project is its proximity to major electrical infrastructure, which in addition to creating a good injection point for the Project's power, also avoid a significant viewshed issue.

[ ]

#### Effects of the facility in inducing future development (Minn. R. 7849.0240 sub. 2 C)

The Project is not expected to directly affect development in Chisago County. It is worth noting that this is not expected to hinder future development. The land for the development is immediately adjacent to an existing solar facility.

Construction of the storage facility will temporarily increase local construction jobs in the area. There is expected to be a mix of in state and out of state construction personnel. Further, the storage project will create operations phase job opportunities as outlined above in this section.

The storage facility will result in additional sources of revenue to the townships and county during both construction and operations. Further, leases with local landowners will result in revenues for community members.

## Operations and Maintenance

The EPC Contractor will be responsible for the operation and maintenance of the Facility until Substantial Completion. The Seller, through its O&M provider, will operate the Facility after Substantial Completion, and the EPC Contractor will administer the warranty for EPC-supplied equipment as directed by Seller.

DESRI manages a fleet of 69 contracted, in-construction and operating assets across 24 states, totaling approximately 8.4 gigawatts (GWac) of contracted, construction and operating projects.

DESRI's O&M partner for the Project will manage labor arrangements in compliance with state laws. It is likely that DESRI's O&M arrangements for the Project and its other proposed assets will be able to leverage operational efficiencies through scale.

#### Planned Maintenance (IRP Order Point C1)

Planned maintenance for the storage facility is anticipated to occur for the following scopes of work.

- Battery Capacity and Performance Testing – at Commercial Operations, Annually
- Battery Remote Monitoring of plant diagnostics – 24/7/365, daily, monthly, and annual report review for underperformance and maintenance.
- Battery HVAC – monthly visual inspection. As needed filter replacement.
- Battery Fire System – monthly safety check, and annual inspection

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- Medium Voltage Transformer – annual thermal inspection of terminations. Monthly visual inspection.
- Inverter – annual internal visual inspection. Annual air filter check, fuse inspection, torque confirmation.
- Note: Equipment rating will be designed and specified to local temperature expectations to minimum risk of equipment repair and failure.

#### Expected Minimum Load (IRP Order Point C2)

The facility loads to maintain system temperature and function during operations and standby may be up to approximately 2 MW. The maximum charge of the system in operation is up to [ ] MW and [ ] depending on the selection system size.

### Exceptions to Model PPA

DESRI has an existing fully financed power purchase agreement for its solar facility. As a result of this unique situation, DESRI suggests an amendment and restate of the existing PPA to accommodate a Solar plus Storage PPA. The form provided is not likely to be acceptable to the parties, and Standalone Storage PPA may be considered as an alternative, with clarification in the existing Solar PPA that charging energy shall be compensated at the existing PPA rate.

DESRI suggests a discussion between the parties to adequately retain the legacy solar PPA structure while affording the storage facility the interconnection rights required.

### Employment Metrics

Approximate employment metrics for the Project are under review. DESRI has not yet committed to signing a PLA for the Project, but may elect to do so in the future.

#### Work Force (Minn. R. 7849.0320 J)

The Project is expected to create approximately 40 construction jobs during the construction phase, and up to 3 full time jobs onsite during the operations phase.

#### Effect of Economies of Scale (Minn. R. 7849.0250 A (1))

Economies of scale (system size) are relevant for the overall procured MW capacity of the system. As outlined in this proposal, the larger system results in a lower overall unit cost for the storage facility. The storage equipment itself consists of containerized battery cells, cooling systems, and other electrical equipment, which typically have a minimum size of around 1 MW / 4 MWh.

The BESS project will be capable of discharging [ ] MWh over an expected 20 year life for the [ ] MW system and [ ] MWh over an expected 20 year life for the [ ] MW system. Given the energy storage facility is not a generating station, it is not expected to directly offset carbon emissions, however its co-location with the existing solar facility may enable curtailed energy to be stored and used during intervals where grid demand increases.



### Estimated amount of vehicular, rail, and barge traffic due to construction and operation (Minn. R. 7849.0320 B)

Traffic will be primarily vehicular, and barge traffic is not anticipated. Project anticipates an approximate 9 month construction cycle for the storage system, with less than 50 construction workers anticipated at peak construction. Deliveries of the battery storage containers are expected to last approximately 2 months and are not expected to exceed 80,000 pounds.

### Water Use (Minn. R. 7849.0320 E (1), (2), and (3))

Regarding water use, the Project does not anticipate use of more than 20 acre-feet of water for construction (groundwater use not anticipated to exceed 100 gpm, surface water use is not anticipated). Water use during operations is expected to be under 1 acre-foot per year.

### Audible Noise (R. 7849.0320 I)

Minn. Stat. §116.07, subd. 2(c) dictates the MPCA's authority to adopt noise standards, which are set forth in Minn. R. Ch. 7030. Noise area classifications will be considered based on proximity to residential homes (Noise Area Classification 1). The standards vary depending on daytime and nighttime, and require A-weighted noise measurements.

Construction activities, including equipment operation and vehicles will result in intermittent noise. Noise will vary depending on the associated construction activities, but impactful activities will include pile drivers, dozers, graders, rollers, small cranes, fork lifts, and other equipment. Further, additional on site traffic will contribute to noise. The project intends to limit construction activities to daylight hours. Equipment used for construction will be in good working condition and will be equipped with industry standard sound dampening devices.

Operations activities sources of noise will primarily include maintenance activities and equipment operations. Maintenance and repair activities may result in infrequent heavy machinery and crews, but maintenance workers will be cognizant of time of day and work activities to limit local impact. Project inverters, transformers, BESS containers, and HVAC systems are the primary contributors to noise in a solar system. During operations, the BESS mainly generates noise from two components: the HVAC-based cooling systems within each BESS container as well as the inverters that convert Discharging Energy from DC to AC power (and vice versa for Charging Energy). For an 80 MWac BESS facility, which would have roughly 174 BESS containers and 22 inverters, DESRI estimates that the total sound output of a system of this size would have an hourly equivalent operational sound level of just under 56 dB[A] from 1,600 feet away. Please note that these noise levels and design parameters are estimates and might be subject to slight changes pending final vendor selection and project design. Final design will be developed consistent with Minn. R. Ch. 7030.



**Table 1. Hourly Equivalent Operational Sound Levels at Various Distances**

Distance (feet)	Estimated Noise Level (dB[A])		
	1 BESS Pod (approximately 20 MW)	5 BESS Pods (approximately 80 MW)	6 BESS Pods (approximately 100 MW)
50	79.4	85.8	86.5
100	73.4	79.8	80.5
200	67.4	73.7	74.4
400	61.3	67.7	68.4
800	55.3	61.7	62.4
1,600	49.3	55.7	56.4
3,200	43.3	49.7	50.4

Climate Change Analysis (800 FD Order, Metric 32)

The Project considered the Minnesota Environmental Quality Board's environmental assessment worksheet guidance in assessing the climate change metric. Further details are included incorporated throughout this proposal.

Environmental Justice Area (800 FD Order, Metric 32)

The Project is not currently located within an environmental justice area.

***Attachment B***

Updated Proposal in Clean Form of DESRI RENEWABLE ENERGY DEVELOPMENT BID TO NORTHERN  
STATES POWER COMPANY 2023 FIRM DISPATCHABLE PROCEEDING



# DESRI RENEWABLE ENERGY DEVELOPMENT BID TO NORTHERN STATES POWER COMPANY 2023 FIRM DISPATCHABLE PROCEEDING (PUBLIC)

[ ] | [ ] MWac in [ ], MN

DESRI Renewable Energy Development  
[Jonathan.kett@deshaw.com](mailto:Jonathan.kett@deshaw.com)



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DESRI Renewable Energy Development, LLC, an affiliate of D. E. Shaw Renewable Investments (“DESRI”) is pleased to submit a proposal for the [ ] MWac [ ] Project (“Project”). The Project is a new early-to-mid-stage development asset located in [ ], Minnesota, which will include battery storage technology added as a surplus storage IA to an existing solar photovoltaic facility.

The Project, which is being developed by DESRI and will leverage DESRI’s internal expertise as well as strong financing and construction relationships, will provide new storage to Northern States Power Company (“NSP”) at scale and close to the Minneapolis Metro load center. DESRI has approximately 10 acres under control and is working on active development of the Project. We are targeting a January 2027 commercial operations date for the Project.

DESRI is one of the leading owner-operators of renewable energy projects in North America. Since its formation in 2011, DESRI has had a successful track record developing, owning, and operating high-quality, utility-scale wind and solar power plants across the U.S., including its current portfolio of 55 operating and in construction projects with more than 3.2 GW of capacity. The DESRI team has significant experience financing renewable projects and has raised more than \$17 billion in project financing, tax equity, mezzanine debt, corporate debt, equity, and other capital for its projects. DESRI is a member of the D. E. Shaw group, a global investment and technology development firm with more than \$60 billion in investment capital as of December 1, 2022, and offices in North America, Europe, and Asia. DESRI is headquartered in New York, NY and Denver, CO.

We are proud to be on the leading edge of renewable energy investing and development in the U.S and to be one of the largest owner and constructors of new renewable projects in the Intermountain West. To date, DESRI has assets that are in development, construction or operations in most of the Midwest, including the 149 megawatt (“MWac”) River Fork Solar project, currently in construction in Sheridan & Parma Township, Michigan and the 239 MWac Assembly Solar project, which has been operating for 3 years in Venice and Hazelton Townships in Michigan. DESRI owns and operates the [ ], which sells



energy to NSP (Xcel Energy), and achieved COD in [ ]. In addition, DESRI is currently one of the largest owner and constructor of new renewable assets in the Midwest, where it currently has approximately 680 MWac of projects in operations, 769 MWac of projects in construction and ~2.5 GWac of projects in late-stage development (including through joint ventures). Lastly, we have a commercially operating Arroyo Solar and Storage facility with 300 MWac solar and 150 MWac / 600 MWh of co-located battery storage, and the San Juan Solar and Storage facility with 200 MWac solar and 100 MWac / 400 MWh of co-located battery storage under construction.

DESRI looks forward to working with NSP on the Project and anticipates that its location and development progress will add value to NSP's system, which can be passed back to its customers. We have marked confidential information in this bid by highlighting it in yellow, and have marked all confidential exhibit materials as "CONFIDENTIAL". We request that NSP please endeavor to maintain these materials' confidential nature and alert us to any requirement to share this information outside of the Evaluation Team.

We appreciate the opportunity to bid and look forward to continued discussion on the Project.

#### Project Summary

Project Name	Location	Capacity (MWac)	BESS (MWh)	BESS Price (\$/kw-month)	PPA Term (Energy Only)	COD
[ ]	[ ], MN					
[ ]	[ ], MN					



## Development Experience

DESRI Renewable Energy Development (“DESRI”, or “Seller”) is pleased to present [ ], a 50 MWac/200 MWh or 80 MWac/320 MWh co-located battery storage project to NSP for its 2023 RFP (“Project”). The Project is well-sited in Chisago County, CO, close to the Minneapolis Metro Load Center and can be a helpful driver of new energy and economic development in Chisago County. The Project is being bid as a separate tolling agreement structure, and will require an amendment to the existing North Star Solar PPA, with a 20 tolling agreement for storage.

DESRI is a nation-wide developer, owner and operator of new renewable assets and has over 8 GW of contracted, construction and operating assets across 69 projects and 24 states. Our team’s experience spans across early, mid and late stage development, as well as project financing and construction. DESRI has a track record of leadership in the Intermountain West and is currently the largest owner and constructor of projects in the Midwest. To date, DESRI has assets that are in development, construction or operations in most of the Midwest, including the 149 megawatt (“MWac”) River Fork Solar project, currently in construction in Sheridan & Parma Township, Michigan and the 239 MWac Assembly Solar project, which has been operating for 3 years in Venice and Hazelton Townships in Michigan. DESRI owns and operates the 100 MWac North Star Solar Facility, which sells energy to NSP (Xcel Energy), and achieved COD in December 2016. In addition, DESRI is currently one of the largest owner and constructor of new renewable assets in the Midwest, where it currently has approximately 680 MWac of projects in operations, 769 MWac of projects in construction and ~2.5 GWac of projects in late-stage development (including through joint ventures). Lastly, we have a commercially operating Arroyo Solar and Storage facility with 300 MWac solar and 150 MWac / 600 MWh of co-located battery storage, and the San Juan Solar and Storage facility with 200 MWac solar and 100 MWac / 400 MWh of co-located battery storage under construction. A full list of projects owned by DESRI is available in Figure 1 below.

Our team has a track record of delivering successful projects and thus has many repeat utility and corporate customers, and is one of the largest independent owner-operators of renewable energy assets in the United States. DESRI, through affiliated special purpose project entities, such as DESRI Tidewater Development, LLC and Aspen Renewables, is actively developing utility-scale solar projects across the United States.

DESRI is a member of The D. E. Shaw group, which is a leading global alternative asset manager, with more than \$60 billion in investment capital as of December 1, 2022. DESRI is a leader in renewable energy, having raised more than \$17 billion in capital through its renewable energy projects and portfolio companies since 2005. Biographies of relevant project team members are listed below.

### Hy Martin, Chief Development Officer

Hy Martin is Chief Development Officer at DESRI. He has originated, developed, or financed more than 4,000MW of solar, wind, and conventional energy generation projects during his career. Prior to his current position, he was leading the development acquisition team at SunEdison transacting on more than 1,000MW of power generation assets. Hy previously held positions at NRG Energy, a multi-strategy infrastructure fund, and the United States Department of the Treasury. He has more than 15 years of experience in the power generation industry. Hy holds a BS from the University of Virginia, an MPA from Harvard Kennedy School, and an MBA from Harvard Business School.

### Liz Peyton, Executive Director of Development

Liz Peyton is an Executive Director of Development for D. E. Shaw Renewable Investments. In this capacity, she has achieved financial close for approximately 275 MWac of new solar assets, and secured over 400 MWac in new power purchase agreements, (targeted to be executed by in Q1 2023), in the Intermountain West. Prior to joining DESRI, Liz was a Project Director for Development at NextEra Energy Resources, where she led development for 147 MWac of complex New England solar projects, including the largest solar projects in Vermont and in New England, respectively. Liz has worked through early-stage site diligence and land acquisition, all the way through PPA negotiations, and project construction. Liz holds a B.A. from Boston University and an M.A. from Tufts University. She resides in Denver, CO.

### Jonathan Kett, Executive Director of Special Projects

Jonathan Kett is an Executive Director of Special Projects for D.E. Shaw Renewable Investments. Within this role, he is focused on utility scale solar, wind and storage projects in regions throughout the United States during both development and construction. Prior to joining DESRI, Jonathan was an asset manager at Invenergy, where he focused on operations and M&A for utility solar, wind and storage throughout North America. Jonathan has worked on greenfielding projects, acquiring projects through M&A, PPA agreements, and managing projects during operations & construction. Jonathan holds an engineering degree from University of Wisconsin – Madison. He resides in Denver, CO.

### Damon Lao, Director of Engineering

Damon Lau is Director of Project Engineering for D.E. Shaw Renewable Investments. Within this role, he is focused on design optimization of mid to late stage projects and managing EPC designs. Damon has been working in renewables since 2011 working for EPCs, equipment suppliers and project developers. His last 8 years was spent at 8minute Energy and at Shell New Energies developing solar projects in the US and engineering projects globally. Damon holds a mechanical engineering degree from UC Berkeley and is a licensed Civil Engineer in California.

### Daniel Wang, Director of Transmission

Daniel has a decade of interconnection experience on energy projects, first at Pacific Gas and Electric Company as an Interconnection Manager followed by development work. He has been involved in the achievement of commercial operations for one and a half gigawatts of solar generation across the United States. Daniel received his electrical engineering degree at the University of California, San Diego and his MBA at the University of Southern California.

Project	State	Type	Status	Size (AC)	Size (DC)
Airport	Oregon	Solar	Operating	47	61
Alta Luna	New Mexico	Solar	Operating	25	34
Assembly	Michigan	Solar	Operating	50	72
Assembly II	Michigan	Solar	Operating	110	161
Assembly III	Michigan	Solar	Operating	79	115
Balko	Oklahoma	Wind	Operating	300	0
Belmont	Indiana	Solar	Operating	4	5
Benson Creek	Oregon	Wind	Operating	10	10
Big River	Illinois	Solar	Operating	149	209
Cove Mountain 1	Utah	Solar	Operating	58	75
Cove Mountain 2	Utah	Solar	Operating	122	159
CT Fusion	Connecticut	Solar	Operating	20	32
Cuyama	California	Solar	Operating	40	56
Dressor Plains	Illinois	Solar	Operating	99	135
Drew	California	Solar	Operating	100	138
Durbin Creek	Oregon	Wind	Operating	10	10
Gray Hawk Solar	Arizona	Solar	Operating	55	65
Hunter Solar (UT)	Utah	Solar	Operating	100	130
Huntington (Parent Entity)	Oregon	Wind	Operating	0	0
Iris Solar	Louisiana	Solar	Operating	50	82
Jett Creek	Oregon	Wind	Operating	10	10
Kawailoa Solar	Hawaii	Solar	Operating	49	63
Kawailoa Wind	Hawaii	Wind	Operating	69	69
Lamesa	Texas	Solar	Operating	50	66
LNGN	Indiana	Solar	Operating	2	2
Marion (Parent Entity)	Indiana	Solar	Operating	0	0
Midway	Texas	Solar	Operating	182	236
Mississippi Solar 2	Mississippi	Solar	Operating	52	74
Mount Signal II	California	Solar	Operating 3rd Party	154	200
North Star	Minnesota	Solar	Operating	100	138
Orchard 1	Oregon	Wind	Operating	20	20
Orchard 2	Oregon	Wind	Operating	20	20
Orchard 3	Oregon	Wind	Operating	20	20
Orchard 4	Oregon	Wind	Operating	20	20
Orchard A	Oregon	Wind	Operating	40	20
Orchard B	Oregon	Wind	Operating	40	20
Portal Ridge (Parent Entity)	California	Solar	Operating	0	0
Portal Ridge Solar B	California	Solar	Operating	20	25
Portal Ridge Solar C	California	Solar	Operating	11	14
Power County (Parent Entity)	Idaho	Wind	Operating	0	0
Power County North	Idaho	Wind	Operating	23	23
Power County South	Idaho	Wind	Operating	23	23
Prairie State	Illinois	Solar	Operating	99	134
Prospector	Oregon	Wind	Operating	10	10
Rancho Seco 1	California	Solar	Operating	11	13
Rancho Seco II	California	Solar	Operating	160	213
Red Horse 2	Arizona	Solar / Wind	Operating	55	76
Red Horse 3	Arizona	Solar	Operating	30	38
Sigurd	Utah	Solar	Operating	80	112
Simsbury	Connecticut	Solar	Operating	26	50
Springbok 1	California	Solar	Operating	108	137
Springbok 2	California	Solar	Operating	165	191
St. James	Louisiana	Solar	Operating	20	35
Willow Spring	Oregon	Wind	Operating	10	10
Willow Springs	California	Solar	Operating	108	132
55				3213	3758



Figure 1 List of DESRI's current operating projects in the U.S.

## Financial Information

DESRI's audited financial statements for 2020, 2021, and 2022 are available in Exhibit 10. We request these materials be treated **confidentially**, given their sensitive nature.

The Project will be financed as a non-recourse project and will utilize both debt and tax equity financing. At this time, it is expected that the Project will utilize the ITC with approximately 40-45% of the Project's financing derived from tax equity investment.

During construction, the Project will be financed using construction debt as well as a tax equity bridge loan, which will comprise approximately 80-90% of the Project's costs, with the remainder being supplied by sponsor equity from an affiliate of Seller. On completion of construction and commencement of operations, the Project's capital stack will include term debt, tax equity financing and sponsor equity. Project development security will be provided from one of DESRI's revolving credit facilities for development projects.

Bidder intends to finance the Project utilizing the project finance markets in a manner similar to our now operating utility-scale projects. If the Project is selected as a winning bid, project equity will be provided by DESRI with third party tax equity and project debt being provided by one or more national banking institutions with which our team maintains relationships. The project finance and construction loan market for high-quality utility-scale solar projects is highly liquid and competitive.

DESRI is an industry leader and one of the most active participants in raising tax equity and project finance for renewable energy projects, having closed approximately \$6 billion in funding commitments for its projects. Since 2005, the team's renewable energy portfolio companies have raised over \$10 billion in senior secured project debt, corporate bonds, tax equity, cash equity, and other sources of funding, as well as \$17 billion raised for energy projects.

An organizational chart representing the Seller's ownership structure are provided in Exhibit 2.

## Project Description and Development Schedule

The Project is a well-sited proposed [ ] MWac energy storage facility. It will be sited on approximately 10 acres of land in [ ], MN. Bidder has engaged Westwood to complete a critical issues analysis for the Project, and they will likely be the Project's primary permitting consultant. The primary Project access will be adjacent to the existing [ ] substation, and our team will engage in permitting activities with the state and county in 2024 – 2025. There is ample land at the site and the project is working to secure additional connected land.

At this time our team feels confident that, pending interconnection timelines and construction of any required network upgrades (i.e., point of interconnection (POI) substations and/or substation yard upgrades), the Project can come online by January 2027. It is expected that the Surplus IA process will yield limited network upgrades. The Project's interconnection and associated transmission will be provided by NSP and the Project intends to enter the interconnection queue in Q1-24.

As described in more detail below, DESRI has many relationships with battery EPC and equipment manufacturers, and is actively procuring over 500 MW of BESS equipment.

The Project has not submitted bids into any other solicitations for new PPAs at this time.

## Project Collection/Transmission Requirements

The Project Team has approximately 10 acres purchased, and is actively negotiating additional land for construction. The Project's contiguous acreage to the existing substation and POI is in place. As such, the Project team is working on a proposed Project lands are currently being used for agriculture.



Figure 2 [ ] Property Aerial Map

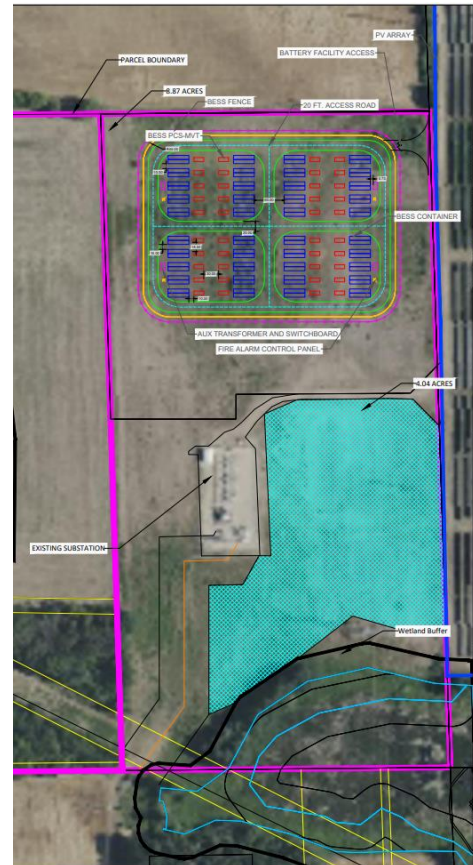


Figure 3 [ ] Layout

## Equipment Description

DESRI will utilize new, tier one equipment for all major parts and equipment for the Project. Given the size of its portfolio, DESRI has strong, active relationships with a variety of tier one owner equipment manufacturers (OEMs) for battery storage equipment, BESS array equipment and project transformers. DESRI is comfortable with the Dynamic Reactive Power Capability requirements to comply with FERC 827 and applicable IEEE Std. 2800 requirements as well as the Ride Through Capability requirements.

DESRI will likely utilize one of the following OEMs for the Project:

- **Battery Storage Equipment:** Similar to Project modules, DESRI and its EPC partners procure batteries at scale. We would likely use Sungrow, Tesla or another tier one supplier.

## Real Property Acquisition Description and Plan

DESRI currently owns 10 acres of land for the BESS. DESRI is actively negotiating rights to land [ ].

At this time, DESRI anticipates that we can fit land within the existing owned land, but may require approximately 1 additional agreements (or amendment to an agreement) to secure adequate land for the facility.

The existing owned parcel is currently being used for substation facilities.

Title reports for the Project's parcels are attached as supporting documents. DESRI anticipates preliminary title work and curative may be required when/if additional parcels are secured.

## Permitting Plan

DESRI has engaged Westwood to prepare a Critical Issues Analysis and permit matrix for the Project, and is actively working to draft submissions for the state permitting process. The Project team, who have experience permitting projects in some of the most complex markets in the US are anticipating an approximately one year permitting timeline to complete these permits.

The Project is not anticipated to need any air quality permits, water discharge permits, or hazardous waste permits.

## Transmission Plan

In addition to its proximity to the Minneapolis Metro area, [ ] is also advantaged in its proximity to strong transmission infrastructure on NSP's system. The Project site interconnects to the [ ] substation 115 kV . Given the surplus status of the filing, and the existing NRIS designation, we do not anticipate material interconnection upgrade costs ([ ]).

## Community/State Reaction Assessment

DESRI has a strong track record of execution in the Midwest, and is currently one of the largest owner and constructor of solar in the Midwest. We have a comprehensive development, financing and construction strategy that yields strong assets that contribute to rural economic development and new construction job creation in the state. DESRI's goal is to be a steward of our relationships with host communities and to contribute positively to ongoing economic development in places where we have developed projects. This requires strong and transparent communication, local stakeholder engagement and consistent follow up.

DESRI's approach to development is as follows:

1. Identify a need for cost-effective, well-sited renewable energy;
2. Find the best resource and delivery point to serve that need;
3. Screen the site for the least environmental impact and least negative impact on the local community. Key screening factors considered include:

- a. Interconnection
- b. Fuel source/resource
- c. Permitability
- d. Constructability
- e. Levelized Cost of Energy.

In the case of [ ], the project is currently on lands being used for the solar substation and agriculture. The Project is sited in a primarily agricultural area with some residential development, but should not be visible from major thoroughfares. In addition, part of the value of the Project is its proximity to major electrical infrastructure, which in addition to creating a good injection point for the Project's power, also avoid a significant viewshed issue.

[ ]

#### **Effects of the facility in inducing future development (Minn. R. 7849.0240 sub. 2 C)**

The Project is not expected to directly affect development in Chisago County. It is worth noting that this is not expected to hinder future development. The land for the development is immediately adjacent to an existing solar facility.

Construction of the storage facility will temporarily increase local construction jobs in the area. There is expected to be a mix of in state and out of state construction personnel. Further, the storage project will create operations phase job opportunities as outlined above in this section.

The storage facility will result in additional sources of revenue to the townships and county during both construction and operations. Further, leases with local landowners will result in revenues for community members.

## **Operations and Maintenance**

The EPC Contractor will be responsible for the operation and maintenance of the Facility until Substantial Completion. The Seller, through its O&M provider, will operate the Facility after Substantial Completion, and the EPC Contractor will administer the warranty for EPC-supplied equipment as directed by Seller.

DESRI manages a fleet of 69 contracted, in-construction and operating assets across 24 states, totaling approximately 8.4 gigawatts (GWac) of contracted, construction and operating projects.

DESRI's O&M partner for the Project will manage labor arrangements in compliance with state laws. It is likely that DESRI's O&M arrangements for the Project and its other proposed assets will be able to leverage operational efficiencies through scale.

#### **Planned Maintenance (IRP Order Point C1)**

Planned maintenance for the storage facility is anticipated to occur for the following scopes of work.

- Battery Capacity and Performance Testing – at Commercial Operations, Annually
- Battery Remote Monitoring of plant diagnostics – 24/7/365, daily, monthly, and annual report review for underperformance and maintenance.
- Battery HVAC – monthly visual inspection. As needed filter replacement.
- Battery Fire System – monthly safety check, and annual inspection

- Medium Voltage Transformer – annual thermal inspection of terminations. Monthly visual inspection.
- Inverter – annual internal visual inspection. Annual air filter check, fuse inspection, torque confirmation.
- Note: Equipment rating will be designed and specified to local temperature expectations to minimum risk of equipment repair and failure.

#### Expected Minimum Load (IRP Order Point C2)

The facility loads to maintain system temperature and function during operations and standby may be up to approximately 2 MW. The maximum charge of the system in operation is up to [ ] MW and [ ] depending on the selection system size.

### Exceptions to Model PPA

DESRI has an existing fully financed power purchase agreement for its solar facility. As a result of this unique situation, DESRI suggests an amendment and restate of the existing PPA to accommodate a Solar plus Storage PPA. The form provided is not likely to be acceptable to the parties, and Standalone Storage PPA may be considered as an alternative, with clarification in the existing Solar PPA that charging energy shall be compensated at the existing PPA rate.

DESRI suggests a discussion between the parties to adequately retain the legacy solar PPA structure while affording the storage facility the interconnection rights required.

### Employment Metrics

Approximate employment metrics for the Project are under review. DESRI has not yet committed to signing a PLA for the Project, but may elect to do so in the future.

### Work Force (Minn. R. 7849.0320 J)

The Project is expected to create approximately 40 construction jobs during the construction phase, and up to 3 full time jobs onsite during the operations phase.

### Effect of Economies of Scale (Minn. R. 7849.0250 A (1))

Economies of scale (system size) are relevant for the overall procured MW capacity of the system. As outlined in this proposal, the larger system results in a lower overall unit cost for the storage facility. The storage equipment itself consists of containerized battery cells, cooling systems, and other electrical equipment, which typically have a minimum size of around 1 MW / 4 MWh.

The BESS project will be capable of discharging [ ] MWh over an expected 20 year life for the [ ] MW system and [ ] MWh over an expected 20 year life for the [ ] MW system. Given the energy storage facility is not a generating station, it is not expected to directly offset carbon emissions, however its co-location with the existing solar facility may enable curtailed energy to be stored and used during intervals where grid demand increases.

## Estimated amount of vehicular, rail, and barge traffic due to construction and operation (Minn. R. 7849.0320 B)

Traffic will be primarily vehicular, and barge traffic is not anticipated. Project anticipates an approximate 9 month construction cycle for the storage system, with less than 50 construction workers anticipated at peak construction. Deliveries of the battery storage containers are expected to last approximately 2 months and are not expected to exceed 80,000 pounds.

## Water Use (Minn. R. 7849.0320 E (1), (2), and (3))

Regarding water use, the Project does not anticipate use of more than 20 acre-feet of water for construction (groundwater use not anticipated to exceed 100 gpm, surface water use is not anticipated). Water use during operations is expected to be under 1 acre-foot per year.

## Audible Noise (R. 7849.0320 I)

Minn. Stat. §116.07, subd. 2(c) dictates the MPCA's authority to adopt noise standards, which are set forth in Minn. R. Ch. 7030. Noise area classifications will be considered based on proximity to residential homes (Noise Area Classification 1). The standards vary depending on daytime and nighttime, and require A-weighted noise measurements.

Construction activities, including equipment operation and vehicles will result in intermittent noise. Noise will vary depending on the associated construction activities, but impactful activities will include pile drivers, dozers, graders, rollers, small cranes, fork lifts, and other equipment. Further, additional on site traffic will contribute to noise. The project intends to limit construction activities to daylight hours. Equipment used for construction will be in good working condition and will be equipped with industry standard sound dampening devices.

Operations activities sources of noise will primarily include maintenance activities and equipment operations. Maintenance and repair activities may result in infrequent heavy machinery and crews, but maintenance workers will be cognizant of time of day and work activities to limit local impact. Project inverters, transformers, BESS containers, and HVAC systems are the primary contributors to noise in a solar system. During operations, the BESS mainly generates noise from two components: the HVAC-based cooling systems within each BESS container as well as the inverters that convert Discharging Energy from DC to AC power (and vice versa for Charging Energy). For an 80 MWac BESS facility, which would have roughly 174 BESS containers and 22 inverters, DESRI estimates that the total sound output of a system of this size would have an hourly equivalent operational sound level of just under 56 dB[A] from 1,600 feet away. Please note that these noise levels and design parameters are estimates and might be subject to slight changes pending final vendor selection and project design. Final design will be developed consistent with Minn. R. Ch. 7030.

**Table 1. Hourly Equivalent Operational Sound Levels at Various Distances**

Distance (feet)	Estimated Noise Level (dB[A])		
	1 BESS Pod (approximately 20 MW)	5 BESS Pods (approximately 80 MW)	6 BESS Pods (approximately 100 MW)
50	79.4	85.8	86.5
100	73.4	79.8	80.5
200	67.4	73.7	74.4
400	61.3	67.7	68.4
800	55.3	61.7	62.4
1,600	49.3	55.7	56.4
3,200	43.3	49.7	50.4

### Climate Change Analysis (800 FD Order, Metric 32)

The Project considered the Minnesota Environmental Quality Board's environmental assessment worksheet guidance in assessing the climate change metric. Further details are included incorporated throughout this proposal.

### Environmental Justice Area (800 FD Order, Metric 32)

The Project is not currently located within an environmental justice area.