

# **APPENDIX D**

## **DRAFT DECOMMISSIONING PLANS**

# **CRANE DECOMMISSIONING PLAN**

# CRANE ENERGY STORAGE DECOMMISSIONING PLAN

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## List of Abbreviations

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Abbreviation	Term/Phrase
BESS	Battery Energy Storage System
BOP	Balance of Plant
C&D	Construction and Demolition
CFR	Code of Federal Regulations
kV	Kilovolt
LFP	Lithium iron phosphate
LOTO	Lock-out-tag-out
MW	Megawatt
MWh	Megawatt-hours
POI	Point of Interconnection
PPE	Personnel Protective Equipment
PUC	Public Utilities Commission
RCRA	US Resource Conservation and Recovery Act

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## 1.0 Introduction

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BMcD was retained by Crane Energy Storage LLC to build a preliminary decommissioning plan and cost estimate for the Crane Energy Storage Project, hereby referred to as the Project, which includes a Battery Energy Storage System (“BESS”). The plan aims to review the Project and recommend to Crane Energy Storage LLC how to decommission it, as well as an estimated cost to decommission and dismantle the Project at the end of its useful life.

In addition to preparing decommissioning cost estimates, BMcD has supported demolition projects in various respects, including but not limited to self-perform, owner’s engineer, project manager, cost estimator, construction manager, project control specialist, and environmental professional. In these capacities, BMcD has evaluated demolition bids and overseen decommissioning activities in numerous different power plants and other industrial facilities. This has provided BMcD with insight into a broad range of complexities pertaining to the decommissioning process. By carefully studying and planning, BMcD’s goal is to assist Crane Energy Storage LLC in avoiding safety risks and costly setbacks in decommissioning. Each decommissioning or demolition project worked on has individual needs, and by leveraging the experience and best practices learned from years of performing these operations, BMcD has prepared the decommissioning estimate developed in this document.

### 1.1 Methodology

The Project’s decommissioning plan and costs were developed using Project drawings accepted by Crane Energy Storage LLC, publicly available information, BMcD’s in-house database of plant equipment quantities, and professional judgment. For the Project, quantities were estimated for each required major task. Current market pricing for labor rates and equipment was developed for the Project, and disposal costs specific to where the work will be performed. These rates were applied to the quantities for the Project to determine the total cost of decommissioning and dismantling. The decommissioning cost includes returning the site to an agricultural condition suitable for reuse for development. Included are the costs to decommission and dismantle all the assets owned by Crane Energy Storage LLC at the site, including power generating equipment and balance of plant (“BOP”) facilities.

## 2.0 Project Description

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The decommissioning plan and cost evaluation were prepared based on the following assumptions regarding the Project facility.

### 2.1 General

The Project is in Olmsted County, Minnesota. The Project is expected to consist of BESS, BOP components and a collector substation. The total facility rating is expected to maintain 200 megawatts (“MW”) / 800 megawatt hours (“MWh”) at the point of interconnection (“POI”) as designated by the local utilities. The interconnection voltage of the collector substation is planned to be 161kV per the project information provided by Crane Energy Storage LLC. Project BESS technology has not been selected, so the decommissioning plan and costs are based on current market research, guiding regulations, and BMcD’s knowledge.

The Project is located on an area of approximately 23 acres. Preliminary design documents have shown that the BESS facility, BOP, gen-tie line, access road, and collector substation can limit their area of disturbance to 15 acres. The Project area is currently used for farming agriculture products and is edged by a fence. When decommissioned, it is assumed that all installed BESS, BOP equipment, substation components, and stormwater basins will be removed.

As part of decommissioning, all above-grade equipment within the project’s perimeter fence, including battery enclosures, inverters, substation, transmission line, and fencing, will be removed. All salvageable materials will be loaded onto trucks and hauled to a scrap yard for recycling. Batteries and other universal waste will be shipped to an approved third party for proper reuse, recycling, or disposal. All other materials that cannot be recycled or reused will be loaded onto trucks and hauled to a local landfill for disposal.

The below-grade equipment, structures, and foundations associated with the Project will be removed per applicable regulations, as discussed in the following section. Voids left from removing the below-grade foundations will be backfilled with surrounding soils and fine-graded to provide suitable drainage. Once all equipment, structures, and foundations are removed and voids are filled on the site, the site will be re-graded and seeded for proper drainage and future use.

### 2.2 Battery Energy Storage System

Project BESS technology has yet to be selected at the time of the initial release of the decommissioning plan. Hence, the assumption for decommissioning is that the technology chosen for the Project will be a purpose-built enclosure designed for outdoor applications containing lithium-ion batteries with the composition of lithium iron phosphate (“LFP”). The LFP composition is assumed since most leading BESS manufacturers use this cell type for grid storage applications. In the current recycling market, the composition of LFP batteries is less desirable than that of other lithium-ion battery compositions, making disposal of the battery cost more than any recycling value that is received during the decommissioning process. The purpose-built enclosures will be designed and installed according to all

nationally recognized electrical, structural, civil, and fire safety standards. Onsite decommissioning is expected to secure and manage the batteries according to the manufacturer's recommendations and all applicable safety and regulatory requirements to enable all batteries to be reused or recycled with minimal impact on the Project site, environment, and surrounding area.

The BESS equipment will come with an accompanying power conversion system, step-up transformer, heating and air conditioning systems, fire protection systems rated for the enclosures, and any other auxiliary equipment required by the selected BESS technology manufacturer for the Project. Leading BESS technology manufacturers have developed systems where the accompanying equipment fits in containers similar in size to shipping containers; this combined system will be referred to as the power conversion skid. The accompanying equipment will be included in all phases of the decommissioning plan and meet all the safety standards for their prospective use.

Seismic and local geotechnical reports will be considered when building acceptable foundations for the site. Foundations will be rated for the weight of the equipment. Current market research shows that each battery enclosure can weigh over 80,000 pounds with approximate dimensions like standard or large shipping containers. To meet the Project's power requirements and after reviewing the available enclosures and equipment on the market, the Project is estimated to have 236 purpose-built battery enclosures at the end of the life of the project with 59 additional power conversion skids.

Certain BESS equipment manufacturers have planned decommissioning processes to help guide purchasers in recycling their equipment at the end of life. For the current decommissioning plan, such processes are assumed not to be in place, and Crane Energy Storage LLC will be responsible for the reuse, recycling, or disposal of all equipment for the Project.

## **2.3 Substation and Transmission Line**

The Project plans to have a collector substation for the generation equipment capable of meeting the power purchase agreement stipulations listed above. The substation will be co-located on the Project site. The substation's significant components include a control enclosure, a main power transformer, circuit breakers, busbars, a grounding grid, and other electrical control equipment. Underground electrical lines will connect the BESS equipment and the substation. The substation equipment will be installed on concrete foundations with a gravel footprint area estimated to be 1.75 acres. All above-grade equipment, conduits, cables, and foundations in the substation area will be removed as part of the decommissioning process.

The Project substation will be connected to the national transmission grid with a 161kV overhead transmission line. The transmission line is estimated to be 0.15 miles and terminates at the Northern States Power Company Substation located South of the Project site. Decommissioning of the Project includes removing the installed overhead transmission line built for the Project collector substation.

## 2.4 Stormwater Basin

Current Project estimations indicate the need for a stormwater basin to be located onsite. The proper sizing of the basin will conform to all county and state requirements and meet all national standards. The stormwater basin will be located next to the BESS facility to protect the site from flooding during the project's lifespan. The stormwater basin will be included in decommissioning the Project and removed along with the Project equipment. The stormwater basin will be filled with soil similar to the predominant soil found on the property.

## 2.5 Site Access

The Project will include internal roadways and perimeter fencing. All site access roadways will meet county requirements for emergency response access and equipment manufacturer specifications for equipment delivery and site maintenance. Throughout the project's life, the roadways and fencing will be maintained after use during decommissioning, the access roads may be preserved in order to keep access to property area.

## 2.6 Applicable Regulations

The Project is designed following the regulations established in the following publications: NFPA 70 National Electric Code, NFPA 855: Standard for the Installation of Stationary Energy Storage Systems, NFPA 1 Fire Code, NFPA 70E Standard for Electrical Safety in the Workplace, Title 29 of the Code of Federal Regulations ("CFR") Part 1910 Occupational Safety and Health Standards, and Title 29 CFR Part 1926 Safety and Health Regulations for Construction. When beginning to decommission, the work will adhere to the safety standards established during the facility's construction, including those based on NFPA 241, the Standard for Safeguarding Construction, Alteration, and Demolition Operations. Local and federal regulations for handling hazardous and non-hazardous waste material will also apply to all work performed during decommissioning.

During decommissioning, the Project will become a waste generator and US Resource Conservation and Recovery Act ("RCRA") regulations will apply. Along with RCRA regulations, Title 40 CFR Subchapter I Solid Wastes is applicable. The Project will follow the on-site waste accumulation limits, obtain EPA identification numbers as needed, meet accumulation time limits, maintain proper training certificates, maintain records, and meet all other requirements for waste generators.

Lithium-ion batteries are considered hazardous materials under Title 49 CFR Subtitle B Chapter 1 Subchapter C. This regulation applies to the movement of hazardous material and contains requirements for safety, training, security, and records that apply to anyone handling hazardous material. The Project will verify that personnel who handle any hazardous materials on site meet all training and safety requirements outlined in 49 CFR. Additionally, when the batteries of the Project reach the end of their useful life, they are also considered waste, and RCRA regulations also apply. Batteries that are fully intact and classified as hazardous waste can be managed as universal waste under the universal waste regulations established by the Environmental Protection Agency. Batteries that have been damaged or are defective must be treated as hazardous waste.

Decommissioning obligations for BESS projects are not currently regulated in applicable state or federal regulations, nor are there requirements in Olmsted County, Minnesota, regarding decommissioning of BESS facilities. In good faith, Crane Energy Storage LLC is submitting a decommissioning plan following the guidelines of the Minnesota Public Utilities Commission and other renewable energy facilities in Minnesota. The decommissioning plan is also informed by and attempts to follow the requirements of Olmsted County Zoning Ordinances, notably, Code of Ordinance - Chapter 1400, Article X, 508C Section 10.52 Solar Energy Farms B.10—and C.2.e., to the extent practicable.

### **2.6.1 Battery Transportation**

Before packaging the batteries for transportation, the Project will verify that all batteries have been discharged below 30% of their rated capacity or the more stringent requirements set forth by the Department of Energy or Department of Transportation at the time of decommissioning in order to meet all transportation guidelines. Batteries will be packaged in a manner designed to prevent short circuits, accidental activation of the equipment, and any movement within the outer package. Batteries will be placed in inner packaging, such as a plastic bag, to envelop the entire battery and prevent contact with other devices or packages. The outer packaging will be designed to meet the specifications outlined in the universal waste regulations, hazardous material regulations, and Department of Transportation regulations.

Batteries damaged or identified as defective can be transported only by highway, rail or vessel. The packaging of defective batteries will meet 49 CFR 173.185(f). Each cell or battery must be placed in individual, non-metallic inner packaging that completely encloses the cell or battery. The inner packaging must be surrounded by cushioning material that is non-combustible, electrically non-conductive, and absorbent. Each inner packaging must be individually placed in an outer package meeting 49 CFR 173.185(f) requirements. The outer packaging of the batteries will be marked with the identification of “damaged/defective lithium-ion battery” with characters at least 0.5 inches in height.

All batteries, whether intact or defective, will be transported following all Department of Transportation requirements, with certified drivers carrying the equipment being transported.

## 3.0 Decommissioning Objectives

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The decommissioning plan follows the BESS industry's standards and standard lease and easement agreement terms. Decommissioning will safely do the following:

1. Clear, clean, and remove from the Project each battery storage facility or energy storage device, transformer, BOP equipment, and substation equipment constructed on the property.
2. Clear, clean, and remove from the Project each structural foundation of the battery storage facility and collector substation constructed by Crane Energy Storage LLC on the property, and each hole or cavity created in the ground by the removal will be filled with the removed soil. All foundations will be removed to a depth of four feet.
3. Clear, clean, and remove from the Project each buried cable, including power, grounding equipment, fiber-optic, and communication cables constructed by the Crane Energy Storage LLC on the property, and each hole or cavity created in the ground by the removal will be filled with the removed soil. Any cable below four feet will stay.
4. Clear, clean, and remove each overhead power or communications line constructed by Crane Energy Storage LLC on the property from the property.
5. Clear, clean, and remove from the property each stormwater basin constructed by Crane Energy Storage LLC on the property and each hole or cavity created in the ground by the removal will be filled with the removed soil.
6. Clear, clean, and remove from the property each fence, gate, and onsite roadway access constructed by Crane Energy Storage LLC on the property, and each hole or cavity created in the ground by the removal will be filled by the removed soil.

The Project will be dismantled as a single project, allowing the most cost-effective demolition methods to be utilized. A summary of several means and methods that could be employed is summarized in the following paragraphs; however, means and methods will not be dictated to the contractor performing the decommissioning work. The contractor will determine the means and processes that safely dismantle the Project.

### 3.1 Safety

All work performed during the Project's decommissioning will be completed with safety being the top priority. Being a commercial energy storage facility, the Project will have many potential hazards found on site, including electrical, mechanical, chemical, and environmental hazards. The Project will establish a health and safety plan for all decommissioning tasks. Throughout decommissioning, a Project safety representative will be on-site during all activities and hold daily safety meetings to review the health and safety plan, and potential hazards and mitigations implemented during the daily tasks. Before any work begins, the equipment to be worked on will be examined to identify all possible hazards; mitigation techniques will be applied using the manufacturers and established site guidelines for proper safety and dismantling of the equipment. During decommissioning, all site and manufacturer lock-out-tag-out ("LOTO") procedures will be followed. All equipment used for decommissioning will be designed and rated for the work being carried out on the Project.

The Project will verify that all safety, mechanical, and electrical tools that require calibration will be calibrated according to manufacturer guidelines and within calibration dates before each use.

All personnel decommissioning the Project will be trained and qualified to dismantle and remove the equipment they are working on. All personnel will use the proper personal protective equipment (“PPE”) specific to their task. All decommissioning sites in the Project will maintain a clean and orderly site to the extent possible. Although weather conditions cannot be controlled, all work will be conducted in appropriate weather conditions to avoid increasing the risk of serious harm or injury to personnel.

### 3.2 Timeline

Once it is determined that the Project has reached its useable end of life and decommissioning should proceed, an additional decommissioning report will be created and completed to coordinate the stages and dates of decommissioning activities, record the equipment or material removed from the Project, record the disposed of or recycled material recipient information, document any change of custody of equipment, and report final site conditions. Preparation for decommissioning should happen before ceasing site operations, and decommissioning activities are anticipated to be completed within six (6) months of the Project’s closure.

Certain stages of decommissioning can happen congruently with proper oversight and planning, but generally, the following stages are suggested for overall site safety.

1. BESS battery units and support equipment
2. Substation components and transmission line
3. Foundations
4. Stormwater basin
5. Perimeter fencing
6. Site access and internal roadways

The current decommissioning plan assumes all site access roadways have been maintained throughout the life of the Project and are suitable for decommissioning.

### 3.3 Required Permitting and Notices

Before Decommissioning Tasks begin and once decommissioning is finished, multiple agencies and organizations need to be notified of the work to be performed. Crane Energy Storage LLC will notify the landowner, local government agencies, and the Minnesota Public Utilities Commission. In addition to sending out notifications, numerous permit applications must be submitted. All permits must be received before any decommissioning construction on the Project site. In addition, these permits may require obtaining a US Army Corps of Engineers (USACE) Section 404 Permit to Discharge Dredged or Fill Material. The project will adhere to all state and federal permit requirements when decommissioning.

Due to more than one-acre on-site disturbance during decommissioning, the National Pollutant Discharge Elimination System (NPDES) Construction Site Run-off permit will be needed. These permits could require an additional Storm Water Pollution Prevention Plan and



a Spill Prevention, Control and Countermeasures Plan for decommissioning based on regulations at the time of decommissioning.

### **3.4 Decommissioning Tasks**

Upon determining that the Project has reached its end of life and that decommissioning of the facility can begin, the Project will be disconnected from its POI at the substation located south of the Project site. Before the facility shutdown, the BESS will be discharged to a state of charge below 30% or the more stringent requirements set forth by the Department of Energy or Department of Transportation at the time of decommissioning in order to allow all transportation guidelines to be followed, depending on what mode of transportation will be used to transfer the lithium-ion batteries for reuse or recycling. All equipment on site, from the Project's substation to the BESS purpose-built enclosures, will be isolated and grounded as required to limit maximum potential energy to any personnel working on the Project. The contractor performing the decommissioning tasks will be responsible for all equipment needed to facilitate decommissioning. All equipment and site LOTO will be followed to ensure minimal risk during all decommissioning tasks. Personnel will always be required to have the proper PPE for each task.

High-grade asset removal would occur up-front in the schedule to reduce the potential for theft, increase cash flow, and separate recyclable materials to increase scrap recovery. High-grade assets include precious alloys such as copper, aluminum-brass tubes, stainless steel tubes, and other high-value metals in plant systems. This would consist of transformers, transformer coils, circuit breakers, electrical cables, batteries, and inverters. Methods of removal vary with the location and nature of the asset. Small transformers, equipment, and cables would likely be removed and shipped for processing in a scrap yard. Large transformers and inverters require on-site disassembly before being shipped to a scrap yard.

Construction and Demolition ("C&D") waste will be segregated from scrap and concrete to avoid cross-contamination of waste streams or recycling streams. C&D demolition crews could remove these materials with equipment such as excavators equipped with material handling attachments, skid steers, etc. This material would be consolidated and loaded into bulk containers for disposal.

#### **3.4.1 BESS Battery Units and Support Equipment**

The Project's BESS will be the first component removed from the site. All personnel working on the equipment will be required to be certified to work on the equipment and be trained in decommissioning the BESS equipment according to manufacturer requirements and federal hazardous materials training. The batteries within the purpose-built enclosure will be isolated to the smallest individual component recommended by the manufacturer for on-site handling and removed from the enclosure to be packaged for reuse or recycling. After removing the battery modules, heating and cooling, fire suppression, or other internal equipment it will be separated for recycling. The purpose-built enclosure for the batteries will then be disassembled and separated for recycling. While decommissioning the electrical components, the grounding circuit will be the last to be removed whenever possible for personnel safety. Foundations for the enclosures will remain in place until all other equipment has been disassembled and removed from the site. Specialized equipment needed to perform this work could include a crane, forklift, and specialized equipment from the BESS manufacturer.



### **3.4.1.1 Power Conversion Skid**

All personnel working on the power conversion equipment will be trained to decommission the equipment they are working on according to the manufacturer's requirements. Electrical cabling between purpose-built battery enclosures and any inverter or transformer components will be removed for recycling. Electronic equipment and transformers will be separated from the supporting power conversion equipment for resale or recycling. All transformers on site will be drained of oil before being moved offsite. Electrical cables connecting the power conversion systems and the Project substation will be removed for recycling. While decommissioning the electrical components, the grounding circuit will be the last to be removed whenever possible for personnel safety. Foundations for the power conversion systems will remain in place until all other equipment has been disassembled and removed from the site. Specialized equipment needed to perform this work could include a crane and specialized equipment from the power conversion system manufacturer.

### **3.4.1.2 Auxiliary Electrical Systems**

All personnel working on the auxiliary electrical equipment will be trained to decommission the equipment they are working on according to the manufacturer's requirements. Auxiliary electrical systems can include auxiliary transformers, switchboards, panelboards, additional fire protection equipment, and heating and cooling systems. This equipment connected to the power conversion system for the BESS will need to be removed and organized for recycling according to the manufacturer's recommendations of the equipment and any applicable regulations. Depending on the manufacturer of the heating and cooling and fire protection equipment, additional material handling requirements may need to be met before recycling the equipment. While decommissioning the electrical components, the grounding circuit will be the last to be removed whenever possible for personnel safety. Foundations for the auxiliary electrical systems will remain in place until all other equipment has been disassembled and removed from the site. Specialized equipment needed to perform this work could include a crane and a forklift.

### **3.4.1.3 Electrical Cables and Conduits**

All direct buried electrical cables and conduits between equipment must be excavated and removed to a depth of four feet. The removed materials will be separated for proper recycling or C&D waste disposal. During this task, the BESS ground grid and the underground electrical cables connecting to the substation of the Project substation will be removed for recycling up to the point of the substation yard. The gravel terrain of the Project is to be removed for off-site disposal. All cavities created during this work will be filled with soil like the original Project soil intended for agricultural development. Special equipment for this work can include graders, skid steers, excavators, bulldozers, and dump trucks.

## **3.4.2 Substation Components and Transmission Line**

All personnel working on the substation components and transmission line will be trained to decommission the equipment they are working on according to the manufacturer's requirements. The substation components will be disassembled for reuse and recycling. The substation main power transformer must be drained of all oil before disassembly or transportation for reuse or recycling. The dismantling of the 0.15-mile transmission line for recycling will be accomplished during this decommissioning task. All C&D waste will need to

be separated for proper off-site disposal. While decommissioning the electrical components, the grounding circuit will be the last to be removed whenever possible for personnel safety. During this task, the ground grid and the underground electrical cables connecting to the substation of the Project will be removed for recycling. Special equipment needed for this work can include a crane, excavators, and open flame-cutting torches.

### **3.4.3 Foundations**

The remaining structures and foundations would be demolished up to a depth of four feet using excavators equipped with hydraulic shears, hydraulic grapples, impact breakers, and workers utilizing open flame-cutting torches. Steel components would be separated, reduced in size, and loaded onto trailers for recycling. Concrete would be broken into manageable pieces and stockpiled for future off-site disposal. At the end of this task, there should be no remaining in-ground components of the Project except for fencing. Special equipment for this work can include graders, skid steers, excavators, bulldozers, dump trucks, and open flame-cutting torches.

### **3.4.4 Stormwater Basin**

The stormwater basin will be removed, backfilled, and graded to match the terrain. All cavities created during this work will be filled with soil like the original Project soil intended for agricultural development. Special equipment for this work can include graders, skid steers, excavators, bulldozers, dump trucks, and open flame-cutting torches.

### **3.4.5 Perimeter Fencing**

Perimeter fencing will remain in place until all high-grade assets have been removed from the Project. The fencing will also provide the site with a safety zone preventing uncontrolled people from entering the area. All cavities created during this work will be filled with soil like the original Project soil intended for agricultural development. When ready for removal, fencing will be torn down, and materials will be organized and sent to recycling or C&D waste. Special equipment for this work can include skid steers and excavators.

### **3.4.6 Site Access and Internal Roadways**

All site access roads will be preserved after the project; all internal roadways will be removed and restored to the original soil composition. All materials removed will be sorted for offsite reuse or recycling. All cavities created during this work will be filled with soil like the original Project soil intended for agricultural development. Special equipment for this work can include graders, skid steers, excavators, bulldozers, and dump trucks.

## **3.5 Restoration/Reclamation of Site**

The Project's disturbed land will be restored to the original purpose before construction. New disturbances will be minimized to the greatest extent practicable. The purpose of the site chosen for the Project is agricultural development. During the Project's lifespan, if any chemical or hazardous spills are identified, the location will be reviewed for contamination left in the soil. If any soil found on the Project is not conducive to agricultural development, the soil will be removed and replaced with soil like the soil found on the property pre-project construction. Any topsoil that is removed from the surface for decommissioning will be

stockpiled to be reused and respread after decommissioning. Removed equipment will be backfilled with subgrade material, and cover with reserved topsoil to allow adequate root penetration for plants, and so that subsurface structures do not substantially disrupt ground water movements. Soils will be stabilized and returned for agricultural use, according to landowner directions. Any leaks and releases from equipment operation and electrical transformers will be remediated prior to completion of decommissioning.

Site restoration will follow the Project's stormwater management plan. Site reclamation includes the removal of any general onsite crushed rock and the replacement of similar pre-development fill. As mentioned above in decommissioning task section 3.4, any holes or excavations made during the Project or decommissioning will be filled and regraded to match the area's natural terrain. Any bare earth will be seeded with local vegetation to mitigate flood runoff. All materials needed to control water runoff, such as silt fences, sediment traps, or erosion control blankets, will also be applied. Any seeding applied on the Project should be performed as soon as possible to minimize exposed soil and increase potential erosion. All federal and local water run-off regulations will be applied to the Project site.

After completing all decommissioning activities, a two-year post-restoration monitoring program will begin. The post-restoration program will coordinate with land reclamation services to ensure site conditions remain compatible with the surrounding environment. If any issues arose, Crane Energy Storage LLC would be notified, and resources would be allocated to restore the site to pre-construction conditions.

## 4.0 Financial Assurance Plan

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Crane Energy Storage LLC will be financially responsible to decommission the Project, which will include removal of all equipment, improvements, and facilities. The original decommissioning plan approved by the Commission will be updated and reviewed by a Professional Engineer licensed in the State of Minnesota every five years from the start of operation to account for uncertainties in future salvage values, and decommissioning costs. Every five years, or with every change in ownership during the anticipated lifetime, this decommissioning plan will be updated using the method described in Section 1.1 above, and elsewhere in this plan.

During the 10th year of operation, Crane Energy Storage LLC will enter into a surety bond agreement, create an escrow account, create a reserve fund, or provide another form of security that will ultimately fund decommissioning and site restoration costs after Project operations cease, to the extent that the salvage value does not cover decommissioning costs. Crane Energy Storage LLC will decommission the Project in accordance with the conditions outlined in the PUC Site Permit. Crane Energy Storage LLC will notify the appropriate landowners and local governing bodies of the decommissioning schedule.

## 5.0 Estimated Decommissioning Costs

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When Crane Energy Storage LLC determines that the site has reached its usable end of life and should be retired, the above-grade equipment and steel structures are assumed to have scrap value to a scrap contractor, which will offset some of the site decommissioning costs. However, Crane Energy Storage LLC will incur costs of dismantling the Project and restoring the site to the extent that those costs exceed the scrap value of equipment and bulk steel.

The project's decommissioning cost includes returning the site to an agricultural condition suitable for reuse for development, and the costs of dismantling all the assets at the site, including energy storage equipment, BOP devices, and auxiliary power equipment.

### 5.1 Decommissioning Assumptions

The following assumptions are made as the basis of all cost estimates. In addition to other assumptions noted herein, the following general assumptions were utilized for the decommissioning cost estimates.

1. All costs are presented in current (2024) dollars using the 2024 Minnesota Prevailing Wage Heavy Highway rates for the Rochester, MN area.
2. Equipment and transportation costs (i.e., trucking) are based on Q4 2024 rates.
3. Mobilization of the contractor performing the deconstruction is based on the contractor mobilizing from Minneapolis, MN.
4. Per Diem for the contractor is included in the cost estimate.
5. The labor costs were based on a standard 40-hour workweek schedule; no overtime was included in the estimate.
6. The estimate is based on engineering drawings approved by Crane Energy Storage LLC. Where information was not provided, assumptions about weights, quantities, etc., were made based on market research and facility standards.
7. An offsite landfill, Kalmar Landfill, located in Rochester, Minnesota, was used to estimate demolition waste disposal from the Project. The hauling distance to this landfill is approximately 7 miles from the Project. Disposal of construction and demolition debris is \$30.00 per ton.
8. All concrete, asphalt and base aggregate will be hauled to the Milestone Materials crushing facility in Rochester, MN.
9. It was assumed that all batteries from the facility would be recycled with Battery Recyclers of America.
10. The manufactured battery enclosure and all other site non-battery components will be recycled locally in the Rochester / Minneapolis area.
11. All electrical wiring is assumed to be copper and not aluminum.
12. Scrap values are based upon an average of monthly American Metal Market prices; the most recent 12-month period, May 2023 through June 2024, was used for this estimate. These values include the cost of hauling the scrap via truck and rail to the primary market, which provides the best price. Based on hauling and rail prices, the

best market during this plan is Minneapolis, Minnesota. The following prices were used.

- a. Steel scrap value: \$150.00 per net ton
  - b. Copper scrap value: \$2.75 per net pound
13. Any containers or fluid storage tanks owned by the Project were assumed to be drained and the contents disposed of before demolition; these costs are excluded from the estimate. No allowances are included for unforeseen environmental remediation activities.
  14. Alternating Current and Direct Current cable lengths and quantities were assumed based on BMcD's experience.
  15. It was assumed that all disturbed areas would be restored to the site's current grade, reclaimed with native soils, seeded, and replanted with native vegetation consistent with the surrounding land use.
  16. Transformers will be removed and processed on-site. The decommissioning cost estimate includes draining and disposing of transformer oil off-site.
  17. At the time of decommissioning, it is assumed that the Project laydown yards utilized during construction will have been previously reclaimed and restored; no further grading, seeding, or other restoration of these areas is included in this estimate.
  18. Market conditions may result in cost variations during contract execution.
  19. Valuation and sale of land and replacement generation costs are excluded from this scope.

## 5.2 Decommissioning Costs Results

Based on the assumptions noted herein, the total cost to decommission the Project at the end of its useful life is estimated to be \$13,893,408.50. A detailed breakdown of these costs is included in the table below.

**Table 5-1: Decommissioning Cost Summary (2024\$)**

Project Task	Cost
Mobilization / Demobilization	\$75,000.00
<b>Permitting</b>	
State Permits	\$37,500.00
SWPPP Design	\$5,000.00
Subtotal	\$42,500.00
<b>Civil Infrastructure - General</b>	
Install SWPPP	\$17,500.00
Remove Asphalt Roadway	\$119,938.50
Remove Road Base aggregate	\$2,423.00
Haul Asphalt to Recycler	\$26,919.50
Haul Road Base to Recycler	\$26,653.00
Dispose of Asphalt at the Recycler	\$6,118.00
Dispose of the Road Base at the Recycler	\$6,057.50

Subtotal	\$205,609.50
<b>Civil Infrastructure</b>	
Remove Base aggregate under Battery Units	\$2,592.00
Haul Base aggregate to Recycler	\$28,512.00
Dispose of Base aggregate at the Recycler	\$6,480.00
Remove Pond Liner	\$14,593.00
Haul & Dispose of the Pond Liner	\$552.00
Removal of Security Fence	\$13,568.00
Haul & Dispose of the Security Fence	\$390.00
Subtotal	\$66,687.00
<b>Battery Storage</b>	
Removal of Batteries	\$736,320.00
Removal of PCS Units	\$92,040.00
Removal of Transformers (XFMR)	\$63,130.00
Haul & Dispose of all Batteries to the Recycler	\$12,454,500.00
Haul & Dispose of all PCS Units to Recycler	\$213,000.00
Haul XFMR to Recycler	\$10,280.00
Recycle Value of XFMR	\$(154,200.00)
Removal of Enclosures	\$236,000.00
Haul Enclosure to Recycler	\$5,629.00
Remove Concrete Foundations	\$354,710.00
Haul Concrete Foundations	\$65,267.00
Dispose of Concrete Foundations	\$15,607.00
Haul Rebar Reinforcing from Foundations to Recycler	\$1,703.00
Import Backfill Material	\$38,309.00
Place Backfill XFMR Pads	\$10,641.00
Remove the U/G Copper Cable	\$42,525.00
Load and Haul Copper Cable for Recycling	\$10,000.00
Recycle Value of Copper	\$(550,000.00)
Subtotal	\$13,645,461.00
<b>Substation</b>	
Disassembly & Removal of Main GSU XFMR	\$100,000.00
Transport Recyclable Material to Scrap Yard	\$10,000.00
Dispose of Transformer Oil	\$(15,000.00)
Recycling Value of XFMR	\$(450,000.00)
Remove XFMR Concrete Foundations	\$75,000.00
Haul XFMR Foundation	\$13,800.00

Dispose of the XFMR Foundation	\$3,000.00
Subtotal	\$(263,200.00)
<b>Site Restoration</b>	
Rough Grade Disturbed Areas	\$21,428.00
Import Topsoil	\$68,155.00
Spread Topsoil	\$16,462.50
Hydroseed Site	\$15,305.50
Subtotal	\$121,351.00
<b>TOTAL PROJECT COST:</b>	<b>\$13,893,408.50</b>

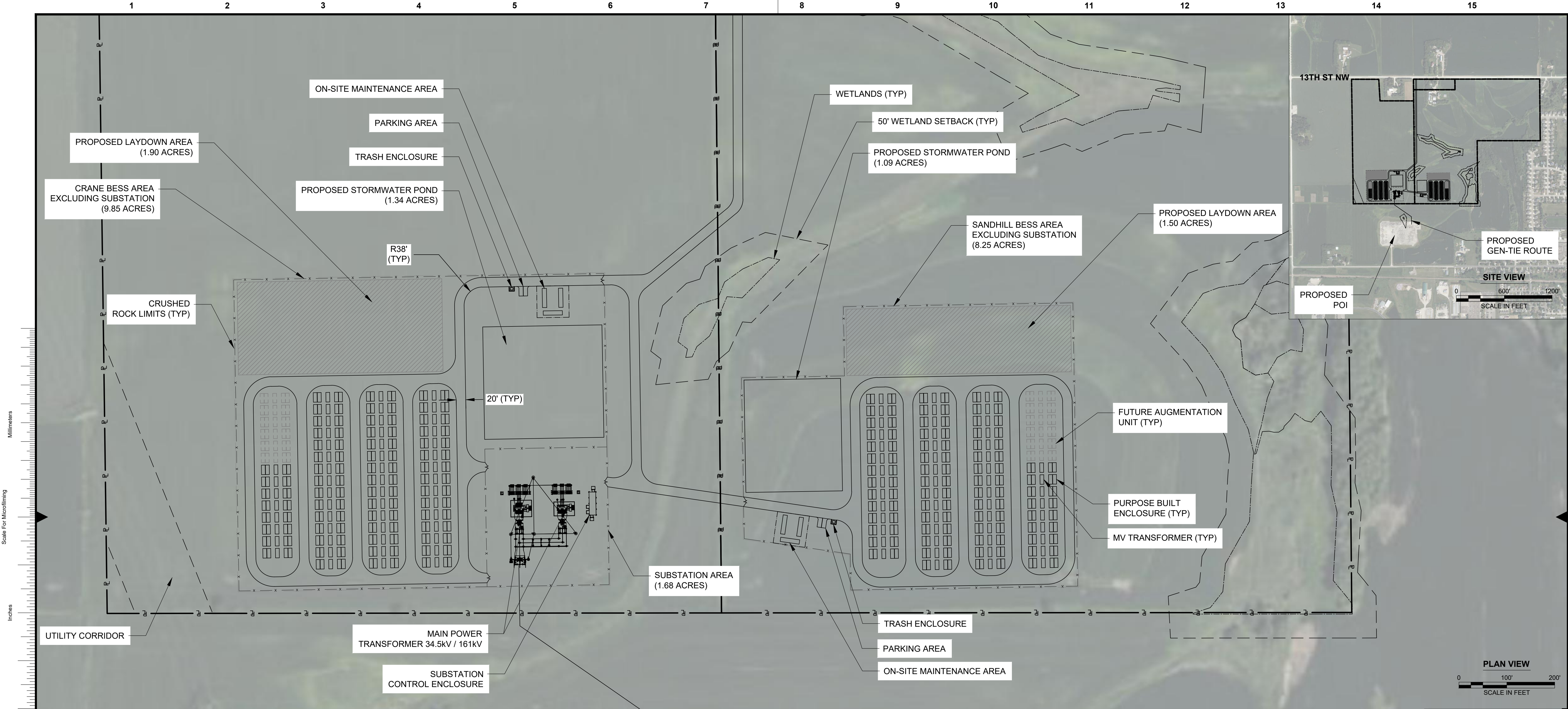


## APPENDIX A – PROJECT AERIAL

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Potential project equipment layout. This image is not final and will not be used for permitting or licensing purposes. The image represents the amount of land that could be disturbed during the life and the potential equipment locations of the Crane Project sites.





CRANE DESCRIPTION	
NAMEPLATE	200 MW / 800 MWh
CRANE MATERIAL LIST	
NUMBER OF PURPOSE BUILT ENCLOSURES (BOL)	212
NUMBER OF PURPOSE BUILT ENCLOSURES (EOL)	236
NUMBER OF MEDIUM VOLTAGE TRANSFORMERS (BOL)	53
NUMBER OF MEDIUM VOLTAGE TRANSFORMERS (EOL)	59

SANDHILL BESS DESCRIPTION	
NAMEPLATE	200 MW / 800 MWh
SANDHILL MATERIAL LIST	
NUMBER OF PURPOSE BUILT ENCLOSURES (BOL)	212
NUMBER OF PURPOSE BUILT ENCLOSURES (EOL)	236
NUMBER OF MEDIUM VOLTAGE TRANSFORMERS (BOL)	53
NUMBER OF MEDIUM VOLTAGE TRANSFORMERS (EOL)	59

- LEGEND:**
- P — PROPERTY LINE
  - x — x — FENCE
  - - - - - SETBACK
  - ⋈ GATE
  - - - - - CRUSHED ROCK LIMITS

- ABBREVIATION LIST:**
- BESS - BATTERY ENERGY STORAGE SYSTEM
  - BOL - BEGINNING OF LIFE
  - EOL - END OF LIFE
  - PCS - POWER CONVERSION SYSTEM
  - POI - POINT OF INTERCONNECTION
  - TYP - TYPICAL

- NOTES:**
1. FINAL LAYOUT SUBJECT TO CHANGE BASED ON FINAL ENVIRONMENTAL, CIVIL, GEOTECHNICAL, AND AUTHORITY HAVING JURISDICTION REQUIREMENTS.
  2. EQUIPMENT QUANTITIES, CONFIGURATION, AND FOOTPRINT SUBJECT TO CHANGE BASED ON FINAL BESS TECHNOLOGY SELECTION AND ADDITIONAL PROJECT DUE DILIGENCE.
  3. CIVIL GRADING AND STORMWATER NOT CONSIDERED IN LAYOUT DEVELOPMENT.
  4. DESIGN MAINTAINS FACILITY NAMEPLATE RATING THROUGH YEAR 20. AUGMENTATION EVENTS OCCUR AT YEARS 6, 10, 13, AND 17.
  5. LANDSCAPING NOT INCLUDED IN LAYOUT DEVELOPMENT.
  6. WATER SUPPLY, SUCH AS TANKS, FIRE WATER LOOP, AND/OR HYDRANTS NOT INCLUDED OR CONSIDERED IN LAYOUT DEVELOPMENT.
  7. WETLANDS, FLOODPLAINS, AND OTHER ENVIRONMENTAL CONSIDERATIONS SUBJECT TO CHANGE.



**PRELIMINARY - NOT FOR CONSTRUCTION**

C	10/21/2024	MRA	EDV	ISSUED FOR REVIEW	
B	03/11/2024	MRA	EDV	ISSUED FOR REVIEW	
A	01/18/2024	MRA	JLT	ISSUED FOR REVIEW	
no.	date	by	ckd	description	



no.	date	by	ckd	description	



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M. ANSTINE

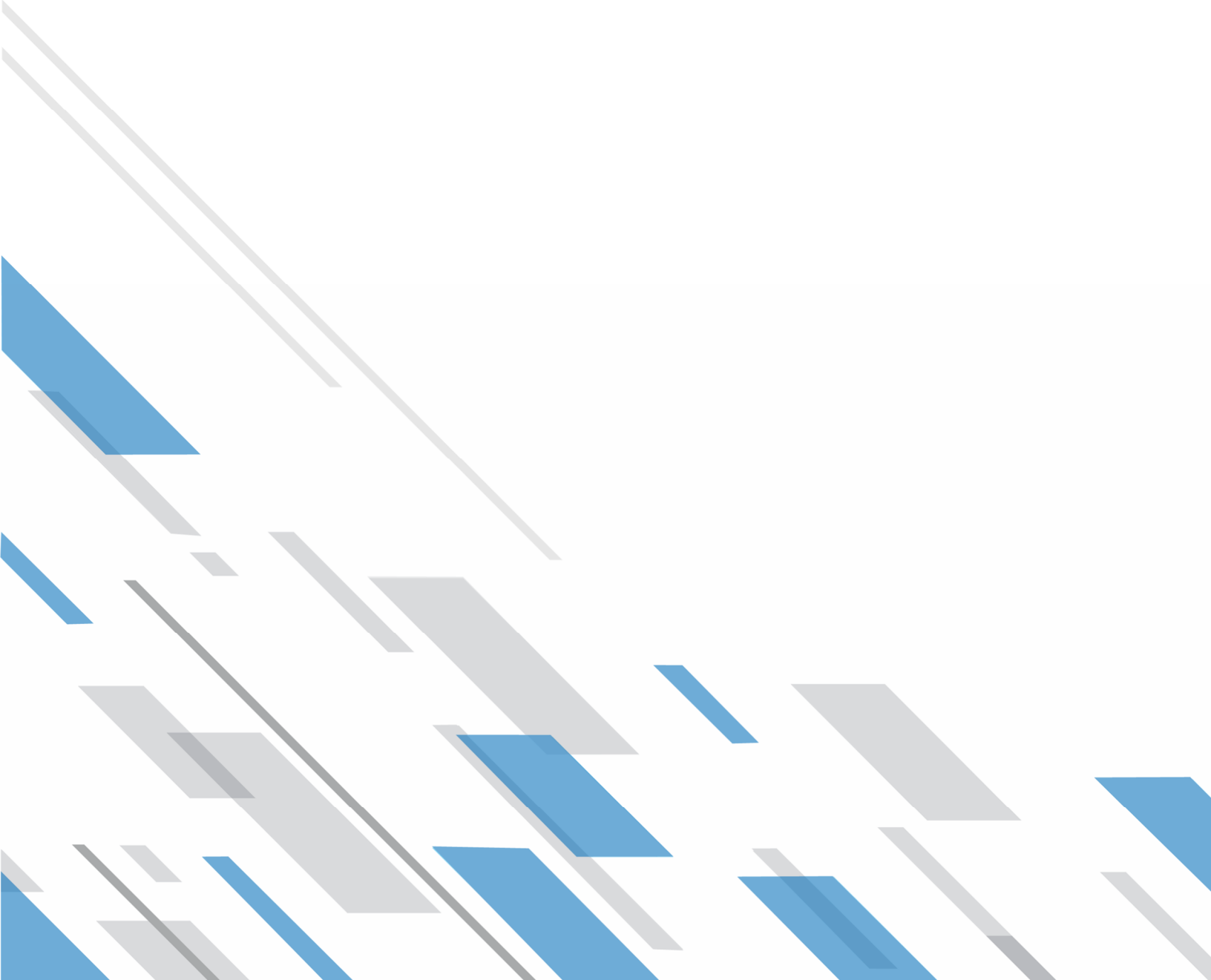
detailed  
M. ANSTINE



OLMSTED COUNTY, MINNESOTA

TENASKA CRANE & SANDHILL BATTERY ENERGY STORAGE SYSTEM SITE PLAN	
project	contract
drawing	rev.
<b>LAYOUT — C</b>	
sheet 1 of 1 sheets	
file TenaskaCraneSandhillLayout.dwg	





# **SANDHILL DECOMMISSIONING PLAN**

# SANDHILL ENERGY STORAGE DECOMMISSIONING PLAN

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REVISION NUMBER 00

REVISION DATE: NOVEMBER 22, 2024

# REVISION HISTORY LOG

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Revision	Date Revised	Reason for Revision	Author	Reviewed By
00	11/22/24	Issued for Review	CAB	MJP

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## List of Abbreviations

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Abbreviation	Term/Phrase
BESS	Battery Energy Storage System
BOP	Balance of Plant
C&D	Construction and Demolition
CFR	Code of Federal Regulations
kV	Kilovolt
LFP	Lithium iron phosphate
LOTO	Lock-out-tag-out
MW	Megawatt
MWh	Megawatt-hours
POI	Point of Interconnection
PPE	Personnel Protective Equipment
PUC	Public Utilities Commission
RCRA	US Resource Conservation and Recovery Act

## Disclaimer

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## 1.0 Introduction

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BMcD was retained by Sandhill Energy Storage LLC to build a preliminary decommissioning plan and cost estimate for the Sandhill Energy Storage Project, hereby referred to as the Project, which includes a Battery Energy Storage System (“BESS”). The plan aims to review the Project and recommend to Sandhill Energy Storage LLC how to decommission it, as well as an estimated cost to decommission and dismantle the Project at the end of its useful life.

In addition to preparing decommissioning cost estimates, BMcD has supported demolition projects in various respects, including but not limited to self-perform, owner’s engineer, project manager, cost estimator, construction manager, project control specialist, and environmental professional. In these capacities, BMcD has evaluated demolition bids and overseen decommissioning activities in numerous different power plants and other industrial facilities. This has provided BMcD with insight into a broad range of complexities pertaining to the decommissioning process. By carefully studying and planning, BMcD’s goal is to assist Sandhill Energy Storage LLC in avoiding safety risks and costly setbacks in decommissioning. Each decommissioning or demolition project worked on has individual needs, and by leveraging the experience and best practices learned from years of performing these operations, BMcD has prepared the decommissioning estimate developed in this document.

### 1.1 Methodology

The Project’s decommissioning plan and costs were developed using Project drawings accepted by Sandhill Energy Storage LLC, publicly available information, BMcD’s in-house database of plant equipment quantities, and professional judgment. For the Project, quantities were estimated for each required major task. Current market pricing for labor rates and equipment was developed for the Project, and disposal costs specific to where the work will be performed. These rates were applied to the quantities for the Project to determine the total cost of decommissioning and dismantling. The decommissioning cost includes returning the site to an agricultural condition suitable for reuse for development. Included are the costs to decommission and dismantle all the assets owned by Sandhill Energy Storage LLC at the site, including power generating equipment and balance of plant (“BOP”) facilities.

## 2.0 Project Description

---

The decommissioning plan and cost evaluation were prepared based on the following assumptions regarding the Project facility.

### 2.1 General

The Project is in Olmsted County, Minnesota. The Project is expected to consist of BESS, BOP components and a collector substation. The total facility rating is expected to maintain 200 megawatts (“MW”) / 800 megawatt hours (“MWh”) at the point of interconnection (“POI”) as designated by the local utilities. The interconnection voltage of the collector substation is planned to be 161kV per the project information provided by Sandhill Energy Storage LLC. Project BESS technology has not been selected, so the decommissioning plan and costs are based on current market research, guiding regulations, and BMcD’s knowledge.

The Project is located on an area of approximately 23 acres. Preliminary design documents have shown that the BESS facility, BOP, gen-tie line, access road, and collector substation can limit their area of disturbance to 13 acres. The Project area is currently used for farming agriculture products and is edged by a fence. When decommissioned, it is assumed that all installed BESS, BOP equipment, substation components, and stormwater basins will be removed.

As part of decommissioning, all above-grade equipment within the project’s perimeter fence, including battery enclosures, inverters, substation, transmission line, and fencing, will be removed. All salvageable materials will be loaded onto trucks and hauled to a scrap yard for recycling. Batteries and other universal waste will be shipped to an approved third party for proper reuse, recycling, or disposal. All other materials that cannot be recycled or reused will be loaded onto trucks and hauled to a local landfill for disposal.

The below-grade equipment, structures, and foundations associated with the Project will be removed per applicable regulations, as discussed in the following section. Voids left from removing the below-grade foundations will be backfilled with surrounding soils and fine-graded to provide suitable drainage. Once all equipment, structures, and foundations are removed and voids are filled on the site, the site will be re-graded and seeded for proper drainage and future use.

### 2.2 Battery Energy Storage System

Project BESS technology has yet to be selected at the time of the initial release of the decommissioning plan. Hence, the assumption for decommissioning is that the technology chosen for the Project will be a purpose-built enclosure designed for outdoor applications containing lithium-ion batteries with the composition of lithium iron phosphate (“LFP”). The LFP composition is assumed since most leading BESS manufacturers use this cell type for grid storage applications. In the current recycling market, the composition of LFP batteries is less desirable than that of other lithium-ion battery compositions, making disposal of the battery cost more than any recycling value that is received during the decommissioning process. The purpose-built enclosures will be designed and installed according to all

nationally recognized electrical, structural, civil, and fire safety standards. Onsite decommissioning is expected to secure and manage the batteries according to the manufacturer's recommendations and all applicable safety and regulatory requirements to enable all batteries to be reused or recycled with minimal impact on the Project site, environment, and surrounding area.

The BESS equipment will come with an accompanying power conversion system, step-up transformer, heating and air conditioning systems, fire protection systems rated for the enclosures, and any other auxiliary equipment required by the selected BESS technology manufacturer for the Project. Leading BESS technology manufacturers have developed systems where the accompanying equipment fits in containers similar in size to shipping containers; this combined system will be referred to as the power conversion skid. The accompanying equipment will be included in all phases of the decommissioning plan and meet all the safety standards for their prospective use.

Seismic and local geotechnical reports will be considered when building acceptable foundations for the site. Foundations will be rated for the weight of the equipment. Current market research shows that each battery enclosure can weigh over 80,000 pounds with approximate dimensions like standard or large shipping containers. To meet the Project's power requirements and after reviewing the available enclosures and equipment on the market, the Project is estimated to have 236 purpose-built battery enclosures at the end of the life of the project with 59 additional power conversion skids.

Certain BESS equipment manufacturers have planned decommissioning processes to help guide purchasers in recycling their equipment at the end of life. For the current decommissioning plan, such processes are assumed not to be in place, and Sandhill Energy Storage LLC will be responsible for the reuse, recycling, or disposal of all equipment for the Project.

## **2.3 Substation and Transmission Line**

The Project plans to have a collector substation for the generation equipment capable of meeting the power purchase agreement stipulations listed above. The substation will be co-located on the Project site. The substation's significant components include a control enclosure, a main power transformer, circuit breakers, busbars, a grounding grid, and other electrical control equipment. Underground electrical lines will connect the BESS equipment and the substation. The substation equipment will be installed on concrete foundations with a gravel footprint area estimated to be 1.75 acres. All above-grade equipment, conduits, cables, and foundations in the substation area will be removed as part of the decommissioning process.

The Project substation will be connected to the national transmission grid with a 161kV overhead transmission line. The transmission line is estimated to be 0.15 miles and terminates at the Northern States Power Company Substation located South of the Project site. Decommissioning of the Project includes removing the installed overhead transmission line built for the Project collector substation.

## 2.4 Stormwater Basin

Current Project estimations indicate the need for a stormwater basin to be located onsite. The proper sizing of the basin will conform to all county and state requirements and meet all national standards. The stormwater basin will be located next to the BESS facility to protect the site from flooding during the project's lifespan. The stormwater basin will be included in decommissioning the Project and removed along with the Project equipment. The stormwater basin will be filled with soil similar to the predominant soil found on the property.

## 2.5 Site Access

The Project will include internal roadways and perimeter fencing. All site access roadways will meet county requirements for emergency response access and equipment manufacturer specifications for equipment delivery and site maintenance. Throughout the project's life, the roadways and fencing will be maintained after use during decommissioning, the access roads may be preserved in order to keep access to property area.

## 2.6 Applicable Regulations

The Project is designed following the regulations established in the following publications: NFPA 70 National Electric Code, NFPA 855: Standard for the Installation of Stationary Energy Storage Systems, NFPA 1 Fire Code, NFPA 70E Standard for Electrical Safety in the Workplace, Title 29 of the Code of Federal Regulations ("CFR") Part 1910 Occupational Safety and Health Standards, and Title 29 CFR Part 1926 Safety and Health Regulations for Construction. When beginning to decommission, the work will adhere to the safety standards established during the facility's construction, including those based on NFPA 241, the Standard for Safeguarding Construction, Alteration, and Demolition Operations. Local and federal regulations for handling hazardous and non-hazardous waste material will also apply to all work performed during decommissioning.

During decommissioning, the Project will become a waste generator and US Resource Conservation and Recovery Act ("RCRA") regulations will apply. Along with RCRA regulations, Title 40 CFR Subchapter I Solid Wastes is applicable. The Project will follow the on-site waste accumulation limits, obtain EPA identification numbers as needed, meet accumulation time limits, maintain proper training certificates, maintain records, and meet all other requirements for waste generators.

Lithium-ion batteries are considered hazardous materials under Title 49 CFR Subtitle B Chapter 1 Subchapter C. This regulation applies to the movement of hazardous material and contains requirements for safety, training, security, and records that apply to anyone handling hazardous material. The Project will verify that personnel who handle any hazardous materials on site meet all training and safety requirements outlined in 49 CFR. Additionally, when the batteries of the Project reach the end of their useful life, they are also considered waste, and RCRA regulations also apply. Batteries that are fully intact and classified as hazardous waste can be managed as universal waste under the universal waste regulations established by the Environmental Protection Agency. Batteries that have been damaged or are defective must be treated as hazardous waste.

Decommissioning obligations for BESS projects are not currently regulated in applicable state or federal regulations, nor are there requirements in Olmsted County, Minnesota, regarding decommissioning of BESS facilities. In good faith, Sandhill Energy Storage LLC is submitting a decommissioning plan following the guidelines of the Minnesota Public Utilities Commission and other renewable energy facilities in Minnesota. The decommissioning plan is also informed by and attempts to follow the requirements of Olmsted County Zoning Ordinances, notably, Code of Ordinance - Chapter 1400, Article X, 508C Section 10.52 Solar Energy Farms B.10—and C.2.e., to the extent practicable.

## **2.6.1 Battery Transportation**

Before packaging the batteries for transportation, the Project will verify that all batteries have been discharged below 30% of their rated capacity or the more stringent requirements set forth by the Department of Energy or Department of Transportation at the time of decommissioning in order to meet all transportation guidelines. Batteries will be packaged in a manner designed to prevent short circuits, accidental activation of the equipment, and any movement within the outer package. Batteries will be placed in inner packaging, such as a plastic bag, to envelop the entire battery and prevent contact with other devices or packages. The outer packaging will be designed to meet the specifications outlined in the universal waste regulations, hazardous material regulations, and Department of Transportation regulations.

Batteries damaged or identified as defective can be transported only by highway, rail or vessel. The packaging of defective batteries will meet 49 CFR 173.185(f). Each cell or battery must be placed in individual, non-metallic inner packaging that completely encloses the cell or battery. The inner packaging must be surrounded by cushioning material that is non-combustible, electrically non-conductive, and absorbent. Each inner packaging must be individually placed in an outer package meeting 49 CFR 173.185(f) requirements. The outer packaging of the batteries will be marked with the identification of “damaged/defective lithium-ion battery” with characters at least 0.5 inches in height.

All batteries, whether intact or defective, will be transported following all Department of Transportation requirements, with certified drivers carrying the equipment being transported.

## 3.0 Decommissioning Objectives

---

The decommissioning plan follows the BESS industry's standards and standard lease and easement agreement terms. Decommissioning will safely do the following:

1. Clear, clean, and remove from the Project each battery storage facility or energy storage device, transformer, BOP equipment, and substation equipment constructed on the property.
2. Clear, clean, and remove from the Project each structural foundation of the battery storage facility and collector substation constructed by Sandhill Energy Storage LLC on the property, and each hole or cavity created in the ground by the removal will be filled with the removed soil. All foundations will be removed to a depth of four feet.
3. Clear, clean, and remove from the Project each buried cable, including power, grounding equipment, fiber-optic, and communication cables constructed by the Sandhill Energy Storage LLC on the property, and each hole or cavity created in the ground by the removal will be filled with the removed soil. Any cable below four feet will stay.
4. Clear, clean, and remove each overhead power or communications line constructed by Sandhill Energy Storage LLC on the property from the property.
5. Clear, clean, and remove from the property each stormwater basin constructed by Sandhill Energy Storage LLC on the property and each hole or cavity created in the ground by the removal will be filled with the removed soil.
6. Clear, clean, and remove from the property each fence, gate, and onsite roadway access constructed by Sandhill Energy Storage LLC on the property, and each hole or cavity created in the ground by the removal will be filled by the removed soil.

The Project will be dismantled as a single project, allowing the most cost-effective demolition methods to be utilized. A summary of several means and methods that could be employed is summarized in the following paragraphs; however, means and methods will not be dictated to the contractor performing the decommissioning work. The contractor will determine the means and processes that safely dismantle the Project.

### 3.1 Safety

All work performed during the Project's decommissioning will be completed with safety being the top priority. Being a commercial energy storage facility, the Project will have many potential hazards found on site, including electrical, mechanical, chemical, and environmental hazards. The Project will establish a health and safety plan for all decommissioning tasks.

Throughout decommissioning, a Project safety representative will be on-site during all activities and hold daily safety meetings to review the health and safety plan, and potential hazards and mitigations implemented during the daily tasks. Before any work begins, the equipment to be worked on will be examined to identify all possible hazards; mitigation techniques will be applied using the manufacturers and established site guidelines for proper safety and dismantling of the equipment. During decommissioning, all site and manufacturer lock-out-tag-out ("LOTO") procedures will be followed. All equipment used for decommissioning will be designed and rated for the work being carried out on the Project.



The Project will verify that all safety, mechanical, and electrical tools that require calibration will be calibrated according to manufacturer guidelines and within calibration dates before each use.

All personnel decommissioning the Project will be trained and qualified to dismantle and remove the equipment they are working on. All personnel will use the proper personal protective equipment (“PPE”) specific to their task. All decommissioning sites in the Project will maintain a clean and orderly site to the extent possible. Although weather conditions cannot be controlled, all work will be conducted in appropriate weather conditions to avoid increasing the risk of serious harm or injury to personnel.

### **3.2 Timeline**

Once it is determined that the Project has reached its useable end of life and decommissioning should proceed, an additional decommissioning report will be created and completed to coordinate the stages and dates of decommissioning activities, record the equipment or material removed from the Project, record the disposed of or recycled material recipient information, document any change of custody of equipment, and report final site conditions. Preparation for decommissioning should happen before ceasing site operations, and decommissioning activities are anticipated to be completed within six (6) months of the Project’s closure.

Certain stages of decommissioning can happen congruently with proper oversight and planning, but generally, the following stages are suggested for overall site safety.

1. BESS battery units and support equipment
2. Substation components and transmission line
3. Foundations
4. Stormwater basin
5. Perimeter fencing
6. Site access and internal roadways

The current decommissioning plan assumes all site access roadways have been maintained throughout the life of the Project and are suitable for decommissioning.

### **3.3 Required Permitting and Notices**

Before Decommissioning Tasks begin and once decommissioning is finished, multiple agencies and organizations need to be notified of the work to be performed. Sandhill Energy Storage LLC will notify the landowner, local government agencies, and the Minnesota Public Utilities Commission. In addition to sending out notifications, numerous permit applications must be submitted. All permits must be received before any decommissioning construction on the Project site. In addition, these permits may require obtaining a US Army Corps of Engineers (USACE) Section 404 Permit to Discharge Dredged or Fill Material. The project will adhere to all state and federal permit requirements when decommissioning.

Due to more than one-acre on-site disturbance during decommissioning, the National Pollutant Discharge Elimination System (NPDES) Construction Site Run-off permit will be needed. These permits could require an additional Storm Water Pollution Prevention Plan and

a Spill Prevention, Control and Countermeasures Plan for decommissioning based on regulations at the time of decommissioning.

### **3.4 Decommissioning Tasks**

Upon determining that the Project has reached its end of life and that decommissioning of the facility can begin, the Project will be disconnected from its POI at the substation located south of the Project site. Before the facility shutdown, the BESS will be discharged to a state of charge below 30% or the more stringent requirements set forth by the Department of Energy or Department of Transportation at the time of decommissioning in order to allow all transportation guidelines to be followed, depending on what mode of transportation will be used to transfer the lithium-ion batteries for reuse or recycling. All equipment on site, from the Project's substation to the BESS purpose-built enclosures, will be isolated and grounded as required to limit maximum potential energy to any personnel working on the Project. The contractor performing the decommissioning tasks will be responsible for all equipment needed to facilitate decommissioning. All equipment and site LOTO will be followed to ensure minimal risk during all decommissioning tasks. Personnel will always be required to have the proper PPE for each task.

High-grade asset removal would occur up-front in the schedule to reduce the potential for theft, increase cash flow, and separate recyclable materials to increase scrap recovery. High-grade assets include precious alloys such as copper, aluminum-brass tubes, stainless steel tubes, and other high-value metals in plant systems. This would consist of transformers, transformer coils, circuit breakers, electrical cables, batteries, and inverters. Methods of removal vary with the location and nature of the asset. Small transformers, equipment, and cables would likely be removed and shipped for processing in a scrap yard. Large transformers and inverters require on-site disassembly before being shipped to a scrap yard.

Construction and Demolition ("C&D") waste will be segregated from scrap and concrete to avoid cross-contamination of waste streams or recycling streams. C&D demolition crews could remove these materials with equipment such as excavators equipped with material handling attachments, skid steers, etc. This material would be consolidated and loaded into bulk containers for disposal.

#### **3.4.1 BESS Battery Units and Support Equipment**

The Project's BESS will be the first component removed from the site. All personnel working on the equipment will be required to be certified to work on the equipment and be trained in decommissioning the BESS equipment according to manufacturer requirements and federal hazardous materials training. The batteries within the purpose-built enclosure will be isolated to the smallest individual component recommended by the manufacturer for on-site handling and removed from the enclosure to be packaged for reuse or recycling. After removing the battery modules, heating and cooling, fire suppression, or other internal equipment it will be separated for recycling. The purpose-built enclosure for the batteries will then be disassembled and separated for recycling. While decommissioning the electrical components, the grounding circuit will be the last to be removed whenever possible for personnel safety. Foundations for the enclosures will remain in place until all other equipment has been disassembled and removed from the site. Specialized equipment needed to perform this work could include a crane, forklift, and specialized equipment from the BESS manufacturer.

### **3.4.1.1 Power Conversion Skid**

All personnel working on the power conversion equipment will be trained to decommission the equipment they are working on according to the manufacturer's requirements. Electrical cabling between purpose-built battery enclosures and any inverter or transformer components will be removed for recycling. Electronic equipment and transformers will be separated from the supporting power conversion equipment for resale or recycling. All transformers on site will be drained of oil before being moved offsite. Electrical cables connecting the power conversion systems and the Project substation will be removed for recycling. While decommissioning the electrical components, the grounding circuit will be the last to be removed whenever possible for personnel safety. Foundations for the power conversion systems will remain in place until all other equipment has been disassembled and removed from the site. Specialized equipment needed to perform this work could include a crane and specialized equipment from the power conversion system manufacturer.

### **3.4.1.2 Auxiliary Electrical Systems**

All personnel working on the auxiliary electrical equipment will be trained to decommission the equipment they are working on according to the manufacturer's requirements. Auxiliary electrical systems can include auxiliary transformers, switchboards, panelboards, additional fire protection equipment, and heating and cooling systems. This equipment connected to the power conversion system for the BESS will need to be removed and organized for recycling according to the manufacturer's recommendations of the equipment and any applicable regulations. Depending on the manufacturer of the heating and cooling and fire protection equipment, additional material handling requirements may need to be met before recycling the equipment. While decommissioning the electrical components, the grounding circuit will be the last to be removed whenever possible for personnel safety. Foundations for the auxiliary electrical systems will remain in place until all other equipment has been disassembled and removed from the site. Specialized equipment needed to perform this work could include a crane and a forklift.

### **3.4.1.3 Electrical Cables and Conduits**

All direct buried electrical cables and conduits between equipment must be excavated and removed to a depth of four feet. The removed materials will be separated for proper recycling or C&D waste disposal. During this task, the BESS ground grid and the underground electrical cables connecting to the substation of the Project substation will be removed for recycling up to the point of the substation yard. The gravel terrain of the Project is to be removed for off-site disposal. All cavities created during this work will be filled with soil like the original Project soil intended for agricultural development. Special equipment for this work can include graders, skid steers, excavators, bulldozers, and dump trucks.

The gravel terrain of the Project is to be removed for off-site disposal. All cavities created during this work will be filled with soil like the original Project soil intended for agricultural development. Special equipment for this work can include graders, skid steers, excavators, bulldozers, and dump trucks.

### **3.4.2 Substation Components and Transmission Line**

All personnel working on the substation components and transmission line will be trained to decommission the equipment they are working on according to the manufacturer's requirements. The substation components will be disassembled for reuse and recycling. The substation main power transformer must be drained of all oil before disassembly or transportation for reuse or recycling. The dismantling of the 0.15-mile transmission line for recycling will be accomplished during this decommissioning task. All C&D waste will need to be separated for proper off-site disposal. While decommissioning the electrical components, the grounding circuit will be the last to be removed whenever possible for personnel safety. During this task, the ground grid and the underground electrical cables connecting to the substation of the Project will be removed for recycling. Special equipment needed for this work can include a crane, excavators, and open flame-cutting torches.

### **3.4.3 Foundations**

The remaining structures and foundations would be demolished up to a depth of four feet using excavators equipped with hydraulic shears, hydraulic grapples, impact breakers, and workers utilizing open flame-cutting torches. Steel components would be separated, reduced in size, and loaded onto trailers for recycling. Concrete would be broken into manageable pieces and stockpiled for future off-site disposal. At the end of this task, there should be no remaining in-ground components of the Project except for fencing. Special equipment for this work can include graders, skid steers, excavators, bulldozers, dump trucks, and open flame-cutting torches.

### **3.4.4 Stormwater Basin**

The stormwater basin will be removed, backfilled, and graded to match the terrain. All cavities created during this work will be filled with soil like the original Project soil intended for agricultural development. Special equipment for this work can include graders, skid steers, excavators, bulldozers, dump trucks, and open flame-cutting torches.

### **3.4.5 Perimeter Fencing**

Perimeter fencing will remain in place until all high-grade assets have been removed from the Project. The fencing will also provide the site with a safety zone preventing uncontrolled people from entering the area. All cavities created during this work will be filled with soil like the original Project soil intended for agricultural development. When ready for removal, fencing will be torn down, and materials will be organized and sent to recycling or C&D waste. Special equipment for this work can include skid steers and excavators.

### **3.4.6 Site Access and Internal Roadways**

All site access roads will be preserved after the project; all internal roadways will be removed and restored to the original soil composition. All materials removed will be sorted for offsite reuse or recycling. All cavities created during this work will be filled with soil like the original Project soil intended for agricultural development. Special equipment for this work can include graders, skid steers, excavators, bulldozers, and dump trucks.

### 3.5 Restoration/Reclamation of Site

The Project's disturbed land will be restored to the original purpose before construction. New disturbances will be minimized to the greatest extent practicable. The purpose of the site chosen for the Project is agricultural development. During the Project's lifespan, if any chemical or hazardous spills are identified, the location will be reviewed for contamination left in the soil. If any soil found on the Project is not conducive to agricultural development, the soil will be removed and replaced with soil like the soil found on the property pre-project construction. Any topsoil that is removed from the surface for decommissioning will be stockpiled to be reused and respread after decommissioning. Removed equipment will be backfilled with subgrade material, and cover with reserved topsoil to allow adequate root penetration for plants, and so that subsurface structures do not substantially disrupt ground water movements. Soils will be stabilized and returned for agricultural use, according to landowner directions. Any leaks and releases from equipment operation and electrical transformers will be remediated prior to completion of decommissioning.

Site restoration will follow the Project's stormwater management plan. Site reclamation includes the removal of any general onsite crushed rock and the replacement of similar pre-development fill. As mentioned above in decommissioning task section 3.4, any holes or excavations made during the Project or decommissioning will be filled and regraded to match the area's natural terrain. Any bare earth will be seeded with local vegetation to mitigate flood runoff. All materials needed to control water runoff, such as silt fences, sediment traps, or erosion control blankets, will also be applied. Any seeding applied on the Project should be performed as soon as possible to minimize exposed soil and increase potential erosion. All federal and local water run-off regulations will be applied to the Project site.

After completing all decommissioning activities, a two-year post-restoration monitoring program will begin. The post-restoration program will coordinate with land reclamation services to ensure site conditions remain compatible with the surrounding environment. If any issues arose, Sandhill Energy Storage LLC would be notified, and resources would be allocated to restore the site to pre-construction conditions.

## 4.0 Financial Assurance Plan

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Sandhill Energy Storage LLC will be financially responsible to decommission the Project, which will include removal of all equipment, improvements, and facilities. The original decommissioning plan approved by the Commission will be updated and reviewed by a Professional Engineer licensed in the State of Minnesota every five years from the start of operation to account for uncertainties in future salvage values, and decommissioning costs. Every five years, or with every change in ownership during the anticipated lifetime, this decommissioning plan will be updated using the same method described in Section 1.1 above, and elsewhere in this plan.

During the 10th year of operation, Sandhill Energy Storage LLC will enter into a surety bond agreement, create an escrow account, create a reserve fund, or provide another form of security that will ultimately fund decommissioning and site restoration costs after Project operations cease, to the extent that the salvage value does not cover decommissioning costs. Sandhill Energy Storage LLC will decommission the Project in accordance with the conditions outlined in the PUC Site Permit. Sandhill Energy Storage LLC will notify the appropriate landowners and local governing bodies of the decommissioning schedule.

## 5.0 Estimated Decommissioning Costs

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When Sandhill Energy Storage LLC determines that the site has reached its usable end of life and should be retired, the above-grade equipment and steel structures are assumed to have scrap value to a scrap contractor, which will offset some of the site decommissioning costs. However, Sandhill Energy Storage LLC will incur costs of dismantling the Project and restoring the site to the extent that those costs exceed the scrap value of equipment and bulk steel.

The project's decommissioning cost includes returning the site to an agricultural condition suitable for reuse for development, and the costs of dismantling all the assets at the site, including energy storage equipment, BOP devices, and auxiliary power equipment.

### 5.1 Decommissioning Assumptions

The following assumptions are made as the basis of all cost estimates. In addition to other assumptions noted herein, the following general assumptions were utilized for the decommissioning cost estimates.

1. All costs are presented in current (2024) dollars using the 2024 Minnesota Prevailing Wage Heavy Highway rates for the Rochester, MN area.
2. Equipment and transportation costs (i.e., trucking) are based on Q4 2024 rates.
3. Mobilization of the contractor performing the deconstruction is based on the contractor mobilizing from Minneapolis, MN.
4. Per Diem for the contractor is included in the cost estimate.
5. The labor costs were based on a standard 40-hour workweek schedule; no overtime was included in the estimate.
6. The estimate is based on engineering drawings approved by Sandhill Energy Storage LLC. Where information was not provided, assumptions about weights, quantities, etc., were made based on market research and facility standards.
7. An offsite landfill, Kalmar Landfill, located in Rochester, Minnesota, was used to estimate demolition waste disposal from the Project. The hauling distance to this landfill is approximately 7 miles from the Project. Disposal of construction and demolition debris is \$30.00 per ton.
8. All concrete, asphalt and base aggregate will be hauled to the Milestone Materials crushing facility in Rochester, MN.
9. It was assumed that all batteries from the facility would be recycled with Battery Recyclers of America.
10. The manufactured battery enclosure and all other site non-battery components will be recycled locally in the Rochester / Minneapolis area.
11. All electrical wiring is assumed to be copper and not aluminum.
12. Scrap values are based upon an average of monthly American Metal Market prices; the most recent 12-month period, May 2023 through June 2024, was used for this estimate. These values include the cost of hauling the scrap via truck and rail to the primary market, which provides the best price. Based on hauling and rail prices, the

best market during this plan is Minneapolis, Minnesota. The following prices were used.

- a. Steel scrap value: \$150.00 per net ton
  - b. Copper scrap value: \$2.75 per net pound
13. Any containers or fluid storage tanks owned by the Project were assumed to be drained and the contents disposed of before demolition; these costs are excluded from the estimate. No allowances are included for unforeseen environmental remediation activities.
  14. Alternating Current and Direct Current cable lengths and quantities were assumed based on BMcD's experience.
  15. It was assumed that all disturbed areas would be restored to the site's current grade, reclaimed with native soils, seeded, and replanted with native vegetation consistent with the surrounding land use.
  16. Transformers will be removed and processed on-site. The decommissioning cost estimate includes draining and disposing of transformer oil off-site.
  17. At the time of decommissioning, it is assumed that the Project laydown yards utilized during construction will have been previously reclaimed and restored; no further grading, seeding, or other restoration of these areas is included in this estimate.
  18. Market conditions may result in cost variations during contract execution.
  19. Valuation and sale of land and replacement generation costs are excluded from this scope.

## 5.2 Decommissioning Costs Results

Based on the assumptions noted herein, the total cost to decommission the Project at the end of its useful life is estimated to be \$13,887,087.50. A detailed breakdown of these costs is included in the table below.

**Table 5-1: Decommissioning Cost Summary (2024\$)**

Project Task	Cost
Mobilization / Demobilization	\$75,000.00
<b>Permitting</b>	
State Permits	\$37,500.00
SWPPP Design	\$5,000.00
Subtotal	\$42,500.00
<b>Civil Infrastructure - General</b>	
Install SWPPP	\$17,500.00
Remove Asphalt Roadway	\$119,938.50
Remove Road Base aggregate	\$2,423.00
Haul Asphalt to Recycler	\$26,919.50
Haul Road Base to Recycler	\$26,653.00
Dispose of Asphalt at the Recycler	\$6,118.00
Dispose of the Road Base at the Recycler	\$6,057.50



Subtotal	\$205,609.50
<b>Civil Infrastructure</b>	
Remove Base aggregate under Battery Units	\$2,592.00
Haul Base aggregate to Recycler	\$28,512.00
Dispose of Base aggregate at the Recycler	\$6,480.00
Remove Pond Liner	\$11,870.00
Haul & Dispose of the Pond Liner	\$460.00
Removal of Security Fence	\$10,160.00
Haul & Dispose of the Security Fence	\$292.00
Subtotal	\$60,366.00
<b>Battery Storage</b>	
Removal of Batteries	\$736,320.00
Removal of PCS Units	\$92,040.00
Removal of Transformers (XFMR)	\$63,130.00
Haul & Dispose of all Batteries to the Recycler	\$12,454,500.00
Haul & Dispose of all PCS Units to Recycler	\$213,000.00
Haul XFMR to Recycler	\$10,280.00
Recycle Value of XFMR	\$(154,200.00)
Removal of Enclosures	\$236,000.00
Haul Enclosure to Recycler	\$5,629.00
Remove Concrete Foundations	\$354,710.00
Haul Concrete Foundations	\$65,267.00
Dispose of Concrete Foundations	\$15,607.00
Haul Rebar Reinforcing from Foundations to Recycler	\$1,703.00
Import Backfill Material	\$38,309.00
Place Backfill XFMR Pads	\$10,641.00
Remove the U/G Copper Cable	\$42,525.00
Load and Haul Copper Cable for Recycling	\$10,000.00
Recycle Value of Copper	\$(550,000.00)
Subtotal	\$13,645,461.00
<b>Substation</b>	
Disassembly & Removal of Main GSU XFMR	\$100,000.00
Transport Recyclable Material to Scrap Yard	\$10,000.00
Dispose of Transformer Oil	\$(15,000.00)
Recycling Value of XFMR	\$(450,000.00)
Remove XFMR Concrete Foundations	\$75,000.00
Haul XFMR Foundation	\$13,800.00

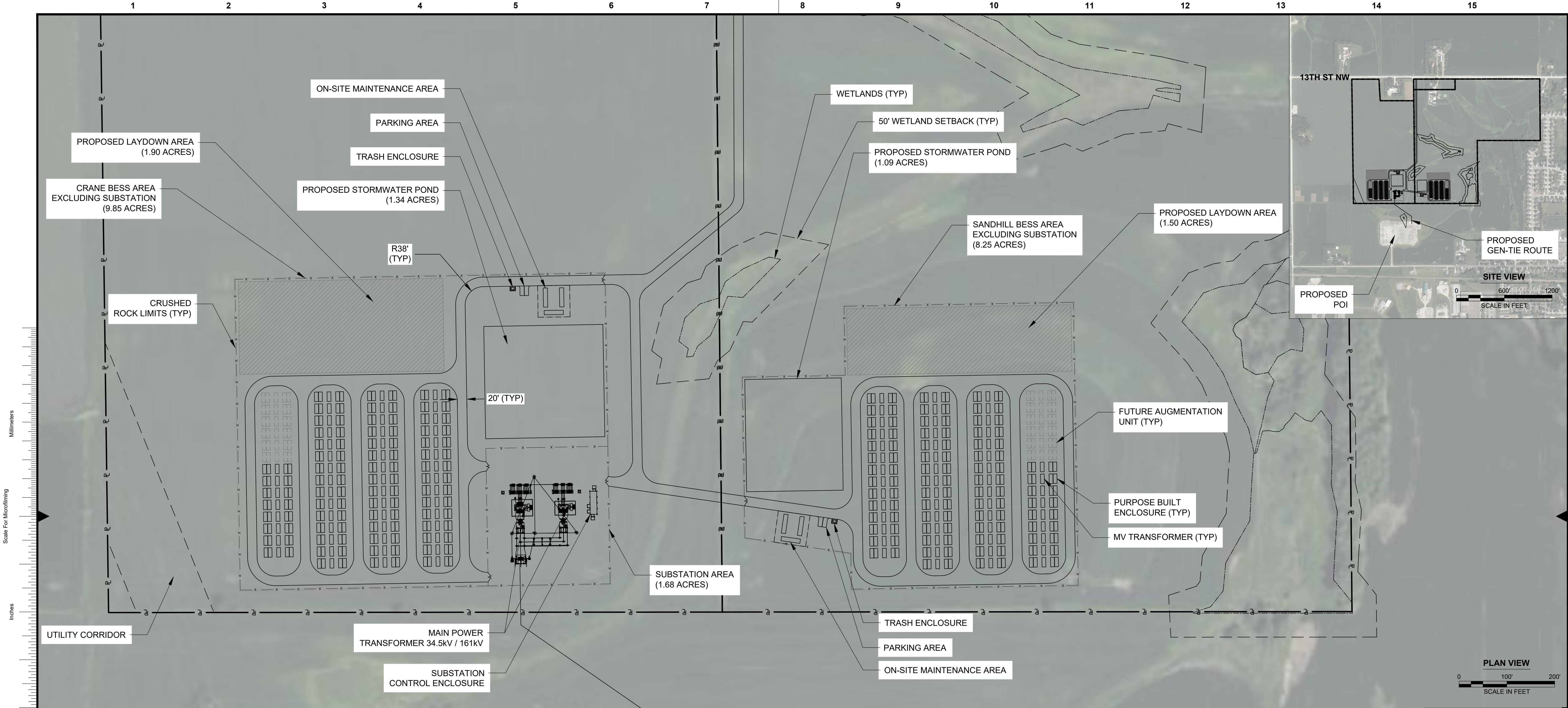
Dispose of the XFMR Foundation	\$3,000.00
Subtotal	\$(263,200.00)
<b>Site Restoration</b>	
Rough Grade Disturbed Areas	\$21,428.00
Spread Topsoil	\$16,462.50
Hydroseed Site	\$15,305.50
Subtotal	\$53,196.00
<b>TOTAL PROJECT COST:</b>	<b>\$13,818,932.50</b>

## APPENDIX A – PROJECT AERIAL

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Potential project equipment layout. This image is not final and will not be used for permitting or licensing purposes. The image represents the amount of land that could be disturbed during the life and the potential equipment locations of Sandhill Project site.





CRANE DESCRIPTION	
NAMEPLATE	200 MW / 800 MWh
CRANE MATERIAL LIST	
NUMBER OF PURPOSE BUILT ENCLOSURES (BOL)	212
NUMBER OF PURPOSE BUILT ENCLOSURES (EOL)	236
NUMBER OF MEDIUM VOLTAGE TRANSFORMERS (BOL)	53
NUMBER OF MEDIUM VOLTAGE TRANSFORMERS (EOL)	59

SANDHILL BESS DESCRIPTION	
NAMEPLATE	200 MW / 800 MWh
SANDHILL MATERIAL LIST	
NUMBER OF PURPOSE BUILT ENCLOSURES (BOL)	212
NUMBER OF PURPOSE BUILT ENCLOSURES (EOL)	236
NUMBER OF MEDIUM VOLTAGE TRANSFORMERS (BOL)	53
NUMBER OF MEDIUM VOLTAGE TRANSFORMERS (EOL)	59

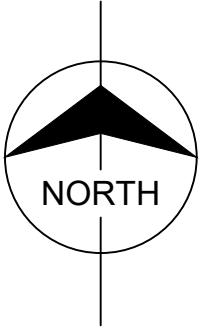
**LEGEND:**

- P — PROPERTY LINE
- x — x — FENCE
- - - - - SETBACK
- ⋈ GATE
- - - - - CRUSHED ROCK LIMITS

**ABBREVIATION LIST:**

BESS - BATTERY ENERGY STORAGE SYSTEM  
BOL - BEGINNING OF LIFE  
EOL - END OF LIFE  
PCS - POWER CONVERSION SYSTEM  
POI - POINT OF INTERCONNECTION  
TYP - TYPICAL

- NOTES:**
- 1. FINAL LAYOUT SUBJECT TO CHANGE BASED ON FINAL ENVIRONMENTAL, CIVIL, GEOTECHNICAL, AND AUTHORITY HAVING JURISDICTION REQUIREMENTS.
  - 2. EQUIPMENT QUANTITIES, CONFIGURATION, AND FOOTPRINT SUBJECT TO CHANGE BASED ON FINAL BESS TECHNOLOGY SELECTION AND ADDITIONAL PROJECT DUE DILIGENCE.
  - 3. CIVIL GRADING AND STORMWATER NOT CONSIDERED IN LAYOUT DEVELOPMENT.
  - 4. DESIGN MAINTAINS FACILITY NAMEPLATE RATING THROUGH YEAR 20. AUGMENTATION EVENTS OCCUR AT YEARS 6, 10, 13, AND 17.
  - 5. LANDSCAPING NOT INCLUDED IN LAYOUT DEVELOPMENT.
  - 6. WATER SUPPLY, SUCH AS TANKS, FIRE WATER LOOP, AND/OR HYDRANTS NOT INCLUDED OR CONSIDERED IN LAYOUT DEVELOPMENT.
  - 7. WETLANDS, FLOODPLAINS, AND OTHER ENVIRONMENTAL CONSIDERATIONS SUBJECT TO CHANGE.



**PRELIMINARY - NOT FOR CONSTRUCTION**

C	10/21/2024	MRA	EDV	ISSUED FOR REVIEW	
B	03/11/2024	MRA	EDV	ISSUED FOR REVIEW	
A	01/18/2024	MRA	JLT	ISSUED FOR REVIEW	
no.	date	by	ckd	description	

no.	date	by	ckd	description	

9400 WARD PARKWAY  
KANSAS CITY, MO 64114  
816-333-9400  
Burns & McDonnell Engineering Co., Inc.

designed  
M. ANSTINE

detailed  
M. ANSTINE

OLMSTED COUNTY, MINNESOTA

TENASKA CRANE & SANDHILL BATTERY ENERGY STORAGE SYSTEM SITE PLAN	
project	contract
drawing	rev.
<b>LAYOUT — C</b>	
sheet 1 of 1 sheets	
file TenaskaCraneSandhillLayout.dwg	



