



Constructing the Largest Standalone Energy Storage Project in Arizona

CASE STUDY

→ SNAPSHOT

With 276 BESS units, Sierra Estrella became the largest grid-tied battery for the local utility, and largest standalone BESS facility in Arizona when it came online in 2024.

Sturgeon Electric was awarded both electrical scopes for this large, complex project with a compressed schedule. They were responsible for much of the electrical material procurement and performed all below and above grade construction in the BESS yard, including conduit, grounding, batteries, transformers, wiring and connections.

Significant challenges arose, including a product line going down for essential long lead time materials, threatening the project schedule. However, through determination and innovation they were able to meet all milestone dates.

→ CLIENT INTRODUCTION

Sturgeon Electric was hired as a procurement and construction partner by an engineering firm which held the EPC contract. That firm was working directly for a developer and indirectly for a local utility.



→ PROBLEM

Like many in the power industry, Arizona utilities have pursued clean energy and incorporated more of it into their energy mix. In this case, they sought to add more battery storage (BESS) to capture renewable energy and discharge it during peak demand periods, supporting affordable, reliable power in their community. Sierra Estrella can store enough energy to power more than 50,000 homes for up to four hours.

From the outset, MYR Group subsidiary Sturgeon Electric knew the project was large, complex and came with a compressed schedule. Some of the construction would take place during sweltering summer heat and local road restrictions on heavy duty trucks would complicate battery deliveries.

Many unforeseen challenges also arose, including the sudden unavailability of essential parts, delays outside of Sturgeon Electric's work scope, and scope and design gaps and additions.



Sturgeon Electric expected long lead times and ordered materials early but could not anticipate the manufacturer being unable to fulfill their essential order of 400 T-bodies.

➔ SOLUTION

Sturgeon Electric overcame the expected and unexpected challenges through determination, creativity, problem solving, innovation and proactivity.

Meeting A Major Material Challenge

Sturgeon Electric expected long lead times and ordered materials early but could not anticipate a manufacturer being unable to fulfill their order.

Because more than 400 dead-end bodies (or T-bodies) were essential and the longest lead time item in the work scope (16 weeks), they placed the order in 2023. However, just six weeks before T-bodies should have begun arriving, Sturgeon Electric was notified the manufacturer's product line had gone down.

To keep their work on schedule, Sturgeon Electric had to act fast.

They immediately coordinated with their vendor to identify an alternate supplier and developed a plan to incrementally fill the order. In parallel, they worked with the customer to approve the alternate supplier and materials.

The new order was placed within about 10 days of the cancellation, and partial deliveries began within four weeks keeping their schedule on track.

Overcoming Schedule Challenges

Much of Sturgeon Electric's work in the battery yard depended on civil work which was outside of their work scope. Although those foundations were delayed, Sturgeon Electric remained proactive, engaging their partners to identify alternative work and continued moving the project forward.

They tracked, reviewed and scheduled around completed foundations. Then, based on the timing of available foundations, they coordinated and sequenced delivery and placement of the 276 BESS units.

They also avoided schedule and performance delays using an efficient production line to receive BESS units and an innovative method for installations. By using a 300-ton track mounted crane, they established a highly efficient tempo of receiving and setting eight BESS units and four transformers per day, avoiding double handling and storage.

Mitigating Heat Hazards for Crews

Sturgeon Electric maintained OSHA safety standards and additional guidance from the customer.

They developed an innovative method for receiving and installing the 276 BESS units. Using a 300-ton track mounted crane, they established a highly efficient tempo of receiving and setting eight BESS units and four transformers per day.



Determination, innovation and problem solving enabled Sturgeon Electric's team to complete both electrical work scopes (BESS and substation) while meeting all schedule milestones. In fact, the bulk of electrical construction was completed in less than five months.

SOLUTION CONTINUED

To mitigate heat-related hazards during triple-digit Arizona heat, they used 10x10 pop-up structures as portable shade breaks with portable cooling units to reduce and mitigate risks of employee heat exhaustion or illness. They also shared a cooling Connex (air-conditioned shipping container) with another contractor.

These efforts helped prevent the Sturgeon Electric team from having recordable injuries or incidents due to heat or cold stress during the project.

➔ THE RESULTS

In addition to overcoming all those challenges, Sturgeon Electric also managed design and scope changes during the project. They provided solutions for scope gaps including the designs for connecting the BESS yard communication network to the substation.

They also completed the large scope addition of one and a half acres of ground grid to facilitate future expansion of the BESS system.

The bulk of Sturgeon Electric's electrical construction for both the BESS yard and new substation was completed in less than five months, a tremendous accomplishment given its size, complexity and various challenges.

➔ CONCLUSION

Even with all the complexity, Sturgeon Electric met all the numerous schedule milestones in the contract, beating them in some cases by one day up to two weeks, and reached the ultimate milestone of substantial completion roughly a month early. The system was placed online in April 2024.

At that time it became the largest grid-tied battery for the local utility and the largest standalone BESS facility in Arizona.