

Project Brief

West Owatonna Substation Expansion Owatonna Public Utilities (OPU) & Southern Minnesota Municipal Power Agency (SMMPA)

Owatonna Public Utilities (OPU) needed expanded power transformer capacity to accommodate growing customer power needs at the West Owatonna substation, but faced contingency issues connecting into the substation's 69 kV buses. To address this design limitation, DGR Engineering designed a joint 161 kV project with OPU and Southern Minnesota Municipal Power Agency (SMMPA), OPU's power supplier.



To achieve desired redundancy, OPU tied its new power transformer into SMMPA's 161 kV facilities at the West Owatonna substation. To accommodate the new tie-in, SMMPA converted the 161 kV half-breaker bus configuration into a five-breaker ring bus.

Work was performed on various portions of the West Owatonna Substation, including the 161 kV, 69 kV and the 12.47 kV. All of OPU's electrical system is served out of this substation, either via 69 kV lines or transformers. Any work involving existing equipment had to be carefully planned to maintain electrical service, and significant outage coordination was required for all entities involved, including contractors, testers, owners, and transmission operators. The project was broken into smaller phases. The first (or preparatory) phase of the project involved construction in an area of the site which did not affect normal electrical operations.

Preparatory work transitioned to the second (or tie-in) phase which focused on existing equipment. Once all new equipment was tied into the substation, construction moved onto the final (or energization) phase. Very deliberate sequencing was needed to transition through each step of construction.

The biggest factors leading to project success were the outage schedule and subsequent cooperation from all involved parties.

- Collaborated with Owners, OPU and SMMPA, to identify project construction constraints and limitations
- Created an outage schedule/work plan to curb the overall complexity of the construction process
- Communicated the outage schedule to be on the same page as the contractors, testers, OPU and SMMPA
- Existing substation site was redesigned to meet the Owner's current needs
- Complex construction sequence and a hands-on approach
- Emphasis was placed on coordination and communication to the parties involved throughout the project