

CASE STUDY

Engineering and Construction Oversight for Temporary Substation



OVERVIEW

The 4.5 MW Fox Island Wind project, located on the island of Vinalhaven, consists of three GEWE 1.5 MW wind turbines. The project interconnects to Fox Island Electrical Cooperative's 12.47 kV distribution system at the Fish Head Substation. Due to the installation of the new generation the Fish Head Substation required upgrading transformers, reclosers, equipment slab replacements, and cable upgrades. The Fish Head Substation is the only substation on the island and this upgrade additionally required the establishment of a temporary substation to provide continuous electric service to the island during the upgrade process.

THE APPROACH

- Designed structures and specified materials & equipment for the construction of a 12.47 kV combination aerial and underground collector system.
- Designed ground grid for wind turbines.
- Directed substation and collector system construction.
- Specified low voltage breaker between turbine & GSU.
- Tripled capacity of Fish Head Substation and introduced a transfer trip protection scheme between wind project and substation without losing service to the community.

- Coordinated interconnection process and compliance.
- Coordinated substation and project commissioning and energization.
- Developed & implemented relay settings.
- Developed design for communication system between the wind turbines and the project SCADA system. Copper to fiber media converters were used to connect devices over great distances and isolate data from electrical noise.

THE CONCLUSION

RLC provided engineering, construction oversight, communication services and commissioning for the creation of a temporary substation, the substation upgrades, collector system design, and turbine to SCADA communication. Substation and communication challenges were resolved through experience and ingenuity.