

pzcounter

From: Kiki Tidwell <ktinsv@cox.net>
Sent: Saturday, October 22, 2016 9:56 AM
To: pzcounter
Subject: Case study NRG attached
Attachments: Reliability Solutions Case Study - GRE.PDF



To: P & Z

Documents provided by me at the workshop meeting on October 20th. Case study of a similar community which installed backup generation rather than a new transmission line.

Kiki Tidwell

From: Halstead, Emerson [mailto:EMERSON.HALSTEAD@nrg.com]
Sent: Thursday, October 20, 2016 7:54 AM
To: Kiki Tidwell (ktinsv@cox.net)
Cc: 'Kerrin McCall' (kerrinmac@gmail.com); Aimée Christensen (aimee@christensenglobal.com); Kandankulam, Greg
Subject: NRG update: Indicative Pricing

Kiki,

As promised, a couple of updates: (1) Attached is an updated case study for the Minnesota project; (2) We reached out to our OEM to provide the following indicative pricing:

- The indicative price for an emergency-only, diesel generation project in the 40-70 MW range if \$625/kW installed all-in
- At this price, the project would cost between \$25 MM at 40 MW to \$41 MM at 65 MW (as compared to \$57 MM in the IPCo document)
- Based on City of Ketchum resiliency needs (critical load), the system can be sized accordingly
- Project can be developed as capital expenditure and owned by the City or IPCo; or as an option, NRG could offer to own and operate these power plants for Ketchum on a flat fee per month basis, such that no upfront capital would be required of Ketchum
- The indicative price is based on a smaller, but similar project we completed – with updated pricing from our generator/switchgear vendor.

The indicative price is for a turnkey, all-in solution with the following exceptions/assumptions:

- Does not include Power Factor correction of the utility/transmission system. This estimate is good for line (load) power factor up to 0.9 lagging or leading
- Includes 15KV generators, 15 kV switchgear including utility grade protection, buildings, fuel tanks, step up transformer to 138 kV transmission voltage
- Does not include any engineering, equipment or labor on the utility side (138 kV side of the step up transformer)
- Does not include land purchase; includes all site work assuming a reasonably flat ready to build site (no soil reclamation required)
- Does not include contractor's bond if required
- Includes all engineering and permitting (air and construction) necessary
- It is premature to discuss maintenance expenses, but they would be low based on very low run hours expected on these units (testing only)

Let me know your thoughts. Happy to hop on a call if that's convenient.



Best,
Emerson



Emerson Halstead
Manager, Sustainable Energy Advisory
Business Solutions
1201 Fannin, Houston, TX 77002
W 713.537.2333 C 512.350.1521

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Arrowhead Emergency Generating Plant

18MW Arrowhead Emergency Generating Plant, Coville, Minnesota

Emergency Power: NRG Reliability Solutions provides backup power along remote North Shore in Minnesota.

The opportunity

While residents and visitors to the North Shore of Lake Superior in northeast Minnesota enjoy the area because of its remote location and secluded woods, this remoteness can prove risky in an area where high winds and inclement weather can cause frequent power outages.

NRG Reliability Solutions saw an opportunity to provide the region with a backup power facility that was neighbor-friendly and had little environmental impact.

The challenge

For the thousands of residents who live in the North Shore region, the wooded area and frequent storms raise concerns over the reliability of their electric power service. Great River Energy (GRE) provides wholesale electric service to 28 distribution cooperatives that cover approximately 60 percent of the state of Minnesota. All but one of these cooperatives are provided with power using a loop transmission system, which circles through the distribution area and provides power from two directions.



ENVIRONMENTALLY RESPONSIBLE

Facility wanted to improve environmental impact



FAST REACTION TIME

Remote monitoring ensures immediate response following an outage



PROVEN EXPERTISE

The experience and technical know-how to provide unique power solutions

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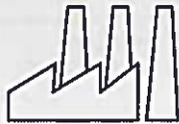


Power to be free™



nine
2MW

Cummins generators, along
with PowerCommand®
Digital switchgear



7,500 sq. ft.
facility housing the
backup power plant

35,000 gal.

diesel storage tank to ensure
the facility can operate for
more than 24 hours without
fuel delivery

However, due to the geography of the region, Arrowhead Electric Cooperative Inc. (AECI) receives power through a radial transmission line, meaning there is one source line for customers. **When this line is down, all customers beyond the failure point are without power.**

The solution

NRG Reliability Solutions provided the design and construction expertise required to make this project a success. The Arrowhead Emergency Generating Plant can now feed power to customers from the opposite direction of the normal energy flow into the region, which helps AECI quickly restore power to more customers in the event of a failed transmission line.

NRG Reliability Solutions installed 18 MW of Cummins generators and PowerCommand® Digital switchgear. A 7,500-square-foot building houses nine, 2 MW generators, and features a 35,000-gallon diesel storage tank to ensure the facility can operate for more than 24 hours without fuel delivery. The site is remotely monitored and controlled from GRE's system control center in Elk River, Minnesota.

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According to Dale Gundberg, past president of NRG Reliability Solutions, "The remote monitoring of the equipment ensures a fast reaction time following an outage. If the line goes down, the GRE operators are notified immediately and can start the plant up in a matter of minutes."
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With this new standby power installation, residents of Covill and other North Shore communities can now enjoy their surroundings and keep the lights on during a storm.

Contact NRG Reliability Solutions

All it takes is one call to put NRG Reliability Solutions' years of experience, industry expertise and broad service portfolio to work for you – ensuring that your business will always have the power you need to serve those who rely on you. With NRG Reliability Solutions, you'll enjoy a single source for everything energy-related at every step along the way.



Power to be free™

FOR MORE INFORMATION: nrg.com/backupgeneration | 612.564.1973