

Baseline™ provides a 3.5 MW natural gas generator microgrid solution for an Oklahoma gas and electric public utility

BACKGROUND

Baseline™ Energy Services commissioned and has operated a 3.5 MW natural gas generator microgrid for an Oklahoma gas and electric public utility. This gas and electric utility needed a cost- and emissions-efficient power generation solution from Baseline to assist one of its end-user customers (an energy transportation and logistics company). The end-user company needed to power electric pumps and motors at a site not connected to the broader electric grid, on a 24 x 7 continuous-duty basis for up to eighteen (18) months. The gas and electric utility opted for a natural gas generator microgrid operating at continuous duty, as the cost of this solution would be approximately 80% lower than running diesel generators. In addition, natural gas also offered a 40% improvement in emissions profile compared to diesel generators.

THE CHALLENGE

This project was unique because Baseline would be providing power to a high-visibility public utility, enabling the utility to expand its scope of services and offer more value to its end-users. The issue for the utility was its inability to provide power to its customers in a timely manner. Acting creatively, the utility sought out natural gas microgrid providers, such as Baseline, to provide unique solutions that met the customer's power requirements while enhancing the project's ROI/NPV. Other project challenges included Baseline having to solve complex startup-load dynamics and ensuring enough generators

were available and running at the same time to provide the “in-rush” current required to start large 480-volt electric motors. Positioning the generators at the site also introduced unique challenges, as did accommodating the customer cabling solution needed to connect the paralleled generators to the customer load points.



Five (5) of an eventual ten (10) x 350 kW Baseline™ mobile natural gas generators setup to provide power to an Oklahoma gas and electric utility.

THE SOLUTION

Baseline's equipment solution consisted of ten (10) 350 kW mobile natural gas generators running in parallel (synchronized) for a total of 3.5 MW of available power. The system also included one 3000-amp i-line panel with isolation breakers, cable trays, a custom low-voltage cabling solution, and generator telemetry for remote monitoring. Pipeline-quality natural gas (approximately 1000 BTU), sourced and managed by the utility company, was available to power the natural gas generators. In addition, Baseline project management and field personnel had to meet stringent PPE and HSE



Five (5) of an eventual ten (10) (3.5 MW) Baseline mobile natural gas generators system that is providing reliable electric power to an Oklahoma gas and electric utility.

requirements to set up and manage the site throughout the life of the project. This project also required rigorous load studies for both startup and continuous-duty loads, generator sizing exercises, and extensive site layout work, given the site's smaller footprint. Baseline's smaller 350 kW units were arranged in two banks of five (5) generators each, with cabling running from the generators to the customer load point, enabling a setup that might not have been possible with larger single-reciprocating generators. The gas and electric utility also recognized the value of Baseline's service team's capabilities and selected the company in large part based on its fast response times and true commitment to 24/7 service.

RESULT

Baseline management worked with the gas and electric utility as a true partner from project design and commissioning through ongoing daily operation of the microgrid, delivering a positive, value-added outcome using the natural gas generator microgrid solution.

If the gas and electric utility had opted for a 3.5 MW diesel generator solution, the project would have required 160 gallons of diesel per hour, or 2,050,000 gallons over the 18-month period. The total cost of this diesel fuel, at \$3.50 per gallon, would have been approximately \$7.2 million. In comparison, Baseline's 3.5 MW natural gas generator solution required approximate 22 MCF per hour of natural gas, or 280,000 MCF of natural gas over 18 months. The total cost of gas fuel, at \$3.00 per MCF, was approximately \$842,000 over 18 months.

By utilizing Baseline's natural gas-generated microgrid solution, compared to the incumbent diesel generator solution, on a 24/7 continuous-duty basis, the public gas and electric utility saved \$6.35 million in fuel for the project. In addition, the Baseline solution delivered a 40% reduction in the emissions footprint for key constituents such as CO₂, NO_x, and VOCs. More affordable, more reliable, and cleaner – that is a “win-win-win” solution all around.



Baseline 3.5 MW natural gas generator microgrid in operation for Oklahoma gas and electric utility.

Baseline™ Energy Services, LP



833.POWR.GEN



info@baselineenergy.com



www.baselineenergy.com