

# Combination of Generating Sources Power Oilfield Production and Facility Operations

Baseline NexGen™ Mobile Natural Gas Generators to Play Key Role in Uinta Basin Microgrid System

Baseline Energy Services' new NexGen™ 400 Mobile Natural Gas Generators will provide electric power to a behind-the-meter microgrid in northeast Utah. This microgrid will support the long-term power requirements of a number of energy-producing sites. Electricity will be generated from both a solar array and Baseline's new NexGen™ 400 Mobile Natural Gas Generators, arranged in a load-sharing microgrid configuration. Both the solar array and the NexGen™ units will be charging lithium-ion battery energy storage systems, which will serve to store and discharge power into the microgrid as load conditions demand.

## SYSTEM SPECIFICS

This system is a true microgrid, capable of generating up to 1.4 MW of power. One source of power generation is a 6-acre solar panel array, with solar panels flush-mounted to the ground in a horizontal position. In a novel development, the solar panels will be cleaned daily by a robotic and autonomous cleaning system, ensuring that they operate at peak efficiency. In peak sun, the solar array can generate as much as 1.4 MW of power.

Baseline's new NexGen™ 400 mobile power-generating units will be used to supplement the output of the solar panels. Each of these units can generate up to 350kW

of continuous power output for a total of 1.4 MW when the four units are synced together. The NexGen™ units will be powered by natural gas from a pipeline constructed by the customer to support the microgrid.



*Array of solar panels, Baseline NexGen™ 400 mobile power generators, and storage batteries*

The solar array and the Baseline units will generate electricity for both immediate use and for charging the system's two 1-MW storage batteries. An onsite microgrid control system will manage all aspects of the generation and distribution of electric power. Additionally, the three-phase, 480-volt power generated by the NexGen™ units will be stepped up from 480 volts to medium voltage, allowing for transmission to all sites.

## POWERING PRODUCTION SITES

This system was conceived and engineered to serve the electrical requirements of seventeen energy-producing sites, powering both production and facility operations. The power is distributed to the individual sites through traditional power poles covering a 10 square mile area.

The electricity will be distributed to each of the sites via the newly installed power lines at medium voltage, which will be stepped down to 480 volts at each well pad in order to serve the electrical needs of the individual sites.



*Baseline NexGen™ 400 Mobile Generator*

## THE NEXGEN™ 400 MOBILE GENERATOR

A key component to this overall power system is Baseline's four NexGen™ 400 Mobile Natural Gas Generators, which are equipped with the latest engine, fuel system, and emissions control technology. These NexGen 400 natural gas generators deliver a true, non-derated 350 kW continuous duty electric power output at 480 volts using field gas of up to 1400 BTU.

Additionally, the NexGen 400 generators offer a very low emission profile, reducing NOx and CO output by 40% compared to comparable legacy natural gas generators. This low carbon footprint is achieved

through efficient combustion of the fuel gas as well as upgraded catalyst systems that operate at high temperatures in order to eliminate pollutants from the exhaust stream. Combining the output of the solar arrays and battery banks with these mobile natural gas generators provides the lowest possible carbon emissions profile. It should be noted that the alternative for the customer would have been to procure power from the grid generated by a nearby coal plant.

## FINAL THOUGHTS

This electrical power generating/distribution system represents a unique answer to powering energy production and facility operations. Graham Radler, CEO of Baseline Energy Services, commented "This solar + battery + natural gas generator microgrid is an excellent example of how low-carbon natural gas generators can be paired with new-age distributed energy solutions, such as solar and battery, to deliver increased reliability, resiliency, and affordable power for customers."

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