



## CASE STUDY: 3G FARMS

### Energy-Efficient Irrigation System Produces Savings

3G Farms started in the 1940s and has grown into a classic alfalfa and grass hay production operation. Located in the Smith Valley near Wellington, Nevada, two sites are farmed: Desert Creek field and Triangle field. Previously, wheel lines (pictured below) irrigated both fields using water supplied from ponds filled with a mixture of well water and stream water from nearby Desert Creek. The pumps operated during the irrigation season, generally from April through October. 3G Farms wanted to improve its operation by installing a pivot irrigation system (pictured above). The project saved energy and qualified for incentives from NV Energy.

Pivot irrigation systems replace wheel line systems in agricultural facilities because they operate at lower pressure and provide a more consistent application. Wheel lines irrigate in a rectangular pattern, requiring someone to constantly move the hose feeding the wheel line from source to source as it moves along the field. A pivot system irrigates in a circular pattern, rotating around a center, fixed installation and, therefore, does not require labor to move the source. This transition translates into reduced pumping and electricity usage.



### LEARN MORE

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## More about this project...



### Project Summary

Desert Creek is a 240-acre field that had 11 quarter-mile wheel lines with a total of 418 impact sprinklers, delivering water at 2,700 gallons per minute. A 125-horsepower well pump delivered water into a pond. Through the conversion to a pivot system, the system pressure reduced from 60 to 20 psig and now uses only one of the original three 50-horsepower booster pumps.

Triangle field is a 199-acre plot that had 23 quarter-mile wheel lines with a total of 882 impact sprinklers, delivering water at 2,700 gallons per minute. A 125-horsepower well pump delivered water into a pond, while a 100-horsepower booster pump delivered water to the wheel lines. Through the conversion to two new pivot systems, 3G Farms replaced the 125-horsepower well pump with a 150-horsepower pump and removed the holding pond. This project eliminated the need for the separate 100-horsepower booster pump. Additionally, the system pressure reduced from 60 to 20 psig, and installing a variable frequency drive on the new pump motor maintains 20 psig at the wheel lines.



### Energy-saving Equipment

As a result of the irrigation system retrofit, 3G Farms can expect energy savings of more than 579,000 kWh and a reduction in peak demand of approximately 141 kW annually. The facility could realize an overall annual savings potential of approximately \$45,200.



### Project Results

**Building Type:** Agriculture

**Project Type:** Retrofit

**Measures:** Pivot irrigation system retrofit

**Incentive:** \$32,495

**Projected Annual kWh Savings:** 579,445