

Contract Details

Contract Type:

Design/Build; Photovoltaic System;
Renewable Energy

Energy Project Size:

\$25,000

About R & A Moore, Inc.

R & A Moore, Inc. is a small independently owned and operated gas and oil producer with 30 stripper wells in the Oklahoma and Texas panhandle. A broad range of field experience and an open mind to engineering innovations guides day to day operations to maximize production from almost completely depleted wells left behind by the larger production companies.

About Ameresco

Ameresco, Inc. is one of the leading global energy services providers. We deliver long-term customer value, environmental stewardship, and sustainability through energy efficiency services, alternative energy solutions, supply management, and innovative facility renewal strategies. The company has over 750 employees in regional offices throughout North America. Ameresco, Inc. has constructed billions in energy projects throughout the world.

For more information about Ameresco and our full-range of energy efficiency and renewable energy solutions, please visit www.ameresco.com.



The pump jack pictured is connected to a down-hole cylinder at a depth of approximately 7,500 feet.



The solar array was expanded from the 12 modules to a total of 18 modules, as pictured. It has an output of 3150Wp. (All photos courtesy of the R & A Moore, Inc.)

Customer Benefits

Ameresco Solar assisted R & A Moore, Inc. in constructing a dewatering system for a 7,500-foot-deep gas well located in Western Oklahoma. In this case, the customer wished to design and build the system and turned to Ameresco for their expertise. The project called for a standard 160D pump jack to be modified and powered by a 3 horsepower (HP) motor with a special solar control and solar array. As a viable oil and gas application, the system dewateres the well more economically than a propane or gasoline engine powered pump.

As old gas wells become filled with fluids, hydrostatic pressure from the well bore fluid column will completely shut off gas production. Removing the fluids from the well bore restores gas production.

This project was funded by a grant from the Stripper Well Consortium under the oversight of the DOE through Penn State University. The original design included 12 modules, the current system consists of 18 modules. The array is connected with a special oil field solar motor control to a 3 HP electric motor.

Environmental Benefits

Extending the useful life of an existing well helps reduce the need to drill new wells.

- ▶ Drilling new wells usually means drilling in a formation that requires fracturing, and frac water is an environmental risk.
- ▶ Similarly, over time, an oil well pump running on a natural gas fueled internal combustion engine will require replacing the gas. Typical options would

replace natural gas with propane, diesel, or gasoline. ▶ A solar powered pump provides a green way to run the pump and continue to recover the oil.

Accolades

"... the expertise of Ameresco sales and technical assistance, coupled with proper controller/converters, permitted the only viable solution to dewatering a gas well in a remote area of the Oklahoma panhandle. Electrical power was not a financially wise decision for this gas well and the volume of daily gas production was insufficient to maintain gas-fired motor power for the pump jack... Water production is now well over a barrel per day and gas production has increased by over 50% and the best is yet to come—thanks to solar power."

- Robert Moore, R & A Moore, Inc.

Services Provided

Gas production prior to the solar running the pump jack was 5 MCF (1,000 cubic feet) per day and no fluid. After solar running the pump, present production has increased from 150 to 224 MCF of natural gas per month and 30 to 35 barrels of fluid removed per month. The pump jack is operated by a standard 10 HP alternating current motor with a reducing gearbox to increase torque to the jack. Though the motor is rated as 10 HP, it receives up to 3 HP worth of energy from the solar array. The actual HP output of the motor varies proportionately with the solar intensity on the array. The system is solar direct. On a clear day, the pump will start in the morning and will slowly pick up speed to a maximum output around noon. As the afternoon wears on, the pump slows and eventually stops before sunset.