



United States Department of Agriculture
Natural Resources Conservation Service

helping people help the land

Hall Ranch

“As soon as the sun comes up over the hill the pump starts running on 60 watts of power. It’s unbelievable.”

— **Cattle Rancher Rick Hall**, commenting about a solar-powered cattle watering system designed by NRCS



Hall’s challenge was how to move water from this well to the top of the mountain behind him -- a 420 foot rise in elevation.



Hall’s grandson takes delight in the water flowing from the storage tank.

Hall Ranch is a beautiful place, blessed with good grazing and plentiful water. Some of the better foraging areas on the Dunlap, Calif. ranch are located on mountaintops. During cooler months, cattle can be found grazing there. But as soon as hot weather hits, the cattle move down to stay in cooler areas closer to creeks on the property.

Owner **Don Hall** and his son Rick think their ranch is under utilized because of it. “My son said if we had water up there our cows would probably stay,” Don Hall says.

So the Halls contacted the USDA Natural Resources Conservation Service (NRCS) in Fresno for advice and financial assistance through its Environmental Quality Incentives Program (EQIP). The challenge put before Soil Conservationist **Sam Vang** and Engineer **Jon Chilcote** was how to move water from an existing well to the top of a nearby mountain -- a distance of over a quarter of a mile and a 420 foot rise in elevation.

What they came up with was a solar-powered watering system. It uses three solar panels to supply power to a pump installed at the well. “As soon as the sun comes up over the hill the pump starts running on 60 watts of power. It’s unbelievable,” said **Rick Hall**. “This is far better than gas engines that need maintenance and can be heard a mile away,” added Chilcote.

Water is pushed up through 1,500 feet of pipe at a rate of two gallons a minute to a storage tank at the top of the mountain. “I thought it would actually be a little less so the pump is outperforming what I thought it would do,” added Hall.

Water stops flowing to the tank when it’s full. By opening a valve at the tank, gravity moves the water down to a pair of troughs where the cattle can drink.

With the help of several family members, including cousin **Tony Welton** and his son **Brack**, a trench was dug, pipe laid and the trench covered back up in seven hours. “It pays to have family and friends,” said Hall.

Now that water is being brought to the uppermost reaches of the ranch, the Halls think they might be able to add 10 to 20 cows to their herd. “I believe we’re on the cutting edge because no one else around here has tried this before,” concluded Hall. “NRCS has been an invaluable partner. I would definitely recommend the agency to other cattle producers thinking of doing something similar.”



Rick Hall, left, grandson Bryce, and Don Hall think NRCS has been an invaluable partner.

Photos by Brian Ziegler



Hall checks one of the new watering troughs.