

Saving Energy In Irrigation Systems

Grant County Public Utility District

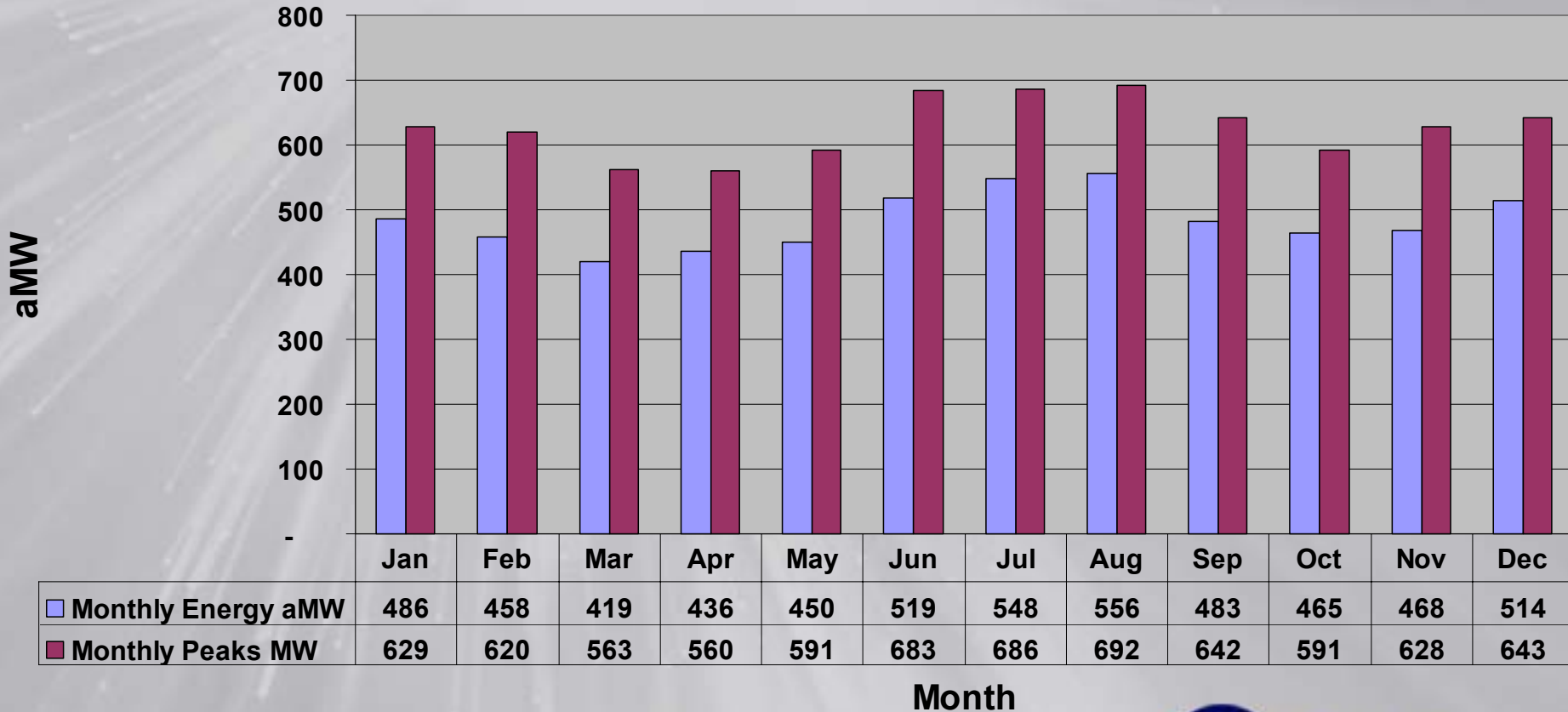
Grant County PUD History

- Established Public Utility District No. 2 of Grant County, Washington in 1938 by a vote of the people in Grant County with five member board
- Federal Energy Regulatory Commission license for Priest Rapids Project issued in 1955
- The largest non-federal hydroelectric project of its kind in the county with 1,755 megawatts of installed capacity
- 2008 received a new 44 year license to operate the second largest non-federal hydropower project with 1,993.6 megawatts of installed capacity

Near Term Retail Load

- District Busbar Retail Loads

2009 Monthly Energy and Hourly Peak



Saving Energy in Irrigation Systems

- Electric Pumping- Increase Efficiency
- Water Horsepower = Flow(GPM)* Total Head (FT) / 3960
- Pump Horsepower = Water Horsepower/Efficiency (Motor+ Pump)
- Look at Amt Water applied, Total Head and Pump Efficiency

Two Programs : Hardware and Water Management

- Grant PUD HARDWARE PROGRAM
- First stage 1 establish baseline
- Data Information: customer, motor, pump, acres, crop type, annual usage, pipe sizes and length
- Measure: flow, voltage , amperage, power factor, KW, pressures, pumping lift,
- Calculate: total dynamic head, pumping plant efficiency, power usage cost

Report to Farmer

- Irrigation System Efficiency Evaluation
- Report present pumping rate, total dynamic head and pumping plant efficiency
- Recommendations to increase efficiency
- Approximate kWh savings and annual dollar amount of savings.
- Incentive available from PUD for making upgrades to system

Next Step for Irrigator

- Agreement with PUD and farmer
- Farmer makes changes
- PUD retest a stage 2 test
- Stage 2 test confirms kWh savings
- PUD sends farmer incentive based on confirmed savings and project cost.

Bonneville Power Administration For Irrigation

- Replacement or installation of nozzles, pressure regulators, sprinklers, and gaskets
- VFD drives
- Premium efficient motors

Irrigation Water Management

IWM

- Used to improve water application to crops
- When and how much water to apply using soil moisture and weather data
- Saves water, energy, and fertilizer and may improve quality and yields.
- Calculate energy saving using BPA
Scientific Irrigation Scheduling Calculator

Grant PUD IWM

- Farmer sign fields in the spring 3 year program
- Must do water monitoring over irrigation season
- Water monitoring done by consultant or the farmer.
- End of the season turn in data
- PUD pays incentive at end of season
- PUD calculates energy savings

Questions

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