

REP Workshop
February 25, 2010
Comprehensive Farm Irrigation Load Example

Dirt Farm Inc. consists of three separate sections (section = 640 acres or 1 square mile) of land that are contiguous to one another in Eastern Washington. On section #1 the farm raises soybeans and on section #2, the farm raises wheat. These crops are rotated between these two parcels every third year. The main farm house, equipment sheds for farm machinery, maintenance/repair shop, and security lighting (one electric meter captures this load), and housing for the farm's workers (four trailers each separately metered) are located on $\frac{1}{4}$ of the third section. A beef feed-lot operation consisting of a barn and hay/grain storage is located on another $\frac{1}{4}$ of the third section (one electric meter captures this load). On the remaining $\frac{1}{2}$ of the third section the farm raises feed corn for the feed lot operation.

The farm uses four circular center pivots to irrigate each of the first two sections, and a hand-set irrigation system to irrigate the feed corn (9 irrigation systems total). Water for the farm is supplied by three deep wells (525 feet deep) each employing a 350 electric horsepower pump, and in addition the farm has a one quarter interest in a canal company that supplies water to the farm in a system of underground irrigation pipes. Fifty horsepower electric booster pumps are used on each of the 9 irrigation systems to pressurize the water to the end of the irrigation pipes. Each irrigation system uses separate electric motors to propel the irrigation system across the ground. Separate electric meters are used to record the electric energy use on each of the nine irrigation systems and on each of the three deep well pumping units.

The manure from the feed lot operation is stored on site in a large covered pit and is mixed with water into a slurry solution that is pumped in underground pipes to fertilize the farm's three crops and to a neighboring farm's crops during the winter and early spring time periods to avoid damaging the crops during the main growing season and to mitigate odor during the hot growing season. This manure disposal system mixes the manure and water in two large tanks and employs separate pumps and machinery to perform this mixing operation whose electric loads are captured on a separate meter. The pumping loads used to move the slurry solution in the underground pipes is also separately metered. A large trailer hose reel and gun system with its own 150 horsepower gasoline powered pump that is pulled by a 150 horsepower diesel tractor is used to spray the slurry mixture over the fields in the winter and early spring time periods.

The electric loads associated with the canal companies operations are separately metered and allocated by the utility company to each of the six farms who own the water allocation rights from the canal company. The canal company has water rights to draw an allocation of water from the Columbia River, and it employs a series of electric pumps to lift the water out of the river and to move the water through the system of underground irrigation pipes to the fields of the six farms.

The electric power bills for Dirt Farm Inc. for the months of March and August 2009 follow.

ABC Utility Company

Dirt Farm Inc.
Route 2, Box 1257
Richland, WA. 98452

March 2009 Electric Bill
Account # 00042378

Non-Irrigation Residential Loads:

Meter No. 1257-00 - Farm House and Outbuildings	860 kWh
Meter No. 1257-01 – Farm labor residence #1	275 kWh
Meter No. 1257-02 – Farm labor residence #2	221 kWh
Meter No. 1257-03 – Farm labor residence #3	242 kWh
Meter No. 1257-04 – Farm labor residence #4	260 kWh

Total loads – Residential Utility Tariff Schedule #1

Energy Charges	1,858 kWh @ \$.0525 = \$	97.54
Distribution System Charges	1,858 kWh @ \$.00525 = \$	9.75

Other Non-Irrigation Farm Loads:

Meter No. 1257-05 – Manure disposal system	3,520 kWh
Meter No. 1257-06 – Manure pumping loads	2,501 kWh
Meter No. 1257-07 – Beef feed-lot metered loads	372 kWh

Total loads – Non-Irrigation Farm Loads Tariff Schedule #2

Energy Charges	6,393 kWh @ \$.0425 = \$	271.70
Distribution System Charges	6,393 kWh @ \$.00425 = \$	27.17

Irrigation Farm Loads

Meter No. 1257-101 – Pumping System#1	80,532 kWh
Meter No. 1257-102 – Pumping System#2	95,026 kWh
Meter No. 1257-103 – Pumping System#3	90,163 kWh
Meter No. 1257-111 – Irrigation System#1	13,422 kWh
Meter No. 1257-112 – Irrigation System#2	13,201 kWh
Meter No. 1257-113 – Irrigation System#3	13,553 kWh
Meter No. 1257-114 – Irrigation System#4	15,838 kWh
Meter No. 1257-115 – Irrigation System#5	15,621 kWh
Meter No. 1257-116 – Irrigation System#6	15,026 kWh
Meter No. 1257-116 – Irrigation System#7	15,027 kWh
Meter No. 1257-116 – Irrigation System#8	15,234 kWh
Meter No. 1257-116 – Irrigation System#9	14,952 kWh

ABC Utility Company

Dirt Farm Inc.
Route 2, Box 1257
Richland, WA. 98452

March 2009 Electric Bill
Account # 00042378

Irrigation Farm Loads - continued

Allocation of Columbia Canal Company #1 – pumping loads

356,289 kWh @ 25% allocation amount	89,072 kWh	
Total Irrigation – Pumping Loads Tariff Schedule #3		
Energy Charges	486,667 kWh @ \$.0325 =	\$15,816.68
Distribution System Charges	486,667 kWh @ \$.00325 =	\$ 1,581.67
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Total Charges before Credits		\$17,804.51
Residential Exchange Program Credit – Tariff Schedule #5		
Federal Columbia River Benefits supplied by BPA:		
Residential Energy Charge Amounts	1,858 kWh	
Other Non-Irrigation Farm Load Amounts	6,393 kWh	
Irrigation – Pumping Load Amounts	486,667 kWh	
Limited to monthly Credit limit amount	222,000 kWh	<u>222,000 kWh</u>
Total Eligible Qualifying Loads	230,251 kWh @ \$.0125 =	\$ - 2,878.14
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Net Amount to be paid on or before April 21, 2009		<u>\$14,926.37</u>

ABC Utility Company

Dirt Farm Inc.
Route 2, Box 1257
Richland, WA. 98452

August 2009 Electric Bill
Account # 00042378

Non-Irrigation Residential Loads:

Meter No. 1257-00 - Farm House and Outbuildings	1,690 kWh
Meter No. 1257-01 – Farm labor residence #1	490 kWh
Meter No. 1257-02 – Farm labor residence #2	453 kWh
Meter No. 1257-03 – Farm labor residence #3	502 kWh
Meter No. 1257-04 – Farm labor residence #4	476 kWh

Total loads – Residential Utility Tariff Schedule #1

Energy Charges	3,611 kWh @ \$.0525 = \$ 189.58
Distribution System Charges	3,611 kWh @ \$.00525 = \$ 18.96

Other Non-Irrigation Farm Loads:

Meter No. 1257-05 – Manure disposal system	0 kWh
Meter No. 1257-06 – Manure pumping loads	0 kWh
Meter No. 1257-07 – Beef feed-lot metered loads	321 kWh

Total loads – Non-Irrigation Farm Loads Tariff Schedule #2

Energy Charges	321 kWh @ \$.0425 = \$ 13.64
Distribution System Charges	321 kWh @ \$.00425 = \$ 1.36

Irrigation Farm Loads

Meter No. 1257-101 – Pumping System#1	182,250 kWh
Meter No. 1257-102 – Pumping System#2	179,543 kWh
Meter No. 1257-103 – Pumping System#3	178,420 kWh
Meter No. 1257-111 – Irrigation System#1	30,375 kWh
Meter No. 1257-112 – Irrigation System#2	29,867 kWh
Meter No. 1257-113 – Irrigation System#3	30,651 kWh
Meter No. 1257-114 – Irrigation System#4	29,925 kWh
Meter No. 1257-115 – Irrigation System#5	28,992 kWh
Meter No. 1257-116 – Irrigation System#6	29,204 kWh
Meter No. 1257-116 – Irrigation System#7	29,737 kWh
Meter No. 1257-116 – Irrigation System#8	31,556 kWh
Meter No. 1257-116 – Irrigation System#9	30,951 kWh

