



Energy Trust Irrigation Incentives
Deschutes SWCD IWM Workshop
4/8/2021

Outline

- Energy Trust background
- Wasted energy
- Energy Trust irrigation incentives
- Next steps



Energy Trust Background

About us

Independent
nonprofit

Serving 1.6 million customers of
Portland General Electric,
Pacific Power, NW Natural,
Cascade Natural Gas and Avista

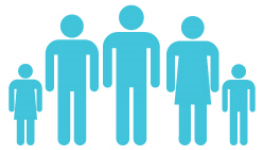
Providing
access to
affordable
energy

Generating
homegrown,
renewable
power

Building a
stronger Oregon
and SW
Washington

Clean and affordable energy since 2002

From Energy Trust's investment of \$1.8 billion in utility customer funds:



Nearly 718,000 sites transformed into energy efficient, healthy, comfortable and productive homes and businesses



14,500 clean energy systems generating renewable power from the sun, wind, water, geothermal heat and biopower



\$7.7 billion in savings over time on participant utility bills from their energy-efficiency and solar investments



29.3 million tons of carbon dioxide emissions kept out of our air, equal to removing 6 million cars from our roads for a year

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SOLUTION**

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AND MAJOR
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AGRICULTURE**

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**HOMES, APARTMENTS
AND CONDOS**

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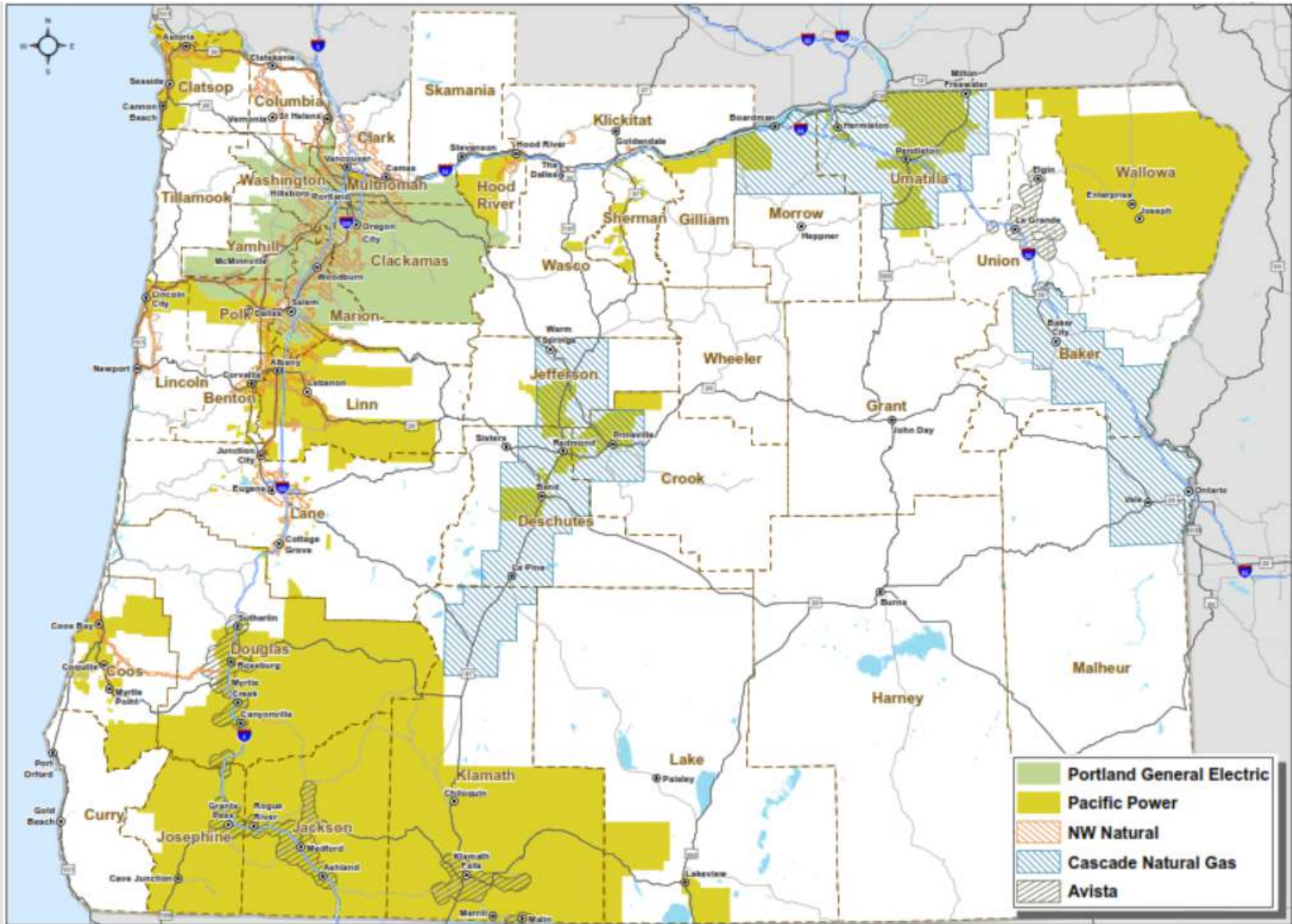
RENEWABLES

+ 1.866.368.7878

Energy Trust work in Ag sector

- Serving - Residences, Businesses and On-Farm
- Energy Efficiency Measures – various programs
- Irrigation Efficiency Measures
- Irrigation Modernization
- Renewable Energy Generation – residential and commercial programs





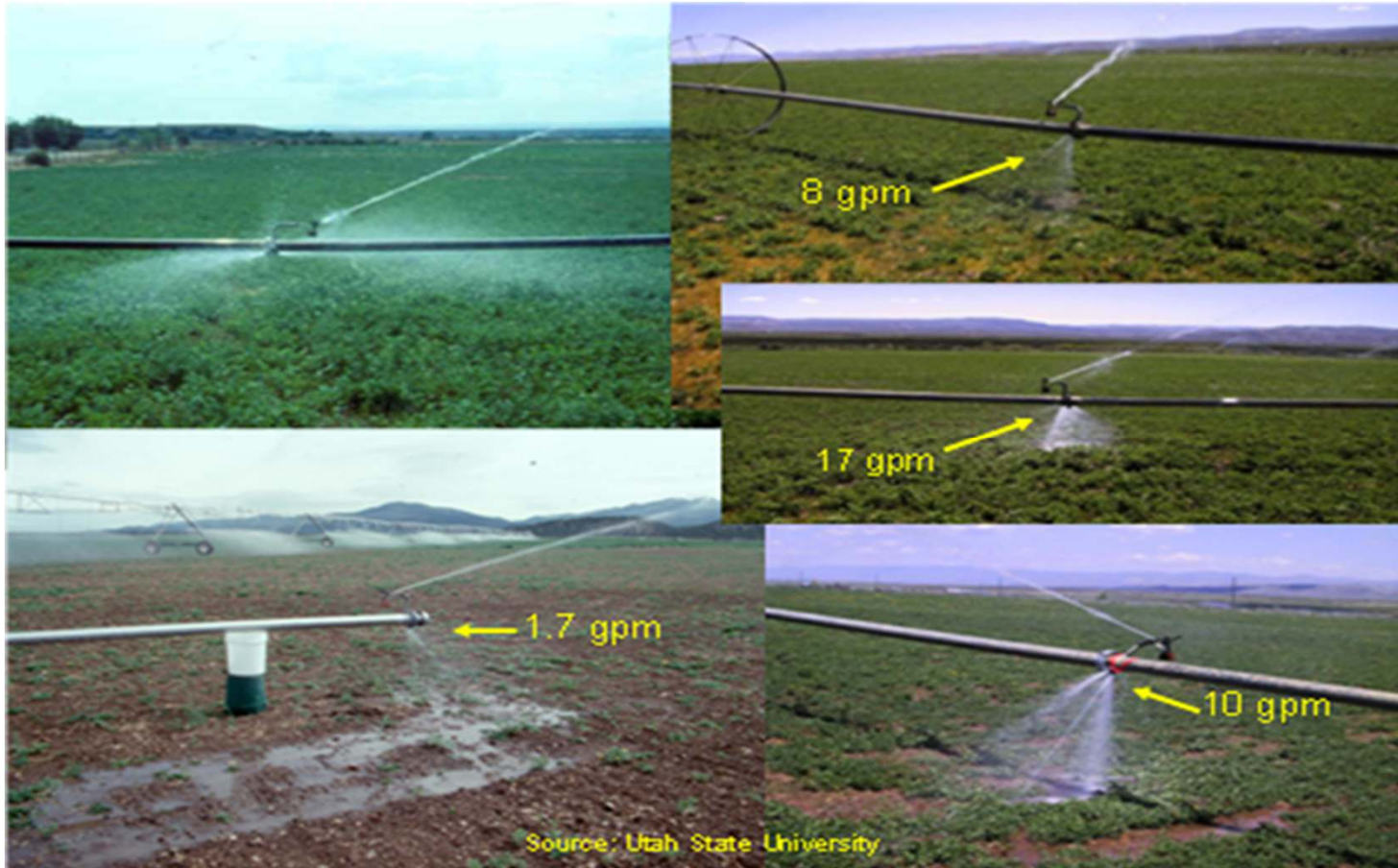
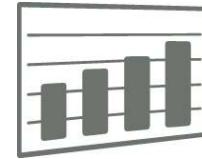
Sources of Wasted Energy in Irrigation

Where is energy wasted in irrigation?

- Leaking pipes, drains, fittings
- Over-irrigating
- Nozzles
 - Worn out
 - High-flow
- Incorrect pump for the application
- Pump control
 - Flow bypass
 - Throttled valves
- Small-diameter pipes & fittings



It all adds up



Efficiency comparison of Irrigation Systems

	Application Efficiency	PSI	Annual Energy Cost	Initial Equipment Cost	Estimated Energy Trust Incentive
Big Gun, hard hose traveler	60%	100	\$7,700	\$12,000	
Wheel line, handline, solid set	65%	70	\$4,325	\$70,000 \$200,000	\$12,375*
Pivot / linear (MESA)	85%	60	\$3,150	\$80,000 \$116,800	\$16,250
Drip, micro irrigation	90-95%	35	\$1,645	\$185,000	\$21,625



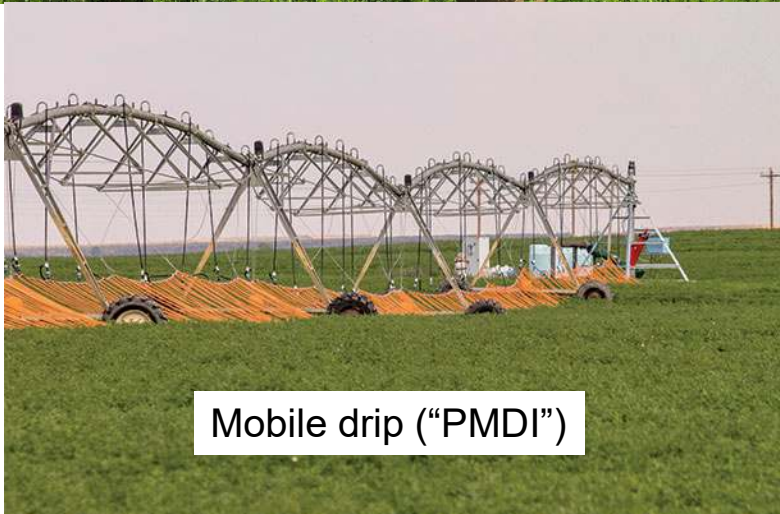
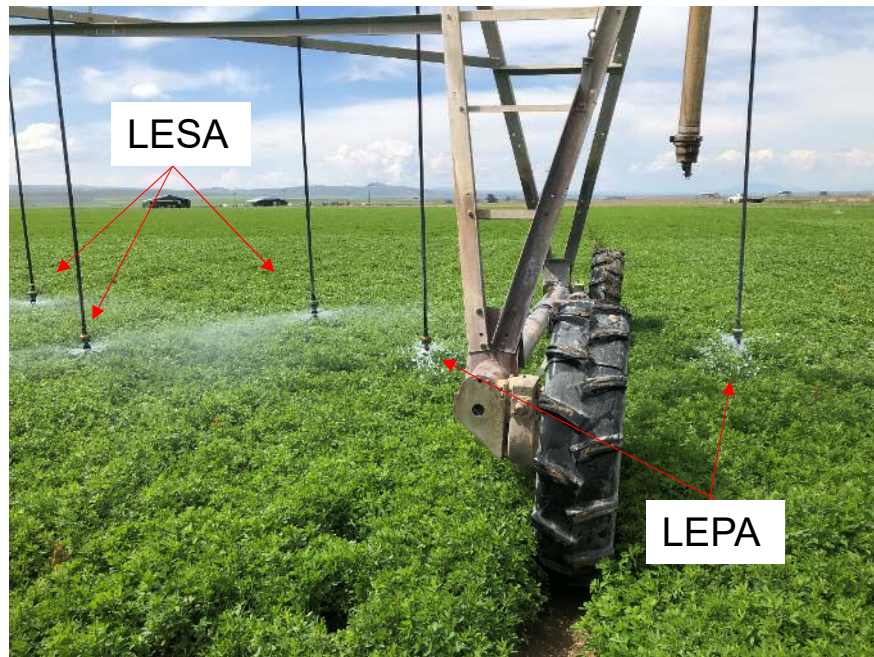
Precision Irrigation

LESA (spray)

- 0-4 ft. above ground
- Low sprinkler pressure (6-10 psi)
- High application efficiency (90%)
- Requires additional sprinklers

LEPA (bubble) or mobile drip

- Low pressure (<10 psi)
- Higher application efficiency (92-95%)





VFDs

- Variable loads or oversized pump
- Energy savings
- Other benefits
 - Labor
 - Maintenance

Irrigation Efficiency Incentives

Incentives



Rebates

- See forms for details

Post-purchase

Submit within 6 months
and
before the end of the
calendar year

Calculated projects

- Higher application efficiency
- Lower pressure
- Lower water volume pumped
- (Less water loss)

Call before you buy

Pre-approval required

2021 Rebates

Rebates (post-purchase)

- Nozzles, gaskets, drains, regulators, sprinklers, drop tubes, goose necks, pipe repair
- Converting to LEPA/ LESA/ mobile drip

Upgrade for systems with VFD		Incentive	
High pressure to MESA		\$25 per sprinkler drop	
High pressure to LESA/LEPA/PMDI		\$25 per sprinkler drop	
MESA to LESA/LEPA/PMDI		\$15 per sprinkler drop	
Upgrade for systems without VFD		Incentive	Requirements
High pressure to MESA		\$11 per sprinkler drop	
High pressure to LESA/LEPA/PMDI		\$10 per sprinkler drop	
MESA to LESA/LEPA/PMDI		\$7 per sprinkler drop	

Linear and pivot improvement	Incentive
New low-pressure regulators	\$5 per regulator
New drop tube or hose extensions for low pressure sprinklers	\$2.40 per tube
New "goose neck" elbows for new drop tubes	\$1.65 per elbow
New multi-trajectory sprays that replace worn low pressure sprinklers	\$1 per sprinkler
New multi-trajectory sprays that replace impact sprinklers	\$4 per sprinkler
New multiple configuration nozzles for low pressure systems	\$2.75 per sprinkler
Rebuilt or new impact sprinklers	\$3.75 per sprinkler
New drains	\$1 per drain
Wheel and hand-line improvement	Incentive
Rebuilt or new impact sprinklers	\$3.75 per sprinkler
New nozzle for impact sprinkler	\$0.75 per nozzle
New flow-controlling type nozzles for impact sprinklers	\$3.75 per nozzle
New drains	\$1 per drain
New gaskets replacing leaking gaskets	\$2.00 per gasket, limit 2 per irrigated acre
Cut and pipe press repair of leaking pipes	\$10 per section

2021 Calculated Incentives

Calculated Incentives (pre-approval)

- Pump VFDs
- Pump consolidation or downsize
- System upgrade (pivot, linear, drip)
- Mainline upgrade



Participating Utility	Incentive	Maximum Incentive Limit for Irrigation VFDs (per site in 2021)
Portland General Electric	\$0.30 per kWh saved, up to 70% of eligible project cost	Up to \$40,000
Pacific Power	\$0.30 per kWh saved, up to 70% of eligible project cost	Up to \$10,000, if project's calculated energy savings is less than 100,000 kWh Up to \$15,000, if project's calculated energy savings is 100,000 kWh or more



Scientific Irrigation Scheduling

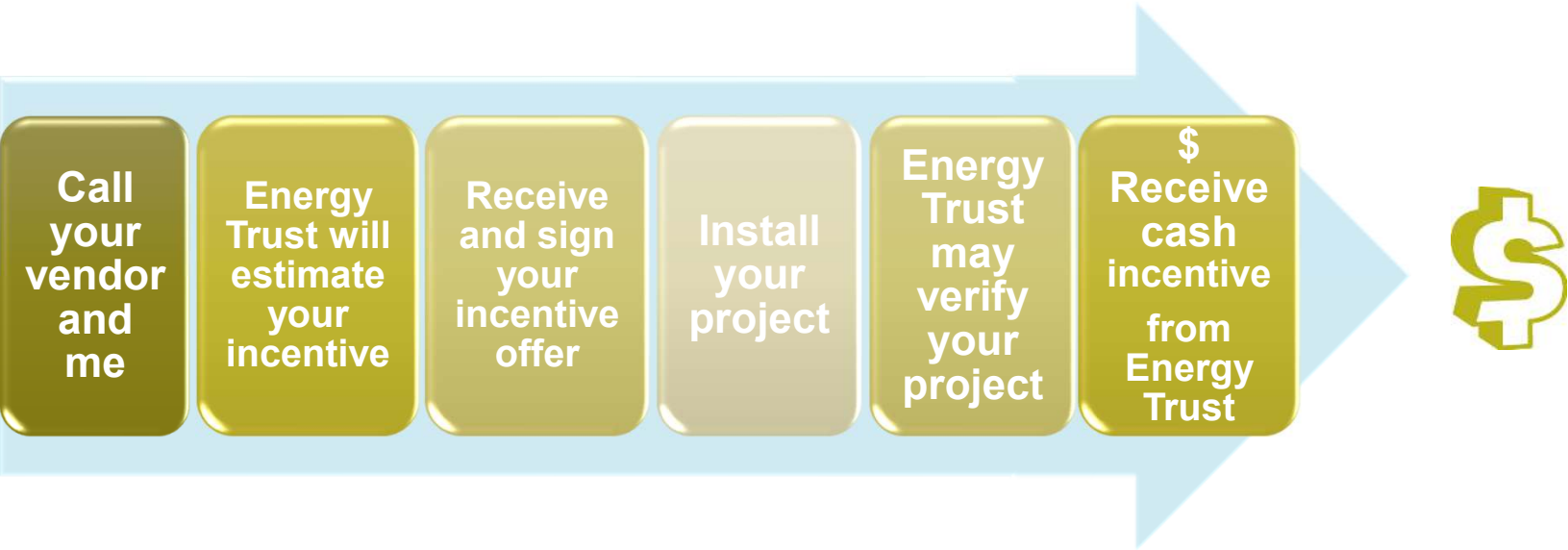
- \$3.22 per acre, up to 100% eligible cost
- Work with a specialized vendor

Benefits

- Energy savings
- Water savings
- Improved yield

Next Steps

Receiving your calculated project incentive



We are always there to help guide you through the process.

FAQ

Q: Is a site visit necessary?

A: Generally no. Collect info via phone and email. Inspect 10% of completed projects.

Q: Incentives available if no pump or off grid pump?

A: No. We assume energy savings at pump. Must pay public purpose charge on electrical bill.

Q: Incentives available for new systems?

A: Yes, if efficient options are implemented.

Q: How long will it take to apply?

A: Usually between one day and two weeks.

Q: What vendors or contractors should we work with?

A: Your choice. I can provide options.

Find a Contractor




RECENT NEWS [Food processor Meduri Farms harvests energy savings >](#)

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Thank you

Brad Moore, Program Engineer
Brad.Moore@CascadeEnergy.com

Phone

Direct: 503-837-2087

Mobile: 541-419-5028



HELPFUL LINKS

- <https://www.energytrust.org/solutions/agriculture-irrigation-improvements/>
- <https://www.energytrust.org/industry-agriculture/industry-forms-and-resources/>
- <https://www.energytrust.org/success-stories/fox-hollow-ranch-madras/>
- <https://www.energytrust.org/success-stories/rajnus-seed-klamath-falls/>
- <https://www.energytrust.org/success-stories/criss-family-farms/>
- <https://www.energytrust.org/find-a-contractor/>

Pump VFDs

Quick summary

- VFDs installed on 125 and 100 hp pump
- \$4,400 per year cost savings
- \$15,000 cash incentives from Energy Trust
- Energy Trust incentives covered 43% of total cost



Rajnus Seed, Klamath Falls

ESTIMATED ANNUAL SAVINGS: \$11,000

The 800-acre Rajnus Seed family farm in Klamath Falls has worked with Energy Trust on several energy-saving upgrades which are helping them to reduce labor hours and save money. Most recently the farm installed two new irrigation pumps with variable frequency drives, VFDs.

The new 125 horsepower and 100 horsepower pumps with VFDs are “saving a bunch, energy wise” says owner George Rajnus - an estimated \$4,400 in annual energy costs. For the project the farm received about \$15,000 in cash incentives from Energy Trust, or approximately 43 percent of the project cost. Rajnus plans to continue working with Energy Trust to uncover additional opportunities to reduce energy use.

Pump consolidation and VFD

Quick summary

- Replaced three pumps with one with VFD
- \$6,700 per year cost savings
- Rebates for drains, gaskets, nozzles, and pipe repair



Fox Hollow Ranch, Madras

ESTIMATED ANNUAL BILL SAVINGS: \$6,700

Time equals money for Fox Hollow Ranch, a family business that produces carrot seed, bluegrass seed and peppermint oil. Located in Oregon's high desert, all 600 acres require irrigation, an arduous task until Energy Trust helped Fox Hollow replace three irrigation pumps with a single 125-horsepower pump and variable frequency drive. The new technology automatically adjusts pump speed to optimize pressure and water flow requirements, saving the ranch approximately \$6,700 in annual energy costs while also reducing water use.

And the benefits don't stop there. Depending on the weather and season, Fox Hollow runs anywhere from three to 20 lines off its main irrigation pipe. "Before, we spent a lot of time determining which pump to use when," said Nancy Richards, co-owner of Fox Hollow Ranch. "Now the variable frequency drive does that for us, making the job easier, quicker and safer for employees."

Several years ago, Energy Trust provided cash incentives to help the ranch replace drains, gaskets, nozzles and leaking pipes, and schedule irrigation to optimize the frequency and duration of watering crops.