Wallowa County Irrigation, Efficiency and Community Hydro

Wallowa Resources Community Solutions Inc.

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Wallowa County

- NE Corner of Oregon
- 3,000 square miles
- 57% federal land, the majority of which is forested
- There are currently just over 45,000 acres of irrigated farmland
- 202,700 acre-feet per year irrigation
- 7,000 residents
- Ag, resource based, professional services and tourism economy
About Wallowa Resources Community Solutions Inc.

- Subsidiary of Wallowa Resources, a place-based land and community stewardship non-profit.
- WRCSI’s mission: To provide capital, business and technical services to support and create businesses that generate benefits to the community and the environment.
- Core business is renewable energy project development.
  - 6.6 MW of renewable thermal and electrical energy generated in county.
  - 25% of total thermal and electrical load.
  - More than $5M energy dollars retained annually.
  - Goal is 100% - would retain more than $20M annually.
Irrigation Efficiency: The Opportunity

There is great opportunity for agriculturally based communities within mountainous landscapes:

- Conserve or produce power
- Increase irrigation efficiency
- Maintain or increase crop yields
- Reduce farm operating costs (labor, energy)
- Keep $$ in the community
- Increase community resiliency
- Keep more water in stream
- Improve working land values
The Water - Energy Nexus

- The water-energy nexus is the relationship between how much water is used to generate and transmit energy, and how much energy it takes to move water. **Or, we can say, how much energy water has as it moves!**
- Saving water saves energy, and vice versa
- This is easy to see with a pumped irrigation system
- Precipitation in mountainous landscapes delivers vast amounts of potential energy.
- Mountainous regions are fortunate to have the opportunity to optimize efficiency **AND produce power**
Hydropower Regulatory Efficiency Act of 2013

A streamlined FERC process for small conduit hydro

• Exempts certain conduit hydropower facilities from the licensing requirements of the Federal Power Act (FPA)

• Qualifying Conduit Hydropower Facility Criteria
  o Non-federally owned conduit
  o < 5MW
  o Not currently licensed or exempt

• The term ‘conduit’ means any tunnel, canal, pipeline, aqueduct, flume, ditch, or similar manmade water conveyance operated for the distribution of water for agricultural, municipal, or industrial consumption and not primarily for the generation of electricity.
Conduit Hydroelectric

ENERGY DOLLARS
WORKING LANDSCAPES
RESILIENT COMMUNITIES
Wallowa County Success Story

Imnaha Parks Ditch Water Project

- Installed new pipeline, and lateral lines with sprinkler heads, over a four mile open irrigation ditch with flood irrigation - $300,000
- Reduced water use by 50% (about 4-5 cfs per year)
- System maintained or increased crop yields on each ranch with less labor.
- Opportunity to add micro-hydro – over 60 psi in pipe at end of line.
- Current market - Water Trusts pays up to $500,000 per certified cfs retained in-stream to improve fish habitat
Irrigation Modernization Program

Irrigation Modernization Program is an irrigation efficiency campaign spearheaded by Farmers Conservation Alliance (FCA) in partnership with Energy Trust of Oregon (ETO), and in collaboration with Wallowa Resources Community Solutions Inc., and other consulting firms, technology experts and irrigation managers. The program builds on preceding efforts by additional local partners The Freshwater Trust and The Nez Perce Tribe.

Goal
Support the modernization of irrigation districts
• Maintain or increase irrigation efficiency, agricultural resilience, rural economic development, and environmental enhancement.
WRCSI is currently performing hydro assessments on three separate irrigation systems in Wallowa County:

Assessing Potential - Westside & Poley/Allen Ditches:
- 150 kW peak power production across five hydro installations
- Offset a portion of irrigator power costs, or generate revenue for irrigation district – 40 irrigators
- Irrigation season hydro production potential value of $35,000 (62% of consumption)
- Consolidate two ditches into one
- Put ~ 10 cfs of water back into an ESA listed stream during critical spawning seasons
Community Hydro for Irrigation

Assessing Potential – Hurricane Pipeline:
• 27 irrigators
• 104 kW peak power production across two hydro installations
• Irrigation season hydro production potential value of $23,500
  • 50% of power consumed by irrigators
  • 14 year simple payback w/o incentives
• Irrigation efficiency upgrades for farmers
• Leaves more water in stream
Community Hydro for Irrigation – HOW?

Convert excess irrigation distribution pressure into electricity and net meter amongst pipeline/ditch members

Community Hydro for Gravity Irrigation Distribution:

• Assess hydroelectric potential for irrigation system
• Aggregate net meter -> virtual net meter
• Offset a portion of irrigator power costs and/or generate revenue for irrigation district/company

Aggregate Net Metering Arrangement
Community Hydro for Irrigation - Technology

• Standardize
• Reduce/eliminate engineering
• Drive cost down
Challenges

• Organizing farmers to form common entity for community hydro structure.

• Setting up community hydro structure within the current rules with the power utility

• Driving capital costs down to make projects pencil for rural family farmers

• Pushing community hydro legislation
Tools for funding an irrigation efficiency and hydro project

- FCA/ETO Irrigation Modernization Program
- The Conserved Water Statute is a voluntary program which allows a water user who conserves water through efficiency upgrades to use a portion of the conserved water on additional lands, lease or sell the water, or dedicate the water to instream use. The remaining portion is dedicated to instream.
- USDA NRCS
- USDA RD
- Utility RE programs
HYDROELECTRIC for:
O&M of our irrigation districts,
and reduced fees for members
HYDROELECTRIC for:
water conservation, and
water distribution upgrades
HYDROELECTRIC for:
fiscal and environmental sustainability
THANK YOU!

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