

In-Conduit Hydroelectric
renewable power generation



City of Hood River In-Conduit Hydroelectric Projects:

Belmont and Dee Bridge PRV Overview

January 13, 2020



Agenda

1. Site Overview
2. Site Features
3. Turbine System
4. Regulatory and Environmental
5. Cost Estimate
6. Financial Summary
7. Project Impacts



Belmont Site Overview



Dee Bridge Site Overview



Site Features



Belmont

- Closest address: 4030-4156 Belmont Drive
- 145 psi Inlet pressure
- 45 psi Outlet pressure
- 300 to 3,200 gpm
- PRV is 12-inch
- PacifiCorp Power lines on site
- Existing 22' x 10' vault

Dee

- Closest address: 4001 Dee Bridge Drive
- 300 psi Inlet pressure
- 117 psi Outlet pressure
- 300 to 3,200 gpm
- PRV is 12-inch
- PacifiCorp Power lines on site
- Existing 15' x 8' vault

Turbine Generator System

- Pump-as-Turbine In-Line Turbine
- Turbines controlled via logic algorithm
- Hydraulic and Electrical Protections





Regulatory & Environmental

- **Land Ownership/Site Control**
 - Belmont – City Easement
 - Dee – Private Property
- **Federal Energy Regulatory Commission**
 - FERC Qualifying Conduit Facility
- **Environmental**
 - NEPA Categorical Exclusion pending Federal Nexus
- **OWRD Water Rights**
 - Review to add hydroelectric rights
- **Potable Water Equipment Requirements**
 - ANSI 61 Certified Parts
- **Oregon Health Authority**
 - Plan Reviews Mandated
- **Interconnection**
 - PacifiCorp



Project Cost Estimate

Cost Estimate City of Hood River – Dee Bridge Conduit Hydro 115 kW ILT		Cost Estimate City of Hood River – Belmont Conduit Hydro 32 kW ILT	
Construction		Construction	
Mobilization and site work	\$ 84,800	Mobilization and site work	\$ 30,000
Pipe, valves, and fittings	\$ 139,800	Pipe, valves, and fittings	\$ 52,000
Turbine/generator units	\$ 282,000	Turbine/generator units	\$ 164,200
Electrical	\$ 194,900	Electrical	\$ 174,900
Building and misc. structural	\$ 39,900	Building and misc. structural	\$ 8,900
Materials and installation subtotal	\$ 741,400	Materials and installation subtotal	\$ 430,000
20% contingency	\$ 148,280	20% contingency	\$ 86,000
Construction costs subtotal	\$ 869,680	Construction costs subtotal	\$ 516,000
Non-Construction		Non-Construction	
Mechanical, Electrical, Civil Design	\$ 150,000	Mechanical, Electrical, Civil Design	\$ 150,000
Surge Analysis	\$ 10,000	Surge Analysis	\$ 10,000
GC Bid Package / Bid	\$ 15,000	GC Bid Package / Bid	\$ 15,000
Project Management and Engineering Services During Construction	\$ 75,000	Project Management and Engineering Services During Construction	\$ 75,000
Startup and Commissioning	\$ 20,000	Startup and Commissioning	\$ 20,000
Interconnection	\$ 15,000	Interconnection	\$ 15,000
Environmental and Regulatory	\$ 25,000	Environmental and Regulatory	\$ 25,000
Fee Simple Easement	\$ 20,000	Additional Services	\$ -
Non-construction costs subtotal	\$ 330,000	Non-construction costs subtotal	\$ 310,000
Non-Construction Contingency	\$ -	Non-Construction Contingency	\$ -
Total Estimated Project Costs	\$ 1,220,000	Total Estimated Project Costs	\$ 826,000

Financial Summary

- **Energy Trust Applications Submitted in Dec 2019**
 - Belmont - \$750,000 requested
 - Dee - \$975,000 requested
- **30 Year Net Earnings**
 - \$1,127,000 + Energy Trust Grants
 - 30 to 50 year asset
- **PRV Maintenance**





Project Impacts

- Offsets 46% Equivalent of City Electric Demands
 - Reduces Greenhouse Gas Emissions:
 - 87 homes annual electricity use
 - 140 cars
 - 224 tons of waste sent to a landfill
 - 726 tons of CO₂e
 - Directly aligns with 2018 HR County Energy Action Plan
 - Fossil Fuels
 - Grid Resiliency
 - Local Power



EVERY DROP OF ENERGY®

NLine Energy, Inc.
403 Portway Avenue, Suite 300
Hood River, OR 97040
o: 916.235.6852 | f: 866.444.4320
www.nlineenergy.com

