

Qualco Energy Bio-Gas Project



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Introduction



- ⌘ Description of Project
- ⌘ Current status of Project
- ⌘ Future Expansion
- ⌘ Nutrient Recovery Pilot Project
- ⌘ Funding
- ⌘ Benefits of Digester Project
- ⌘ Questions

Project Description



⌘ Sewage Treatment for Cow Manure

- ☑ Collect Cow Manure from Dairy
- ☑ Collect Ag. Waste and Pre-Consumer food Waste
- ☑ Pump into Anaerobic Digester
- ☑ Capture Methane Gas
- ☑ Burn Gas to Produce Electricity
- ☑ Compost Bio-solids
- ☑ Return Effluent & Compost to Farms
- ☑ Building Pilot Project for Concentrating Nutrients from the Digester Effluent.

Biogas Project



- ⌘ Started Operation December 2008
- ⌘ Currently Operating with 1300 cows and other agricultural substrates and pre-consumer food wastes.
- ⌘ Washington State Law exempts dairy digester operations from waste handling permits. Digesters must use at least 50% manure, may use other agricultural wastes and use up to 30% Pre-consumer food waste.
- ⌘ Generator capacity is 450 KWh and has operated approx. 92% of the time since start-up.
- ⌘ Revenues
 - ⊞ Approx. \$20,000/month electricity sales.
 - ⊞ Approx. \$35,000/month tipping fees for food wastes.

Expansion Opportunities



- ⌘ Concentrating nutrients from liquid effluent for farms to use instead of petroleum based fertilizers.
- ⌘ Add additional digester capacity.
- ⌘ Add additional generator capacity (750 – 800 KW)
- ⌘ Clean gas to pipeline quality and compress for RCNG market (Transportation/Heating Fuel).
- ⌘ Sell digester gas for Chicken manure drying facility.
- ⌘ Use waste heat for other uses on site (i.e. green houses/hot houses).

Nutrient Recovery Pilot Project



- ⌘ Pilot project only designed to process 1 gpm with a cost estimate of \$38,000.
(We Currently discharge approx. 55 gpm)
- ⌘ 3 Step Process
 - ☑ Dissolved Air Flotation System to Remove Fats Oils and Greases.
 - ☑ Micro-Membrane (Ultra Filtration) System to Remove Suspended Solids
 - ☑ Reverse Osmosis System to Concentrate the Nutrients

Funding



- ⌘ Department of Energy Grant for Feasibility Study and Business Plan (\$250K)
- ⌘ Department of Agriculture Grant for Construction (\$500K)
- ⌘ Energy Bill through IRS - Clean Renewable Energy Bonds (\$2.6M)
- ⌘ Tulalip Tribal Funds (\$350K)
- ⌘ Volunteered Time by Qualco Board
- ⌘ Land Donated by State of Washington
- ⌘ Community Economic Revitalization Board Grant (Washington State Department of Commerce) (\$25K)

Benefits of Project



- ⌘ Improved Water Quality from Stormwater Run-off
 - ☒ 92-98% Pathogen Reduction in Effluent for Irrigation
 - ☒ Converting Nutrients from organic to inorganic forms
- ⌘ Reduced Waste going to Landfills and Wastewater Treatment Facilities
- ⌘ Creation of Renewable Energy
- ⌘ Recycling Nutrients for use on neighboring farms
- ⌘ Reduced Methane Emissions
- ⌘ Improved Economic Viability for Farms



Questions?