

Snohomish County's Bio-diesel Initiative

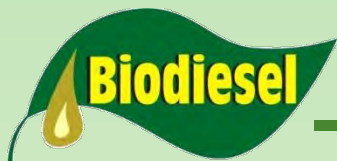
***West Coast Collaborative
November 6, 2008***



SNOHOMISH COUNTY FARM-GROWN FUEL PROJECT

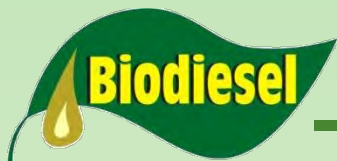
Why Bio-diesel?

- Reduce diesel fleet emissions; local supply chain
- Local production means lower fuel transportation cost
- Create community resiliency and sustainability
- Provides more options for local agriculture

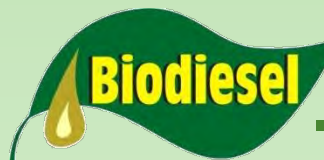


Goals of the County's Initiative?

- Grow 240,000 gallons of bio-diesel locally
- Dry oil seed at Cathcart using landfill gas
- Crush oil seed locally
- 100% of diesel fleet to operate on B-40 by 2014
- 3 or More Bio-diesel Stations for Fleet use in County

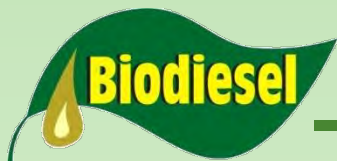


Model of Biodiesel Infrastructure



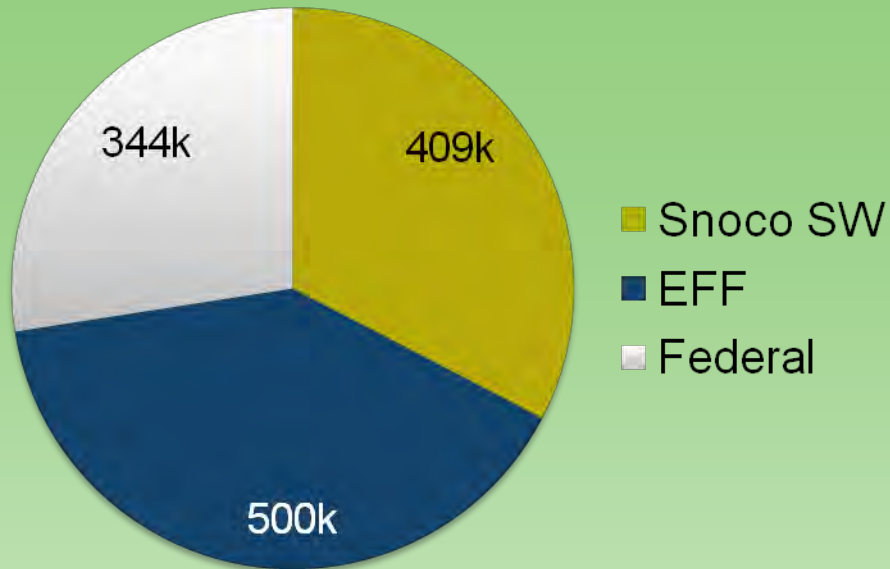
Why Use Landfill Gas (LFG)?

- Cost of natural gas is high – about \$1.31 per therm
 - Dryer uses 5MMBTUs per hour or \$65.50 per hour
- The County currently flares 20MM BTUs every hour at the closed Cathcart Landfill
- Snohomish County wants to use this resource
 - Too little gas for waste to energy (WTE)
 - Too little production time remains for capital energy project
 - Support from PSCAA for small scale projects like this one



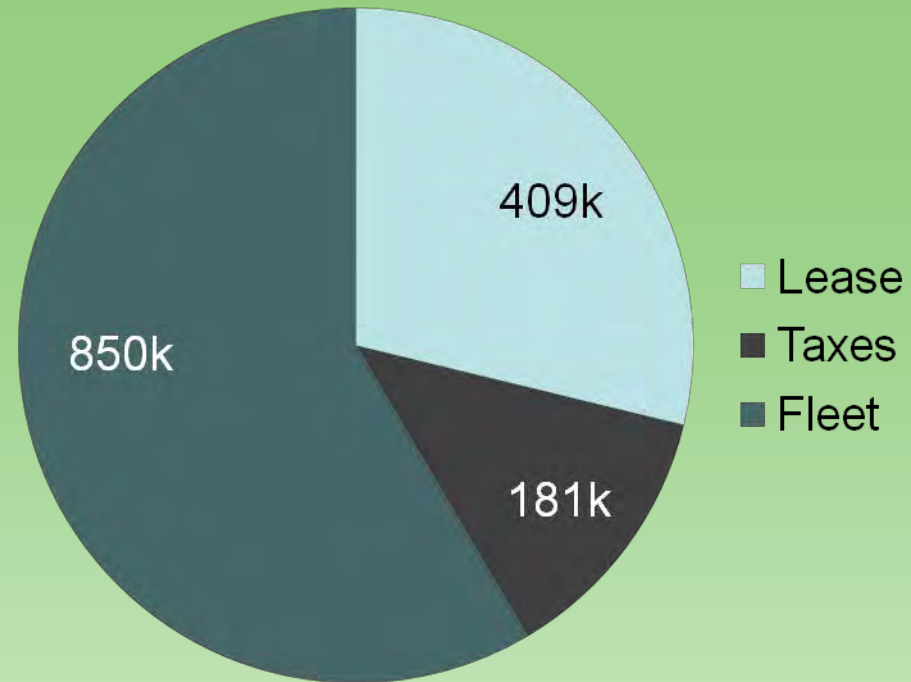
PUBLIC BENEFIT

Total Current Investment

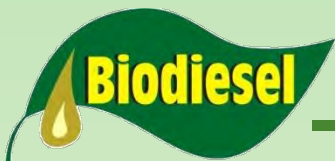


\$1,250,000

Benefit In 5 Years

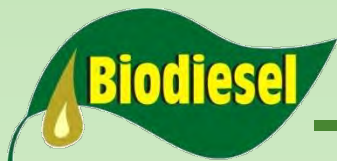


\$1,500,000



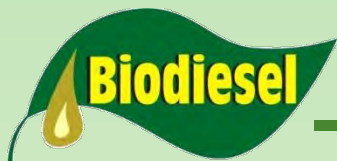
Project Budget

Fund Source	Equipment Item	Cost
Solid Waste Funds	Dryer	\$67,566
\$409,800	Storage bins	\$232,219
	Engineering Design Consultants	\$72,871
	Air Quality Testing	\$20,000
	Electrical Work	\$17,144
Dept. of Energy Earmark	Engineering Design Consultants	\$20,000
\$344,400	Electrical, Assembly, Mechanical	\$116,000
	Access Road and Pads	\$179,400
	Grower's Cooperative	\$9,000
	Demonstration Biodiesel Fuel Unit	\$20,000
CTED Grant \$500,000	Crusher System and Installation	\$500,000
TOTAL = 1,254,200		\$1,254,200



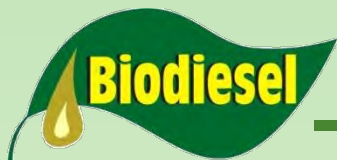
County Infrastructure

- Landfill gas flares
- Mathews 675 Dryer
- 24 ton Insta-Pro crusher, filter, de-gummer
- 356 tons bushel storage, elevator, grain cleaner
- Scales
- Access road



Landfill Gas (LFG)

- Study done in 2007 determined no LFG products of combustion “stuck” to the product
- New dryer burners are more efficient than existing flares
- Expect CO emissions at 9 ppm which is equal to best available control technology for non-methane organic compounds



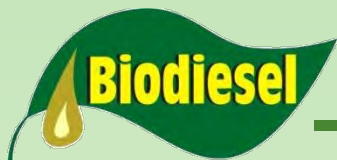
Emissions Data

Expected

Pollutant	Lb / Hr	Lb / yr	Ton / yr
NOx	6.0	576	0.288
CO	0.8	97	0.049
PM	6.6	627	0.313
PM 10	2.2	202	0.101
PM 2.5	0.5	44	0.022

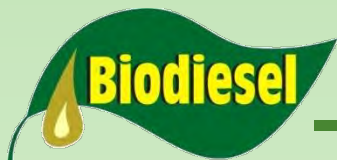
Potential

Pollutant	Lb / Hr	Lb / yr	Ton / yr
NOx	6.0	1,152	1.676
CO	0.8	0.194	0.227
PM	6.6	1,254	0.968
PM 10	2.2	404	0.331
PM 2.5	0.5	88	0.094



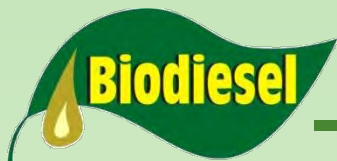
Air Permit Conditions

- Monitor for dust emissions
- Dry no more than 4,320 tons of product per year
 - About 2500 acres of oil seed crop
 - We will hit this ceiling in about 3 years
- Keep a log of materials dried, dust emission observations.



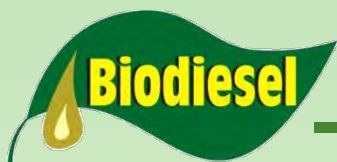
Carbon Credits

- Gas Collection system does not qualify
 - Pipes put in in 1991-1993
 - No major project improvements since
 - Dryer addition doesn't count
- Fuel usage numbers will count (HB2815)
 - 120,000 gal. by 2010 with local feed stocks
 - Pilot B40 thereafter
 - 240,000 gal. with local feed stocks by 2012



Other Ideas for LFG Use

- Green Houses – Tomatoes in November
- Co-generation with cow manure just north of the site
 - Beuller Farm has 700 cows on 600 acres
 - Big manure lagoon for land application
 - Need to overcome infrastructure cost of digester
- On-site heat exchange for buildings
 - Heat to liquid exchange



Questions? - Please Contact

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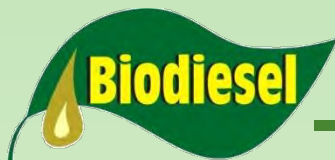
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Credits

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