

Oregon Cellulose-Ethanol Study

Production Assumptions

Target Ethanol Production (Anhydrous)

49,356,780 Gal./year Capital Cost (\$/gal) = \$1.84

Product Yields & Energy Consumption

	<u>1st year</u>	<u>2nd year</u>	<u>3rd Year</u>	<u>3rd Year</u>	<u>4th Year</u>	<u>5th Year</u>	<u>6th Year</u>	<u>7th Year</u>	<u>8th Year</u>	<u>9th Year</u>	<u>10th Year</u>	<u>Escalation</u>
	<u>Operations</u>	<u>Operations</u>	<u>Operations</u>	<u>Operations</u>	<u>Operations</u>	<u>Operations</u>	<u>Operations</u>	<u>Operations</u>	<u>Operations</u>	<u>Operations</u>	<u>Operations</u>	
Feedstock (Bone Dry Tons)												
Greenwaste	0	0	0	0	0	0	0	0	0	0	0	
Mixed Waste Paper	0	0	0	0	0	0	0	0	0	0	0	
Wood & Lumber	0	0	0	0	0	0	0	0	0	0	0	
Paper mill sludge	0	0	0	0	0	0	0	0	0	0	0	
Grass Straw	0	0	0	0	0	0	0	0	0	0	0	
Wheat Straw	931,260	931,260	931,260	931,260	931,260	931,260	931,260	931,260	931,260	931,260	931,260	
Forest Residues	0	0	0	0	0	0	0	0	0	0	0	
Other Agricultural Residues	0	0	0	0	0	0	0	0	0	0	0	
Ethanol Yield (gal/BDT)	53.000	53.000	53.000	53.000	53.000	53.000	53.000	53.000	53.000	53.000	53.000	
Ethanol Selling Price (\$/gal delivered+incentive)	\$1.270	\$1.285	\$1.300	\$1.316	\$1.332	\$1.348	\$1.365	\$1.382	\$1.399	\$1.416	\$1.434	per formula
Ethanol Sales Commission (\$/gal)	\$0.020	\$0.020	\$0.020	\$0.020	\$0.020	\$0.020	\$0.020	\$0.020	\$0.020	\$0.020	\$0.020	
Ethanol Transportation (\$/gal)	\$0.050	\$0.050	\$0.050	\$0.050	\$0.050	\$0.050	\$0.050	\$0.050	\$0.050	\$0.050	\$0.050	0.00%
Ethanol Producer Incentive	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	
By-Product (Lignin) Yield (MMBTU)	8,208,960	8,208,960	8,208,960	8,208,960	8,208,960	8,208,960	8,208,960	8,208,960	8,208,960	8,208,960	8,208,960	
By-Product Price (\$/MM BTU delivered)	\$2.000	\$2.000	\$2.000	\$2.000	\$2.000	\$2.000	\$2.000	\$2.000	\$2.000	\$2.000	\$2.000	0.00%
By-Product Transportation (\$/MMBTU)	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	0.00%
By-Product Sales Commission (% of sales)	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	
CO2 Yield (lb/gal)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
CO2 Price (\$/ton)	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	2.00%
Feedstock Purchase Price (\$/BDT Delivered)	\$30.000	\$30.600	\$31.212	\$31.836	\$32.473	\$33.122	\$33.785	\$34.461	\$35.150	\$35.853	\$36.570	2.00%
Feedstock Purchase Commission (\$/BDT)	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.000	0.00%
Utilities												
Electricity (Total Usage - kWh)	139,552,320	139,552,320	139,552,320	139,552,320	139,552,320	139,552,320	139,552,320	139,552,320	139,552,320	139,552,320	139,552,320	
Electricity (\$/kWh)	\$0.0325	\$0.0336	\$0.0346	\$0.0358	\$0.0369	\$0.0381	\$0.0394	\$0.0407	\$0.0420	\$0.0433	\$0.0447	2.00%
Natural Gas (Total Usage - MCF)	192,037	192,037	192,037	192,037	192,037	192,037	192,037	192,037	192,037	192,037	192,037	
Natural Gas (\$/MCF)	\$2.8500	\$2.9070	\$2.9651	\$3.0244	\$3.0849	\$3.1466	\$3.2096	\$3.2738	\$3.3392	\$3.4060	\$3.4741	2.00%
Fresh Water (Total Usage - 1000 gal))	979,200	979,200	979,200	979,200	979,200	979,200	979,200	979,200	979,200	979,200	979,200	
Fresh Water (\$/1000 gal)	\$1.0000	\$1.0200	\$1.0404	\$1.0612	\$1.0824	\$1.1041	\$1.1262	\$1.1487	\$1.1717	\$1.1951	\$1.2190	2.00%
Waste Effluent (Total Usage - 1000 gal))	656,064	656,064	656,064	656,064	656,064	656,064	656,064	656,064	656,064	656,064	656,064	
Waste Effluent (\$/1000 gal)	\$1.6000	\$1.6320	\$1.6646	\$1.6979	\$1.7319	\$1.7665	\$1.8019	\$1.8379	\$1.8747	\$1.9121	\$1.9504	2.00%
Denaturant (% of ethanol sold)	5.000%	5.000%	5.000%	5.000%	5.000%	5.000%	5.000%	5.000%	5.000%	5.000%	5.000%	
Denaturant (\$/gal)	\$0.7500	\$0.7650	\$0.7803	\$0.7959	\$0.8118	\$0.8281	\$0.8446	\$0.8615	\$0.8787	\$0.8963	\$0.9142	2.00%
Chemicals & Enzymes (\$/gal of ethanol)	\$0.1500	\$0.1515	\$0.1530	\$0.1545	\$0.1561	\$0.1577	\$0.1592	\$0.1608	\$0.1624	\$0.1641	\$0.1657	1.00%
Labor												3.00%
All Other Expense Categories												2.50%