



Benefit-Cost Analysis

*P&L Shortline Railroad Upgrade and Shuttle
Train Loader Facility Project*

Conducted by Regional Economist, Steven Peterson with assistance from Jackie Tee, Project Manager, Cooperative Agricultural Producers, Inc., (Co-Ag) for use by the Port of Whitman County in its TIGER3 Application for Discretionary Funding.

10/1/2011

METHODOLOGY

A benefit-cost analysis of the project was conducted by regional economist, Steven Peterson from University of Idaho and the assistance of Jackie Tee, Manager at Co-Agricultural Producers, Inc. (Co-Ag). This benefit-cost analysis adhered to the specifications outlined in the TIGER3 NOFA and Appendix A. The supporting documentation for the cost-benefit analysis can be viewed via the following web link: <http://www.portwhitman.com/tigergrant.php>.

- **Baselines and Alternatives.** The baseline assumption is that without the project, the P&L branch of shortline rail will eventually close. As a result, an estimated 16,368,000 bushels of grain will be hauled by truck from farm storage and grain terminals to the Whitman County Port of Central Ferry and shipped to Portland, Oregon, in barges. It is unlikely the shortline rail will continue to operate in the future without the project to bring it up to 286K compliance. The result will be increased trucking on the regional highways and a complete dependence on barge transportation of grain.
- **Affected Population.** There are three shipping companies on the P&L: Cooperative Agricultural Producers, Inc. (Co-Ag), Palouse Grain Growers, Inc., and Pacific Northwest Farmers' Cooperative, Inc. These companies will benefit from this project as well as the regional farmers in Stevens, Spokane, and Whitman Counties. The railroad operator, WIR and the BNSF will also benefit from the track improvements.
- **Discounting.** The systematic approach studied a 20-year timeline using both 3% and 7% discount rates starting in 2012 and ending in 2031.
- **Risk and Uncertainty.** Future fuel prices are uncertain. If environmental concerns were to dominate and the dams along the Snake River were breached, barge shipping options would be removed and the ports could close. Other uncertainty includes the assumption of the rail line closure if the improvements are not made. On July 15, 2010, the FRA required lines like the P&L to put together a Bridge Management Program (Ruling 49 CFR Part 237). This program has to be in place and implemented by September 2012. The bridges must be rated. Three years ago, WSDOT went through a cursory evaluation of the bridges on the P&L. The findings showed that many of the bridges were not 286K compatible. Under FRA regulations, without these repairs, the 110-car loader trains that BNSF prefers would not be able to run on this line. The effect would eventually cause closure of the line.
- **Costs.** A total project cost of \$22,280,882 was use to compare the costs of the whole project, including both the TIGER Discretionary Grant funding (\$5,905,000) and the private partner contribution (\$16,375,882).

- Types of Benefits. The benefit-cost analysis includes calculations for net benefits in: transportation/trucking, road damage, safety, and CO2 Emissions.

BENEFIT-COST SUMMARY

The analysis resulted in a benefit/cost ratio of 2.43 using a 3% discount rate and 1.44 using a 7% discount rate. The analysis compared two scenarios: continuation of the status quo, eventually resulting in track abandonment due to the state of disrepair and rehabilitation of the track as described in the project proposal.

The table below (Figure 1) presents a summary of the results.

Figure 1: Benefits/Costs Summary Total

Year	Baseline Costs	Baseline Benefits	Baseline B/C	Discount Rate 7%	Discount Rate 3%
				7%	3%
2011	\$ (22,280,882)	\$ -	\$ (22,280,882)	\$ (22,280,882)	\$ (22,280,882)
2012	\$ -	\$ 5,131,851	\$ 5,131,851	\$ 4,796,122	\$ 4,982,380
2013	\$ -	\$ 5,131,851	\$ 5,131,851	\$ 4,482,357	\$ 4,837,262
2014	\$ -	\$ 5,131,851	\$ 5,131,851	\$ 4,189,119	\$ 4,696,371
2015	\$ -	\$ 5,131,851	\$ 5,131,851	\$ 3,915,065	\$ 4,559,583
2016	\$ -	\$ 5,131,851	\$ 5,131,851	\$ 3,658,939	\$ 4,426,780
2017	\$ -	\$ 5,131,851	\$ 5,131,851	\$ 3,419,569	\$ 4,297,844
2018	\$ -	\$ 5,131,851	\$ 5,131,851	\$ 3,195,859	\$ 4,172,664
2019	\$ -	\$ 5,131,851	\$ 5,131,851	\$ 2,986,784	\$ 4,051,131
2020	\$ -	\$ 5,131,851	\$ 5,131,851	\$ 2,791,387	\$ 3,933,136
2021	\$ -	\$ 5,131,851	\$ 5,131,851	\$ 2,608,773	\$ 3,818,579
2022	\$ -	\$ 5,131,851	\$ 5,131,851	\$ 2,438,105	\$ 3,707,358
2023	\$ -	\$ 5,131,851	\$ 5,131,851	\$ 2,278,603	\$ 3,599,377
2024	\$ -	\$ 5,131,851	\$ 5,131,851	\$ 2,129,536	\$ 3,494,541
2025	\$ -	\$ 5,131,851	\$ 5,131,851	\$ 1,990,220	\$ 3,392,758
2026	\$ -	\$ 5,131,851	\$ 5,131,851	\$ 1,860,019	\$ 3,293,940
2027	\$ -	\$ 5,131,851	\$ 5,131,851	\$ 1,738,335	\$ 3,198,000
2028	\$ -	\$ 5,131,851	\$ 5,131,851	\$ 1,624,613	\$ 3,104,854
2029	\$ -	\$ 5,131,851	\$ 5,131,851	\$ 1,518,330	\$ 3,014,422
2030	\$ -	\$ 5,131,851	\$ 5,131,851	\$ 1,419,000	\$ 2,926,623
2031	\$ -	\$ 5,131,851	\$ 5,131,851	\$ 1,326,168	\$ 2,841,381
Total	\$ (22,280,882)	\$ 102,637,019	\$ 80,356,137	\$ 32,086,020 \$32,086,020	\$ 54,068,102 \$54,068,102
Benefit Cost Ratios				1.44	2.43

RESULTS

The baseline assumption is that without the project, the shortline rail will close. As a result, an estimated 16,368,000 bushels of grain will be hauled by truck from farm storage and grain terminals to the Whitman County Port of Central Ferry and shipped to Portland, Oregon, in barges. It is unlikely the shortline rail will continue to operate in the future without the project. The result will be increased trucking on the regional highways and a complete dependence on barge transportation of grain.

The project construction costs are \$22,280,882 and assumed to occur in 2011 (Year 0) of the period of analysis. It is assumed that additional yearly costs beyond year zero are negligible for the project. The stream of benefits from the project occurs from reduced grain trucking. The baseline real yearly benefits are \$5,131,851. We are estimating the benefit/cost analysis over a 20-year period. The cumulative real benefits are \$102,637,019, and the net of construction costs are \$80,356,137. Applying a 7% discount rate, the net benefits are \$32,086,020 and alternatively \$54,068,102 with a 3% discount rate. The benefit/cost ratio is 1.44 at 7% discount rate and 2.43 at 3% discount rate.

Transportation Savings

The greatest benefits from the project are the net transportation savings from reduced trucking of grain. The comparison is truck-to-train to Portland versus truck-to-barge to Portland.

- a. **Truck-to-Train:**
6,500,000 bushels are loaded and shipped directly from storage facilities along the shortline to the loading facility built as a component of this project. The rate is \$.05 per bushel ($6,500,000 * \$0.05 = \$325,000$). The balance of 9,868,000 bushels will be shipped by truck to the loading facility (1,150 bushels per truck) which equals 8,581 truckloads. Conversion to truck miles: $8,581 * 50$ miles (round trip) = 429,043.48 truck miles. Total costs equals: $429,043.48$ truck miles * \$2.645 per truck mile = \$1,134,820.
- b. **Train-to-Portland:**
From this facility the grain will be loaded onto unit trains and shipped to Portland, Oregon. Costs: $16,368,000 * \$0.48/\text{bushel} = \$7,911,200$.

Total yearly cost truck-to-train to Portland equals \$ 9,371,020.

- c. **Truck-to-Barge:**
16,368,000 bushels are shipped to the port at Central Ferry by truck. An average of 1,150 bushels per truck = 14,233 truckloads to ship the grain from farms and grain terminals to the port at Central Ferry (150 miles round trip). Converting to truck miles: $14,233$ truck loads * 150 miles = 2,134,957 truck miles. Total truck cost to port: $2,134,957$ truck miles * \$2.43 per truck mile = \$5,187,944 (Note \$2.43 per truck mile is used instead of \$2.645 used in the truck-to-train analysis because of less loading-unloading costs/mile).

d. Barge-to-Portland:

Costs: \$6,219,840 (barge rate + FSC)/16,368,000 bushels=\$0.38/bushel. Adding put-through costs: \$0.38/bushel + \$0.10 = \$0.48 per bushel. Total costs = 16,368,000 bushels *\$0.48 per bushels = \$7,856,640.

Total yearly cost truck- to-barge to Portland equals \$ 13,044,584.

Net yearly transportation savings equals \$3,673,564.

Safety Savings

Reduced truck traffic will save lives and reduce accidents. The estimated fatality costs are \$0.0213 per ton-mile for trucks versus \$0.0029 per ton-mile for rail. Source: *TTI Source: A Modal Comparison of Domestic Freight Transportation Effects on the General Public, Texas Transportation Institute, December 2007 (Amended March 2009).*

a. Costs of Shipping by Truck-to-Barge:

Estimated truck loads: 16,368,000 bushels/1,200 bushels per truck = 13,640 truck loads.

Convert to pounds: 1,150 bushes per truck * 60 lbs per bushel = 69,000 lbs.

Pounds to truck tons: 69,000 lbs/2000 lbs/ton=34.5 tons per truck.

13,640 truckloads * 34.5 tons =491,040 truck tons.

Tons to ton miles: 491,040 truck tons * 120 miles = 58,924,800 ton miles.

The 120 miles (truck-to-barge) is net of the (truck-to-rail) offsetting transportation which averages 30 miles when accounting for the train to train loading (thus 120 miles instead of 150 miles).

Fatality cost of \$0.0213 per ton-mile for trucks * 58,924,800 = \$1,255,098 savings per year from loading facility.

Barge travel from Central Ferry to Portland, Oregon risk of death is considered zero.

b. Costs of Shipping by Truck-to-Train:

Rail risk of death is netted out: 16,368,000 bushels equals 491,040 tons * 370 miles to Portland = 181,684,800 ton miles. Rail risk: 181,684,800 ton miles*\$0.0029 (rail fatality risk per ton mile) = \$526,886.

Net safety savings is \$728,212 per year.

Savings of Reduced Road Damage

The estimated road damage savings parameters was taken from a 2006 study which estimated the additional road damage from the closure of the shortline railroad: *Casavant, Ken, and Eric Jessup, Palouse River and Coulee City Railroad: Market Assessment, Washington State Department of Transportation Office of Freight Strategy and Policy, August 2006, p.8.*

The damage costs were estimated in the table below:

Casavant Report Road Damage Costs from P&L abandonment

	<u>Annual</u>	<u>Total</u>
State	\$ 198,667	\$ 2,980,000
Local	\$ 36,667	\$ 550,000
Total	\$ 235,334	\$ 3,530,000

In 2005 an estimated 22% of 19,913,890 bushels of regional wheat was hauled by P&L Rail = 4,381,056 bushels. The \$235,334 annual estimated road damage savings/ 4,382,056 bushels = \$0.0537/bushel in savings.

Converting to bushel-mile: \$0.053/150 miles = \$0.000358 bushel-mile savings.

Applying the savings parameters to current estimates: 16,368,000 bushels * \$ 0.000358 per bushel-mile * 120 miles (net of truck-to-rail)= \$ 703,382.

The yearly savings in road damage from the project is \$ 703,382.

Savings in C02 Emissions

The C02 parameters in the analysis were adapted from: *A Modal Comparison of Domestic Freight Transportation Effects on the General Public, Texas Transportation Institute, December 2007 (Amended March 2009), p.36*.

Two analyses were conducted. The emissions created from truck-to-barge to Portland were converted to C02 costs. This was compared to truck-to-train to Portland, Oregon in C02 costs. The social cost of C02 in the literature can reach as high as \$50 per ton. This analysis uses a conservative \$14/ton of C02 which has been utilized in similar transportation studies.

Truck-to-Barge to Portland

a. Truck-to-Barge

Truckloads conversion: 16,368,000 bushels/1,150 bushel per truck = 14,233 truckloads.

Ton-mile conversion: 60 pounds per bushel * 1,150 bushels per truck = 69,000 pounds per truck. There is an estimated 14,233 truck loads*69,000 lbs = 982,080,000 pounds.

Converting to tons /2000 pounds per ton=491,040 tons. The estimated miles are 150 miles (round trip) * 491,040 tons = 73,656,000 ton miles.

Tons of C02: 73,656,000 ton miles/13,964 ton miles per ton C02 =5,275 tons C02.

Cost of C02: 5,275 tons C02* \$14.00 per ton = \$73,846.

b. Barge to Portland

Conversion to ton miles: 16,368,000 bushels * 60 lbs = 982,080,000 pounds. Dividing by 2000 pounds/ton equals 491,040 tons. It is an estimated 300 miles to Portland, Oregon * 491,040 tons= 147,312,000 ton miles.

Tons of C02: 147,312,000 / 51,891 ton miles per ton C02 = 2,839 tons C02.

Costs of C02: 2,839 tons C02* \$14.00 per ton = \$ 9,744.

Grand Total Truck-to-Barge to Portland equals \$113,590.

Truck-to-Rail to Portland

a. Truck-to-Train

Ton mile conversion: $9,868,000 \text{ bushels} / 1,150 \text{ bushel per truck} = 8,581 \text{ truckloads}$ from farm to rail. Converting to pounds: $60 \text{ pounds per bushel} * 1,150 = 69,000 \text{ pounds per truck}$. Converting to tons: $8,581 \text{ truck loads} * 69,000 \text{ pounds} = 592,080,000 \text{ pounds}$. Converting to tons ($/2000$) equals $296,040 \text{ tons}$. The estimated trip from farm to rail is $50 \text{ miles (round trip)} * 491,040 \text{ tons} = 14,802,000 \text{ ton miles}$.
Tons of CO₂: $14,802,000 \text{ ton miles} / 13,964 \text{ ton miles per ton CO}_2 = 1,060 \text{ tons CO}_2$.
Costs of CO₂: $5,275 \text{ tons CO}_2 * \$14.00 \text{ per ton} = \$14,840$.

b. Train to Portland

Ton mile conversion: $16,368,000 \text{ bushels} * 60 \text{ lbs} = 982,080,000 \text{ pounds} / 2000 \text{ pounds per ton} = 491,040 \text{ tons}$. There is an estimated $390 \text{ miles trip to Portland, Oregon (including 20 miles of shortline)} * 491,040 \text{ tons} = 191,505,600 \text{ ton miles}$.
Tons of CO₂: $191,505,600 / 37,207 \text{ ton miles per ton CO}_2 = 5,147 \text{ tons CO}_2$.
Costs of CO₂: $5,147 \text{ tons CO}_2 * \$14.00 \text{ per ton} = \$ 72,058$.

Grand Total Truck-to-Train to Portland equals \$ 86,898.

Net annual CO₂ savings from project is \$ 26,692.

Total Annual Real Benefits and Costs from Project (Baseline-No Discount Rate)

The annual real benefits by category (undiscounted) are presented in Figure 2. The total undiscounted real benefits are \$102,637,019. They are broken out by net truck savings, road damage savings, safety savings, and C02 savings.

Figure 2: Total Benefits/Costs ---0 Discount Rate

Costs		Benefits					
Year	\$	22,280,882	Net Trucking Savings	Road Damage	Safety	C02	Total Benefits
2011	\$	(22,280,882)					\$ -
2012			\$ 3,673,564	\$ 703,382	\$ 728,212	\$ 26,692	\$ 5,131,851
2013			\$ 3,673,564	\$ 703,382	\$ 728,212	\$ 26,692	\$ 5,131,851
2014			\$ 3,673,564	\$ 703,382	\$ 728,212	\$ 26,692	\$ 5,131,851
2015			\$ 3,673,564	\$ 703,382	\$ 728,212	\$ 26,692	\$ 5,131,851
2016			\$ 3,673,564	\$ 703,382	\$ 728,212	\$ 26,692	\$ 5,131,851
2017			\$ 3,673,564	\$ 703,382	\$ 728,212	\$ 26,692	\$ 5,131,851
2018			\$ 3,673,564	\$ 703,382	\$ 728,212	\$ 26,692	\$ 5,131,851
2019			\$ 3,673,564	\$ 703,382	\$ 728,212	\$ 26,692	\$ 5,131,851
2020			\$ 3,673,564	\$ 703,382	\$ 728,212	\$ 26,692	\$ 5,131,851
2021			\$ 3,673,564	\$ 703,382	\$ 728,212	\$ 26,692	\$ 5,131,851
2022			\$ 3,673,564	\$ 703,382	\$ 728,212	\$ 26,692	\$ 5,131,851
2023			\$ 3,673,564	\$ 703,382	\$ 728,212	\$ 26,692	\$ 5,131,851
2024			\$ 3,673,564	\$ 703,382	\$ 728,212	\$ 26,692	\$ 5,131,851
2025			\$ 3,673,564	\$ 703,382	\$ 728,212	\$ 26,692	\$ 5,131,851
2026			\$ 3,673,564	\$ 703,382	\$ 728,212	\$ 26,692	\$ 5,131,851
2027			\$ 3,673,564	\$ 703,382	\$ 728,212	\$ 26,692	\$ 5,131,851
2028			\$ 3,673,564	\$ 703,382	\$ 728,212	\$ 26,692	\$ 5,131,851
2029			\$ 3,673,564	\$ 703,382	\$ 728,212	\$ 26,692	\$ 5,131,851
2030			\$ 3,673,564	\$ 703,382	\$ 728,212	\$ 26,692	\$ 5,131,851
2031			\$ 3,673,564	\$ 703,382	\$ 728,212	\$ 26,692	\$ 5,131,851
Total	\$	(22,280,882)	\$ 73,471,287	\$ 14,067,648	\$ 14,564,246	\$ 533,838	\$ 102,637,019

Total Annual Real Benefits and Costs from Project (Discount Rate 7%)

The annual real benefits by category (7% discount rate) are presented in Figure 3. The total discounted net benefits are \$32,068,020. They are broken out by net truck savings, road damage savings, safety savings, and CO2 savings.

Figure 3: Total Benefits/Costs ---7% Discount Rate

		Discount 7%					
Costs		Benefits					
Year	\$ 22,280,882	Net Trucking Savings	Road Damage	Safety	CO2	Total Benefits	Net Benefits
2011	\$ (22,280,882)					\$ -	\$ (22,280,882)
2012	\$	3,433,238	\$ 657,367	\$ 680,572	\$ 24,946	\$ 4,796,122	\$ 4,796,122
2013	\$	3,208,633	\$ 614,361	\$ 636,049	\$ 23,314	\$ 4,482,357	\$ 4,482,357
2014	\$	2,998,723	\$ 574,170	\$ 594,438	\$ 21,789	\$ 4,189,119	\$ 4,189,119
2015	\$	2,802,545	\$ 536,607	\$ 555,550	\$ 20,363	\$ 3,915,065	\$ 3,915,065
2016	\$	2,619,201	\$ 501,502	\$ 519,205	\$ 19,031	\$ 3,658,939	\$ 3,658,939
2017	\$	2,447,851	\$ 468,693	\$ 485,239	\$ 17,786	\$ 3,419,569	\$ 3,419,569
2018	\$	2,287,711	\$ 438,031	\$ 453,494	\$ 16,622	\$ 3,195,859	\$ 3,195,859
2019	\$	2,138,048	\$ 409,375	\$ 423,826	\$ 15,535	\$ 2,986,784	\$ 2,986,784
2020	\$	1,998,176	\$ 382,593	\$ 396,099	\$ 14,519	\$ 2,791,387	\$ 2,791,387
2021	\$	1,867,454	\$ 357,564	\$ 370,186	\$ 13,569	\$ 2,608,773	\$ 2,608,773
2022	\$	1,745,284	\$ 334,172	\$ 345,968	\$ 12,681	\$ 2,438,105	\$ 2,438,105
2023	\$	1,631,107	\$ 312,310	\$ 323,335	\$ 11,852	\$ 2,278,603	\$ 2,278,603
2024	\$	1,524,399	\$ 291,879	\$ 302,182	\$ 11,076	\$ 2,129,536	\$ 2,129,536
2025	\$	1,424,672	\$ 272,784	\$ 282,413	\$ 10,352	\$ 1,990,220	\$ 1,990,220
2026	\$	1,331,469	\$ 254,938	\$ 263,938	\$ 9,674	\$ 1,860,019	\$ 1,860,019
2027	\$	1,244,363	\$ 238,260	\$ 246,671	\$ 9,041	\$ 1,738,335	\$ 1,738,335
2028	\$	1,162,956	\$ 222,673	\$ 230,533	\$ 8,450	\$ 1,624,613	\$ 1,624,613
2029	\$	1,086,875	\$ 208,105	\$ 215,452	\$ 7,897	\$ 1,518,330	\$ 1,518,330
2030	\$	1,015,771	\$ 194,491	\$ 201,357	\$ 7,381	\$ 1,419,000	\$ 1,419,000
2031	\$	949,319	\$ 181,767	\$ 188,184	\$ 6,898	\$ 1,326,168	\$ 1,326,168
Total	\$ (22,280,882)	\$ 38,917,793	\$ 7,451,643	\$ 7,714,692	\$ 282,774	\$ 54,366,902	\$ 32,086,020

Total Annual Real Benefits and Costs from Project (Discount Rate 3%)

The annual real benefits by category (3% discount rate) are presented in Figure 4. The total discounted net benefits are \$54,086,102. They are broken out by net truck savings, road damage savings, safety savings, and CO2 savings.

Figure 4: Total Benefits/Costs ---3% Discount Rate

		Discount 3%							
Costs		Benefits							
Year	\$ 22,280,882	Net Trucking Savings	Road Damage	Safety	CO2	Total Benefits	Net Benefits		
2011	\$ (22,280,882)					\$ -	\$ (22,280,882)		
2012	\$	\$ 3,566,567	\$ 682,896	\$ 707,002	\$ 25,914	\$ 4,982,380	\$ 4,982,380		
2013	\$	\$ 3,462,687	\$ 663,005	\$ 686,410	\$ 25,160	\$ 4,837,262	\$ 4,837,262		
2014	\$	\$ 3,361,832	\$ 643,695	\$ 666,417	\$ 24,427	\$ 4,696,371	\$ 4,696,371		
2015	\$	\$ 3,263,914	\$ 624,946	\$ 647,007	\$ 23,715	\$ 4,559,583	\$ 4,559,583		
2016	\$	\$ 3,168,849	\$ 606,744	\$ 628,162	\$ 23,025	\$ 4,426,780	\$ 4,426,780		
2017	\$	\$ 3,076,552	\$ 589,072	\$ 609,866	\$ 22,354	\$ 4,297,844	\$ 4,297,844		
2018	\$	\$ 2,986,944	\$ 571,914	\$ 592,103	\$ 21,703	\$ 4,172,664	\$ 4,172,664		
2019	\$	\$ 2,899,946	\$ 555,257	\$ 574,858	\$ 21,071	\$ 4,051,131	\$ 4,051,131		
2020	\$	\$ 2,815,481	\$ 539,084	\$ 558,114	\$ 20,457	\$ 3,933,136	\$ 3,933,136		
2021	\$	\$ 2,733,477	\$ 523,383	\$ 541,858	\$ 19,861	\$ 3,818,579	\$ 3,818,579		
2022	\$	\$ 2,653,861	\$ 508,138	\$ 526,076	\$ 19,283	\$ 3,707,358	\$ 3,707,358		
2023	\$	\$ 2,576,564	\$ 493,338	\$ 510,753	\$ 18,721	\$ 3,599,377	\$ 3,599,377		
2024	\$	\$ 2,501,519	\$ 478,969	\$ 495,877	\$ 18,176	\$ 3,494,541	\$ 3,494,541		
2025	\$	\$ 2,428,659	\$ 465,019	\$ 481,434	\$ 17,646	\$ 3,392,758	\$ 3,392,758		
2026	\$	\$ 2,357,921	\$ 451,474	\$ 467,412	\$ 17,133	\$ 3,293,940	\$ 3,293,940		
2027	\$	\$ 2,289,244	\$ 438,325	\$ 453,798	\$ 16,634	\$ 3,198,000	\$ 3,198,000		
2028	\$	\$ 2,222,567	\$ 425,558	\$ 440,580	\$ 16,149	\$ 3,104,854	\$ 3,104,854		
2029	\$	\$ 2,157,832	\$ 413,163	\$ 427,748	\$ 15,679	\$ 3,014,422	\$ 3,014,422		
2030	\$	\$ 2,094,982	\$ 401,129	\$ 415,289	\$ 15,222	\$ 2,926,623	\$ 2,926,623		
2031	\$	\$ 2,033,964	\$ 389,446	\$ 403,194	\$ 14,779	\$ 2,841,381	\$ 2,841,381		
Total	\$ (22,280,882)	\$ 54,653,361	\$ 10,464,554	\$ 10,833,960	\$ 397,108	\$ 76,348,984	\$ 54,068,102		