PORT OF LEWISTON

Dock Expansion TIGER 2012 Grant Application

Benefit Cost Summary

Selection Criteria	Description	Inputs	Non Discounted Value	Net Present Value 7.0%	Net Present Value 3.0%
State of Good Repair Repair	Consistent with Regional Plans	Maintenance Preservation and Upgrade			
Livability	Increased Mobility	Time Travel Savings	$36,034,278	$16,742,000	$25,348,092
Economic Competitiveness	Fuel Cost Savings	Fuel Cost Savings	$52,317,420	$24,307,363	$36,802,368
Environmental Sustainability	Reduced Pollution	CO2 Cost Savings	$3,840,387	$1,709,248	$2,652,432
Safety	Reduced Collisions	Collision Cost Savings	$6,075,382	$2,822,703	$4,273,690
Total Costs	(Construction Costs $2,900,000 + NPV Annual Maintenance $198,567				
7.0% NPV	- Remaining Capital Value $904,467)			$2,194,099	
Total Costs	(Construction Costs $2,900,000 + NPV Annual Maintenance $299,650				
3.0% NPV	- Remaining Capital Value $1,937,865)				$1,261,785
Total Benefits				$45,581,313	$69,076,582
Net Present Value				$43,387,214	$67,814,797
Benefit to Cost Ratio 7.0% NPV			**(20.77 to 1)**	20.77	
Benefit to Cost Ratio 3.0% NPV			**(54.75 to 1)**		54.75

Benefit Cost Analysis Executive Summary

The Benefit Cost Analysis looks at the project from the standpoint of society as a whole, and accounts for the net benefits and net costs based on the criteria described in the TIGER Grant NOFA. Analysis of the project seeks to answer the questions, "Is the region, the state and the nation enhanced by the completion of this project?" The Benefit Cost Analysis addresses the issues of reduction of freight travel time, operating costs, emissions reductions and crash reduction.

Current Status & Problem to be Addressed	Change to Baseline / Alternatives	Types of Impacts	Population Affected by Impact	Economic Benefit	Summary of Results	Page Reference in BCA
35 year old Container Dock is not large enough to meet current demands and expand export and import opportunities	150' dock extension, mooring dolphin and fender system	Increased export and import capacity; time and fuel cost savings; State of Good Repair through the reduction of long-term maintenance and repair costs	Agricultural producers, timber manufacturers and energy industries	Monetized value of reduced travel times, fuel consumption, emissions and safety benefits	The benefits to cost analysis indicate a benefit of 54.75 to 1, at a 3.0% NPV	Pages. 1 - 12;

The Port of Lewiston is requesting TIGER Discretionary Grant funds in the amount of $1,300,000. TIGER Discretionary Grant funds requested for this project comprises 45% of the total dock extension construction costs with the remaining 55% of funds provided through state and local support.

Total construction project costs are estimated at $2,900,000. The Port of Lewiston has been awarded an Idaho Rural Community Block Grant, state supported funds, in the amount of $500,000 (engineering/design - $150,000, construction - $350,000). Local and in-kind funds have been provided by Nez Perce County for audit needs.

Planning, engineering and permitting for this project have been completed.

Total Construction Costs

Item	% of Project Cost	Total
ID Rural Community Block Grant Funds committed	12%	$350,000
Port Funds	43%	$1,250,000
Tiger Discretionary Grant Funds Requested	45%	$1,300,000
Total Project Cost		$2,900,000

Budget

Item	Rural Community Block Grant	Port Funds	TIGER Grant	Total
Construction	$350,000	$1,035,000	$1,300,000	$2,745,000
Engineering Construction Support and Testing		$215,000		$215,000
Total Budget	$350,000	$1,250,000	$1,300,000	$2,900,000

The life cycle of the dock expansion is expected to 50+ years; the Benefits Cost Analysis uses a 20 year forecast period per the TIGER Grant NOFA. Typical maintenance and operation costs of a dock is minimal; annual maintenance cost per year will provide funds for future replacement of the dock fender system and cover annual maintenance repairs such as painting.

The only alternative to this project is a no-build scenario. There are not any identifiable methods to increase dock capacity that do not include construction of additional berthing area.

Benefits – Long Term Outcomes

Long-Term Outcome	Types of Societal Benefits
Livability	Time Travel Savings Increased freight transportation options Accessibility to Port
Economic Competiveness	Fuel cost savings Time savings Increase export/import capacity Increase export/import opportunities
Safety	Safer working environment Reduced collisions
State of Good Repair	Support regional transportation and land use plans Preservation of national investments in maritime infrastructure
Environmental Sustainability	Reduced emissions Reduced highway surface damage

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Benefit Cost Summary

Selection Criteria	Description	Inputs	Non Discounted Value	Net Present Value 7.0%	Net Present Value 3.0%
State of Good Repair Repair	Consistent with Regional Plans	Maintenance Preservation and Upgrade			
Livability	Increased Mobility	Time Travel Savings	$36,034,278	$16,742,000	$25,348,092
Economic Competitiveness	Fuel Cost Savings	Fuel Cost Savings	$52,317,420	$24,307,363	$36,802,368
Environmental Sustainability	Reduced Pollution	CO2 Cost Savings	$3,840,387	$1,709,248	$2,652,432
Safety	Reduced Collisions	Collision Cost Savings	$6,075,382	$2,822,703	$4,273,690
Total Costs 7.0% NPV	(Construction Costs $2,900,000 + NPV Annual Maintenance $198,567 - Remaining Capital Value $904,467)			$2,194,099	
Total Costs 3.0% NPV	(Construction Costs $2,900,000 + NPV Annual Maintenance $299,650 - Remaining Capital Value $1,937,865)				$1,261,785
Total Benefits				$45,581,313	$69,076,582
Net Present Value				$43,387,214	$67,814,797
Benefit to Cost Ratio 7.0% NPV			(20.77 to 1)	20.77	
Benefit to Cost Ratio 3.0% NPV			(54.75 to 1)		54.75

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Dock Expansion TIGER 2012 Grant Application

Benefit Cost Summary

		NPV of 7.0%		NPV of 3.0%	
	Present Value of Trucking Time Benefit	$21,175,677		$32,060,865	
	Present Value of Increased Barge Time Cost	(4,433,677)		(6,712,773)	
1	Net Present Value of Time Benefit		$16,742,000		$25,348,092
	Present Value of Trucking Fuel Benefit	$32,866,293		$49,760,949	
	Present Value of Increased Barge Fuel Cost	(8,558,930)		(12,958,580)	
2	Net Present Value of Fuel Benefit		$24,307,363		$36,802,368
	Present Value of Trucking Carbon Reduction Emissions Benefit	$2,311,095		$3,586,387	
	Present Value of Increased Barge Carbon Emission Cost	(601,848)		(933,955)	
3	Net Present Value of Carbon Reduction Emission Benefit		$1,709,248		$2,652,432
	Present Value of Trucking Reduced Collision Benefit	$2,822,759		$4,273,775	
	Present Value of Increased Barge Collision Cost	(56)		(85)	
4	Net Present Value of Reduced Collision Benefit		$2,822,703		$4,273,690
5	Net Present Value of All Benefits		$45,581,313		$69,076,582
6	Present Value of Maintenance and Operation Cost		$198,567		$299,650
7	Present Value of Construction Costs		$2,900,000		$2,900,000
8	Less Present Value of Remaining Capital Value		($904,467)		($1,937,865)
9	Net Present Value of All Costs		$2,194,100		$1,261,785
10	Net Present Value = 5 - 9		$43,387,213		$67,814,797
11	Benefit / Cost Ratio = 5 / 9	**(20.77 to 1.00)**	20.77	**(54.75 to 1.00)**	54.75

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Dock Expansion TIGER 2012 Grant Application

Present Value of Trucking Time Benefit

Year	Calendar Year	Annual Truck Miles Saved	Annual Number of Trips Saved	Annual Number of Hours Saved at 6.45 Hours Per Trip	Annual Payroll Dollars Saved for Travel Time at $23.70 Per Hr.	NPV of Travel Time Savings 7.0%	NPV of Travel Time Savings 3.0%
1	2013	2,130,000	6,000	38,700	$917,190	$857,187	$890,476
2	2014	2,485,000	7,000	45,150	1,070,055	934,627	1,008,629
3	2015	2,840,000	8,000	51,600	1,222,920	998,267	1,119,145
4	2016	3,550,000	10,000	64,500	1,528,650	1,166,200	1,358,186
5	2017	3,798,500	10,700	69,015	1,635,656	1,166,200	1,410,931
6	2018	4,064,395	11,449	73,846	1,750,151	1,166,200	1,465,724
7	2019	4,348,750	12,250	79,013	1,872,596	1,166,159	1,522,592
8	2020	4,653,340	13,108	84,547	2,003,754	1,166,203	1,581,782
9	2021	4,979,230	14,026	90,468	2,144,084	1,166,240	1,643,262
10	2022	5,327,840	15,008	96,802	2,294,198	1,166,254	1,707,099
11	2023	5,700,945	16,059	103,581	2,454,859	1,166,286	1,773,442
12	2024	6,099,965	17,183	110,830	2,626,679	1,166,277	1,842,300
13	2025	6,282,790	17,698	114,152	2,705,405	1,122,647	1,842,249
14	2026	6,470,940	18,228	117,571	2,786,423	1,080,623	1,842,154
15	2027	6,665,125	18,775	121,099	2,870,040	1,040,235	1,842,170
16	2028	6,864,990	19,338	124,730	2,956,103	1,001,334	1,842,146
17	2029	7,070,890	19,918	128,471	3,044,765	963,895	1,842,133
18	2030	7,283,180	20,516	132,328	3,136,178	927,882	1,842,174
19	2031	7,501,505	21,131	136,295	3,230,190	893,175	1,842,132
20	2032	7,726,575	21,765	140,384	3,327,107	859,788	1,842,138
					$45,577,005	$21,175,677	$32,060,865

ASSUMPTIONS

- 355 Mile Trip With a 55 MPH Average Takes 6.45 Hours Per Trip
- We Did Not Adjust for Load\Unload Time as The Barges Will Have Load\Unload Time as Well
- The Payroll Cost Per Hour Came from the Revised Departmental Guidance on Valuation of Travel Time in Economic Analysis; Table 3 (Revision 2)
- We Used a 7.0% and a 3.0% Discount Rate
- There May Be Immaterial Mathematical Inconsistencies Due to Rounding of Fractional Amounts

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Dock Expansion TIGER 2012 Grant Application

Present Value of Increased Barge Time Cost

Year	Calendar Year	Annual Truck Miles Saved	Annual Number of Trips Saved	Annual Number of Barge Trips Per Year	Annual Number of Hours For the Barge Trips	Annual Payroll Dollars Incurred for Travel Time at $51.21 Per Hr.	NPV of Travel Time Savings 7.0%	NPV of Travel Time Savings 3.0%
1	2013	2,130,000	6,000	75	3,750	$192,038	$179,474	$186,444
2	2014	2,485,000	7,000	88	4,375	224,044	195,688	211,183
3	2015	2,840,000	8,000	100	5,000	256,050	209,013	234,322
4	2016	3,550,000	10,000	125	6,250	320,063	244,174	284,371
5	2017	3,798,500	10,700	134	6,688	342,467	244,174	295,415
6	2018	4,064,395	11,449	143	7,156	366,440	244,174	306,887
7	2019	4,348,750	12,250	153	7,656	392,077	244,166	318,794
8	2020	4,653,340	13,108	164	8,193	419,538	244,175	331,187
9	2021	4,979,230	14,026	175	8,766	448,920	244,183	344,060
10	2022	5,327,840	15,008	188	9,380	480,350	244,185	357,425
11	2023	5,700,945	16,059	201	10,037	513,988	244,192	371,316
12	2024	6,099,965	17,183	215	10,739	549,963	244,190	385,733
13	2025	6,282,790	17,698	221	11,061	566,447	235,055	385,723
14	2026	6,470,940	18,228	228	11,393	583,410	226,256	385,703
15	2027	6,665,125	18,775	235	11,734	600,917	217,800	385,706
16	2028	6,864,990	19,338	242	12,086	618,937	209,655	385,701
17	2029	7,070,890	19,918	249	12,449	637,500	201,816	385,698
18	2030	7,283,180	20,516	256	12,823	656,640	194,276	385,707
19	2031	7,501,505	21,131	264	13,207	676,324	187,009	385,698
20	2032	7,726,575	21,765	272	13,603	696,616	180,019	385,699
						$9,542,727	$4,433,677	$6,712,773

ASSUMPTIONS

- It Takes 355 Miles Per Barge Trip
- We Did Not Adjust for Load\Unload Time as The Barges Will Have Load\Unload Time as Well
- We Used a 7.0% and a 3.0% Discount Rate
- The Average Barge Trip has One Deck and One Captain and Takes 50 Hours
  (Deck Hand $17.32 per Hour + Captain $33.89 Per Hour = $51.21 Per Hour Average)
- Deck Hands
  1-4 years $19,271 - $52,775 Average $36,023 or $17.32 Per Hour
  http://www.payscale.com/research/US/Job=Deckhand/Salary
- Tug Captains
  Salary Range $33.89 / Hour
  The U.S. Bureau of Labor Statistics includes tugboat captains in its category of captains, mates and pilots of water vessels. These professionals command the operations of ships and other water vessels and may supervise workers. Their average salary as of May 2010 was $33.89 per hour, or $70,500 per year.
  http://www.ehow.com/info_7743256_average-salary-deckhand.html
- There May Be Immaterial Mathematical Inconsistencies Due to Rounding of Fractional Amounts

PORT OF LEWISTON

Dock Expansion TIGER 2012 Grant Application

Present Value of Trucking Fuel Benefit

Year	Calendar Year	Annual Truck Miles Saved	Gallons of Fuel Saved (Avg. 6 MPG)	Annual Fuel Cost Savings (Cost $4.01\Gal)	NPV of Fuel Savings 7.0%	NPV of Fuel Savings 3.0%
1	2013	2,130,000	355,000	$1,423,550	$1,330,421	$1,382,087
2	2014	2,485,000	414,167	1,660,808	1,450,614	1,565,471
3	2015	2,840,000	473,333	1,898,067	1,549,388	1,737,000
4	2016	3,550,000	591,667	2,372,583	1,810,032	2,108,010
5	2017	3,798,500	633,083	2,538,664	1,810,032	2,189,874
6	2018	4,064,395	677,399	2,716,371	1,810,032	2,274,918
7	2019	4,348,750	724,792	2,906,415	1,809,969	2,363,181
8	2020	4,653,340	775,557	3,109,982	1,810,038	2,455,049
9	2021	4,979,230	829,872	3,327,785	1,810,095	2,550,470
10	2022	5,327,840	887,973	3,560,773	1,810,116	2,649,550
11	2023	5,700,945	950,158	3,810,132	1,810,166	2,752,520
12	2024	6,099,965	1,016,661	4,076,810	1,810,152	2,859,392
13	2025	6,282,790	1,047,132	4,198,998	1,742,435	2,859,313
14	2026	6,470,940	1,078,490	4,324,745	1,677,211	2,859,166
15	2027	6,665,125	1,110,854	4,454,525	1,614,525	2,859,190
16	2028	6,864,990	1,144,165	4,588,102	1,554,149	2,859,153
17	2029	7,070,890	1,178,482	4,725,711	1,496,039	2,859,133
18	2030	7,283,180	1,213,863	4,867,592	1,440,145	2,859,197
19	2031	7,501,505	1,250,251	5,013,506	1,386,276	2,859,132
20	2032	7,726,575	1,287,763	5,163,928	1,334,457	2,859,142
				$70,739,047	$32,866,293	$49,760,949

ASSUMPTIONS

- 355 Miles Per Trip
- 6 Miles Per Gallon is the Average MPG of the Trucks
- We Used $4.01 Per Gallon for Fuel
- We Did Not Adjust the Dollar Amounts for Inflation Over Time
- We Used a 7.0% and a 3.0% Discount Rate
- There May Be Immaterial Mathematical Inconsistencies Due to Rounding of Fractional Amounts

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Present Value of Increased Barge Fuel Cost

Year	Calendar Year	Number of TEU (Loads) Per Year	Annual Number of Barge Trips Per Year	Annual Number of Barge Miles Per Year	Annual Number in Tons of Barge Freight	Annual Gallons of Barge Fuel Used	Annual Cost of Barge Fuel Used	NPV of Fuel Used 7.0%	NPV of Fuel Used 3.0%
1	2013	6,000	75	26,625	150,000	92,448	$370,716	$346,464	$359,919
2	2014	7,000	88	31,063	175,000	107,856	432,502	377,764	407,675
3	2015	8,000	100	35,500	200,000	123,264	494,288	403,486	452,344
4	2016	10,000	125	44,375	250,000	154,080	617,860	471,363	548,961
5	2017	10,700	134	47,481	267,500	164,865	661,110	471,363	570,280
6	2018	11,449	143	50,805	286,225	176,406	707,388	471,363	592,426
7	2019	12,250	153	54,359	306,250	188,748	756,879	471,346	615,412
8	2020	13,108	164	58,167	327,700	201,968	809,891	471,364	639,336
9	2021	14,026	175	62,240	350,650	216,112	866,611	471,379	664,185
10	2022	15,008	188	66,598	375,200	231,243	927,285	471,384	689,987
11	2023	16,059	201	71,262	401,475	247,437	992,222	471,397	716,802
12	2024	17,183	215	76,250	429,575	264,755	1,061,669	471,394	744,633
13	2025	17,698	221	78,535	442,450	272,691	1,093,489	453,759	744,613
14	2026	18,228	228	80,887	455,700	280,857	1,126,236	436,774	744,574
15	2027	18,775	235	83,314	469,375	289,285	1,160,033	420,449	744,581
16	2028	19,338	242	85,812	483,450	297,960	1,194,818	404,726	744,571
17	2029	19,918	249	88,386	497,950	306,896	1,230,654	389,594	744,566
18	2030	20,516	256	91,040	512,900	316,110	1,267,602	375,038	744,583
19	2031	21,131	264	93,769	528,275	325,586	1,305,600	361,009	744,566
20	2032	21,765	272	96,582	544,125	335,355	1,344,773	347,515	744,568
							$18,421,627	$8,558,930	$12,958,580

ASSUMPTIONS

- The Average Number of Truck Loads (TEU) Per Barge is 80
- The Trip Miles for the Barge is 355 (This is the Same as the Trucks)
- The Average Tons per TEU is 25
- The Average Fuel Consumption for the Barge is 576 Mile Per Ton Per Gallon
- A Barge Uses 1 Gallon of Fuel to Move 1 Ton of Cargo 576 Miles
  (1 Ton / 576 x 960 Tons Per Barge Load X 355 Mile Per Round Trip = 591.66 Gallons of Fuel Per Barge Trip)
- We Used $4.01 Per Gallon for Fuel
- We Did Not Adjust the Dollar Amounts for Inflation Over Time
- We Used a 7.0% and a 3.0% Discount Rate
- There May Be Immaterial Mathematical Inconsistencies Due to Rounding of Fractional Amounts

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Present Value of Trucking Carbon Reduction Emissions Benefit

Year	Calendar Year	Annual Truck Miles Saved	Annual Gallons of Fuel Saved	Annual Metric Tons of CO2 Saved	CO2 Emissions Price Per Metric Ton	Annual Dollars Saved Due to Reduced CO2 Emissions Per Metric Ton	NPV of CO2 Emissions Savings 7.0%	NPV of CO2 Emissions Savings 3.0%
1	2013	2,130,000	355,000	3,574	$22.80	$81,491	$76,159	$79,117
2	2014	2,485,000	414,167	4,170	23.30	97,157	84,861	91,580
3	2015	2,840,000	473,333	4,766	23.80	113,420	92,584	103,795
4	2016	3,550,000	591,667	5,957	24.30	144,753	110,431	128,611
5	2017	3,798,500	633,083	6,374	24.80	158,073	112,704	136,355
6	2018	4,064,395	677,399	6,820	25.30	172,548	114,976	144,506
7	2019	4,348,750	724,792	7,297	25.80	188,268	117,244	153,079
8	2020	4,653,340	775,557	7,808	26.30	205,359	119,521	162,112
9	2021	4,979,230	829,872	8,355	27.00	225,590	122,706	172,896
10	2022	5,327,840	887,973	8,940	27.60	246,748	125,434	183,604
11	2023	5,700,945	950,158	9,566	28.30	270,724	128,619	195,577
12	2024	6,099,965	1,016,661	10,236	28.90	295,814	131,345	207,478
13	2025	6,282,790	1,047,132	10,543	29.60	312,059	129,494	212,497
14	2026	6,470,940	1,078,490	10,858	30.20	327,920	127,173	216,794
15	2027	6,665,125	1,110,854	11,184	30.90	345,589	125,257	221,820
16	2028	6,864,990	1,144,165	11,519	31.50	362,864	122,915	226,125
17	2029	7,070,890	1,178,482	11,865	32.10	380,866	120,572	230,430
18	2030	7,283,180	1,213,863	12,221	32.80	400,856	118,599	235,460
19	2031	7,501,505	1,250,251	12,588	33.40	420,424	116,251	239,762
20	2032	7,726,575	1,287,763	12,965	34.10	442,114	114,251	244,788
						$5,192,636	$2,311,095	$3,586,387

ASSUMPTIONS

- CO_2 Emissions From a Gallon of Diesel = 2,778 Grams x 0.99 x (44/12) = 10,084 Grams = 10.1 kg/Gallon = 22.2 Pounds/Gallon/2205 Pounds Per Ton; EPA - Office of Transportation; Average Carbon Dioxide Emissions Resulting from Gasoline and Diesel Fuel, 2005 page 2; http://www.epa.gov/otaq/climate/420f05001.pdf
- 6 Miles Per Gallon is the Average MPG of the Trucks
- We Used Cost Per Metric Ton for the Cost of Carbon as Shown in the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866 (February 2010)
- We Used a 7.0% and a 3.0% Discount Rate
- There May Be Immaterial Mathematical Inconsistencies Due to Rounding of Fractional Amounts

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Dock Expansion TIGER 2012 Grant Application

Present Value of Increased Barge Carbon Emission Cost

Year	Calendar Year	Number of TEU (Loads) Per Year	Annual Number of Barge Trips Per Year	Annual Number of Barge Miles Per Year	Annual Number in Tons of Barge Freight	Annual Gallons of Barge Fuel Used	Annual Metric Tons of CO2 Generated	CO2 Emissions Price Per Metric Ton	Annual Dollars Due to Increased CO2 Emissions Per Metric Ton	NPV of CO2 Emissions Costs 7.0%	NPV of CO2 Emissions Costs 3.0%
1	2013	6,000	75	26,625	150,000	92,448	931	$22.80	$21,222	$19,833	$20,603
2	2014	7,000	88	31,063	175,000	107,856	1,086	23.30	25,301	22,099	23,849
3	2015	8,000	100	35,500	200,000	123,264	1,241	23.80	29,536	24,110	27,030
4	2016	10,000	125	44,375	250,000	154,080	1,551	24.30	37,696	28,758	33,493
5	2017	10,700	134	47,481	267,500	164,865	1,660	24.80	41,165	29,350	35,509
6	2018	11,449	143	50,805	286,225	176,406	1,776	25.30	44,934	29,942	37,632
7	2019	12,250	153	54,359	306,250	188,748	1,900	25.80	49,028	30,532	39,864
8	2020	13,108	164	58,167	327,700	201,968	2,033	26.30	53,479	31,125	42,217
9	2021	14,026	175	62,240	350,650	216,112	2,176	27.00	58,747	31,955	45,025
10	2022	15,008	188	66,598	375,200	231,243	2,328	27.60	64,257	32,665	47,813
11	2023	16,059	201	71,262	401,475	247,437	2,491	28.30	70,501	33,495	50,931
12	2024	17,183	215	76,250	429,575	264,755	2,666	28.90	77,035	34,204	54,031
13	2025	17,698	221	78,535	442,450	272,691	2,745	29.60	81,265	33,722	55,338
14	2026	18,228	228	80,887	455,700	280,857	2,828	30.20	85,396	33,118	56,457
15	2027	18,775	235	83,314	469,375	289,285	2,913	30.90	89,997	32,619	57,766
16	2028	19,338	242	85,812	483,450	297,960	3,000	31.50	94,496	32,009	58,887
17	2029	19,918	249	88,386	497,950	306,896	3,090	32.10	99,184	31,399	60,008
18	2030	20,516	256	91,040	512,900	316,110	3,183	32.80	104,389	30,885	61,318
19	2031	21,131	264	93,769	528,275	325,586	3,278	33.40	109,486	30,274	62,438
20	2032	21,765	272	96,582	544,125	335,355	3,376	34.10	115,134	29,753	63,747
									$1,352,249	$601,848	$933,955

ASSUMPTIONS

- The Average Number of Truck Loads (TEU) Per Barge is 80
- The Trip Miles for the Barge is 355 (This is the Same as the Trucks)
- The Average Tons per TEU is 25
- The Average Fuel Consumption for the Barge is 576 Mile Per Ton Per Gallon
- A Barge Uses 1 Gallon of Fuel to Move 1 Ton of Cargo 576 Miles
  (1 Ton / 576 x 2,000 Tons Per Barge Load X 355 Mile Per Round Trip = 1232.64 Gallons of Fuel Per Barge Trip)
- CO_2 Emissions From a Gallon of Diesel = 2,778 Grams x 0.99 x (44/12) = 10,084 Grams = 10.1 kg/Gallon = 22.2 Pounds/Gallon/2205 Pounds Per Ton; EPA - Office of Transportation; Average Carbon Dioxide Emissions Resulting from Gasoline and Diesel Fuel, 2005 page 2; http://www.epa.gov/otaq/climate/420f05001.pdf
- We Did Not Adjust the Dollar Amounts for Inflation Over Time
- We Used a 7.0% and a 3.0% Discount Rate
- The Projected Growth Rate for Years 13 thru 20 is 3%, As the Growth Rate Equals the Discount Rate the NPV of the CO2 Emission will Not Increase Which it Shows by Staying Consistent at $40,009 to $40,005 for the Last 9 Years
- There May Be Immaterial Mathematical Inconsistencies Due to Rounding of Fractional Amounts

PORT OF LEWISTON

Dock Expansion TIGER 2012 Grant Application

Present Value of Trucking Reduced Collision Benefit

Year	Calendar Year	Annual Truck Miles Saved	Reduced Accidents @ .63 Per Million Miles Traveled	Annual Cost of Truck Collision Savings $91,112 Avg. Cost	NPV of Collision Savings 7.0%	NPV of Collision Savings 3.0%
1	2013	2,130,000	1.342	$122,263	$114,265	$118,702
2	2014	2,485,000	1.566	142,640	124,588	134,452
3	2015	2,840,000	1.789	163,018	133,071	149,184
4	2016	3,550,000	2.237	203,772	155,457	181,049
5	2017	3,798,500	2.393	218,036	155,457	188,080
6	2018	4,064,395	2.561	233,299	155,457	195,384
7	2019	4,348,750	2.740	249,621	155,451	202,964
8	2020	4,653,340	2.932	267,104	155,457	210,855
9	2021	4,979,230	3.137	285,811	155,462	219,050
10	2022	5,327,840	3.357	305,821	155,464	227,560
11	2023	5,700,945	3.592	327,237	155,468	236,403
12	2024	6,099,965	3.843	350,141	155,467	245,582
13	2025	6,282,790	3.958	360,636	149,651	245,575
14	2026	6,470,940	4.077	371,436	144,049	245,563
15	2027	6,665,125	4.199	382,582	138,665	245,565
16	2028	6,864,990	4.325	394,054	133,480	245,562
17	2029	7,070,890	4.455	405,873	128,489	245,560
18	2030	7,283,180	4.588	418,059	123,688	245,565
19	2031	7,501,505	4.726	430,591	119,062	245,560
20	2032	7,726,575	4.868	443,510	114,611	245,561
				$6,075,503	$2,822,759	$4,273,775

ASSUMPTIONS

- The Value of Collision Reduction Based Upon 2001-2003 Average Costs of Truck Crashes
  Source: Ted Miller, Eduard Zaloshnja, Rebecca Spicer, Revised Cost of Large Truck and Bus Involved Crashes (2006), Adjusted to 2005 Dollars; US Department of Transportation Federal Motor Carrier Safety Administration Commercial Motor Vehicle Facts, Nov 2007
- We Used a 7.0% and a 3.0% Discount Rate
- There May Be Immaterial Mathematical Inconsistencies Due to Rounding of Fractional Amounts

PORT OF LEWISTON

Dock Expansion TIGER 2012 Grant Application

Present Value of Increased Barge Collision Cost

Year	Calendar Year	Number of TEU (Loads) Per Year	Annual Number of Barge Trips Per Year	Annual Number of Barge Miles Per Year	Increased Accidents @ .028 for Every Billion Miles Collisions	Annual Cost of Barge Collision Incurred at an $91,112 Ave Cost	NPV of Collision Savings 7.0%	NPV of Collision Savings 3.0%
1	2013	6,000	75	26,625	0.000027	$2.43	$2.27	$2.36
2	2014	7,000	88	31,063	0.000031	2.83	2.47	2.67
3	2015	8,000	100	35,500	0.000036	3.23	2.64	2.96
4	2016	10,000	125	44,375	0.000044	4.04	3.08	3.59
5	2017	10,700	134	47,481	0.000047	4.33	3.08	3.73
6	2018	11,449	143	50,805	0.000051	4.63	3.08	3.88
7	2019	12,250	153	54,359	0.000054	4.95	3.08	4.03
8	2020	13,108	164	58,167	0.000058	5.30	3.08	4.18
9	2021	14,026	175	62,240	0.000062	5.67	3.08	4.35
10	2022	15,008	188	66,598	0.000067	6.07	3.08	4.52
11	2023	16,059	201	71,262	0.000071	6.49	3.08	4.69
12	2024	17,183	215	76,250	0.000076	6.95	3.08	4.87
13	2025	17,698	221	78,535	0.000079	7.16	2.97	4.87
14	2026	18,228	228	80,887	0.000081	7.37	2.86	4.87
15	2027	18,775	235	83,314	0.000083	7.59	2.75	4.87
16	2028	19,338	242	85,812	0.000086	7.82	2.65	4.87
17	2029	19,918	249	88,386	0.000088	8.05	2.55	4.87
18	2030	20,516	256	91,040	0.000091	8.29	2.45	4.87
19	2031	21,131	264	93,769	0.000094	8.54	2.36	4.87
20	2032	21,765	272	96,582	0.000097	8.80	2.27	4.87
						$121	$56	$85

ASSUMPTIONS

- The Value of the Increased Barge Collision Cost was Set at $91,121, the Same as the Truck Collision Cost as a Result of Non Availability of Barge Collision Cost Statistics
- The Increased Cost of Barge Collision is .028 for Each Billion Ton Miles
- We Used a 7.0% and a 3.0% Discount Rate
- As Referred to Above the Value of the Costs of Truck Crashes was $91,112
- There May Be Immaterial Mathematical Inconsistencies Due to Rounding of Fractional Amounts

PORT OF LEWISTON

Dock Expansion TIGER 2012 Grant Application

Present Value of Maintenance and Operation Cost

Year	Calendar Year	Annual Maintenance Cost	NPV of Annual Maintenance Cost 7.0%	NPV of Annual Maintenance Cost 3.0%
1	2013	$11,000	$10,280	$10,680
2	2014	11,000	9,608	10,369
3	2015	11,000	8,979	10,067
4	2016	11,000	8,392	9,773
5	2017	11,000	7,843	9,489
6	2018	20,000	13,327	16,750
7	2019	20,000	12,455	16,262
8	2020	20,000	11,640	15,788
9	2021	20,000	10,879	15,328
10	2022	20,000	10,167	14,882
11	2023	25,000	11,877	18,061
12	2024	25,000	11,100	17,534
13	2025	25,000	10,374	17,024
14	2026	25,000	9,695	16,528
15	2027	25,000	9,061	16,047
16	2028	25,000	8,468	15,579
17	2029	30,000	9,497	18,150
18	2030	30,000	8,876	17,622
19	2031	30,000	8,295	17,109
20	2032	30,000	7,753	16,610
		$425,000	$198,567	$299,650

ASSUMPTIONS

- We Did Not Adjust the Dollar Amounts for Inflation Over Time
- We Used a 7.0% and a 3.0% Discount Rate
- The Annual Maintenance Cost Per Year Will Provide Funds for Replacing the Dock Fendering System and Cover the Small Annual Maintenance Repairs
- There May Be Immaterial Mathematical Inconsistencies Due to Rounding of Fractional Amounts

PORT OF LEWISTON

Dock Expansion TIGER 2012 Grant Application

Present Value of Remaining Capital Value

Project Life	Calendar Year	Remaining Capital Value in 20 Years	NPV of Remaining Capital Value 7.0%	NPV of Remaining Capital Value 3.0%
20	2032	$3,500,000	$904,467	$1,937,865
		$3,500,000	$904,467	$1,937,865

ASSUMPTIONS

- We Did Not Adjust the Dollar Amounts for Inflation Over Time
- We Used a 7.0% and a 3.0% Discount Rate
- The Remaining Capital Value of the Project in 20 Years Has Been Set at $3,500,000
- There May Be Immaterial Mathematical Inconsistencies Due to Rounding of Fractional Amounts
  of Fractional Amounts