



LORDSTOWN

SMART LOGISTICS HUB

USDOT BUILD Grant
BCA Narrative
May 2020



WESTERN RESERVE
PORT AUTHORITY

PROJECT COSTS

Project costs by project development category are summarized below:

Project Cost Breakdown by Development Category		
Category	Cost	Percent of Total Project
Capital Costs	\$21,152,338	66.4%
Technology Demonstration Costs	\$7,521,122	23.6%
Design & Construction Administration	\$3,172,851	10.0%
Total Project Development Cost:	\$31,846,310	

Project costs by project development category and project component are summarized below:

Project Cost Breakdown by Development Category & Component				
Category	Capital Cost	Technology Demonstration Cost	Total Cost	Percent of Total Project
Intermodal Connection	\$8,494,882	\$0	\$8,494,882	26.7%
Automated Freight Shuttle & Fiber Optic	\$3,151,850	\$1,000,000	\$4,151,850	13.0%
Inductive Electric Charging	\$4,234,271	\$6,161,679	\$10,395,950	32.6%
Future focused Transfer Yard	\$5,271,335	\$359,443	\$5,630,779	17.7%
Design & Construction Administration			\$3,172,851	10.0%
Total Project Development Cost:			\$31,846,310	

Detailed cost information by line item is provided with the supplementary information at:

<https://neodfa.org/build-2-grant/lordstownsmartlogistics/>

SOURCE & AMOUNT OF PROJECT FUNDS

The total project cost is \$31,846,310. The BUILD funding request is \$24,950,502. A 21.7% non-federal match of \$6,895,808 is committed to the project. There are no other federal funds committed to the project. The source and amount of project funds are summarized below:

Project Funding Sources		
Funding Category	Funding Amount	Percent of Total Project
Non-Federal Funds (Match)	\$6,895,808	21.7%
BUILD Request	\$24,950,502	78.3%
Committed Federal Funds	\$0	0.0%
Total Project Cost:	\$31,846,310	

Safety

Decrease in Truck Crashes

Safety benefits from the proposed project resulting from an expected crash reduction are calculated by monetizing the decreased shipping costs being achieved based upon (1) rail transportation being safer than trucking, and (2) automation of a freight circulator reducing crashes caused by driver error.

High-speed truck crashes are generally fatal and severe in nature, so the focus of this benefit cost analysis for safety is based only on fatal and severe crashes. Additional benefits can be expected from reductions in less severe crash types.

Safety benefits are estimated at \$7,392,533 in total over the 20 years after project construction is completed. These calculations are based upon the anticipated reduction of fatalities and injury crashes due to the use of rail versus truck along the 66-mile Cleveland to Lordstown freight route.

State of Good Repair

Reduced Pavement Maintenance

The Lordstown Smart Logistics Hub will result in modal shift from truck to rail which will reduce the damage of heavy freight loads on Interstate, state highway, and local road pavement and bridges. Heavy trucks are the primary source of road damage due to the stresses imposed by heavy axle loads. A highly desirable outcome for the state of good repair of the highway system is achieved through the reduction of truck vehicle miles traveled.

Virtually all pavement damage is created by heavy trucks, but the cost of repair is paid for by fuel taxes imposed on the public at large. Though increased rail use will increase track maintenance costs, the burden of these maintenance costs rest on the railroads and their shareholders. This project places the cost of maintenance on those most responsible for wear.

An intermodal connection at the Ohio Commerce Center results in a reduction of 2.64 million truck highway miles driven per year. This corresponds to a projected total savings of \$3,467,332 in road maintenance over the 20-year post-construction analysis period.

Economic Competitiveness

Quantifiable efficiencies in transportation costs are realized by monetizing the reduction in shipping costs due to rail transportation being more cost effective than trucking in two key areas:

- Travel Time (vehicle operators) Savings
- Vehicle Operating (fuel and vehicle maintenance) Savings

The new intermodal connection in Lordstown will enable shippers to achieve significant savings in both travel time and fuel costs versus the current “last-mile” highway freight truck drive from the nearest CSX intermodal connection located in Cleveland, some 66 miles away).

In addition, the proposed freight circulator will provide travel time savings due to automation and reduced vehicle operating costs through a reduction in diesel fuel costs.

Travel Time Savings

The travel time savings discounted at 7% totals \$32,184,183 over the analysis period.

Vehicle Operating Costs

The project will reduce fuel usage by over 298,333 gallons of fuel annually at project opening. Discounted at 7% a fuel cost savings of \$8,723,785 is realized over the life of the project based on the April 27, 2020 average diesel fuel prices of \$2.44 per gallon.

Air Quality

Air quality improvements will result from decreases in toxic emissions due to shifts to more fuel-efficient rail and electric truck transport.

Greenhouse Gas Reduction

Freight rail is nearly five times more efficient in the production of greenhouse gases per ton-mile than a large Class 8 semi-trailer, and over seven times more efficient than a medium truck. Truck to rail modal shift results in a carbon credits cost savings of approximately \$2.88 per 1,000 ton-miles.

Applying U.S. DOT’s guidance for reduced carbon costs discounted at 7%, the estimated value of the improved air quality associated with these modal shifts is \$34,852.

DISCOUNTED BENEFITS

The BCA was prepared with a base year of 2020 and projected both benefits and costs for 20 years. All benefits and costs were discounted at 7% per the BUILD Benefit-Cost Analysis Resource Guide.

The analysis conservatively assumes future container traffic will increase 25% every four years post-construction as 3,000 acres of shovel ready logistics/distribution/industrial sites begin to develop.

The discounted benefits are summarized below:

Year	Term	Safety Benefits Discounted (7%)	Maintenance Savings Discounted (7%)	Fuel Cost Savings Discounted (7%)	Travel Time Savings Discounted (7%)	Carbon Cost Savings Discounted (7%)	Total Benefits Discounted (7%)
2020	0	\$0	\$0	\$0	\$0	\$0	\$0
2021	1	\$0	\$0	\$0	\$0	\$0	\$0
2022	2	\$0	\$0	\$0	\$0	\$0	\$0
2023	3	\$0	\$0	\$0	\$0	\$0	\$0
2024	4	\$515,285	\$241,685	\$608,078	\$2,243,350	\$1,903	\$3,610,302
2025	5	\$481,575	\$225,874	\$568,298	\$2,096,589	\$1,778	\$3,374,114
2026	6	\$450,070	\$211,097	\$531,119	\$1,959,429	\$1,662	\$3,153,378
2027	7	\$420,626	\$197,287	\$496,373	\$1,831,242	\$1,553	\$2,947,082
2028	8	\$491,386	\$230,476	\$579,875	\$2,139,301	\$1,814	\$3,442,853
2029	9	\$459,239	\$215,398	\$541,939	\$1,999,347	\$1,696	\$3,217,619
2030	10	\$429,196	\$201,306	\$506,485	\$1,868,549	\$1,585	\$3,007,121
2031	11	\$401,117	\$188,137	\$473,351	\$1,746,307	\$1,481	\$2,810,393
2032	12	\$468,595	\$219,786	\$552,980	\$2,040,079	\$1,730	\$3,283,170
2033	13	\$437,939	\$205,407	\$516,804	\$1,906,615	\$1,617	\$3,068,383
2034	14	\$409,289	\$191,970	\$482,994	\$1,781,884	\$1,511	\$2,867,648
2035	15	\$382,513	\$179,411	\$451,396	\$1,665,312	\$1,412	\$2,680,044
2036	16	\$446,861	\$209,592	\$527,332	\$1,945,458	\$3,300	\$3,132,543
2037	17	\$417,627	\$195,880	\$492,834	\$1,818,185	\$3,084	\$2,927,610
2038	18	\$390,306	\$183,066	\$460,592	\$1,699,238	\$2,882	\$2,736,084
2039	19	\$364,772	\$171,090	\$430,460	\$1,588,073	\$2,694	\$2,557,088
2040	20	\$426,135	\$199,871	\$502,874	\$1,855,225	\$3,147	\$2,987,253
Totals		\$7,392,533	\$3,467,332	\$8,723,785	\$32,184,183	\$34,852	\$51,802,684

BENEFIT COST RATIO

The discounted benefits are compared against discounted project development costs and life cycle maintenance costs to calculate a net present value as summarized below. The project results in a **1.74:1 Benefit-Cost Ratio**. A detailed calculation of benefits is provided in the BCA Calculations which can be accessed at:

<https://neodfa.org/build-2-grant/lordstownsmartlogistics/>

Year	Term	Total Benefits Discounted (7%)	Project Development Costs	Maintenance Costs	Total Costs	Discounted Costs (7%)	Net Present Value at 7%
2020	0	\$0			\$0		
2021	1	\$0	\$10,615,437		\$10,615,437	\$9,920,969	-\$9,920,969
2022	2	\$0	\$10,615,437		\$10,615,437	\$9,271,934	-\$9,271,934
2023	3	\$0	\$10,615,437		\$10,615,437	\$8,665,359	-\$8,665,359
2024	4	\$3,610,302	\$0		\$0	\$0	\$3,610,302
2025	5	\$3,374,114	\$0		\$0	\$0	\$3,374,114
2026	6	\$3,153,378	\$0		\$0	\$0	\$3,153,378
2027	7	\$2,947,082	\$0		\$0	\$0	\$2,947,082
2028	8	\$3,442,853	\$0		\$0	\$0	\$3,442,853
2029	9	\$3,217,619	\$0	\$625,000	\$625,000	\$339,959	\$2,877,661
2030	10	\$3,007,121	\$0		\$0	\$0	\$3,007,121
2031	11	\$2,810,393	\$0		\$0	\$0	\$2,810,393
2032	12	\$3,283,170	\$0		\$0	\$0	\$3,283,170
2033	13	\$3,068,383	\$0		\$0	\$0	\$3,068,383
2034	14	\$2,867,648	\$0	\$3,625,000	\$3,625,000	\$1,405,837	\$1,461,810
2035	15	\$2,680,044	\$0		\$0	\$0	\$2,680,044
2036	16	\$3,132,543	\$0		\$0	\$0	\$3,132,543
2037	17	\$2,927,610	\$0		\$0	\$0	\$2,927,610
2038	18	\$2,736,084	\$0		\$0	\$0	\$2,736,084
2039	19	\$2,557,088	\$0	\$625,000	\$625,000	\$172,818	\$2,384,271
2040	20	\$2,987,253	\$0		\$0	\$0	\$2,987,253
Totals		\$51,802,684				\$29,776,875	\$22,025,809
Benefit Cost Ratio						1.74	