



LIVE zone

**Logistics Innovation and
Vehicle Electrification**



EASTGATE
Regional Council of Governments

**USDOT RAISE GRANT
BCA Narrative
April 2022**



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	\$22,096,732	89%
System Engineering, Design & Construction Administration	\$2,651,608	11%
Total Project Development Cost:	\$24,748,523	

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

Project Cost Breakdown by Development Category & Component		
Category	Capital Cost	Percent of Total Project
Transfer Yard	\$15,645,265	56.4%
Smart Corridors	\$3,710,441	13.4%
EV Charging Stations	\$4,353,034	15.7%
Micromobility Transit	\$1,039,782	3.8%
System Engineering	\$441,935	1.8%
Detailed Design	\$1,104,837	4.5%
Construction Administration	\$1,104,837	4.5%
Total Project Development Cost:	\$24,748,523	

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

<https://www.eastgatecog.org/transportation/LiveZone>

SOURCE & AMOUNT OF PROJECT FUNDS

The total project cost is \$24,748,340. The **RAISE funding** request is **\$24,498,340**. As project sponsor Eastgate is committing a **\$250,000 non-federal match** for this rural 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)	\$250,000	1%-
RAISE Request	\$24,498,340	99%
Committed Federal Funds	-	-
Total Project Cost:	\$24,748,523	

PROJECT BENEFITS

Safety

Decrease in Truck Crashes

The Lordstown Smart Logistics Hub will reduce truck vehicle miles traveled (VMT) due to the installation of a new triple trailer transfer yard at Lordstown. A reduction in truck VMT will yield safety benefits through a reduction in truck crashes.

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, but they are not quantified in the BCA.

Separate tabs are provided in the BCA spreadsheet for safety benefits related to the following project components:

1. Trailer transfer yard - crash savings from truck crashes avoided due to decrease in truck VMT
2. Smart Corridor - crash savings from incremental adoption of AV/CV technology along Smart Corridor

Total safety benefits are estimated at \$8,162,974 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 reduction truck vehicle miles traveled.

State of Good Repair

Reduced Pavement Maintenance

The Lordstown Smart Logistics Hub will result in a reduction in truck VMT due to the installation of a new triple trailer transfer yard at Lordstown. The reduction in VMT 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. 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.

A new triple trailer transfer yard at Lordstown results in a reduction of 1,073,100 truck highway miles driven per year. This corresponds to a projected total savings of \$1,854,496 in road maintenance over the 20-year post-construction analysis period.

Economic Competitiveness

The installation of trailer transfer yard at Lordstown will reduce vehicle miles traveled by trucks with triple trailers that currently must exit the Ohio Turnpike at either SR 5 to the west or SR 7 to the east. As such, quantifiable efficiencies in transportation costs are realized by monetizing the reduction in shipping costs:

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

Travel Time Savings

Travel time savings will result from the reduction in vehicles miles traveled as a result of the new transfer yard accommodating triple trailers at Lordstown. The total discounted travel time savings is \$4,561,218 over the analysis period.

Vehicle Operating Costs

Fuel savings are realized from all of the major project components due to a reduction in diesel truck miles driven. Benefits are detailed in separate BCA Spreadsheet tabs for the following project elements: Transfer Yard (reduced truck miles traveled); EV Charging Stations, Smart Corridor EV circulator (existing and future businesses), and workforce last-mile micromobility transit service.

In total the project will result in total fuel cost savings of \$23,237,922 over the life of the project as summarized at the bottom of the Summary tab in the BCA Spreadsheet.

Environmental Sustainability

Air quality improvements will result from decreases in toxic emissions due to a reduction in truck VMT and a shift to more fuel-efficient electric truck transport.

Greenhouse Gas Reduction

Carbon cost savings are realized from all of the major project components due to a reduction in diesel truck miles driven. Benefits are detailed in separate BCA Spreadsheet tabs for the following project elements: Transfer Yard (reduced truck miles traveled); EV Charging Stations, Smart Corridor EV circulator (existing and future businesses), and workforce last-mile micromobility transit service.

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 \$4,902,224

QUALITATIVE BENEFITS

Regional Economic Impacts

While not included in the BCA calculations per USDOT guidance, IMPLAN software was used to estimate the regional Economic Impacts of:

1. One-time construction of private warehouse or manufacturing space, and
2. Ongoing industrial activity in the region.

The results are summarized below. The details of the Economic Impact Analysis are available at:

<https://www.eastgatecog.org/transportation/LiveZone>

Construction of private warehouse/ manufacturing space - Regional Economic Impacts				
Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	11,135	\$676,990,191	\$688,540,177	\$1,340,000,000
Indirect Effect	1,643	\$98,480,447	\$158,611,859	\$318,381,049
Induced Effect	3,539	\$149,086,681	\$272,511,151	\$484,249,437
Total Effect	16,317	\$924,557,319	\$1,119,663,187	\$2,142,630,485

Ongoing industrial activity - Regional Economic Impacts				
Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	6,620	\$480,338,045	\$551,594,920	\$2,302,694,927
Indirect Effect	4,603	\$216,270,363	\$352,100,605	\$757,393,292
Induced Effect	3,118	\$131,797,944	\$240,335,709	\$427,205,535
Total Effect	14,340	\$828,406,353	\$1,144,031,233	\$3,487,293,755

Property Value Increases

Local property values along the project corridors will increase due the implementation of cost-effective last-mile freight shuttle service to and from the proposed trailer transfer yard. Job creation will result from the construction of new transportation and warehousing facilities at 3,000 acres of shovel-ready greenfield development sites in the area. While these benefits are not quantified for the purposes of the Benefit Costs Analysis, they do represent important tangible benefits to the local economy which suffered an unemployment rate increase of 4.4% upon closure of the GM Lordstown Plant in 2019.

BENEFIT COST RATIO

The BCA was prepared with a base year of 2022 and projected both benefits and costs for 20 years. All benefits and costs were discounted at 7% per the Benefit-Cost Analysis for Discretionary Grant Programs Guide.

The discounted costs (including maintenance costs over the 20-year life cycle) benefits for the project are summarized below and detailed in BCA Spreadsheet Summary tab.

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 **1.59:1 Benefit-Cost Ratio**.

Element	Transfer Yard	EV Charging	Smart Corridor	Transit	Project Total
Costs (Discounted at 7%)	\$16,703,250	\$4,567,447	\$4,510,441	\$1,098,621	\$26,879,758
Benefits (Discounted at 7%)	\$25,019,781	\$4,844,706	\$10,497,883	\$2,356,464	\$42,718,835
BCA Ratio	1.50	1.06	2.33	2.14	1.59