

Mine Truck Electrification Evaluation Pilot Project Opportunity



Key Findings

- MTE significantly reduces fossil fuel consumption, resulting in reduced emissions near key Class I airsheds, such as the Boundary Waters Canoe Area Wilderness, Voyageurs National Park, and several defined areas of environmental justice.
- The economics are very site specific (slope, distance, life).
- Upfront infrastructure and equipment costs are sizable barriers.
- Incentives/financial support needed to support the transition.



1 Mine Truck (240 ton)



463 passenger vehicles

In a Large Mine Operation (LMO) scenario, adding trolley assist to Tier IV mine trucks reduces CO₂ by 23,449 metric tons if supplied with 100% carbon free electricity. **To achieve those same reductions, it would require electrifying 5,098 gasoline passenger vehicles, or 463 passenger vehicles per mine truck.**

Equipment Needs

- New electric drive mine trucks (~\$6M each)
and/or
- Modification of existing electric drive mine trucks (~\$1.1M)

Infrastructure Needs

- Trolley infrastructure costs are ~\$5M/mile
- Overhead powerline and poles/support structure
- Power rectifier station/portable substation
- Service extension to trolley line