



2023 DOE Vehicle Technologies Office Annual Merit Review

Cold-Weather Operation, Observation and Learning Electric Vehicles

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This presentation does not contain any proprietary, confidential, or otherwise restricted information.

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Overview

Timeline

- Start: October 1, 2020
- End: December 31, 2023
- 50% complete

• Barriers Addressed

- Lack of data on medium/heavy duty electric vehicles (EVs) in cold weather climates
- Cost of medium and heavy-duty electric vehicles

• Targets

- Deploy 4 medium/heavy duty vehicles
- Performance Monitoring Reports
- Community-based Outreach and Collaboration

Budget

Total project funding: \$2,017,265

DOE share: \$997,274

Cost share: \$1,019,991

2021 (BP1): \$1,665,870

2022 (BP2): \$198,279

2023 (BP3): 153,117

Partners

- American Lung Association
- Eastern Carver County School
- Eureka Recycling
- University of Minnesota
- CTE
- Xcel Energy

Project Objectives

Objectives

deploy electric vehicle charging and electric vehicles

Analyze extreme weather impacts to EV functionality

Inform EV industry and fleet operators about lessons learned

Technology Integration Goals

National Security

Economic Growth

Affordability for Fleets

Impacts

Increased EV adoption & awareness

Increased availability of electric vehicle charging infrastructure

Documented best practices for one-way & two-way carshare

Project Approach

Budget Period 1

Project Initiation and Launch

- Reviewed partner locations for commercially available 100% battery electric medium- and heavy-duty vehicles
- Facility EVSE design and installation to be completed with three unique fleets at four sites.
- Planning and implementation of Training and Outreach

Budget Period 2 (2022)

Implementation, Deployment & Education

- Continue location and route assessment for three fleets
- Electric vehicles performance monitoring and charging evaluation
- Commission final sites and vehicle deployment
- Collect data and disseminate lessons to other regions.
- Continue outreach and promotional activities

Budget Period 3 (2023)

Final Completion

- Data Collection
- Electric vehicles performance monitoring
- Training and Outreach

Milestones

Budget Period 1

(Oct. 20 – Dec. 21)

- Vehicle Deployment: 3 fleets
 - EVSE Evaluation: 3 fleet sites
 - Purchase Orders Placed
 - Training and Outreach Initiative
 - EVSE Infrastructure Installed: 3 fleets at 4 sites
 - All contracts secured
- ✓ **Go/No Go**

Budget Period 2

(Jan. 22 – Dec. 22)

- Vehicle Acceptance and Validation Testing: 3 fleets
 - Vehicle Training: 3 fleets
 - Training and Outreach Initiative
 - Vehicle Deployment: 3 fleets
 - EVSE Commissioned to vehicles-three fleets/four sites
 - Performance Monitoring – KPI
 - Training and Outreach Initiative
 - All vehicles in active service
- ✓ **Go/No Go**

Budget Period 2

(Jan. 23 – Dec. 23)

- Host High Voltage Safety training
- Attend a minimum of 2 tradeshow and two article/case study completed
- Quarterly KPI reports for each fleet completed
- Complete final performance monitoring report and analysis

Project Accomplishments and Progress



Fleets:

- Eastern Carver School District Electric Blue Bird School Bus (1.5 year on road)
- Eureka Recycling: Battle Motors Battle Electric 480 Refuse (ETA April 2023)
- University of Minnesota: 2 Peterbilt 220e (ETA Spring 2023)

Project Accomplishments and Progress (continued)



Outreach & Education

Bus Demos

- Minnesota School Board Association Leadership Conference
- InterFaith Creation Care South Metro

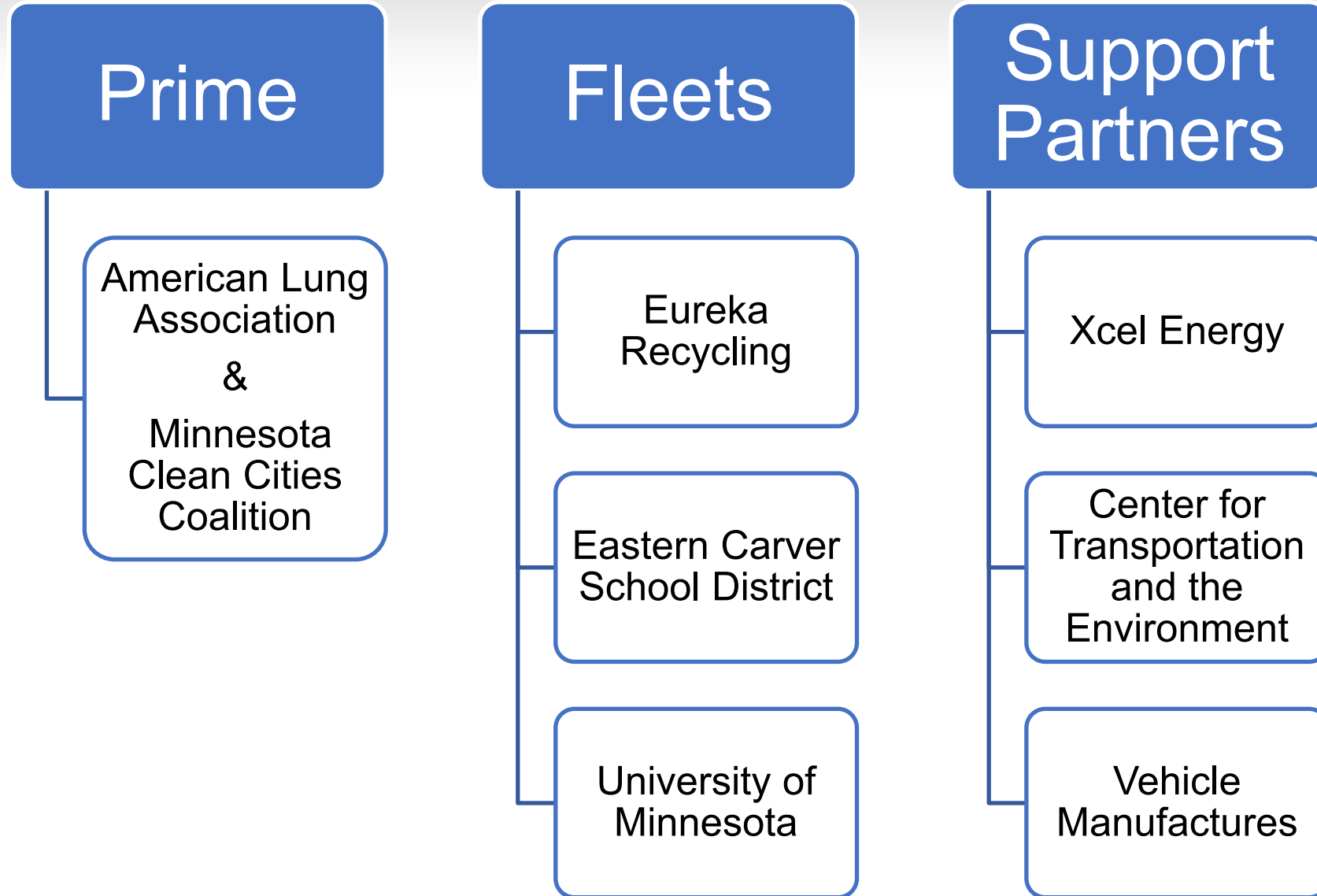
Fleet Outreach

- Eureka Recycling met with three fleets and 4 vendors to discuss needs

Changes

- Fleet cancellation in FOA led to new RFP. 12 fleets were interviewed

Collaboration among Project Team



Contribution to Energy Equity & Environmental Justice

- Vehicles to be deployed in 2 of 3 communities of low-income
- Case studies and demonstrations provided to underserved communities

Sustainability

- Long history of partners working to make fleets sustainable beyond the period of performance.
- Media support and presentations continues to grow interest.
- Key messaging, best practices and speaking opportunities will continue to be developed and shared with partners outside of region.

Summary

Approach

- Deploy four electric vehicles (EVs) and electric vehicle supply equipment (EVSE) infrastructure in three community fleets in Minneapolis/St. Paul metro area.
- Analyze extreme weather impacts to EV functionality and inform EV industry and fleet operators about lessons learned.

Collaborations

- Local governments, Community Based Organizations, Utilities, Private and Non-Profit Companies

Accomplishments

- Deployed 1 of 4 EVs and EVSE:
- Planning underway for Performance Monitoring Report, Community-based Outreach and Collaboration including first responder trainings, high voltage safety trainings, KPI workshop, ride and drives, case studies, and promotional, training and outreach materials for tradeshow and presentations.

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