

Old Salem Museum – Electric Vehicle Purchase

Case Study Follow-up visit on 6-19-09

NC DENR, Division of Air Quality

Site Overview

Old Salem Museums and Gardens is an interpretive historic museum that covers about 20 city blocks and has two blocks of supporting facilities. Today the museum operates with more than 200 employees, a thriving retail department, a book publishing arm, a research center and more than 11 gardens. The site also has a new focus on renting its numerous meeting spaces to local businesses and for special events. It is also involved with the capital's On Common Ground campaign to enhance the visitor experience at Old Salem and support the future sustainability of Old Salem.

The Fleet

In the past, Old Salem used five gasoline-powered golf carts for transportation and maintenance purposes. At about 10-20 miles per day, the carts consumed over 50 gallons of gasoline a week. Two Global Electric Motorcars (GEM) LS electric vehicles were purchased to start replacing the fleet in 2007 with money obtained through the MSERG program.



Old Salem's new electric vehicle is able to transport more people than other vehicles in their fleet while being 100 percent emissions-free.

Implementation

In 2008, Old Salem was awarded a Mobile Source Emission Reduction Grant (MSERG) that went toward the purchase of their third electric vehicle – a 2008 Tomberlin Emerge E-4 electric vehicle. It came with a high-performance controller and a 48-volt battery, seamlessly replaced one of the gas-powered golf carts. The Tomberlin has led to the following improvements and benefits:

- Elimination of all idling emissions, including nitrogen oxides, fine particulate matter, carbon monoxide and other forms of air pollution.
- A reduction in noise pollution for the surrounding community.
- Promotion of low-impact vehicles aligned with Old Salem's mission to educate the public on environmental issues.
- The Tomberlin, having six seats, was able to transport more people at one time than both the gas-powered golf carts and GEM electric vehicles.
- Fleet operation and maintenance costs continued to decrease with the electric vehicle additions.
- The Winston-Salem Journal featured a story about Old Salem's electric vehicles.

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Adjustments and Conclusion

The Old Salem Museum did not encounter any major problems related to the grant process. However, the original contract was for the purchase of a GEM LS electric vehicle to add to the fleet of other GEM vehicles that were obtained with the 2007 MSERG funding. Old Salem found that previously purchased GEM vehicles were unfavorable, so they requested a modification of the contract to purchase the Tomberlin Emerge E-4 electric vehicle instead. Overall, the members of Old Salem Museums and Gardens would recommend this type of project to organizations who are looking to save on transportation costs, help the environment, and provide the local community with information on alternative transportation methods.



The Tomberlin Emerge E-4 (above) was favored over the GEM LS (below) models from past grant awards. However, both models have helped Old Salem move toward their goal of an all electric vehicle fleet.

“The initial costs are minimal with significant long-term cost benefits from the reduction in gasoline dependency and servicing. Other key benefits for us are the reduction in noise and pollution and the advantage of having a vehicle that is appropriate and safe for use on public streets.”

- David Bergstone, Director of Architecture



Emission Reductions (for all three electric vehicles)

Nitrogen Oxides (tons/yr)	Particulate Matter (tons/yr)	Carbon Monoxide (tons/yr)
0.03	0.0003	0.36

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