



SPR RESEARCH PROGRAM

SECOND-STAGE PROBLEM STATEMENT

FY 2009-10

ODOT Research Unit
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I. PROBLEM NUMBER

IM-10-05

II. PROBLEM TITLE

Determination of the impact of Light Electric Vehicles (LEV) on statewide transportation infrastructure and operations *Sustainable Transportation: A Multimodal option for achieving Governor's Carbon Reduction Goals*

III. RESEARCH PROBLEM STATEMENT

There are increasing numbers of LEV on public roadways. The LEV can range from gas powered golf carts to light electric vehicles. The electric vehicles are becoming much more common than the gas powered vehicles. These vehicles are increasing in number due to the increase in costs of petroleum based fuels, the number of active seniors, and the trend towards more sustainable transportation technologies that reduce green house gases. These vehicles are already in use on many college and industrial campuses and in gated communities in the US sunbelt. In Europe and Asia, these vehicles are increasing in number as an extended mobility and independence option of seniors and people with disabilities. They are often called Neighborhood Electric Vehicles (NEV). The Connecticut General Legislative Assembly, conducted a study of neighborhood electric vehicle use in the US.¹ The Report shows a summary of 40 states operating parameters include operating speeds, roadway type and regulatory authority. Oregon Revised statutes are consistent with most of the other 40 states. ORS "Low-speed vehicle" means a four wheeled motor vehicle with a top speed of more than 20 miles per hour but not more than 25 miles per hour. The ORS is in itself controversial, because it does not address LEV with a top speed of 35MPH, and there is no provision for three wheeled vehicles such as the ZAP car. In addition, there is potential for operating licensing issues. In Japan, many large powered scooters are used by seniors to extend their independence, and do not require any personal licensing, and three wheeled LEV's have more lenient operator licensing requirements than four wheeled devices.

A brief investigation of other US State's Laws show that there is a range of restrictions. For example, Washington's laws are much more restrictive. There is a need to investigate laws that pertain to operating rules and operator licensing. There is a need to examine the impact of increasing numbers of LEV vehicles on the public road systems and multi-use paths in Oregon communities. There is strong evidence to suggest that these devices will become more mainstream, and may offer some congestion relief. Research is need to investigate the impact of these devices if they are used on multiuse paths like golf carts or should they be restricted to the roadway. These devices do take up less road and parking space than cars but many can operate at speeds up to 35 MPH, even though current ORS only pertain to those with a top speed of 25 MPH. The LEV are increasing in popularity in Oregon, but many communities are unprepared for the impact that these vehicles will have on infrastructure, land use, road safety and traffic operations.

These vehicles are smaller and lighter than small cars. As a result, they have inherent safety risks associated with their use on public roadways, and where these roadways intersect with high speed facilities. All aspects of the use of LEV's needs to be investigated to insure the safety of the traveling public.

IV. RESEARCH OBJECTIVES

The goal of the research is to determine positive and negative impacts that LEV will have for ODOT, Oregon communities, and whether adjustments in current state legislation needs to be made to insure that LEV do not negatively impact road safety and traffic operations. The research will also examine land use and land development practices that support the use of these vehicles and thus potentially improve the quality of community life.

V. WORK TASKS, COST ESTIMATE AND DURATION

Task 1 Conduct an extensive literature review that examines European, Japanese and North American sources to determine the impact of these vehicles in other regions where they are already in more common use, such as Japan, the Netherlands, Germany, and in the US sunbelt senior and golf communities. The literature review will examine

land use and land development practices, regulations and operating policies, safety including existing NHTSA regulations, licensing and permitting, infrastructure impacts; and impacts on other roadway and multi-use path users such as pedestrians, mobility aids users and bike users who would share the same paths and roadways with LEV. The literature review will also examine existing Oregon and other state regulations as they currently pertain to LEV, and extend the work started in Connecticut. Task 1 Outcome: Interim report, Task 1 duration 6 months, Task 1 estimated costs \$ 30,000

Task 2 Develop a Matrix/Framework for LEV Model Development. Task 2 will build on the literature review in Task 1 to develop a Matrix that articulates the factors to be included in the model to be developed in Task 3. It should be noted that some of these factors may not be significant to be included in the model, but of sufficient significance to be discussed. Task 2 Outcome: Matrix/Framework, Task 2 duration 2 months, Task 2 estimated costs \$ 20,000

Task 3 Using the Framework developed in Task 2 a modified model that accounts for the costs and benefits of LEV will be developed. The model would include both disaggregate and aggregate approaches, and include factors identified in Task 2 such as considerations of safety and sustainability as well as added mobility and independence benefits of the operators. It is anticipated that the model will also include land use and land development issues/practices. Task 3 Outcome: working papers Task 3 duration 3 months Task 3 estimated costs \$ 30,000

Task 4 Final report, Project documentation and dissemination (\$20,000)
 Estimated project duration: 15 months including 2 months for review of final report
 Estimated Project Budget: \$100,000, plus \$5,000 for ODOT Coordination = \$105,000 total estimate

VI. IMPLEMENTATION

The results of this project will be disseminated in technical journals at the TRB Annual meeting. Implementation plans will also include collaboration with the appropriate ODOT entities to develop appropriate actions and/ or policies that result from the findings. This activity is included in Task 4 dissemination. It is also anticipated that the project findings will be disseminated to Oregon Communities through the Association of Oregon Counties and League of Oregon Cities.

VII. POTENTIAL BENEFITS

1. The research results will assist ODOT and Oregon communities to establish planning, land use and operating policies associated with LEV to improve safety and sustainability goals of the state of Oregon.
2. The evidence based research is timely, and will permit ODOT and Oregon communities to be proactive rather than reactive towards the increase use of LEV as another mode that will promote increased safety and sustainability for Oregonians.
3. The product of the research will be guidelines for Oregon communities to develop planning, land use and traffic operation policies for LEV. In addition, the research results may also provide direction for state regulators on licensing and permitting of the vehicles and the operators.
4. The research results would be added to the multimodal data warehouse for future policy and planning use by ODOT and local agencies.

VIII. SUBMITTED BY

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¹ Office of Legislative Research, Neighborhood Electric Vehicles, Connecticut General Assembly, September 2008, Report 2008-R-0479