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Scope of Services

Synthesis of Research on the Use of Idle Reduction Technologies in Transit

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National Center for Transit Research
Center for Urban Transportation Research
University of South Florida
www.nctr.usf.edu

SCOPE OF SERVICE

Synthesis of Research on the Use of Idle Reduction Technologies in Transit

Submitted by:

Stephen L. Reich
National Center for Transit Research (NCTR) at the
Center for Urban Transportation Research (CUTR)
University of South Florida
4202 E. Fowler Avenue, CUT 100
Tampa, Florida 33620-5375
813-974-6435

Alexander Kolpakov
National Center for Transit Research (NCTR) at the
Center for Urban Transportation Research (CUTR)
University of South Florida
4202 E. Fowler Avenue, CUT 100
Tampa, Florida 33620-5375
813-974-4038

Websites: www.cutr.usf.edu
www.nctr.usf.edu

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The Use of Idle Reduction Technologies in Transit

Introduction and Purpose

The nation's transportation system is heavily reliant on petroleum-based energy sources that are finite, not always abundant domestically, subject to volatile price changes, and also produce harmful emissions resulting in climate issues and health concerns. Issues of energy conservation and reduction in greenhouse gas (GHG) emissions have become centers of attention in recent years and public transportation plays a vital role in achieving these goals. Transit agencies and funding entities around the country continue to be under pressure to run a more sustainable and environmentally friendly operation in the urban environment. In addition, reducing energy consumption of transit vehicles can provide substantial cost savings for transit agencies struggling with funding shortfalls and the increased demand for transit service.

Many transit agencies around the country have introduced alternative fuel vehicles into their bus fleets and implemented other strategies aiming to reduce energy consumption and GHG emissions, and realize fuel cost savings. However, a shift towards alternative fuel transit technologies requires significant up-front investment in vehicles and infrastructure, and may not always result in the overall cost savings to the transit agencies in the short term. On the other hand, the strategies that focus on minimizing the time the vehicles idle can be implemented rather quickly and with no or little investment. Many of the idle reduction devices, developed primarily for the trucking industry, can also be used in transit vehicles. In addition to new technologies that can be installed in the vehicles, simple modification of fleet driving behavior can also reduce unnecessary engine idling.

Billions of gallons of fuel are being consumed in the U.S. every year by idling vehicles. While some idling is unavoidable (e.g. idling in congestion), idling for reasons of operator of passengers' convenience can be minimized by the use of auxiliary power units allowing to run various vehicle accessory systems from battery(s) rather than the engine generator. Even a modest reduction in idle time of transit vehicles can offer significant reductions in petroleum consumption nationwide, provide tangible fuel cost savings for transit agencies, and generate public health benefits.

While the use of idle reduction technologies in transit is not as common as in the trucking industry, transit application also has great potential for cost savings and environmental benefits. Both government officials and transit agencies can benefit from a synthesis of knowledge about the current state of idle reduction technologies

and practices, its applicability to transit operation, potential benefits and challenges, as well as best practices around the country.

The synthesis of research and practical knowledge covering wide range of issues related to the use of idle reduction technologies in transit vehicles will be a useful resource to public transportation providers, local and state governments, the private sector, and other transit stakeholders exploring various options for fuel savings and GHG reductions.

The segment that follows provides a brief discussion of the proposed synthesis study.

Synthesis Study on Idle Reduction Technologies in Transit

NCTR researchers will collect and compile both theoretical and practical knowledge on the use of idle reduction technologies and methods in transit in the United States. The research will include, at a minimum, a brief overview of the existing technologies and methods used for idle reduction, the discussion of advantages and limitations of idle reduction strategies as they apply to transit vehicles, direct and indirect costs of idle reduction equipment, typical fuel cost savings and environmental benefits of idle reduction technologies and strategies, as well as anecdotal evidence regarding best practices, critical success factors and noteworthy comments from the transit agencies that have implemented such technologies in their fleets.

In addition to reviewing the literature, NCTR researchers will survey fixed-route transit agencies around the U.S. regarding their idle reduction practices and experience. A brief electronic survey will be used to collect this information from the agencies. At least 100 transit agencies from different regions of the country will be surveyed in this manner as part of the current research.

The above research will be summarized in a brief synthesis paper assembled with the level of detail appropriate for a non-technical person.

NCTR is well positioned to perform such research. It has demonstrated previous experience in researching alternative fuel transit technologies and other innovative fuel-saving practices, as well as technical capabilities to effectively communicate the collected information to the industry stakeholders through Listservs and other web/electronic media.

Overview of Idle Reduction Incentives

NCTR researchers will review and summarize various policies and incentives related to idle reduction technologies at the federal, state and local level. This document will include a list of financial and non-financial incentives (available from public sources) by state, and/or local jurisdiction, and will be presented in a concise manner as a reference material for practitioners. The above document will be added as an Appendix to the synthesis paper described earlier.

Select Case Studies of Idle Reduction Application

In addition to general theoretical information about idle reduction technologies, NCTR researchers will also research and review notable case studies of successful and/or unsuccessful implementation of idle reduction technologies by transit agencies. The goal of this effort is to emphasize lessons learned, identify critical success factors, and review best practices in practical application of idle reduction methods on transit vehicles.

The list of case studies with brief description of each case will be compiled and will be included as an Appendix to the synthesis paper. The number of cases presented and the level of detail provided for each case will be determined based on the importance of the demonstrated example for the current research purposes and on the availability of information.

Information Dissemination

The synthesis paper resulting from the current research will be posted on the Advanced Transit Energy Portal (ATEP) website, funded by another NCTR project. NCTR researchers will also make reasonable efforts to present the findings of the current research to transit industry professionals and granting agencies staff by means of webcast presentations, presentations at industry group meetings, professional conferences, or publications. The goal will be to communicate the findings to the people that may be directly involved in making decisions regarding implementation of idle reduction technologies and, thus, are likely to benefit the most from this knowledge.

Implementation Schedule

It is anticipated that the research project, outlined in the proposed scope, will be completed within 12 months.

Budget

The proposed Budget for this project is $40,000 on a fixed fee basis.

Synthesis of Research on the Use of Idle Reduction Technologies in Transit

Categories	Budget Amount	Explanatory Notes
Salaries and Fringe	**$40,000**	Faculty, OPS student research assistants, and fringe benefits
Expenses	**$0**	
Travel	**$0**	
Overhead	**$0**	
TOTAL	**$40,000**	