

## **2007 Innovations Awards Program APPLICATION**

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ID # (assigned by CSG): 07-S-27WVeCDL

**Please provide the following information, adding space as necessary:**

State: West Virginia

Assign Program Category (applicant): **Government Operations/Administration** (Use list at end of application)

1. Program Name-**eCDL**
2. Administering Agency-**West Virginia Division of Motor Vehicles**
3. Contact Person (Name and Title)-**Wilbur L. Thaxton II, Manager, Information Technology, William D. Totten, Director CDL Program, Stephen Shelton, Manager, CDL Testing**
4. Address-**1900 Kanawha Boulevard, East, Charleston, WV 25301**
5. Telephone Number-**(304) 558-2196**
6. FAX Number-**(304) 558-0734**
7. E-mail,- **wthaxton@dot.state.wv.us, wdtotten@dot.state.wv.us, sshelton@dot.state.wv.us**
8. Web site Address-**www.wvdmv.gov**
9. Please provide a two-sentence description of the program. **eCDL** is a wireless, paperless technology for the skills testing of commercial driver's utilizing laptops equipped GPS tracking, wireless data transmission, and other digital communication technology in order to maximize state resources. In addition to the e-tracking aspects of the technology, eCDL also provides the ability to covertly and overtly monitor the entire skills testing process as required while reducing if not eliminating, the opportunity for fraud, cheating or otherwise illegal manipulation associated with the prior manual process.
10. How long has this program been operational (month and year)? Note: the program must be between 9 months and 5 years old on April 2, 2007, to be considered. **Initial deployment began in June, 2006.**

11. Why was the program created? We were looking for an automated solution for a completely manual process that involved far too much paper and manual tracking, as well as, one that provided opportunity for fraud, and other wrongdoing in the process. Additionally, continued state imposed reduction in resources forced a reduction in frequency and overall observation practices required under the Code of Federal Rules and the Federal Motor Carrier Safety Administration. A continued manual process was no longer an acceptable alternative to meet the requirements. We simply had to adapt to doing more with less, and, an electronic/technological solution was the only way to achieve this.

What problem[s] or issue[s] was it designed to address? The solution was specifically designed to achieve more with less; meaning that all requirements would be met with fewer or no manual intervention requiring less and less manual manipulation of required data and results processing. eCDL was also designed to negate, not only the opportunity for fraud by administering fictitious tests, but, to dramatically reduce if not completely eliminate the possibility of receiving a CDL without even taking a test (actually earning the license).

12. Describe the specific activities and operations of the program in chronological order. After entering applicant and pertinent vehicle information into the laptop, a score sheet is generated specifically for the vehicle being tested in and the testing process begins. The applicant must successfully pass all three portions of the skills test; the vehicle inspection, basic control skills and the road test. Upon the successful completion of all three portions, the examiner uploads the information via wireless network to a secure website located at the Rahall Transportation Institute/Marshall University. It is important to note that no PII (Personally Identifiable Information) is being transmitted and any and all data being uploaded is encrypted and secure. The applicant can then enter a regional DMV office and be issued their actual Commercial Driver's License based on numeric unique identifiers and encrypted data received from the examiners laptop via the host application..
13. Why is the program a new and creative approach or method? West Virginia is the first state to actually succeed in creating a CDL testing program that has the potential of being completely paperless and eliminate the possibility of fraud. If utilized in its fullest capacity, no one can succeed in receiving a CDL without physically being administered the test in all facets.
14. What were the program's start-up costs? (Provide details about specific purchases for this program, staffing needs and other financial expenditures, as well as existing materials, technology and staff already in place.) The start up costs included the purchase of seventeen (17) Panasonic Toughbook 18 computers at \$4,539.50 each, programming and maintenance costs of the software developer, Rahall Transportation Institute at \$3,280.00 to design the program, with an ongoing fee of \$350.00 per month to host, maintain, house and update the system. No additional DMV personnel were required to maintain the program. In fact, there has been a reduction in personnel as a result of the diminishing manual processes associated with this new and innovative way of providing this service. Existing personnel with minimal training easily made the transition from the manual to the e-process while allowing us to utilize their necessary expertise and oversight skills of the testing process and requirements thereof.
15. What are the program's annual operational costs? Approximately \$4,200.00 for maintenance and hosting plus normal operational costs.

16. How is the program funded? The program was originally funded by money received through a grant from the Federal Motor Carrier Safety Administration (\$96,875.00 less 20% in-kind State match of \$19,375.00 for \$77,500.00). We have applied for additional funding for continued development of eCDL for \$485,000.00 to complete the entire project which consists of Automated (written) Testing Interface, eCrash interface, eCitation interface and the analysis and comparison of all data. Additionally, we will add sound and video capture to the units to provide 100% fraud proof skills testing. On going annual maintenance if funded at no additional program cost resulting from reduction in required personnel and time and efficiency savings as a result of automation of processes. Overall savings will not be realized until the completion of the entire process automation, however, we expect the number to be quite substantial.
17. Did this program require the passage of legislation, executive order or regulations? No. If YES, please indicate the citation number.
18. What equipment, technology and software are used to operate and administer this program? We chose to use Panasonic Toughbook 18's configured with GPS receivers and wireless networking capabilities. Because of their rugged design, they are able to withstand the rigors and rougher than normal treatment associated with the specialized skills testing environment of the trucking industry. The software being used was designed and developed in a cooperative effort between the individuals listed below in question 19 with the "code" written by Pete Dailey and Doug Brown of the Rahall Transportation Institute in cooperation with Marshall University.
19. To the best of your knowledge, did this program originate in your state? Yes. If YES, please indicate the innovator's name, present address, telephone number and e-mail address. The program design concept, vision and operational process was conceived by the following individuals:

**West Virginia Division of Motor Vehicle Personnel**  
**1900 Kanawha Blvd., East**  
**Charleston, WV 25301**  
**(304) 558-2723**

Wilbur L. Thaxton II – Project Manager, [wthaxton@dot.state.wv.us](mailto:wthaxton@dot.state.wv.us)

William D. Totten – CDL Program Director, [wdtotten@dot.state.wv.us](mailto:wdtotten@dot.state.wv.us)

Stephen Shelton – CDL Program Manager, [sshelton@dot.state.wv.us](mailto:sshelton@dot.state.wv.us)

Mark Holmes – CDL Grant Coordinator, [mholmes@dot.state.wv.us](mailto:mholmes@dot.state.wv.us)

In cooperation with and under the direction of the Innovation Team, the software was created by the following individuals:

### **Software Developers**

Pete Dailey – Geometric Research Manager/Software Developer, dailey29@marshall.edu  
Rahall Transportation Institute / Marshall University  
P.O. Box 5425  
Huntington, WV 25703-0425

Doug Brown – Software Developer  
Rahall Transportation Institute / Marshall University  
P.O. Box 5425  
Huntington, WV 25703-0425

20. Are you aware of similar programs in other states? If YES, which ones and how does this program differ? Research confirms that no other state has successfully implemented such a system. The North Carolina Department of Motor Vehicles, to our knowledge, is the only other effort in the nation to attempt to employ global position system (GPS) technology in skills examinations (class E - regular drivers not CDL drivers). We have spoken to their testing contractor charged with the task of integrating the GPS tracking skills testing system and data gathering components into their current automated driver licensing written testing system to track all regular drivers' skills tests and provide for a fully integrated driver testing record. The North Carolina project has yet to be completed and does not specifically address the Commercial Driver Licensing process and subsequent fraudulent activity, tracking concerns and other problems associated. In fact, since our implementation, we have been contacted by the North Carolina vendor and at least 17 other states, as well as Canada, all expressing interest in acquiring our technology. We continue discussions to share what we have learned.
21. Has the program been fully implemented? If NO, what actions remain to be taken? No. We are in Phase I of a multi-phase program. As previously stated, we have applied for additional funding for continued development of eCDL for \$485,000.00 to complete the entire project which consists of Automated (written) Testing Interface, eCrash interface, eCitation interface and the analysis and comparison of all data. We expect to draw a conclusion as to the Validity and Reliability of the skills and written testing processes as they relate to the practical application of vehicle operation. This will be shown by the correlation and analysis of data with that of eCrash and ECitation data. These results will allow us to issue a more reliable and more valid testing program under ever-changing circumstances and requirements. Additionally, we will add sound and video capture to the units to provide 100% fraud proof skills testing. Further, only half of our examiners (17), are equipped with laptops issuing the vast majority of the skills testing. We will issue (17) additional laptops to provide additional coverage and faster, more convenient, response to our applicants. It is also our goal in the near future, with enhanced statewide wireless infrastructure, to provide real-time in-cab oversight.

22. Briefly evaluate (pro and con) the program's effectiveness in addressing the defined problem[s] or issue[s]. Provide tangible examples. The actual "pros" of this program are immeasurable. The mere fact that each portion of the tests are timed and that the road test maps are laid out, has convinced the WVCDL supervisory personnel that no fraud has been committed by those who have both administered and received the actual CDL skills test. The on-board GPS unit doesn't lie, and this division is able to determine if a legal test was administered.
23. How has the program grown and/or changed since its inception? The program has been refined in that the examiners whom currently utilize this laptop testing system have provided input on how it would be more user-friendly. An example of this would be the inception of a restriction menu, whereas the examiners could downgrade a test vehicle if it is not representative of the class indicated on the learner's permit.
24. What limitations or obstacles might other states expect to encounter if they attempt to adopt this program? Being a most user friendly computerized program, the only limitations or obstacles that could not be foreseen was the actual intimidation of the testing system being on a computer, and the actual utilization of a laptop computer as being the "new" method of administering a test. The effective training of all affected personnel quickly negated any doubts an examiner had towards utilizing the new type of testing program.

### ***eCDL and Third Party Monitoring Project***

#### ***A Progressive Alliance of***

#### ***The West Virginia Division of Motor Vehicles and The Rahall Transportation Institute***

#### **Background**

The Federal Motor Carrier Safety Administration (FMCSA) under Section 49 of the Code of Federal Regulations is required to monitor the Commercial Driver License Program in every state and conduct Compliance Reviews on the programs.

In recent compliance reviews, the FMCSA found monitoring deficiencies in West Virginia's third party testing program. This program trains and certifies non-state personnel to administer and report test results to regional DMV offices for issuance of a commercial driver's license (CDL). State employed regional CDL Examiners (ASAs) rely on test results provided by the third party examiners. The examination forms and test results are paper-based, limiting confidence in the third party program's integrity. Recommendations from the compliance review states that West Virginia must implement a stronger third party testing oversight program satisfying additional federal requirements than those already in compliance.

Additionally, the lack of reconciliation of the data from the DMV written and skills tests impedes an analysis into the efficacy of commercial driver's education programs. The federal review also exposed a lack of document control or other security measures necessary in maintaining the manual skills testing process. The inherent problems in handling paper help create an environment susceptible to fraudulent activity. These shortfalls provide the need for the WV DMV to develop a digital solution to eliminate opportunities for fraud and increase the effectiveness of commercial driver's education.

Mark Holmes and Wilbur L. Thaxton II submitted a grant proposal to the Federal Motor Carrier Safety Administration to fund a pilot project based on this technology in West Virginia. The FMCSA review committee expected proposals utilizing current technologies to automate and update processes. As a result, we received initial funding in the amount of \$96,875.00 less 20% in-kind State match of \$19,375.00 for \$77,500.00 for the laptop project utilizing GPS tracking and/or other digital communication technology.

## **Methodology**

The third-party oversight program is being enhanced by employing covert monitoring techniques and sampling a number of CDL drivers for retesting. The covert monitoring includes equipping third-party testers with laptops with digital communication capabilities for the full automation of skills test delivery. This program allows the DMV to satisfy the requirements of past compliance reviews by:

1. Providing laptops with a GPS receiver.
  - We have installed a GPS tracking and data collection software. The GPS system allows for covert monitoring from remote locations.
  - The GPS system and the CDL skills test are fully integrated whereby the examiners input on the skills test triggers the capture of spatial data.
2. The Administration of the skills test on a laptop reduces and nearly eliminates the use of paper forms and manual procedures. This innovation enhances testing integrity and streamlines the licensing process. Federal reporting requirements are fulfilled automatically from the skills test database.

With full implementation the DMV will integrate the written testing system into a fully automated skills testing program. The Department of Transportation is currently developing the automated knowledge testing system that will be integrated with the automated skills testing. The first step in the integration process was to program the skills version of the Commercial Drivers License Test on to mobile equipment such as the Panasonic Toughbook 18 to record skills test results electronically. The results are transmitted from the laptop via a wireless Internet connection to the host application server at the Rahall Transportation Institute. The results will be uploaded to the knowledge testing system providing the facility for skills test monitoring, performance analysis, and reporting to state and federal entities. Future plans will integrate the ATS test scores in each driver's record in the DMV data base. This step insures compliance with federal regulations and enhances the integrity of the CDL testing processes. At present, the ATS provides laptop to server data transmission, a review of the skills test results and a graphic road test audit log accessible from a secure web server.

## **Rahall Transportation Institute Partnership**

The Director of the Rahall Transportation Institute, Bob Plymale is guiding the Institute's partnership with The Division of Motor Vehicles. Mr. Plymale has encouraged the research and development process integrating technologies used in similar transportation research at RTI with the CDL examination process. The uniting of RTI's significant resources with the DMV's agenda has resulted in a successful collaborative effort between the two organizations. The success of this effort establishes West Virginia as a leader in this application of technology.

Rahall Transportation Institute is providing document searches, hardware evaluations and software development for the project. By providing a secure data warehouse during this project, RTI is allowing the DMV to utilize the most economical, efficient, and secure products necessary for project implementation. The laptop client-data server developed by RTI allows for seamless adoption by the DMV without re-inventing the wheel. This approach reduces the need for additional development and maintenance costs incurred by state government resources. Relying on RTI expertise inevitably reduces the overall program cost to the state.

DMV and RTI will complete the project in phases. Operational functionality of Phase I began in June, 2006, with project release October 1, 2006 (see attached Press Release).

The DMV and RTI entered into a formal Memorandum of Agreement (attached) to specify additional contractual items concerning maintenance, ownership and further developments related to this partnership.

With this successful collaboration, we look at this project as the initial development of a lasting cooperative partnership between the Division of Motor Vehicles and the Rahall Transportation Institute. Further opportunities exist for this alliance to provide additional innovative and more efficient methods of providing West Virginians with world class transportation services.

This product is fully endorsed by the Federal Motor Carrier Safety Administration (FMCSA See letter below) and will be showcased at the American Association of Motor Vehicle Administrators (AAMVA) Region II Conference in Jacksonville Florida at the Sawgrass Marriott, June 10-14, 2007.



U.S. Department  
of Transportation

**Federal Motor Carrier  
Safety Administration**

**Administrator**

400 Seventh St., S.W.  
Washington, D.C. 20590

**FEB 26 2007**

Refer to: MC-ESL

Commissioner Joseph Cicchirillo  
West Virginia Division of Motor Vehicles  
1800 Kanawha Boulevard East  
Building 3, Room 319  
Charleston, WV 25317

Dear Commissioner Cicchirillo:

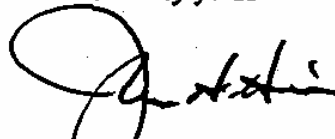
Mr. Robert Miller, Field Administrator for the Federal Motor Carrier Safety Administration's (FMCSA) Eastern Service Center forwarded to me West Virginia's report of the demonstration of the "eCDL and Third Party Monitoring Project." Mr. Miller and the FMCSA West Virginia Division appreciated the opportunity to participate in this demonstration and are pleased with the success of this program which was supported by an FMCSA Commercial Driver's License (CDL) grant.

The FMCSA has reviewed the functionality, usability, and security of this CDL skills testing and monitoring system created and maintained by Orange Cone Software, LLC, in cooperation with the Rahall Transportation Institute/Marshall University Research Corporation's Technology Transfer office. The CDL Division believes this program has significant possibilities as both a deterrent to, and as an identifier of fraudulent activities that occur related to CDL skills testing.

This system is an excellent example of innovation in the CDL program and the use of technology to assist in the monitoring of the program. We encourage you to expand the use of the system throughout the State and hope that you would share the information about this new system with your counterparts across the country.

If you need additional information or assistance, please contact Dominick Spataro, CDL Division Chief, at (202) 366-2995.

Sincerely yours



John H. Hill

cc:

Michael Myers, Division Administrator, FMCSA West Virginia  
Michael Gordon, Highway Safety Specialist, FMCSA West Virginia  
Robert Miller, Field Administrator, FMCSA Eastern Service Center  
William Totten, Director, West Virginia DMV Commercial Driver License  
Wilbur L. Thaxton II, Project Manager, West Virginia DMV  
Mark Holmes, Grants Management, West Virginia DMV  
Pete Dailev, System's Developer, RTI/Marshall University

**WEST VIRGINIA  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF MOTOR VEHICLES  
PUBLIC INFORMATION OFFICE**

**For Immediate Release:  
September 28, 2006**

**Contact:  
Wilbur Thaxton  
304 558-2196**

## **West Virginia Commercial Driver's Licensing Goes Paperless**

**-First State In The Nation To Use Global Position System (GPS) Technology In CDL Skills Exams-**

Charleston, WV – Gov. Joe Manchin joined Secretary of Transportation Paul Mattox and DMV Commissioner Joe Cicchirillo to officially introduce eCDL – wireless, paperless technology for the skills testing of commercial driver's license.

"West Virginia is the first state in the nation to incorporate GPS technology in the CDL examination," the governor said. "This innovation increases the efficiency and integrity of the CDL licensing process, eliminates non-productive paper handling, and assures the quality of West Virginia's truck drivers."

The Kanawha Valley Regional Transportation Authority offered a commercial vehicle for the live, on-site eCDL demonstration following the governor's remarks at the Capitol.

"Our state's entire commercial driver's license testing is computerized, setting an innovative model for the rest of the nation to follow," WVDMV Commissioner Joe Cicchirillo said. "Not only will this project create better security in the testing process, it will also cut down on the transaction process for successful test applicants. This is a win-win for the State of West Virginia."

The eCDL project is a result of a progressive alliance between the West Virginia Division of Motor Vehicles and the Rahall Transportation Institute. The project was funded by a \$77,500 grant from the Federal Motor Carrier Safety Administration. The eCDL examinations utilize GPS tracking, wireless data transmission, and other digital communication technologies.

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## **2007 Innovations Awards Program Program Categories and Subcategories**

Use these as guidelines to determine the appropriate Program Category for your state's submission and list that program category on page one of this application. Choose only one.

### *Infrastructure and Economic Development*

- Business/Commerce
- Economic Development
- Transportation

### *Government Operations*

- Administration
- Elections
- Public Information
- Revenue

### *Health & Human Services*

- Aging
- Children & Families
- Health Services
- Housing
- Human Services

### *Human Resources/Education*

- Education
- Labor
- Management
- Personnel
- Training and Development
- Workforce Development

### *Natural Resources*

- Agriculture
- Energy
- Environment
- Environmental Protection
- Natural Resources
- Parks & Recreation
- Water Resources

### *Public Safety/Corrections*

- Corrections
- Courts
- Criminal Justice
- Drugs
- Emergency Management
- Public Safety

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The Council of State Governments  
2760 Research Park Drive, P.O. Box 11910  
Lexington, KY 40578-1910

### **Contact:**

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The Council of State Governments  
E-mail: [nvickers@csg.org](mailto:nvickers@csg.org)

This application is also available at [www.csg.org](http://www.csg.org), in the Programs section.

**Deadline: April 2, 2007**