



**VEHICLE INFORMATION DATABASE**  
*Digital Government: Government to Business*  
**Nevada Department of Motor Vehicles**

**NASCIO Awards**

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## **B. EXECUTIVE SUMMARY:**

The Nevada Department of Motor Vehicles' Vehicle Identification Database (VID) is a web-based, real-time system that allows communication between the department's vehicle database and emissions testing stations.

More than 1.5 million vehicles in Washoe and Clark counties, the two most populous counties in the state, are required to pass a emissions test in order to be registered. The emissions testing stations throughout the state, for the most part, are privately owned.

The department instituted a system allowing motorists to renew the registrations of gasoline-powered vehicles at emissions stations and avoid an office visit in 2000, relying on a third-party contractor to run the network. When a vehicle is tested, the results are immediately transmitted to the department. From the beginning, there were difficulties with the system. Motorists paid a contractor transaction fee and stations were required to reconcile their records with the contractor's. Informational material had to be printed and distributed and minor changes in state law would often render the materials obsolete. Updating the stations' software was difficult and adding a station required third-party cooperation.

Also, prior to the implementation of the department's VID, diesel emissions stations were not networked and used paper-based Diesel Vehicle Inspection Report books. The stations were required to submit to the department paper copies of the certificates they issued monthly.

The department's Motor Vehicle Information Technology (MVIT) Division tackled the system's problems in May of 2006. Implementation of the VID began in July of 2007 and was statewide by April of 2008. The web-based system connects both gasoline and diesel emissions stations in real time for business rules and certificate repository. The department's access to date even during a test is a valuable tool in preventing fraud. The VID also allows the department to activate or deactivate a station, inspector or analyzer with a single key stroke.

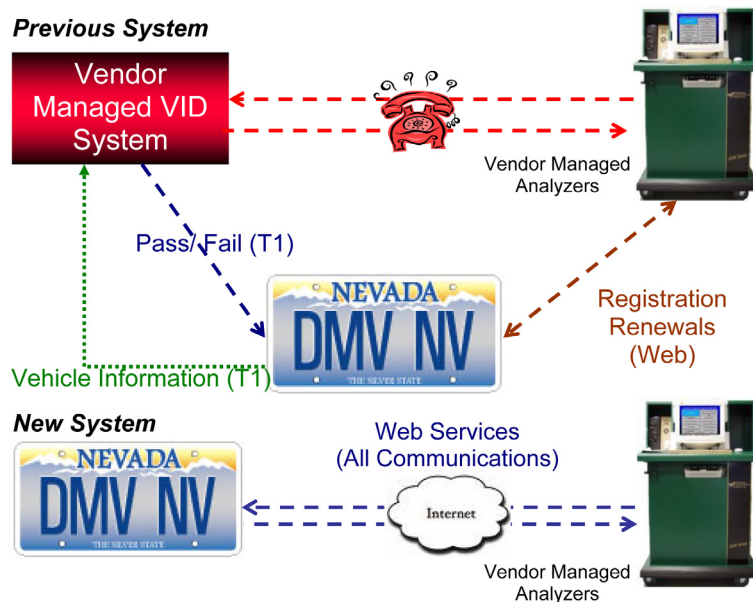
Because the VID eliminated the third-party transaction fee, Nevada motorists save in excess of \$3 million annually.

### C. DESCRIPTION OF THE BUSINESS PROBLEM AND SOLUTION, INCLUDING LENGTH OF TIME IN OPERATION.

The Nevada Department of Motor Vehicles implemented a new Vehicle Information Database (VID) in July 2007. All emissions stations had switched over by the end of April 2008. The system is on the World Wide Web and is built with state-of-the-art Service Oriented Architecture (SOA) technology.

All emissions stations in the state connect to a centralized server in real time for business rules, the emissions certificate repository and test results submission. A separate web portal was also developed to give real time access to the VID data. This web portal allows department employees to perform various activities related to the VID including inspector and station audits. Having real time access to data, even when a smog test is in progress, is a great advantage to the Compliance Enforcement Division of the department in preventing fraudulent activities.

Real time communication from analyzer to a centralized server for an emissions test via the web is a first of a kind in the VID industry. With a centralized server hosting business rules, any changes can be implemented with no changes to the client software on the analyzers. With this centralized system, any station, inspector or analyzer can be activated or deactivated with a touch of a key stroke. A Vehicle Inspection Report (VIR) is printed by the analyzer at the end of every smog test. The VIR is generated at the centralized server as a PDF file and is sent to the analyzers. This gives great flexibility to the state when changing the content and format of the VIR.



When compared to the previous system, which was based on telephone lines, the new web-based system is very fast and has reduced the time to conduct an emissions test by about one minute. The system is also built with a secondary database to fall back to when the main database is down, allowing "24X7" service to customers.

The system's Service Oriented Architecture (SOA) allows any manufacturer of emissions analyzer equipment to easily program their client application to communicate

with the network system. Ease of programming and user acceptance testing provides for lower equipment costs for emissions stations operators and a wider range of equipment from which to choose.

With the VID in operation, Nevada motorists no longer pay a “per transaction” fee for emissions tests conducted on their vehicles. Emissions test stations no longer need to carry out accounting measures by monitoring the number of transactions between their emissions test equipment and Vehicle Information Database. Under the previous, contractor-run system, emissions test operators kept records on the communication sessions to make certain the monthly bill from the contractor balances with their records.

Information outreach materials for distribution to department customers and the regulated industry are a significant cost to any government agency administering an emissions program. Under the previous system, the test equipment was not capable of printing outreach materials. The Department was required to have paper copies of all outreach materials (brochure fact sheets, newsletters and other program related documents) printed at a print shop. Once printed, the materials had to be distributed to each emissions station. The VID allows the applicable outreach document to be automatically printed by the emissions station’s test equipment when printing emissions test results.

While gasoline powered vehicles have been tested through a networked system for the past nine years, this was not the case with diesel powered vehicles. The department previously issued paper-based Diesel Vehicle Inspection Reports (VIR) books to diesel emissions stations. Emissions inspectors completed a paper VIR for each emissions test performed and copies of the completed tests were submitted to the department monthly. Department staff manually entered all data listed on the paper VIR into an Access database, a very time consuming process. Manual entry of data also increased the probability of errors. In addition, motorists could not use alternative methods to renew their vehicle’s registration. All transactions had to be completed at a local office or through the mail.

#### **D. SIGNIFICANCE: HOW DID THE PROJECT IMPROVE THE OPERATION OF GOVERNMENT?**

The entire vehicle emissions database system was developed by the department’s Motor Vehicle Information Technology (MVIT) staff working with the department’s Research and Development and Compliance Enforcement Divisions. A small group of staff members handled the initial design sessions, development and system testing completely in-house. The entire changeover from the previous vendor operated network to the new DMV network proved to be a seamless experience for all program stakeholders. No serious issues ever surfaced during the critical changeover period which ran between December 2007 and April 2008. Over two million emissions tests transactions have been successfully conducted on the vehicle information database network since implementation.

Having a centralized database and business rule server paved the way to have analyzers with very light client software. Any analyzer vendor can participate in the new system without having to load the analyzer with heavy client software with all the rules

built in for each state. This has made the certification process of any analyzer very easy as it need not be certified for any business rules. Also when multiple certified analyzer vendors participate in the program, changing of business rules only needs to be done at the centralized server with no separate certification process for each vendor.

The VID has simplified the tasks for the department's front line staff because all business functions are now available in one single database. The previous system required front line staff to use both the department application and contractor application when issuing emissions certificates and other secure documents to an emissions station. Now, all functions are easily done in fewer steps, reducing the chance of errors. There were typically several errors each month under the previous contractor system, which required submittal of "Help Desk" tickets and Information Technology staff assistance in order to finalize a resolution. Only a fraction of that number of errors have occurred under the VID, which were all promptly corrected within the agency.

### **E. Benefit of the Project:**

Nevada's motorists no longer pay a "per transaction" fee for emissions tests conducted on their vehicles. Prior to implementation of the VID by Nevada's DMV, motorists were paying more than \$3 million each year for contractor services to operate a database for Nevada's emissions needs.

Emissions test stations no longer need to carry out accounting measures by monitoring the number of transactions between their emissions test equipment and Vehicle Information Database. Under the contractor-run system, emissions test operators kept records on the communication sessions to make certain the monthly bill from the contractor balances with their records. This saves station operators costs for running their business because their employees can be free to carry out more important and profitable tasks.

Information outreach materials for distribution to department customers and regulated industry are a significant cost to any government agency administering an emissions program. The VID allows the applicable outreach document to be automatically printed by the emissions station's test equipment right from the database. This has saved printing, shipping and personnel costs.

Many times in the past a small law change would obsolete thousands of unused outreach materials for the department. Department staff would need to arrange a time and place to discard many cases of these obsolete outreach materials, a very wasteful but necessary process. The VID has permanently resolved this problem. Outreach materials can be updated by department staff and easily implemented through a Project Request submitted to the MVIT Division.

Changes to the content and format of the Vehicle Inspection Report (VIR) can be implemented dynamically by deploying a new VIR format to the centralized server that generates the VIRs. This is a huge cost savings to the department when compared to the previous system in which the new VIR had to be programmed into the client software and distributed to all analyzers.

The VID also allows department auditors to complete audits of emissions stations, emissions inspectors and analyzers directly from the analyzer by accessing the

web portal. This has reduced the paper trail of audits and the time required by the field technicians to document the audit. In the new system, the audits are available in real time for supervisors to review.

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The new network system for diesel testing replaced the paper reporting books, eliminating all costs associated to the paper based system. Also with the new system, the data is transmitted to the central database at every step of the emissions test, eliminating the possibility of errors during a manual transfer of diesel test results from a paper Vehicle Inspection Report (VIR) to the database. Motorists with diesel vehicles can now enjoy the convenience of renewing their registration through several alternative methods, such as in person at a DMV counter, Kiosks, Internet, Telephone, mail and participating emissions stations.

Emissions station managers are given access to Vehicle Inspection Reports (VIR) purchases on the web, which allows them to buy Vehicle Inspection Reports at any time from anywhere using credit cards. This saves station owners the time it previously took to go to a DMV office to buy report certificates. All Vehicle Inspection Reports purchased are associated with a station rather than an analyzer. Thus it can be used by any analyzer in that station. Under the previous system, Vehicle Inspection Reports were sold to an analyzer and could not be used by other analyzers at the station.

Activating or deactivating an emissions station or analyzer can be done through a key stroke from the web portal anytime of the day with no one having to physically go the station. This is very useful when a DMV official spots fraudulent activity at a station and wants to deactivate the station. If required, this can be done at a DMV enforcement office, avoiding any inconvenience in dealing with defiant station owners.

The web portal has various reports available to both DMV employees and station managers, which are generated in real time. These reports serve as a great productivity tool, the cost of which is not tangible.

Adding a new emissions station or analyzer to the system has become very effective with the reduction of stakeholders from three to two. Third party activation for new locations or equipment is no longer needed. Emissions station owners only have to deal with the DMV to get licensed and deal with certified vendors for purchase of analyzers.