

**2008 NASCIO Recognition Awards Nomination  
Commonwealth of Virginia**

**Nomination Category:**  
Government to Business

**Title of Nomination:**  
Virginia's e-Forms for the Mineral Mining and Gas and Oil Industries

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**2008 NASCIO Award Submission**  
**Category: Government to Business**  
**Project: e-Forms for the Mineral Mining and Gas and Oil Industries**

**Executive Summary**

Virginia's Department of Mines, Minerals and Energy ([DMME](#)) serves the minerals and fossil fuels industries with regulatory compliance services in areas of worker safety, public safety, and environmental protection. The agency began implementing electronic government to business services in 2000 by offering an electronic permitting system to the coal industry. DMME is extending similar services, with a different application, to the mineral mining and gas and oil industries.

With an \$80,000 competitive grant from the Governor's Productivity Investment Fund, DMME implemented e-Forms centers to allow applications for permits, licenses and registration and required reports to be submitted through a secure, Web-based interface. Customers once required to submit thousands of pages of paper forms each year can now fulfill most of their submission requirements in a secure, paperless environment.

DMME's e-Forms centers offer significant benefits to industry, the public, and the agency. For industry customers, the online e-Forms applications provide a secure, streamlined process of submitting permit applications and reports to the agency. The Web-based interface enables instant delivery of information as soon as the user completes the forms. Data entry is streamlined and simplified through use of automatic population of data fields, dropdown lists and automated data validation. The system is available 24x7.

For the agency, the applications enable a streamlined permit review process, reduced opportunity for data entry and transcription errors, reduced paper handling, and a reduction in storage space required for paper documents. Shared electronic access to customer submissions by various permit reviewers such as field inspectors, engineers and environmental specialists allows collaborative reviews to take place, an essential capability for agency personnel who work from locations throughout the state. The system also eliminates the need for staff to manually enter data from paper forms, thereby saving staff time and reducing data entry errors. The net result is increased staff availability for essential services such as worker safety and environmental protection activities.

For the public, an inquiry-only version of the system that requires no user ID or password allows viewing of non-confidential gas and oil data and generation of informational reports. This system enables, for example, the interactive searching and downloading of a digital archive of thousands of scanned gas well logs. A similar application for mineral mining data will be available in the near future. Allowing public users self-service access to agency data reduces staff time spent answering questions by phone or email.

DMME's e-Forms centers meet the goals of Virginia's Strategic Plan for Information Technology: increasing accessibility to government, facilitating IT collaboration and partnerships, ensuring a trusted and reliable technology environment, creating a reputation of performance for technology, and increasing worker productivity through the use of technology. These improvements also are aligned with two of our Governor's stated priorities – to be the best managed state, and to be a national leader in preservation and enhancement of our economy.

## Description of the problem and solution

Virginia's Department of Mines, Minerals and Energy ([DMME](#)) serves the minerals and fossil fuels industries with regulatory enforcement and compliance services in the areas of worker safety, public safety, and environmental protection. Industry customers are required to apply to the agency for permits, licenses, certifications, and registrations. They must also submit periodic reports and supporting information. Before, customers manually completed and submitted permit applications and reports on paper forms that were delivered or mailed to DMME. Department staff then entered data from the paper forms into the agency's regulatory databases. Thousands of pages of paper forms per year required thousands of staff hours to enter and manage the data. This process was susceptible to data entry errors and delays in submission and review.

DMME's award-winning electronic permitting system, implemented in 2000 for the coal industry, achieved a 97 percent adoption rate within three years. It was so successful that DMME moved to extend similar services to its next largest customer groups, the non-coal mineral mining and gas and oil industries. Mineral mining customers submitted about 11,000 paper forms annually, and gas and oil customers submitted about 6,000 paper forms annually.

These industries have an enormous economic impact. There are approximately 440 active mineral mines in Virginia, producing over 100 million tons of stone and minerals annually, with an annual value estimated at over \$900 million. The gas and oil industry in Virginia has experienced phenomenal growth. In the last 10 years, the industry has seen a 215% increase in wells representing a 395% increase in economic value. There are more than 5,700 active gas and oil wells in Virginia, producing 112 billion cubic feet of natural gas annually, with an estimated annual value of nearly \$800 million. DMME recognized that streamlining services to these industries would support the rapid growth of the energy and mineral resource availability enhancing Virginia's economy and estimated that adoption would be quick and widespread.

Because legal and regulatory requirements for these industries are substantially different from those for the coal industry, a different application was required. In 2004 DMME sought and received a competitive grant from the Governor's [Productivity Investment Fund](#) of \$80,000 to design and implement a paperless, Web-based e-Forms center, first for the agency's mineral mining customers. The application was later customized for the gas and oil industry.

The majority of the grant funds were used for database and Web server infrastructure, licenses, and contract programming for application operations, the user interface, and business rule development. The work on both systems was supported by student interns and contractors working under the supervision of DMME's internal IT staff. DMME initially consulted with Microsoft Consulting Services to validate the basic application and database architecture.

The e-Forms service is accessible to customers regardless of PC equipment and Web browser. The DMME e-Forms applications are based on Microsoft's Internet Information Server, Windows 2003 Server and the Microsoft SQL Server database platform. The SQL server database was licensed through the Microsoft processor-based license, significantly lowering the cost of ownership to the agency.

Security is provided at multiple tiers through an enhanced firewall, procedures, data checking through application business rules, encryption, and user security through advanced database roles. An agency-internal version of the application provides approval security through single sign-on Active Directory integrated application security.

Both customers and internal agency users enter the application through a secure Web site. The application authenticates each user and grants access only to data associated with that user. Database security is also enhanced through a centralized database auditing function which audits all data changes. Customers submitting information to the agency electronically sign their submissions. The user identification of the submitter is maintained in the database. Industry customers identify to the agency employees and consultants who are authorized to submit various types of data on their behalf. When data submissions have been reviewed and approved by DMME staff, the final document is prepared and the hash key of the document is stored in the database so that the unique hash key verifies the integrity of the data.

DMME's launched the e-Forms for mineral mining customers in January 2006. DMME presented the application at the annual meeting of the Virginia Transportation Construction Alliance (VTCA), the industry trade group. The VTCA served as the principal collaborator in the design and adoption. DMME includes a flyer about the system in annual mailings to customers. Adoption was nearly instantaneous (Figure 1). During the first quarter of calendar year 2008, customers submitted 1,264 forms via the e-Forms center, representing 39 percent of the total number of forms submitted for the quarter.

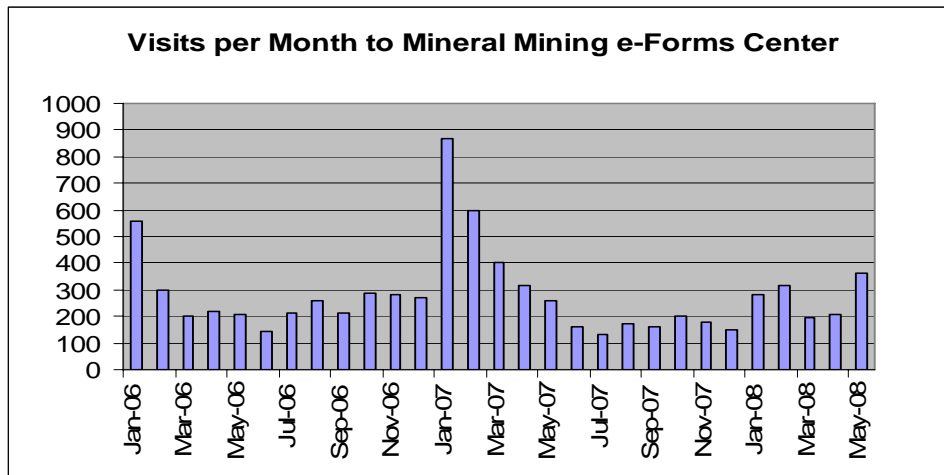


Figure 1. Graph showing monthly usage of the mineral mining e-Forms center, including peak usage when customers are required to submit their annual reports during the first quarter of the calendar year. Higher than normal usage during the first quarter of 2007 reflects a large number of new user registrations in response to agency recruiting efforts.

For gas and oil industry customers, DMME consulted companies to determine their existing internal procedures, request design input and gauge interest and participation. Potential end users were consulted and informed throughout the development process. The e-Forms center was demonstrated at the annual meeting of the Virginia Oil and Gas Association in August 2006. The agency asked for volunteers to be part of a pilot group that would begin using the system in October 2006. Three companies - one small, one mid-size, and one large - and two consultant companies that submit information on behalf of Virginia's largest natural gas operator piloted the system during the 4<sup>th</sup> quarter of 2006. The pilot companies submitted 421 forms electronically.

DMME implemented Phase I in January 2007; 664 forms were submitted electronically during the first quarter of full implementation. During the last recorded full quarter (January-

March of 2008), 1,155 forms were submitted (Figure 2). Approximately 70 percent of the agency's gas and oil customer base uses e-Forms, accounting for 85 percent of transactions. DMME continues to enhance the system, including the addition of new forms.

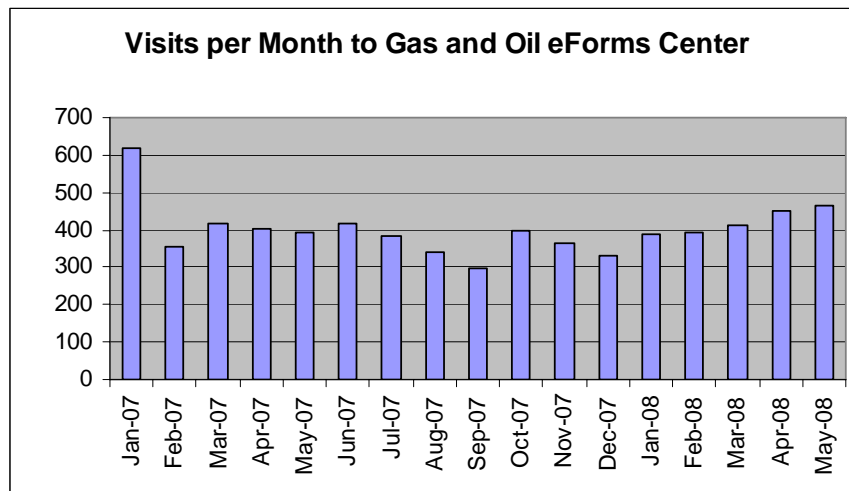


Figure 2.

In addition to providing customers rapid turnaround on required filings with DMME, the e-Forms Center provides a secure “electronic file cabinet” where permit holders can review the latest permit applications on file or research submittals from prior years. Flexible security access can meet the requirements of the largest of DMME customers and a small, one-person operation. This is very important to Virginia’s diverse customer base.

### Significance of the project to the improvement of the operation of government

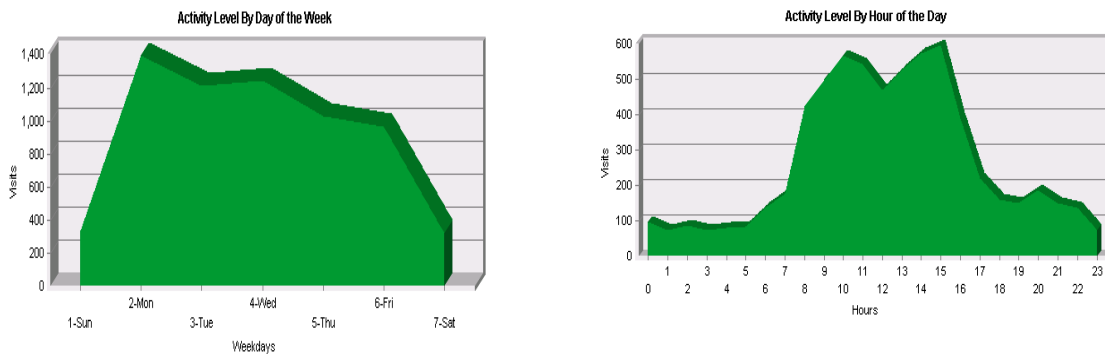
The e-Forms centers deliver substantial cost and service benefits to DMME’s customers, the agency itself, and the public, including:

- Efficiency - The Web-based interface enables instant delivery of information, saving DMME’s customers approximately six days per submittal compared to using the U.S. Postal Service.
- Accuracy - Because customers directly submit their own data and data validation checks are performed on submission, there are fewer data entry and transcription errors.
- Flexibility - The system is available 24 hours a day, seven days a week. Customers can check the status of their applications and reports with the click of a mouse.
- Work flow - DMME personnel required to review submissions are notified by e-mail. For applications requiring multiple reviews, subsequent reviewers are automatically notified in turn, representing a great improvement over the time-consuming process of hand-routing paper forms, sometimes from one office location to another.
- Data integrity and confidentiality- Version control is automated and tracked. The system tracks confidential information as defined by regulations, such as a drilling report for a gas well, automatically controlling access until the confidentiality period expires.

- Records management - The e-Forms center reduces paper handling and storage space required for paper documents, eliminating the need for approximately four 5-drawer file cabinets per year.
- Collaboration - The system enables instantaneous and shared electronic access to among DMME field inspectors, engineers and environmental specialists, allowing collaborative reviews to take place from locations throughout the state.
- Improved compliance and responsiveness - Customer compliance with regulatory requirements and deadlines has increased. Customer data is integrated with DMME's existing field laptop systems, enhancing the ability of field staff to respond rapidly to customers on the ground. The net result is increased staff availability for essential services such as worker safety and environmental protection activities.
- Transparency – An inquiry-only version of the system allows the public to view non-confidential gas and oil data and generate reports. For example, citizens can search interactively and download a digital archive of thousands of scanned gas well logs. Allowing public users self-service access to agency data reduces staff time spent answering questions by phone or email. The gas and oil public inquiry system has experienced hundreds of thousands of inquiries in its first year of operation.

These processes not only save customers time and money over traditional document printing, handling, and mailing, but also reduce time and staff costs through rapid online access to supporting information and past submittals. It takes an average of three to four hours to prepare a mineral mining permit renewal document using paper forms. The e-Forms center reduced this time to as little as one hour per renewal.

Customers are notified by e-mail of the progress of the reviews and approvals. E-mail notifications allow one-click URLs to rapidly connect users to the application and pending submittal. Users can check on the progress of their submissions, reducing DMME time answering calls and researching status information (Figure 3).



*Figure 3. Usage of the DMME e-Forms centers by day of week (left) and by hour of day (right), demonstrating that the centers are available and being used 24 X 7.*

Many states have an online inquiry system for information about their industries, but our customers report that Virginia is the only Appalachian state that offers online submission of applications, forms, and data with an electronic signature capability.

## Benefits of the project

For a relatively modest investment of \$80,000 DMME has provided substantial benefits to two important customer groups, as well as to the agency and the public. The e-Forms centers have streamlined submission of required forms and reports for customers, and streamlined internal agency review processes. The public has greatly expanded access to agency information. Surveys of our customers indicate that Virginia is the only eastern state offering this level of e-Government service to the mineral mining and gas and oil industries.

Customers report substantial time savings in preparing and submitting required applications and reports. For example, an electronic permit renewal with no changes from the previous year in the e-Forms center takes five minutes to complete, compared to one hour for the equivalent paper form. For the 440 mineral mine sites in Virginia, this represents an aggregate time savings of over 400 worker hours per year, for one type of form.

One of the primary benefits to the agency is reduced staff time spent on data entry. These time savings will increase when DMME completes scanning and entering legacy data into the database. Another benefit is reduced need for storage space for paper files, estimated to be at least four filing cabinets per year.

DMME's e-Forms centers meet all five of the goals of Virginia's strategic plan for information technology:

- Increasing accessibility to government.
- Facilitating IT collaboration and partnerships.
- Ensuring a trusted and reliable technology environment.
- Creating a reputation of performance for technology.
- Increasing worker productivity through the use of technology.

The enhanced security provided through this application also complies with the Virginia Governor's [Executive Order 43](#) by amply protecting sensitive customer information entrusted to the agency. These improvements are also aligned with two of our Governor's stated priorities – to be the best managed state in the nation, and to be a national leader in preservation and enhancement of our economy. Virginia Governor Tim Kaine has urged all state agencies to move toward paperless government. The e-Forms centers position DMME at the forefront of this initiative.