

**Sacramento County
Environmental Management Department**

CROSS-CONNECTION PROGRAM PORTAL
NACo Achievement Awards 2013



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1. ABSTRACT

The Sacramento County Environmental Management Department (EMD) launched a new electronic cross connection control program web portal (portal) that dramatically reduces program costs while improving protection of public health and the environment. By using technology, the portal streamlines the time consuming data entry and paper intensive mail-out processes formerly used to track and manage nearly 15,000 backflow protection devices. These devices protect Sacramento County's public drinking water supply from contamination when water lines break or other conditions cause a drop in pressure.

Now, business owners and property managers can have their backflow device tester electronically submit the facility's annual backflow devices test data directly to EMD via the portal. Backflow device testers can also track and submit their certification records and pay for related program fees online 24 hours a day.

Extensive outreach during development and multiple training sessions held prior to "going live" in September 2012, helped ensure the portal roll out was successful. To date, 97% of all devices test results are being electronically transmitted. The transition to electronic reporting along with consolidation of annual reminder notices has resulted in substantial cost savings to both EMD and the regulated community.

2. NEED FOR THE PROGRAM

Prior to implementing the cross connection portal, over 4,000 staff hours were required every year to track and monitor the backflow device inventory. Coupled with the number of program related notices, phone calls, and emails, staff had over 75,000 documents to process annually. Given the different department staff required to accurately manage this process, EMD developed a simplified and more efficient method to provide program services to the regulated community while containing program costs.

3. DESCRIPTION OF THE PROGRAM

Within the public water supply distribution system are points called cross-connections where drinking water piping can be connected to non-drinking water piping or sources. These cross-connections can provide a pathway for backflow of non-drinkable water into potable sources. Backflow can occur either because of reduced pressure in the distribution system (backsiphonage) or the presence of increased pressure from a non-potable source (backpressure). Backsiphonage may be caused by a water main break, booster pump failure, or emergency firefighting activity. Backpressure may occur when HVAC, waste disposal, or industrial manufacturing systems are connected to potable water supplies and the on-site pressure is greater than the distribution system pressure. Under either one of these conditions, water which normally flows from the distribution system to the customer can reverse direction, or backflow, carrying non-potable and potentially contaminated water back into the distribution system through a cross-connection.

Since 1987, the EMD has implemented a cross-connection control program on behalf of regional public water suppliers through existing contractual agreements. As part of cross-connection control program administration, EMD regulates the installation and testing of nearly 15,000 backflow prevention devices that prevent backflow contamination of the public water supply.

To provide faster customer service, better data management, and reduce program costs, EMD launched a web-based portal in September 2012. Throughout the past year, EMD performed a broad range of activities including acquiring, developing and implementing the portal, with contributions from the regulated community and a consultant. Major categories of achievement include:

- Developing An Electronic Web Portal For The Cross Connection Control Program
- Implementation Of Data Transfer
- Performing Stakeholder Outreach
- Performing On-Going User Training
- Improving Data Collection And Accuracy
- Containing Current Program Fees

Each of these categories is discussed in greater detail below.

Developing An Electronic Web Portal For The Cross Connection Control Program

To manage data collected in conjunction with the backflow devices program, EMD uses Decade Software's "Envision Connect" database management system. Each backflow device is categorized and assigned an individual tracking record in Envision Connect. Each database record includes the site address, on-site location of the device, and other device specific information.

As the backflow device owners have the assemblies tested, they have their registered tester electronically submit field test result data to EMD through the portal. The portal updates Envision Connect with the new test data, and then the data is automatically sent to our electronic imaging system for recordkeeping.

Also, registered testers are now able to update their contact information, submit e-copies of their certification documents and pay for program fees using the portal.

Implementation Of Data Transfer

Getting data from the customer based internet portal to our Envision Connect database took quite a bit of technology and collaboration between EMD, Sacramento County Office of Communications and Information Technology (OCIT), and the contractor. Data has to be moved from public facing systems to internal systems in a manner that is approved by OCIT's security group.

Performing Stakeholder Outreach

Outreach efforts included:

- Targeted mass mailings
- Informational flyers included in monthly testing letters
- County website postings
- Presentations to industry groups including Public Works Agencies, Backflow Testers, Sacramento Area Water Works Association, Cal-Nevada Section of American Water Works Association, Business Owners and Property Managers.

Performing User Training

Staff performed the following training in conjunction with the cross-connection control portal:

Sacramento County Registered Backflow Testers

- Held on-site "Portal Basics" training for registered testers before launch
- Present at bi-monthly backflow devices tester certification courses (Cal-Nevada AWWA)
- Hold ongoing user refresher trainings for registered testers

Internal Training

- Database management
- Bi-monthly program staff meetings with archived meeting minutes

Improving Data Collection And Accuracy

- 24 hours a day access allows testers to submit test report data from the office, or directly from the field by using a smartphone or tablet PC
- Acceptable range of field test values are built into the portal data entry screens, ensuring EMD receives correct information
- Tester registration certification documents and their respective expiration dates, are viewable on-line
- Program related fees can be paid for through the portal

Containing Current Program Fees

- Eliminated over 3,000 staff hours annually by transitioning to web portal
- Able to postpone fee increases by streamlining work flows

4. RESPONDING TO ECONOMIC DOWNTURN

EMD is 100% fee supported, and relies solely on fees it charges its regulated entities to recover costs associated with program operation and maintenance. During a recent 5-year program fee study, the cross-connection program was scheduled to have a 45% fee increase in order to fully cover costs.

As a result of the program efficiencies observed since the portal went live, EMD has been able to delay the planned fee increase, and save local small businesses and the community money.

5. USE OF TECHNOLOGY

EMD used the following technologies in developing and implementing the cross connection portal:

- Decade Software's Envision Connect Database Management System
- E-Compliance's Portal Database Management System
- Internet

A more detailed description of each technology employed follows.

Envision Connect Database Management

EnvisionConnect is a private-vendor database management system. The system allows us to create separate records for each backflow devices. Each record contains standard and user-defined fields that EMD uses to record site-specific information and to track the device's status and annual field test compliance.

E-Compliance Portal Database Management

E-Compliance is a private-vendor database management consultant company. The consultant aided in developing the web portal interface where backflow device testing data, tester registration forms and program fees can all be accessed. The portal manages and stores this data which is then forwarded to the Envision Connect database. The portal website is supported on all browsers and is accessible 24 hours a day.

Internet

Postings to EMD's internet site include web pages devoted to public outreach/program descriptions, regulatory/statutory requirements for owners and operators, and guidance documents for using the portal. In addition, EMD created a dedicated cross-connection program email address (crossconnection@saccounty.net) to allow the public to contact EMD regarding backflow devices and portal questions.

6. THE COST OF THE PROGRAM

Program costs for implementing the portal in **Calendar year 2012** are shown below.

SUMMARY OF EXPENDITURES THROUGH 12/31/2012 Sacramento County Cross-Connection Web Portal	
CATEGORY	EXPENSE(\$)
<i>Direct Labor</i>	\$22,746.85
TOTAL	\$ 22,746.85

7. THE RESULTS/SUCCESS OF THE PROGRAM

To date, EMD is receiving 97% of all backflow device test reports electronically through the online portal. We continue to explore outreach and training opportunities to help assist all property owners and backflow testers become more comfortable with using the portal.

By eliminating paper intensive mailout processes and vast amounts of manual data entry, we are able to provide more efficient and budget conscience service. Annual savings include:

- REDUCED Over 67,000 Pieces Of Paper From Being Printed
- SAVED Over \$4,600.00 In Mailing Costs
- SAVED Over 3,300 Annual Staff Hours

The combined savings in staff hours and resource costs enabled EMD to delay the planned program fee increases.

8. WORTHINESS OF AN AWARD

The new EMD cross-connection control web portal is the only systematic county-wide program in the nation integrating cross-connection control program services in an electronic format. With responsibility for nearly 15,000 backflow prevention devices, EMD views the portal as a unique way to manage its existing program with the benefit of providing both faster customer service and saving money.

The new portal builds upon EMD's 25 years of protecting the public water supply from backflow contamination. Backflow incidents can have devastating impacts on public health. For perspective, the Centers for Disease Control documented 57 waterborne disease outbreaks between 1981 and 1998, resulting in over 9,000 illnesses. In one particular incident, ethylene glycol (anti-freeze) back-flowed from an air conditioning cooling tank and into a group of dialysis machines, resulting in the death of several patients. Cross-connection control programs are the first line of defense in preventing future backflow incidents from happening.

EMD created the portal from the ground-up, making modifications to the portal as we received community feedback and by observing what elements worked and didn't work. Both EMD and the community have benefitted from the portal's efficient customer service delivery, enhanced employee productivity, and program cost savings.

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