

# **Governor's Report on the Capability Enhancement Program**



**pennsylvania**

DEPARTMENT OF ENVIRONMENTAL  
PROTECTION

Bureau of Safe Drinking Water

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## Introduction

The 1996 amendments to the federal Safe Drinking Water Act require all states to implement a Capacity Development Program, also known as the Capability Enhancement Program (CEP) in Pennsylvania. The CEP is designed to address the lack of technical, managerial and financial (TMF) abilities of the state's 8,900 public drinking water systems. Limited TMF capability is the root cause for the inability of many systems to meet state and federal health-based drinking water standards. At the request of qualifying systems, the CEP uses facilitators in conjunction with peer-based trainers to assist water systems in improving TMF capability and maximizing public health protection. Pennsylvania's program includes the following components, which are implemented within the Department of Environmental Protection (DEP):

- Capability Enhancement Facilitators;
- Professional Engineering Services Program;
- Outreach Assistance Provider Program;
- Drinking Water and Wastewater Systems Operators' Certification Program;
- The Filter Plant Performance Evaluation, Area Wide Optimization and Partnership for Safe Water Programs; and
- Source Water Assessment and Protection Programs.

The CEP strategy implements a number of basic steps:

1. Developing and maintaining a Priority Ranking System (PRS) to identify and rank public drinking water systems most in need of TMF capability assistance.
2. Evaluating priority drinking water systems to define their specific needs for improvement.
3. Developing "action item" lists to identify needs and set milestones at each system that participates in the CEP.
4. Offering the Professional Engineering Services Program, which assists small systems with engineering needs that they would otherwise be unable to obtain.
5. Monitoring of drinking water systems while they receive assistance to measure progress.
6. Maintaining a partnership with the Pennsylvania Infrastructure Investment Authority (PENNVEST) to ensure that funding recipients for all Drinking Water State Revolving Loan Funds have adequate TMF capability to operate and maintain the system.

## Condition of Our Drinking Water Infrastructure

In 2011, the national Drinking Water Needs Survey showed that \$14.2 billion in construction must be completed over the subsequent 20 years in Pennsylvania to repair or enhance the state's drinking water infrastructure. The previous 2007 survey showed a \$12.9 billion need (normalized for 2011 dollars). Reversing this growing infrastructure need represents a worrisome trend that will require a paradigm shift in the way water systems plan and fund needed improvements to protect public health. Awareness of the need is important, but until water systems realize how to utilize proper asset management practices to fund long-term infrastructure needs, the cost will continue to grow.

Based on information garnered from a subset of 23 out of 97 systems with CEP assessments in 2013, water systems are struggling with implementing proper technical, managerial and financial practices to sustain their systems for the long term. One of DEP's Capability Enhancement Facilitators (CEF) compiled the following data through an informal survey at 23 systems in the CEF's work area:

- 30% of the 23 systems answered that revenues generated by their water system are not sufficient to fund annual expenses associated with the system.
- 65% do not calculate how much it costs their system to produce the water (including all costs such as utilities, labor, chemicals, monitoring, etc.).
- 9% utilize revenues generated by their water system to fund other non-water system needs.
- 61% believe that adjusting user rates is not an option, or they plan to only adjust rates when the system is in deficit or close to a deficit.
- 48% do not have an annual budget.
- 30% have a non-revenue water percentage of at least 20% (lost to leaks, meter error, or otherwise non-billed usage). 39% do not even calculate their non-revenue water rate.
- 61% of the systems evaluated do not know the age, condition and expected life of their water system assets.

The CEFs identify and help systems address the weaknesses mentioned above, among others. Statewide, the CEP is seeing great success in helping system owners who participate in the program. However, if the data garnered in this sub-set of systems is an indication of statewide system capability, there is much work to be done.

In 2011, in partnership with the U.S. Environmental Protection Agency (EPA), DEP conducted a gap analysis. The analysis identified all of the funds that a drinking water system will need over the next 20 years—including capital improvement, operations, maintenance and debt service—and compared that information to the revenues the system could be expected to have over the same time period.

Critical findings of the gap study showed that:

- Pennsylvania's drinking water capital assets are seriously deteriorated and slowly getting worse.
- There is a huge gap between how much money systems will need over 20 years and how much they can expect to have using existing local, state and federal financial resources.
- If user rates were to increase to 1.5% of the median household income, where needed, the 20-year gap would be considerably reduced.
- Oftentimes, systems were unaware of their own long-term infrastructure needs.

The findings of the survey and gap analysis clearly indicate the need to develop a strategic approach to improving Pennsylvania's drinking water infrastructure.

## **Capability Enhancement Program Improvements**

The challenges described in the introduction above have been analyzed over the past three years to improve the delivery of services and support to drinking water systems. That effort has resulted in a draft revised Capability Enhancement Strategy. Although still in draft format, the revised strategy has already achieved the following:

- Refined the Priority Ranking System (PRS) rating process;
- Created an assessment tool that staff will use to assess the TMF capability of drinking water systems;
- Implemented "action item" identification of weaknesses, which is used to track progress at drinking water systems;
- Integrated CEF assistance with the Professional Engineering Services Program and the Outreach Assistance Provider Program to provide comprehensive assistance; and,
- Sharpened the process used to confirm adequate TMF capability in advance of providing financial support with the federal Drinking Water State Revolving Fund (DWSRF).

The strategy applies an improved rating system to identify drinking water systems that may have problems. The PRS uses compliance data from both DEP and EPA databases to annually rate systems. Information such as monitoring data, violation counts and status of certified operators are used to apply a priority score for each community and nontransient noncommunity water system in the commonwealth. The CEFs then collaborate with field staff to determine what systems would be best served by the CEP as opposed to only initiating enforcement activities.

The revised strategy also implements an improved method (called the Assessment Tool, or AT) to evaluate system needs in detail. The AT is a capability self-assessment

completed by the utility that provides CEFs with baseline information to help prepare them for the onsite TMF assessment. In essence, the AT provides a formal method to document the TMF capability of the individual system and improves DEP's ability to document improvements in system TMF capability over time.

Just as importantly, the revisions in the strategy better reflect integration of other related programs. The CEFs are now seeking input from DEP Regional Office drinking water program staff by providing draft TMF assessment reports for comment. CEFs are also pursuing improved financial and managerial capabilities at systems when Filter Plant Performance Evaluations identify financial and managerial causes for technical issues. Likewise, the CEFs are now encouraging systems to pursue capital funding through the DWSRF using the services of the Professional Engineering Services contract, if needed.

Finally, the revised strategy outlines how DEP will evaluate systems for their TMF capability prior to awarding DWSRF capital funding through PENNVEST. For systems requesting funding, EPA requires that DWSRF funds only be provided to systems that are deemed capable or that will become capable as a result of the utilization of the funds. Systems are evaluated for their capability prior to DWSRF funding by the CEF first reviewing the system's PRS score. If the score is below an identified threshold, the system is deemed capable. A score below the threshold ensures that the system does not have major compliance concerns. If a system is above the PRS threshold, they are required to complete the AT and are evaluated on site. A TMF report is given to the system outlining any TMF weaknesses that must be addressed prior to them being considered for DWSRF funding.

## **Program Goals and Objectives**

Program goals and objectives for the CEP are established to protect public health. The goals and objectives continue to encompass enhancements to the following areas:

- Technical capabilities of system operators;
- Financial and managerial expertise of system owners and operators; and,
- Capability of drinking water systems.

The success of the CEP is measured using the following parameters:

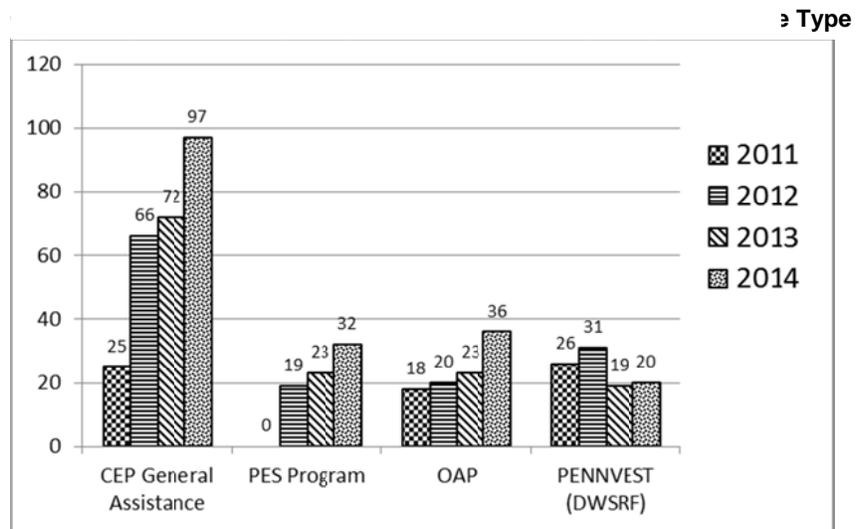
- The number of systems where hands-on assistance is provided;
- Increase in the number of certified operators and the amount of operator training offered;
- Systems successfully addressing action items noted by the CEFs; and,
- Increase in the number of surface water treatment plants with a Filter Plant Performance Evaluation rating of "Commendable."

## Effectiveness of the Capability Enhancement Program

Three CEFs coordinate assistance to drinking water systems that participate in the program. They manage the Professional Engineering Services contract, refer systems to the Outreach Assistance Provider Program, evaluate systems for PENNVEST funding, and refer systems for operator certification training and testing. Below are some highlights of the CEP.

### CEF Coordinated System Assistance

The Capability Enhancement Program had direct contact with 97 systems in state FY '13-14. Typically, the assistance type is divided into smaller categories. Some systems may be included in more than one category. Chart 1 depicts the breakdown of the number of systems participating in the CEP by the type of assistance provided.



The CEP has substantially increased the total number of systems it has had contact with over last year. This is primarily due to the Professional Engineering Services (PES) Program gaining momentum while also integrating Outreach Assistance Provider Program (OAPP) assistance with the PES. The number of systems evaluated for DWSRF funding has remained somewhat consistent. DWSRF evaluations are system-driven based upon how many systems apply for funding and are not a measure of CEP effectiveness as much as it is a measure of CEF workload.

Currently, site-specific success is measured by noting systems' completion of action items in their evaluation report on a system-by-system basis. To date, a number of systems assisted have employed a certified operator, implemented standard operating procedures, and are working toward the basics of asset management as a result of action items identified by the CEFs. Concurrently, the PES program is providing needed engineering support to these systems.

### *Professional Engineering Services Program*

The PES Program has become the primary tool in providing assistance to small water systems. PES provides engineering design to small systems that would otherwise not be able to pay for services of a professional engineer. These are long-term projects that involve DEP's contracted engineer in the private sector to provide feasibility and/or design work while the system simultaneously works through TMF recommendations identified by the CEFs. In order to be included in the PES Program, systems must agree to address certain identified TMF weaknesses. In this way, the CEP is able to obtain "buy-in" from the system to make necessary TMF changes to improve their capability while also providing engineering and outreach assistance.

Baseline numbers are difficult to assign for measuring abstract improvements in TMF capability. The CEFs conduct monthly status meetings with the PES contractor to measure the progress of each system that is receiving engineering assistance. This allows the CEFs to stay informed with project progress and ensure systems are addressing their action items while also receiving engineering support. Since the PES program's inception in FY '11-12, 18 PES projects have reached completion and 21 are still progressing. New projects are already in queue as we begin FY '14-15.

Since its inception, the CEP has provided engineering assistance through the PES program for multiple projects. Table 1 denotes a count of projects that were/are being provided through the PES program.

**Table 1 – Count of PES Assistance Types since Program Inception**

<b>No. of Projects</b>	<b>General Project Type</b>
11	Groundwater Rule 4-log design and permitting
7	Source evaluation, exploration, and/or siting
3	General design services
2	As-built drawings
2	Contract administration/construction oversight
2	Engineering Assessment/Capital Needs Assessment
2	Iron and manganese treatment design and permitting
2	Grant funding support
2	Interconnection design and permitting
1	Corrosion control treatment feasibility study
1	Storage tank design and permitting

Of special note are the two "Interconnection design and permitting" projects. These projects started out as "Groundwater Rule 4-log design and permitting" projects (a regulatory requirement to ensure adequate treatment for disease-causing organisms). As a result of the systems completing action items identified by the CEFs relating to

asset management, the system owners determined that an interconnection to another nearby water system was more feasible. The PES Program provided the needed engineering services, and the systems are now a part of more viable systems.

*Outreach Assistance Provider Program*

OAPP utilizes part-time wage payroll instructors who are certified operators or managers working at peer water systems to provide on-site technical, managerial and financial assistance to water system owners and operators. On-site assistance and training is provided through a combination of instructional videos, classroom and web-based training, and one-on-one assistance to address specific system operational problems. In addition, the financial and managerial assistance includes the development of appropriate rate structures, business plans, long-term budgets and assistance to implement asset management programs.

OAPP has assisted 79 systems since 2011. There has been a steady increase in the number of assistance sites due to CEF referrals.

In 2012 and 2013, the CEP plotted operator certification information through Geographic Information System (GIS) data. DEP mapped the GIS data to identify areas with concentrations of uncertified or under-certified operators for training and testing through the Approved Exam Provider program. Similarly, DEP focused on less populated areas with the OAPP. Through the OAPP initiative, DEP developed and coordinated certification training for numerous trainees from small systems in remote parts of the commonwealth to enable those systems to come into compliance with operator certification regulations. A significant increase occurred in the pass rate of the OAPP training/testing as compared to the statewide average pass rate for the previous two years.

*Drinking Water Operator Certification Program*

As indicated in Chart 2, information from the most recently available data shows that 89% of the nontransient noncommunity systems and 97% of community water systems have designated their available operator(s) in 2013. This represents a 5% and 2% increase in compliance, respectively. The overall compliance rate was 94%, representing a 3% increase in compliance from 2012.

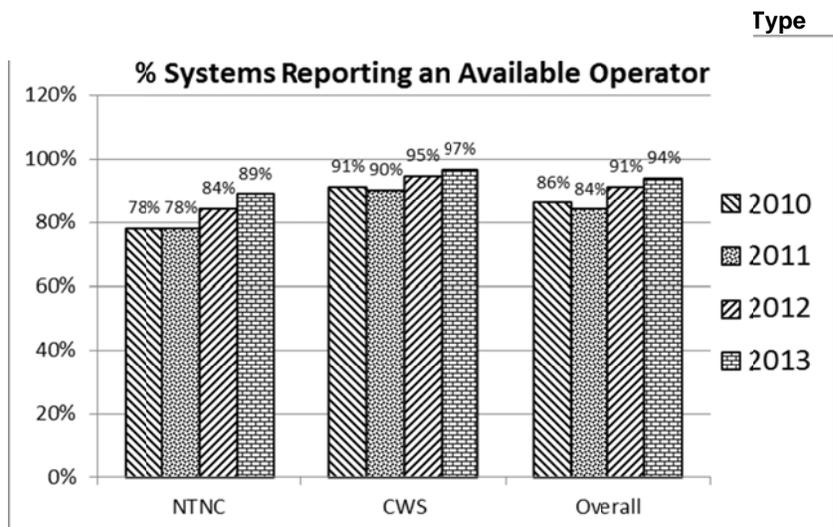
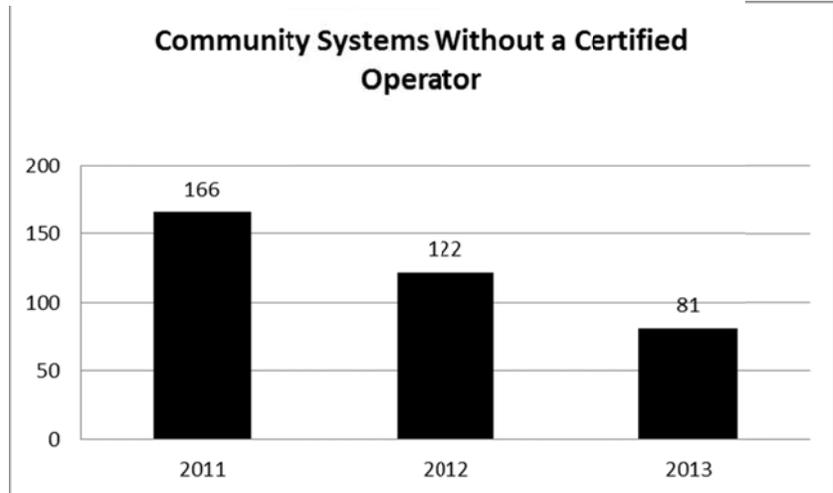
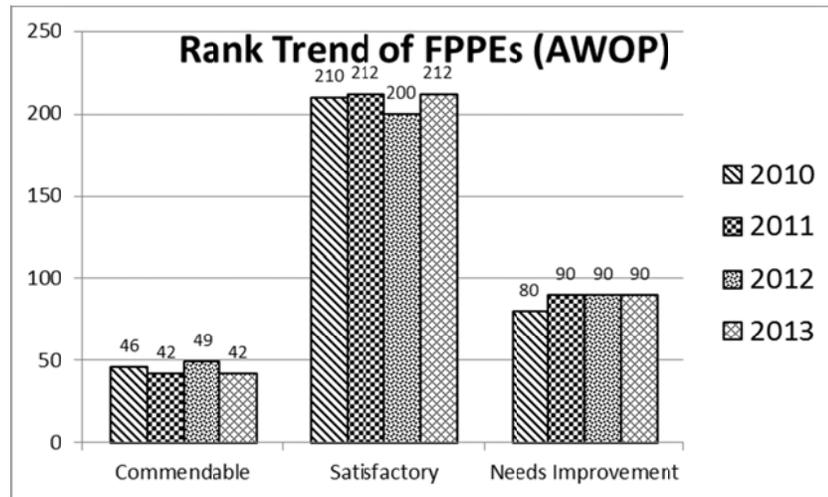


Chart 3 shows that the number of community water systems without a properly certified operator has been steadily declining. This is due to DEP Operator Certification Program staff and Regional Office staff efforts to identify and bring into compliance those systems that have an operator who is not certified or under-certified. The CEP program's targeted trainings and certification exams have also helped in ensuring more systems have properly certified operators.



*Filter Plant Performance Evaluation, Area Wide Optimization and Partnership for Safe Water Programs*

The national Area Wide Optimization Program and the Partnership for Safe Water Program support States with the implementation of optimization programs. Both programs are intended to assist filter plants in improving performance and maximizing public health protection. The programs are closely integrated with DEP's



Filter Plant Performance Evaluation (FPPE) Program. Chart 4 shows a comparison of FPPE ratings for 2010 to 2013. Through this comparison, DEP can measure performance improvements at individual filter plants.

*Source Water Assessment and Protection Programs*

The CEP integrates source water evaluation, protection, rehabilitation and exploration into its evaluation of each system. When a system is determined as needing assistance with source issues, the CEF facilitates the assistance through either the OAPP or PES Programs. The CEF can also refer the system to DEP's source water protection

facilitators, who are located regionally for assistance with source water protection assessment and protection.

## Conclusions and Outlook

The need for infrastructure improvements to Pennsylvania's drinking water systems is great and growing. Safe drinking water regulations primarily address technical issues that can immediately impact a system's quantity or quality of water provided to the public. However, technical compliance issues are often caused by underlying weaknesses in the managerial and financial capability of the decision-makers of the system (i.e., Board members, Authority members, etc.). There are very few avenues to ensure that system management is planning for the future needs of its water system and ensuring adequate revenues will be available to pay for those needs.

As stated previously, a paradigm shift will be needed for water systems and the public they serve to embrace the idea of water as a valuable commodity. With that realization, management of the systems can transition to operate more as a business, such as other utilities. The CEP is doing its part to assist water systems in understanding what capability really means.

While the CEP is successfully doing its part to ensure systems are more technically, managerially and financially capable, the program is voluntary. The three CEFs can only facilitate assistance at a limited number of sites. The CEP will continue to build on the successes it has achieved by completing the following activities:

- Quantify and document the needs of Pennsylvania's public water systems;
- Deliver assistance to as many water systems that resources allow; and,
- Partner with PENNVEST to ensure funding recipients have adequate technical, managerial and financial capability.

DEP's Capability Enhancement Program has expanded its statewide services and support to drinking water systems and operators in the state since the 2011 *Governor's Report on the Capability Enhancement Program*. Although still in draft format, the revised Capability Enhancement Strategy has resulted in numerous program improvements in the technical, managerial and financial capabilities of water systems. In fact, the program has had a quantifiable impact on reducing the number of systems without a certified operator. In FY '14-15 and beyond, DEP will continue to take steps toward expanding the public health impact of the Capability Enhancement Facilitators, the Outreach Assistance Provider Program, and the Professional Engineering Services Program.

## Contacts

More information about the contents of this report and the Capability Enhancement Program is available by contacting DEP's Division of Training, Technical and Financial Services at (717) 787-0122 or at the mailing address below. Information may also be obtained from the Department of Environmental Protection's website at [www.dep.state.pa.us](http://www.dep.state.pa.us) (select "Capability Enhancement Program" under DEP Programs A – Z).

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