



# **Assessing the Environmental and Capacity Development Outcomes of Small Water System Board and Management Training**

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## **Disclaimer**

This material is based upon work supported by the Midwest Technology Assistance Center for Small Public Water Systems (MTAC). MTAC was established October 1, 1998 to provide assistance to small public water systems throughout the Midwest via funding from the United States Environmental Protection Agency (USEPA) under section 1420(f) of the 1996 amendments to the Safe Drinking Water Act. MTAC is funded by the USEPA under Grant No. X83259101. Any opinions, findings, and conclusions or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the USEPA or MTAC.

## **Midwest Technical Assistance Center**

### **Project Final Report**

## **Assessing the Environmental and Capacity Development Outcomes of Small Water System Board and Management Training**

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### **Goal**

This project assesses the outcomes of community water system board and management training (BMT) in enhancing community technical, financial, and managerial capacity and in achieving or protecting environmental quality and public health. The assessment will recognize and compare the diversity of types of board training, and the context in which these trainings are conducted. The outputs of this initiative will include: 1) a manual on outcome measurement of BMT; and 2) an assessment of BMT as implemented in Illinois, Kansas, Kentucky, Mississippi, and Ohio. The outcome of this initiative will be greater knowledge by EPA and partners about how to measure the environmental and capacity development impacts of BMT.

### **Methodology**

The research involved a comparative case study framework (Ragin and Becker 2002) to assess the likeness and differences between board and management training programs and make preliminary assessment of impacts. This involved, first, a compilation of the literature on community capacity development in the area of water. Using this framework, this assessment investigated five state programs to understand how small community water system board and management training was implemented and what the impacts of these trainings were. Our analysis involved five phases. First, we compiled demographic and community water system statistics on each state using the United States Census and EPA data sources, specifically the Safe Drinking Water Information System (SDWIS). Second,

we compiled background data on community water board and management trainings in each of the states. This involved discussions with key stakeholders and compilation of available background information. Third, we analyzed board and management training curricula sent to us by those responsible for trainings in the states where they conducted organized trainings. Fourth, we conducted participant observations of trainings to understand how they were carried out, who attended and what sorts of interactions occurred during the trainings. Fifth, we assessed documents provided by key informants in each state to assess the preliminary impacts of community water board training.

### **Activity Report**

January 2007, background research and field visit to Ohio Board and Management Training. January – August, collection of background materials on board training programs in Ohio, Mississippi, Kansas, Kentucky, and Illinois. This involved discussion with primacy agency officials, Rural Water Association, and Rural Community Assistance Partnership employees. January through June 2008, preparation for and conducting of site visit in Mississippi and Kansas. Kansas had to be cancelled at the last minute because of staff illness. June 2008, presentation of initial findings at the American Water Works Association annual conference in Atlanta, GA. July 2008 through December 2008. Follow up on presentation and carrying out site visit to Kansas. January through September 2009, report and manual preparation.

### **Critical Literature**

Decentralized systems for the management of natural resources are receiving increasing attention. Through the 1990s, many governments progressively devolved responsibility for management of common pool resources (CPR) (natural resources and natural resources infrastructure), to provinces, regions states and ultimately to communities (May, et al. 1996; Robins 2007). This transition has left many local entities with responsibilities that are possibly greater than their innate management capacity.

The field of community-based natural resources management (CBNRM) emerged in the 1990s as a means of helping to improve local capacity. As Fabricius and Collins (2007) states, “CBNRM focuses on the collective management of ecosystems to promote human well-being and aims to devolve authority for ecosystem management to the local (community) level. CBNRM therefore requires strong investments in capacity development of local institutions and governance structures” (Fabricius and Collins, 2007: 83). Governments, donors and non-governmental organizations (NGOs) have increasingly worked to build community capacity for management and governance of natural resources, especially in the context of changing biophysical parameters, such as climate change (Ivey, et al. 2004; Robins 2008).

This paper investigates efforts in the United States to improve community capacity for water and water infrastructure management through training community water board members. Our analysis will draw both on an emerging CBNRM literature that focuses specifically on water management and on the community leadership literature—specifically that which is grounded in the use of the community capitals framework (CCF) to analyze this data. Our paper aims to connect these literatures in the context of community water system governance.

#### Principles of Community Capacity Development

Robbins (2008: 3) argues that:

“The increasing expectation of community members to participate in public policy decision-making [...] needs to be matched by their capacity to meet the responsibilities devolved by governments [...].”

Community capacity development initiatives aim to provide this improved capacity. One way of conceptualizing this capacity is through listing community assets. Community assets are the resources available to the community, such as natural resources (natural capital), existing infrastructure, including water and wastewater infrastructure (built capital), financial resources (financial capital), knowledge, education and public health (human capital), cultural awareness and solidarity (cultural capital), social

networks, trust, and relationships (social capital), and political connections (political capital).

Community development scholars argue that this framework may be used to better understand the opportunities for development in any given community. Community development is the ability to recognize the available assets and utilize those assets in developing goals and visions of a desirable community condition. Through the visioning process, the community can then strategically approach government or other institutions for needed resources to build on the existing, identified assets (Green and Haines 2004; Flora and Flora 2008).

In the context of CBNRM, increasing efforts are under way to at least partially define capacity in terms of these issues. For instance, Moore, et al. (2006) argued that CBNRM could be tabulated as follows in Table 1. The authors argue that CBNRM is a combination of factors – human capital, social norms (social capital), structural networks (bridging social capital), governance arrangements (political capital), and economic capital (financial capital).

**Table 1: A conceptual framework for understanding the elements of capacity building**

| Human Capital                 | Social Capital  |                       | Institutional Capital   | Economic Capital                    |
|-------------------------------|---|-----------------------|-------------------------|-------------------------------------|
|                               | Cognitive (Bonding Social Capital and Cultural Capital)                                       | Structural (networks) |                         |                                     |
| Knowledge, Skills, Experience | Trust and reciprocity, values, attitudes and behavior, commitment, motivation, sense of place | Relationships         | Governance arrangements | Infrastructure; Financial resources |

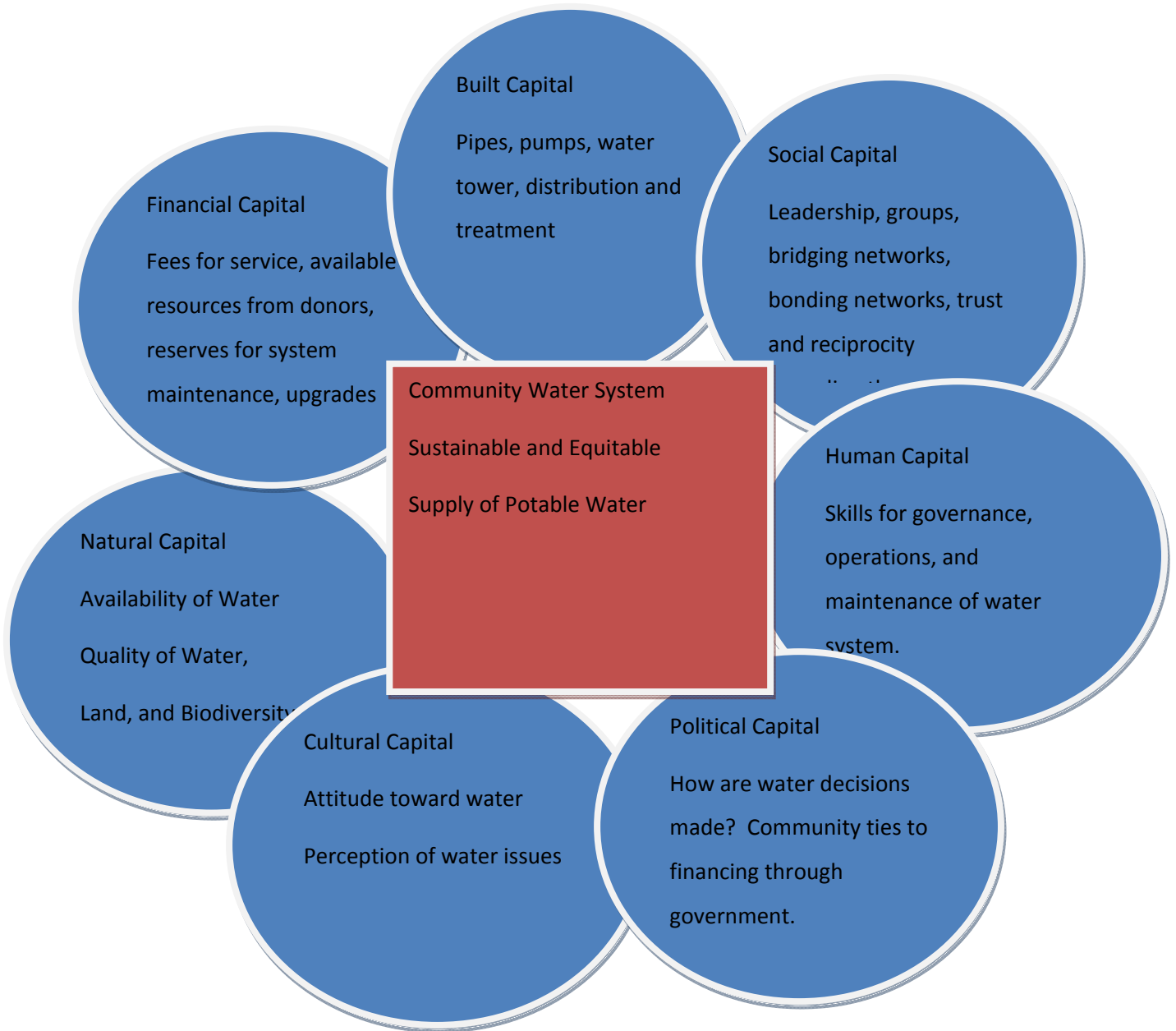
(Modified from Moore et al. 2006 in Robbins 2008.)

Using this as a framework, we expand our analysis drawing on Flora (2004). Flora argues that small community water systems have a legacy of being installed and maintained with minimal public participation. The result is that people come to see water and wastewater as provided services, rather than feeling a sense of ownership of those systems. Simultaneously, small communities have managed community water systems in a vacuum, not connecting those systems to other issues in the community.

Thus, those who become involved in community water system management through being elected or appointed to the water board or committee are too often those with a grudge. All of this leads to management decisions that may be detrimental to the capacity of the water system over time. Rates are kept too low to pay for operations, maintenance and upgrades. Water system staff are under-paid, and this result in water system staff being only those unable to move to other positions. Water infrastructure is left to deteriorate.

Flora (2004) argues that improved management involves several integrated factors: 1) human capital: improved knowledge of water system issues and needs at the individual board member level; 2) political capital: improved connections to be the local community governance structure; 3) bonding social capital: increased interactions between the water operator(s), the water board or committee, and the community council and mayor; 4) social capital: improved communication with regulators, funders, and technical assistance providers; 5) cultural capital: the development of the understanding at the community level that the water system is a community asset that needs attention; 6) natural capital: better understanding of the water source and what will be needed to protect it; 7) built capital: improved water management, distribution and treatment infrastructure; 8) Financial capital: a better financial management plan. These interactions are depicted in Figure 1.

**Figure 1: Intersection of Community Capitals in Water Management**



Using this as a framework we can begin to assess specific community assets that are impacted by community board and management training in the five states of Mississippi, Kansas, Ohio, Kentucky and Illinois. As these five states vary significantly in how BMT is implemented this will allow for a comparison of relative approaches in creating community capacity.



## Methods

Our research methodology follows Ragin and Becker's (2002) comparative case study analysis. Ragin and Becker (2002) argue that comparative case studies can provide important insights into the processes of social change and the role of context in creating that change. Comparative case analysis lends itself to a mixed methods approach. It is possible to do comparative analysis using only quantitative analysis. Indeed, it is important to look at the available statistics in comparing multiple cases. To really compare cases, it is usually important to look at comparative trends over time. This type of analysis is important to understand trends and social facts (presuming one can find and trusts the statistics). We analyzed US Census data from 1990-2000 to look at demographic and economic trends in each of the states in this research project. We also analyzed the Safe Drinking Water Information System (SDWIS) for trends in the number of small community water systems and number of reported Safe Drinking Water Act (SDWA) violations. The interpretation of this data is tricky. We argue that this data is indicative more of SDWA enforcement, rather than of actual compliance by water systems in the state. For this reason, we test whether this data could also be used as a tool for investigating the state level impacts of BMT.

Quantitative analysis from secondary data, however, rarely tells us much about processes or intentions. For that, other methods are necessary. We used two intertwined methods in this project. First, we collected available training materials, reports, articles and publicity pamphlets from trainers and those overseeing training. We content analyzed these documents to determine the goals, objectives, and subjects covered by the training in each state. In as much as statistics about the trainings were available, we collected and analyzed those as well. Additionally, we carried out site visits and participant observation of trainings in each of the states where training was under during the period when this research was conducted. These involved attending one to two days of training in Ohio and Mississippi and interviews with key stakeholders (trainers and program managers responsible for

training). While we carried out extensive conversations and reviewed materials from Kansas, we were unable to coordinate a site visit because of an extended period when the principal trainer was undergoing medical treatment and rehabilitation.

Kentucky's trainings are conducted through trainings targeted at all community community-by-community, and we were unable to coordinate a visit during a time when the trainers felt comfortable with having outsiders visiting the community. BMT in Illinois is similar, only less organized and less frequent. Again, we were unable to coordinate a site visit in Illinois. We did hold discussions with the trainers in both those states.

### **Rationale and Implementation of BMT**

While much of the CBNRM literature has focused on management of game parks, protected forests or other natural resources, this concept should likewise be applied to management of critical natural resources such as drinking water. The drinking water system in the United States is distinct from other industrialized countries because it is both highly regulated and highly decentralized. The 1972 Safe Drinking Water Act and subsequent amendments established a highly complex regulatory framework for water treatment and supply. This framework includes regulatory systems to ensure that water throughout the United States meets public health and environmental standards that includes the limits on the amount of allowable contaminants in drinking water, the allowable discharge and residual from treatment processes, monitoring and sampling regimes, and standards for qualifications of treatment plant operators. The number of monitored contaminants has grown steadily since SDWA enactment to over 160. Implementation of these standards is complicated by the sheer number of systems. According to US Environmental Protection Agency (EPA), there are more than 54,000 community water systems spread across the United States. Eighty-five percent of these systems are small, less than 3,300 connections.

Attention to management of small water systems is critical to maintaining the capacity of water systems and water infrastructure sustainability. Capacity development is required by the 1996 amendments to the Safe Drinking Water Act. EPA defines capacity development as, “capacity refers to a water system’s ability to consistently provide safe drinking water for its customers” (Klappauf, 2000(9): 2). Deanna L. Ruffer, who served as program manager for the two-year Georgia Water Management Campaign stated a link between community water system management and water boards: “Technical, financial, and managerial capacity development starts and ends with educating the decision-makers and policy setters” (quoted in Klappauf 2000, p. 4). In other words, the capacity of community water systems is dependent on the management capacity.

To improve small community water system management, increasing effort in recent years has gone into development and implementation of small community water board and management trainings (BMT). These are carried out by intermediaries ranging from state Cooperative Extension, to the state Rural Water Associations (RWA) and Rural Community Assistance Programs (RCAP). While intuitively, these efforts are important to improving the capacity of small water systems to achieve environmental outcomes, there has been little work documenting the outcomes of these efforts. Below I will describe how this literature has described the elements of: A) the rationale; B) the technical design; and C) the expected outcomes.

#### *Rationale for BMT*

The rationale for BMT is related to efforts to improve the capacity of small water systems, as stated in the 1996 amendments to the Safe Drinking Water Act. The efforts at capacity development have been bolstered further by growing concern about the financial viability of the water delivery system in general. Brown (2004) argues that BMT is a major part of the strategy to help small water

systems grapple with the reality that, because issues cited in the EPA Infrastructure Gap Analysis of 2002:

Without measures to increase revenues and reduce costs, in the next several decades, our water and sewer systems will experience serious financial upsets that may shut some systems down and seriously imperil the operations of many others. The effects will hit small rural systems disproportionately hard. (Brown, 2004: 27)

While Brown argues that BMT is most valuable in helping small water system board members to understand financial management, others see the importance of BMT in helping water boards with basic group decision making process--how to run a meeting, solicit input, and come to closure on issues (Knotts 2004). Ricks (2004: 1) argues that BMT is a means of improving a poor,

[M]anagement structure [to mitigate or eliminate] customer complaints, employee turnover, financial problems, [and] regulatory compliance problems [that] ultimately can spiral out of hand.

A serious issue facing small community water systems is they often lack the resources to hire experienced management staff, thus leaving management decisions to volunteer water boards which often lack management expertise and operators who work at the pleasure of these boards. BMT should provide these volunteers with basic skills for making these critical management decisions, which may range from asset management, to system financial and other planning, to rate structure design and implementation (Kemp-Rye 2004; Ricks 2004).

In short, BMT is deemed necessary because those who serve on the governance entities of small community water systems, who are either elected or appointed by elected officials, the support and training they need in how to run a community water system. According to the EPA, 83 percent of community water systems in the United States serve fewer than 3,300 customers (EPA 2008). These systems have a disproportionately large number of health-based violations and often lack experienced

municipal and board members to implement the kinds of policies and procedures to correct these issues over time. BMT may also help with communication both within the community and with exogenous institutions such as government agencies. Lack of communication is seen as one of the critical sources of problems in small water systems (Dziegielewski and Bik 2004).

### *Training Design and Implementation*

As Ricks (2004) documents, the context for working with small water system creates a climate for BMT. It is important to consider the institutional climate. Is board training encouraged and supported with financial resources, or do communities pay for the service? Is board training required, or voluntary? What are the major issues facing small water systems in the state?

For instance, the role and perceived importance of BMT for small water systems is likely to be greater in states where there are a great proportion of small community systems, as opposed to states where there are large rural water districts or regional facilities. Likewise, the regulatory challenges that small water systems face in a particular state may make a difference. Are the critical compliance issues related to treatment issues (such as compliance with the Arsenic rule) or to administration issues (such as compliance with sampling schedules)? Additionally, concerns about financial planning and asset management may differ by state—likely based on whether there has been a political culture of state level bail outs for small water systems.

Second: What type of board training is offered? The Montana State University TAC has identified two general types of BMT: that which addresses roles, issues, and responsibilities; and BMT that addresses issues of financial management and other more advanced managerial issues (Montana TAC 2008). In addition, BMT may be conducted over longer or shorter time periods and may involve different levels of interaction, information, and use of computer technology (such as web based

training). This analysis will consider the types of BMT carried out and assess the differences in as much as this is possible.

### *Outcomes from BMT Literature*

The BMT literature to date has said little about the actual outcomes. What can be done is to derive intended outcomes from articles and reports on board training. According to Eddy (2006) the role of BMT is to increase the capacity of local board members to help their systems stay in compliance with public health and safety codes, to make financial decisions, to help their systems plan for the future. These general goals by other articles and reports about BMT (see, for instance, Ricks 2004). Taken from this literature, we could arguably say that appropriate indicators would include: What were the relationships between improved small community water system management capacity and environmental outcomes (such as decreased water quality violation)? How did BMT impact compliance with SDWA rules and regulations, and overall system health?

Below we will describe the findings from our research of our five state BMT programs. These findings will include: 1) A brief history of the BMT program; 2) A description of the partnerships that have made the program possible; 3) This Basic statistics about the small community water systems in each of the states; the history of the BMT program; the partnerships that make the BMT program work in each of these states; program funding; the elements of the BMT; and indicators of impact.

### **Findings**

Below we will report our findings by state. In each state we will report: the history of the movement in support of community water board training; the partnerships involved in the Board Management Training (BMT) program; the funding sources; the curriculum utilized; and existing measures of success. We found three basic models of board training in the five states that we reviewed. The first model, fully supported mandatory board training, is represented by Mississippi in our study.

The second model, organized training with incentives for community board member participation, is represented by Kansas and Ohio. The third model, decentralized training on an as-requested basis from the community, is represented by Kentucky and Illinois.

### **Model I: State Case Studies: Mississippi Board Management Training**

The Mississippi BMT and capacity development program is notable as the most comprehensive in the United States. All public community water system board or governing members are required to have training after their election or appointment. This enforced through ongoing capacity development inspections that are carried out by the Mississippi State Department of Health. Community water systems (CWS) are scored on the basis not only on the quality of the water and physical infrastructure, but also on management factors such as the state of the community water system's financial records, whether they have recently raised rates, and how much the operator is paid. Included in this score is whether all board members have received BMT. Below we will provide a brief history of the community water system BMT and specifics about training.

#### *History of BMT in Mississippi*

In 1997, the legislature of Mississippi passed an amendment to Section 41-26-101 of the Mississippi Code of 1972 (the Mississippi Safe Drinking Water Legislation or MSDWL) requiring:

“ each member elected or reelected after June 30, 1998, to serve on a governing board of any community public water system, except systems operated by municipalities with a population greater than two thousand five hundred (2,500), shall attend a minimum of eight (8) hours of board management training within two (2) years following the election of that board member.”

(Mississippi Code 1997, Section 41-26-101(1), quoted from Manning 2002).

This mandate was then backed up by a community capacity development assessment inspection system that was also codified in the same act in 1997. The inspection system empowered the

Mississippi State Department of Health (MsDH) to carry out annual capacity development assessments of community water systems as part of annual sanitary surveys. This assessment is based on a composite score of indicators of technical, managerial and financial capacity which are used to rank community water systems throughout the state. MsDH uses the Capacity Assessment Ratings to identify public water systems that are at risk of being unable to provide safe and adequate drinking water to their customers. Every effort is then made to provide technical assistance to improve those water systems. There is no cost to the water systems for such technical assistance, which is provided by MsDH regional engineering staff, as well as technical assistance contractors paid with set-aside funds available from the DWSRF. Assessment scores are made publically available on the Department of Health and MSU Extension Service (MSUES) web site in the hopes that this will lead to community pressure on water systems to improve their assessment scores. (For a copy of the form, see Division of Water Supply, 2008.) As a local water system newsletter stated:

Assessments include a review of daily log books, housekeeping and bookkeeping records, budget numbers and long-range plans. Also reviewed are state-mandated reporting and sampling requirements, water quality samples, security vulnerability studies, emergency response and sample site plan and accompanying reports. (Water Quality Products 2007).

The Mississippi mandate was the result of a bottom-up initiative. Small water system operators, through the Mississippi Water & Pollution Control Operator's Association (MWPCOA) worked with Mississippi Rural Water Association (MsRWA), which has an effective lobbying presence in the Mississippi legislature. Together, they mobilized and pressured the legislature to pass the above mentioned legislation and to appropriate the resources to support this program. MWPCOA began mobilizing a few years before passage.

The reason behind this initiative was that the Mississippi primacy agency for drinking water at the time could not enforce regulations upon water systems unless they went out of compliance with the



SDWA. This was in part because they lacked authority over the operations of non-profit water systems. MsWPCOA was concerned because of increasing reports of observable mismanagement in small water systems by the board members. Community water operators serve at the behest of water board members. If the board refused to invest in needed upgrades to treatment facilities or infrastructure, the community water system operator was effectively powerless to make those adjustments. Water systems in Mississippi were increasingly at risk of violations and thought to be an increasing public health risk as a result.

Once passed, the amended Safe Drinking Water legislation provided a system for ensuring that community water governance boards received board management training. Communities would be held accountable for investment, or lack thereof, in system capacity. This mandate under the MS SDWL was revised again in 2007, this time requiring the board members of water systems serving populations of 10,000 and below to attend a minimum of eight hours of management training within two years of election.

As part of this effort, the Mississippi State University Extension System developed a peer support initiative in 1997 in collaboration with the MsWPCOA and the MRWA to help communities improve their capacity development assessment scores. Funded by the Mississippi State Department of Health, this program allows communities that score poorly on the capacity development assessment reports to request a peer review by other operators. The service is free of charge to communities.

### *Partnerships*

The Mississippi State Department of Health, Bureau of Public Water Supply (MsDH-BPWS) is the primacy agency for water board management training. By Mississippi code they must collaborate with the “[MsRWA] and other organizations (Mississippi Code 1997, Section 41-26-101(2)). However, the implementation has in practice involved a contract with MSU Extension Service to coordinate the board

trainings. MSU utilizes the skills of operators within the MWPCOA and MsRWA as trainers. Other partners have been involved, including specifically Community Resource Group (CRG), specifically in leveraging funding from EPA and USDA to pay for more advanced BMT trainings for interest community representatives. In recent years this program has been intermittent due to funding fluctuations.

The Department of Health (MsDH) continually seeks financing and technical assistance partnerships with EPA and USDA among other agencies. These partnerships not only provide extra resources for providing training and assessments, but also provide materials that may be used to improve training over time (such as new tools for financial and capital accounting, financial management, and asset management).

MsDH provides the technical assistance contractors an annual list of public water systems determined to be in need of assistance. The contractors then contact the water systems to determine specifics and to provide the assistance needed if the water systems so desire. Periodic reports are provided by the contractors to MsDH to confirm that the assistance being provided is showing a benefit to the public water supplies of Mississippi.

### *Public Engagement*

“[A] primary goal of the Capacity Development Program is for the public, not just the public water systems, to take an active role in assuring the quality of the State's water supply” (MsDH FY 2007 Annual Capacity Report: , p. 5).

The MsDH recommends a relatively narrow perspective of what that *public engagement* entails. For example, the report suggests that customers of highly rated CWS to contact their officials and “congratulate them for doing an excellent job of operating and managing their water system (p. 5).” For customers of low rated CWS, the MsDH recommends customers ask to see the Capacity Assessment

Form and “get involved with their water system to ensure that any needed improvements are completed.”

Public engagement has potential to add greater capacity to both high and low performing CWS. MsDH and low performing CWS need to make explicit what roles effected customers can take to help their systems meet and exceed compliance standards. All CWS can and should take advantage of such efforts to create engaged civic task force that collaborate with their CWS to increase capacity and quality. More research may be needed to determine the extent to which these methods have worked in encouraging public participation and improving system performance.

### *Incentives*

MsDH strictly enforces laws and regulations pertaining to CWS.

“This strict enforcement also encourages water systems without adequate capacity to seek alternate methods of compliance, including the pursuit of mergers with neighboring viable water systems. In most cases, these mergers (or "consolidations") result in the creation of much more viable public water systems, which have the capacity to provide safe drinking water to their customer” (MsDH BPWS 2008, p. 4).

On an individual level, the BMT requirement is only enforced by the water system officials themselves. Should a board member refuse to receive training upon election or appointment within two years, it is up to the board in which that member serves to decide whether or not to remove said official for non-compliance (none of our contacts are aware if such action had been taken). The water system board is motivated to action because compliance with the BMT requirement is included in the MsDH capacity development assessment. Low scores on the capacity assessment have implications in terms of access to financing and public perception.

### *Training Details*

As noted above, board members of water systems serving populations totaling 10,000 and below are required to attend a minimum of 8 hours of management training within two years of election. To make this possible MsRWA attempts to provide 18 or more trainings around the state per year in different regions of Mississippi, that there are trainings a convenient distance from all water systems. MsRWA also reaches out to surrounding water systems in an attempt to reach out to board members in need of mandatory training or those board members wanting additional training exposure (the remaining trainings are reserved by request). Once an event is setup, MSU Extension Service and the training organization reach out to water board members in the training region with the goal of having at least 8 to 10 participants, though they can train with fewer than 8. The training organization often uses the relevant MSU Extension Service county office. Depending on the number of participants, they may use other venues such as the home office of the local small water system. MsRWA tracks compliance with the training requirement by keeping a roster of training attendees, and sends that information to MSU Extension Service. There is discussion of expanding the mandate to require refresher training.

The basic training components are outlined in the applicable Mississippi Code:

The management training shall include information on water system management and financing, rate setting and structures, operations and maintenance, applicable laws and regulations, ethics, the duties and responsibilities of a board member and other information deemed necessary by the department after consultation with the association and other organizations. The department shall develop and provide all training materials. The department may charge a fee not to exceed Seventy-five Dollars (\$75.00) per member to defray the actual costs of providing the materials and training. These costs shall be reimbursed to the board

member as an expense of the community public water system. (Mississippi Code 41-26-101(3), 1997)

Mississippi State University Extension Service has a publically available curriculum used in BMT, the link to which is available in the footnote below<sup>1</sup>. All of the elements stated in the law have been included. Participants are sent home with materials to reference, but may also access available materials on the footnoted website.

#### *Indicators of Outcome: Capacity Development Assessment*

The Capacity Development Assessment Rating Program is utilized to assessing community water system capacity and the impact of BMT in Mississippi. MsDH developed the Program, to promote existing systems' capacity development. MsDH's regional engineers rank the technical, managerial, and financial capacity of each public water system annually during the sanitary surveys. The assessment is basically an "open book test," since the water systems are aware of the questions and the necessary requirements to receive credit during the assessment. The maximum rating possible is "5.0," indicating a water system of significant capacity and minimum is "0.0." The rating is determined using Capacity Assessment Forms (CAFs), which consist of three major sections: 1) Technical, 2) Managerial, and 3) Financial. (See, Appendix A.) Each section includes key questions designed to identify those things that a public water system must routinely accomplish in order to possess the technical, managerial, and financial capacity to comply with all current and proposed requirements of the SDWA and Mississippi's Safe Drinking Water Law. The CAFs were developed by MsDH in conjunction with an Advisory Committee, consisting of representatives of various stakeholder organizations such as the MsRWA, the

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<sup>1</sup> MSU Extension. N.d. Water Board Management and Training Program. <http://msucare.com/water/waterboard/trainingmanual.html>. Accessed July 15, 2009.

Mississippi Municipal League (MML), the MWPCOA, and CRG as well as selected water system managers and operators from throughout the State.

Each year, prior to the annual Advisory Committee meeting (typically held in April), the MsDH staff reviews and evaluates the program, discusses the strengths, weaknesses, and any related problems which may have arisen during the fiscal year, and determines any needed program changes to be reported to and discussed with the Advisory Committee. After input is obtained from the Advisory Committee at the annual meeting, MsDH makes changes as needed to the Program strategy, the following year's CAFs, and other related issues. The Advisory Committee recommended no major changes to the capacity development strategy between 2007 and 2009. Minor changes were made to the CAF instruction sheet to further clarify the scoring system.

Appendix A includes the three CAFs used during FY-2007: 1) The Standard Form - used for community public water systems, 2) the Private Form - used for public water systems that are owned by private investors, and 3) the Non-Transient Non-Community Form - used for public water systems that provide water to 25 or more of the same individuals, in a non-residential manner, on a daily basis (schools, industries, etc.).

We have included in Appendix B, a complete listing of the Technical, Managerial, Financial, and Overall/Average Capacity Assessment Ratings (scores) of Mississippi's public water systems for FY-2005, FY-2006, and FY-2007. While these data are useful in demonstrating the variance in community scores, they are skewed in evaluating the impacts of BMT because of the effects of Hurricane Katrina and Rita<sup>2</sup> (MDH 2008a).

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<sup>2</sup> According the MDH report to the Governor in 2008 (MDH 2008a), due to the immediate effect of Hurricane Katrina and the fallout years later, most of the water supplies in the six coastal counties of George, Hancock, Harrison, Jackson, Pearl River, and Stone did not have their annual capacity assessment performed during FY2006. There are a few exceptions, due to some assessments performed prior to the Hurricane Katrina. These systems are identified with the "KAT" designation in the FY-2006 Overall rating. The "KAT-D" identifies systems that were destroyed and did not resume operations. The "KAT-C" identifies systems that in the long term after Hurricane

One can see better the impacts of the combined capacity development program, BMT plus the Peer Review program through Appendix C, which contains individual 4-Year Distribution Charts for the scores for each category (FY-2003 to FY-2007). MsDH argues that the trend in all categories “away from lower scores (0 through 3) and toward higher scores (4 and 5)” indicated a trend toward improved capacity for water systems throughout Mississippi until the disasters of Katrina and Rita. Appendices B and C in the Annual Capacity Report from FY 2006 demonstrates that by MsDH measures over a 4 year period, the overall quality and capacity of MS CWS has improved, a noteworthy success (p. 5).

#### **Model II Case Study I: Kansas Board Management Training.**

Kansas is among a growing number of states that have developed BMT programs that do not require participation by community water boards, but instead attempt to provide incentives to encourage participation in the training programs as part of broader capacity development efforts. Trainings are held periodically and communities are invited to send participants. Incentives are provided for participation in trainings including placement on the priority list for community water system financing.

#### *History of BMT in Kansas*

In response to the need as codified under the 1996 amendments to the Safe Drinking Water Act, the Kansas Department of Health and Environment (KDHE) assembled the Kansas Capacity Development Workgroup in March 1999 to recommend ways to improve the capacity of community level public water systems. Thirty drinking water stakeholders from across the State were invited to participate in the Workgroup. The Workgroup met 8 times across the state during 1999 and 2000 to recommend strategies for addressing BMT. The Workgroup developed a *Report of Findings* for the Kansas Capacity

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Katrina elected to consolidate with a neighboring system(s). The "CON" designation identifies systems that were consolidated with existing water supplies either hurricane or non-hurricane related. Newly created water supplies are identified by "NS"

Development Strategy. The KDHE *Report of Findings*, lists the 15 recommendations that were submitted for consideration by KDHE in the State Strategy (KDHE 2005: 3). Eight of the 15 recommendations were chosen based on their potential to produce significant gains in capacity (the remaining 7 were to be considered at a future date) (KDHE 2005). Table 2 lists the 8 items chosen and status of those actions. Note board and management training is listed as the eighth item.

**Table 2: Recommended Actions to Improve Small Community Public Water Systems**

| <b>Recommendation Implementation</b>                             | <b>Status</b>               |
|--|-----------------------------|
| TFM Surveys for all community water systems Implemented          | Conducted every 3 years     |
| Require water use reports from all systems Implemented           | Required annually By DWR    |
| Develop a PWS business planning guidebook Implemented            | Part of KanCap              |
| Develop PWS finance training program Implemented                 | KanCap/EFC Financial Tools  |
| Require all systems to install customer meters Under Development | Deferred                    |
| <b>Develop board/council member education program</b>            | <b>Implemented – KanCap</b> |

The Workgroup report argued that the goal should be that all public water systems be able to meet the technical, financial, and managerial (TFM) capacity to comply with all regulations by 2010. New water systems must demonstrate their TFM capacity to comply with the regulations in order to be certified under the KDHE New Systems Strategy. The KDHE New Systems Strategy ensures that “KDHE will not certify a new system until it has demonstrated the TFM capacity to comply with drinking water regulations” (KDHE 2008: 4).

KDHE, in an effort to ensure the Strategy remains relevant to Kansas’ CWS, collaborates with stakeholders to seek input and pursue alterations before the tri-yearly *Report to the Governor*. The stakeholders review the strategy and current benchmarks (benchmarks are determined by a Capacity Survey submitted every 3 years to all CWS to determine changes in capacity, strengths and weaknesses). Alterations are noted in the Appendices of the *Report to the Governor* (KDHE 2008).



## *Partnerships*

KDHE contracts with a number of partners in implementing the KanCap program. KDHE has an ongoing contract with the Kansas Rural Water Association (KRWA) to assist in the design of training materials, advertise and encourage community officials to attend trainings, and to advertise trainings in their publications and conferences. Most of the trainings through 2008 were actually carried out through the Capacity Development Office at KDHE. As a result, when key staff had medical problems, a gap occurred in training.

The agency is hoping to expand training participants in the KanCap class sessions by contracting out to Ranson Financial Consultants and KRWA, which is funded by the drinking water revolving loan fund set-aside. Ranson also provided technical assistance to 12 of the 68 CWS that downloaded and utilized the Rate Checkup software program (this is a 1 yr contract), as well as onsite financial planning assistance (budget review, capital improvement planning)<sup>3</sup>. KDHE also contracted with Boise State University's Environmental Finance Center to develop an online financial planning and rate-setting tool for CWS, and the Kansas Rural Water Finance Authority (KRWFA) to conduct financial reviews for all systems applying for a loan.

The KRWA is contracted to handle the Small System Technical Assistance 2% Set Aside, which funds the technical assistance program to small CWS with populations less than 10,000. Assistance is to provide to all small systems, with an emphasis on surface water compliance. This contract is meant to be preventative in nature with KRWA providing 1775 of training hours per year and is likely to be renewed annually.

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<sup>3</sup> KDHE uses a number of indicators to determine if a CWS is eligible for Ranson's financial planning assistance. While systems with drinking water violations are given greater weight, the Capacity Development Survey, enforcement actions, and referrals also factor into this determination.

### *Incentives: Performance-Based Loans*

Compliance issues serve as a part of the KDHE incentive structure. Water system loans administered through the Kansas State Revolving Fund (SRF) or other state agencies are contingent on demonstration of TFM capacity or at least a willingness to take steps toward achieving capacity. KDHE can condition the loans to address TFM issues, does not always include a long range plan.

Loans are vital to the continued operation of Kansas CWS. The 2008 report states that “loans awarded under the Program have helped systems achieve and maintain compliance with SDWA regulations. As new regulations are implemented loans will continue to help systems meet the ever increasing challenges they face in achieving compliance. In addition, the KDHE contracts with the KRWFA to conduct financial reviews for all systems applying for a loan” (KDHE 2008: 15).

KDHE has also attempted to provide incentives through Capacity Development Achievement Awards. KDHE distributed 7 awards in 2007 to CWS that demonstrated excellence in TFM capacity development. (2007 was the first year of this new program.) Funded by the EPA drinking water revolving loan fund set-aside, the Awards are part of the State Capacity Development Strategy for Existing Systems.<sup>4</sup>

### *Training Details*

For KDHE, BMT plays a critical role in building management capacity within broader concerns about community water system capacity development. The KDHE contracted with KRWA to develop a curriculum and a training program for BMT. The curriculum materials were reviewed by customer and stakeholder organizations such as the Kansas Section of the American Water Works Association

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(KAWWA), and the Kansas Municipal League. These combined efforts led to the KanCap Board and Management Training curriculum. The training manual includes information on technical, managerial and financial capacity.

The KanCAP Trainings are broken up into technical, financial, and management areas of capacity for running a small community water system in Kansas. An article by the KRWA training coordinator in 2008 classified the critical issues by capacity area:

**“Managerial Capacity:**

- Roles and responsibilities of board/council members
- Conducting meetings
- Customer service policies
- Emergency water supply plans
- Personnel policies
- Benefits and legal issues.

**Financial Capacity:**

- Understanding your audit
- Budgets
- Record retention
- Capital improvement plans
- Rate reviews

**Technical Capacity:**

- Water rights Water conservation/drought planning
- Operator certification
- Monitoring, reporting and record keeping
- O&M plans, rules/regulations
- Safe Drinking Water Act regulations
- Reducing unaccounted for water loss” (Jackson 2008: 47),

In the same article, the training director goes on to argue that graduates of BMT should be able to answer the following set of questions:

What Kansas regulations are required of all water systems? What comprises an officially approved business plan? Is having a cash reserve of 60 to 180 days of operating expenses adequate? How do we gage our operating expenses? Will a financial audit detect fraud? Does Kansas law require cities to retain canceled checks for five years? How many stages are there in

a Water Conservation Plan? What three items must be in a motion to go into executive session? Why and what water quality samples must be analyzed? What options does a public water system in Kansas have for financing (loans, grants or bonds)? (Jackson 2008: 47)

KDHE and KRWA clearly presumes that basic small community water system capacity would be indicated by the ability of board members to answer these questions about small water system TMF.

While the KANCAP materials have been available for self instruction, KDHE has attempted to provide incentives for classroom training through providing the materials free of charge to all those who participate. Since KDHE offers both comprehensive TFM trainings, and stand alone trainings by capacity area, they are then able to award those systems where board members have taken complete the complete KANCAP series. It should be noted that unlike the other programs we have analyzed. They also have a certification and award program for the level of participation.

From 2005 through 2007, KANCAP had successfully trained 327 people in classroom, and over 170 have received training in all three capacities (KDHE 2008). Of the almost 330 people trained, 143 individuals, representing 44 public water supply systems received KanCap classroom training in FY2008 (KDHE 2009: 5), 132 people representing 47 public water systems participated in classroom training in FY 2007, 75 board/council members, representing 41 public water supply systems completed KanCap training in two training sessions in FY2006 (KDHE 2007).

In 2006 and 2007 trainings were held in Topeka at the EPA Region VII offices. In 2008, an effort was made to do classroom training in multiple regions of Kansas. The outreach for these trainings has been carried out through KRWA and Ranson as well as KDHE. As Jackson (2008: 47):

Kansas Rural Water Association will be sponsoring “regional” KanCap training in the coming months. Let KRWA know if an RWD or city is interested in hosting a board/council training workshop. KRWA will work to set time and locations of training to best fit the needs of boards/councils in the area.

*Indicators and measures of success*

Kansas has attempted to measure the impacts of board training through multiple methods. First, KDHE administers a survey after training sessions that track what issues were covered and the extent to which the training met the expectations of participants. Through this survey, KDHE is able to track the numbers trained by the designated categories (technical, managerial, financial). Responses are included in Table 3.

**Table 3: KanCap Classroom Training Evaluations Summary (KDHE 2008: 5)**

| <b>Managerial Section Evaluation</b>          | 1   | 2   | 3   | 4  | 5  | 9  | NR | Total | 254 | Combined 1 & 2 |
|---|-----|-----|-----|----|----|----|----|-------|-----|----------------|
| <b>Topics Covered (Q. 1 – Attachment C)</b>   | 166 | 59  | 18  | 4  | 0  | 7  | 0  | 254   |     | 225            |
| Percent (Q. 1)                                | 65% | 23% | 7%  | 2% | 0% | 3% | 0% | 100%  |     | 89%            |
| <b>Worth Time (Q. 4 – Attachment C)</b>       | 132 | 94  | 17  | 3  | 2  | 0  | 6  | 254   |     | 226            |
| Percent (Q.4)                                 | 52% | 37% | 7%  | 1% | 1% | 0% | 2% | 100%  |     | 89%            |
| <b>Trainer Prepared (Q. 6 – Attachment C)</b> | 201 | 39  | 6   | 3  | 3  | 0  | 2  | 254   |     | 240            |
| Percent (Q.6)                                 | 79% | 15% | 2%  | 1% | 1% | 0% | 1% | 100%  |     | 94%            |
| <b>Financial Section Evaluation</b>           |     |     |     |    |    |    |    |       |     |                |
|   | 1   | 2   | 3   | 4  | 5  | 9  | NR | Total | 269 | Combined 1 & 2 |
| <b>Topics Covered (Q. 1 – Attachment C)</b>   | 133 | 95  | 30  | 7  | 1  | 3  | 0  | 269   |     | 228            |
| Percent (Q.1)                                 | 49% | 35% | 11% | 3% | 0% | 1% | 0% | 100%  |     | 85%            |
| <b>Worth Time (Q. 4 – Attachment C)</b>       | 119 | 109 | 29  | 2  | 5  | 0  | 5  | 269   |     | 228            |
| Percent (Q.4)                                 | 44% | 41% | 11% | 1% | 2% | 0% | 2% | 100%  |     | 85%            |
| <b>Trainer Prepared (Q. 6 – Attachment C)</b> | 160 | 72  | 26  | 5  | 2  | 0  | 4  | 269   |     | 232            |
| Percent (Q.6)                                 | 59% | 27% | 10% | 2% | 1% | 0% | 1% | 100%  |     | 86%            |
| <b>Technical Section Evaluation</b>           |     |     |     |    |    |    |    |       |     |                |
|   | 1   | 2   | 3   | 4  | 5  | 9  | NR | Total | 247 | Combined 1 & 2 |
| <b>Topics Covered (Q. 1 – Attachment C)</b>   | 132 | 80  | 16  | 3  | 2  | 14 | 0  | 247   |     | 212            |
| Percent (Q.1)                                 | 53% | 32% | 6%  | 1% | 1% | 6% | 0% | 100%  |     | 86%            |
| <b>Worth Time (Q. 4 – Attachment C)</b>       | 140 | 66  | 22  | 6  | 1  | 0  | 12 | 247   |     | 206            |
| Percent (Q.4)                                 | 57% | 27% | 9%  | 2% | 0% | 0% | 5% | 100%  |     | 83%            |
| <b>Trainer Prepared (Q. 6 – Attachment C)</b> | 157 | 46  | 20  | 8  | 2  | 0  | 14 | 247   |     | 203            |
| Percent (Q.6)                                 | 64% | 19% | 8%  | 3% | 1% | 0% | 6% | 100%  |     | 82%            |

**Legend:**

|   |
|---|
| <p><b>Topics Covered:</b> 1 = Very Valuable through 5 = Not Valuable<br/> <b>Worth Time:</b> 1 = Very Much through 5 = Very Little<br/> <b>Trainer Prepared:</b> 1 = Very Much through 5 = Very Little<br/>           9 = No Opinion, NR = No Response, Combined 1 &amp; 2. = Total of 1 &amp; 2 Rankings</p> |
|---|

*Measures: Efficacy of Existing System Strategy*

The Capacity Development Workgroup recommended that KDHE use a tri-yearly water system survey to measure improvements in water system capacity. Prior to the 2002 Report to the Governor, KDHE developed and completed the first Capacity Development Survey, which established the baseline data that enables KDHE to measure improvements or identify weaknesses in water system capacity. The

tri-yearly survey is also used to identify areas where assistance is needed to help systems achieve and maintain TFM capacity.

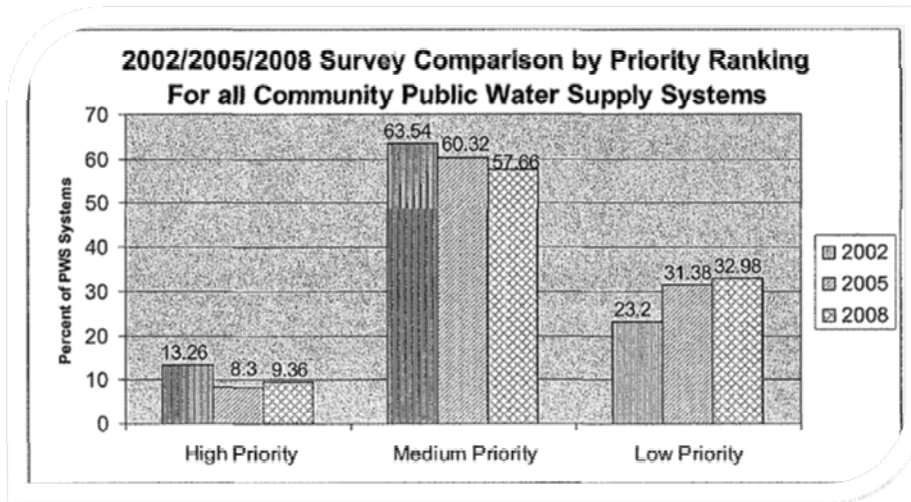
The survey responses establish a score for each CWS, which are then divided into priority categories of High (insufficient in the three TFM areas, or extremely deficient in one), Medium (CWS may be in compliance but exhibit a few TFM deficiencies) or Low (least likely to exhibit compliance problems); Table 4 summarizes the results of the 2008 Survey. The ultimate goal is to have the fewest number of systems in the high category with the majority of water systems in the low category. KDHE has focused mostly on CWS in the *high* category, but has recently concluded an emphasis is needed to be placed on *medium* categories to move them into the *low* category. A CWS system is prioritized by the survey response score, the compliance data, sanitary surveys and information from the district offices.

**Table 4: 2008 TFM Capacity Development Survey Summary (KDHE 2008: 11)**

| Total Possible Points on Survey         |                   | 124               |                |
|---|-------------------|-------------------|----------------|
| Highest Score (2 systems)               |                   | 86                |                |
| Lowest Score (2 systems)                |                   | 2                 |                |
| Priority Ranking Summary                |                   |                   |                |
| Priority Category                       | Points            | Number of Systems |                |
| High                                    | 40 or More Points | 80                | 9.36%          |
| Medium                                  | 20 to 39 Points   | 493               | 57.66%         |
| Low                                     | 19 Points or Less | 282               | 32.98%         |
| <b>Total Number of Surveys Analyzed</b> |                   | <b>855</b>        | <b>100.00%</b> |

Initial analysis has indicated an improvement in all categories from 2002 to 2005 (which is to say that the number of high priority cases decreased while the low priority cases increased). (See, Figure 2.) They found mixed results in 2008. Low priority rankings increased, but there was also an increase in high priority rankings.

Figure 2: Survey Comparison by Priority Ranking for all Community Systems (KDHE 2008: 12)<sup>5</sup>



EPA studies highlighting the greater susceptibility of small CWS to TFM capacity maintenance prompted KDHE to analyze the TFM survey results by system size. Figure 2 shows the comparison among the 2002, 2005 and 2008 surveys by population. Analysis of the survey data is consistent with EPA conclusions that small systems experience greater difficulties. The survey data for all three years indicates that the systems most often in the high priority category are those serving a population of 500 or less. KDHE, referencing these results, found that “KDHE needs to continue to place emphasis on small drinking water systems and focus additional technical assistance to those systems most in need (KDHE 2008: 12).”

#### Model II: State Case Studies: Ohio Board and Management Training

Ohio represents another case in our second model of BMT. Board training is offered, but not required for community board members. In the case of Ohio, BMT is part of the overall capacity development strategy, but is not integrated explicitly into the strategy for improving individual CWS capacity.

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<sup>5</sup> Comparison of the 2002, 2005 and 2008 surveys of their progress toward achieving TFM capacity.

### *History of the Ohio BMT Program*

The Ohio BMT program came out of interaction between Great Lakes Rural Community Assistance Partnership (GLRCAP), administered by W.S.O.S –CAC, Inc. a social services agency and Ohio EPA (OEPA) Division of Drinking And Ground Water (DDAGW). GLRCAP already played an important role in working with small community water systems in Ohio both assisting with providing community technical and managerial capacity development issues. OEPA recognized the need to explicitly address the requirement under the 1996 amendments to the SDWA to improve managerial capacity. GLRCAP proposed to conduct community BMT. OEPA, in turn, contracted with GLRCAP Ohio to provide these trainings. Trainings have been held since 2004.

As described by OEPA (OEPA DDAGW 2008: 5)

Each year Ohio EPA DDAGW provides funding to W.S.O.S Community Action Commission, Inc., Great Lakes Rural Community Assistance Program (Ohio RCAP) to present training courses as part of the Drinking Water Assistance Fund program goals and objectives. These one-day courses are free and targeted to board members, mayors, water system superintendents and operators.

The success of the trainings in terms of participant evaluations has led RCAP to offer an increasing number of trainings. In 2005/2006, RCAP conducted 11 trainings, with 349 participants overall representing 161 water systems. In 2007/2008, RCAP conducted 16 trainings with 564 attendees representing 332 community water systems. In Fiscal Year 2008, RCAP conducted 23 trainings. There were 514 attendees representing 250 water systems. (See, Table 5.)



**Table 5: Number of Trainings and Percent of Local Government Attendance**

|           | Trainings Held <sup>6</sup> | Number of Participants <sup>7</sup> | Number of Systems represented <sup>8</sup> | Number from Management/Board <sup>9</sup> |
|-----------|-----------------------------|-------------------------------------|--|---|
| 2005/2006 | 11                          | 349                                 | 161  | .32                                       |
| 2007/2008 | 16                          | 564                                 | 332  | .3  |
| 2008/2009 | 23                          | 514                                 | 250  | .46                                       |
| TOTAL     | 50                          | 1427                                | 714  | .36                                       |

*Partnerships*

Partnerships play a role in two aspects of this project: funding trainings, preparation, and publicity; and implementing and publicizing the training. While OEPA DDAGW provides some of the base line funding, Ohio RCAP leverages federal grant money in carrying out this research as well. Specifically, Ohio RCAP will utilize technical assistance financing from EPA Safe Drinking Water Capacity Development program to supplement state funding. Funding resources comes through RCAP’s national EPA contract as well as USDA rural development. Ohio RCAP and OEPA work with the Ohio Rural Water Association, Ohio State University, the Ohio Governor’s Office of Appalachia, USDA Rural Development (USDA-RD), the Ohio Section of the American Water Works Association, Ohio Municipal league, Ohio Water Environment Association, and the Small Community Environmental Infrastructure Group to advertise training.

Ohio RCAP also works with many of the same agencies to ensure that small community water systems and their board members are informed about the time and place of trainings. OEPA attends the

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<sup>6</sup> Derived from Ohio EPA Capacity Assurance Reports 2005-2008. Retrieved from <http://www.epa.ohio.gov/ddagw/capability.aspx> on 08/31/09.

<sup>7</sup> *ibid*

<sup>8</sup> *ibid*

<sup>9</sup> Calculated from participant rosters provided by Ohio RCAP.

trainings so that they are available to talk with both current and perspective community water system board members and employees about issues in their own system.

### *Incentives for Participation*

OEPA does not mandate BMT but instead provides incentives for attending training courses. While OEPA will not pick up attendant costs such as mileage of attendees, the training courses themselves are offered at no cost to participants. Under the contract with OEPA, RCAP supplies trainers, materials, and arranges for facilities. Individuals participating in the program receive OEPA operator continuing education units (CEUs). They also receive scores contributing to the local water system board's financial score (which is a deciding factor in the loan application process). OEPA has also started to look at whether a system's decision makers have attended BMT in considering funding. Also USDA-RD southwest Ohio office has issued a letter of conditions with a requirement that members of a "new" rural water system attend all three trainings. OEPA has also required local officials to attend trainings as part of their enforcement settlements.

While this has been successful in encouraging attendance for water operators, according to RCAP it was only minimally successful through 2006 in encouraging local government officials to participate. In 2007, Senator Voinovich sent a letter to local government officials encouraging participation in RCAP training initiatives. This resulted in improved participation by local government officials and community water board members. (See, Table 5.) Senator Brown's office has now taken an interest as well.

### *Training Details*

From 2004-2008 OEPA provided support for Ohio RCAP to offer community water board and management training courses. Table 5, above, summarizes the numbers of trainings held, the number

of attendees, and number of systems affected. Ohio RCAP offered two types of trainings in 2005/2006: Utility Management Training and Financial Management Training. These two Training courses are summarized in Tables 6 and 7.

The Utility Management Training covers an overview of technical, managerial, and financial issues. Since 2004, according to an RCAP brochure (Ohio RCAP 2008), more than 900 people have attended Utility Management trainings. This training offers an overview of technical, managerial and financial capacity issues. The training involves five contact hours. The training is conducted through a MS Office Power Point presentation, broken up with specific sections on each of the subject areas and sub areas listed in Table 7. Each participant is supplied with a three ring binder with both PowerPoint handouts and background materials. The training consists of presentation of the PowerPoint slide interspersed with stories from personal experience as well as requested audience participation.<sup>10</sup> RCAP also provides a copy of slides and reference materials on CD (which includes even more exhaustive background information as well as USEPA's STEP Guides and Best Practice Guides.

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<sup>10</sup> Based on participant observation at a Utility Management training in January 2007 in Reynoldsburg, OH.

**Table 6: Ohio RCAP Utility Management Training: Topics and Agenda (Ohio RCAP 2009a)**

| Utility Management Training Topics   | Utility Management Training Agenda   |
|--|--|
| <p>TECHNICAL CAPACITY</p> <ul style="list-style-type: none"> <li>• Management’s responsibility for operations</li> <li>• The Operator’s responsibilities</li> <li>• OEPA’s role</li> <li>• Operation &amp; maintenance of systems</li> <li>• Existing and proposed rules &amp; regulations</li> </ul> <p>MANAGERIAL CAPACITY</p> <ul style="list-style-type: none"> <li>• Regulatory and legal requirements</li> <li>• Dealing with planning and emergencies</li> <li>• Personnel and staffing issues</li> <li>• System policies and procedures</li> <li>• Security issues</li> </ul> <p>FINANCIAL CAPACITY</p> <ul style="list-style-type: none"> <li>• Capital improvement planning</li> <li>• Budgeting</li> <li>• Rate-adjustments</li> <li>• Record keeping</li> <li>• Replacement &amp; emergency funds</li> </ul> | <p>AGENDA</p> <p>8:30 - 8:55 Registration</p> <p>8:55 - 9:00 Welcome &amp; Introductions</p> <p>9:00 -10:00 Managerial Capacity</p> <p>10:00 -10:15 Break</p> <p>10:15 -11:15 Managerial Capacity (cont.)</p> <p>11:15 -12:00 Technical Capacity</p> <p>12:00 - 1:30 Lunch - On your own</p> <p>1:30 - 2:00 Technical Capacity (cont.)</p> <p>2:00 - 2:45 Financial Capacity</p> <p>2:45- 3:00 Break</p> <p>3:00 - 4:00 Financial Capacity (cont.)</p> |

Since 2004, more the 400 people have attended Ohio RCAP’s Financial Management training (Ohio RCAP 2008). The training provides attendees with an overview of the laws regulations and policies that have driven new initiatives on record and book keeping, financial planning and accounting. These include discussion of basic financial planning such as accounting for operations and maintenance, debt repayment, indirect costs, emergency and other reserves, capital replacement and capital improvements. The training goes through the Ohio laws and regulations that require basic financial accounting. The MS PowerPoint also discusses strategies for taking action to improve financial viability including best practices for raising rates and communicating financial issues to customers. The training is conducted using more than 60 PowerPoint slides covering financial policies, planning, and involves participants going through tabletop financial planning exercises. Implementation and involves five contact hours. (See, Table 7.) Attendees receive a three ring binder filled with background information including summaries of pertinent laws, worksheets, and articles summarizing best practices.

**Table 7: Ohio RCAP Financial Management Training: Topics and Agenda (Ohio RCAP 2009a)**

| Financial Management Training Topics  | Financial Management Training Agenda   |
|---|--|
| <p><b>EVALUATING FINANCIAL POLICIES and RECORDS</b></p> <ul style="list-style-type: none"> <li>• Financial policies and guidelines</li> <li>• Needed and un-needed records</li> <li>• Billing records and what they mean</li> </ul> <p><b>PLANNING YOUR FINANCIAL NEEDS</b></p> <ul style="list-style-type: none"> <li>• Financial goals and budgeting</li> <li>• Asset management</li> <li>• Capital improvement planning</li> <li>• Fiscal management and controls</li> <li>• Record keeping</li> </ul> <p><b>IMPLEMENTING and MONITORING</b></p> <ul style="list-style-type: none"> <li>• Legislation</li> <li>• Policies and rules &amp; regulations</li> <li>• Internal controls</li> <li>• Rate and fees</li> <li>• Reporting</li> <li>• Customer outreach</li> </ul> | <p><b>AGENDA</b></p> <p>8:30 - 8:55 Registration</p> <p>8:55 - 9:00 Welcome &amp; Introductions</p> <p>9:00 -10:15 Evaluating Policies</p> <p>10:15 -10:30 Break</p> <p>10:30- 11:15 Evaluating Records</p> <p>11:15 -12:15 Planning Your Future</p> <p>12:15 - 1:45 Lunch - On your own</p> <p>1:45 - 2:45 Planning (cont.)</p> <p>2:45 - 3:00 Break</p> <p>3:00 - 4:00 Implementation &amp; Monitoring</p> |

Since 2007, RCAP has also provided training on Asset Management for small community water system officials. These trainings have gone through the basics of asset management in water systems including system mapping, accounting for assets and liabilities in the system, and debt payment. (See Table 8, below.) According to RCAP records, 290 attendees representing 174 water systems have been trained over this two year period.

**Table 8: Ohio RCAP Asset Management Training: Topic and Agenda (Ohio RCAP 2009b)**

| Applied Asset Management Training Topics   |
|--|
| <b>ASSET MANAGEMENT</b> <ul style="list-style-type: none"><li>• Inventorying assets; estimating replacement costs, prioritizing projects</li><li>• Developing and implementing an asset management plan</li><li>• Incorporating other capital improvement projects</li><li>• Planning for outside funding</li><li>• Resources and software</li></ul> |
| <b>BUDGETING</b> <ul style="list-style-type: none"><li>• Preparing useful expense and revenue budgets, and budget reports</li><li>• Incorporating the asset management plan and other reserves into the budget</li><li>• Spreadsheet templates for budgets</li></ul>   |
| <b>RATE SETTING</b> <ul style="list-style-type: none"><li>• Rate setting goals, rate structures and analysis</li><li>• Impact of inflation; establishing rate adjustments</li><li>• Setting equitable rates and defending them</li></ul>   |
| Spreadsheet templates and software   |

RCAP says they are writing a course layout for an “Applied Asset Management” using USEPA’s CUPSS. This will be designed as an advanced course, with a prerequisite of prior attendance to the asset management course. The course will be taught in computer labs across the state to facilitate actual interaction with the computer program. This course is scheduled to be completed by end of ’09 and debut in the spring of 2010.

Training preparation involves sending brochures to all small community water systems in the state of Ohio. In addition, RCAP works with a range of partners to publicize trainings including OEPA-DDAGW, Ohio Rural Water Association (ORWA), the Ohio section of the American Water Works Association, Ohio Water Environment Association, Ohio Municipal League, and the County Commissioner’s Association of Ohio. A minimum of five trainings are held each year, one in each OEPA District in the State and they move around to different locations in the District providing a location close to everyone. In addition to scheduled trainings, Ohio RCAP also has and will provide trainings if one or multiple communities request particular trainings in any of these areas.

Through 2007, Ohio RCAP originally provided coffee, juice and rolls in morning and a catered lunch as part of the training. When we engaged in participant observation, we observed that these times allowed for networking and general discussion among systems and between systems and OEPA employees who were also at the trainings. Some of these were informal conversations, but in a couple of cases they engaged specifically in problem solving. In one case, a community official engaged in a casual conversation during the afternoon coffee break about strategies for dealing with a trailer park near the community that was in danger of creating a public health risk through mismanagement of the water and wastewater system with operators from other systems, RCAP employees and an OEPA employee. In another case, community officials engaged in a conversation over lunch with an OEPA official with input from other attendees about what would be needed to establish a new water system. Since 2008, the governor's office of Ohio has prohibited the allocation of OEPA training funds for refreshments and lunch. This limits participant interaction, but also means that trainings must be located in venues close to nearby lunch facilities and the trainings need to allow one and a half hours for lunch.

### *Indicators of Outcome*

The Ohio BMT trainings are evaluated in several ways. These reflect several evaluation questions. First, are the trainings reaching the right audience? Second, when people attend the training, do they feel it was conducted well? Third, are they absorbing the information? Fourth, what difference does it make in water system management?

Are the trainings reaching the right audience? RCAP and OEPA initially asked attendees to sign in, but only as a way of being sure that they could follow up and count the total number of attendees. They soon realized, however, that the incentives of CEU contact hours could lead to more water plant operators and supervisors attending the trainings rather than community water board and government

officials--the intended audience. The sign in ledger was amended to reflect the actual position of the attendee. As evidenced in Table 5, Ohio RCAP has been successful in slowly increasing the percentage of attendees who hold local water board or local government positions (from 32 percent of attendees in 2006/2007 to 46 percent in 2008/2009).

The customer satisfaction surveys for the training consistently indicate high levels of satisfaction with the training. Not only were the responses generally positive: almost all categories averaging 4.60 or greater on a five point scale, but qualitative comments on the survey were also generally positive. (See, Table 9.)

**Table 9: Ohio BMT 2006/2007 Evaluation Results**

|  |      |
|--|------|
| Were the Materials Well Presented        | 4.68 |
| Were the Materials Helpful               | 4.65 |
| Were the Instructors Prepared            | 4.79 |
| Did the instructors communicate well     | 4.70 |
| Were your questions adequately answered  | 4.68 |
| Did you benefit from the training        | 4.59 |
| Would you recommend it to others         | 4.73 |
| Were Lunch and Refreshments satisfactory | 4.68 |
| Will you use this material in your work  | 4.57 |

It is still hard to know whether people absorbed the material. RCAP has not tabulated the before and after surveys. But comments indicated that participants felt they had learned a great deal from the training. For instance, one evaluation of the Utility Management training had the comment: “Triggered ideas to implement.” One of the comments from the Financial Management training said: “I received information to better our Village” (Ohio RCAP 2008: 2). These indicate that attendees believe that they have learned important materials.

It is more difficult to determine the impacts of the BMT on the communities of origin of the attendees. Anecdotally, Ohio RCAP says they have received more requests for assistance with



management issues from communities – for instance to help with rate designs. They were unable, however, to provide actual numbers to back up this suspicion.

Another indicator of success should certainly be that OEPA has shown a continuing interest in increasing the number of trainings offered by Ohio RCAP. The number of trainings offered more than doubled between 2006 and 2009. (See, Table 9.) RCAP also reports having an increasing number of requests as to when our next training is scheduled, which may be seen as an indicator of interest in the trainings by the drinking water sector in general. Additionally, RCAP reports that in the last 2 years they have received between 8 and 10 more requests than before for rate analysis. They attribute this increase for improved management to these trainings. They have been asked by OEPA to assist with an asset management plan as a result. The number of general requests for assistance has also increased.

### **Model III: Less Formalized Optional Board Training and Training by Request**

The third model of Board Training is represented by two of our case studies: Kentucky and Illinois. In both cases, there is no formal program for municipal community water systems. However, in both cases there is training provided at the state level targeted to larger water systems that smaller system officials may attend. Additionally, there training is provided to small communities on an as requested basis through the federal technical assistance grants to technical assistance organizations (specifically RCAP). There are key differences however, because of the characteristics of community water systems in these two states. Below, we will briefly discuss the BMT program in Kentucky and Illinois.

#### **KENTUCKY**

##### *History*

Since the 1996 amendments to the Safe Drinking Water Act, the Kentucky Department of Environmental Protection Division of Water (KDOW) has worked to develop a legal framework and a

process of stakeholder involvement to devise a strategy for evaluating TMF capacity of community water systems (Wilson 2000). The legal framework was developed in 1999 with:

Kentucky General Assembly [...] House Bill 598, now codified as KRS 151.630 - 151.636, directing the Natural Resources and Environmental Protection Cabinet to refuse to approve plans for any new system to come into existence after October 1, 1999 unless they could demonstrate their technical, financial, and managerial ability to meet requirements, and to establish a strategy to assist existing systems to improve capacity. This document is to fulfill the requirements for a strategy for existing systems (Wilson 2000: 1).

KRS 151 directed the Kentucky Natural Resources and Environmental Protection Cabinet and the KDOW to: 1) prioritize the public water systems most in need of TMF assistance; 2) to assess and seek input on the institutional, regulatory, financial, tax or legal factors at the federal, state, or local level that encourage or impair capacity development; “3) describe of how the Cabinet will use the authority and resources of the SDWA to assist public water systems in complying with drinking water regulations; encourage the development of partnerships between public water systems to enhance the technical, managerial, and financial capacity of the systems; and assist public water systems in the training and certification of operators; 4) a description of how the Cabinet will establish a baseline and measure improvements in capacity to comply with drinking water law and regulations; and 5) an identification of the persons that have an interest in and are involved in the development and implementation of the capacity development strategy (including all appropriate agencies of federal, state, and local governments, private and non-profit public water systems, and public water system customers)” (Wilson 2000: 2).

In concurrence with the requirement for sectoral representation, KDOW has involved multiple stakeholders in the process of developing public water system capacity development evaluation tools and methods for technical assistance. Initial attempts to develop tools for assessment were

unsuccessful. While the evaluation tools were developed, they were not accepted by the stakeholder commission. As the 2005 *Triennial Report to the Governor* on water system capacity development states, "Currently DOW is evaluating public water systems based on technical triggers such as water availability, compliance history and treatment process performance" (Morgan 2005: 3). Later efforts have led to the development of a proposed set of tools, but the proposed strategies for improving community water system capacity were limited to technical assistance programs through the Kentucky Rural Water Association (KRWA) and the Kentucky Rural Community Assistance Program (KRCAP). One of the reasons for this is that the Kentucky Public Services Commission (PSC) already has for years administered training for commissioners of Public Water Associations, Public Water Districts, and investor owned utilities.

Kentucky is somewhat unique in terms of both the environmental characteristics and the regulation of community drinking water. Environmentally, in part because of the geography and in part because of the legacy of coal mining, even most small communities are supplied from surface water sources. As a result, there are half again as many water systems that fall under the jurisdiction of the state of Kentucky Public Service Commission (PSC) as under the jurisdiction of the state of Kentucky Department of Environmental Protection Division of Water (KDOW). The PSC regulates investor owned utilities (8), water associations (22), and water districts (122). KDOW regulates municipal utilities (92).

PSC has offered management training to commissioners of water associations, water districts, and municipal utilities. The PSC was charged with training by the passage of Kentucky statute in 1998, KRS 74.020(7) which requires to PSC to "encourage and promote the offering of high quality water district management training programs that enhance a water district commissioner's understanding of his or her duties." Three trainings were offered per year through 2007. During 2008 and 2009, PSC has offered from four to six trainings per year. The trainings have been scattered around the state to encourage and facilitate participation. The courts of KY ruled that water districts could not develop their

own trainings en lieu of the actual PSC training. KDOW informally refers community leaders to the PSC training and there is explicit language in the proposal that KDOW would not compete with PSC in training. However, there are currently no official arrangements linking the PSC training program to the KDOW capacity development strategy.

### *Partnerships*

The Kentucky Division of Water works with Kentucky Rural Community Assistance Program (KRCAP), Kentucky Rural Water Association (KRWA), and USDA Rural Development to improve municipal small community water system capacity. This has involved providing technical assistance and financing, but also occasionally on-site training by KRCAP. Kentucky RCAP trains in communities on an as-needed basis, onsite, specific to the needs of the beneficiary organization. They use a wide variety of materials in this training, including specifically the Rural Community Assistance Corporation (RCAC-the RCAP western affiliate based in California). The RCAC materials are similar to the "Small Community Water Board Training" information provided through the Montana Technical Assistance Center at Montana State University

The PSC works with KRWA as well as other groups including the Kentucky Association of Water and Wastewater Operators (KWWOA) in delivering their training to water commissioners. The trainings are actually conducted by multiple trainers who represent both PSC employees and others (including KRWA, University of Kentucky, KWWOA, among others) who are asked to speak to the attendees.

### *Incentives*

PSC uses a pay grade as incentive. Commissioners of water associations and water districts are compensated monetarily for their work. To receive a higher compensation rate they are required to receive six hours of commissioner training per year. The community water systems also benefit from an

improved assessment score that may be helpful as they apply for capital financing from the state and federal sources.

Since KDOW does not require BMT, they do not have an incentive to participate in BMT per se. However, should a water system fall out of compliance with the capacity assurance assessment, the BMT may be used as a carrot toward reinstatement.

*Training Details*

The KPSC The training covers issues similar to community BMT as delivered in Kansas, Mississippi, or Ohio, including applicable laws, rate setting, public communications, human relations, laws and best practice regarding meeting management and the Kentucky Open Meetings Act. Training is largely done through delivery of lectures with handouts or PowerPoints as guides. Attendees are given a binder that they fill with background materials over the course of the day. Training usually takes place at the PSC chambers or adjacent meeting rooms and there is a nominal fee for attending the training.

Table 10 (below) includes the elements of a commissioners’ training agenda.

**Table 10: A sample agenda from Kentucky PSC Commissioner Training (PSC 2008)**

| <b>Time</b>   | <b>Agenda Item</b>   |
|---------------|--|
| 7:30 - 8:00   | Registration   |
| 8:00 - 8:05   | Welcome and Program Overview   |
| 8:05 - 9:05   | Recent Developments in Utility Regulation                            |
| 9:15-10:15    | Open Records/Open Meetings Acts                                      |
| 10:25-11:25   | Legal Issues in Water District Operations                            |
| 11:25 - 12:35 | Lunch  |
| 12:35 - 1:35  | PSC Regulation of Municipal Utilities – History, and critical issues |
| 1:45 - 3:15   | Issues in the Negotiation of Wholesale Water Contracts               |
| 3:25-4:05     | Tariffs, Rate Setting and the Regulatory Process                     |

Kentucky RCAP trains in communities on an as-needed basis, onsite, specific to the needs of the beneficiary organization. They use a wide variety of materials in this training. When we spoke with them, they mentioned in particular training materials developed through the Rural Community Assistance Corporation (RCAC-the RCAP western affiliate based in California) though additional contacts informed us the materials used were based upon adult learning techniques geared specifically to the unique needs and situations of the particular small water system; the RCAC materials are similar to the "Small Community Water Board Training" information provided through the Montana Technical Assistance Center at Montana State University (Montana TAC 2009).

*Indicators of Outcome: Capacity Assessment*

An official with KWWOA (<http://www.kwwoa.org/>) claims there is "pressure from below (water operators) to provide and mandate water training for board members." Despite the lack of robust mandates, according to the KWWOA official, KWWOA incentivizes BMT training (of which a minimum is required by state law for water board officials) by offering compensation for training, the compensation being dependent upon the categorization of the host water system (for ex. Muni, water district, private, non-profit, and so on).

However there is no broad-based movement to do so in Kentucky. As is exists, Kentucky's system is better connected than in the Illinois case, with NGOs, government agencies and professional organization communicating on training opportunities and pooling resources to leverage opportunities and stimulate the BMT process. It is clear however that the perception amongst stakeholders in this process is that state-mandated BMT from small water systems, as well as the provision of resources needed to accompany such trainings, is essential to the resiliency of small water systems.

KDOW has a history of attempting to ensure capacity development of small water systems through providing incentives and inspections. As the 2005 "Triennial Report to the Governor" on water

system capacity development states, "Currently DOW is evaluating public water systems based on technical triggers such as water availability, compliance history and treatment process performance" (Morgan 2005: 3).

In other words, while Kentucky has developed a set of principles for the assessment of water system capacity, they had effectively shelved it, replacing it instead with proxy measures related to the technical aspects of water system function.

As of 2008, the *Triennial Report to the Governor* stated had only managed to construct a taskforce that recommended:

"to have all systems be evaluated on a set of questions for TMF Capacity. If systems do not have capacity through this evaluation process, then they would be required to submit capacity development plans explaining how they intend to achieve and maintain capacity" (Gruzesky, 2008: 2).

The Report stated that KDOW works with a range of partners to improve community water system capacity (see below). A task force was established in 2007 to develop a set of questions that would be used to determine community water system capacity. The task force included a wide range of stakeholders in the water sector including community water system operators, engineering firms, regulators, and technical assistance providers. This group developed a set of questions to evaluate community water system capacity and stated that the following guidelines should determine how the evaluation was implemented:

The assessment will consist of questions that are considered critical to determine if a system lacks capacity for each category (i.e. technical, managerial, and financial); And best management practices (BMP); System assessments will occur at the same time as the Sanitary Surveys are conducted. The assessment criteria will be re-evaluated on a triennial basis (Marlin 2008: Slide 14).

The report goes on to state that Managerial Capacity shall be measured using questions in the following categories:

Administrative: Defined organizational structure; Sufficient staff w/ appropriate expertise, experience, licenses & certifications and continuing education opportunities; Written procedures & policies for system management & operation.

Planning: Plans to address pending and current regulatory requirements, and growth; Updated Emergency Response Plans; Response to Water Shortages.

Operating: Tracking water loss; Maps of distribution assets; Cross Connection Control Program; Written procedures for Boil Water Advisories.

Customer Service: 24 hr Emergency Response; Established business hours; Rules governing provision of service; Rules, Rates and Regulations made available to the public (Marlin 2008: Slide 16-18).

The PSC measures what is learned during the training through pre-and post training surveys of attendees. They have not engaged in an assessment of the impacts of training on community water system capacity over all.

## **Illinois**

Illinois has a 1,765 community water systems, 1,549 of which have less than 10,000 connections. Community capacity development has been a major issue for the state. Illinois EPA (IEPA) is the primacy agency in the state for community water systems. The Illinois Department of Health (DOH) has primacy over non-community water systems. These two agencies work together in implementing the capacity development requirements of the Safe Drinking Water Act (SDWA). They have not emphasized BMT as a strategy for achieving community water system capacity development. As the "Capacity Development Report" states:



“the staffs of the Illinois EPA and [Department of Public Health] DPH have incorporated elements of Illinois’ approved capacity strategy into their routine surveillance practices. As the program continues to mature, the agencies will continue to modify the original strategy to reflect those practices that prove to be most efficient and effective in maintaining and increasing water system capacity” (IEPA 2008: 4)

The focus of the agencies is on capacity as defined in terms of the existing structures to ensure system function. In other words, managerial capacity is measured by the existence of plans on paper and documents verifying attention to managerial issues. These include:

“[a] water supply organizational chart, up to the owner or official custodian level; an operational management plan; and emergency management plan; a summary of all educational conferences or seminars attended by both operator and managerial personnel; a communications chart, with a description of channels of communication; and legal agreements pertinent to water supply such as articles of incorporation, operating tariff, and mutual assistance agreements” (IEPA 2008: 3).

IEPA partners with the Illinois Rural Water Association and the Illinois Section of the American Water Works Association in providing training and technical assistance to communities. The IEPA and IDOH have a capacity development evaluation process that is done in tandem with sanitary surveys of public water systems. This survey tracks the extent to which water systems have in place many the plans, documents, and protocols mentioned in the above quote. These evaluations are carried out on a regular basis and have been used to increase compliance with Safe Drinking Water Act regulations.

IEPA works with key partners such as the Illinois Rural Water Association, Illinois Rural Community Assistance Program, and Illinois Section AWWA, to ensure that community water systems that are shown to be deficient through the evaluations process receive technical assistance and

opportunities for training. IEPA partners with USEPA Region V and USDA Rural Development in financing the technical assistance.

### *Board Trainings*

The Illinois Section AWWA worked from 2000-2002 with IEPA to conduct 2 trainings per year, one covering the northern half of Illinois, the other covering the southern half. The program was organized by an employee of IEPA with ISAWWA support, but ended up "petering out," for reasons that were indeterminable. Currently IL RCAP provides on-site training for individual community water boards on an as needed basis, and based on the availability of RCAP personnel to provide the training. RCAP claimed to have done six individual small system trainings in 2006, four in 2007 and only one in 2008.

In 2009, the Illinois Section AWWA partnered with RCAP to provide training using the Ohio model (above) two day training for public officials on Utility Management and Financial Management. The Illinois Section sent out a mailing advertising the training to 1,700 people associated with community water systems. They had to cancel a proposed training in May in Springfield, Illinois because of low registration numbers. In June they held the first of their trainings in Decatur, Illinois, with 12 attendees, two of which were local officials. The training cost \$35 for one day \$50 dollars for both days (or \$75 if people registered on-site). The cost included coffee and breakfast snacks, lunch, and afternoon refreshments as well as the training materials. Training materials included binders with background materials – pertinent laws, regulations, best practices, as well as a compact disc with EPA Step Guides, web site links, and other materials.

Illinois RCAP carries out 6-8 board trainings per year in communities. These are conducted at the request of community representatives and usually in the communities as part of regularly scheduled board meetings. Illinois RCAP said that they would use the section of the Ohio RCAP training manual most appropriate given the community water board's request for assistance.

### *Funding*

RCAP provides this service free of charge to the community, folding it into activities under a grant for small community water and wastewater technical assistance from the USDA Rural Utility Service and a grant for the provision of technical assistance services through the EPA Safe Drinking Water Capacity Development program.

The Illinois section AWWA trainings were set up to be cost neutral, with attendance fees covering the cost of training. The section used membership funds to subsidize this initial training, but as there is greater interest in future trainings, it is thought that fees will cover the training cost.

### *Indicators of Success*

The 2008 IEPA Illinois Capacity Development Triennial Report to the Governor (IEPA 2008) argues that the ultimate indicator of success in the implementation of capacity development program is improved public water system compliance with SDWA regulations and standards. The report uses Safe Drinking Water Information System (SDWIS) data to demonstrate that community water systems in Illinois have increased rates of compliance from 91.7% in 2005 to 93.7% compliance in 2007. Calculating compliance with regulations, however, is tricky as it is subject to variables such as the extent to which IEPA is engaged in regulatory activity.

RCAP reports that onsite trainings have been largely successful as they have led to communities completing necessary strategic plans, adjustment of water rates, and other activities that improve community capacity. However, they readily admit that those communities that request on-site BMT are likely to be the communities already representatives argue that the indicators of success were in the reactions from the community. If, after training, the community took steps to address community water system concerns, including asking RCAP to conduct rate studies or other measures to ensure the

financial viability of the water system. According to the RCAP field staff or to others, this would constitute a success. They say that this has happened in many cases. Because of the disaggregated nature of program application, it is hard to verify this claim.

The Illinois Section AWWA Small Systems Division (SSD) Coordinator claimed IEPA used to have 2 trainings per year, one covering the northern half of Illinois, the other covering the southern half. The program was organized by an employee of IEPA with ISAWWA support, but ended up "petering out," for reasons that were indeterminable. The ISAWWA trainings offered in June of this year received very positive reviews from participants, according to ISAWWA staff. While only two of the participants were actual local government officials, attendees said that the information provided would lead to improved water system management capacity.

ISAWWA small system division members have voiced a desire for more BMT targeted toward local officials. Illinois Rural Water Association representatives have voiced similar interests.

### **Comparison of State Programs**

In the context of increasing regulatory demands and decreasing federal and state resources to underwrite community water systems, it is important that small communities have the capacity to make prudent management decisions about water resources and infrastructure. Congress foresaw this need with the creation of the capacity development language in the amendments to the Safe Drinking Water Act in 1996. This language calls for the establishment of measures to improve community water system technical, managerial, and financial capacity. There are fairly good systems in place to improve technical and financial capacity with operator training and technical assistance programs. Improving community water system management capacity has been a greater challenge.

While management capacity may be measured in terms of existing plans and protocols, it is widely acknowledged that the real challenge is in improving that decision making capacity, especially of small town elected or appointed public officials. Small community water systems, after all, are

ultimately managed by elected or appointed officials, often volunteers who are unfamiliar with the complicated regulatory, accounting and operational issues in the water sector. One way to improve the managerial capacity of these officials is through the delivery of Board and Management Training (BMT). This report has attempted to summarize findings from a multi-state comparison of community water board and management training.

Tying this work back to the literature on water governance training (Table 1 and Figure 2; Robbins 2008, Flora 2008), there is a clear sense that some of the intangibles in training would be important to consider. Robbins (2008) and Flora (2008) argue that community governance capacity development around water issues must touch on a range of capacities, which they define in terms of capitals. The point would be that water governance should involve a combination of human capital in terms of knowledge of the regulatory and water management issues, tools for financial capital asset management (including a basic knowledge of infrastructure lifecycle and maintenance requirements), the basic precepts for optimal personnel management, communication with customers, and best-practice for conducting public or closed meetings. This human capital development must be involved with social capital both internally (bonding) to increase problem solving relationships at the community level, and external (bridging) to create increased networks to those not concerned about water issues in the community and to other communities and organizations outside the community (bridging social capital). The bridging social capital can be essential in innovative water system problem solving and planning. Political capital will be essential to facilitate a good relationship with regulators but also with government agencies that have capital financing that can create options for solving community problems.

From analysis of the training agendas and participant observation of actual trainings, it is possible to derive the extent to which the various state programs aimed to develop capacities in the various capitals. There is remarkable similarity in the basic curricula taught around community water

system board and management training. All attempt to address aspects of technical, managerial and financial issues.

In about 4 hours of training, the Mississippi training program goes through basic water system regulatory issues, financial management, and engineering, infrastructure depreciation, and water treatment issues. The training also contains an overview of basic employee management, human relations, and customer relations issues. Finally, the training provides an overview of legal requirements and best-practices in conducting board meetings and hearings. Background materials are provided to attendees, and more information is available on-line. Training is usually held in the evening, and coffee and sweets are provided with some mingling time. In terms of content, the Illinois ISAWWA, Kansas, Kentucky- PSC, and Ohio training curricula are very similar, though all cover the material in a longer time period. Ohio's and ISAWWA's curricula actually take a full day for the overview of utility management and a full day on financial management issues. The Kentucky PSC trainings cover 6 hours and are more focused on the legal statutes that dictate local water management decisions. The Kansas training also takes roughly six hours, but is more focused on conveying best practices in utility management. The only time reserved for interaction within the curricula is during mingling around coffee and snacks during breaks and catered meals. As noted above, participant observation in Ohio recorded this as time when attendees from different utilities exchanged ideas, but also built bridging social capital with those from other utilities and with regulatory agency representatives. The latter could be seen as building political capital as well. Recent cost-cutting measures eliminated the catered lunch time in Ohio. As capacity development initiatives are implemented utilizing BMT in an era of fiscal belt tightening, it will be tempting to eliminate meals as part of the training program. The Ohio example demonstrates the importance of including time for interaction among training attendees to network and meals provide that opportunity. Table 13 (below) summarizes the information covered in the trainings across capitals.

**Table 13: Community Capitals Addressed Through BMT Curricula in the Five States**

| Capitals Addressed | Illinois  | Kansas   | Kentucky  | Mississippi  | Ohio  |
|--------------------|---|--|---|--|---|
| Human              | Human resource & communications   | Human resource & communications  | Human resource & communication  | Human resource & communications  | Human resource & communications   |
| Financial          | Utility Mgt: Overview of best practices for Financial Management<br>Financial Mgt: lecture on best practices and tools for financial Mgt and planning | Overview of best practices for Financial Management<br>Accompanying documentation on best practices and tools for financial Mgt and planning | Overview of best practices for Financial Management<br>If requested onsite training                                   | Overview of best practices for Financial Management<br>Accompanying documentation on best practices and tools for financial Mgt and planning | Utility Mgt: Overview of best practices for Financial Management<br>Financial Mgt: lecture on best practices and tools for financial Mgt and planning |
| Built              | Overview of infrastructure lifespan and maintenance requirements;<br>Referrals to TA providers to assist in assessment                                | Overview of infrastructure lifespan and maintenance requirements<br>Referrals to TA providers to assist in assessment                        | Overview of infrastructure lifespan and maintenance requirements<br>Referrals to TA providers to assist in assessment | Overview of infrastructure lifespan and maintenance requirements<br>Referrals to TA providers to assist in assessment                        | Overview of infrastructure lifespan and maintenance requirements<br>Referrals to TA providers to assist in assessment                                 |
| Natural            | Overview of pertinent EPA and state rules and regulations;<br>Environmental conditions of concern   | Overview of pertinent EPA and state rules and regulations;<br>Environmental conditions of concern  | Overview of pertinent EPA and state rules and regulations<br>Environmental conditions of concern                      | Overview of pertinent EPA and state rules and regulations;<br>Environmental conditions of concern  | Overview of pertinent EPA and state rules and regulations;<br>Environmental conditions of concern   |
| Social             | Interaction during coffee hour and lunch  | Interaction over coffee  | Informal Interaction  | informal interaction   | Interaction over coffee   |
| Cultural           | Discussion of community culture around water use and rates for use  | Discussion of community culture around water use and rates for use   | Discussion of community culture around water use and rates for use  | Discussion of community culture around water use and rates for use   | Discussion of community culture around water use and rates for use  |
| Political          | Interaction with regulators during coffee and lunch   | Interaction with regulators during coffee and breaks   | Interaction with regulators during coffee and breaks  | Interaction with regulators during coffee and breaks   | Possible interaction with regulators over coffee, before or after training.   |

Above, we have attempted to provide a comparison of five state programs that used BMT to a greater or lesser degree to improve community water system management capacity. These programs

vary considerably in context, design, implementation, and impact. We have compared them looking at program history, funding, partnerships, training implementation and indicators of program outcome. What can we learn from a comparison of these five programs? Table 12, below, summarizes the key differences in community water board training programs.

A basic assessment of the percent of public officials receiving training indicates that the Mississippi program is among the most robust in the US. In Mississippi, all community water board members elected or appointed to a community water board are required to receive training—thus, at least, ensuring that they are exposed to the basic issues facing community water systems and water system operators. Ohio has been the next most successful in the percent of municipal officials trained for community water systems, followed by Kentucky, Kansas, and Illinois.

The Mississippi program is further supported by a robust program of yearly evaluation that accompanies the sanitary survey and tests TMF capacity at the level of each water system. Since 2002, Mississippi has consistently had a compliance ratio (number of systems in violation as a proportion of systems with less than 10,000 connections) has been higher than the other states in this sample (Table 12). Kansas has a similar program, though less extensive.

This indicator is, of course, somewhat problematic, as the compliance ratio is calculated based on the number of known violations. A low number of known violations could be the result of systems actually being in compliance, or could be the result of lack of regulatory oversight. The ratio vis-à-vis Mississippi is interesting since at least Mississippi's program for regulatory oversight of community water systems is quite robust. It is also possible that violations could be the result of economic and environmental factors (such as exceedingly low source water quality). It is notable, for instance, that since 2006, Illinois (which has no official BMT program) has had a higher ratio than the other states in this study. (See, Table 11.)



**Table 12: Cross State Comparison of Leadership Programs**

| State       | Incentives   | Legal Requirements | Training Frequency           | Contact Hours          | Primary Funding | Secondary Funding |   |
|-------------|--|--------------------|------------------------------|------------------------|-----------------|-------------------|---|
| Mississippi | Meet legal responsibility  | Mandate BMT        | 20-30 sessions per year      | 2 days, 4 hours ea.    | MsDH            | USDA; EPA         | Trainings around state. MSU Ext and trainer outreach. Provide refreshments. Cross-sectoral partnerships.  |
| Kansas      | State credit score. Certification                                  | Voluntary          | 10-20 sessions per year      | 3 days, 3 hours each   | KDHE            | EPA SRF           | Provide food. Explicitly tied to funding and credit scores. KDHE-KRWA partnership.  |
| Ohio        | State credit score; CEUs   | Voluntary          | 15-20 sessions per year      | 2 days, 5-6 hours each | Ohio EPA        | USDA/EPA          | Credit score. Strategically located meetings. Use partnerships to encourage participation.  |
| Kentucky    | increase pay grade for PWD, WUA, and private utility commissioners | Voluntary          | 4 per year; on-demand        | 1 day for 2 hours      | KY DOW; KY PSC  | USDA/EPA          | Public Service Commission Trainings are open to PWDs, WUAs, and Investor-owned utilities. Municipalities are invited to attend. RCAP provides community based training. |
| Illinois    | N/A  | Voluntary          | 1 offered in 2009; On-demand | 2 days, 5 hours each   | (Illinois EPA)  | USDA/EPA          | ISAWWA provided 1 training with RCAP; RCAP will carry out community level trainings.  |

Looking at history it is clear from the Mississippi story that there is a role for advocacy in developing a state infrastructure to implement BMT, but also a regulatory system that actually attempts to measure capacity. The MWPCOA lobbied for the state legislature to require training of all public

officials responsible for community water systems and to require capacity assessment of small community water systems carried out annually. The public law passed as a result of this effort not only resulted in increased training, but created a culture of concern with meeting the basic decision making capacity requirements.

In all of the other states except Kentucky, the history of BMT dates to the SDWA requirement that primacy agencies do something to address issues of managerial capacity. In Kentucky, the public service commission was seeking ways to create a more informed clientele about water management issues so that discussions about rates and investments were informed by at least some level of knowledge about community water system issues. The state could entice commissioners to attend these trainings through tying the qualification for the higher tier of compensation to attending six hours of training. In Kansas, the financing for BMT was initiated by employees of the Kansas Department of Health, in order to comply with the capacity development requirements of SDWA. In Ohio, RCAP actually proposed carrying out the trainings to OEPA. In Illinois, RCAP and ISAWWA have initiated BMT programs on their own with little involvement from OEPA.

Partnerships are also clearly important. In Ohio and Kansas, the initiative has resulted in government contracts with training providers to implement training. According to analysis of the state capacity development reports, in Mississippi and Kansas, BMT is presented as a critical part of the overall capacity development program. It is mentioned as an issue of importance in Ohio. In Kentucky, it is mentioned in passing. In Illinois, there is no mention of BMT in the capacity development documents. The Mississippi training explicitly involves a wide range of partners (including Mississippi State University Extension, MsRWA, MsRCAP, MWPCOA among others). While Ohio RCAP carries out the training through a direct contract with OEPA, they also network with a wide range of stakeholders to popularize and encourage participation in training. Kansas works with the Kansas Rural Water Association to implement training. They likewise use multiple stakeholders to popularize the training.

In Kentucky and Illinois the partnerships involve far fewer institutional stakeholders in carrying out BMT. There was no explicit collaboration between Kentucky RCAP, PSC, and KDOW, on this issue, for instance.

Partnerships can provide more than just people willing to advertise the training. Partnerships should also create safety nets. Even though Kansas has a laudable program, by nesting the responsibility in one bureaucratic agency, the program diminished for a year when a key staffer got sick. A broader partnership may have yielded people who could organize and carry out the trainings.

Government buy-in is also necessary. Not only does government provide financing and a regulatory framework for the training, but active government buy-in can lead an increased participation from local government officials. This was especially evident in Ohio when the training organizers asked Ohio US Senators Voinovich and Brown to sign letters urging participation in the BMT by local officials. The attendance from local government officials increased significantly after these letters of encouragement were sent. Illinois provides the opposite case. Illinois Section AWWA offered an inexpensive, two-day local government training (that once offered received rave reviews). But there was no explicit endorsement from state government, and despite perceived interest from the water sector, the first attempt at holding the training had to be cancelled because of lack of registrants. When the BMT was finally held, only two of 12 attendees were local government officials. It is notable that there is no mention of BMT in the IEPA capacity development report (IEPA 2008).

The conundrum of improving the capacity of community water systems to deliver safe water supply implies the development of human decision making capacity. Assuring that water is delivered safely to homes and businesses in communities throughout the United States involves complex

**Table 12: Compliance Ratio of Community Water Systems of Less than 10,000 2003-2008**

| FY         | State | Violations | Systems in Violation | Population In Violation | Total Systems with < 10000 hookups | Total Population Served by This Size System | Compliance Ratio for systems (GPRA-sys) |
|------------|-------|------------|----------------------|-------------------------|------------------------------------|---|---|
| 2008       | IL    | 372        | 127                  | 204,540                 | 1,544                              | 2,332,372                                   | 91.8%                                   |
|            | KS    | 351        | 112                  | 148,198                 | 863                                | 834,516                                     | 87.0%                                   |
|            | KY    | 58         | 28                   | 118,140                 | 287                                | 977,047                                     | 90.2%                                   |
|            | MS    | 128        | 74                   | 110,925                 | 1,069                              | 1,812,616                                   | 93.1%                                   |
|            | OH    | 221        | 100                  | 132,093                 | 1,105                              | 1,625,411                                   | 91.0%                                   |
| 2007       | IL    | 499        | 148                  | 193,773                 | 1,548                              | 2,331,998                                   | 90.4%                                   |
|            | KS    | 414        | 119                  | 113,606                 | 868                                | 852,372                                     | 86.3%                                   |
|            | KY    | 57         | 27                   | 106,560                 | 289                                | 982,654                                     | 90.7%                                   |
|            | MS    | 107        | 56                   | 115,976                 | 1,101                              | 1,844,125                                   | 94.9%                                   |
|            | OH    | 304        | 121                  | 157,910                 | 1,118                              | 1,619,582                                   | 89.2%                                   |
| 2006       | IL    | 431        | 166                  | 256,631                 | 1,559                              | 2,311,323                                   | 89.4%                                   |
|            | KS    | 515        | 114                  | 139,525                 | 870                                | 826,782                                     | 86.9%                                   |
|            | KY    | 87         | 33                   | 149,409                 | 300                                | 1,044,989                                   | 89.0%                                   |
|            | MS    | 39         | 35                   | 69,852                  | 1,104                              | 1,810,899                                   | 96.8%                                   |
|            | OH    | 215        | 101                  | 156,760                 | 1,143                              | 1,643,894                                   | 91.2%                                   |
| 2005       | IL    | 509        | 174                  | 267,771                 | 1,564                              | 2,317,113                                   | 88.9%                                   |
|            | KS    | 541        | 107                  | 141,064                 | 873                                | 839,694                                     | 87.7%                                   |
|            | KY    | 168        | 46                   | 186,108                 | 307                                | 1,049,234                                   | 85.0%                                   |
|            | MS    | 36         | 33                   | 59,921                  | 1,108                              | 1,809,078                                   | 97.0%                                   |
|            | OH    | 239        | 115                  | 190,518                 | 1,155                              | 1,650,959                                   | 90.0%                                   |
| 2004       | IL    | 473        | 178                  | 243,744                 | 1,581                              | 2,305,576                                   | 88.7%                                   |
|            | KS    | 175        | 93                   | 104,365                 | 880                                | 850,251                                     | 89.4%                                   |
|            | KY    | 39         | 21                   | 117,087                 | 313                                | 1,077,139                                   | 93.3%                                   |
|            | MS    | 19         | 18                   | 38,171                  | 1,121                              | 1,771,309                                   | 98.4%                                   |
|            | OH    | 113        | 73                   | 53,861                  | 1,164                              | 1,674,018                                   | 93.7%                                   |
| 2003       | IL    | 389        | 138                  | 171,406                 | 1,587                              | 2,275,706                                   | 91.3%                                   |
|            | KS    | 113        | 77                   | 64,924                  | 878                                | 853,625                                     | 91.2%                                   |
|            | KY    | 18         | 14                   | 75,876                  | 321                                | 1,089,223                                   | 95.6%                                   |
|            | MS    | 44         | 42                   | 87,149                  | 1,117                              | 1,732,002                                   | 96.2%                                   |
|            | OH    | 123        | 73                   | 90,005                  | 1,182                              | 1,701,135                                   | 93.8%                                   |
| 2003 Total |       | 687        | 344                  | 489,360                 | 5,085                              | 7,651,691                                   | 93.2%                                   |

interactions and tradeoffs. Most states now have a fairly good system of insuring that community water operators are adequately trained and receive training to make them aware of new issues over time. The development of community water BMT is an effort to replicate these systems for local officials who actually manage community water system operators.

Through surveying different state programs, it is possible to piece together the similarities and differences in the context and implementation of BMT. These strategies produce particular outcomes, in terms of who gets trained, how in depth their training is, what kinds of skills are gained from the training and ultimately what impacts result from the training?

Mandating that all elected or appointed community water board members receive training, as is done in Mississippi, does the best job of ensuring that all board members receive some training. This state initiative may be an artifact of political action at the end of the 1990s, when state resources were better. The Mississippi program involves a multi-organizational partnership, and is backed by an activist capacity development evaluation initiative, administered through the Mississippi Department of Health (MsDH). Every small community water system board member in the state at least has exposure to the critical issues facing a community water system—and this may account for Mississippi's consistently high compliance rate with SDWA rules and regulation. Yet, this program is not well replicated in other states. The appetite for new mandates on communities and new allocations of state resources to improve water system capacity is probably weak right now. Further, the data on compliance probably only tells one small part of the community water system story. There are many reasons that community water systems may or may not be in compliance with rules and regulations.

Other strategies seem to have strengths and weaknesses as well. A critical issue is whether training is reaching a critical mass of board members. Ohio and Kentucky, using very different methods have developed ongoing BMT programs that reach good numbers of community water system officials.

But in both cases, a good number of the attendees are not board members, but operators seeking continuing education credits to maintain their operators' license.

What is not known in any of these cases is the extent to which board operators internalize training in their planning and decision making about the water systems. Four, six or even 12 hours of lectures and PowerPoint slides could result in the internalization of significant knowledge and water system issues. It could also result in overload. It is possible that the on-site trainings, as conducted in by Kentucky RCAP and Illinois RCAP, could do a better job of delivering the needed information and practices to decision makers. Further, the theories of governance training (Robbins 2008) emphasize the importance of building networks and relationships among multiple decision-makers, allowing them to share experiences across geographic contexts and jointly solve problems. Currently, such networking and sharing of experiences is informal among those who attend BMT. Additionally, the forums for such interaction are being eliminated to save costs. More research is needed to really understand the impacts of BMT.

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