

**Information Collection Request for the 2015 Drinking Water  
Infrastructure Needs Survey and Assessment (DWINSA)  
(Supporting Statement for ICRAS and ROCIS)**

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## PART A OF THE SUPPORTING STATEMENT

### A.1 IDENTIFICATION OF THE INFORMATION COLLECTION

#### A.1.a Title of the Information Collection Request

2015 Drinking Water Infrastructure Needs Survey and Assessment (DWINSA), EPA ICR Number 2234.04, OMB Control Number 2040-02747.

#### A.1.b Short Characterization

The Environmental Protection Agency (EPA) will conduct an assessment to estimate the capital investment needs of drinking water systems eligible to receive Drinking Water State Revolving Fund (DWSRF) monies. The nationwide assessment will be conducted by the Drinking Water Protection Division (DWPD) of EPA's Office of Ground Water and Drinking Water (OGWDW). The data collection is authorized by Sections 1452(h) and 1452(i)(4) of the Safe Drinking Water Act (SDWA) and will be used to estimate the capital investment cost of providing safe drinking water to consumers over a 20-year period. The data from the report will also be used to allot DWSRF monies among states.

In determining an appropriate survey approach, EPA strives to achieve an acceptable level of statistical precision and avoid measurement errors while minimizing the burden placed on the states, water systems and the Agency in conducting the survey effort.

The 2015 DWINSA will focus on data collection from water systems overseen by state drinking water programs, referred to in previous DWINSA ICRs and reports to Congress as a "state survey." All states have committed to help EPA administer the 2015 DWINSA with at least a minimum set of activities. For this document, the term "states" refers to all 50 states, the U.S. territories (Guam, U.S. Virgin Islands, Northern Mariana Islands and American Samoa), Puerto Rico and the District of Columbia.

EPA will conduct a census of all community water systems (CWSs) serving populations more than 100,000. For CWSs serving populations of 3,301 to 100,000, EPA proposes to use a modified panel approach that will reassess the needs of most of the water systems that participated in the 2011 DWINSA. The modified panel approach will involve dropping a random selection of 25 percent of the systems serving 3,301 to 100,000 people that participated in the 2011 DWINSA and then drawing a random sample to replace those systems in the survey for the 2015 DWINSA. The approach will be implemented by state and stratum.

Fifteen states are expected not to participate in the statistical portion of the survey (i.e., collecting data from systems serving 3,301 to 100,000 persons). The needs of the participating states will be used to estimate the needs for systems serving 3,301 to 100,000 persons for the states that are not included in the statistical portion of the survey. All states with systems serving more than 100,000 persons will participate in the census portion of the survey.

For the 2015 DWINSA, EPA will not collect data from small CWSs in states (those serving 3,300 and fewer people), not-for-profit noncommunity water systems (NPNCWSs)<sup>1</sup> or American Indian or Alaska Native Village water systems. EPA will estimate the infrastructure needs for CWSs serving 3,300 and fewer persons based on the average system need calculated in the 2007 DWINSA, adjusted for inflation. Similarly, the infrastructure needs for NPNCWSs will be based on the 1999 DWINSA results, adjusted for inflation. The 2011 DWINSA included a survey of American Indian and Alaska Native Village water systems; those results will be adjusted for inflation for the 2015 DWINSA.

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<sup>1</sup> NPNCWSs are also eligible for DWSRF funding.

The data collection instrument to be used consists of project tables in which the water systems list all their capital improvement projects for the survey period of January 1, 2015, to December 31, 2034. The data collection instrument used will be in a Microsoft Excel format, with no changes in content or questions from the previous three DWINSAs.

## **A.2 NEED FOR AND USE OF THE COLLECTION**

### **A.2.a Authority and Need for the Collection**

EPA (the Agency) is conducting this DWINSA pursuant to its authority under Sections 1452(h) and 1452(i)(4) of the SDWA. Section 1452(h) requires that “the Administrator shall conduct an assessment of water system capital improvement needs of all eligible public water systems in the United States and submit a report to the Congress containing the results of such assessment within 180 days after the date of the enactment of the SDWA Amendments of 1996 and every 4 years thereafter.” Section 1452(i)(4) requires that “the Administrator, in consultation with the Director of the Indian Health Service and Indian Tribes, shall, in accordance with a schedule that is consistent with the needs surveys conducted pursuant to subsection (h), prepare surveys and assess the needs of drinking water treatment facilities to serve Indian Tribes, including an evaluation of the public water systems that pose the most significant threats to public health.”

### **A.2.b Use and Users of the Information**

The results of the DWINSA will be used as a basis for allocation of DWSRF funds among states and contributes to the allocation of DWSRF funds to EPA Regions and Tribes with primacy enforcement authority for American Indian and Alaska Native Village water systems. In addition, many water systems have empirical data on the cost of compliance with SDWA regulations. A national assessment improves the Agency’s ability to gauge long-term capital costs of SDWA regulations.

EPA will collect two types of system-specific information:

1. System inventory and characteristics data (i.e., name and address of the system, contact person, population served, total design capacity, number of connections, primary source, whether the water system is privately or publicly owned and whether the water system purchases/sells water from/to another water system).
2. Information on capital improvement projects.

The specific uses of each data type vary. EPA will use system inventory and characteristics data to characterize CWSs nationwide and, in some cases, to model costs for individual water systems’ capital improvement projects. EPA will use all data collected to estimate state and national needs.

Respondents will identify capital improvement needs on a project-by-project basis and identify the reason for the project on the data collection instrument. EPA will collect information on the proposed infrastructure to be installed, replaced, rehabilitated, upgraded or expanded. EPA will use the information to assess project allowability, which is determined by DWSRF funding allowability and DWINSA policies.

Respondents will also identify either a documented cost estimate for the project or will provide adequate information so that EPA can model the cost of the project. The information needed to model the cost will depend on the type of need. For example, EPA may collect information on the size and number of meters or the diameter and length of transmission or distribution lines. For the 2011 DWINSA, approximately 15 percent of the projects reported had documented costs; the costs for the remaining 85 percent of projects were modeled.



### A.3 NONDUPLICATION, CONSULTATIONS AND OTHER COLLECTION CRITERIA

The following sections verify that this information collection satisfies the OMB's non-duplication and consultation guidelines and does not duplicate another collection.

#### A.3.a Non-duplication

To the best of EPA's knowledge, up-to-date state-by-state information on water systems' capital needs is not available from any other source. Some of the data collection efforts EPA considered include the following:

- **Safe Drinking Water Information System (SDWIS).** Inventory data and information on system characteristics have been collected by states and EPA Regions and entered into the SDWIS. For systems in the statistical sample, EPA will pre-populate the SDWIS system characteristics data (i.e., name and address of the system, contact person, address, population served, total design capacity, number of connections, primary source, whether the system is privately or publicly owned and whether the system purchases/sells water from/to another water system) on the 2015 DWINSA form and ask the respondents to provide information only if the SDWIS data are inaccurate or missing. SDWIS does not contain information on water systems' capital needs.
- **Community Water System Survey (CWSS).** EPA completed a statistical survey in 2006 that focused on the operating and financial characteristics of CWSs. The CWSS is addressed in the ICR for the National Survey of the Financial and Operating Characteristics of Community Water Suppliers. The CWSS had a different objective than the DWINSA. The CWSS was designed to characterize technical and financial aspects of CWSs. In contrast, the DWINSA will be used to develop national estimates of capital needs. In addition, the CWSS's targeted precision was on a national basis, whereas the DWINSA will provide state-by-state estimates.
- **Economic Analyses (EAs) for National Primary Drinking Water Regulations.** The Agency has developed EAs for its National Primary Drinking Water Regulations. These documents estimate the costs of complying with proposed and final regulations. EAs do not typically include an estimate for capital projects needed to maintain compliance with existing regulations. Therefore, the EAs are not an adequate substitute for the DWINSA. In addition, the EAs provide nationwide estimates. As discussed above, EPA is conducting the DWINSA because the Agency needs a state-by-state estimate to develop the allocation formula for the DWSRF. Also, EAs may not, depending on when they were developed, reflect currently available contaminant occurrence data or current or emerging treatment technology costs.
- **State Needs Surveys.** Several states have conducted needs surveys of their own drinking water systems. The state results cannot be extrapolated to the nation as a whole because the state surveys do not use consistent methodologies and do not account for national variations in system characteristics and needs.
- **1995, 1999, 2003, 2007 and 2011 DWINSAs.** Under the SDWA, EPA must conduct the DWINSA every four years. The approach for the 2015 DWINSA will incorporate some data collected during the previous assessments updated to reflect 2015 construction costs and shifts in the number and characteristics of the Nation's water utilities. The approach for the 2015 DWINSA also includes substantial new data from the field to ensure up-to-date information on

changes in the relative level of infrastructure needs at the state level as well as change in the total national need.

### **A.3.b Public Notice Required Prior to ICR Submission to OMB**

To comply with the 1995 Amendments to the Paperwork Reduction Act (PRA), EPA is soliciting public comment on this ICR for a 60-day period before it is submitted to OMB. Specifically, EPA published a notice in the *Federal Register* (FR) requesting comment on the estimated respondent burden and other aspects of this ICR (2234.04). This notice is included in Appendix A. Before submission to OMB, EPA will consider any comments received and determine if any adjustments are needed to the burden and cost calculations or to the supporting statement for this ICR. Comments received and EPA's responses will be included in Appendix D. An additional *Federal Register* notice will be published when this ICR is submitted to OMB. The public comment period for this additional notice will be 30 days.

### **A.3.c Consultations**

In May 2014, EPA assembled a workgroup that consisted of EPA Headquarters, EPA Regions and state representatives to discuss the approach for the 2015 DWINSA. The purposes of the workgroup were to gather information on state and/or regional concerns, to discuss lessons learned during the 2011 DWINSA and to discuss new policies for the 2015 DWINSA. The information gathered by the workgroup contributed to the development of the methodology for the 2015 DWINSA.

For the 2007 DWINSA, the data collection instrument and some policies were modified substantially. Consequently, in 2007, EPA conducted a pre-test of the data collection instrument (see B.3 for more information on the pre-test) and a formal peer review of the 2007 DWINSA statistical methodology and policies. Based on comments received from the peer review and the pre-test, EPA made modifications to the data collection instrument, statistical procedures and survey polices.

The data collection instrument was further modified for the 2011 DWINSA by the addition of optional questions to gather information on "green" and climate readiness infrastructure projects. Consequently, EPA conducted a limited peer review focused on these new questions. The peer review included experts familiar with the operations of drinking water systems and "green" and climate readiness issues. Based on comments received from the peer review, EPA developed an addendum to the 2011 survey instructions that provided additional explanation about why EPA was interested in collecting information on "green" and climate readiness infrastructure projects as well as providing examples of what might constitute "green" and climate readiness. Based on the limited number of states that submitted projects with "green" or climate readiness attributes indicated, EPA concluded these attributes were likely underreported in 2011. For the 2015 DWINSA, the "green" and climate readiness questions will be removed from the data collection instrument. Instead, EPA will explore streamlined approaches that might enable the Agency, during the Survey review process, to identify and flag projects that are likely to have "green," climate readiness or climate resilience attributes.

The other significant modification for the 2015 data collection methodology will be the use of a modified panel approach. This approach uses a longitudinal study method for the survey with a 25 percent refresh of the sample (by state and by strata) of systems serving 3,301 to 100,000 population (this approach is described in more detail in Section B.2). EPA conducted a peer review of the applicability of this modified panel approach and the details of the approach. EPA considered comments from the peer review and made changes to the approach as necessary as described in Appendix C.

### **A.3.d Effects of Less Frequent Collection**

The 2015 DWINSA is a single collection and does not involve periodic reporting or recordkeeping.

### **A.3.e General Guidelines**

The 2015 DWINSA does not violate any guidelines for information collection activities specified by OMB. Specifically, the 2015 DWINSA respondents are not required to:

- Report information to EPA more often than quarterly.
- Retain records for more than three years.
- Complete the data collection instrument in fewer than 30 days.
- Maintain or provide information in a format other than that in which it is customarily maintained.
- Submit proprietary, trade secret or other confidential information.
- Submit more than one original and two copies of any document.

The information collection:

- Is a statistical assessment designed to produce data that can be generalized to the universe of the study (see Section B.2).
- Does not provide remuneration to participants.
- Will transcribe information collected into an automated format.
- Is designed with small entities particularly in mind (see Part A.5.c).
- Does not concern grants or grantees.
- Is voluntary.

### **A.3.f Confidentiality Questions**

This information collection does not require the respondent to disclose any confidential information. Respondents are not obliged to respond to this strictly voluntary information collection. Further, respondents could eliminate any confidential business information from their reply.

### **A.3.g Sensitive Questions**

The 2015 DWINSA does not ask sensitive questions.

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## **A.4 THE RESPONDENTS AND THE INFORMATION REQUESTED**

### **A.4.a Respondents/NAICS Codes**

#### *NAICS Codes*

The respondents for the 2015 DWINSA are CWSs in states and state agencies that include drinking water programs. CWSs are considered public water systems. According to 40 CFR Part 141.2, a CWS is a “public water system which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.” The North American Industry Classification System (NAICS) code for a public water system is 221310. State agencies that include drinking water programs are classified as NAICS code 924110 (Administration of Air and Water Resources and Solid Waste Management Programs) or 926130 (Regulation and Administration of Communications, Electric, Gas and Other Utilities). Ancillary systems (i.e., those that supplement the function of other establishments like factories, power plants, mobile home parks, etc.) cannot be categorized in a single NAICS code. For ancillary systems, the NAICS code is that of the primary establishment or industry.

#### *Respondents*

EPA will gather information from CWSs serving more than 3,300 persons. For the purposes of this document, EPA will use inventory and sample numbers from the 2011 DWINSA to approximate sample sizes for 2015.

Because of their variability and significant contribution to the overall drinking water capital investment need, water systems serving more than 100,000 persons will be sampled with certainty. The burden estimates assume that EPA will survey approximately 612 water systems that serve more than 100,000 persons.

There are 8,927 water systems that serve populations of 3,301 to 100,000. Surveying all of these water systems would impose a large burden on respondents, EPA and states. Therefore, EPA will select a statistically representative sample of water systems serving populations of 3,301 to 100,000. As described in Section B.2., a modified panel approach will be used to select water systems to be sampled. This approach will result in a re-sampling of 75 percent or more of the water systems that were sampled in 2011. Based on the sampling conducted in 2011, the burden estimates assume that EPA will survey approximately 2,247 water systems that serve 3,301 to 100,000 persons.

EPA will not collect new needs data from NPNCWSs, small CWSs in states, Alaska Native Village water systems or American Indian water systems. EPA will instead extrapolate the findings for these systems from previous Needs Surveys to 2015 dollars taking into account changes in the number of these systems in current operation.

For purposes of this burden statement, EPA is assuming that fifty-six states (50 states plus the District of Columbia, Puerto Rico, Northern Mariana Islands, American Samoa, Guam and the U.S. Virgin Islands) will be called upon to provide support and information for the approximately 2,859 systems for the 2015 DWINSA.

#### **A.4.b Information Requested**

As previously discussed, EPA will collect two types of information from systems:

1. System inventory and characteristics.
2. Information on capital improvement projects.

EPA anticipates that respondents will provide varying levels of information by system size category. Based on experience from the previous five DWINSAs, EPA generally expects larger systems (e.g., those systems serving more than 50,000 persons) to have a well-developed understanding of their capital needs and the costs for meeting them. Almost all of these systems will have detailed Capital Improvement Plans (CIPs). Most of these systems will be capable of providing accurate information on cost. Most medium-sized systems (e.g., those systems serving 3,301 to 50,000 persons) can provide reliable data on their needs and some can provide cost estimates for meeting their needs. The information that respondents will be asked to provide is generally maintained and reported as a function of the management and operation of the water system.

##### **A.4.b.i Data Items**

###### *2015 DWINSA – Systems Serving More Than 3,300 Persons*

The data collection instrument asks respondents to verify or correct system characteristic information (i.e., name and address of the system, contact person, address, population served, total design capacity, number of connections, primary source, whether the water system is privately or publicly owned and whether the water system purchases/sells water from/to another water system). It is customary business practice for the water system to maintain this information. The respondent will either indicate that the information is correct as provided or enter the correct information in the space provided. States verify this information in advance of the data collection instrument being sent to the water systems. Based on previous assessments, EPA anticipates that very few water systems will need to correct the information provided.

In addition, the respondent is asked to provide information associated with specific types of projects:

- source;
- treatment;
- finished or treated water storage and pumping;
- transmission and distribution; and
- backflow prevention devices/assemblies, service lines, valves, water meters and other (projects not associated with one of the specified project types).

For each project, the respondent is asked to:

- Briefly describe the needed capital project (e.g., “routine distribution system replacement,” “filtration plant upgrade,” “high service pump replacement,” “corrosion control treatment,” “storage tank rehabilitation”). Information is collected on a project-by-project basis because it is most commonly available to respondents in that form and because documentation, when available, is usually developed on a project-by-project basis.

- Provide the codes that best describe the project’s type of need and reason (see Appendix B for “Lists of Codes”).
- Indicate if the project is to install new infrastructure to meet current population demands, replace old infrastructure, expand or upgrade existing infrastructure (such as treatment plants to meet current population demands) or rehabilitate existing infrastructure.
- Indicate if the project is needed now to protect public health or is not needed now but will be necessary to continue providing safe drinking water within the next 20 years.
- Provide design capacity when applicable -- i.e., millions of gallons per day (MGD) for treatment and pumping; millions of gallons (MG) for storage; the diameter and number of feet of distribution or transmission lines; and the size and number of backflow prevention devices/assemblies, lead service lines, valves and water meters. EPA will use these parameters to model project costs.
- If available, provide the capital cost estimate and year and month (if known) of the estimate. EPA will use this information to assign the cost of the project. The year and month are important because they will allow EPA to account for differences in the value of money over different years and to convert all costs to a common year.
- Provide an estimate of the total length of pipe in the water system. This information will only be required for water systems that submit pipe projects but do not have independent documentation of need for these projects (i.e., planning document, sanitary survey or leak and break records). It is expected that not all systems will need to provide this inventory information due to submitting pipe projects supported by independent documentation.
- Indicate the type of documentation using EPA’s “Lists of Codes” that explains why the project is needed and, if an existing cost estimate (developed for other purposes independent of the DWINSA) is available, indicate the documentation that explains the breakdown of the cost. This will verify the cost for the project. NOTE: EPA discourages systems or states from developing new cost estimates solely for the purposes of the 2015 DWINSA. For needs identified without independent cost estimates, the Agency instead will rely on extrapolations from cost models that are based on extensive independently-documented cost estimates.
- Help verify that adequate documentation of the need has been submitted.
- Help determine if the project is an allowable need.
- Help gauge cost-reasonableness.

The data collection instrument contains optional worksheets where respondents can record information about the water system’s existing infrastructure, such as information on storage tanks, pumps and pipe material as well as the age and condition of the infrastructure. This information will not be entered into the DWINSA data system. The worksheets are only provided as a helpful tool for a respondent to inventory all of a water system’s assets and assess any infrastructure needs that are not yet part of the system’s formal planning documents.

For respondents to the 2015 DWINSA that did not participate in the 2011 DWINSA, the states will provide a data collection instrument with the water system characteristics information. The respondent will be asked to populate this document with a list of all the system’s planned capital improvement projects for the survey period of January 1, 2015 to December 31, 2034. The system must provide documentation and ensure that all projects meet policy requirements established for the 2015 DWINSA.

For respondents to the 2015 DWINSA that reported projects in the 2011 DWINSA, states will provide them with a list of all the projects that were submitted in response to the 2011 DWINSA. EPA will provide the 2011 project list to each state for each water system selected for both surveys. The respondent will be asked to update the list by correcting any old information (e.g., cost estimate) and deleting projects that are completed or no longer needed. The respondent will also add any new projects that were not included in the 2011 DWINSA. All projects must meet documentation and policy requirements established for the 2015 DWINSA.

The respondent's representative is also asked to provide his or her name, title, address, phone number and e-mail address. This information is requested in case EPA or the state must contact the respondent for clarification or explanation of any response.

The respondent is asked to attach documentation for all needs and costs reported in the 2015 DWINSA or to refer to applicable documentation previously submitted to EPA for the 2011 DWINSA. Systems are encouraged to provide inventory data on their systems. Only where noted above will the inventory data be required.

The data collection instrument and Lists of Codes are attached as Appendix B.

#### ***A.4.b.ii Respondent Activities***

##### *2015 DWINSA – Systems Serving More Than 3,300 Persons*

To complete the data collection instrument, the following activities are anticipated for CWSs serving more than 3,300 persons:

- **Participate in an informational telephone call.** Respondents will receive a call from the state describing the purpose of the DWINSA, the information that will be requested and the timetable for completing and returning the data collection instrument.
- **Read the cover letter.** Respondents will review the cover letter and instructions accompanying the data collection instrument.
- **Collect and copy supporting documentation.** Respondents will locate the necessary supporting documentation in system files and copy it.
- **Call for technical assistance.** Respondents will call their state contacts for technical assistance, if necessary.
- **Complete the data collection instrument.** Respondents will discuss current needs with the state and complete the data collection instrument. An estimate of total amount of pipe in the system must be provided if any pipe project is submitted without independent documentation of need (e.g., a planning document).
- **Respond to call back from the state about the status of 2015 DWINSA.** Respondents who do not provide information to the states in a timely manner will be contacted by the state to provide a brief report on the status of the 2015 DWINSA response.

##### *2015 DWINSA – State Activities*

For this burden estimate, EPA assumes all states will participate in certain “up-front activities” where the measure of the activity burden is on an “hours per state” basis and the combined burden on all states is calculated by multiplying by the 56 participating states.



The burden of additional state activities is measured on an “hours per system” basis and the combined burden on all states is calculated by multiplying the number of systems being sampled in the survey. The hours per system burden differs between systems serving 50,000 or more people and systems serving less than 50,000 persons. The combined additional burden on all states from surveying the larger systems is calculated by multiplying the hours per system burden of these systems by 612 – the total number of the larger systems being sampled in the survey. The combined additional burden on all states from surveying the smaller systems (serving 3,300 to 49,999 people) is calculated by multiplying the hours per system burden of these systems by 2,247 - the total number of these smaller systems being sampled in the survey.

The total burden on all states is calculated by adding the combined burden based on “hours per state” with the combined burden based on hours per system for all systems to be surveyed.

### State Up-Front Activities

This first activity category includes the states’ “fixed burden” for helping EPA prepare for the 2015 DWINSA.

- **Participate in training and other pre-survey efforts.** This activity includes participating in training sessions offered by EPA and becoming familiar with the survey design and policies. In addition, it includes activities such as reviewing the draft data collection instrument.
- **Help EPA verify SDWIS data.** There are several important variables for which SDWIS data must be verified. Critical inventory data for the water systems being surveyed will need to be reviewed. Such data include the public water system identification number (PWSID), system name, address, telephone numbers (if any), primary source, population served, number of service connections, whether the water system is publicly or privately owned and whether the water system purchases/sells water from/to another water system. To help with this verification activity, EPA will provide the information that must be reviewed in electronic form.
- **Perform miscellaneous administrative activities.** States will perform various administrative duties prior to the 2015 DWINSA (e.g., establishing system files). In addition, state management will explain the 2015 DWINSA to staff and allocate resources.

### State Data Collection Activities for Systems Serving more than 3,300 Persons

States will conduct the following activities for CWSs serving more than 3,300 persons during the data collection phase of the 2015 DWINSA:

- **E-mail survey package to water systems.** States will provide each system in the 2015 DWINSA with a survey package, which will be delivered via e-mail.
- **Telephone systems to ensure participation and provide instructions.** To improve response rates, states will telephone the water systems early in the process to ensure that they have received the survey package and understand how to complete the data collection instrument.
- **Provide technical assistance.** States will provide technical assistance to systems by answering their questions about the data collection instrument and how needs should be represented.

- **Call systems that do not return the data collection instrument by a certain date.** To improve response rates, states will telephone systems that have not returned their assessment by a specific date to encourage participation.
- **Review completed data collection instruments and documentation.** The data collection instrument will be returned directly to the state. State personnel will have the opportunity to review the information on the data collection instrument, as well as any accompanying documentation. The state’s review will provide the first quality assurance/quality control check.
- **Discuss results with EPA.** After the state reviews the submission and documentation, the state forwards the data to EPA for review and data entry. EPA performs a second quality assurance/quality control check to ensure all data are documented and allowable. Any issues regarding the project descriptions or adequacy of the documentation of the data will be resolved by EPA and the state. States are provided access to the data system and are able to verify that the data have been entered into the data system.

*Small CWSs (systems serving 3,300 and fewer people)*

As discussed above, EPA will not collect data from small systems. The needs of these systems will be based on the results of the 2007 Assessment. EPA will adjust these estimates to 2015 dollars for the 2015 DWINSA.

*NPNCWSs*

EPA will base the needs of NPNCWSs on the 1999 DWINSA results. EPA will adjust these estimates to 2015 dollars for the 2015 DWINSA.

*American Indian and Alaska Native Village Water Systems*

EPA will base the needs of Alaska Native Village and American Indian water systems on the results of the 2011 Native American DWINSA. EPA will adjust these estimates to 2015 dollars for the 2015 DWINSA.

## A.5 INFORMATION COLLECTED: AGENCY ACTIVITIES, COLLECTION METHODOLOGY AND INFORMATION MANAGEMENT

### A.5.a Agency Activities

#### A.5.a.i EPA and Contractor Activities

Many of the EPA activities described here will be conducted by contractors with EPA oversight/technical direction. For example, EPA will oversee contractor acceptance of survey submissions and subsequent data analysis. For purposes of describing Agency activities related to the 2015 DWINSA, contractor effort is not distinguished from EPA effort. Separate estimates for contractor burden and cost will be provided in Section A.6.c. In addition, Section B.1.c describes the contractor's role.

#### *Up-Front Activities*

The following pre-assessment activities will be conducted:

- **Revise the data collection instrument.** EPA is revising the data collection instrument based on lessons learned during the previous DWINSAs and state input from a May 2014 Workgroup meeting. This task will include developing materials for water system use and for state use in supporting water systems.
- **Train state participants.** To ensure that state staff understand every aspect of the 2015 DWINSA, EPA will conduct five training sessions at locations across the country. The training will help ensure consistent responses across the country, high response rates and efficient use of staff.
- **Select 2015 DWINSA respondents.** The Agency will drop a random selection of 25 percent of the systems serving 3,301 to 100,000 people that participated in the 2011 DWINSA. The Agency will draw a random sample to replace those systems in the survey for the 2015 DWINSA. The Agency will also update inventory numbers for water systems serving more than 3,300 people. Section B.2.c. describes the precision targets in more detail.
- **Update data system.** EPA will update the data system used for the 2011 DWINSA to store and analyze data. The data system will produce the necessary statistical reports for EPA, Congress and states. The data system will also allow EPA and state offices to have access to the data.
- **Send data collection instruments.** This will include prepopulating an electronic data collection instrument with water system inventory information and a list of projects reported in the 2011 DWINSA (for systems that participated in the 2011 DWINSA) and sending the survey packages via e-mail to the states. Survey packages will include the prepopulated data collection instrument for each water system selected in the 2015 DWINSA, Lists of Codes for the survey, instructions and a cover letter from EPA.

## *Data Collection Activities*

EPA will conduct the following activities during the data collection phase of the 2015 DWINSA:

- **Provide technical assistance.** The Agency will provide technical assistance to water systems and states to promote consistent responses across the country.
- **Review completed data collection instruments.** EPA will review the completed data collection instruments to ensure that all data are documented and allowable.
- **Maintain the data.** EPA will enter DWINSA data into the data system and perform quality assurance/quality control checks of data entry.
- **Communicate results of review to the state.** EPA will communicate the results of each survey submittal review to the states via a website that shows the updated project table and comment codes indicating the changes made. EPA Regional staff will also be able to view the data for states in their respective Regions.

### **A.5.b Collection Methodology and Management**

This section discusses the steps that EPA has taken to ensure that the information being collected will be accurate, reliable and retrievable. This methodology was developed using experience gained in conducting the previous DWINSAs. EPA has incorporated into this methodology comments and advice from EPA staff involved with those assessments.

#### *Development of Data Collection Instrument*

Appendix B contains the data collection instrument. EPA has developed the 2015 DWINSA approach and the data collection instrument with the assistance of a workgroup. As is explained in Section A.3.c, the workgroup includes EPA Headquarters, EPA Regions and state representatives. The 2015 DWINSA approach and many of the refinements to the data collection instrument were based on experience in conducting the 1995, 1999, 2003, 2007 and 2011 DWINSAs. One change to the data collection instrument for the 2015 DWINSA is that it will only be administered electronically, whereas in the past respondents had the option of receiving printed or electronic data collection instruments. Another change, which can be found in EPA's Lists of Codes, is the deletion of certain types of needs from the list that water systems use in filling out the survey instrument (see Appendix B). These types of needs are being removed from the 2015 DWINSA pursuant to discussions with states in which they were identified as having very little relative impact on survey results. Note that these needs are stricken out on the list rather than simply dropped; this was done to help facilitate the re-review in the 2015 DWINSA of submissions from systems' surveys in 2011 when these codes were still being used.

EPA is also modifying the approach for collecting information on "green" and climate readiness attributes of infrastructure projects for the 2015 DWINSA. EPA will not include questions about these projects in the data collection instrument. Instead, EPA will explore streamlined approaches that might enable the Agency, during the Survey review process, to identify and flag projects that are likely to have "green," climate readiness or climate resilience attributes.

The format and content of the data collection instrument will otherwise remain largely unchanged from the 2011 DWINSA. Section B.2.c.ii describes the steps taken to ensure that the data collection instrument will be an effective tool for retrieving the information EPA needs to meet the 2015 DWINSA objectives.

### *Methodology for 2015 DWINSA – CWSs Serving More Than 3,300 Persons*

Most systems serving more than 100,000 persons have CIPs or similar documents that summarize their projects. Therefore, these systems are generally able to provide accurate information on their needs and, for some projects, accurate estimates on the associated cost. A data collection instrument will be sent to states for every CWS that serves more than 100,000 persons. Clarifying information for completing the data collection instrument will be available from EPA.

The experience of states that participated in the previous DWINSAs indicates that most systems serving 3,301 to 100,000 persons could provide reliable data on their needs and a large portion of these systems could provide at least some cost estimates for meeting those needs.

Also, water systems that participated in the 2011 DWINSA and are selected to participate in the 2015 DWINSA will receive a copy of their project submissions from the 2011 DWINSA. These water systems will be able to update the information on the list and add new projects to the data collection instrument. States will provide technical support to the water systems participating in the 2015 DWINSA. EPA will also offer technical support to state and water system personnel.

EPA will send the data collection instrument to the states to forward on to the water systems. Water systems will return the completed data collection instruments to the state. The state will then forward the data collection instrument and supporting documentation to EPA for review and data entry. EPA will perform a second quality assurance/quality control check to ensure that all infrastructure projects are documented and allowable. EPA will enter the data into the data system. Projects or cost estimates that are not documented will be identified in the data system as lacking documentation. If the system or state does not provide documentation, the project or cost estimate will be deleted from the 2015 DWINSA. EPA will offer technical support to state personnel to assist with the completion of each of these steps.

For projects that do not have cost estimates, EPA will model the costs.

### *Methodology for 2015 DWINSA – CWSs Serving 3,300 and Fewer Persons*

Data will not be collected in the 2015 DWINSA from CWSs serving 3,300 and fewer persons. Their needs will be based on data collected during the 2007 DWINSA and updated to 2015 dollars.

### *Methodology for 2015 DWINSA – NPNCWSs*

Data will not be collected in the 2015 DWINSA from NPNCWSs. Their needs will be based on data collected during the 1999 DWINSA and updated to 2015 dollars.

### *Methodology for American Indian and Alaska Native Village Water Systems*

EPA conducted a survey of American Indian and Alaska Native Village water systems in the 2011 DWINSA. EPA will not collect data in the 2015 DWINSA from American Indian and Alaska Native Village water systems. Their needs will be based on data collected during the 2011 Native American DWINSA and updated to 2015 dollars.

### *Data Quality*

It is important that the results of the DWINSA be as uniform as possible across the country. Toward this end, EPA will take the following steps:

- EPA will establish a uniform set of assumptions or criteria for state, EPA Regions, EPA Headquarters and contractor staff to evaluate data provided by systems.

- EPA will provide training to all those involved in the DWINSA to ensure that the assumptions and procedures are clear and understood.
- EPA will provide quality control reviews of each data collection instrument submitted to ensure compliance with DWINSA policies and accuracy of data.

Among the most important steps in quality assurance is training. EPA will provide training sessions for state and EPA Regions involved in the 2015 DWINSA. The training sessions will be designed to enable state and EPA Regions to review completed data collection instruments and respond to questions from systems on the projects to be included in the survey response and related project documentation. The training will emphasize the following elements:

- Identifying the capital improvements associated with source, treatment, transmission, distribution and storage.
- Discussing policies and documentation requirements.
- Completing the 2015 DWINSA data collection instrument.

EPA will develop materials for distribution to state and EPA Region personnel who are unable to attend training sessions.

In addition to the training sessions, EPA will provide technical support to state, EPA Region and water system personnel. It is anticipated that this support will primarily consist of providing information to the EPA Regions and states, which will then provide technical support to the systems. However, technical support will be available to systems in states that have chosen not to provide their own technical assistance.

Data quality will be assured by implementing the following mechanisms throughout the gathering and processing phases of the information collection:

- **Adequate documentation.** EPA has requested documentation of needs and costs, when cost documentation is available, to ensure the accuracy and reliability of the data. Acceptable forms of documentation of needs and costs are included on List 4 of the Lists of Codes. EPA will not accept needs or costs without adequate documentation. EPA will emphasize to respondents that they are not expected to develop cost estimates for the purposes of the 2015 DWINSA. The costs of projects without a cost estimate will be modeled by EPA.
- **Provide an estimate of the total length of pipe in the water system.** This information will only be required for water systems that submit projects for rehabilitation or replacement of pipe that are not independently documented (e.g., planning document or sanitary survey). It is expected that not all systems will need to provide this information.
- **Receipt control.** The primary objective of the receipt control system will be to ensure that completed forms submitted by respondents (or forwarded by states) are logged in promptly and given proper chain of custody. A second objective is to provide states with the data needed to monitor cumulative receipts by date to identify potential problems with the response rate. Such response rate problems could necessitate action. See Section B.2.c.ii for EPA's method for improving the response rate. States that receive data collection instruments from respondents will be trained in receipt control.
- **Data review by states and EPA Regions.** EPA will rely on the states and EPA Regions to help ensure data quality. Fifteen states are expected to opt out of participating in the statistical portion

of the 2015 DWINSA (i.e., collecting data from systems serving 3,301 to 100,000 persons). However, all states that have systems serving more than 100,000 persons are expected to participate in the census portion of the survey. EPA will ask the Association of State Drinking Water Administrators (ASDWA) to communicate with the state drinking water program administrators to encourage their participation. EPA believes that state review is important in ensuring nationally consistent results because the states have more frequent communications with systems and possess a better understanding of each particular system's needs. Therefore, state personnel will have the opportunity to review the information on the form, as well as any accompanying documentation. When necessary, the states will contact the water system to ask for clarifying information.

- **Survey review and data entry.** EPA will screen the submitted electronic data collection instruments for completeness and review projects to ensure that they are allowable and adequately documented based on survey policies. To reduce the review time for water systems that participated in the 2011 DWINSA, EPA will compare the responses of the 2015 DWINSA with those of the 2011 DWINSA and conduct a thorough review of the projects flagged as requiring a complete review. Projects that are needed in each 20-year survey period and that remain unchanged from the 2011 survey will not require a complete review unless that project is impacted by another project that is added or changed. Reviewers will also assign comment codes to projects to describe any changes made to the data. Data from the data collection instruments will be entered into the database only after they have passed the initial screening. As data are entered, an automatic data entry program will provide reasonable bounds checking and data verification. The program will signal if an entry is out of the allowable range or is an invalid entry for that data field. All such signals will be investigated and resolved.
- **Data systems.** EPA updated a Web-based data system for the 2007 and 2011 DWINSAs that will be used for the 2015 DWINSA. The Web-based system includes a data entry interface that allows the Agency and its contractor to input data and allows states and EPA Regions to access, download, verify and suggest modifications to their data ([www.DWNeeds.com](http://www.DWNeeds.com)). EPA will use a commercial “off the shelf” program, Microsoft Access, to manage the information. The data system will provide the following functions:
  - Data entry through the user interface or batch upload.
  - Data verification through bounds checking.
  - A password-protected data modification interface.
  - Data access for states and EPA Regions for review and verification of their data.
  - Predefined summary and statistical reports.
- **Cost reasonableness ranges.** EPA will develop “cost reasonableness ranges” to help verify the accuracy of the data and identify projects for further review.

#### *Public Access to Data*

The Agency's policy is to make the fullest possible disclosure of information without unjustifiable expense or unnecessary delay to the requester. Once the final Report to Congress has been submitted, the public will be given access to assessment data in accordance with EPA's policies and procedures for Freedom of Information Act (FOIA) requests. However, as a matter of policy, EPA will not disclose the identity of any respondent to the 2015 DWINSA. EPA will develop standard report formats for providing data to the public.

### A.5.c Small Entity Flexibility

In designing the 2015 DWINSA methodology, EPA has taken small systems' relatively limited technical capabilities and financial resources into account. EPA's experience with the previous DWINSAs has shown that some small systems lack the resources and technical ability to complete the data collection instruments. Small CWSs (those serving 3,300 and fewer persons) will not be included in the surveying for the 2015 DWINSA. EPA will use the results from the 2007 DWINSA adjusted to 2015 dollars. For NPNCWSs, EPA will use the 1999 DWINSA results, adjusted to 2015 dollars, as the basis for the 2015 DWINSA estimates.

For the 2011 DWINSA, EPA conducted a census of all American Indian water systems that served more than 10,000 persons (there were no Alaska Native Village water systems that serve more than 10,000 persons) and selected a random sample of American Indian and Alaska Native Village systems serving 10,000 and fewer persons. To reduce the burden on these systems and EPA, the Agency will use the results from the 2011 DWINSA as the basis for the 2015 DWINSA estimates for these water systems.

### A.5.d Collection Schedule

The current schedule assumes EPA would receive OMB approval for data collection by January 2015. The schedule will be adjusted based on the final approval date. EPA will send data collection instruments to states as soon as possible after OMB approval. All systems participating in the 2015 DWINSA will be asked to complete and return the data collection instruments to their state within 1 month of receipt.

To facilitate efficient data entry by EPA, the Agency will ask the states to submit data for one-third of the systems within three months after data collection begins. Data for two-thirds of the systems will be due within six months and all data will be due within nine months. Exhibit A-5-1 summarizes the major collection milestones.

#### Exhibit A-5-1 Collection Schedule

Task	Date
EPA Tentatively Selects Systems to be Included in State Samples	September 2014
Training Sessions for States and EPA Regions	September - October 2014
Information Collection Request Submitted to OMB	December 2014
Electronic Delivery of Data Collection Instruments to States	February 2015
Date by which Systems Are to Return the Data Collection Instrument to States	March 2015
1/3 of Sent Data Collection Instruments Returned by States to EPA	May 2015
2/3 of Sent Data Collection Instruments Returned by States to EPA	August 2015
All Sent Data Collection Instruments Returned by States to EPA	November 2015
No New Projects Will Be Accepted by EPA	December 2015
No New Information on Submitted Projects Will Be Accepted by EPA	February 2016
All Information in the Data System Finalized	August 2016
Report to Congress Due	February 2, 2017



## A.6 ESTIMATING THE BURDEN AND COST OF THE COLLECTION

### A.6.a Respondent Burden

Modifications to the implementation of the 2015 DWINSA will change how burden is distributed among the systems and states from past DWINSAs. For the 2015 DWINSA, the majority of the respondents will be updating their submittal from 2011. It is anticipated this will reduce the burden for both entities. In addition, all responses will be submitted in electronic format, which will reduce the burden associated with EPA or states distributing the survey packages to systems.

EPA estimates that there will be 612 systems serving more than 100,000 people and 308 systems serving 50,001 to 100,000 people (231 of which participated in the 2011 DWINSAs and 77 of which did not). EPA estimates that 1,939 systems serving 3,001 to 50,000 people will participate in the 2015 DWINSA and approximately 75 percent of these systems (1,454) also participated in the 2011 DWINSA. This breakdown is used to calculate the average burden per system in the sections that follow.

#### A.6.a.i Burden to Community Water Systems

The annual water system burden for the 2015 DWINSA is estimated to be 3,956 hours (a total of 15,822 hours over the full four-year project effort). Exhibit A-6-6 shows the breakdown of the total burden hours for CWSs by system size in the 2015 DWINSA. The basis for the burden estimates are detailed below.

#### 2015 DWINSA – CWSs Serving More Than 50,000 Persons

The respondent burden for the systems serving more than 50,000 persons consists of systems' burden for completing the data collection instrument. EPA estimates that the total unit burden is 6.48 hours per system. Exhibit A-6-1 shows the unit burden for 920 systems serving more than 50,000 persons.

- **Participate in informational phone call.** All systems will participate in an informational phone call with the state. For systems that participated in the 2011 DWINSA, each informational call should last about 15 minutes (0.25 hours).

EPA anticipates that systems that did not participate in the 2011 DWINSA will require more time on the phone call to understand the process. Each informational call should last about 20 minutes (0.33 hours).

Consequently, the average burden per system is as follows:

$$[0.25 \times (612 + (0.75 \times 308)) / (612 + 308)] + [0.33 \times (0.25 \times 308) / (612 + 308)] = 0.26 \text{ hrs/system}$$

EPA anticipates that management staff will take the call at half of the systems and technical staff will take the call at the other half.

#### Respondents by Water System Size

- Systems serving more than 50,000 persons = 920 systems.
  - 612 serving more than 100,000 and participated in the 2011 DWINSA.
  - 231 serving 50,001-100,000 and participated in the 2011 DWINSA.
  - 77 serving 50,001-100,000 and did not participate in the 2011 DWINSA.
- Systems serving 3,301-50,000 persons = 1,939 systems.
  - 1,454 serving 3,301-50,000 and participated in 2011 DWINSA.
  - 485 serving 3,301-50,000 and did not participate in 2011 DWINSA.

- **Read cover letter.** EPA anticipates that systems that participated in the 2011 DWINSA will require less time to read the cover letter and data collection instructions because they will already be familiar with the process and will only need to become familiar with aspects of the survey that have changed. EPA estimates that the burden for each of these systems is 45 minutes (0.75 hours) and breaks down as follows:
  - A manager will receive the 2015 DWINSA, read the cover letter and review the instructions and other materials. The estimated time for managers to perform these activities is 15 minutes (0.25 hours).
  - Technical staff will read the cover letter and data collection instructions in detail. EPA estimates that the burden for this activity is 30 minutes (0.5) hours per system.

EPA estimates that systems that did not participate in the 2011 DWINSA will require 1.5 hours to read these materials. This estimate breaks down as follows:

- A manager will receive the 2015 DWINSA, read the cover letter and review the instructions and other materials. The estimated time for managers to perform this role is 30 minutes (0.50 hours).
- Technical staff will read the cover letter and data collection instructions in detail. EPA estimates that the burden for this activity is 1.0 hour per system.

Thus, the total unit burden is:

$$[0.75 \times (612 + (0.75 \times 308)) / (612 + 308)] + [1.5 \times (0.25 \times 308) / (612 + 308)] = 0.81 \text{ hrs/system}$$

- **Collect and copy supporting documentation.** The time required to review system files and to collect and copy supporting documentation will vary greatly. EPA anticipates that systems that participated in the 2011 DWINSA will use much of the same documentation that was collected and submitted for the previous DWINSA with limited modifications or updates. Therefore, EPA estimates that the time for these systems to collect and copy supporting documentation will be reduced from previous years. EPA estimates that it will take 1.0 hour at 50 percent of the systems, 2.0 hours at 25 percent of the systems and 4.0 hours at 25 percent of the systems. Thus, the average time per system is as follows:

$$(1.0 \times 0.5) + (2.0 \times 0.25) + (4.0 \times 0.25) = 2.0 \text{ hrs/system}$$

For systems that did not participate in the 2011 DWINSA, EPA estimates that it will take 1.5 hours at 30 percent of the systems, 2.5 hours at 30 percent of the systems, four hours at 30 percent of the systems and 16 hours at 10 percent of the systems. Thus, the average time per system is as follows:

$$(1.5 \times 0.30) + (2.5 \times 0.30) + (4 \times 0.30) + (16 \times 0.10) = 4 \text{ hrs/system}$$

The total average time per system is:

$$[2.0 \times (612 + (0.75 \times 308)) / (612 + 308)] + [4 \times (0.25 \times 308) / (612 + 308)] = 2.16 \text{ hrs/system}$$

Half of this time will be spent by technical staff and half will be spent by clerical staff.

- **Call for technical assistance.** Many systems will call states for technical assistance. In developing the burden estimate for this activity, EPA assumes that the number of requests for

assistance will equal 100 percent of the number of systems. (This estimate considers the likelihood that some systems will call more than once, while some will not call at all.) EPA also assumes that each call will be placed by technical staff.

EPA anticipates that systems that participated in the 2011 DWINSA will require less technical assistance than those that did not participate in the 2011 DWINSA. Therefore, EPA estimates that all questions from systems that participated in the 2011 DWINSA will be readily answerable and the state will not need to conduct any additional research and will be able to answer the question during the initial call. That initial call is estimated to average 15 minutes (0.25 hours).

EPA estimates that the burden for systems that did not participate in the 2011 DWINSA is 20 minutes (0.33 hours) and break down as follows:

- About 50 percent of the questions will be readily answerable” and the state will not need to conduct any additional research and will be able to answer the question during the initial call that will average 15 minutes (0.25 hours).
- About 50 percent of the questions will require the state to perform research and call the system back. In this case, EPA estimates that the total burden for the two calls is 25 minutes (0.42 hours).

$$[(0.25 \times 0.50) + (0.42 \times 0.50)] = 0.34 \text{ hrs/system}$$

The total average burden per system is:

$$[0.25 \times (612 + (0.75 \times 308))/(612 + 308)] + [0.34 \times (0.25 \times 308)/(612 + 308)] = 0.26 \text{ hrs/system}$$

- **Complete data collection instrument.** The burden to systems to complete the data collection instrument will vary depending on whether the system participated in the 2011 DWINSA. The 2011 DWINSA participants will have a relatively low burden because EPA expects that a large portion of the information in the 2011 survey will carry over to the 2015 DWINSA. Thus, 2011 DWINSA participants will only update their needs and documentation rather than identify their needs anew.

EPA estimates that technical staff at systems that participated in the 2011 DWINSA will require two hours to update the 2011 survey and complete the project table of the data collection instrument. Management is expected to take 18 minutes (0.30 hours) to review the completed data collection instrument for accuracy. Clerical staff is anticipated to take 18 minutes (0.30 hours) to provide support to the technical staff. Thus, the total unit burden to systems that participated in the 2011 DWINSA is approximately 2.6 hours per system.

EPA estimates that technical staff at systems that did not participate in the 2011 DWINSA will take three hours to complete the project table of the data collection instrument. This estimate is consistent with EPA’s experience with the previous DWINSAs. Management is expected to take 18 minutes (0.30 hours) to review the completed data collection instrument for accuracy. Clerical staff is anticipated to take one hour to provide support to the technical and managerial staff. Thus, the total unit burden to systems that did not participate in the 2011 DWINSA is approximately 4.3 hours per system.

The total average burden per system is as follows:

$$[2.6 \times (612 + (0.75 \times 308))/(612 + 308)] + [4.3 \times (0.25 \times 308)/(612 + 308)] = 2.74 \text{ hrs/system}$$

- **Respond to call back from state about status of 2015 DWINSA.** For this burden estimate, EPA assumes each system will spend time responding to the state call(s) to request a status update on completing the survey's questionnaire. EPA assumes that the average total time spent by each system on responding to the state call(s) is 15 minutes (0.25 hours) per system. This does not include discussing technical questions, which is accounted for above. Rather, it includes time required for the system to provide the state with a brief report on the status of the 2015 DWINSA response.

**Exhibit A-6-1 Estimated Average Unit Burden for Systems Serving More Than 50,000 Persons**

Activity	Estimated Burden (hours)			
	Management	Technical	Clerical	Total
Participate in informational phone call	0.13	0.13		<b>0.26</b>
Read cover letter/data collection instructions	0.27	0.54		<b>0.81</b>
Collect supporting documentation		1.08	1.08	<b>2.16</b>
Call for technical assistance		0.26		<b>0.26</b>
Complete data collection instrument	0.30	2.08	0.36	<b>2.74</b>
Respond to call back from state		0.25		<b>0.25</b>
<b>TOTAL</b>	<b>0.70</b>	<b>4.34</b>	<b>1.44</b>	<b>6.48</b>

*2015 DWINSA – CWSs Serving 3,301 – 50,000 Persons*

Exhibit A-6-2 shows the unit burden for 1,939 systems serving 3,301 to 50,000 persons. EPA estimates that each of these systems will take a total of 5.09 hours to respond to the 2011 DWINSA.

- **Participate in informational phone call.** All systems will participate in an informational phone call with the state. For systems that participated in the 2011 DWINSA, each informational call should last about 15 minutes (0.25 hours).

EPA anticipates that systems that did not participate in the 2011 DWINSA will require more time on the phone call to understand the process. Each informational call should last about 20 minutes (0.33 hours).

Consequently, the average burden per system is as follows:

$$[(0.25 \times 0.75) + (0.33 \times 0.25)] = 0.27 \text{ hrs/system}$$

EPA anticipates that management staff will take the call at half of the systems and technical staff will take the call at the other half.

- **Read cover letter.** EPA anticipates that systems that participated in the 2011 DWINSA will require less time to read the cover letter and data collection instructions because they will already be familiar with the process and will only need to become familiar with aspects of the survey that have changed. EPA estimates that the burden for each of these systems is 45 minutes (0.75 hours) and breaks down as follows:

- A manager will receive the 2015 DWINSA, read the cover letter and review the instructions and other materials. The estimated time for managers to review these items is 15 minutes (0.25 hours).
- Technical staff will read the cover letter and data collection instructions in detail. EPA estimates that the burden for this activity is 30 minutes (0.50) hours per system.

EPA estimates that systems that did not participate in the 2011 DWINSA will require 1.5 hours to read these materials. This estimate breaks down as follows:

- A manager will receive the 2015 DWINSA, read the cover letter and review the instructions and other materials. The estimated time for managers to review the cover letter is 30 minutes (0.50 hours).
- Technical staff will read the cover letter and data collection instructions in detail. EPA estimates that the burden for this activity is one hour per system.

Thus, the total unit burden is:

$$[(0.75 \times 0.75) + (1.5 \times 0.25)] = 0.94 \text{ hrs/system}$$

- **Collect and copy supporting documentation.** The time required to review system files and to collect and copy supporting documentation will vary greatly. For instance, systems serving 3,301 to 50,000 persons typically have less documentation than larger CWSs. Furthermore, EPA anticipates that systems that participated in the 2011 DWINSA will use much of the same documentation that was collected and prepared for the previous DWINSA with limited modifications or updates. Therefore, EPA estimates that the time for these systems to collect and copy supporting documentation will be reduced from previous years. EPA estimates that it will take approximately 45 minutes (0.75 hours) at 40 percent of these systems, 1.5 hours at 40 percent of these systems and three hours at 20 percent of these systems. Thus, the average time per system that participated in the 2011 DWINSA is as follows:

$$[(0.75 \times 0.40) + (1.5 \times 0.40) + (3 \times 0.20)] = 1.5 \text{ hrs/system}$$

For systems that did not participate in the 2011 DWINSA, EPA estimates that it will take one hour at 50 percent of the systems, two hours at 25 percent of the systems and four hours at 25 percent of the systems. Thus, the average time per system is as follows:

$$[(1.0 \times 0.5) + (2.0 \times 0.25) + (4.0 \times 0.25)] = 2.0 \text{ hrs/system}$$

The total average time per system is:

$$[(1.5 \times 0.75) + (2.0 \times 0.25)] = 1.63 \text{ hrs/system}$$

Half of this time will be spent by technical staff and half will be spent by clerical staff.

- **Call for technical assistance.** Many systems will call states for technical assistance. In developing the burden estimate for this activity, EPA assumes that the number of requests for assistance will equal 150 percent of the number of systems. (This estimate accounts for the fact that some systems will call more than once, while some will not call at all.) EPA also assumes that each call will be placed by technical staff.

EPA anticipates that systems that participated in the 2011 DWINSA will require less technical assistance than those that did not participate in the 2011 DWINSA. Therefore, EPA estimates that all questions from systems that participated in the 2011 DWINSA will be readily answerable and the state will not need to conduct any additional research and will be able to answer the question during the initial call. That initial call is estimated to average 15 minutes (0.25 hours).

EPA estimates that the burden for systems that did not participate in the 2011 DWINSA is 20 minutes (0.34 hours) and breaks down as follows:

- About 50 percent of the questions will be readily answerable and the state will not need to conduct any additional research and will be able to answer the question during the initial call that will average 15 minutes (0.25 hours).
- About 50 percent of the questions will require the state to perform research and call the system back. In this case, EPA estimates that the total burden for the two calls is 25 minutes (0.42 hours).

$$[(0.25 \times 0.50) + (0.42 \times 0.50)] = 0.34 \text{ hrs/system}$$

The total average burden per system is:

$$1.50 \times [(0.25 \times 0.75) + (0.34 \times 0.25)] = 0.41 \text{ hrs/system}$$

- **Complete data collection instrument.** The burden to systems to complete the data collection instrument will vary depending on whether or not the system participated in the 2011 DWINSA. The 2011 DWINSA participants will have a relatively low burden because EPA expects that a large portion of the information in the 2011 survey will carry over to the 2015 DWINSA. Consequently, 2011 DWINSA participants will only update their needs and documentation rather than identify their needs anew.

EPA estimates that technical staff at systems that participated in the 2011 DWINSA will require 1 hour to update the 2011 survey and complete the project table of the data collection instrument. Management is expected to take 18 minutes (0.30 hours) to review the completed data collection instrument for accuracy. Thus, the total unit burden to systems that participated in the 2011 DWINSA is approximately 1.3 hours per system.

EPA estimates that technical staff at systems that did not participate in the 2011 DWINSA will take two hours to complete the data collection instrument. This estimate is consistent with EPA experience with the previous DWINSAs. Management is expected to take 28 minutes (0.47 hours) to review the completed data collection instrument for accuracy. Thus, the total unit burden to systems that did not participate in the 2011 DWINSA is approximately 2.47 hours per system.

The total average burden per system is as follows:

$$(1.3 \times 0.75) + (2.47 \times 0.25) = 1.59 \text{ hrs/system}$$

- **Respond to call back from state about status of 2015 DWINSA.** For this burden estimate, EPA assumes each system will spend time responding to the state call(s) to request a status update on completing the survey's questionnaire. EPA assumes that the average total time spent by each system on responding to the state call(s) is 15 minutes (0.25 hours) per system. This does not include discussing technical questions, which is accounted for above. Rather, it includes time required to provide the state with a brief report on the status of the 2015 DWINSA response.

**Exhibit A-6-2 Estimated Average Unit Burden for Systems Serving 3,301 to 50,000 Persons**

Activity	Estimated Burden (hours)			
	Management	Technical	Clerical	Total
Participate in informational phone call	0.135	0.135		<b>0.27</b>
Read cover letter/data collection instructions	0.31	0.63		<b>0.94</b>
Collect supporting documentation		0.81	0.81	<b>1.63</b>
Call for technical assistance		0.41		<b>0.41</b>
Complete data collection instrument	0.34	1.25		<b>1.59</b>
Respond to call back from state		0.25		<b>0.25</b>
<b>TOTAL</b>	<b>0.79</b>	<b>3.49</b>	<b>0.81</b>	<b>5.09</b>

Note: Numbers may not add due to rounding.

*2015 DWINSA – CWSs Serving 3,300 and Fewer Persons*

EPA will adjust the 2007 DWINSA need for CWSs serving 3,300 and fewer persons to 2015 dollars for the 2015 DWINSA and to reflect the 2015 number and sizes of these systems. There will be no burden for these systems.

*2015 DWINSA – NPNCWSs*

EPA will adjust the 1999 DWINSA need for NPNCWSs to 2015 dollars for the 2015 DWINSA. There will be no burden for these systems.

*2015 Native American DWINSA – American Indian and Alaska Native Village Water Systems*

EPA will adjust the 2011 DWINSA need for American Indian and Alaska Native Village Water Systems to 2015 dollars for the 2015 DWINSA and to reflect the 2015 number and sized of these systems. There will be no burden for these systems.

**A.6.a.ii Burden to States**

As previously discussed, all states have committed to help EPA administer the 2015 DWINSA with at least the minimum of activities. The majority of states expected to opt out of the statistical portion of the survey have systems serving more than 100,000 persons; therefore, they would participate in the data collection phase of the 2015 DWINSA.

*Up-Front Burden*

This activity category includes the “fixed burden” for states to help EPA prepare for the 2015 DWINSA. The total burden for these activities is 110 hours per state, plus 0.2 hour per system assessed. Exhibit A-6-3 summarizes this burden.

- **Participate in training and other pre-survey efforts.** The burden for this activity is estimated at 80 hours per state.
- **Help EPA verify SDWIS data.** Based on past experience, EPA estimates that verifying SDWIS data for systems in the sample will require approximately 12 minutes (0.2 hours) per system.

- **Perform miscellaneous administrative activities.** The burden for these activities should be 30 hours per state.

### Exhibit A-6-3 State Unit Burden for Up-Front Activities

Activity	Estimated Burden
Participate in training and other pre-survey activities	80 hours/state
Help EPA verify SDWIS data	0.2 hours/system
Perform miscellaneous administrative activities	30 hours/state
<b>TOTAL</b>	<b>110 hours/state, plus 0.2 hours/system</b>

#### State Burden for CWSs Serving More Than 50,000 Persons

This section estimates the state burden for helping EPA conduct the 2015 DWINSA for systems serving more than 50,000 persons by providing technical assistance where needed, working with systems to identify their needs in 2015, calling systems that do not return the data collection instrument on time, reviewing the completed data collection instrument and documentation and discussing the results with EPA. Although most of these systems will be able to answer the questions on the data collection instrument, states will provide them with clarifying information as necessary. The state burden for activities associated with the systems serving more than 50,000 persons is summarized in Exhibit A-6-4, which follows the activity descriptions.

- **Telephone systems to ensure participation and provide instructions.** EPA estimates that this preliminary phone call will take about 15 minutes (0.25 hours) per system that participated in the 2011 DWINSA and about 20 minutes (0.33 hours) per system that did not participate in the 2011 DWINSA. Thus, the average burden to states for each system is as follows:

$$[0.25 \times (612 + (0.75 \times 308)) / (612 + 308)] + [0.33 \times (0.25 \times 308) / (612 + 308)] = 0.26 \text{ hrs/system}$$

- **E-mail survey package to systems.** Each state will send the survey packet (provided by EPA) to systems via e-mail. EPA estimates that states will spend a total of 30 minutes drafting text for two e-mails: one to systems that participated in the 2011 DWINSA and one to systems that did not participate in the 2011 DWINSA. This amounts to approximately 0.01 minutes (0.0002 hours) per system. EPA anticipates that states will spend approximately five minutes (0.08 hours) compiling each e-mail, including addressing the e-mail to the correct recipient and attaching the correct files. EPA also estimates that approximately 10 percent of these e-mails will be returned to the states and states will require an additional five minutes (0.08 hours) to locate the correct recipient and resend the e-mail. Thus, the average burden to states for each system is as follows:

$$[0.0005 + 0.08 + (0.10 \times 0.08)] = 0.09 \text{ hrs/system}$$

- **Provide technical assistance.** In developing a burden estimate for this analysis, EPA assumes that the number of requests for technical assistance will equal 100 percent of the number of systems. (This estimate considers that some systems will call more than once while some will not call at all.)

EPA anticipates that systems that participated in the 2011 DWINSA will require less technical assistance than those that did not participate in the 2011 DWINSA. Therefore, EPA estimates that



all questions from these systems will be readily answerable, requiring only 15 minutes (0.25 hours) to answer.

EPA estimates that the burden to assist systems that did not participate in the 2011 DWINSA is 30 minutes (0.5 hours) and breaks down as follows:

- Of those that do require technical assistance, about 50 percent of their questions will be readily answerable, requiring only 15 minutes (0.25 hours) to answer.
- About 25 percent of their questions will entail limited research and follow-up, requiring 30 minutes (0.50 hours) to answer, including time to call EPA with questions.
- About 25 percent of their questions will require the state to perform some research and will require one hour to answer.

Therefore, the state burden for providing technical assistance is estimated as:

$$[0.25 \times (612 + (0.75 \times 308)) / (612 + 308)] + [0.5 \times (0.25 \times 308) / (612 + 308)] = 0.27 \text{ hrs/system}$$

- **Call back systems that do not provide information for the data collection instrument by a certain date.** EPA assumes that the number of these “reminder” calls will equal 100 percent of the systems. This assumes that most (but not all) will need at least one reminder call and a few will need two or three. The average time for these calls is 20 minutes (0.33 hours) per system. This estimate includes the time to find the contact information and call the system as well as time to talk to the technical staff. This does not include answering technical questions, which is accounted for above. Rather, it includes locating the correct contact person and obtaining a brief report on the status of the 2015 DWINSA response.
- **Review completed data collection instruments and documentation.** The data collection instrument will be returned directly to the state for review. For some systems, the documentation is expected to be quite voluminous and reviewing it will be the most burdensome part of the 2015 DWINSA. The time required for this review is difficult to estimate. States may generate their own documentation for the 2015 DWINSA and, if they add distribution or transmission projects, are required to ensure that the total pipe inventory section on the 2015 DWINSA is completed.

For the 2015 DWINSA, the burden to states to review the data collection instrument for each system will vary depending on whether the system participated in the 2011 DWINSA. Based on discussions with the states concerning their level of effort in previous assessments, and based on the estimates for systems to complete the survey in previous assessments, EPA estimates that, on average, states will take 3.5 hours to review the submission for each system that participated in the 2011 DWINSA. This estimate reflects a lower burden than in the 2011 DWINSA because EPA expects the total time for states to review the data collection instrument for systems that participated in the 2011 DWINSA will be less than the time needed to review a newly developed data collection instrument. For the 2011 DWINSA it was assumed that all systems were preparing a new data collection instrument.

For systems that did not participate in the 2011 DWINSA, EPA estimates that a total of five hours will be required for the state to review each data collection instrument.

Thus, the average burden to states for each system is as follows:

$$[3.5 \times (612 + (0.75 \times 308)) / (612 + 308)] + [5 \times (0.25 \times 308) / (612 + 308)] = 3.63 \text{ hrs/system}$$

- **Discuss results with EPA.** To estimate the state burden for resolving questions on the completed data collection instruments, EPA made the following assumptions:
  - EPA will have questions for the state on 50 percent of the completed data collection instruments. Some of these questions will actually apply to all systems.
  - Each question will take the state one hour to resolve.

Thus, the average burden to states for each system is as follows:

$$[0.5 \times 1] = 0.50 \text{ hrs/system}$$

**Exhibit A-6-4 State Unit Burden for Systems Serving More Than 50,000 Persons**

Activity	Estimated Burden (hours per system)
Call to ensure participation	0.26
E-mail surveys to systems	0.09
Provide Technical Assistance	0.27
Call back systems that do not return the data collection instrument by a certain date	0.33
Review completed assessment forms and documentation	3.63
Discuss results with EPA	0.50
<b>TOTAL</b>	<b>5.08</b>

*State Burden for CWSs Serving 3,301 – 50,000 Persons*

This section estimates the state burden for helping EPA conduct the 2015 DWINSA for systems serving 3,301 to 50,000 persons by telephoning systems to ensure participation, calling back systems that did not return the data collection instrument on time, reviewing the completed data collection instrument and the accompanying documentation and discussing the results with EPA. The state burden for activities associated with systems serving 3,301 to 50,000 persons is summarized in Exhibit A-6-5, which follows the activity descriptions.

- **Telephone systems to ensure participation.** EPA estimates that this preliminary phone call will take about 15 minutes (0.25 hours) per system that participated in the 2011 DWINSA and about 20 minutes (0.33 hours) per system that did not participate in the 2011 DWINSA. Thus, the average burden to states for each system is as follows:

$$[(0.25 \times 0.75) + (0.33 \times 0.25)] = 0.27 \text{ hrs/system}$$

- **E-mail survey package to systems.** Each state will send the survey packet (provided by EPA) to systems via e-mail. EPA estimates that states will spend a total of 30 minutes drafting text for two e-mails: one to systems that participated in the 2011 DWINSA and one to systems that did not participate in the 2011 DWINSA. This amounts to approximately 0.01 minutes (0.0002 hours) per system. EPA anticipates that states will spend approximately five minutes (0.08 hours) compiling each e-mail, including addressing the e-mail to the correct recipient and attaching the correct files. EPA also estimates that approximately 10 percent of these e-mails will be returned

to the states and states will require an additional five minutes (0.08 hours) to locate the correct recipient and resend the e-mail. Thus, the average burden to states for each system is as follows:

$$[0.0005 + 0.08 + (0.10 \times 0.08)] = 0.09 \text{ hrs/system}$$

- **Provide technical assistance.** In developing a burden estimate for this analysis, EPA assumes that the number of requests for technical assistance will equal 150 percent of the number of systems. (This estimate accounts for the fact that some systems will call more than once while some will not call at all.)

EPA anticipates that systems that participated in the 2011 DWINSA will require less technical assistance than those that did not participate in the 2011 DWINSA. Therefore, EPA estimates that all questions from these systems will be readily answerable, requiring only 15 minutes (0.25 hours) to answer.

EPA estimates that the burden to assist systems that did not participate in the 2011 DWINSA is 30 minutes (0.5 hours) and breaks down as follows:

- Of those that do require technical assistance, about 50 percent of their questions will be readily answerable, requiring only 15 minutes (0.25 hours) to answer.
- About 25 percent of their questions will entail limited research and follow-up, requiring 30 minutes (0.50 hours) to answer, including time to call EPA with questions.
- About 25 percent of their questions will require the state to perform some research and will require one hour to answer.

Therefore, the state burden for providing technical assistance is estimated as:

$$1.5 \times [(0.25 \times 0.75) + (0.5 \times 0.25)] = 0.47 \text{ hrs/system}$$

- **Call back systems that do not return the data collection instrument by a certain date.** It is assumed that the number of these “reminder” calls will equal 150 percent of the systems. This assumes that most (but not all) will need at least one reminder call and some will need two or possibly three. The average time for these calls is 20 minutes (0.33 hours) per system. This does not include answering technical questions, which is accounted for above. Rather, it includes locating the correct contact person and obtaining a brief report on the status of the 2015 DWINSA response.

$$[1.5 \times 0.33] = 0.50 \text{ hrs/system}$$

- **Review completed data collection instruments and documentation.** The data collection instrument will be returned directly to the state for review. For some systems, the documentation is expected to be quite voluminous and reviewing it will be the most burdensome part of the 2015 DWINSA. The time required for this review is difficult to estimate. States may generate their own documentation for the 2015 DWINSA and, if they add distribution or transmission projects, are required to ensure that the total pipe inventory section on the 2015 DWINSA is completed.

For the 2015 DWINSA, the burden to states to review the data collection instrument for each system will vary depending on whether or not the system participated in the 2011 DWINSA. Based on discussions with the states concerning their level of effort in previous assessments, and based on the estimates for systems to complete the survey in previous assessments, EPA estimates that, on average, states will take three hours to review the submission for each system

that participated in the 2011 DWINSA. This estimate reflects a lower burden to the state than in the 2011 DWINSA because EPA expects the total time for states to review the data collection instrument for systems that participated in the 2011 DWINSA will be less than the time needed to review a newly developed data collection instrument. For the 2011 DWINSA, it was assumed that all systems were preparing a new data collection instrument.

For systems that did not participate in the 2011 DWINSA, EPA estimates that a total of 4.25 hours will be required for the state to review each data collection instrument.

Thus, the average burden to states for each system is as follows:

$$[(3 \times 0.75) + (4.25 \times 0.25)] = 3.31 \text{ hrs/system}$$

- **Discuss results with EPA.** To estimate the state burden for resolving questions on completed data collection instruments, EPA made the following assumptions:
  - EPA will have questions for the state on 50 percent of the completed data collection instruments. Some of these questions will actually apply to all systems.
  - Each question will take the state one hour to resolve.

Thus, the average burden to states for each system is as follows:

$$[0.5 \times 1] = 0.50 \text{ hrs/system}$$

**Exhibit A-6-5 Estimated State Average Unit Burden for Systems Serving 3,301 to 50,000 Persons**

Activity	Estimated Burden (hours per system)
Telephone systems to ensure participation	0.27
E-mail surveys to systems	0.09
Provide technical assistance	0.47
Call back systems that do not return the data collection instrument by a certain date	0.50
Review completed data collection instruments and documentation	3.31
Discuss results with EPA	0.50
<b>TOTAL</b>	<b>5.14</b>

### State Burden for CWSs Serving 3,300 and Fewer Persons

The 2015 DWINSA will use the 2007 DWINSA need for CWSs serving 3,300 and fewer persons adjusted to 2015 dollars. There will be no state burden for these CWSs.

### State Burden for NPNCWSs

The 2015 DWINSA will use the 1999 DWINSA need for NPNCWSs, adjusted to 2015 dollars. There will be no state burden for these CWSs.

## A.6.b Respondent Costs

### A.6.b.i Costs to Community Water Systems

Exhibit A-6-6 summarizes the burden and costs to water systems. Total costs are estimated at \$603,853, which consists solely of labor costs. There are no operation and maintenance (O&M) costs or capital costs associated with the collection.

CWS labor costs are based on the number of burden hours multiplied by the average hourly wage rate, including overhead. The average hourly wage rate is the rate taken from a 2003 EPA document titled Labor Costs for National Drinking Water Rules. The quoted rate was \$26.05 in 2003 dollars for systems serving 50,000 and fewer persons and \$31.26 in 2003 dollars for systems serving more than 50,000 persons. This rate has been inflated to 2013 dollars using the Employment Cost Index. The inflated rate is \$35.49 for systems serving 50,000 and fewer persons and \$42.59 for systems serving more than 50,000 persons.

**Exhibit A-6-6 Total Burden and Cost to Water Systems**

Respondent	Average Unit Burden (hours)				Total Responses	Total Hours	Hourly Rate	Total Cost
	Management	Technical	Clerical	Subtotal				
Systems Serving More Than 50,000 Persons	0.70	4.34	1.44	6.48	920	5,962	\$42.59	\$253,922
Systems Serving 3,301 – 50,000 Persons	0.79	3.49	0.81	5.09	1,939	9,860	\$35.49	\$349,931
<b>TOTAL</b>					<b>2,859</b>	<b>15,822</b>		<b>\$603,853</b>

Note: The average burden per system response is 5.53 hours (15,822/2,859). Numbers may not add due to rounding.

### A.6.b.ii Cost to States

Exhibit A-6-7 shows the total burden and costs to states. The cost burden for EPA Regions is discussed in section A.6.c. Based on EPA's projection that all states will participate in the DWINSA, the cost to states is \$1,130,151. The labor costs are based on an average full time equivalent (FTE) cost of \$109,990 including overhead, which equates to approximately \$52.88 per hour.<sup>2</sup> This rate has been inflated to year 2013 dollars using the Employment Cost Index and is based on the rates provided by the Association of State Drinking Water Administrators' 2011 Survey of State Drinking Water Programs. This survey

<sup>2</sup> According to the *ICR Handbook*, an employee is paid an average of 2,080 hours in one year.

provides the most recent estimate of state salaries and FTEs, which were used in EPA's 2011 State Resource Needs Model.

There are no O&M or capital costs for states under this ICR.

#### Exhibit A-6-7 Total Burden and Cost to States

Activity	Number of States/ Systems	Unit Burden	Total Burden (hours)	Hourly Rate	Total Cost
Up-front	56 <sup>3</sup>	110 hours/state	<b>6,160</b>	\$52.88	<b>\$325,741</b>
	2,859 <sup>4</sup>	0.20 hours/system	<b>572</b>	\$52.88	<b>\$30,247</b>
State burden for systems serving more than 50,000 persons assessment	920	5.08 hours/system	<b>4,674</b>	\$52.88	<b>\$247,161</b>
State burden for systems serving 3,301 – 50,000 persons assessment	1,939	5.14 hours/system	<b>9,966</b>	\$52.88	<b>\$527,002</b>
<b>TOTAL</b>			<b>21,372</b>		<b>\$1,130,151</b>

#### A.6.c Agency Burden and Cost

The Agency burden and cost reflects the burden and cost directly incurred by EPA Headquarters and EPA Regions and is summarized in Exhibit A-6-8. EPA will also bear the cost of contractor activities as detailed in Exhibit A-6-8. Both exhibits distribute burden/costs among Fiscal Years 2014, 2015, 2016 and 2017, reflecting that Agency and contractor activities will vary substantially over the four-year period.

EPA made the following assumptions in developing its estimate of Agency and contractor burden and cost<sup>5</sup>:

##### *EPA Headquarters*

- Over the four-year period, EPA Headquarters will expend a total of 2.8 FTEs (e.g., an average of 0.7 FTEs per year over the four years). Assuming 2,080 hours per year, this equates to 5,824 hours.
- The average salary and benefits (i.e., personnel compensation and benefits [PC&B]) of the FTEs is at the GS 13, Step 5 level of \$163,062. Assuming 2,080 hours per year, this equates to \$78.40 per hour.

<sup>3</sup> Fifty-six includes the 50 states plus the District of Columbia, Puerto Rico, Northern Mariana Islands, American Samoa, Guam and the U.S. Virgin Islands.

<sup>4</sup> The total number of systems in the 2015 DWINSA is 2,859 systems. The number of systems shown is the number of total systems selected for the 2015 DWINSA.

<sup>5</sup> Hourly rates are from U. S. Office of Personnel Management, 2014 General Schedule (GS) Locality Pay Tables (<http://www.opm.gov/policy-data-oversight/pay-leave/salaries-wages/2014/general-schedule/>) and overhead rates are from *Information Collection Request for Public Water Supply Program*, December 20, 1993.

### *EPA Regions*

- Over the four-year period, EPA Regions will expend a total of 1.4 FTEs (i.e., an average of 0.35 FTE per year) providing support to the 2015 DWINSA. Assuming 2,080 hours per year, this equates to 2,911 hours.
- The average salary and benefits (i.e., PC&B) of the 1.4 FTEs is at the GS 11, Step 5 level of \$113,651. Assuming 2,080 hours per year, this equates to \$54.64 per hour.

### *EPA Contractor(s)*

- Over the four-year period, the EPA contractor(s) will expend a total of 27,685 hours of direct labor.
- The EPA contractor(s) will provide this professional labor at a total hourly rate, including all applicable indirect costs, of \$84.46.

Based on these assumptions, EPA estimates that the total burden/cost to EPA (excluding EPA's contractor) for the DWINSA over the four-year period is 8,735 hours and \$615,658. Over the three-year ICR period, the average annual hours would be 2,912 hours per year and \$205,219 per year. Exhibits A-6-8 and A-6-9, however, provide greater detail on the estimated yearly expenditures for the actual four-year effort.

### **Exhibit A-6-8 Burden/Cost to EPA (Excluding Contractor Activities)**

<b>Fiscal Year</b>	<b>EPA Headquarters</b>		<b>EPA Regions</b>		<b>Total</b>	
	<b>Hours</b>	<b>Cost</b>	<b>Hours</b>	<b>Cost</b>	<b>Total Hours</b>	<b>Total Cost</b>
FY 2014	892	\$69,933	446	\$24,369	1,338	<b>\$94,302</b>
FY 2015	2,020	\$158,368	1,009	\$55,132	3,029	<b>\$213,500</b>
FY 2016	2,020	\$158,368	1,010	\$55,186	3,030	<b>\$213,554</b>
FY 2017	892	\$69,933	446	\$24,369	1,338	<b>\$94,302</b>
<b>TOTAL</b>	<b>5,824</b>	<b>\$456,602</b>	<b>2,911</b>	<b>\$159,056</b>	<b>8,735</b>	<b>\$615,658</b>

**Exhibit A-6-9 Burden/Cost of Contractor Activities**

Activities	FY 14		FY 15		FY 16		FY 17		Total	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Planning	5,100	\$430,746	2,000	\$168,920	1,500	\$126,690	300	\$25,338	<b>8,900</b>	<b>\$751,694</b>
Survey Design	200	\$16,892	0	\$0	0	\$0	0	\$0	<b>200</b>	<b>\$16,892</b>
Peer Review	40	\$3,378	0	\$0	0	\$0	0	\$0	<b>40</b>	<b>\$3,378</b>
Modeling	0	\$0	141	\$11,909	997	\$84,207	480	\$40,541	<b>1,618</b>	<b>\$136,656</b>
Database Development	300	\$25,338	800	\$67,568	300	\$25,338	300	\$25,338	<b>1,700</b>	<b>\$143,582</b>
Survey Production	250	\$21,115	473	\$39,950	0	\$0	0	\$0	<b>723</b>	<b>\$61,065</b>
Data Analysis	0	\$0	7,037	\$594,345	1,520	\$128,379	0	\$0	<b>8,557</b>	<b>\$722,724</b>
Report Writing	0	\$0	208	\$17,568	1,459	\$123,227	700	\$59,122	<b>2,367</b>	<b>\$199,917</b>
Statistical Analysis	0	\$0	94	\$7,939	656	\$55,406	750	\$63,345	<b>1,500</b>	<b>\$126,690</b>
Tech Assistance	0	\$0	480	\$40,541	100	\$8,446	100	\$8,446	<b>680</b>	<b>\$57,433</b>
Training	500	\$42,230	900	\$76,014	0	\$0	0	\$0	<b>1,400</b>	<b>\$118,244</b>
<b>Total</b>	<b>6,390</b>	<b>\$539,699</b>	<b>12,133</b>	<b>\$1,024,753</b>	<b>6,532</b>	<b>\$551,693</b>	<b>2,630</b>	<b>\$222,130</b>	<b>27,685</b>	<b>\$2,338,275</b>



#### A.6.d Estimating Respondent Universe and Total Burden and Costs

Respondents for this ICR include CWSs and states. This ICR estimates that the number of CWS respondents is 2,859. In addition to the CWS respondents, this ICR assumes 56 states (50 states plus the District of Columbia and the U.S. Territories). Therefore, the total number of respondents is 2,915. The total costs and burden for these respondents are detailed in Exhibits A-6-10 and A-6-11.

#### A.6.e Bottom Line Burden Hours and Costs

Exhibit A-6-10 summarizes the bottom line burden hours and costs for CWSs and states for this collection. The total burden is 37,194 hours at a cost of \$1,734,004.

**Exhibit A-6-10 Bottom Line Respondent Burden**

<b>Respondent Type</b>	<b>Burden Hours</b>	<b>Total Cost</b>
Water Systems	15,822	\$603,853
States	21,372	\$1,130,151
<b>TOTAL</b>	<b>37,194</b>	<b>\$1,734,004</b>

Over the three-year ICR period, the average annual burden for all respondents (i.e., states and systems combined) would be 12,398 hours and the average annual cost would be \$578,001 per year. Exhibit A-6-11 summarizes more specifically the estimated burden hours and costs for CWSs and states for each year of the four-year survey period. It is estimated that the states will conduct the up-front activities in 2014 and the data collection activities in 2015. It is estimated that the CWSs will provide information to the states for the completion of the data collection instrument in 2015.

**Exhibit A-6-11 Burden Hours and Costs for Respondents per Year**

<b>Respondent Type</b>	<b>Total Hour Burden (per year)</b>				<b>Total Cost (per year)</b>			
	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
Water systems	0	15,822	0	0	\$0	\$603,853	\$0	\$0
States	6,732	14,640	0	0	\$355,988	\$774,163	0	\$0
<b>TOTAL</b>	<b>6,732</b>	<b>30,462</b>	<b>0</b>	<b>0</b>	<b>\$355,988</b>	<b>\$1,378,016</b>	<b>0</b>	<b>\$0</b>
<b>Average per Respondent</b>	<b>2.31</b>	<b>10.45</b>	<b>0</b>	<b>0</b>	<b>\$122</b>	<b>\$473</b>	<b>0</b>	<b>\$0</b>

Exhibit A-6-12 summarizes the bottom line burden hours and costs for EPA for this collection. The total burden for EPA, including EPA Regions and EPA's contractor is 36,420 hours at a cost of \$2,953,933.

**Exhibit A-6-12 Bottom Line Burden Hours and Costs for EPA (including EPA's contractor)**

<b>Respondent Type</b>	<b>Burden Hours</b>	<b>Total Costs</b>
EPA	8,735	\$615,658
Contractor	27,685	\$2,338,275
<b>TOTAL</b>	<b>36,420</b>	<b>\$2,953,933</b>

Exhibit A-6-13 shows the bottom line hour and dollar burden estimate by the Information Collection (IC) Entities. IC Entities covered by this ICR include publicly owned CWSs, privately/investor owned CWSs, state owned CWSs and state government agencies.

**Exhibit A-6-13 Disaggregated Burden by Affected Information Collection (IC) Entities**

		<b>Total Number Of IC Entities</b>	<b>Burden Per Response</b>	<b>Total Hour Burden</b>	<b>Hourly Rate</b>	<b>Total Cost</b>	<b>Cost Per Response</b>
<b><i>Water Systems Respondents</i></b>							
Serving More than 50,000 Persons	Publicly Owned CWSs	785	6.48	5,087	\$42.59	\$216,655	\$ 276
	Private/Investor Owned CWSs	131		849		\$36,159	
	State Owned CWSs	4		26		\$1,107	
	Tribal Owned CWSs & NPNCWSs	-		-		\$0	
	<i>Subtotal</i>	920		5,962		\$253,922	
Serving 3,301 to 50,000 Persons	Publicly Owned CWSs	1,674	5.09	8,512	\$35.49	\$302,091	\$ 180
	Private/Investor Owned CWSs	244		1,241		\$44,043	
	State Owned CWSs	21		107		\$3,797	
	Tribal Owned CWSs & NPNCWSs	-		-		\$-	
	<i>Subtotal</i>	1,939		9,860		\$349,931	
Serving 3,300 and Fewer Persons	Publicly Owned CWSs	-	-	-	-	\$ -	\$ -
	Private/Investor Owned CWSs	-		-		\$ -	
	State Owned CWSs	-		-		\$ -	
	Tribal Owned CWSs & NPNCWSs	-		-		\$ -	
	<i>Subtotal</i>	-		-		\$ -	
<b><i>Total Water System Respondents</i></b>							
	Publicly Owned CWSs	2,459	5.53	13,599		\$518,746	\$ 211
	Private/Investor Owned CWSs	375	5.57	2,090		\$80,202	\$ 214
	State Owned CWSs	25	5.32	133		\$4,904	\$ 196
	Tribal Owned CWSs & NPNCWSs	-	-	-		\$-	-
	<i>Subtotal</i>	2,859	5.53	15,822		\$603,853	\$ 211
<b><i>Total State Government Respondents</i></b>		56	381.64	21,372	\$ 52.88	\$ 1,130,151	\$ 20,181

	<b>Total Number Of IC Entities</b>	<b>Burden Per Response</b>	<b>Total Hour Burden</b>	<b>Hourly Rate</b>	<b>Total Cost</b>	<b>Cost Per Response</b>
<b><i>Total Tribal Authority Respondents</i></b>	-	-	-	\$ -	\$ -	\$ -
<b>Total Respondents</b>	2,915	12.76	<b>37,194</b>		<b>\$ 1,734,004</b>	<b>\$ 595</b>

Note: Numbers may not add due to rounding.

#### **A.6.f Reasons for Change in Burden**

This ICR does not modify an existing ICR. However, it should be noted that an ICR was prepared for the previous survey effort done in 2011, which is outside of the three-year window for modifying an existing ICR for a new effort. For purposes of this reinstatement, the EPA has provided a comparison of burden of the proposed new effort to the estimates of the previous 2011 effort's ICR.

The estimated total public reporting burden over the entire four-year length of the **2011** DWINSA was 48,995 hours; the total burden for the **2015** Survey is estimated to be 37,194 hours. The **2011** DWINS average burden per respondent was estimated to be 15.24 hours whereas for **2015** the average is estimated to be 12.76 hours per respondent. The reduction in burden for the 2015 DWINSA is attributed to:

1. The use of a modified data collection approach, whereby a majority of systems from the 2011 DWINSA are being resurveyed and a smaller pool of systems will be randomly surveyed.
2. For the 2015 DWINSA, existing data from the 2011 DWINSA for Tribal systems will be extrapolated to 2015 needs using construction cost inflation calculations and taking into account any shifts in the number and size of these systems.

#### **A.6.g Burden Statement**

The public reporting burden for collections included in this ICR is detailed above. The total public reporting burden over the four-year length of the 2011 DWINSA is estimated to be 37,194 hours, of which 15,822 hours are attributable to water systems. These estimates include time for gathering and submitting of information. Public reporting burden (i.e., combined state and system burden) for this collection of information is estimated to average 12.76 hours per response.<sup>6</sup> Respondent burden for the water system alone is 5.53 hours per system response.<sup>7</sup>

Burden means the total time, effort or financial resources expended by people to generate, maintain, retain, disclose or provide information to or for a federal agency. This includes the time needed to review instructions, adjust the existing ways to comply with any previously applicable instructions and requirements, train personnel to respond to the information collection request, search data sources, complete and review the collection of information and transmit or otherwise disclose the information. An agency may not conduct or sponsor, and a person is not required to respond to, a request for information collection unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations are listed in 40 CFR Part 9 and 48 CFR Chapter 15.

Please send comments on the Agency's need for this information, accuracy of the burden estimates and any suggested methods for minimizing respondent burden to: Director, Office of Environmental Information, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), Ariel Rios Building, 1200 Pennsylvania Ave., N.W., Washington, D.C. 20460; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street, NW, Washington, DC 20503, Attention: Desk Officer for EPA. Please include the EPA ICR number and OMB control number in any correspondence.

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<sup>6</sup> For this ICR, the number of responses is calculated at 2,915 (920 systems serving more than 50,000 people, 1,939 systems serving 3,301 to 50,000 people and 56 states). The burden per response is calculated as the total respondent burden (37,194) divided by the number of responses (2,915).

<sup>7</sup> See Exhibit A-6-6.

## **PART B OF THE SUPPORTING STATEMENT (FOR STATISTICAL SURVEYS)**

### **INTRODUCTION TO PART B**

The Environmental Protection Agency (EPA) will conduct the following type of statistical survey for the 2015 State Drinking Water Infrastructure Needs Survey and Assessment (DWINSA). EPA will undertake an assessment of community water systems (CWSs) serving populations of more than 3,300. EPA will use the same methodology for collecting data for CWSs serving more than 3,300 persons as was used in the 2011 DWINSA with the implementation of a modified panel approach. EPA will not be collecting new data from the field for CWSs serving 3,300 and fewer or from American Indian systems, Alaska Native Village water systems or not-for-profit noncommunity water systems; instead, the Agency will update the data from previous surveys based on construction cost inflation and on shifts in the number and sizes of these water systems.

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## 2015 DWINSA

### B.1 SURVEY OBJECTIVES, KEY VARIABLES AND OTHER PRELIMINARIES

#### B.1.a Survey Objectives

The primary objective of the 2015 DWINSA is to collect information from water systems on the infrastructure they need to continue to provide safe drinking water to consumers. These data are used to produce a national estimate as well as state-specific estimates of water systems' 20-year need. EPA has established policies to ensure that the overarching goals of the survey are met:

- Estimate the total national 20-year need
- Estimate the total 20-year need for each fully participating state
- Provide complete and accurate data to Congress
- Provide a tool to fairly distribute DWSRF capitalization funds to states
- Maintain the credibility of the DWINSA findings

EPA proposes to collect information on the cost of water systems' infrastructure needs. If cost data are not available from systems, EPA proposes to collect information that will enable the Agency to model costs. In the data collection instrument, the respondent will identify needs on a project-by-project basis and list the "type(s) of need" that the project will meet. The "types of need" include raw water source, transmission, source water treatment, storage, distribution, pumping stations and other needs.

EPA will use the information from the DWINSA to estimate capital investment requirements of drinking water systems. The information will be used to allot DWSRF monies among states and as part of an allotment formula for the DWSRF Tribal Set-Aside (TSA) Program.

For the 2015 DWINSA, EPA is proposing to use a modified panel approach to select survey respondents. The modified panel approach will involve dropping a random selection of 25 percent of the systems serving 3,301 to 100,000 people that participated in the 2011 DWINSA and then drawing a random sample to replace those systems in the survey for the 2015 DWINSA. This will be done for each state and by strata. By primarily using information from the 2011 DWINSA, this approach would reduce the amount of time required to prepare and review the responses from systems resurveyed in 2015.

For the new systems selected for the 2015 Assessment, EPA will use the same methodology as used in previous DWINSAs. The sampling design is discussed in detail below.

#### B.1.b Key Variables

Several key variables are available from the Safe Drinking Water Information System (SDWIS). To ensure accuracy, the 2015 DWINSA will verify these data by asking respondents to confirm existing information (pre-populated on the data collection instrument) or correct it. These variables include population served, total design capacity, number of service connections, primary source of supply, ownership type (private or public) and whether the system purchases water from or sells water to another water system.

Information on capital needs will be collected from respondents on a project-by-project basis. For each project, respondents will be asked to provide the following types of information: type of need; reason for need; documentation of need and cost (if necessary); if the project is a new project or to replace, rehabilitate or expand existing infrastructure; if the project is needed now to protect public health or if it is needed over the next 20 years to continue to provide safe drinking water; the federal regulation or state requirement (if the project is to meet a current regulation or state requirement); design capacity of source,



storage and treatment projects; length and diameter of pipe projects; diameter for projects such as water meters; cost of the project (if available); and date of the cost estimate. For most of these variables, respondents will choose the appropriate “documentation,” “type of need,” “reason for need” or “regulation or requirement” from EPA’s Lists of Codes.

The principal variable of interest is total projected capital needed for each water system in the 2015 DWINSA for the time period of January 1, 2015, through December 31, 2034. The total capital need for all systems in each state (to be derived from the statistical sample of systems) is the key variable that decision-makers at EPA use to allocate funds to states based on need.

The method of data collection has been designed to minimize burden on respondents while ensuring that information is collected in a consistent manner. Collecting information on a project-by-project basis, for example, will be particularly helpful in reducing burden since most respondents develop Capital Improvement Plans (CIPs) on a project-by-project basis.

Information on type of need will be used to disaggregate total capital needs for EPA’s Report to Congress. Information on the reason for need will be used to verify the public health benefit of the need. Information on the date of the cost estimate will be used to provide a consistent basis for cost estimates across systems. Information on a regulation or requirement will be used to determine the reported project costs related to federal regulations or state requirements.

If a system cannot provide cost estimates, additional data are necessary so that the Agency can impute costs. Each of these variables is described in greater detail later in this document.

### **B.1.c Statistical Approach**

The 2015 DWINSA is being designed to achieve a desired level of precision for state-level estimates of total capital needs for systems serving more than 3,300 persons. EPA proposes a modified panel approach that includes a census of large systems and a survey of a statistical sample of medium-sized systems to estimate total capital needs. This statistical approach minimizes burden while achieving the desired level of precision.

The 2015 DWINSA design divides CWSs serving populations of more than 3,300 into two groups: CWSs serving populations of more than 100,000 and systems serving populations of 3,301 to 100,000. EPA proposes to sample with certainty systems serving more than 100,000 persons. These systems have the largest capital needs and they have the staff to respond efficiently to the 2015 DWINSA. EPA proposes to use a random sample of systems serving 3,301 to 100,000 persons. This methodology can reduce burden and still achieve the DWINSA data quality objectives.

To further reduce burden, EPA proposes using a modified panel approach for the 2015 DWINSA. Rather than select a completely new sample of systems in 2015, EPA will reassess the needs of most of the systems that participated in the 2011 Assessment. EPA will replace 25 percent of the sample of systems serving 3,301 to 100,000 people. By state and stratum, EPA will randomly select 25 percent of the sample to drop and will then randomly select replacement systems from the sampling frame. By primarily using information from the 2011 DWINSA, this approach would reduce the amount of time required for systems to prepare and states to review the responses from systems resurveyed in 2015. This approach will maintain EPA’s sampling targets for each stratum and ensure that EPA continues to meet its precision targets for each state. Additionally, by using information from the 2011 review, the modified panel approach would reduce the amount of time required for EPA’s contractor to review each system’s response. By replacing 25 percent of the sample, EPA will reduce a potential source of bias introduced by the panel. (When a completely new sample was selected for each assessment, the sampling error was a random component that changed from survey to survey. With the panel approach, this error becomes

systematic.) By refreshing 25 percent of the sample, the approach alleviates this potential source of bias and helps to ensure that the 2015 sample represents the need as it exists in 2015.

To meet the state-level precision targets, EPA will use the same strata as in the 2011 DWINSA. As previously mentioned, EPA will adjust the sample size to accommodate changes in the sample frame. These changes may address new systems, systems that are no longer active and systems that have “migrated” between strata (become smaller or larger, or changed source). If EPA determines that there have been substantial changes in the size of the sample frame since the 2011 DWINSA, EPA will adjust the sample size as needed to ensure that the precision targets are met for each state. As in the 2011 DWINSA, EPA will first determine the total sample size for each state to meet the target level of precision. EPA will then allocate the sample to strata in order to maximize the efficiency of the design.

EPA is designing and conducting the 2015 DWINSA with the assistance of a contractor:

**Contractor**

The Cadmus Group, Inc.  
100 5<sup>th</sup> Avenue, Suite 100  
Waltham, MA 02451  
(617) 673-7000

**Contractor Roles**

- Oversight of data collection instrument design
- Oversight of statistical sample design
- Training
- Data collection instrument package distribution: logistics
- Technical support for respondents and states
- Review of all survey responses for conformance to survey policies and project allowability criteria
- Model development
- Data processing
- Statistical sample design

**B.1.d Feasibility**

The 2015 DWINSA data collection instrument has been designed with the capabilities of the typical respondent in mind. To fully assess feasibility, the Agency undertook the following steps. EPA convened a workgroup (see Section A.5.b) to comment on the proposed data collection and its feasibility. The data collection instrument to be used for the 2015 DWINSA is generally the same form as used for the past two DWINSAs. For the 2007 DWINSA, EPA conducted a pre-test in which EPA’s contractor met with individual CWS operators and discussed the proposed survey. System operators were asked to comment on all proposed data elements and the feasibility of collecting information by a mail survey. The Agency recognizes that most systems serving fewer than 50,000 persons and some that serve 50,000 or more may not have cost data or documentation of costs for some projects. In those cases, the 2015 DWINSA data collection instrument requests other readily available information that EPA can use to model costs. EPA will emphasize to respondents that they are not expected to develop cost estimates for the purposes of the 2015 DWINSA. In addition, EPA (or states) will provide systems with technical assistance for completing the data collection instrument.

EPA has developed cost models for most of the infrastructure needs included in the 2015 DWINSA based on the size and capacity of a project. These cost models were originally developed during the 1995 DWINSA, have been updated during subsequent assessments, including the 2011 DWINSA, and will be used again for the 2015 DWINSA. New cost models may be developed for weaker cost models, influential cost models and new technology.

The time frame for the 2015 DWINSA is acceptable to the users of data within the Office of Ground Water and Drinking Water (OGWDW) and sufficient to complete a report to Congress by its anticipated due date of early 2017. The schedule also is acceptable to other users of the data.

## **B.2 SURVEY DESIGN**

This section contains a detailed description of the statistical survey design and modified panel approach including a description of the sampling frame, sample identification, precision requirements and data collection instrument.

The sample design for the 2015 DWINSA is stratified random sampling within each state. In cases where the state is not participating in the data collection for systems serving 3,301 to 100,000 persons, EPA will not provide state-specific results, as the data collection for these states does not meet the DWINSA data quality objectives. EPA will include an overall national result for the systems serving 3,301 to 100,000 persons, using the average need by strata of the systems in states that are participating in the full 2015 DWINSA. For states that are fully participating in data collection for systems serving 3,301-100,000 persons, the 2015 DWINSA will use a modified panel approach for sampling these systems within each state. This approach is described in more detail in Section B.2.b.

Stratification increases the precision of estimates compared with a simple random sample of the target population of systems. In stratified samples, the target population is divided into non-overlapping groups, known as strata, from which separate samples are drawn. The goal of stratified sampling is to choose sample sizes within each stratum in a manner designed to obtain maximum precision in the overall estimate for the population. Stratification variables for this study include: population size (populations of: 3,301 to 10,000; 10,001 to 25,000; 25,001 to 50,000; 50,001 to 100,000 and more than 100,000) and primary sources of supply (surface and ground). Systems serving more than 100,000 persons are selected with certainty. For the 2011 DWINSA, the size of each state's sample of systems serving populations of 3,301 to 100,000 was set to meet the 2011 DWINSA's data quality objectives. For the 2015 DWINSA, the survey will rely on a modified panel approach in which 75 percent of the 2011 DWINSA respondents serving populations of 3,301 to 100,000 are resampled, and 25 percent are put back into the frame and a new 25 percent are drawn.

EPA's precision target for the 2015 DWINSA is to be 95 percent confident that the true need for each state lies within an interval of plus or minus 10 percent of the estimated need. These precision targets are identical to the targets for the 2011 Assessment. The 2011 sample, modified as described above, will meet the assessment's precision target. The sample sizes will be adjusted to account for changes in the inventory of systems, if necessary, to ensure the 2015 sample meets the precision targets.

### **B.2.a Target Population and Coverage**

The target population for the 2015 DWINSA is the number of CWSs in the nation. A CWS is a public water system (PWS) that serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents (40 CFR 141.2). The 2015 DWINSA is designed to produce estimates of the capital need of systems serving more than 3,300 persons for each participating state. In partially surveyed states, EPA will be able to provide state-specific results for systems serving 100,000 or more persons. EPA will include an overall national result for the systems serving 3,301 to 100,000 persons using the average need by strata of the systems in participating states and the total number of systems by strata in the partially surveyed state. The 2015 DWINSA is designed to produce estimates of the capital need of systems serving 3,300 and fewer persons by state and for the nation as a whole using the results of the 2007 DWINSA.

## **B.2.b Sample Design**

This section describes the sample design. It includes a description of the sampling frame, target sample size, stratification variables and sampling method. The sampling design employed is a stratified random sample of CWSs. The strata employed in the design are discussed in Section B.2.b.iii. Neyman allocation is used to efficiently allocate the sample of water systems among the strata.

### ***B.2.b.i Sampling Frame***

The sampling frame is developed from SDWIS. SDWIS is a centralized database for information on PWSs, including their compliance with monitoring requirements, maximum contaminant levels (MCLs) and other requirements of the SDWA. The following information will be extracted from SDWIS for the statistical survey and verified by participating states:

- Name of system.
- Contact person.
- Address of system.
- Population served.
- Total design capacity.
- Number of connections.
- Primary source (surface water or ground water).
- PWS identification number (PWSID).
- Ownership type.
- Whether the water system purchases/sells water from/to another water system.

From these data, EPA will develop the frame from which EPA will calculate summary statistics (e.g., number of systems per state in pre-defined strata) for use in calculating sample size. For the modified panel approach, the 2015 sampling design will use the 2011 DWINSA sample and make targeted modifications to account for changes in the inventory of systems between 2011 and 2015. Systems that have closed since the 2011 DWINSA will be removed from the 2015 survey. The needs of merged systems will remain in the survey as the need of the combined system. New systems added to the inventory (i.e., systems that served 3,300 or fewer people in 2011 that now serve more than 3,300 people, or newly created systems) will be sampled to ensure the sample is representative of systems in 2015. New large systems (those serving more than 100,000 persons) will also be added to the census.

#### *Justification for the Use of SDWIS*

The following criteria are often used in assessing a proposed sampling frame:

- It fully covers the target population.
- It contains no duplication.
- It contains no foreign elements (i.e., elements that are not members of the population).
- It contains information for identifying and contacting the units selected in the sample.
- It contains other information that will improve the efficiency of the sample design.

The units of observation for this survey are CWSs, a subset of PWSs. SDWIS is the ideal choice for a sample frame because of its inclusive coverage of all units of observation for the 2015 DWINSA. In addition, SDWIS has two other advantages: it contains information that will facilitate contacting the respondents and it contains other information that is useful in stratifying the sample, thereby improving the efficiency of the sample design.

In previous surveys where SDWIS was used as a sample frame, there have been criticisms of its utility. Since 1989, EPA has conducted audits of the quality of SDWIS data. As a result, EPA is aware of the problems with SDWIS. The audits, however, show that errors in classification of systems by strata proposed for the 2015 DWINSA are rare. The audits show that systems are misclassified by population or source in less than one percent of all cases.

To mitigate any potential problems with the sample frame, the 2015 DWINSA design anticipates substantial state involvement in the 2015 DWINSA process. For example, states will be checking the sample frame of systems that will be used to determine the final sample. In EPA's experience, states often have in-house data systems with very accurate data. Even if these data are not transmitted to SDWIS, they are available and can be used by states to check the sample frame.

### **B.2.b.ii Sample Size**

Exhibit B-2-1 at the end of this subsection shows the preliminary sample sizes for the 2015 DWINSA. For the modified panel approach, sample sizes for the 2015 DWINSA will be the same as for the 2011 DWINSA except for changes to accommodate: (1) the addition of large systems serving more than 100,000 people since the 2011 survey; (2) any partially surveyed states from the 2011 survey that fully participate in the 2015 survey; and (3) changes in the inventory of medium systems, including systems changing size or source categories or the creation of new systems. As shown on Exhibit B-2-1, the sampling design will be implemented to achieve state-level precision targets for CWSs serving more than 3,300 persons. Precision targets are discussed in Section B.2.c.

The task of determining the sample size for each stratum requires two steps. The first step determines the sample size for each state that achieves the precision targets for that state. The second step allocates the sample among the relevant strata in the state. The strata are described in section B.2.b.iii.

The first step calculates the total number of systems required at the state level to meet the precision requirements. The sample size is given by:

$$n_{0g} = \frac{\left( \sum_{h=1}^H N_{gh} S_{gh} \right)^2}{V_g}$$

Where:  $n_{0g}$  = the sample size for state  $g$  (prior to the finite population correction)

$N_{gh}$  = the total number of systems in the  $g^{\text{th}}$  state in the  $h^{\text{th}}$  stratum (taken from SDWIS)

$s_{gh}$  = the standard deviation of the variable of interest in the  $g^{\text{th}}$  state for the  $h^{\text{th}}$  stratum (estimated using data from the data from previous assessments)

$H$  = the number of strata defined in the sample design for the  $g^{\text{th}}$  state

$V_g$  = the desired sampling variance for the total system (those serving more than 3,300 persons) capital needs estimate for state  $g$ .

The desired error in the sample is expressed as a relative error. In the above equation,  $V_g = (d/Z_\alpha * \hat{Y}_g)^2$ .  $\hat{Y}_g$  is an estimate of the total capital needs for a given state.  $\hat{Y}_g$  is computed for each state by calculating the mean total capital needs for stratum  $h$  (from the prior DWINSAs) and multiplying this

mean by the actual number of systems in each stratum for that state ( $N_{gh}$ ). Summing across strata provides an estimate of  $\hat{Y}_g$ .  $d$  is the half-width of the desired confidence interval (0.10 for the Assessment).  $Z_\alpha$  is the value of a standard normal distribution for a confidence level of  $1 - \alpha$ , (1.96 for the Assessment).

Because the number of water systems is known and finite, the following population correction is applied:

$$n_g = \frac{n_{0g}}{1 + \frac{1}{V_g} \sum_{h=1}^H N_{gh} s_{gh}^2}$$

The second step allocates the total sample to each sampling stratum. EPA will randomly draw this number of samples from each of these strata. The Neyman allocation is used to determine the sample size for each stratum:<sup>8</sup>

$$n_{gh} = n_g \left( \frac{N_{gh} s_{gh}}{\sum_{h=1}^H N_{gh} s_{gh}} \right)$$

(Because systems serving populations more than 100,000 are to be sampled with certainty, H is the number of strata of systems serving 100,000 or fewer persons.)

In order to implement these sample size and sample allocation equations, EPA needs estimates for  $V_g$ ,  $N_{gh}$ ,  $s_{gh}$  and mean total capital needs by stratum. Information on mean total capital needs by stratum and  $s_{gh}$  were estimated using data from the prior DWINSAs.

### Exhibit B-2-1 State Sample Sizes

State	Estimated Total Number Of Systems Serving More Than 3,300 Persons	Estimated Sample Size For Systems Serving More Than 3,300 Persons
Alaska *	17	1
Alabama	348	131
Arkansas	181	83
American Samoa	1	1
Arizona	130	39
California	688	170
Colorado	169	61
Connecticut	57	36
District of Columbia	1	1
Delaware *	30	3

<sup>8</sup> J. Neyman, "On the Two Different Aspects of the Representative Method: The Method of Stratified Sampling and the Method of Purposive Selection," *Journal of the Royal Statistical Society*, Vol. 97 (1934), pp. 558-606; as cited in William G. Cochran, *Sampling Techniques* (New York: John Wiley & Sons), 1977.

<b>State</b>	<b>Estimated Total Number Of Systems Serving More Than 3,300 Persons</b>	<b>Estimated Sample Size For Systems Serving More Than 3,300 Persons</b>
Florida	387	128
Georgia	237	66
Guam	3	3
Hawaii *	30	2
Iowa	138	53
Idaho *	51	1
Illinois	460	98
Indiana	214	82
Kansas	117	65
Kentucky	259	141
Louisiana	231	65
Massachusetts	253	73
Maryland	59	26
Maine	35	25
Michigan	303	63
Minnesota	181	91
Missouri	216	121
Northern Mariana Islands	2	2
Mississippi	202	105
Montana *	35	1
North Carolina	280	80
North Dakota *	32	0
Nebraska *	43	2
New Hampshire *	39	1
New Jersey	242	61
New Mexico *	60	1
Nevada	35	15
New York	362	50
Ohio	320	90
Oklahoma	165	86
Oregon	116	54
Pennsylvania	349	83
Puerto Rico	118	58
Rhode Island *	28	3

State	Estimated Total Number Of Systems Serving More Than 3,300 Persons	Estimated Sample Size For Systems Serving More Than 3,300 Persons
South Carolina *	159	9
South Dakota *	45	2
Tennessee	288	158
Texas	987	144
Utah	109	50
Virginia	160	56
Virgin Islands	2	2
Vermont *	34	0
Washington	213	58
Wisconsin	181	58
West Virginia *	110	1
Wyoming *	27	0
<b>Total</b>	<b>9,539</b>	<b>2,859</b>

\*Fifteen states are expected to opt out of participating in the statistical portion of the survey (i.e., collecting data from systems serving 3,301 to 100,000 persons). However, those states that have systems that serve more than 100,000 people will participate in the census portion of the survey (i.e., collecting data from systems serving more than 100,000 persons). For those 15 states, the number in the “Estimated Sample Size for Systems Serving More Than 3,300 Persons” represents the total number of systems in the state that serve more than 100,000 persons.

### ***B.2.b.iii Stratification Variables***

The objective of stratification is to increase the efficiency of the sampling design (thereby reducing the number of systems to be sampled for a given level of precision). Stratified sampling may produce a gain in precision in the estimates of the characteristics of the target population as compared to simple random sampling. In stratified sampling, the target population (i.e., CWSs) is divided into non-overlapping strata that are internally homogeneous, in that the measurements vary little from one unit to another (i.e., the within-stratum variance is minimized). If the within-stratum variance is relatively small, then a precise estimate of the variable of interest can be obtained with relatively small samples. Each of the strata estimates can be combined to obtain a precise estimate for the overall target population.

EPA’s drinking water programs have historically evaluated CWSs based on (1) the number of persons served and (2) the primary water source (ground water and surface water).<sup>9</sup> Using total capital need information obtained from prior DWINSAs, EPA evaluated several classification schemes. This analysis showed that the stratification scheme used in prior assessments (10 strata based on size and source) would be appropriate for the 2015 DWINSA. For some states, EPA may combine the 10,001 to 25,000 and 25,001 to 50,000 size categories within each source category, resulting in 8 rather than 10 strata. EPA will combine these two size categories only if the sample using 8 strata is more efficient than the sample using 10 strata. The proposed strata for systems serving more than 3,300 persons are as follows:

<sup>9</sup> For the purposes of the 2015 DWINSA, purchased surface water systems are included with ground water systems. This design yields lower within-stratum variance and has been used since the 1999 DWINSA.



Size of Population Served	Source	Sample Methodologies
3,301 – 10,000	Ground	Panel approach with 25 percent refresh using a random sample.
3,301 – 10,000	Surface	
10,001 – 25,000	Ground	Panel approach with 25 percent refresh using a random sample. In some states the number of strata will be reduced based on analysis of optimal stratum boundaries. Specifically, in some states systems serving between 10,001 and 50,000 will be in one size group rather than two.
10,001 – 25,000	Surface	
25,001 – 50,000	Ground	
25,001 – 50,000	Surface	
50,001 – 100,000	Ground	Panel approach with 25 percent refresh using a random sample
50,001 – 100,000	Surface	
More than 100,000	Ground	Sampled with certainty
More than 100,000	Surface	

#### ***B.2.b.iv Sampling Method***

As indicated above, all CWSs serving populations of more than 100,000 will be sampled with certainty.

For systems serving 3,301 to 100,000 persons, all CWSs will be allocated to eight strata, based on the population served and primary water source. The sample size for each stratum in each state will be determined by the sampling strategy outlined above. As previously described, the modified panel approach that will be used for the 2015 sample will begin with the 2011 DWINSA sample and make targeted modifications to account for changes in the sample between 2011 and 2015. EPA will then “refresh” the sample by randomly replacing 25 percent of the 2011 sample of systems serving 3,301 to 100,000 people with systems that were not included in the 2011 Assessment. To refresh the sample, 25 percent of systems serving 3,301 to 100,000 persons will be dropped from the survey and returned to the pool of systems that were not selected in 2011. The “refresh” will then randomly select systems from among the pool of systems that were not in the 2011 sample, the systems that were randomly dropped and new systems so that the number of systems in the sample reaches the same size as the 2011 sample.

The sampling method for the 25 percent refresh will be similar to the approach used in the 2011 survey. An equal probability random sample will be drawn from each stratum. Anticipating a level of non-response, EPA will over-sample the refresh systems to achieve the desired number of completed data collection instruments. Since the expected response rate for systems serving 3,301 to 100,000 persons is approximately 90 percent, EPA has increased the sample by approximately 10 percent. However, as discussed below, the DWINSA has consistently achieved a higher response rate than estimated. Therefore EPA has included the full sample size estimate in the burden estimate of this ICR.

### **B.2.c Precision Requirements**

#### ***B.2.c.i Precision Targets***

The sampling design for the 2015 DWINSA will be implemented at the state level. EPA’s goal is to be 95 percent confident that the margin of error, when estimating the total capital needs facing these systems in each state, will be plus or minus 10 percent of the total need for these systems. For example, if the total need for these systems in a state is estimated to be \$2 billion, EPA will be 95 percent confident that the actual total need is between \$1.8 billion and \$2.2 billion.

### ***B.2.c.ii Nonsampling Error***

EPA has developed an assessment approach that will employ several quality assurance techniques to maximize response rates, response accuracy and processing accuracy to minimize non-sampling error.

Particular emphasis will be placed on maximizing response rates. Standard methods that have proved effective in other surveys involving states and water systems will be used, including the following:

- EPA and the states will coordinate in the production of a cover letter for the 2015 DWINSA. EPA's opinion (shared by state drinking water administrators and trade associations) is that surveys on state letterhead will be better received than surveys on EPA letterhead. Therefore, states can use state-level cover letters signed by a senior state official instead of the EPA letter.
- The states will place a telephone call to each participating system to ensure that they understand the survey process and their role.
- The data collection instrument design, content and format were reviewed by states that participated in the 1995, 1999, 2003, 2007 and 2011 DWINSAs.
- Questions being asked are those that owners or operators of systems should know. EPA does not ask questions that require monitoring, research or calculations on the part of the respondent.
- The data collection instrument design is limited to a cover page of system information and characteristics and one project table, with three optional tables to record general information about the system's infrastructure inventory. By limiting the information requested, EPA believes that the average water system respondent can complete the data collection instrument in approximately 5.53 hours. Exhibit A-6-6 shows the breakdown of the total burden hours for CWSs by system size in the 2015 DWINSA.
- Respondents will be encouraged to call state personnel who will be trained to answer questions. In addition, EPA will provide technical assistance to states and water systems.
- The electronic format of the survey will make returning the data collection instrument convenient.

Standard methods to reduce other sources of non-sampling error also will be used:

- EPA expects complete coverage of the target population using SDWIS, supplemented by state review of all systems.
- Data will be 100 percent independently keyed and verified.
- The data collection instrument is pre-coded to improve accuracy by eliminating unnecessary processing steps.

Supplementing these standard methods, EPA proposes several unique steps to eliminate non-sampling error which have been developed in concert with organizations representing the states and water systems. These organizations believe that the 2015 DWINSA is important and that a high level of participation by all water systems is essential to its success. Because of the substantial commitment being made by states and water systems to the 2015 DWINSA, EPA believes that response rates will be higher than most surveys of similar respondents. To ensure success, states and organizations representing water systems are taking the following steps.

- **Participation of the states.** Because the 2015 DWINSA will be used to allocate DWSRF funds to states, each entity has a strong interest in achieving a high response rate. EPA believes that their participation will be a key factor in guaranteeing high response rates and low item non-response. Personnel who work with water systems every day are in a strong position to encourage systems to complete the 2015 DWINSA form. States have committed to assisting EPA in achieving a high response rate by participating in follow-up activities. EPA will provide technical assistance to any system that has questions about the 2015 DWINSA.
- **Participation of Organizations Representing Water Systems.** EPA anticipates public support of organizations representing water systems. The prior assessments were supported by groups such as the American Water Works Association (AWWA), the National Association of Water Companies (NAWC) and the Association of Metropolitan Water Agencies (AMWA).

This support by the organizations representing the respondents for the 2015 DWINSA can be helpful in many ways to minimize non-sampling errors. For example,

- In past DWINSAs, national water associations sent letters to each system in their membership, stressing the importance of surveying drinking water infrastructure needs. These letters, along with the letter from the states, helped convince water systems to respond. EPA will seek similar support from these associations for the 2015 DWINSA effort to encourage systems to complete the data collection instrument.
- In the past DWINSAs, the largest association representing water systems serving populations greater than 3,300, AWWA, provided support through its national organization. To improve the response rate, AWWA enlisted the support of its state affiliates to conduct telephone follow-up calls to encourage response. AWWA assisted in past DWINSAs to help achieve high response rates. EPA will seek similar support from AWWA in support of the 2015 DWINSA.
- **Communications Strategy.** EPA has developed a comprehensive communications strategy that will inform likely respondents of the need for their participation. This strategy includes articles in magazines, newsletters and bulletins of all major organizations that represent (or communicate with) water systems. This includes publications of all of the organizations mentioned above, plus the state and local affiliates of these organizations. The strategy is designed to develop widespread peer-group support for participation in the 2015 DWINSA.

#### **B.2.d Data Collection Instrument Design**

Questions about system characteristics (name, population served, number of connections and other customary business information) will be pre-populated on all data collection instruments. The respondent needs only to enter accurate information if any pre-populated information is not correct.

The 2015 DWINSA is based on a matrix project table that requests a list of capital water system infrastructure projects that the system plans for the period 2015 through 2034. For each project listed, the water system is asked to provide:

- Type of need.
- Reason for need.
- Documentation of need.
- If the project is for new infrastructure or to replace, rehabilitate or expand existing infrastructure.

- If the project is needed now to protect public health or if it is needed over the next 20 years to continue to provide safe drinking water.
- The federal regulation or state requirement if the project is needed to meet a current federal regulation or state requirement.
- Design capacity of source, storage and treatment projects.
- Length and diameter of pipe projects.
- Diameter for projects such as meters.
- Cost of the project (if available).
- Date of the cost estimate (if necessary).
- Documentation of cost (if necessary).

For most of these variables, respondents will choose the appropriate “documentation,” “type of need,” “reason for need,” or “regulation or requirement” from EPA’s “Lists of Codes” (Appendix B). The data collection instrument has been designed to be concise, to avoid jargon and to avoid ambiguous words or instructions. Terms and formats have been standardized to the extent possible. There is no intentional bias in the ordering of the items.

### **B.3 PRE-TESTS AND PILOT TEST**

#### **B.3.a Pre-tests**

For the 2007 DWINSA the data collection instrument and some policies were modified substantially. EPA conducted two pre-tests of the data collection instrument for the 2007 DWINSA. These pre-tests were conducted by EPA’s contractor, The Cadmus Group, Inc. The pre-tests gathered feedback on the effectiveness of the data collection instrument; highlighted imprecise, ambiguous or redundant questions; and indicated where further inquiry was needed. A pre-test was held in both Maine (four participants) and Montana (three participants). These states were chosen because they were both partially surveyed states and therefore most of their systems did not participate in the 2007 DWINSA. Also, the contractor conducting the pre-tests has offices in both these states and by conducting the pre-test in these states was able to reduce costs. The names of the seven systems were provided to EPA by the 2007 DWINSA state contacts. Based on the comments received, EPA made modifications to the data collection instrument. Since EPA’s pre-tests of the 2007 DWINSA data collection instrument were so extensive, and because few changes have been made to the data collection instrument since the 2007 DWINSA, EPA believes that a pre-test is not needed for the 2015 DWINSA.

The data collection instrument was further modified for the 2011 DWINSA by the addition of questions and codes to gather information on projects with “green” and climate readiness attributes. Consequently, EPA conducted a limited peer review focused on these new questions. EPA did not conduct a pre-test of the 2011 DWINSA data collection instrument. Based on the limited number of states that submitted projects with “green” or climate readiness attributes indicated in the 2011 effort, EPA concluded these attributes were likely underreported. For the 2015 DWINSA, the “green” and climate readiness questions will be removed from the data collection instrument. Instead, EPA will explore streamlined approaches that might enable the Agency, during the Survey review process, to identify and flag projects that are likely to have “green,” climate readiness or climate resilience attributes.

### **B.3.b Pilot Test**

To eliminate unnecessary burden on states and water systems, it has been decided that no pilot test for the 2015 DWINSA will be conducted. A pilot test was conducted for the 1995 DWINSA and consisted of 60 CWSs from New York and Texas.

One change for the 2015 DWINSA is that EPA will deliver all data collection instruments electronically rather than mailing hard copies, as was done for the 1995, 1999, 2003, 2007 and 2011 DWINSAs. Several states received and used electronic data collection instruments in the 2011 DWINSA and states attending the May 2014 workgroup meeting expressed no concerns about using the electronic format. EPA therefore believes this approach has been well tested and has proven to be successful; therefore, it is not necessary to repeat this testing step.

## **B.4 COLLECTION METHODS AND FOLLOW-UP**

### **B.4.a Collection Method**

The proposed collection method is an electronic survey. The data collection instrument including the Lists of Codes will be sent to the states via e-mail. State drinking water agencies will provide the data collection instrument (with the project table prepopulated for systems that participated in 2011 and blank for those that did not) and other necessary documents to the systems in the sample. They will follow-up if the data collection instrument has not been returned in 30 days. For a complete description of the follow-up procedures proposed to increase the response rate, see section B.2.c.ii.

### **B.4.b Survey Response and Follow-up**

The target response rate (defined as the ratio of responses to eligible respondents) for the 2015 DWINSA is 90 percent. EPA realizes that this is an ambitious target, but EPA believes that there are special circumstances that warrant such a target. Also, overall response rates of 94, 97, 96, 93 and 97 percent were achieved in the 1995, 1999, 2003, 2007 and 2011 surveys, respectively. In the first five surveys, EPA conducted the following activities to achieve that high response rate.

- ***Seek Support from the Respondent Population.*** This is a national survey of infrastructure needs for drinking water systems. EPA will work to bring to the attention of water systems, as well as all national organizations representing these systems, the importance of the DWINSA results. As with the previous five surveys, all national organizations will be contacted by EPA to seek their endorsement of the DWINSA and to communicate to their members the importance of a high response rate to their members. As discussed in Section B.2.c, in past surveys, organizations have provided access to their newsletters and magazines to publicize and endorse participation in the DWINSA. For the 2015 Survey, EPA will seek similar efforts by these organizations.
- ***Follow-up by States and Respondent Peer Groups.*** Since a majority of states have indicated their willingness to participate in follow-up activities, EPA has requested that state personnel, most of whom are personally familiar with the respondents, conduct follow-up procedures including the use of reminder letters and telephone calls to systems that have not responded with the needed information or documentation. If the follow-up fails after three attempts (one reminder letter plus two telephone follow-up calls), EPA is planning to shift to a second approach of peer-group follow-up by members of a trade association, such as AWWA.

## **B.5 ANALYZING AND REPORTING SURVEY RESULTS**

### **B.5.a Data Preparation**

State personnel will check all cost data and documentation to ensure that it is consistent with state and national standards. States will then send the completed and reviewed data collection instruments to EPA for a second round of review by EPA contractor staff.

Once data have been checked, the contractor will key and verify the data. Senior data entry staff will be used for the verification process to improve quality control. Editing will include automated logic and range checks and checks for missing data. Missing cost data will be modeled, using other information provided by the respondents on the data collection instrument. When modeling is insufficient, missing data will be imputed using standard methods such as cell means and regression. The sample of water systems will be weighted so that stratum estimates can be summed to prepare state-level estimates for the 2015 DWINSA.

### **B.5.b Analysis**

EPA will prepare a report that tabulates the results of the 2015 DWINSA and explains the precision of the estimates of total capital needs. Examples of statistics that will be produced include:

- Total capital needs by state and by types of need.
- Total capital needs by domains within the total population, e.g., systems serving populations greater than 100,000.
- Standard errors calculated for key statistics.

The analysis will be similar to that of previous DWINSAs.

### **B.5.c Reporting Results**

The 2015 DWINSA results will be made available to EPA and the public through:

- A printed report that is submitted to Congress on drinking water infrastructure needs. This report will be made available to all participants in the 2015 DWINSA and the public through EPA's Safe Drinking Water website.
- Desktop computer access to state data on the DWINSA Web site without modeled project costs (each state can access only its own data).
- Desktop computer access to the entire data system (EPA only).

A report providing the cost models used to develop costs for the 2015 DWINSA will be made available to EPA and the public through EPA's Safe Drinking Water Web site.

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## **Appendix A – Public Notice Required Prior to ICR Submission to OMB**



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## **Appendix B – Data Collection Instrument and Lists of Codes**

# 2015 Drinking Water Infrastructure Needs Survey And Assessment

U.S. Environmental Protection Agency  
Washington, DC 20460

Federal PWSID No.:

OMB No.:  
Approval Expires:

**Please verify or correct the following information:**

	Check if Correct as Printed	Corrected Information <i>(Fill in only if preprinted information is missing or incorrect)</i>
Name of System (Community):	<input type="checkbox"/>	
Name of Contact:		
Street Address:	<input type="checkbox"/>	
City, State, and Zip:		
Population Served (if wholesaler, include consecutive population as appropriate):	<input type="checkbox"/>	
Number of Connections (not including consecutive systems):	<input type="checkbox"/>	
Total System Design Capacity (in MGD):	<input type="checkbox"/>	
Total Length of Pipe in System (in Feet):	<input type="checkbox"/>	
Source Water Type (Ground, Surface/GWUDI, etc.):	Check All That Apply.	<input type="checkbox"/> Ground <input type="checkbox"/> Surface/GWUDI <input type="checkbox"/> Purchased Ground <input type="checkbox"/> Purchased Surface/GWUDI
Ownership Type:	Check All That Apply.	<input type="checkbox"/> Public <input type="checkbox"/> Investor-Owned or <input type="checkbox"/> Federal Government            Private Non-Profit
<p>Public reporting burden for this collection of information is estimated to average 5.53 hours per response. This estimate includes time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the information collected. Burden means the total time, effort, or financial resources expended by person(s) to generate, maintain, retain, or disclose or provide information to or for a Federal Agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information; adjust the existing ways to comply with any previously applicable instructions; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations are listed in 40 CFR Part 9 and 48 CFR Chapter 15.</p> <p>Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, OPPI, Regulatory Information Division, U.S. Environmental Protection Agency (1804A), Ariel Rios Building, 1200 Pennsylvania Ave., NW, Washington, DC 20460; and Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street, N.W., Washington, DC 20503.</p>		
<p><b>State Use Only</b></p> <p>State Reviewer: _____ Telephone Number: _____</p>		

Information provided for this survey can be requested by the public. It is our experience that this information is rarely requested.



## Source, Treatment, Storage, and Pumping Inventory

To ensure all potential source, treatment, and storage projects are considered, it may be helpful to complete some or all of this inventory table.

How ever, completion of this table is not required.

- **Source Projects** are all projects related to collecting and pumping raw water. This includes wells, surface water intakes, springs, off-stream raw water storage, and pumps.
- **Treatment Projects** are all projects related to disinfection, filtration, or other treatment processes for ground or surface water sources, or for treatment applied in the distribution system.
- **Storage and Pumping Projects** are related to finished or treated water storage, and booster pump stations.

Source Water			
Inventory	Needing Replacement	Needing Rehabilitation	New Infrastructure Needs
Total Number and Capacity of Existing Wells or Springs:	Wells (pumps included) or Springs:	Wells (pumps included) or Springs:	Does your system have additional source water capacity needs to meet the needs of current users? <div style="text-align: center;"> <input type="checkbox"/> Yes    <input type="checkbox"/> No                 </div> If yes, how many additional sources are necessary?
Total Number and Capacity of Existing Surface Water Sources:	Existing Surface Water Intakes (excluding pumps):	Existing Surface Water Intakes (excluding pumps):	
Total Number and Capacity of Existing Pumps (excluding booster pump stations):	Existing Groundwater Pumps (if wells not listed):	Existing Groundwater Pumps (if wells not listed):	
	Existing Raw Surface Water Pumps:	Existing Raw Surface Water Pumps:	
Treatment			
Inventory	Needing Replacement	Needing Expansion/Upgrading or Rehabilitation	New Infrastructure Needs
For the sources identified above, enter the number of locations where the following treatment is applied:			Does your system have additional treatment needs for provisions of additional public health protection or for aesthetic concerns? <div style="text-align: center;"> <input type="checkbox"/> Yes    <input type="checkbox"/> No                 </div> If yes, how much additional treatment is necessary?
Disinfection (including booster disinfection):	Disinfection:	Disinfection:	
Filtration:	Filtration:	Filtration:	
Chemical removal or addition:	Chemical treatment:	Chemical treatment:	
Storage and Pump Stations			
Inventory	Needing Replacement	Needing Rehabilitation	New Infrastructure Needs
Total Number and Capacity of Existing Storage Tanks:	Number of Existing Elevated or Ground-Level Storage Tanks:	Number of Existing Elevated or Ground-Level Storage Tanks:	Does your system have additional storage capacity and/or booster pumping needs to meet the needs of current users? <div style="text-align: center;"> <input type="checkbox"/> Yes    <input type="checkbox"/> No                 </div> If yes, how much additional finished water storage or booster pumping capacity is necessary?
Total Number and Capacity of Existing Booster Pump Stations:	Number of Existing Booster Pump Stations:	Number of Existing Booster Pump Stations:	

## Transmission and Distribution Inventory

**Transmission and distribution projects** are the piping needs of a water system. Projects for **valves, backflow prevention devices and assemblies, and meters** that are not part of a transmission or distribution project listed in this table should be recorded in the table under the tab titled "Inventory Table 3".

On the table below, please provide an estimate of the total feet or miles of pipe in your system, if possible. Completion of this table is not required, but it may be helpful to ensure all potential transmission and distribution pipe projects are considered.

<b>Note: The total feet or miles of pipe in your system is required information if any pipe projects are submitted based solely on survey-generated documentation (documentation codes 10 or 11).</b>		<input type="checkbox"/> feet <input type="checkbox"/> miles	<b>Total Pipe in System</b> <i>(Check feet or miles)</i>			
<b>Total Pipe in System</b> <i>(Check feet or miles)</i>		<input type="checkbox"/> feet <input type="checkbox"/> miles	<u>&lt;=6 inch</u>	<u>8-12 inch</u>	<u>15-42 inch</u>	<u>&gt;=48 inch</u>
<u>Plastic</u>	<input type="checkbox"/> feet <input type="checkbox"/> miles  _____ % of total pipe _____	<input type="checkbox"/> feet <input checked="" type="checkbox"/> miles	Amount of PVC by pipe size _____ <input type="checkbox"/> feet <input type="checkbox"/> miles  _____%	_____ <input type="checkbox"/> feet <input type="checkbox"/> miles  _____%	_____ <input type="checkbox"/> feet <input type="checkbox"/> miles  _____%	_____ <input type="checkbox"/> feet <input type="checkbox"/> miles  _____%
<u>Ductile Iron</u>	<input type="checkbox"/> feet <input type="checkbox"/> miles  _____ % of total pipe _____	<input type="checkbox"/> feet <input type="checkbox"/> miles	Amount of ductile iron by pipe size _____ <input type="checkbox"/> feet <input type="checkbox"/> miles  _____%	_____ <input type="checkbox"/> feet <input type="checkbox"/> miles  _____%	_____ <input type="checkbox"/> feet <input type="checkbox"/> miles  _____%	_____ <input type="checkbox"/> feet <input type="checkbox"/> miles  _____%
<u>Cast Iron</u>	<input type="checkbox"/> feet <input type="checkbox"/> miles  _____ % of total pipe _____	<input type="checkbox"/> feet <input type="checkbox"/> miles	Amount of cast iron by pipe size _____ <input type="checkbox"/> feet <input type="checkbox"/> miles  _____%	_____ <input type="checkbox"/> feet <input type="checkbox"/> miles  _____%	_____ <input type="checkbox"/> feet <input type="checkbox"/> miles  _____%	_____ <input type="checkbox"/> feet <input type="checkbox"/> miles  _____%
<u>Asbestos Cement</u>	<input type="checkbox"/> feet <input type="checkbox"/> miles  _____ % of total pipe _____	<input type="checkbox"/> feet <input type="checkbox"/> miles	Amount of asbestos cement by pipe size _____ <input type="checkbox"/> feet <input type="checkbox"/> miles  _____%	_____ <input type="checkbox"/> feet <input type="checkbox"/> miles  _____%	_____ <input type="checkbox"/> feet <input type="checkbox"/> miles  _____%	_____ <input type="checkbox"/> feet <input type="checkbox"/> miles  _____%
<u>Other</u>	<input type="checkbox"/> feet <input type="checkbox"/> miles  _____ % of total pipe _____	<input type="checkbox"/> feet <input type="checkbox"/> miles	Amount of other by pipe size _____ <input type="checkbox"/> feet <input type="checkbox"/> miles  _____%	_____ <input type="checkbox"/> feet <input type="checkbox"/> miles  _____%	_____ <input type="checkbox"/> feet <input type="checkbox"/> miles  _____%	_____ <input type="checkbox"/> feet <input type="checkbox"/> miles  _____%

**Meters, Service Lines, Backflow Prevention Devices/Assemblies, Valves, etc.**

Projects for meters, service lines, backflow prevention devices and assemblies, valves, and other miscellaneous projects are recorded in this section to accommodate entries of multiple identical items on one line in the project table.

**Record only projects that are not a part of another project (e.g., water main replacement projects will already include valves and other appurtenances).**

EPA requires documentation of all projects provided. Applicable types of documentation are presented in List 4 of the Lists of Codes.

Use only existing documentation of cost. We do not expect you to develop new cost estimates.

To ensure all potential projects are considered, it may be helpful to complete some or all of this inventory table. However, completion of this table is not required.

Inventory	Needing Replacement	New Infrastructure Needs
Total Number of Existing Water Meters:	Number of Water Meters:	Number of Water Meters:
Total Number of Existing Backflow Prevention Devices/Assemblies:	Number of Backflow Prevention Devices/Assemblies:	Number of Backflow Prevention Devices/Assemblies:
Total Number of Valves:	Number of Valves:	Number of Valves:
Total Number of Lead Service Lines:		

## Respondent Information

Please provide the following information in case we need to contact you for clarification or additional explanation of any of your responses.

Contact Person (Person who completed this questionnaire):

Signature: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

Name (please print): \_\_\_\_\_

Fax Number: \_\_\_\_\_

Title: \_\_\_\_\_

E-mail Address: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

Best Time to Reach You: \_\_\_\_\_

(Street Address) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**If you have any questions, contact your state coordinator.**

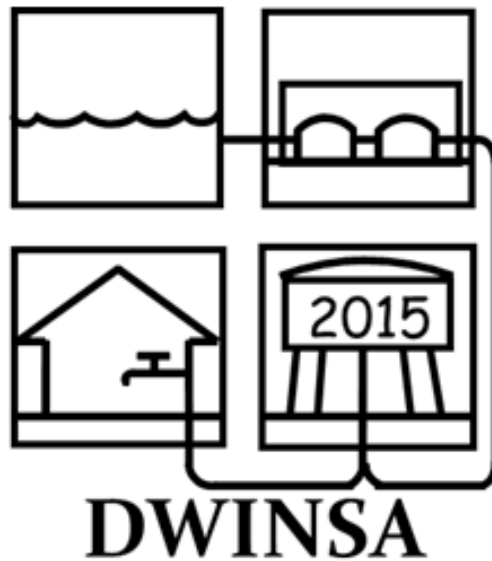
**CLOSING: Thank you for your help. Did you remember to?**

- Identify, by project number, available documentation for all needs and costs reported?
- Email the questionnaire and email or mail the documentation to your state?





## Lists of Codes



Use these instructions and lists of codes when you fill out the Drinking Water Infrastructure Needs Survey and Assessment (DWINSA) questionnaire. In your documentation, please be sure to include project descriptions. Also include copies of the breakdown of cost estimates, if available.

**Instructions for Each Column on the 2015 Drinking Water Infrastructure  
Needs Survey and Assessment Questionnaire**

<b>Column Title</b>	<b>Instructions</b>
<b>Project Number</b>	<p>Number the projects in each category in sequence, using the following range of numbers for each category of need:</p> <ul style="list-style-type: none"> <li>- 1000's Source, treatment, storage, and pumping projects</li> <li>- 2000's Transmission and distribution projects</li> <li>- 3000's Meters, service lines, backflow prevention, valves, etc.</li> </ul>
<b>Project Name</b>	Provide a name that briefly describes and identifies the project.
<b>Type of Need</b>	Refer to List 1 in the Lists of Codes and enter the code(s) that best identifies the project. More than one code may apply to a project if a cost is provided. Use only one code if no cost is available. Codes not applicable to the 2015 DWINSA but that may appear in 2011 DWINSA data are shown in List 1 in italics and with strike-through to indicate they should not be used.
<b>Reason for Need</b>	Refer to List 2 in the Lists of Codes and enter the code(s) that best justifies the project. More than one code may apply to a project.
<b><u>N</u>ew, <u>R</u>eplace, <u>E</u>xpand/<u>U</u>pgrade, or <u>R</u>e<u>H</u>abilitate</b>	<p>Identify whether the project is for:</p> <ul style="list-style-type: none"> <li>- <b>New</b> infrastructure installation where none exists, enter '<b>N</b>' Resulting infrastructure is entirely new.</li> <li>- <b>Replacement</b> of existing infrastructure, enter '<b>R</b>' Existing infrastructure is replaced with similar infrastructure.</li> <li>- <b>Expansion/Upgrade</b> of a complete treatment plant, enter '<b>E</b>' Major improvements to an existing complete plant that adds or changes unit processes or results in an increase in capacity. Only use for complete treatment plants.</li> <li>- <b>Rehabilitation</b> of existing infrastructure, enter '<b>H</b>' Restore existing infrastructure to near-new condition.</li> </ul>
<b><u>C</u>urrent or <u>F</u>uture</b>	<p>Identify whether the project is:</p> <ul style="list-style-type: none"> <li>- Needed now, enter '<b>C</b>' (even if you cannot start construction now)</li> <li>- Not needed now, enter '<b>F</b>' (but will be necessary before 12/31/2034)</li> </ul>
<b>Regulation or Secondary Purpose</b>	If the project is needed to maintain or obtain compliance with a regulation, secondary MCL, or state requirement, refer to List 3 in the Lists of Codes and enter the appropriate code. Enter '4A' if no code applies.
<b>Design Capacity</b>	<p>Enter the design capacity when applicable:</p> <ul style="list-style-type: none"> <li>- million gallons per day (MGD) for source, treatment, and pumping;</li> <li>- million gallons (MG) for storage;</li> <li>- kilowatts (kW) for emergency power.</li> </ul> <p>For this survey, "design capacity" is the total volume or the flow that can be produced when all components of the project are operating (e.g., for disinfection, record the volume of water treated in MGD).</p>

<b>Column Title</b>	<b>Instructions</b>
<b>Diameter</b>	Enter the diameter (in inches, using decimals) if the project is for pipe, valves, backflow prevention, or meters. Use a separate project number and line for different sizes of infrastructure if a documented cost is not available. Diameter is not needed for service lines.
<b>Length</b>	Enter the length of pipe (in feet) that must be rehabilitated, replaced, or installed as new. Use a separate project number and line for different sizes of pipe if a documented cost is not available.
<b>Number Needed</b>	If you have multiple identical projects at the same capacity or multiple identical items, indicate the total number needed (e.g., rehabilitate 10 wells each with a 0.5 MGD capacity, or replace 1,000 0.625-inch meters). If you use this column and provide a project cost, the cost should reflect the entire project (i.e., <i>all</i> 10 wells or <i>all</i> 1,000 meters, <b>not</b> the cost of an individual well or meter).
<b>Cost Estimate</b>	If an existing cost estimate is available, enter the documented cost estimate for this project. Do not use cost estimates that were prepared prior to January 1, 2005. If no cost estimate is provided and modeling parameters are recorded, EPA will use models to estimate the cost. Do not develop a cost estimate for this survey.
<b>Cost Date</b>	If a documented cost estimate is provided, enter the month and year (MM/YYYY) of the cost estimate. EPA will adjust costs to current-year dollars.
<b>Documentation</b>	Refer to List 4 in the Lists of Codes and enter the code(s) that applies to the type of documentation provided that explains why the project is needed. If a cost estimate is provided, also enter the code that applies to the type of cost documentation. More than one code may apply to a project.
<b>Remove, Modify, or Validate</b>	This column appears for systems that participated in the 2011 DWINSA. An asterisk (*) indicates the project must be removed, modified, or have a project-specific validation for the 2015 DWINSA.

**Important Notes:**

- o **What is a “need”?** Installation or rehabilitation of capital infrastructure needed over the next 20 years to obtain or maintain service to existing customers or to existing homes with inadequate or unsafe water that are not currently connected. Projects *substantially* for meeting anticipated future population growth or for fire flow are not allowed for the DWINSA.
- o **What is “independent documentation”?** Documents generated through a process independent of the DWINSA (e.g., CIP, master plan, sanitary survey report).
- o **What is “survey-generated documentation”?** Documents generated specifically for the survey that are written by the system or the state.

Please use the **Documentation Summary** tab of the Questionnaire to provide survey-generated documentation of need and/or provide information on the independent documentation for the project. A description of each project or a copy of the documentation must be provided and be clearly identified by project number.

## LIST 1 - TYPE OF NEED

**Code      Type of Need**

### **RAW/UNTREATED WATER SOURCE**

R1      Well (including pump and appurtenances)  
 R2      Well Pump  
 R3      ~~Well House <sup>1</sup>~~  
 R4      ~~Eliminate Well Pit <sup>1</sup>~~  
 R5      ~~Abandon Well <sup>1</sup>~~  
 R6      Aquifer Storage and Recovery Well  
 R7      Surface Water Intake  
 R8      Raw Water Pump  
 R9      *Off-Stream Raw Water Storage <sup>2</sup>*  
 R10     Spring  
 R11     ~~Destratification<sup>-1</sup>~~

### **TREATMENT: *Disinfection***

T1      Chlorination  
 T2      Chloramination  
 T3      Chlorine Dioxide  
 T4      Ozonation  
 T5      Mixed Oxidant Type Equipment  
 T6      Ultraviolet Disinfection  
 T7      Contact Basin for CT  
 T8      Dechlorination of Treated Water  
 T9      Chlorine Gas Scrubber

### **TREATMENT: *Complete Plants (N/R/E require independent documentation)***

T10     Conventional Filter Plant (includes CAC technologies)  
 T11     Direct or In-line Filter Plant  
 T12     Slow Sand Filter Plant  
 T13     Diatomaceous Earth Filter Plant  
 T14     Membrane Technology for Particulate Removal  
 T15     Cartridge or Bag Filtration Plant  
 T16     Lime Softening  
 T17     Reverse Osmosis  
 T18     Electrodialysis  
 T19     Activated Alumina  
 T20     Manganese Green Sand (or other oxidation/filtration technology)  
 T21     Ion Exchange  
 T22     Groundwater Chemical-feed  
 T23     Iron Adsorption  
 T24     Aeration

### **TREATMENT: *Other Components / Equipment / Processes***

T30     Zebra Mussel Control  
 T31     Corrosion Control (chemical addition)  
 T32     Powdered Activated Carbon  
 T33     Aeration (component)  
 T34     Sequestering for Iron and/or Manganese

<sup>1</sup> *These codes are not applicable to the 2015 DWINSA but may appear in 2011 DWINSA data.*

<sup>2</sup> *Cost must be provided; cost of this infrastructure cannot be modeled.*

**LIST 1 - TYPE OF NEED (cont.)**

**Code      Type of Need**

**TREATMENT: *Other Components / Equipment / Processes***

- T35      Chemical Feed
- T36      Chemical Storage Tank
- T37      Fluoride Addition
- T38      Presedimentation Basin
- T39      Sedimentation/Flocculation
- T40      Granular Activated Carbon
- T41      Membrane Filtration (not complete plant)
- T42      Media Filters
- T43      Waste Handling/Treatment: Mechanical (not included in another project)
- T44      Waste Handling/Treatment: Nonmechanical or Connection to a Sanitary Sewer  
(not included in another project)
- T45      Type of Treatment Unknown
- T46      *Other (Please include an explanation)<sup>2</sup>*

**TRANSMISSION MAINS: (*Any mains that transport raw water to the treatment plant, or treated water from the plant to the distribution system grid.*)**

- X1      Raw Water Transmission
- X2      Finished Water Transmission

**DISTRIBUTION**

- M1      Distribution Mains (any mains that transport water through a piping grid serving customers; see "transmission" above)
- M2      Lead (Pb) Service Line Replacement
- M3      Service Lines (other than lead service lines)
- M4      *Hydrants<sup>1</sup>*
- M5      Valves (gate, butterfly, etc.) (not included in a pipe project)
- M6      Control Valves (PRVs, altitude, etc.)
- M7      Backflow Prevention Devices/Assemblies
- M8      Water Meters

**FINISHED/TREATED WATER STORAGE**

- S1      Elevated Finished/Treated Water Storage
- S2      Ground-level Finished/Treated Water Storage
- S3      Hydropneumatic Storage
- S5      Cover for Existing Finished/Treated Water Storage

**PUMP STATION AND FINISHED WATER PUMP**

- P1      Finished Water Pump
- P2      Pump Station (booster or raw water pump station-may include clearwell, pumps, housing)

**OTHER INFRASTRUCTURE NEEDS**

- W1      *Laboratory Capital Costs for Labs Owned by the System<sup>1</sup>*
- W2      Computer and Automation Costs (SCADA)
- W3      *Pump Controls/Telemetry<sup>1</sup>*
- W4      Emergency Power (enter design capacity as kilowatts)
- W5-W9      *Fencing and Security-related needs<sup>1</sup>*
- W10      *Other (Please include an explanation)<sup>2</sup>*

<b>LIST 2 - REASON FOR NEED</b>
---------------------------------

<b>Code</b>	<b>Reason the Project is Needed</b>
A1	Project is for existing infrastructure that is or will be old or deteriorated by 12/31/2034.
A2	Project is to correct a deficiency in source water quantity caused by current user demand.
A3	Project is to correct a deficiency in storage capacity caused by current user demand.
A4	Project is to correct existing pressure problems (not related to fire flow).
A5	Project needed as a result of, but not in preparation for, a natural disaster.
A6	Project is to obtain or maintain compliance with an <b>existing regulation</b> (enter the regulation code from List 3 in the Lists of Codes in the regulation column of the questionnaire).
A7	Project is to obtain or maintain compliance with a <b>secondary standard</b> (e.g., iron, taste and odor, and color) (enter regulation code 2A in the regulation column of the questionnaire).
A8	Project is for consolidation with and/or connection to an existing public water system.
A9	Project is for extending service to existing homes without adequate water quantity or quality.
<del>A10</del>	<i>[A10 is not applicable to the 2015 DWINSA but may appear in 2011 DWINSA data. A10 referred to security-related needs]</i>
A11	Use this code if codes A1-A9 do not apply.

## LIST 3 - REGULATION OR SECONDARY PURPOSE

### ***Code Regulation or Secondary Purpose***

#### **EXISTING SDWA REGULATIONS**

- 1A Surface Water Treatment Regulations (Surface Water Treatment Rule, Interim Enhanced Surface Water Treatment Rule, Filter Backwash Recycling Rule, Long Term 1 Enhanced Surface Water Treatment Rule, or Long Term 2 Enhanced Surface Water Treatment Rule)
- 1B Total Coliform Rule or Revised Total Coliform Rule
- 1C Nitrate or Nitrite Standard
- 1D Lead and Copper Rule
- 1E Arsenic Rule
- 1F Stage 1 or Stage 2 Disinfectants/Disinfection Byproducts Rules
- 1G Other Regulated VOCs, SOCs, IOCs, or Radionuclides (excludes Radon)
- 1H Ground Water Rule

#### **OTHER**

- 2A Secondary Contaminants (e.g., iron, taste and odor, or color)
- 2B State Requirements

#### **IF NONE OF THE ABOVE CODES APPLY**

- 4A Use this code if none of the codes above apply

#### **PROPOSED AND RECENTLY PROMULGATED SDWA REGULATIONS**

Needs associated **solely** with the **Proposed Radon Rule** are not allowable and should not be included. The costs for these needs, estimated for the rule's Economic Analysis, will be added to the total national need.

As of January 1, 2015, there were no other proposed rules or recently promulgated rules applicable to the 2015 DWINSA.



## LIST 4 - DOCUMENTATION

### **Code**    *Independent Documentation of Need and/or Cost*

- 1        **Capital Improvement Plan or Master Plan.** The plan must address why the project is needed and/or provide a cost.
- 2        **Facilities Plan or Preliminary Engineering Report.** Excerpts justifying need and/or cost from the plan or report are acceptable if project-specific.
- 3        **Grant or Loan Application Form.** An application form is acceptable if it specifically describes a problem requiring capital expenditures.
- 4        **Engineer's Estimate or Bid Tabulation.** These must be project specific and independently generated. They must also be accompanied by an explanation of why the project is needed.

### **Code**    *Independent Documentation of Need Only*

- 5        **Intended Use Plan/State Priority List.** The excerpts must include a description of why the project is needed. Costs from IUPs will not be used - modeling parameters or other cost documentation must be provided.
- 6        **Comprehensive Performance Evaluation (CPE) or Sanitary Survey Results.** The results or recommendations may be used to justify need if the state concurs.
- 7        **Monitoring Results.** Monitoring results indicating an MCL exceedance or a trending toward an exceedance can demonstrate a need for a project if accompanied by a written statement explaining how the results demonstrate the need.
- 8        **Other Independent Document.** Use this code if documentation is independent but none of the codes listed above apply. Examples include: state enforcement order/notice of violation, engineering studies, water main break report, repair reports, and distribution system studies.

### **Code**    *Independent Documentation of Cost Only*

- 9        **Cost of Previous Comparable Construction.** This may be used to justify costs if the costs are project-specific. It must include documentation of how the costs were derived.

### **Code**    *Survey-generated Documentation of Need Only*

- 10       **Written by State.** Brief description and statement of need written by the state.
- 11       **Written by System.** Brief description and statement of need written by the system.

### **Code**    *Documentation Submitted for Previous DWINSA*

- 20       ~~**Project Relied on 2007 DWINSA Documentation.**~~ *Code not applicable to the 2015 DWINSA. Resubmit documentation if it is needed.*
- 21       **Project Relies on 2011 DWINSA Documentation.** Submit project-specific validation statement. Other documentation codes also apply if additional documentation is submitted for the 2015 DWINSA.

**Appendix C – Comments and Response to Comments Received on the 2015  
DWINSA Peer Review**

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## Introduction to the 2015 DWINSA Peer Review Comment and Response

EPA has assessed the drinking water infrastructure needs of public water supplies through a national survey of drinking water systems every four years since 1995. Using a stratified random statistical sample of water systems, the Agency assesses need by evaluating project-level data from each system sampled including information about the type of project, its size or capacity, and its cost. A new sample was selected for each Assessment and the same basic approach (with some notable exceptions) was used in 1995, 1999, 2003, 2007 and 2011.

EPA proposes using a different statistical approach for the design of the 2015 Drinking Water Infrastructure Needs Survey and Assessment (DWINSA or Assessment). Rather than select a completely new sample of systems in 2015, EPA proposes to survey the participants in the 2011 Assessment and re-assess their 20-year investment need in 2015. By using information from the 2011 review as a starting point, this panel approach would reduce the amount of time required to review each system's response and would allow for analyses of trends. The sample will be "refreshed" by randomly selecting up to 25 percent of the 2011 sample in each stratum to be dropped and placed back in the pool of systems that were not selected in 2011. Systems will then randomly be selected from among the pool of systems that were not in the 2011 sample and the systems that were dropped.

The proposed panel (or longitudinal) approach, which tracks a cross-section of observations over time, is common in econometric studies and is used to study individuals, households, firms and utilities. It provides advantages in terms of costs while allowing for trend analyses and providing probability samples of systems on which estimates of each state's needs can be based.

EPA asked two statisticians to review the proposed approach. The peer review charge is to assess the proposed panel approach as outlined in the document: *Proposed Panel Study Approach to the 2015 Drinking Water Infrastructure Needs Survey and Assessment*. The approach was reviewed internally by Dennis Guignet, Ph.D., of EPA's National Center for Environmental Economics. It also was reviewed by Don L. Stevens Jr., Ph.D., of Stevens Environmental Statistics. Each reviewer's comments and EPA's responses are provided below. The comments are presented without attribution by name to either reviewer.

## Reviewer # 1

### I. GENERAL IMPRESSIONS

The general approach of using a partial replacement panel study is eminently sensible for studies with dual objectives of estimating status and trends. Besides the potential cost savings of reducing the review cost, trend estimates can be more precise because of elimination of a component of variance.

There is no indication of plans to continue the panel approach beyond 2015. The full potential of a panel design can only be realized if it is kept in place for multiple surveys. The current plan should address this and also specify how the sample will be “refreshed” in subsequent years.

**EPA response:** *EPA recognizes the longer-term potential offered by the panel approach and will evaluate its future use, including the use of the refresh, in conjunction with the completion of the 2015 Survey.*

Neyman allocation is a reasonable approach, but some of the resulting sample sizes in the 2011 table seem a bit extreme. For example, New York was allocated a sample of 3 from 123 small ground water systems, but Nevada was allocated a sample of 3 from 4 small surface water systems. Was the variation really that extreme? While Neyman allocation is theoretically optimal, that’s only the case if the real variance is known. In practice, the variance is always estimated, and hence has some uncertainty, especially variance based on small sample sizes. It appears as if “3” were set as a minimum sample size; if, so, I think that’s too small.

**EPA response:** *The allocation of each state’s sample by strata depends on the variance, the number of systems in each stratum and the share of the total need in the census strata (systems serving more than 100,000 persons). To determine the sample size needed per state and to allocate the sample among the strata, we must estimate the variance and total need for each state. We use data from prior Assessments to estimate the total need and variance. In both New York and Nevada, systems serving more than 100,000 account for more than 80 percent of total need, even though they comprise less than 10 percent of the systems.*

*Because systems serving more than 100,000 persons account for such a large share of the total need, the Neyman allocation often requires very few systems—2, 1 or fewer—per stratum. The sampling plan requires at least 3 systems per strata. (We need at least 2 systems per stratum to calculate the standard error and select 3 to allow for non-response.)*

### II. RESPONSE TO CHARGE QUESTIONS

#### 1. Sampling Plan/Statistical Theory

##### **a. Are there any general comments or noticeable flaws with the proposed panel study approach?**

The proposal is to refresh 25% of the sample. Many sample sizes are small and not divisible by 4. The proposal should specify how the dropped sites are to be selected if, for example, the sample size is 7.

**EPA response:** *The study will round the number to be resampled to the nearest integer. If a stratum has seven systems in the sample we will resample two systems.*

##### **b. Is the proposed panel study approach complete?**

It was not clear how actual needs data was to be collected for the states retained from the 2011 sample. Are the states asked to update their 2011 response? Accurate needs data is critical to the success of the panel approach. In the usual application of a panel study, the retained elements are re-measured along

with the new elements. Point 4 in the “Proposed Survey Approach” seems to suggest that the process for new and retained systems will be different. This could be a serious problem unless the “rules” EPA has yet to develop in fact yield comparable needs data.

**EPA response:** *The systems retained from the 2011 survey will be asked to update their 2011 response. The guidelines ensure that only needs allowable under the Drinking Water State Revolving Fund (DWSRF) are included in the survey. These guidelines and the EPA’s review of the systems’ responses ensure they are consistent with prior surveys and with the new systems added to the survey.*

**c. Is the statistical theory the correct approach and does it give the desired results?**

The statistical theory is correct. Depending on how the response for sites not replaced is determined, the estimates should be acceptable. However, because of constraints on refreshing 25% of a small sample, the desired cost savings may not be realized.

**EPA response:** *EPA recognizes that the 25% refresh will reduce the potential savings associated with the panel approach.*

**2. Will EPA’s approach for the 2015 Assessment to “refresh 25% of the 2011 sample with new systems from the 2011 sample” adequately:**

**a. Represent system needs for 2015?**

It depends on how the cost data for the non-replaced systems is determined. As I noted above, the proposal was not clear on that point. If the cost data is correct for 2015, then the system needs for 2015 should be adequately represented.

**EPA response:** *See above.*

**b. Address states concerns that their allotment is too closely tied to the 2011 Assessment and help alleviate a potential source of bias?**

See my response above. I’m not sure what “potential source of bias” is present. Provided the needs data is correct for 2015, then the results are unbiased.

**3. As part of the panel approach, EPA is planning on keeping the size of the sample of medium systems the same as in 2011. Should it adjust the sample size if necessary to meet the desired precision targets, or should it keep the sample size the same as in 2011?**

The sample size should be adjusted to meet precision targets. The sample sizes were based on Neyman allocation, sometime with variance estimates based on very small samples. As more (better) information becomes available on variation, the sample allocation should certainly be reconsidered.

**EPA response:** *In 2011, the sample was designed to meet a precision target of plus or minus 10 percent of the total need for each state. Data from 2003 and 2007 were used to estimate the variance in order to calculate the required sample sizes. EPA will update its estimates of the variance using the data from the 2011 Assessment.*

*The sample size needed in 2015 can change because of changes in the inventory or changes in the estimated variance of total need by state. In principal, the required sample size can increase or decrease due to these changes. The sample for some states may increase while others may*

decrease. The allocation among a state’s strata may also change, even if the total sample required does not change.

EPA will revise the sampling plan based on this comment. In cases where the sample size needed increases, EPA will drop 25 percent of the 2011 sample, returning the dropped systems to the pool of systems that can be sampled. EPA will then randomly select the number of additional systems required to meet the precision targets. For example, if the 2011 sample size was 12 and the 2015 sample size must increase to 15 to meet the precision target, EPA will first randomly select and drop 3 systems from the sample and will then randomly select 6 systems from the inventory of remaining systems. The three systems that were dropped may get sampled again.

In cases where the required sample size decreases, EPA will randomly select systems to remove from the sample. It will then randomly select 25 percent of the remaining sample to drop and replace. EPA will then randomly select from the frame—including systems that were dropped in the first two steps—systems to replace the 25 percent dropped as part as the refresh.

### III. SPECIFIC OBSERVATIONS

Page	Paragraph	Comment or Question
5	3	It is a mistake not to re-evaluate sample sizes based on revised variance estimates or frame changes.  <b>EPA response:</b> See response to 3, above.
6	b	P4, paragraph 4, suggests that the new systems would have a separate supplemental sample. This paragraph suggests that the new systems will be included in the frame for the replacement systems. Which is the case?  <b>EPA response:</b> We will clarify the language and revise P4 paragraph 4. Systems added to inventory will be included in the frame for the replacement systems and will have a chance of being selected as part of the refresh.
6	4	The “rules for how projects are included in the 2011 Assessment” are critical. If this is not done carefully, than the whole study could be compromised.  <b>EPA response:</b> EPA recognizes the importance of the rules that guide project review.

## Reviewer # 2

In responding to the below charge questions, my review focuses on adapting the previously peer-reviewed 2011 sampling design to accommodate a panel data approach. Although I reviewed much of the 2011 sampling plan to gather background information, my comments below focus only on the proposed changes for the 2015 sampling plan.

### **1. Sampling Plan/Statistical Theory**

#### **a. Are there any general comments or noticeable flaws with the proposed panel study approach?**

Overall, the proposed changes to the 2011 sampling plan to accommodate the collection of a panel dataset seem reasonable, and I find no major flaws based on my review. Statistical theory suggests that the stratified random sample of medium facilities chosen in 2011 was representative of facilities at that time. It stands to reason that this same sample is still representative of the population of medium systems in 2015.

Besides minor considerations discussed in my below responses, I think the proposed panel approach is valid and offers several advantages. In addition to the cited cost-savings and reduced burden to the EPA and Water Systems, a panel data approach increases EPA's ability to analytically assess the effectiveness of funds in completing projects, to examine how cost estimates for individual projects evolve over time and the initial accuracy of estimates derived by individual water systems or EPA, and to potentially distinguish between total costs projected over the next 20 years versus incremental costs relative to previous assessments.

*EPA response: Following completion of the 2015 DWINSA, we will be assessing these possible future benefits of the new approach in designing the 2019 effort.*

#### **b. Is the proposed panel study approach complete?**

Yes, the proposed panel approach is complete. My only suggestion is that EPA establish their decision rules for "how projects included in the 2011 Assessment will be reviewed and how new projects will be handled" (pg 6), and that this be made clear beforehand. No details are currently provided with the proposed panel approach plan.

These decision rules are particularly important given that the requested fields (e.g., "project name") are open-ended, which could lead to slight differences in responses for the same project. Additionally, it seems possible that the Water System and EPA staff who filled-out and reviewed the survey in 2011 may not be the same individuals in 2015.

Perhaps it would be worthwhile to send previous survey responses to systems along with the 2015 survey? If systems have their last list of projects in front of them, then this may minimize the potential for unwanted overlap and help encourage consistent project names, etc. across the two time periods in the panel. At the same time, this would be a systematic difference between the panel sample compared to the 2015 "refresh" sample, and so consideration should be given to any potential biases that could inadvertently triggered if the previous 2011 responses were provided. In any case, since the census of large systems is already a panel dataset, if such inconsistency issues were not an issue there, then perhaps the above concern is not warranted in the context of medium sized systems either.

*EPA response: EPA recognizes the importance of the rules for how projects are reviewed and how new projects will be handled. The systems retained from the 2011 survey will be asked to update their 2011 response. EPA will send systems that participated in the 2011 survey their*



responses to the survey as a starting point for the 2015 assessment. Guidelines will ensure that only needs allowable under the DWSRF are included in the survey. These guidelines and the EPA's review of the systems' responses ensure they are consistent with prior surveys and with the new systems added to the survey.

**c. Is the statistical theory the correct approach and does it give the desired results?**

Yes, the statistical theory appears correct. However, if the desired results are to estimate the 95% confidence of total need by state with a 10% level of precision, then this may not necessarily be obtained. Please see response to item 3.

**EPA response:** EPA will adjust the size of the sample to allow for changes in the inventory of water systems as well as revisions to estimates of the variance in need. See the response to item 3, below.

**2. Will EPA's approach for the 2015 Assessment to "refresh 25% of the 2011 sample with new systems from the 2011 sample" adequately:**

**a. Represent system needs for 2015?**

Yes, the proposed panel approach should provide a representative sample of system needs for 2015, even absent the 25% sample refresher. The 25% refresher will further ensure a representative sample.

Statistical theory suggests that the stratified random sample of medium facilities chosen in 2011 was representative of facilities at that time. It stands to reason that this same sample is still representative of the population of medium systems in 2015. One potential flaw in this thought is if these stratified randomly selected facilities become inherently different from the population of other medium systems within their strata in between 2011 and 2015. For example, if a facility's particular needs systematically change as a result of previously filling out the survey, then the sample could be less representative of the population within that strata. If there is any reason to suspect that a facility's allocation of funds, effectiveness in spending funds, or even how they fill-out the survey, are systematically different due to the fact that that particular facility filled out a survey in 2011, or that they know they may fill out future surveys, then this could lead to potential biases in the 2015 sample.

However, no evidence was presented suggesting that this could be the case, and the introduction of a 25% sample "refresher" within each strata should alleviate concerns along these lines. Furthermore, by comparing the "refreshed" sample to the sample of systems included in both the 2011 and 2015 sample, one can statistically test whether such facilities are similar (e.g., t-tests of mean responses across subsamples). Although, such tests likely require the pooling of systems across strata in order to achieve the desired level of statistical power, such comparisons may still be insightful. With the appropriate caveats such comparisons could shed light onto the validity of the panel approach and the need (or lack of a need) for a sample "refresher" in future surveys beyond 2015.

**EPA response:** EPA recognizes the potential bias that can be introduced by asking systems to report their project need again. Systems may have learned from their experience in the 2011 Assessment and change their estimate of their future needs as a result. This potential source of bias is not new as systems serving more than 100,000 have participated in every survey since the initial assessment in 1995. There is no evidence that large systems' responses have been affected by their long-term participation in the survey. Furthermore, many medium systems have been included in more than one Assessment and their responses generally appear to be consistent with medium systems of similar size and type that have not been included in more than one Assessment.

***b. Address states concerns that their allotment is too closely tied to the 2011 Assessment and help alleviate a potential source of bias?***

I was not provided with any documentation of the States' comments or concerns, but I presume that such concerns stem from the fact that a "bad" draw of the random sample for a State could lead to concerns that the State's total allotment is too closely tied to the sample selected in 2011. If this is the case, then such concerns could be aggravated by the fact that this same sample would be used to assess their needs in 2015. That said, these samples are randomly drawn from within each strata. No matter when a sample is drawn (2011 or 2015), the States have a similar probability of getting a more or less "favorable" draw. Such discrepancies are random, and are an inherent component of any statistical sampling plan. This should not lead to any systematic biases, however, in estimating State needs.

All that said, since the 25% refresh is again a random selection of systems within each strata, this will help alleviate any potential concerns and perhaps even provide an opportunity to statistically test whether such concerns are warranted (see response to item 2a above).

*EPA response: EPA is implementing the 25 percent refresh in light of discussions with states and to address issues also noted by the reviewer.*

***3. As part of the panel approach, EPA is planning on keeping the size of the sample of medium systems the same as in 2011. Should it adjust the sample size if necessary to meet the desired precision targets, or should it keep the sample size the same as in 2011?***

On page 5 of the "Proposed Panel Study" document it states that "EPA will not change the sample sizes to account for revised estimates of the variance in system need or changes in the inventory of medium systems." Keeping the sample the same size each time period within a panel dataset may be an attractive feature, but if this is the preferred path some additional justification should be provided. If the desire is to continue to maintain a 10% level of precision then it seems that the sample size should be adjusted to account for changes in the size of the population of systems within the different strata, as well as the within strata variance.

For example, in instances where the population of facilities within a strata increases, based on equations 2.2 through 2.5 in Appendix 2 of the "Proposed Panel Study" document, it seems necessary to increase the sample size within the respective strata in order to maintain a 10% level of precision. I'm not arguing that the sample sizes should necessarily be changed in response to any changes in the number of systems in the population, but if the 2011 samples sizes were maintained in 2015, then this needs to be made transparent and the appropriate caveats should be included. Most notably, claims of 10% precision should not be made if that is not the level of precision obtained when keeping the sample size the same as that in 2011.

On a similar note, it appears that an optimum allocation design was used to determine the sample size and allocation across strata, which accounts for information obtained from previous surveys (i.e., estimated standard deviation within each strata and total state costs). On page 20 of the "Proposed Panel Study" document, it is stated that in determining the 2011 sample sizes, this information was estimated based on data from the 2003 Assessment; in other parts it states 2007. I presume this should always read as 2007, but if not then it is unclear why the 2007 Assessment was not used as this was the most recent data prior to the 2011 survey.

In any case, it seems that state cost and stratum standard deviation estimates can be obtained based on information obtained from the 2011 survey, which in turn would provide a more current determination of the sample size and allocation needed to obtain the desired precision targets. Perhaps doing so in a panel

structure introduces some issues that I am not aware of, but this may be something worth considering in order to minimize survey costs and obtain the desired level of precision.

*EPA response: In 2011, the sample was designed to meet a precision target of plus or minus 10 percent of the total need for each state. Data from 2003 and 2007 were used to estimate the variance in order to calculate the required sample sizes. EPA will update its estimates of the variance using the data from the 2011 Assessment.*

*The sample size needed in 2015 can change because of changes in the inventory or changes in the estimated variance of total need by state. In principal, the required sample size can increase or decrease due to these changes. The sample for some states may increase while others may decrease. The allocation among a state's strata may also change, even if the total sample required does not change.*

*EPA will revise the sampling plan based on this comment. In cases where the sample size needed increases, EPA will drop 25 percent of the 2011 sample, returning the dropped systems to the pool of systems that can be sampled. EPA will then randomly select the number of additional systems required to meet the precision targets. For example, if the 2011 sample size was 12 and the 2015 sample size must increase to 15 to meet the precision target, EPA will first randomly select and drop 3 systems from the sample and will then randomly select 6 systems from the inventory of remaining systems. The 3 systems that were dropped may get sampled again.*

*In cases where the required sample size decreases, EPA will randomly select systems to remove from the sample. It will then randomly select 25 percent of the remaining sample to drop and replace. EPA will then randomly select from the frame—including systems that were dropped in the first two steps—systems to replace the 25 percent dropped as part of the refresh.*

**Other minor comments that may be worth some consideration:**

- One minor point regarding the assessment of small systems. On page 6, it states that “Systems that serve populations fewer than 3,301 will not be surveyed. Their needs will be based on the average system need as calculated in 2011...” The Office of Ground Water and Drinking Water certainly has a better understanding of this than I, and I ultimately defer to their expertise, but my understanding is that in 2011 the average small system needs were inferred from responses to a 2007 survey. Are there any concerns that these data are 8 years old and small system needs may have changed?

*EPA response: In previous assessments, EPA has successfully used the approach of extrapolating earlier survey results based on adjustments for construction cost inflation and shifts in the number and sizes of small water systems. For the 2015 assessment, EPA believes this approach will provide an accurate accounting of these systems' needs, but upon completion of the 2015 effort, the Agency will evaluate the results in the context of designing the 2019 DWINS.*

- On page 22, equation 2.6, a slight adjustment is made to account for an assumed 90% response rate. However, the 2011 medium facility response rate was listed as 97%. It seems EPA is being conservative by assuming lower response rate than it has achieved in the past. It seems reasonable to be conservative in order to better ensure the desired level of statistical precision. Perhaps this is a feature worth emphasizing?

*EPA response: While we will work to continue to have a higher response rates, EPA will continue to be conservative in setting targeted sample sizes to ensure our precision targets are reached and a credible survey obtained.*



## **Appendix D – Comments and Response to Comments Received on the First Federal Register Notice**

No comments were received from the 60-day public review.