State of New Jersey
Department of Environmental Protection
Water Supply Administration
Bureau of Safe Drinking Water Technical Assistance

CAPACITY DEVELOPMENT PROGRAM

CRITERIA AND BENCHMARKS FOR TECHNICAL, MANAGERIAL, AND FINANCIAL (TMF) CAPACITY

Capacity Development Program

Criteria and Benchmarks for
Technical, Managerial, and Financial (TMF) Capacity

The Federal Safe Drinking Water Act (SDWA), as amended in 1996, establishes a focus on capacity development through two major provisions. First, section 1420(a) requires States to develop and implement programs to ensure that new systems demonstrate capacity. Second, section 1420(c) requires States to develop and implement programs to assist existing systems in acquiring and maintaining capacity. New Jersey's original Capacity Development Strategy (CDS) was approved by USEPA on September 28, 2000 and addressed the basic requirements detailed in Section 1420(c)2 regarding the development of a strategy to ensure the TMF capacity of existing public water systems (PWS) in New Jersey. The CDS described how New Jersey identifies PWS for placement on its Strategy List and how assistance would be provided.

Capacity is the ability of a PWS to plan for, achieve and maintain compliance with all applicable drinking water standards. Capacity Development (CD) focuses on cultivating a system's TMF capabilities to improve the system's long term viability.

This document has been prepared as part of an effort to revise/update New Jersey's approved CDS and will incorporate the concept of asset management as a central tool to developing long term planning for affected water systems. Asset management helps achieve and maintain the long-term viability of water systems by addressing five core questions: What is the current state of assets? What is the desired level of service? What are the critical assets? What is the minimum life cycle cost of the assets? What is the long-term funding plan? The answers are then used to develop an Asset Management Plan (AMP).

The benchmarks described in this document help measure whether or not a PWS has adequate TMF capacity to sustain its long-term viability. These benchmarks supplement the criteria defined in the approved CDS and together they will serve as the future standards to evaluate TMF capacity.

The components of TMF capacity are discussed separately on the following pages along with the evaluation criteria and benchmarks developed to measure if a PWS is achieving and maintaining TMF capacity. These benchmarks focus on ensuring each PWS has a basic knowledge of its system and adequate TMF capabilities to sustain the long-term viability of the utility. This approach is consistent with the SDWA, as amended in 1996, and concentrates on establishing a cooperative partnership with existing PWS in need of assistance. Repeated reference is made to current regulations throughout this document since current regulations serve as a basis for comparison between the current status of a PWS and the status the PWS should strive to achieve.

Technical Capacity

Technical capacity refers to the adequacy of the source, infrastructure, operation, and maintenance of a PWS. Infrastructure refers to the physical/mechanical components of the source, treatment, storage, and distribution network of the PWS. To demonstrate adequate technical capacity, a PWS must have adequate source and infrastructure, qualified personnel with sufficient technical knowledge available to operate and maintain the PWS, and an operator of the proper license and classification.

The approved CDS defines the following standards for determining if a PWS has adequate technical capacity:

1. The PWS is not in significant non-compliance (SNC) as defined by the USEPA,
2. The PWS does not have any continuing violations of New Jersey's Safe Drinking Water Act regulations (N.J.A.C. 7:10) and Water Supply Allocation Permit regulations (N.J.A.C. 7:19), and
3. The PWS is operating its system under a licensed operator of the appropriate license pursuant to N.J.A.C. 7:10A, "Licensing of Water Supply and Wastewater Treatment System Operators".

Technical capacity should address and/or include without limitation:

- the ability to consistently provide an ample quantity of safe drinking water to its customers
- projected water use
- a description of all major projects and planned expansions
- hydraulic analysis of distribution system and storage tank levels to address pressure problems
- source water adequacy
- source water protection
- water disposal issues
- licensed operator requirements
- laboratory needs
- compliance with state and federal regulations
- cross connection control program

The following sections clarify what information is needed to address the parameters listed above:

I. Infrastructure:

The PWS must possess basic knowledge on the location, age, construction, general condition, and anticipated service life remaining for all existing infrastructure associated with its source, treatment, storage, and distribution network. A scaled map showing the locations of the various infrastructure components must also be available. If the PWS does not have this basic information when the TMF capacity evaluation is performed, then the improvement plan for the PWS must specify the need to acquire the information. This knowledge is required for the PWS to develop an AMP that includes a capital improvement plan (CIP) to operate, maintain, upgrade, refurbish, and/or replace existing infrastructure and add new infrastructure as necessary to operate the utility and maintain service in compliance with applicable laws, regulations, and standards. The CIP provides the description of all major projects and planned expansions. Possessing basic knowledge of the system and an AMP/CIP will serve as common benchmarks for all categories of infrastructure.

Records should be available to show the required permits/approvals were obtained and all conditions stipulated in those permits/approvals were met. If the records do not exist or are not available at the time of the TMF capacity evaluation, the improvement plan should instruct the PWS to work with the appropriate regulatory agency to determine the need for such documentation.

Additional benchmarks for source, treatment, storage, and distribution system infrastructure are provided below to further define how to determine whether or not a PWS has adequate technical capacity for its infrastructure.

A. Source

Discussions of source infrastructure must inherently include a discussion of the source itself. In this regard, the PWS must know the current and future projected use/demand as a prerequisite to demonstrating adequate source water supply. Available information from recordkeeping will show whether or not current demand is being met. Reference sources (e.g. – master plans, planning board records, business plans, or school board plans) may be available to support projections on future development and population growth. This information should be used to estimate future use/demand. The PWS will then be in a position to know if the existing supply source is adequate and will remain so, or if an additional source(s) of supply water is needed.

The benchmark is the ability to demonstrate the existence of an adequate supply of source water capable of meeting current use/demand and, at a minimum, a plan to secure an adequate supply of source water to meet future projected use/demand. "Adequate supply" includes the existence of any required backup/duplicate well(s) and/or interconnections pursuant to N.J.A.C. 7:10, as applicable. Any PWS subject to the New Jersey Water Supply Allocation Rules, N.J.A.C. 7:l9 must also have a valid Water Supply Allocation Permit or Water Use Registration, as applicable.

Scaled Benchmarks:

- ◯ Unauthorized diversion or PWS has 4 or more violations over the term of a required permit/registration; current and future projected use/demand are unknown; current demand not met; no plans to address problems
- ◯ Authorized diversion but PWS has 2-3 violations over the term of a required permit/ registration; current use/demand is known but not always met; future projected use/demand and associated permitting needs are unknown; no plans to address problems
- ◯ Authorized diversion but PWS has 1 violation over term of permit/registration; current use/ demand is known and met; future projected use/demand and associated permitting needs are not clear, but there are plans to address lack of information
- ◯ Authorized diversion with no violations over term of required permit/registration; current use/demand is known and met; future projected use/demand and associated permitting needs are known, plans are in place to secure adequate supply to meet future use/demand

The following sections address source infrastructure. References to wells and intakes in these sections include equipment and appurtenances associated with source infrastructure such as well houses, meters, electrical devices, valves, and pumps. The evaluation of source infrastructure requires an assessment of each well and/or intake using the benchmarks described below.

1. Ground Water

The PWS must know the type of materials used to construct the well, well depth, open-hole/ screen interval, casing depth, casing diameter, annular space, pump type, pump capacity, and other relevant specifications for each well. Each well should also be permitted for use as a potable supply. The PWS must also know the distance from any septic system(s) and/or surface water bodies so that potential sanitary hazards and/or concerns about ground water under the direct influence of surface (GWUDI) water may be evaluated. If the PWS does not know this information and/or a well(s) is not permitted for potable supply, the improvement plan must identify the need to obtain it so proper planning and/or appropriate action(s) is

possible. Having the information described above and an AMP/CIP to operate/maintain the existing well(s), and eventually upgrade, refurbish, or replace the well(s) to conform to applicable regulations (e.g. – N.J.A.C. 7:10 and N.J.A.C. 7:9D).

Scaled Benchmarks:

- Well not permitted and specifications are unknown, well condition is poor, water quality problems (e.g. – coliform) exist, no plans to refurbish/replace the well.
- Well specifications known but do not conform to public supply well specifications, well not permitted as potable supply, well condition is poor, water quality problems (e.g. – coliform) exist, no plans to refurbish/replace the well
- Well is permitted and design conforms to public supply well specifications, well condition is fair, sporadic water quality problems (e.g. – coliform) exist and there are plans to refurbish/replace the well
- Well in good condition, permitted/designated as a public supply well, and no water quality (e.g. – coliform) problems exist, and AMP/CIP contains long-term plans

2. Surface Water

New Jersey's Safe Drinking Water Act Regulations, N.J.A.C. 7:10-12 do not allow a public non-community water system (PNCWS) to use surface water as a source unless specifically approved by the administrative authority. When such approval is obtained, the regulations require the source infrastructure be constructed in compliance with standards for a public community water system (PCWS) as specified at N.J.A.C. 7:10-11. Any PCWS or PNCWS using surface water as a source should be able to demonstrate the source infrastructure is constructed in compliance with applicable regulations (e.g. - N.J.A.C. 7:10-11).

To expand on the basic knowledge needed for a surface water source, the PWS must know the details for all meters, gauges, pumps, devices, and/or equipment required by the applicable regulations and the distance from septic systems and/or sanitary lines.

The benchmarks for demonstrating adequate capacity for source infrastructure under this scenario will be possessing all the basic knowledge and an AMP/CIP to operate/maintain the existing intakes(s), and to eventually upgrade, refurbish, or replace the intake(s).

Scaled Benchmarks:

- Intake specifications and permit status are unknown, intake condition is poor, water quality problems exist, and there are no plans to refurbish or replace the intake
- Intake is permitted but old and older design does not conform to current regulations, intake condition is poor, water quality problems exist, and there are no plans to refurbish/ replace the intake
- Intake is permitted and design conforms to current regulations, intake condition is fair, sporadic water quality problems exist, and there are plans to refurbish/replace the intake
- Intake in good condition, constructed/permitted in accordance with applicable regulations, no water quality problems exist, and AMP/CIP contains long-term plans

Having a source water protection plan, as applicable, would be an additional benchmark for PWS with ground water and/or surface water sources.

B. Treatment

As a prerequisite, the PWS must know which, if any, contaminants exceed their respective primary and/or secondary drinking water standards based on analytical results. Data from raw water samples from new well tests, SWSTA sampling, GWUDI investigations, and source water monitoring per the Ground Water Rule (40 CFR Parts 9, 141 and 142) should also be evaluated for this purpose. Data quantifying contaminants may be from compliance monitoring samples collected by the PWS and/or new well test, complete profile, and/or small water system technical assistance (SWSTA) samples collected by the Department. The PWS needs this knowledge to:

- make informed decisions about the need for and type(s) of treatment requirements required
- comply with federal and state drinking water laws/regulations
- provide consumers with a ready and reliable source of water that meets the primary and secondary drinking water standards

For existing treatment infrastructure, the PWS must possess the basic knowledge described at the beginning of this Technical Capacity section. Infrastructure includes without limitation any units for chemical feed systems, pre-treatment, filtration, treatment processes, and disinfection. The PWS must also have an inventory of the chemicals/materials required for the various treatment processes and have an AMP/CIP to operate/maintain the existing unit(s) and eventually upgrade, refurbish, or replace each treatment unit to conform to the applicable standards (e.g. - N.J.A.C. 7:10). These criteria serve as benchmarks for demonstrating adequate treatment capacity under this scenario.

For situations where the installation of new infrastructure is required to remediate contaminant(s) detected above their respective primary and/or secondary drinking water standard(s), the PWS must identify the type(s) of treatment chosen to remediate any such contaminant(s) and provide a schedule to install the required treatment. The schedule must depict timelines and milestones for obtaining permits/approvals and installing the treatment unit(s) on or before any compliance date mandated by applicable regulations or set by an enforcement document (e.g. - administrative consent order). Installation of the required treatment unit(s) in conformance with the approved permit(s) will be the benchmark for demonstrating adequate treatment under this scenario. Having an AMP/CIP that integrates the operation and maintenance of the new unit(s) along with plans to operate, maintain, upgrade, refurbish, or replace the new unit(s) will serve as an additional benchmark.

In either scenario, demonstrating regulatory compliance with the applicable standard(s) through compliance monitoring sampling results will also serve as a benchmark. If the PWS was in SNC as defined by USEPA, then the PWS will not be removed from the Strategy List until the compliance monitoring results are processed and the PWS is no longer in SNC.

<u>Scaled Benchmarks</u>

- ◙ Water consistently has multiple contaminant(s) above primary standards; treatment unit(s) not installed or not maintained; no backup equipment available to meet demand when largest unit(s) out of service; no plans to address problems;

- Water consistently has at least 1 contaminant above primary standards; treatment unit(s) not installed or not maintained; no backup equipment available to meet demand when largest unit(s) out of service; no plans to address problems;
- Water occasionally has contaminant(s)above primary standards and consistently exceeds secondary standards, treatment unit(s) installed but O&M needs improvement; backup equipment in place to meet demand when largest unit(s) out of service, plan exists to address problems
- Water quality consistently meets primary and secondary standards, treatment unit(s) installed with proper O&M, backup equipment in place to meet demand when largest unit(s) out of service

C. Storage

For a PCWS, the system must know the basic information required to allow for a comparison to the requirements of N.J.A.C. 7:10-11.6 and 11.11 and whether the storage capacity is in compliance with the Water Supply Management Act Rules, N.J.A.C. 7:19-6.1 et seq.

For a PNCWS, the system must know the basic information necessary to facilitate a comparison with the requirements at N.J.A.C. 7:10-12.34 and 12.35.

The benchmarks for demonstrating adequate storage will be possession of this basic knowledge and an AMP/CIP to operate/maintain each existing storage facility, and eventually upgrade, refurbish, or replace the storage facility.

Scaled Benchmarks

- Storage capacity inadequate; facility past useful life, improperly designed, in disrepair, ill-equipped, and/or poorly maintained; finished water quality impaired; minimum pressure insufficient; no plans to address problems. Facility not inspected within last 5 years.
- Storage capacity adequate; facility has little remaining useful life, improperly designed, in disrepair, ill-equipped, and/or poorly maintained; finished water quality impaired; minimum pressure insufficient; no plans to address problems. Facility not inspected within last 5 years.
- Storage capacity adequate; facility has some remaining useful life and few if any design or equipment issues; existing O&M procedures could be improved; finished water quality satisfactory; sporadic problems with maintaining minimum pressure; plans exist to address problems. Facility inspected within last 5 years.
- Storage capacity adequate per applicable regulations; facility is new and/or in good condition with no design, repair, equipment, and/or maintenance deficiencies, finished water quality satisfactory, minimum pressure maintained. Facility routinely inspected at least every 5 years.

D. Distribution

For a PCWS, the system must know the basic information required to allow for a comparison to the requirements of N.J.A.C. 7:10-11.6, 11.9 and 11.10.

For a PNCWS, the system must know the basic information required to allow for a comparison to the requirements at N.J.A.C. 7:10-12.36 through 12.38.

In either situation, information from customer complaints, O&M records, and/or other sources must be used to identify conditions with the potential to affect water quality or service. Such conditions would include, but not be limited to areas with flow restrictions from deposits (e.g. - iron or manganese), areas of low or high pressure, leaks/breaks, and improper/unauthorized connections. This information is necessary to identify what actions are required.

The benchmarks for demonstrating adequate distribution infrastructure will be possession of this basic knowledge and an AMP/CIP to operate/maintain the existing distribution system, and eventually upgrade, refurbish, or replace the various components of the distribution system.

Scaled Benchmarks

- Location, age, construction, and condition of distribution system components unknown; high percentage of unaccounted for water loss; history of customer complaints due to water quality, water pressure, and/or service interruptions with poor response times; no plans to address problems
- Limited knowledge on location, age, construction, and condition of distribution system; high percentage of unaccounted for water loss; history of customer complaints due to water quality, water pressure, and/or service interruptions with poor response times; no plans to address problems
- Location, age, construction, and condition of distribution system components known; low to moderate percentage of unaccounted for water loss; moderate volume of localized customer complaints due to water quality, water pressure, and/or service interruptions; poor response times; plans exist to address problems
- Location, age, construction, and condition of distribution system components known and mapped; low percentage of unaccounted for water loss; few if any customer complaints; water quality and pressure satisfactory; service interruptions are infrequent and receive prompt response when they occur

II. Qualified Personnel:

All system personnel involved with the operation and maintenance of the system must be qualified to perform the level of assigned work. To demonstrate their qualifications, the PWS must be able to show the personnel have the knowledge, training, and skills necessary for the position held and the tasks/duties routinely performed. The policies and procedures these personnel are to follow in the performance of their duties must be in included in the written detailed operations and maintenance procedures prepared by the licensed operator (see item III, below). In addition, the name(s), title(s), job description(s) and other relevant information such as training received/scheduled for these personnel must be included in the managerial plans (see Managerial Capacity section, below).

Scaled Benchmarks

- Personnel are unqualified to perform assigned work because they do not possess knowledge of system policies/procedures, have not been trained, and/or lack necessary skills

- Personnel are poorly qualified due to limited knowledge, received inadequate training, and/or do not possess all necessary skills
- Personnel are fairly qualified, but need to improve knowledge on system policies/procedures, require more training, and/or need to improve the skills they already possess
- Personnel are qualified to perform assigned work, know policies/procedures, are properly trained, and have all necessary skills

III. Licensed Operator:

For utilities where a licensed operator is required, the PWS must have a licensed operator of the appropriate license pursuant to N.J.A.C. 7:10A.

The licensed operator must perform the duties, maintain the records, and satisfy the reporting requirements of N.J.A.C. 7:10A-1.12. Regarding the requirement to have written detailed operations and maintenance procedures, this "O&M manual" must conform to the regulations, include all necessary plans (e.g. - emergency management, source water protection, and water quality monitoring), and adhere to recognized industry standards for items including, but not limited to frequency of inspection and types of materials/additives used. An operations plan template is available from the Department for the licensed operator to use as guidance in preparing/revising an O&M manual. The O&M manual should also:

- provide clear, concise instructions for the licensed operator and/or qualified personnel to follow when performing assigned duties including without limitation the operation, routine inspection, preventive maintenance, necessary repair, and replacement of infrastructure components and/or any testing conducted on water;
- indicate which duties/tasks are not to be performed by the licensed operator and/or qualified personnel (e.g. – do not perform work that require the services of licensed professionals such as well drillers, electricians, or plumbers);
- include provisions for personnel to document, record, and track work performed, and to report observations or recommended follow-up actions to the licensed operator and/or system manager to consider/implement;
- be consistent with any contracts for services maintained by the PWS (see Managerial Capacity section, below); and
- be routinely updated as warranted for consistency with the most recent version of the AMP/CIP for the PWS.

The licensed operator must demonstrate familiarity and ensure compliance with all applicable laws, rules, regulations, and license conditions. The licensed operator must submit the monthly Operating Report of Water Treatment Plants as required. These benchmarks clarify the responsibilities and the capabilities needed for a PWS to must demonstrate technical capacity for a licensed operator.

Scaled Benchmarks

- No licensed operator as required
- Licensed operator does not have the appropriate license; duties, recordkeeping, and reporting not performed as required; O&M manual does not exist or does not conform to regulations; licensed operator not familiar and/or does not ensure compliance with all applicable laws, rules, regulations, and license conditions; monthly reports not submitted as required.

- Licensed operator has appropriate license but needs to improve performance of duties, recordkeeping, and reporting; O&M manual exists but does not fully conform to regulations; monthly reports submitted as required.
- Licensed operator has appropriate license; performs all required duties, recordkeeping, and reporting as required; O&M manual current and conforms to regulations; licensed operator is familiar and ensures compliance with all applicable laws, rules, regulations, and license conditions; monthly reports submitted as required.

Managerial Capacity

Managerial capacity refers to the expertise required of the personnel who administer the overall water system operations. To assure adequate managerial capacity, the PWS must demonstrate that relative to its water system it has clear ownership, proper and organized staffing, effective interaction with regulators, and effective interaction with customers.

The approved CDS defines the following standards for determining if a PWS has adequate managerial capacity:

1. The owner(s) of the PWS is not in receivership;
2. The owner(s) of the PWS demonstrates clear ownership of the water system.
3. The PWS has a clear and defined organizational structure.
4. The PWS has established an emergency management plan.

Managerial capacity should address and/or include without limitation:

- identification of the owner(s) or other responsible legal body
- an organizational chart which also provides job descriptions and lists license/certification requirements for the personnel on the chart
- a representative who can be contacted in New Jersey
- operator training and certification
- licensed operator succession planning
- routine inspections of operations
- listing of O&M contracts
- emergency planning
- legal authority to implement requirements
- policies and procedures for interaction/communication with regulators
- policies and procedures for interaction/communication with customers

Consistent with the benchmarks for measuring all aspects of TMF capacity, a PWS must have AMP/CIP and use it to prepare/revise any other applicable plans required to demonstrate managerial capacity. Possession of a managerial plan that incorporates these plans (e.g. – source water protection, water conservation, emergency response/management, security/safety, etc.) either directly or by reference to the licensed operator's O&M manual will serve as an additional benchmark.

Scaled Benchmarks

- PWS in receivership and/or cannot demonstrate clear ownership; organizational structure not clearly defined; no emergency management plan (if required), AMP/CIP, licensed operator succession plan or other required plans
- PWS not in receivership, but cannot demonstrate clear ownership; organizational structure not clearly defined; no emergency management plan (if required), AMP/CIP, licensed operator succession plan or other required plans
- PWS not in receivership and demonstrates clear ownership; organizational structure clearly defined; no emergency management plan (if required), AMP/CIP, licensed operator succession plan or other required plans
- PWS not in receivership and demonstrates clear ownership; organizational structure clearly defined; emergency management plan (if required), AMP/CIP, licensed operator succession plan and other required plans in place

Financial Capacity

Financial capacity refers to the monetary resources available to a PWS to support the cost of operating, maintaining, and improving the water system. To assure adequate financial capacity, the PWS must demonstrate it has sufficient revenues, credit worthiness, and fiscal management/controls to cover these costs.

The approved CDS defines the following standards for determining if a PWS has adequate financial capacity:

1. The PWS has an effective financial plan which accounts for revenues, operating expenses, reserves, and capital improvements for the next three years.
2. The PWS has an Operating Ratio and a Debt Service Coverage Ratio of greater than 1.0.
3. The PWS has sufficient reserve accounts to cover an operating cash reserve (12% of the annual O&M and general/administrative expenses) and emergency reserve for critical equipment replacement.
4. The PWS has an annual operating budget to demonstrate sufficient revenue to meet all expenses associated with SDWA compliance.

Other ratios (e.g. – expense, sales, current, quick, per capita, receivable ratios) are also available to monitor the financial health of a PWS. The USEPA includes four indicators in its Check Up Program for Small System (CUPSS); the debt ratio (DR), expense ratio (ER), the OR, and sales ratio (SR). The Department is adding the DR, ER, and SR for consistency with USEPA and will retain the DSCR as an indicator, particularly for use with PNCWS.

Summaries of the DR, DSCR, ER, OR, and SR are provided below:

- DR - measures the amount of debt used by the PWS; in other terms, to what degree the utility is mortgaged. Values range from 0-1.0, where a lower number indicates better financial health. As an example, a DR of 0.6 means 60% of operations are financed with debt while the remaining 40% are financed by equity. Being burdened with heavy debt is not desirable for financial health.

The DR is calculated as follows:

DR = Total Liabilities / Total Assets
Liability = Revenue from Loans
Assets = Savings Withdrawal + Revenue from Grants + Revenue from Fees

- DSCR - measures the ability of a PWS to cover debt, over and above operating expenses. A DSCR that is 1.5 or greater is good, between 1.0-1.5 is considered acceptable, and less than 1.0 means there is insufficient revenue to cover the debt service. If a PWS has a DSCR less than 1.0, then it may be headed for bankruptcy or receivership.

  The DSCR is calculated as follows:

  DSCR = Annual Gross Revenues - O&M Expenses / Annual Principal & Interest Charges

- ER (operating expense/total expense) measures the amount of operating expenses compared to total expenses. Values range from 0 to 1.0. The higher the ratio, the more expenses are for operations, leaving less to cover non-operating costs (e.g. - capital improvements and debt service) so a lower number indicates better financial health. When the ER is high, the PWS probably will not meet all of its capital related expenses, leading to a more rapid deterioration of the system infrastructure. In such instances, the PWS should try to identify ways to improve efficiency, reduce operating costs, manage finances better, and/or restructure rates.

  The ER is calculated as follows:

  ER = Operating Expense / Total Expense
  Operating Expense = Annual Operating Expense
  Total Expense = Total Annual Cost of Doing Business

- OR (operating revenue/operating expense) demonstrates the relationship between operating revenues and operating expenses. An OR greater than 1.0 indicates expenses are low relative to revenues, an OR of 1.0 indicates revenues equal expenses, and an OR below 1.0 indicates operating expenses exceed operating revenues. The goal is to have a value greater than one.

  The OR is calculated as follows:

  OR = Operating Revenue / Operating Expenses
  Operating Revenue = Sum of Revenue from (Fees + Grants + Loans + Other Sources)
  Operating Expense = Annual Operating Expense

- SR (sales/total revenue) measures the percentage of total revenue generated by sales of operations (i.e. – from rates). An SR less than 1.0 may indicate the PWS is overly reliant on outside funding while an SR greater than 1.0 may indicate revenues are being drawn to non-utility purposes or generally mismanaged and this potential concern should be addressed. However, an SR greater than 1.0 generally indicates better financial health. Conversely, the ability of a PWS to sustain itself when the SR is less than 1.0 may be questionable, especially if the outside funding source(s) is jeopardized. The SR may be used to identify the need to adjust rates and illustrate/justify the level of any proposed rate increase to both consumers and regulators.

The SR is calculated as follows:

SR = Sales / Total Revenue
Sales = Revenue from Fees + Other Revenue
Total Revenue = Sum of Revenue from (Fees + Grants + Loans + Savings Withdrawn + Other Revenues)

Color coding helps to illustrate what these indicators are saying about the financial health of the PWS. Applying the symbolism associated with the colors red, yellow, and green is a generally accepted practice, is used in CUPSS, and is incorporated here.

For the DR and the ER, a value between 0 and 0.33 is **green**, a value between 0.34 and 0.66 is **yellow**, and a value between 0.66 and 1.0 is **red**.

For the DSCR, a value less then 1.0 is **red**, a value between 1.0 and 1.5 is **yellow**, and a value of 1.5 or greater is **green**.

For the OR, a value of 0.75 or lower is **red**, a value between 0.75 and 1.0 is **yellow**, and a value of 1.0 or greater is **green**.

For the SR, a value of less then 0.1 is **red**, a value between 0.1 and 0.5 is **yellow**, and a value greater than 0.5 is **green**.

Each of these ratios should be used to trigger responses by the PWS. Without going into detail for each ratio here, the following provides one possible example of how the PWS should respond to a high (**red**) DR. In such instances, the PWS should try to find ways to reduce debt, generate other revenues, or restructure rates to lower the DR and improve its financial health.

In summary, each of the ratios/indicators discussed above will serve as benchmarks for financial capacity along with the possession of an AMP/CIP that integrates the budgeting, reserve funding, and financial planning inherent in the process.

Scaled Benchmarks

- No financial plan for future revenues, operating expenses, reserves, and capital improvements; do not have information needed to calculate financial indicator ratios; insufficient reserve accounts; no annual operating budget; water system revenues are siphoned off for non-utility use.
- Financial plan exists, but does not cover future revenues, operating expenses, reserves, and capital improvements; financial indicator ratios in the red; insufficient reserve accounts; annual operating budget has insufficient revenue to meet all expenses; no AMP/CIP, water system revenues are siphoned off for non-utility use.
- Financial plan exists and covers most but not all future revenues, operating expenses, reserves, and capital improvements; financial indicator ratios mix of red, yellow, and green; insufficient reserve accounts; annual operating budget has sufficient revenue to meet all expenses; no AMP/CIP, water system revenues dedicated for utility use.

- Financial plan covers future revenues, operating expenses, reserves, and capital improvements; financial indicator ratios in the green, sufficient reserve accounts; annual operating budget has sufficient revenue to meet all expenses; AMP/CIP exists and is being implemented; water system revenues dedicated for utility use.