

Recommended Approach for Conducting a Self Assessment Using the Effective Utility Management Benchmarking Tool

Web Report #4313a

Subject Area: Management and Customer Relations



Recommended Approach for Conducting a Self-Assessment Using the Effective Utility Management Benchmarking Tool

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Sponsored by:

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6666 West Quincy Avenue
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Published by the



INTRODUCTION

Utilities are facing significant challenges as they strive to increase the quality and lower the cost of services to their customers. These challenges include:

- Increased customer level of service demands
- Financial constraints
- Aging infrastructure
- Security and emergency response concerns
- Growth
- Climate change and reduced environmental footprint pressures
- Stricter regulatory requirements
- Retirement of experienced staff and related workforce shortages

The U.S. Environmental Protection Agency (EPA) and organizations representing North American water and wastewater utilities have been aware of these challenges and identified Effective Utility Management (EUM) practices to address them. In May 2006, EPA, the American Public Works Association (APWA), the Association of Metropolitan Water Agencies (AMWA), the American Water Works Association (AWWA), the National Association of Clean Water Agencies (NACWA), the National Association of Water Companies (NAWC), and the Water Environment Federation (WEF) formed the Effective Utility Management Collaborating Organizations (Collaborating Organizations) and in May 2007 signed an agreement to support effective utility management collectively and individually in the water sector and to develop a joint strategy to identify encourage and recognize excellence in water and wastewater utility management. Subsequently, [*Effective Utility Management: A Primer for Water and Wastewater Utilities*](#) (2008) was published that outlines the following “Ten Attributes of Effectively Managed Water Sector Utilities”:

1. Product Quality
2. Customer Satisfaction
3. Employee and Leadership Development
4. Operational Optimization
5. Financial Viability
6. Infrastructure Stability
7. Operational Resilience
8. Community Sustainability
9. Water Resource Adequacy
10. Stakeholder Understanding and Support

The tool developed by the WRF is aligned with the *Primer* and will support water sector utilities in conducting a self-assessment in order to improve utility operations in one or more of the ten attributes to fit with their utility goals.

This is an excerpt from the final report for the Water Research Foundation project “Performance Benchmarking for Effectively Managed Water Utilities” and identifies steps that a utility could follow to conduct a self-assessment using the benchmarking framework, benchmarking tool, and other resources developed for this project. The suggested approach is

based on the experience of the project team in conducting benchmarking studies and suggestions from the utilities that used the benchmarking tool to conduct self-assessments during Phase 2.

The seven-step process described below provides a recommended approach that utilities can adapt to meet their specific needs:

1. Form a benchmarking team and develop an initial plan of action.
2. Select EUM attributes to assess.
3. Select associated practice areas and performance measures to assess.
4. Revise plan of action (if needed).
5. Conduct self-assessment benchmarking for selected attributes, practice areas, and performance areas.
6. Evaluate results and identify methods to narrow priority gaps.
7. Develop follow-up plans.

Each utility's context, however, is unique, including different goals for conducting self-assessments, varying histories with performance measurement, and varying availability of data, information and other resources to populate the assessment. As such, adaptation of the approach and the sequence of these steps may be needed to provide maximum efficiency and value. Smaller utility systems may find that they can streamline or combine some of the steps recommended because they have fewer groups and staff members that need to be engaged to address the recommended activities, and because they may have fewer data sources to be reviewed in scoring performance for the selected metrics.

FORM A BENCHMARKING TEAM AND DEVELOP AN INITIAL ACTION PLAN

Because the elements of EUM cut across most major functions performed at a utility, it is important to form a team that includes representation of the key groups and functions within the utility. Feedback from the utilities that tested this process indicated that it is important to have executive sponsorship for the program for it to be given adequate priority within the organization.

The number of team members will vary. In large utilities with many divisions or departments (such as Planning, Engineering, Construction, Compliance, and Finance), at least one representative from each of these primary groups is recommended. In smaller utilities, several senior staff members may address multiple primary functions, and a relatively small core team of three or four people may address the primary stakeholder interests and functions within the organization.

As part of the initial effort a preliminary plan of action needs to be developed to include such elements as:

- **Identify team leader.** Identify someone within the utility who will be responsible for leading the effort. This person will be responsible for keeping the process moving despite the many other demands on staff time, organizing meetings when needed, and facilitating discussions on issues such as which attributes should be addressed and how identified performance gaps should be narrowed.
- **Prepare schedule for conducting the self-assessment.** Reasons to establish an initial schedule for the self-assessment include:

- Connection to other utility processes. The results of the self-assessment may be intended to inform strategic planning and budget development processes at the utility. As such, the benchmarking process should be scheduled so that the results can be used to identify resources and other inputs in the budget and strategic planning processes and documents.
- Maintenance of momentum. Because staff members who will be participating in the self-assessment process are likely to have multiple roles in the utility organization, it is important to establish specific schedules and milestone dates so that the process keeps moving forward.
- **Provide preliminary confirmation of resources (staff time plus expenses).** By developing a specific plan and schedule, staff time requirements can be established and balanced with other requirements for staff members whose participation is needed for the effort to be successful.
- **Charter the core team.** A chartering session should be conducted for the core team. Chartering should include executive endorsement and support, a review of the planned schedule and activities, and a team-developed set of program goals. For smaller utilities, where only a small number of staff members may comprise the full team, there may not be a need for a formal chartering session. In this case, a chartering session should be considered an optional activity if the core team has already achieved alignment on goals for the benchmarking and schedule through more informal team communications.

To provide an estimated level of effort regarding the schedule and staffing parameters, participating utilities were able to conduct a self-assessment within a 3-month schedule, and on average, they spent about 32 person-hours conducting the initial self-assessment.

SELECT EUM ATTRIBUTES

The first major activity for the self-assessment team, once formed and chartered, is to select which of the 10 EUM attributes identified in the Primer should be addressed in the initial assessment process. It is recommended that utilities not try to address all Ten Attributes at once. Just as utilities that have implemented Environmental Management Systems (EMSs) have found that it is useful to do so progressively, that is, by addressing initial priority elements and then branching out to address others (*Environmental Management Systems: A Tool to Help Water Utilities Manage More Effectively*. AWWA Research Foundation and EPA 2006); it is useful to begin work on EUM issues by first addressing those attributes deemed of greatest interest/concern to a utility's stakeholders:

1. Product Quality
2. Customer Satisfaction
3. Employee and Leadership Development
4. Operational Optimization
5. Financial Viability
6. Infrastructure Stability
7. Operational Resiliency
8. Community Sustainability

9. Water Resource Adequacy
10. Stakeholder Understanding and Support

The process for identifying priority attributes to address will depend on a number of factors, including whether the utility has engaged in previous efforts related to EUM and the EUM Primer. Utilities that have previously worked with the EUM Primer may already have selected and prioritized attributes as part of those efforts. Utilities without prior EUM experience will need to start by familiarizing themselves with the basic principles of the EUM program. For utilities that fall into the latter category, it is recommended that they review the Primer, case study documents, and other related materials, which can be found on the website that was established at the time of publication of the Primer in 2008 (www.watereum.org/).

For utilities that have not previously identified priority EUM attributes through previous efforts, a useful tool is the self-assessment process identified in the Getting Started section of the interactive primer located on the EUM website at <http://www.watereum.org/resources/interactive-primer/getting-started/>. A downloadable spreadsheet file at this website can be used to help decide an organization's most important attributes.

Another aid for selecting appropriate attributes is to review the practice areas and performance measures that have been defined within each of the Ten Attributes, as summarized in the last ten slides of the *Users Guide* and detailed within the benchmarking tool. Review of the performance measures in the tool provides access to the explanatory notes and more specific definition of how performance is measured, which in some cases may aid the decision of whether a specific attribute is of high priority to an organization. Several utilities that tested the process and tool during Phase 2 commented that they tended to gravitate toward attributes where they had information readily available or where they knew they would perform well. In retrospect, they indicated that perhaps they would have benefited more by focusing initially on attributes where they were more likely to have performance gaps.

The utility will then need to weigh the relative importance of the selected attributes. There is significant flexibility in the relative weighting of the attributes. For example, one attribute could be assigned most of the weighted value, or attributes could be assigned equal weight. It is recommended that the full EUM core team be engaged to help determine the relative weight assigned to the selected attributes. As the weights represent the relative importance of each attribute, the user can use any range of numbers, and the tool normalizes the weights by converting them into percentages. For practical purposes, the maximum range allowed is 1 to 100, however, based on user preference the range can also be 1 to 5 or 1 to 10, etc. A weight of zero excludes the attribute from the framework.

SELECT PRACTICE AREAS AND PERFORMANCE MEASURES

Once a utility has identified the attributes to work with, the next step is to select the practice areas and performance measures within practice areas to include in the utility's customized EUM framework.

To provide some context on what practice areas are, consider "Product Quality", one of the 10 attributes. Per the EUM Primer, this attribute is described as "Produces potable water, treated effluent, and process residuals in full compliance with regulatory and reliability requirements and consistent with customer, public health, and ecological needs". Thus, for this

attribute practice areas are processes or procedures that utilities develop, implement, and track to meet the goals described in the attribute. In the example above, they are processes that a utility employs to fully comply with regulatory requirements, to meet customer service levels, etc. For the purpose of the benchmarking tool developed for this project, the Product Quality attribute was defined to include three practice areas:

- Comply with regulatory and reliability requirements
- Address customer needs
- Address public health and ecological needs

The effectiveness and efficiency of these practice areas can be assessed by performance measures. Performance measures can be quantitative or qualitative. For example, in the case of Product Quality, “extent to which service interruptions are reduced to target levels” is one of the performance measures that assesses the effectiveness of the practice area called “addressing customer needs”. This is an example of a quantitative performance measure.

Using the EUM Primer as a starting point, the practice areas and performance measures were developed based on a literature survey and research team experience, then enhanced during Phase 1 based on input and review by participating utilities. Once the benchmarking framework and tool were developed, the practice areas and performance measures were further refined based on feedback provided by the expanded group of utilities that tested the tool during Phase 2.

It is recommended that all members in the EUM core team be engaged in selecting the practice areas and performance measures. The sub-steps in this process, as described below, include:

- Identify practice areas within the selected attributes.
- Weigh the relative importance of selected practice areas.
- Select applicable performance measures within each selected practice area.

Identify Practice Areas within the Selected Attributes

For each attribute selected, the utility will need to select at least one practice area. When determining which practice areas to include, utilities are encouraged to review the performance measures within each practice area and consider:

- Relevance of the performance measures and aligned practice area to achieving the utility’s key mission and goals.
- Consistency with other related tracking and reporting the utility may already have in place.
- Availability of information and data to make informed ratings of the current and target performance.¹

¹ If the utility determines that the practice area and aligned performance measures are useful but staff is not currently in a position to accurately score current or target performance, it is recommended that this measure be excluded from the utility’s initial customized EUM framework. Instead a plan of action for developing information that would enable the utility to include the measures in future updates should be developed.

Utilities are encouraged to include in their customized self-assessment all practice areas that are relevant to their utility's operation for which information to score is available.

Weight the Relative Importance of Selected Practice Areas

Utilities will need to assign a weight to the relative importance for each of the selected practice areas. As was the case for attributes, the weights represent the relative importance of each practice area, the user can use any range of numbers, and the tool normalizes the weights by converting them into percentages. For practical purposes, the maximum range allowed is 1 to 100, however, based on user preference the range can also be 1 to 5 or 1 to 10, etc. A weight of zero excludes the practice area from the framework.

For example, one practice area could be assigned most of the weighted value within an attribute, or several practice areas could be assigned equal weight. It is recommended that the full EUM core team be engaged to help determine the relative weight assigned to the selected practice areas.

Select the Performance Measures within each Selected Practice Area

For each practice area that a utility has selected, the utility will need to select at least one performance measure to assess. Unlike the attributes and practice areas, the user does not assign relative weights to the selected performance measures. To illustrate, if a performance area has six performance measures and all selected performance measures are weighed equally, and only four of them are selected, then each is weighed 25%. During the scoring process, the current and target scores of that practice area become the arithmetic average (mean) of the four current and target scores of the performance measures. These are the scores that are illustrated in the radar graphic display of the attribute. (See the companion PowerPoint guide to the benchmarking tool for examples of the radar graphics.) On the other hand, the score of the attribute is the weighted average of the different practice areas.

The number of practice areas selected determines the number of dimensions of the radar diagram; for example, an attribute with 3 practice areas is displayed in a triangular shape, while another with 5 practice areas will be displayed in a pentagonal shape.

Utilities are encouraged to include all performance measures within selected practice areas that are relevant to their utility's operation and for which data to assign current and target performance scores are available. It should be noted that the performance measure scales and definitions of each "degree of implementation" and "level of performance achieved" criterion can be revised by a user of the tool, if the utility feels it needs to modify the definitions. This can be done by double clicking on the appropriate cells of the matrix (i.e. the headers of the rows and columns).

REVISE PLAN OF ACTION (IF NEEDED)

Once the utility's customized self-assessment has been developed, it is recommended that the initial plan of action be revisited and revised, if necessary, before scoring and other benchmarking activities begin. Reasons that revisions may be needed at this point include:

- **Benchmarking team composition.** Scoring the performance measures for the attributes and practice areas selected for inclusion in the utility’s customized EUM framework may require input from staff with a different mix of technical expertise than the EUM core team envisioned when the initial plan of action was developed.
- **Benchmarking resource requirements.** The utility may need to gather or analyze more data for the selected performance measures than was anticipated at the time the initial plan of action was developed.
- **Schedule considerations.** Based on the time required to develop information and conduct scoring for the selected performance measures, the utility may need to revise the schedule for scoring and evaluating results.

CONDUCT SELF-ASSESSMENT BENCHMARKING FOR SELECTED ATTRIBUTES, PRACTICE AREAS, AND PERFORMANCE MEASURES

Based on the revised plan of action, the next step is to conduct the self-assessment benchmarking, which requires identifying current and target performance for all performance measures that have been included in the customized self-assessment.

The specific process for conducting the scoring will depend on such factors as the number of attributes and performance measures that are selected, the size of the utility organization, and the size of the benchmarking team. During Phase 2 when utilities tested the tool, several methods were used to conduct the scoring:

- Some utilities used a small core team to conduct the initial scoring and then provided an opportunity for the full team to review and provide input to the assignment of both current and target scores.
- Other utilities assigned scoring to specialists in the fields for each selected attribute and then provided the full team the opportunity to review and provide input on the assigned scores.
- Still other utilities did the scoring as a full team in a workshop setting.

Each of the approaches described above is a valid method for conducting the self-assessment, and other permutations and approaches are also likely. Regardless of the method employed by a utility, it is important that there be an opportunity for the full team to review and provide input to the scoring to ensure transparency in the process and to see that the assessment provides the best available knowledge base of the full organization. Providing the opportunity for input on the scoring also will help to secure internal stakeholder support for results and findings of the process.

The benchmarking tool includes a validation check that ensures that utilities have scored all selected performance measures and that the framework is complete. The validation confirms that at least one practice area has been selected for each selected attribute, that at least one performance measure has been selected for each selected practice area, and that all selected performance measures include a score for both current and target performance.

EVALUATE RESULTS AND IDENTIFY METHODS TO NARROW PRIORITY GAPS

The next step is to review the performance results of the self-assessment. It is recommended that a staff workshop be used for this step. Many of the utilities that participated in testing this process indicated that the dialogue on findings and strategies to move forward was one of the most valuable parts of this self-benchmarking process. The review should include an analysis at a high level (for example, how close is the utility to meeting performance goals for the highest priority attributes?) and also at a detailed level (for example, why is the utility failing to achieve target performance for specific performance measures?). The graphic and tabular results summaries in the benchmarking tool facilitate higher level discussions of findings, and the detailed performance scoring sheets can be used for discussing gaps at the individual performance measure level.

Examples of questions that might be useful to frame the evaluation of results and development of strategies include:

1. Attribute and overall level
 - a. How close is the utility to meeting its target performance levels overall and for the highest priority attributes?
 - b. Are there any surprises in the findings at these high levels (for example, unexpected gaps or performance greater than target)?
 - c. Are the gaps a result of external factors or factors that the utility could affect by increased focus or reallocation of resources?
2. Practice area and performance measure level
 - a. Are there any surprises in the findings for specific performance measures for priority attributes?
 - b. What specific strategies could the utility employ to address gaps in performance for priority attributes?
 - i. What specific actions need to be taken and by whom?
 - ii. What resources are needed to narrow the gaps?
 - iii. What timeframe should be set to achieve the target levels of performance?
 - iv. Who needs to act to approve the resources required to narrow the gaps?
 - c. Are there any performance measures where current performance exceeds target performance for which resources could be reduced to assess gaps for other priority measures?
 - d. Should the target levels of performance be adjusted for any performance measures, based on the results for that measure or overall priorities of the utility in light of the self-assessment results as a whole?

The specific strategies that should be considered and the development of a timeline for narrowing identified gaps will vary depending on a utility's context. Factors such as budget, staff availability, and other competing initiatives will influence the viability of specific strategies that might be considered. At a high level, examples of strategies that could be considered include to:

- Identify specific actions to address the level of performance, such as:
 - Devoting additional budget to the issue.
 - Consulting with appropriate internal and external stakeholders



- Assigning specific staff members or groups with the utility to be responsible for improving performance in this area.
- Identifying and securing additional data or other improvements that need to be made to achieve or track performance in this area.
- Identify specific actions to address the degree of implementation, such as:
 - Revising policies to extend performance achieved from some groups/divisions within the utility to a larger number of groups/divisions within the utility.
 - Embedding performance goals into individual employee or group objectives related to achieving improvement in this area.
 - Encouraging supportive resource allocation decisions.
- Increase overall budgets/resources.
- Reallocate budgets/resources; for example, if current performance currently exceeds the target level for some practice areas, are there opportunities to reallocate some resources to address areas where there are priority gaps?

To illustrate, if a utility identifies a significant performance gap for the Financial Viability attribute measure related to the balance between debt and equity funding sources for capital programs (Figure 1), candidate strategies might include to:

- Raise rates to enable more direct equity expenditure for the capital program.
- Reduce the pace of the implementation of the utility’s capital improvement program, which would allow the utility to reduce bonding programs and thus debt service requirements.
- Use more of available reserve funds to implement the utility’s CIP to reduce reliance on debt.

Utilities should be creative when identifying the range of potential strategies to address priority gaps. Team members should be encouraged to consider both incremental steps that could be taken and bold, sweeping initiatives and new ways of doing business. Utilities might find it useful to conduct a scenario analysis, such as detailed in the Frame the Problem step in the *Capital Planning Strategy Manual* (AWWA Research Foundation 2000) to identify strategies most likely to address the range of internal and external future contexts the utility is likely to face.

The viability of the identified strategies will be utility-specific. For example, regarding the gap for the debt to equity expenditure balance shown in [Figure 1](#), the opportunity to implement rate increases will depend on the level of current rates and the willingness of stakeholders and decision makers to support rate increases. Some utilities that are implementing compliance programs may not have much flexibility to reduce the pace of implementation of their capital improvement programs. The ability to use reserve will depend on the level of reserves available and reserve requirements. This may be dictated by bond covenants or financial policies of the utility or a higher level governing body, such as a city council or regional authority.

Attribute 5: Financial Viability					
Practice Area 1: Develop Sound Financial Plan					
Performance Measure 4: Appropriateness of Balance of Capital Spending Between Debt & Equity Expenditures Main Menu					
Level of Performance Achieved					
	Use 100% debt financing for capital program	Use equity sources for at least 5% of CIP expenditures	Use equity sources for 6-10% of CIP expenditures	Use equity sources for 11% to 20% of CIP expenditures	Use equity sources for at least 20% of capital program expenditures
In order to meet such utility objectives as inter-generational equity and strong credit ratings, there is typically value in funding capital programs through a combination of long-term borrowing and cash (equity) sources [...]					
Agency has not developed a specific debt-to-equity target for its capital spending.					
Target ratio has been established but not yet achieved.			Current		
Target ratio has been established and achieved for less than 3 years.					
Target ratio has been established and achieved consistently for 3-5 years.					
Target ratio has been established and achieved consistently for more than 5 years.					Target

Legend: green = current, blue = target, yellow = current+target

Figure 1 Example of path to narrow gap for one performance measure

Once a strategy has been selected, a utility should establish a timeline to narrow the gap. Where substantial gaps require significant resources, it could take a number of years to achieve the target level of performance. As shown in Figure 2, for the utility with the significant gap in debt to equity spending, after 5 years of concerted effort, the utility might still fall short of its target, although it would have made significant progress toward the target level of performance.

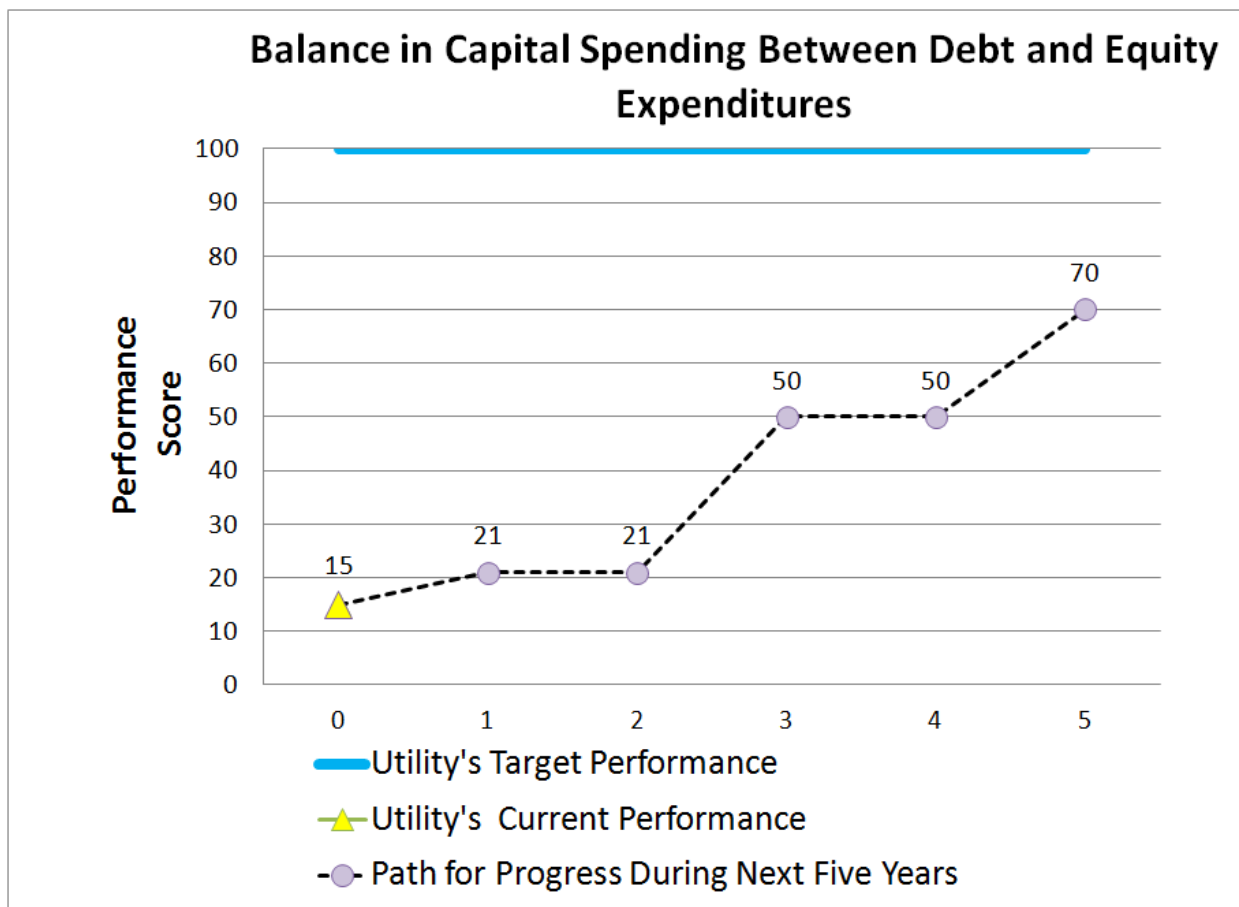


Figure 2 Example of timeline to narrow gap for one performance measure

DEVELOP FOLLOW-UP PLANS

The next step is to develop the following specific follow-up plans:

- Implementation plans for strategies
- Tracking of the implementation plans
- Future benchmarking plans

Implementation Plans for Strategies

For each of the priority gaps that were identified during the evaluation of results, a specific implementation plan should be developed. Specific resource requirements should be determined, and a responsible party or parties within the utility should be assigned so that these items are not overlooked. A schedule for completion and interim milestones should also be developed.

The actual activities to narrow the identified priority gaps will need to be sequenced in light of resource availability, including key staff resources and expenses for any outside services, equipment, or other such resource needs. The implementation plan should form the basis for

organizing these activities. It should be recognized, however, that revisions and updates to the plan may be needed as new insights are gained through the implementation period. These may be related to internal utility performance and, where appropriate, to insights gained through outreach or input from external stakeholders whose engagement may be critical to narrowing key gaps.

For example, for the Financial Viability gap illustrated earlier, follow-up data-gathering, analysis, and review may provide key insights regarding the willingness of the utility's governing body and/or customers to implement rate and fee increases that would help to narrow the identified gap in the balance between debt and equity capital spending. Similarly, efforts to slow the pace of the capital program might identify greater than anticipated impacts on the operational efficiency of the system or ability to maintain compliance with key regulations. The utility's leadership team will need to ensure that there is sufficient flexibility in the tracking and implementation of the program to provide for mid-course corrections and revisions to the strategy as key insights are gained.

Tracking the Implementation Plans

There should be a periodic tracking of progress toward meeting the milestones identified in the implementation plan. It is recommended that an update be developed and a meeting held to discuss progress at least quarterly, or more frequently if needed.

Future Benchmarking Plans

By the close of the review of findings from the current self-assessment benchmarking, it is recommended that an interval for update be established. Many of the utilities that tested the tool and process during Phase 2 indicated plans to update their self-assessment annually. Others indicated plans to update the assessment more frequently, such as quarterly or semi-annually, due to the expected availability of information for many of the performance measures. In some cases, utilities might elect to update the self-assessment on a longer frequency, such as every 2 or 3 years.

The specific interval should be identified to fit data and resource availability and also to provide timely and updated input into planned updates for the utility's related planning processes, such as strategic plans and capital and operating budget development. It is recommended that the update process include a deliberate consideration of whether changes should be made to the selected framework (attributes, practice areas, and performance measures selected, and weights assigned to attributes and practice areas). Changes to the items included or weights could result from such factors as improved data availability, changing mission or priorities as a result of input from stakeholders or external factors affecting the utility.