Schumaker & Company

Microsoft CERTIFIED Partner

Proposal
for the
New York Public Service Commission

To Provide
Management Audit Services of
Niagara Mohawk Power Corporation d/b/a National Grid

Case Number: 08-E-0827

August 15, 2008

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I. Introduction

The New York Public Service Commission has directed that an independent third-party consultant be retained to conduct a comprehensive management audit of Niagara Mohawk Power Corporation d/b/a National Grid (National Grid). This audit is not to be performed using the organizational unit (silo) approach; however, it will include, but not be limited to, an investigation of the company's construction program planning in relation to the needs of its customers for reliable service and an evaluation of the efficiency and performance of the company's operations as required by Public Service Law. The National Grid management audit will focus on electric transmission and distribution in New York State and will not include natural gas.

A. Electric Utility Industry Issues Impacting National Grid

"Over 6,000 companies in the US are involved in the wholesale trade and retail distribution of electricity, with combined annual revenue of more than $220 billion. Companies include owners of high voltage transmission lines, retail distribution systems, and intermediaries like energy dealers and brokers. The US consumes close to 4 billion megawatt-hours (MWh) of electricity per year, about 50 percent of which is bought and sold on the wholesale market."[1]

The energy industry has changed significantly in the last ten years. With the advent of deregulation, energy companies have been forced to rethink and restructure their business models. Previously vertically integrated companies have had to separate their business into individual components with generation assets being put into separate entities or divested altogether, the creation and, in many cases, dissolution of energy trading operations, the control of transmission assets being ceded to some form of independent system operator (ISO), the energy distribution and customer service operations of the utility being restructured, and the unbundling of rates into individual generation (or supply), transmission, distribution, and customer service components.

Currently the electric energy industry is in state- and federally-sponsored transitions, or electric restructuring. The traditional electricity industry consists of large investor-owned utilities; municipal utilities; rural cooperatives; and government entities, like the Tennessee Valley Authority (TVA), that owns the generation, transmission, and retail distribution facilities within a limited area, and serves all customers within that area as tightly regulated "natural monopolies." Under restructuring, the generation, transmission, and distribution operations are carried out by separate companies, and the owners of local distribution lines make their lines available to competitors. About half the states have adopted restructuring legislation, but only a third is actively engaged in restructuring.

[1] Hoovers (http://www.hoovers.com/austin-energy/--ID__54262--/free-co-competition.xhtml) 4/1/2008

The intended purpose of moving toward a less regulated electricity market is to decrease the cost of electricity by fostering competition among producers. The practical effect of federal and state legislation has been the divestment of generation facilities by local utilities. These changes have also brought about the formation of larger utilities (whether adjacent to each other or distant) through company mergers, such as American Electric Power and Central and Southwest, Duke Energy and Cinergy, MidAmerican and PacifiCorp, Commonwealth Edison and PECO Energy Company, and others. Despite restructuring, many local electricity distributors are owned by utility holding companies that also own power generation facilities, wholesale transmission lines, and wholesale power trading companies.

Although much has changed in the electric utility industry, some of the basics remain – such as electricity must still flow through wires. The actual operations of retail electricity distributors consist of generating or acquiring wholesale power (often under long-term supply contracts), maintaining and extending a line network, and billing and collections. The facilities and equipment needed to provide this energy must be built and maintained, meters must be read and bills generated, and storms must be addressed. New technologies have been developed in the last ten years that have changed the way that a utility can perform some of these functions, but they all still revolve around having an adequate trained workforce to meet the day-to-day needs of the customer. How well the utility is organized and managed to address these basic business requirements, including its interactions with affiliates, is of interest for this audit.

Specifically, as per the request for proposal (RFP), the audit will therefore focus on the following elements for electric distribution and transmission operations:

- Corporate mission, objectives, goals, and planning
- Long-term load forecasting
- Supply procurement
- Long-term system planning
- Capital and O&M budgeting
- Program and project planning and management
- Work force management
- Performance and results measurement

Schumaker & Company consultants recognize that this audit is not to be performed using the organizational unit (silo) approach. At the same time, however, it should include, but not be limited to, an investigation of the company's construction program planning in relation to the needs of its customers for reliable service and an evaluation of the efficiency and performance of the company's operations as required by Public Service Law. The RFP suggests that the scope of this audit be based on the framework of a series of elements or functions that are generally sequential in nature that can be viewed as a flow diagram or feedback loop. The elements, although generally sequential, require feedback from one or more of the latter elements to allow for revisions, adjustments, and other changes, over both the short and long term. This framework will begin with the element of "corporate mission, objectives, goals and planning" and end with the element of "performance and results measurement." The "end" is actually the means by which the flow of the elements is connected to the first element.

This feedback typically facilitates the changes and improvements that will then result in better performance.

The audit will emphasize an assessment of National Grid's efficiency and effectiveness in meeting its mission, particularly with respect to meeting its performance goals and the extent to which there are opportunities for improvement.

II. Scope and Objectives

This chapter presents Schumaker & Company's understanding of the scope and objectives of the forthcoming audit of Niagara Mohawk Power Corporation d/b/a National Grid (National Grid).

A. Objectives

Generally, the Commission's objectives for audits are to:

- Determine whether operating and maintenance expenses can be reduced
- Receive recommendations for instituting changes or undertaking the studies necessary to achieve savings or improvements
- Obtain a quantification of savings which will result from implementing the consultant's recommendations
- Receive a written report describing the management and operations of the utility for the information of the Commission, Staff, and the ratepayers
- Identify specific opportunities for improved business processes, systems, organizational design, planning, employee productivity, customer service, etc.

We recognize that this audit is not to be performed using the organizational unit (silo) approach. At the same time, however, it will include, but not be limited to, an investigation of the company's construction program planning in relation to the needs of its customers for reliable service and an evaluation of the efficiency and performance of the company's operations as required by Public Service Law.

B. Scope

The request for proposal (RFP) suggests that the scope of this audit be based on the framework of a series of elements or functions that are generally sequential in nature that can be viewed as a flow diagram or feedback loop. As per the RFP, the management audit should therefore focus on the following elements:

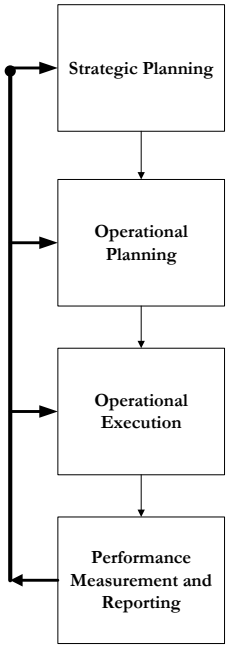
- Corporate mission, objectives, goals, and planning
- Long-term load forecasting
- Supply procurement
- Long-term system planning
- Capital and O&M budgeting
- Program and project planning and management

- Work force management
- Performance and results measurement

The audit will emphasize an assessment of National Grid's effectiveness in meeting its mission, particularly with respect to meeting its performance goals and the extent to which there are opportunities for improvement.

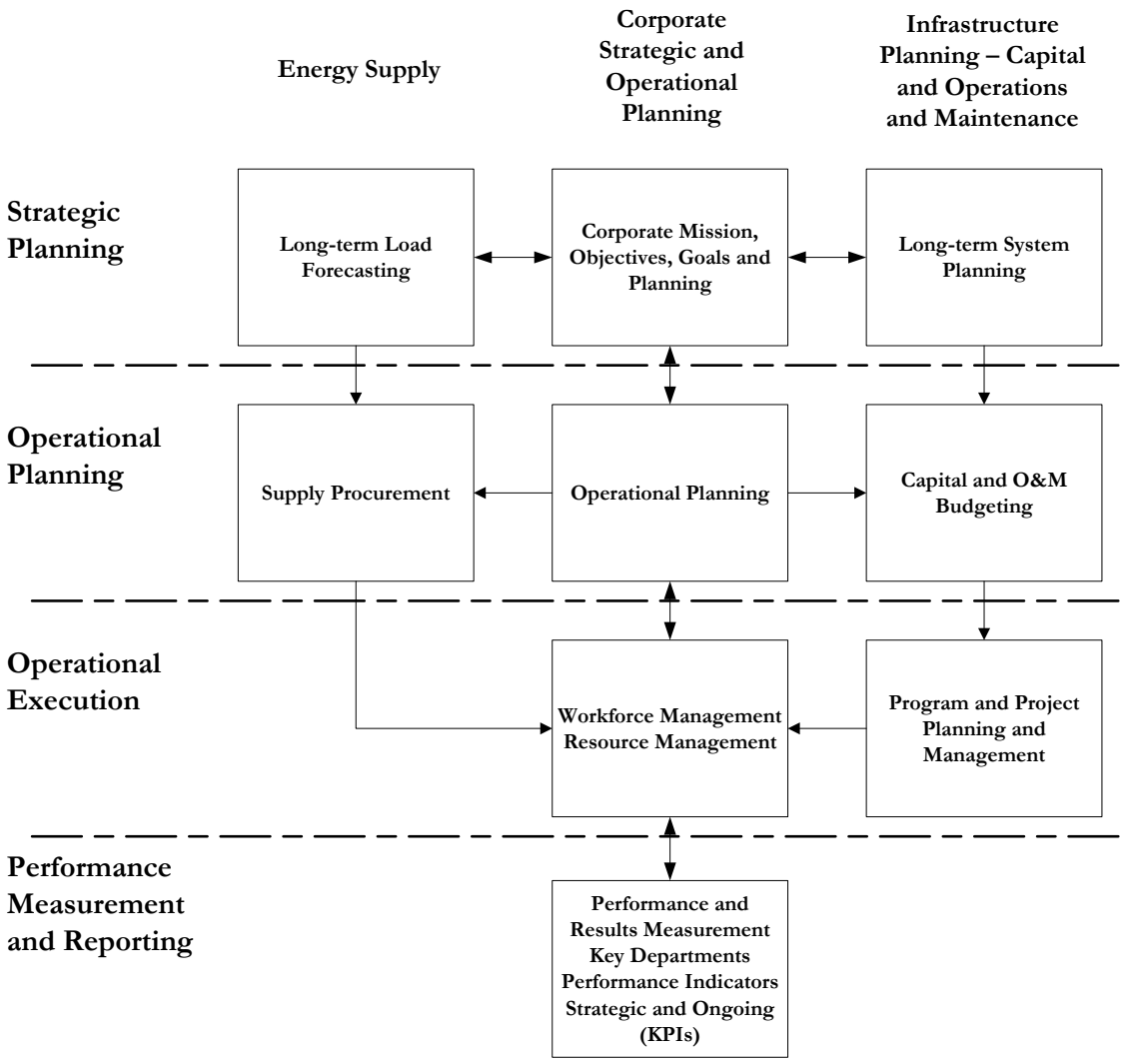
Schumaker & Company has organized our approach to the project using a simplified business flowchart process as shown in *Exhibit II-1*.

Exhibit II-1
Schumaker & Company Simplified Approach



Within this simplified approach, we have grouped each of the items mentioned in the RFP into individual work packages that are related in the overall flow process as shown in *Exhibit II-2*.

Exhibit II-2
Schumaker & Company Audit Approach



As part of your proposal, we have also included workshop-type training for New York State Department of Public Service (NYSDPS) Staff. We have allowed for five full-day workshops at the NYSDPS offices in Albany distributed over the audit duration. All of the above items have been considered in the development of our proposal.

C. Audit Approach Highlights

The Schumaker & Company project team's policy of conducting high quality audits within established time frames entails the coordination of several aspects of the project, as summarized below:

- *Active Participation and Involvement by NYSDPS and National Grid* – The Schumaker & Company project team embraces a close working relationship with NYSDPS and National Grid management and staff in conducting this audit. We believe that we have demonstrated this in our previous work. This type of relationship supports the NYSDPS's full understanding of the basis for our findings and ensures their satisfaction that all pertinent issues have been addressed. We have operated under these requirements in previous audits and found that this high degree of participation leads to a superior work product. We accomplished this in past audits in Indiana, Kentucky, Massachusetts, Maine, Michigan, New Jersey, New York, Ohio, Pennsylvania, South Carolina, and Texas.
- *Logical, Efficient Methodology* – There are three phases of our audit methodology. All of the phases, which are each composed of several tasks (*Step I – Project Orientation and Final Work Plan*, *Step II – Detailed Review and Analysis*, and *Step III – Report Preparation*), and discussed in detail in *Chapter III–Approach, Methods, Procedures, and Audit Management*, with their completion dates and the anticipated due dates for major project deliverables. Our proprietary project management system, Project Management Information Application (PMIA), has been developed specifically to support and facilitate our investigations and analysis, based on our past experiences with other audits of utility operations and performance, management audits, and code of conduct reviews.
- *Generally Accepted Auditing Standards* – This audit must be conducted on an independent, objective basis, adequately supported by proper working papers, and reported constructively with due consideration of pertinent comments on findings, conclusions, and recommendations. Our procedures are in accordance with the standards as defined in the request for proposal and set forth in the National Association of Regulatory Utility Commissioners' "Consultant Standards and Ethics for Performance of Management Analysis," dated November 15, 1989, and with the U.S. General Accounting Office's "Standards for Audit of Government Organizations, Programs, Activities, and Functions," as applicable to public utilities. PMIA has been specifically developed to meet the requirements of these standards.
- *Straightforward, Concise Final Report* – The final report will contain detailed, meaningful findings and well-developed conclusions. It will clearly address the level of compliance desired by the NYSDPS.
- *On-Site Presence* – Approximately 60% of the staff time will be spent on-site. We believe this degree of involvement is essential to perform a thorough investigation and provide a high degree of interaction with the NYSDPS and National Grid management and staff.

- *Rationale for Findings* – The Schumaker & Company project team's findings will be based on facts that are correct and true and, when combined with professional experience, will provide a complete perspective of the services under review. Furthermore, substantiation (audit trail) for each finding will be evident in the project's working papers. To ensure that an adequate audit trail is established and maintained, we adhere to generally accepted auditing standards, as described previously. These standards provide guidance in the formulation of objective, independent audit findings supported by proper working papers and reported constructively. The final report will be fair and equitable in addressing the results of the evaluations in each area of investigation.
- *Quantification of Recommendations* – Every attempt is made to categorize and quantify the cost and benefits of each recommendation. Additionally, each of the functions or issues will be rated based on its operating or performance level relative to its optimum as of the time of the audit.
- *Project Management and Control* – A project must be well planned and managed to ensure that NYSDPS's objectives are realized and to prevent disruption of utility operations. In the conduct of this audit, Schumaker & Company's project management procedures will address both technical and administrative issues. We are committed to ensuring that the project's scope is identified, agreed upon, and controlled. We are committed to establishing project administrative procedures that will facilitate conduct of the audit without placing undue burdens on any of the involved staff.
- *Project Automation* – Various analysis and graphics software will be used by the Schumaker & Company project team consultants to perform many of the analyses for the development of findings and conclusions during the audit. In addition, several computerized project management and administrative techniques provided by Schumaker & Company will be used during the project. Our word processing systems facilitate footnoting of all written products to the appropriate working papers. All working papers will be maintained in PMIA, a proprietary Schumaker & Company database system for organizing and managing interviews, information requests, and final work papers on stratified or focused management audits. In addition, graphics and other software will facilitate the communication of our findings, conclusions, and recommendations to the NYSDPS and National Grid in situations where "pictures speak louder than words." Draft task reports are typically transmitted electronically to the NYSDPS and company for review.
- *Independence and Objectivity* – We recognize that, although the Commission has ordered this audit, National Grid has a vested interest in the results. Furthermore, National Grid will be able to use the results of this audit for initiating positive change within its organization. Therefore, we have tailored our audit approach to facilitate the involvement of National Grid management and staff, and their input into the process, while carefully maintaining Schumaker & Company's independence and objectivity.

The preceding principles will help us to focus our resources in conducting this audit of Niagara Mohawk Power Corporation d/b/a National Grid.

Synopsis of Study

We propose to conduct this audit based on a three-step review process, which has been custom tailored to meet the objectives of the NYSDPS. This process will provide the Schumaker & Company project team with a structured approach that is comprehensive and logical, as well as interactive and participative with NYSDPS and National Grid. The process was originally designed to establish and sustain vital, interactive working relationships among NYSDPS, National Grid, and Schumaker & Company project team during the course of a management and operations audit. We have refined this three-step process over many reviews, audits, and studies conducted with the same team members proposed for this project.

We have assembled a project team with a strong working knowledge of utility company operations, as well as current industry issues. Each individual has been carefully selected according to his or her experience, technical expertise, and education in those areas for which he or she is proposed. Schumaker & Company consultants are mature and experienced, with advanced degrees and practical business management experience. They consistently meet high standards of professional competence within their disciplines and have the team skills needed to work collaboratively with client organizations. They continue to earn and maintain various professional qualifications and certifications relevant to their managerial and technical expertise as demonstrated in *Chapter V – Consulting Staff Organization*.

D. Audit Deliverables and Benefits

This section summarizes project deliverables and benefits resulting from our conduct of the proposed audit. The project deliverables that can be expected by the NYSDPS Project Coordinator during the course of this assignment include those tabulated in the following table:

Deliverable	Content	Format
♦ Weekly notice of upcoming interviews and site visits ♦ Informal meetings	Each week, we provide written notice of the interviews and site visits for the following two to four weeks, for review and approval from PMIA, our project management database system. We can provide a copy of this software to all parties and update it on a periodic basis, allowing both parties the opportunity to produce reports as often as they wish. In addition, we hold frequent informal meetings meant to facilitate NYSDPS Project Coordinator input and project team communication.	♦ Written reports ♦ Informal meetings
♦ Monthly written status report	Monthly written status reports will be submitted to the NYSDPS Project Coordinator by the 5th business day following the month's end. Part I will provide a brief, general narrative describing the project's progress, its status to date – ahead, on, or behind schedule – and the reasons for any discrepancies between its progress and the task plan schedule. Part II of the monthly written status reports will consist of status sheets indicating actual hours logged, by individual, by task, as well as other costs (i.e., material and supplies). These status sheets will contain both actual dollars and the percentage of costs compared to budget.	♦ Written report
♦ Interview summaries	A formal interview summary will be prepared within five days of each interview, and will include the consultants' observations and conclusions, information requests generated, issues identified, and required follow up.	♦ Written interview summaries
♦ Progress meetings	To promote optimum participation by, and interaction among, representatives of National Grid, the NYSDPS, and the Schumaker & Company team, we recommend three formal progress meetings during this project. Our project schedule identifies the time intervals of these progress meetings.	♦ Formal progress meetings
♦ Final detailed work plan	At the end of *Step I –Project Orientation and Final Work Plan*, a revised work plan will be prepared and submitted to the NYSDPS for approval. This revised work plan will encompass changes that should be made based on new information acquired from National Grid during this step.. The revised work plan will then be used for both *Step II – Detailed Review and Analysis* and *Step III - Report Preparation.* This information will be included in a resource-loaded critical path method (CPM) schedule for the project, which will be updated, at a minimum, on a monthly basis. This project schedule will be maintained in our offices.	♦ Paper copies ♦ First progress meeting
♦ Draft task reports	The results of our investigations in each functional area will first be drafted as task reports for review first by the NYSDPS staff, and after NYSDPS approval, by National Grid. A three-party meeting will be held for discussion and to obtain National Grid's written comments which will be incorporated, as appropriate, into the final report.	♦ Electronic files or paper copies ♦ Second progress meeting

Deliverable	Content	Format
♦ Comprehensive first draft report	The results of our investigations in each functional area will be compiled into a draft report to the NYSDPS Project Coordinator. After NYSDPS approval, the draft report will be released to National Grid. National Grid will be permitted to review the applicable report and provide written comments, which will be incorporated, as appropriate, into the final report. These draft reports, after consideration of comments from the NYSDPS staff and National Grid, will form the basis for the final report. The report will be indexed to related supporting working papers. Such working papers will be submitted to the NYSDPS Project Coordinator upon request for up to three years following issue of the final report.	♦ One (1) unbound, copy-ready draft report to both the NYSDPS and National Grid.
♦ Final report	Schumaker & Company will prepare the final report based on the draft report, comments received from the NYSDPS Project Coordinator and National Grid and the requirements of the RFP. The final report will be in narrative form, written in terminology meaningful to management and others generally familiar with the subject areas. The report will be fully footnoted.	♦ Ten (10) bound final report copies to the NYSDPS ♦ One (1) electronic copy
♦ Working papers	A working-paper system will be provided that enables the NYSDPS staff to trace a statement of fact in a finding, conclusion, or recommendation to the original source document (such as an interview, document, calculation, or analysis). It includes a computerized, cross-referenced database of all pertinent information collected during the course of the project. These working papers will be available to the NYSDPS during the course of the audit and retained by the Schumaker & Company project team for three years following the release of the final report by the NYSDPS so that the working papers can be provided to the NYSDPS upon request. Also, duplicate working papers and supporting data will be provided to the NYSDPS Project Coordinator and filed in a locked cabinet on National Grid's premises. These documents will also be retained on site for three years following release of the final report	♦ PMIA database records and paper copies
♦ Workshops	We have also included workshop-type training for NYSDPS Staff. We have allowed for five full-day workshops at the NYSDPS offices in Albany distributed over the audit duration.	♦ Five days workshops

III. Approach, Methods, Procedures, and Audit Management

This chapter summarizes the approach, review methodology and procedures, and project management tools and techniques that Schumaker & Company, Inc. (Schumaker & Company) will apply to the comprehensive management audit of Niagara Mohawk Power Corporation d/b/a National Grid (National Grid).

A. Project Approach

Schumaker & Company brings a results-based (as opposed to a process-based) philosophy to management audits such as this one. We also place considerable emphasis on New York State Department of Public Service (NYSDPS) participation, as well as National Grid participation, during the audit. These factors will enable NYSDPS and National Grid to derive maximum benefit from this review.

Schumaker & Company recognizes that this management audit will not be a functional audit. In the course of well over 50 similar audits/reviews, Schumaker & Company team members have developed an approach that has produced consistently sound, constructive results that are generally accepted by all involved parties. Therefore, we have modified our typical approach to ensure that it will be a more business process oriented approach.

We are proposing that the project team follow a three-step study process designed to achieve vital, interactive working relationships among the NYSDPS, National Grid, and our project team. Specifically, the three steps will be as follows:

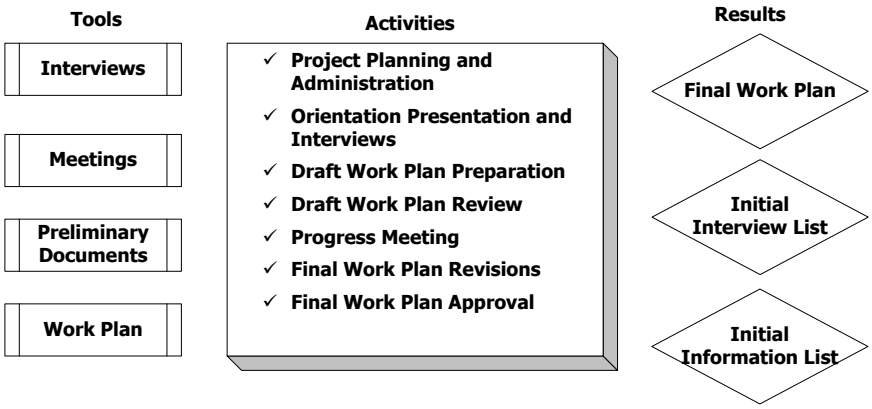
- Step I – Project Orientation and Final Work Plan
- Step II – Detailed Review and Analysis
- Step III – Report Preparation

The review methodology for each of these steps is provided on the following pages.

Step I – Project Orientation and Final Work Plan

Exhibit III-1 illustrates the tools used, activities performed, and results achieved during *Step I*.

Exhibit III-1
Step I – Project Orientation and Final Work Plan



The specific activities we will perform during this step are discussed in detail in the following paragraphs.

Project Planning and Administration

Upon award notification, our *Engagement Manager* and *Project Manager* will initiate project kick-off with a teleconference meeting to include the NYSDPS and National Grid coordinators. The primary objectives of this project planning meeting are to finalize and schedule our investigations, to review and obtain NYSDPS and National Grid concurrence on our project management and administrative procedures, and to set up a timeframe when our consultants can be on-site for a kick-off presentation and to conduct orientation interviews. Specifically, activities to be performed during this step are identified as follows:

- Establishment of administrative procedures for the project with the NYSDPS *Project Coordinator,* and National Grid *Project Coordinator(s)* including:
  - Interview scheduling procedures
  - Information request procedures
  - Progress reporting procedures
- Introduction of Schumaker & Company project management administrative procedures and computer capabilities for use on the project (see *Appendix A*)
- Familiarization of personnel with the use of Schumaker & Company's interview and information request tracking systems, referred to as our *Project Information Management and Administration* application
- Identification and scheduling of orientation interviews
- Submittal and review of initial information requests

Orientation Presentation and Interviews

Based on our experience on prior audits, it has proved to be beneficial for National Grid to make a kick-off presentation to our project team. This kick-off presentation should at a very high level present the following information:

- Overall organization charts for National Grid
- Key business processes to be investigated regarding the key process areas identified in RFP
  - *Corporate mission, objectives, goals, and planning* – organizational unit responsible for performing the business processes, key management personal that we might interview, and key business process or systems (computer or manual) used in support of business process
  - *Long-term load forecasting* – organizational unit responsible for performing the business processes, key management personal that we might interview, and key business process or systems (computer or manual) used in support of business process
  - *Supply procurement* – organizational unit responsible for performing the business processes, key management personal that we might interview, and key business process or systems (computer or manual) used in support of business process
  - *Long-term system planning* – organizational unit responsible for performing the business processes, key management personal that we might interview, and key business process or systems (computer or manual) used in support of business process
  - *Capital and O&M budgeting*– organizational unit responsible for performing the business processes, key management personal that we might interview, and key business process or systems (computer or manual) used in support of business process
  - *Program and project planning and management* – organizational unit responsible for performing the business processes, key management personal that we might interview, and key business process or systems (computer or manual) used in support of business process
  - *Work force management* – organizational unit responsible for performing the business processes, key management personal that we might interview, and key business process or systems (computer or manual) used in support of business process
  - *Performance and results measurement* – current key performance indicators (KPIs) used within each functional area of the organization, including both strategic and operational KPIs; organizational unit responsible for performing reporting of KPIs; key management personal that we might interview; and key business process or systems (computer or manual) used for reporting KPIs

In addition, the individual consultants will conduct brief follow-up interviews with key management personnel involved in the specific business processes to get a better understanding of the processes and systems involved. We will investigate each of the areas in our preliminary work plan, shown in *Chapter IV – Areas and Issues for Review*. Schumaker & Company's *Engagement Manager*, *Project Manager*, and

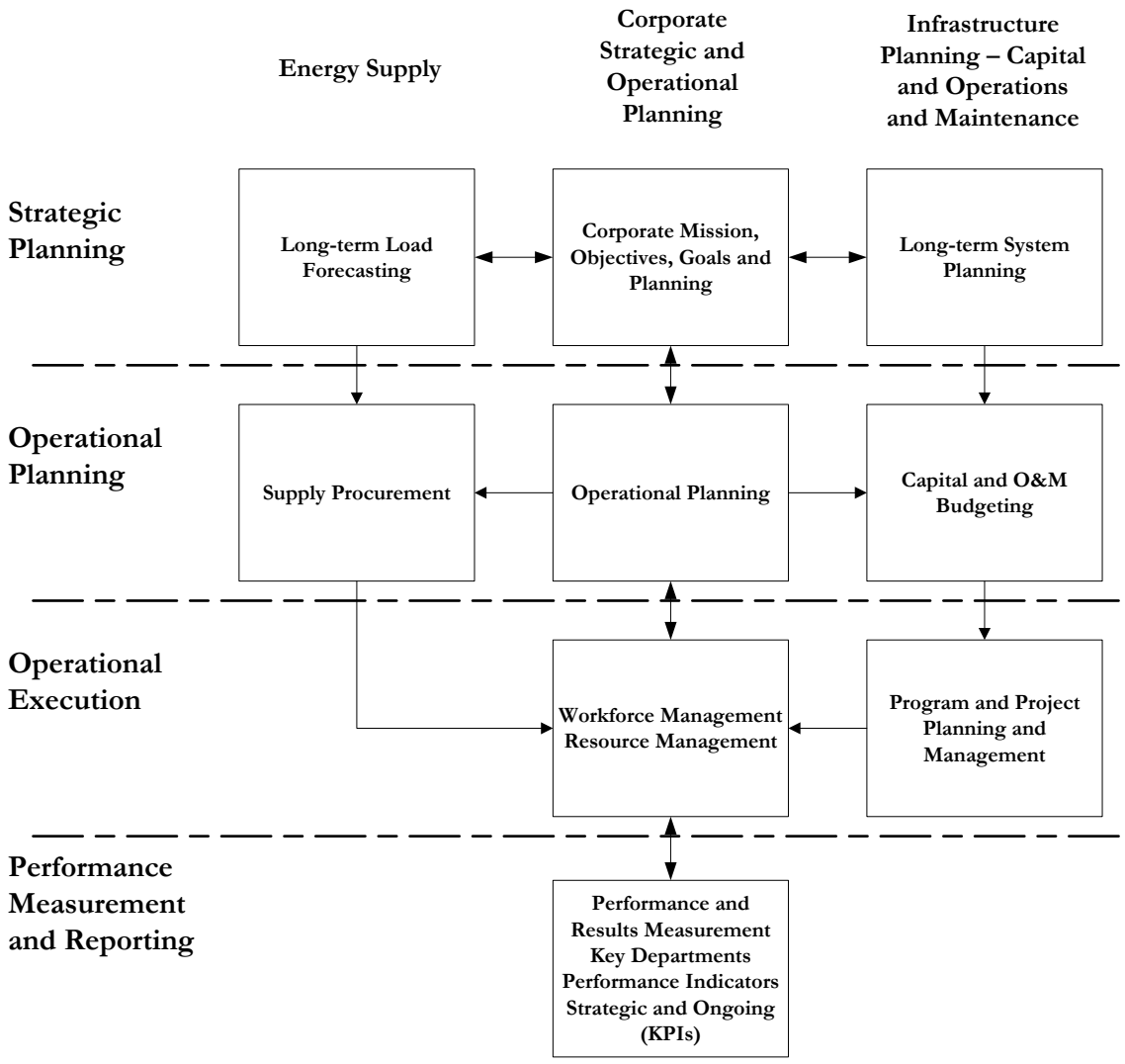
Senior Consultants will conduct these interviews and analyses as a means to more fully understand the issues involved in this project and to determine the extent to which interviews, documentation requests, and sampling of data must be conducted.

Prepare Draft Work Plan

The primary purposes of the above subtask is to develop a deeper understanding of the specific business processes and systems used by National Grid and to provide further technical definition and direction to our project team for preparing a draft work plan for the reminder of the project. Each of the key consultants will be involved in the development of the draft work plan. We will use the scope of work identified in the RFP and our preliminary work plan in *Chapter IV*, combined with our understanding of the business processes and systems within National Grid, as learned from the kick-off presentations and orientation interviews and combined with our consultants' knowledge and the integration of the relevant parts of other management audit work plans that we have developed over the last five years, to draft a detailed work plan for the remainder of this project. This work plan will be a process (see diagram in *Exhibit III-2* shown on the following page) aligned by our interpretation of the business process flows identified in the RFP. Our work plan for each of the identified areas will include detail as follows for each task area:

- **Introduction** – An overall description of a process' functions or activities
- **Proposed Staffing** – An identification of the consultants assigned to the work area and hours
- **Work Plan Areas** – The specific steps and activities we will take in assessing each work plan area are further described, as follows:
  - *Key Business Processes and Indicators* – Key business processes to be investigated and KPIs identified.
  - *Work Steps* – A detailed listing of the principle work steps to be completed and questions to be answered.
  - *Interviews* – Key National Grid personnel to be interviewed
  - *Information Required* – A preliminary list of the information requests required to evaluate this work plan area.

Exhibit III-2
Management Audit Process Flow



The draft work plan will be prepared and submitted to the NYSDPS for review and comment.

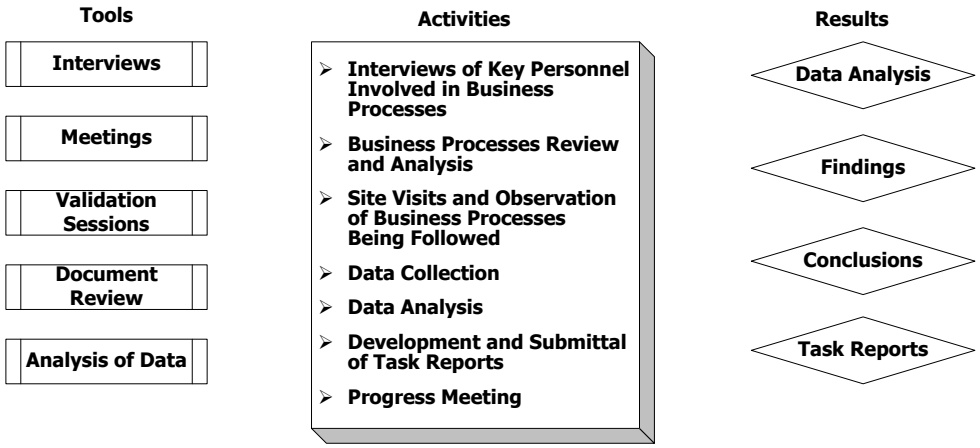
First Progress Meeting
Final Work Plan Approval

Our project team will meet with the NYSDPS *Project Coordinator* and others, as appropriate, to discuss the draft work plan. Also, additional input from attendees on the work plan will be gathered at this time and revisions made, as appropriate. As an outcome of this meeting, the specific areas of focus in the final work plan will be confirmed.

Step II – Detailed Review and Analysis

Exhibit III-3 illustrates the tools used, activities performed, and results achieved during *Step II*.

Exhibit III-3
Step II – Detailed Review and Analysis



Interviews, Documentation, and Data Collection Review and Analysis

The Schumaker & Company project team consultants will visit National Grid's major facilities, conduct interviews with key NYSDPS and National Grid personnel (and others, as appropriate), and gather a variety of information and documents regarding the specific business processes and associated systems. The interviews with key management personnel typically consist of reviews of the organization and processes for which each employee is responsible and discussions of any areas of particular interest or concern. The need for detailed research or analysis by National Grid employees will be identified at this time.

This step will result in the development of findings and conclusions by the consultants, which will be verbally presented to the NYSDPS and National Grid coordinators. In overall terms, this step consists of several principal activities: interviews, information and document reviews, and field observations of representative operations. The following paragraphs describe what each process encompasses.

- *Interviews* – Interviews are conducted with the personnel responsible for the management and direction of processes and activities in each of the issue areas.
- *Information and document reviews* – During the course of these interviews, information and documents relevant to the evaluation of each area are identified and collected for analysis.

- *Field observations* – We will visit National Grid facilities to provide an opportunity for visual inspection of the site, discussions with management and staff personnel, observations of procedures, and other information gathering techniques.
- *Data summaries* – Interview notes, results of reviews of relevant documents, and any numerical data collected for the purpose of quantitative analysis is organized and summarized by the project team members who have conducted the initial data collection in each area.
- *Development of findings and conclusions* – Based on the results of the data collection and analysis activities, findings and conclusions will be formulated that reflect our summary evaluation of the subject practices.

Task Reports Development
Task Reports Review

The input from the task briefing is compiled into the draft task reports, which will be submitted to the NYSDPS for review and comment. After comments are discussed and incorporated, the task reports will be submitted to National Grid for similar review. National Grid's comments should be provided to both the NYSDPS and the Schumaker & Company project team in writing. The Schumaker & Company project team addresses any concerns raised by the NYSDPS *Project Coordinator* and the National Grid *Project Coordinator(s)*.

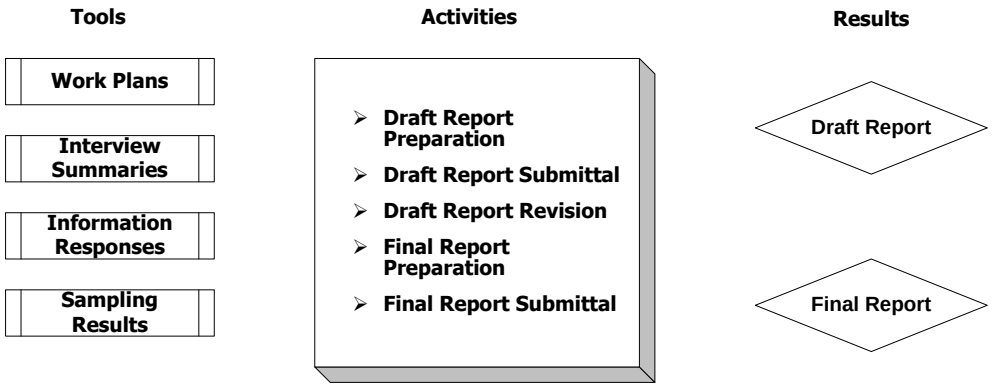
Draft Findings and Recommendations
Progress Meeting

Prior to completing our draft report, we will prepare a summary presentation of our findings and conclusions for review with the NYSDPS and National Grid coordinators. Our draft findings and conclusions with input from these coordinators will form the basis for our draft report preparation.

Step III – Draft and Final Report Preparation

Exhibit III-4 illustrates the tools used, activities performed, and results achieved during *Step III*.

Exhibit III-4
Step III – Draft and Final Report Preparation



This step will result in the preparation of the draft and final reports, which serve as the final result of the project, unless testimony is requested.

Draft Report Preparation

The results of our investigations will be summarized in a draft report that will be submitted to the NYSDPS and National Grid for review and comment. The draft report will be indexed to related supporting working papers, and will consist of the following information:

- Executive summary
- Brief overview of project
- Individual chapters for processes investigated, including:
  - Background and perspective
  - Findings and conclusions
  - Recommendations

Our report will reflect an objective and balanced appraisal of National Grid's processes, systems, and resource allocations. We will fully document any deficiencies/problems and provide improvement opportunities in the form of practical recommendations, associated quantified costs and benefits, and their implementation priorities. We will also point out the strengths, good practices, and sound procedures associated with the service delivery. We will identify and recommend areas for adoption of industry best practices.

Draft Report Submittal and Review
Progress Meeting
Draft Report Revision

The draft report will be submitted to the NYSDPS *Project Coordinator* (and other staff as desired) for review and comment. After performing their review, the NYSDPS *Project Coordinator* will discuss resultant comments with the Schumaker & Company consulting team. The Schumaker & Company team will address all concerns raised by the NYSDPS *Project Coordinator*. Schumaker & Company will then submit the draft report to the National Grid *Coordinator(s)* for review and comment. A third progress meeting will be held with NYSDPS, National Grid, and key Schumaker & Company consultants to verify the material facts in the draft report and obtain written comments. All analyses and hypotheses must be continually assessed within the framework of the focus of the study, the status and structure of the National Grid, and the current utility environment. After incorporation of these comments into the report, as appropriate, the final report will be prepared and submitted.

Final Report Submittal

NYSDPS and National Grid must be satisfied that the end product is supported by accurate analyses. For this reason, Schumaker & Company places heavy emphasis on ensuring, to all participants' satisfaction, that project results are based on facts. Verification is done throughout the project to minimize open questions that may occur at its end.

The final report will consist of the following information:

- Executive summary
- Brief overview of project
- Individual chapters for processes investigated, including:
  - Background and perspective
  - Findings and conclusions
  - Recommendations

Finally, Schumaker & Company does not consider an engagement to be completed satisfactorily until National Grid has recognized the value of proposed recommendations and agreed to begin implementation.

B. Work Shops

We understand that the NYSDPS is particularly interested in developing in-house Staff knowledge and skills that will allow the Department to analyze utility practices and processes as part of their regulatory oversight responsibilities, and as such, have included as part of our proposal workshop-type training for NYSDPS Staff. We have allowed for five full-day workshops at the NYSDPS offices in Albany

distributed over the audit duration. We expect that the number of Staff participants in the workshops will range from five to ten and that the subjects for these work shops will be determined after the audit starts. One workshop, for example, may be focused on optimum (or "best") practices and processes that utilities use to assess operational risks associated with the delivery of the commodity, how risk assessment impacts the long-term corporate construction and O&M decisions, and how budgeting priorities are managed.

C. Project Management Techniques

An operations and performance audit is a complicated consulting project requiring appropriate project management control techniques. The substantial experience of Schumaker & Company in conducting such studies has enabled us to develop effective techniques to control the project, enhance communications among project team members, and among the team, NYSDPS Staff, and National Grid representatives, and assure a quality end product. These techniques have been used in a large number of audits and other reviews, and the experienced team we are proposing is adept at their use. We will modify these techniques as necessary to conform to the specific requirements of this engagement.

We believe the key element to a successful consulting assignment rests on the caliber and qualifications of the project team members. However, the right quality and mix of personnel is necessary, but not sufficient to ensure maximum benefit from an assignment. Effective project management is required to provide for the orchestration of activities, for ongoing feedback and adjustment mechanisms, and for the judicious use of time. Without strong project management and controls, a consultant's time may not be used effectively. Therefore, effective project management is a key element in implementing our approach and is required to:

- Coordinate the activities and schedules of Schumaker & Company project team members with NYSDPS Staff and National Grid personnel.
- Provide a focus for communication and control among the consulting team, NYSDPS Staff, and key individuals within National Grid
- Provide ongoing monitoring of project activities. Unforeseen developments or changes in circumstances may warrant changes in emphasis, revisions to the approach in certain areas, or other modifications to work activities. Active project management provides greater assurance that such refinements or redirections will happen when circumstances warrant.
- Ensure the optimum management of the time available to complete the project. Effective time management is a skill required of experienced professionals. Sound project management can optimize the overall effectiveness of the project team's use of time and provide greater assurance of meeting deadlines and budgets.

- Provide for the continuous reinforcement of project objectives. In addition, the role of project management is to ensure that the consulting team consistently adheres to the proper perspective in conducting the study.

Beyond these, project management will carry the responsibility for integrating the results of the review into a report that is clear, concise, and relevant. Our project staff will be composed of talented individuals who are experienced in performing and successfully managing these types of projects. Three important lead positions exist in our project team, those being:

- The *Engagement Manager* provides general oversight and performs a quality assurance role during the assignment.
- The *Project Manager* is responsible for ensuring that the consultant team is provided with the appropriate resources for completing its activities on a timely basis. This individual is also responsible for ensuring that the work is progressing within planned budget and schedule parameters, and that the work among the various areas is integrated and coordinated. The *Project Manager* is the day-to-day contact for the Schumaker & Company project team.
- A *Lead Consultant* is designated for each area, and he or she is responsible for executing the technical work plan in that area. The *Lead Consultant* is responsible for meeting task schedules and ensuring the completeness and coherence of work in his/her task areas, including:
  - Conducting the orientation and project planning for their designated area
  - Developing the detailed work plan for the area
  - Managing and conducting the investigations of all activities in their work plan areas and presenting the task briefing in their work plan areas
  - Keeping the *Project Manager* apprised of progress in executing the work plan
  - Managing development of complete task briefings, task reports, and a draft report for their areas of investigation
  - Ensuring a successful consulting project

Project Management Tools

We use several project management and control techniques to ensure that budget, schedule, and quality specifications are achieved. These control mechanisms include project meetings, project critical path method (CPM) scheduling, and working papers/audit trails policies, procedures, and systems. Throughout the course of the operations and performance audit, the project team will conduct numerous interviews and submit an extensive number of information requests. Managing those interviews, as well as those information requests and the documents received, is crucial to the success of a project.

Audit Trail and Work Papers

The work paper tracking system, used to catalogue key documents, analyses, working papers, and other materials, is a key part of the quality control process. Recommendations made must be in response to specific shortcomings or needs identified in findings and conclusions. Findings and conclusions, in turn, must be based on information collected in interviews, in data requests, or in analyses performed, and these linkages must be clear. In a number of instances we have been called upon to retrieve these files for use by utilities or commissions long after completion of the project.

Our database-oriented *Project Management Information Application* (PMIA) is a software package specifically developed by Schumaker & Company Information Technology staff to help our Project Manager efficiently and effectively control the scheduling of interviews and tracking of information requests and responses during the audit. More detail on this proprietary tool can be found in *Appendix A* of this proposal.

We have extensive procedures in place to:

- Footnote, annotate, and cross reference the draft and final reports to our working papers and the detailed work plan. This capability permits us to completely document the audit trail in preparation of our reports and is tied to the interviews and information requests tracked through PMIA.
- Schedule and track interviews through PMIA. The numerous summary and detailed reports enable National Grid personnel, NYSDPS Staff, and Schumaker & Company project team consultants to easily determine when and with whom interviews are to be (or have been) held.
- Track the request and receipt of information requests through PMIA. The numerous summary and detailed reports permit effective project management and allow the client to assess the company's response rate.

The use of footnotes forms the basis for annotating our reports. Footnotes are used extensively to identify the source of information that supports a statement of fact, finding, conclusion, or recommendation. As a policy, we require that every fact, quote, result of analysis, or other statement which can be challenged, be footnoted.

All work papers, interview notes, statistical analyses, and other supporting documents developed or obtained during the course of the audit will be made available to the NYSDPS Staff. At the conclusion of the audit, a copy of the report indexed to the supporting documents will be furnished to the NYSDPS Staff. All supporting documents, with the exception of interview notes, and all documents obtained by Schumaker & Company during the audit will be turned over to NYSDPS Staff at the completion of the audit. Interview notes will be retained by Schumaker & Company (or transferred to NYSDPS for retention) for at least three years after the completion of the report and will be made available to NYSDPS Staff. Schumaker & Company will not copyright any material developed during the course of the project.

Work Plans

Well-developed work plans lie at the heart of a well-controlled project. As previously explained, in *Step I –Project Orientation and Final Work Plan*, we will prepare more specific work plans for each study area of *Step II – Detailed Review and Analysis*. The work plans will show:

- Issues and questions to be addressed and reconciled as part of the technical work
- Key forms of analysis to be developed
- Data requirements and sources
- Interview and facility visit requirements
- Work plan milestones and key review points
- Budgets for each element

The detailed work plans we develop during *Step I –Project Orientation and Final Work Plan* will be submitted to the NYSDPS *Project Coordinator* for review and approval. We will use these documents for our own internal control. A preliminary work plan is provided in *Chapter IV – Areas and Issues for Review*.

Project Controls

The standard approach used by the Schumaker & Company project team in performing operations and performance audits is firmly predicated on the recognized need for direct participation of all parties in the audit process, along with an accompanying free and continuous flow of pertinent information among the involved parties. In order to facilitate these activities, a standardized structure and schedule of meetings has been developed and is followed on each project. Descriptions of these meetings are presented in the following paragraphs.

Weekly Project Team Meetings

The consulting team members regularly spend time at the end of each week discussing events and major findings among themselves and with the Schumaker & Company Project Manager. This informal process ensures that everyone is aware of the project status, and focuses attention on important issues. These discussions are used to track progress and update the detailed work plan and project schedule. We invite and actively encourage the frequent participation of NYSDPS Staff (or other appropriate personnel) in these discussions.

Monthly Progress Meetings

Schumaker & Company's project management team will meet each month with the NYSDPS and National Grid coordinators (and any other staff deemed appropriate) for purposes of discussing the project and resolving questions or problems.

Progress Meetings

Schumaker & Company's experience in conducting utility management audits in many states has identified the need to have periodic meetings involving appropriate NYSDPS and National Grid representatives. These meetings will be scheduled at the end of each step to facilitate overall communication between the NYSDPS, National Grid, and Schumaker & Company consultants. The meetings are held to discuss any issues that need attention by two or more parties. There will be a midpoint status meeting with Staff that will be scheduled along with any others as needed and will be conducted either at the NYSDPS offices, the National Grid project site, or via teleconference calling, as appropriate. This enables all parties to stay in close contact, including those not as directly associated with the project as the NYSDPS and National Grid coordinators.

Progress and Time Reporting

Each team member will submit monthly time reports indicating the time expended by work area. Actual time expended for the project team will be aggregated by consultant and by focus area for comparison with the project budget. This will provide the basis for progress reporting and an ongoing assessment of project status.

Each month we will provide a written status report to the NYSDPS *Project Coordinator*, consisting of:

- A general narrative briefly describing progress to date and outlining reasons for any discrepancies between the project schedule and progress actually achieved
- Report of information requests at National Grid showing requested and received status
- Report of interviews and site visits conducted and upcoming interviews and site visits, if applicable
- Report of staff-days expended and costs incurred by each task area

We will also indicate the status of work in each study area in relation to its scheduled duration (i.e., ahead, behind, or on schedule).

Review Standards

Schumaker & Company subscribes to the audit standards set forth by the National Association of Regulatory Utility Commissioners' "Consultant Standards and Ethics for Performance of Management Analysis," dated November 15, 1989, and the U.S. Government Accountability Office's "Standards for Audit of Government Organizations, Programs, Activities, and Functions," (commonly referred to as the "Yellow Book"), as applicable to public utilities. PMIA has been specifically developed to meet the requirements of these standards.

IV. Areas and Issues for Review

Schumaker & Company consultants will approach this management audit from an objective standpoint. Having stated that fact, the RFP requested that we identify the major areas of importance in the audit that offer the greatest potential for cost savings, remedying operating problems, or controlling construction costs. Without conducting the management audit, it would be inappropriate to presume that certain audit areas are more important that others in the management of the utility. Granted some areas within a utility are responsible for the management of more dollars in the day-to-day operations of the utility than others, so the potential for savings would be greater. However, in the past 20 years of performing management audits, we continue to be amazed that our initial perceptions of what a company does well or not before the start of the audit is changed once the in-depth investigations begin.

Most recently, Schumaker & Company and, more specifically, this project team has taken the following approach to identifying benefits and costs when performing management audits. We have not only identified various qualitative and quantitative benefits and costs resulting from our recommendations but, more importantly, have obtained both the company and commission agreement on the benefits and cost savings.

In past audits of this nature, costs have tended to fall into one of three categories:

- Assigning existing company personnel to implement recommendations, resulting in little or no incremental costs
- Engaging outside expert resources to implement recommendations, resulting in incremental costs
- Procuring additional software and equipment, also resulting in incremental costs

Likewise, the benefits associated with recommendations usually fall into one of four categories:

- Reduction in actual costs of operations within a functional area
- Increase in a revenue source within a functional area
- Change in work flow processes used in the provision of services to New York customers on a more cost-effective basis
- Change in other processes resulting in good business practices being implemented

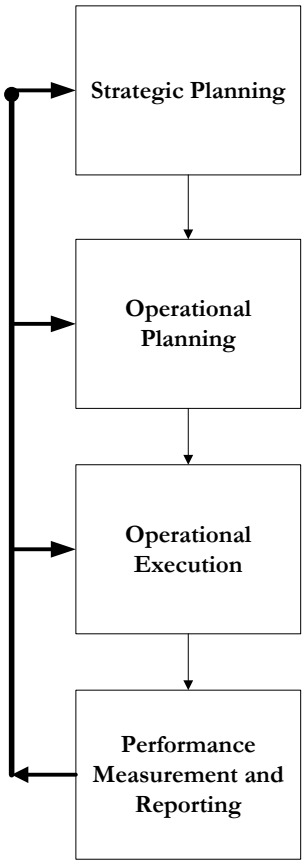
In addition, on two of our last three management audits, we have recommended and obtained agreement, from both the company undergoing the audit and the commission overseeing the audit, to perform a third phase of the project where additional staff hours were expended to further investigate areas offering potential that were identified during the earlier stages of our review. These recent experiences working for the Pennsylvania Public Utility Commission on several recent management

audits demonstrates our ability to establish and sustain vital, interactive working relationships among NYSDPS, National Grid, and Schumaker & Company project team during the course of a management and operations audit resulting in an agreement on recommendations for change, where appropriate.

A. Work Plan Organization

Schumaker & Company has organized our approach to the project using a simplified business flowchart process as shown in *Exhibit IV-1*.

Exhibit IV-1
Schumaker & Company Simplified Approach



The request for proposal (RFP) suggests that this audit's scope be based on the framework of a series of elements or functions that are generally sequential in nature and can be viewed as a flow diagram or feedback loop.

As per the RFP, the management audit will focus on the following elements:

- Corporate mission, objectives, goals and planning
- Long-term load forecasting
- Supply procurement
- Long-term system planning
- Capital and O&M budgeting
- Program and project planning and management
- Work force management
- Performance and results measurement

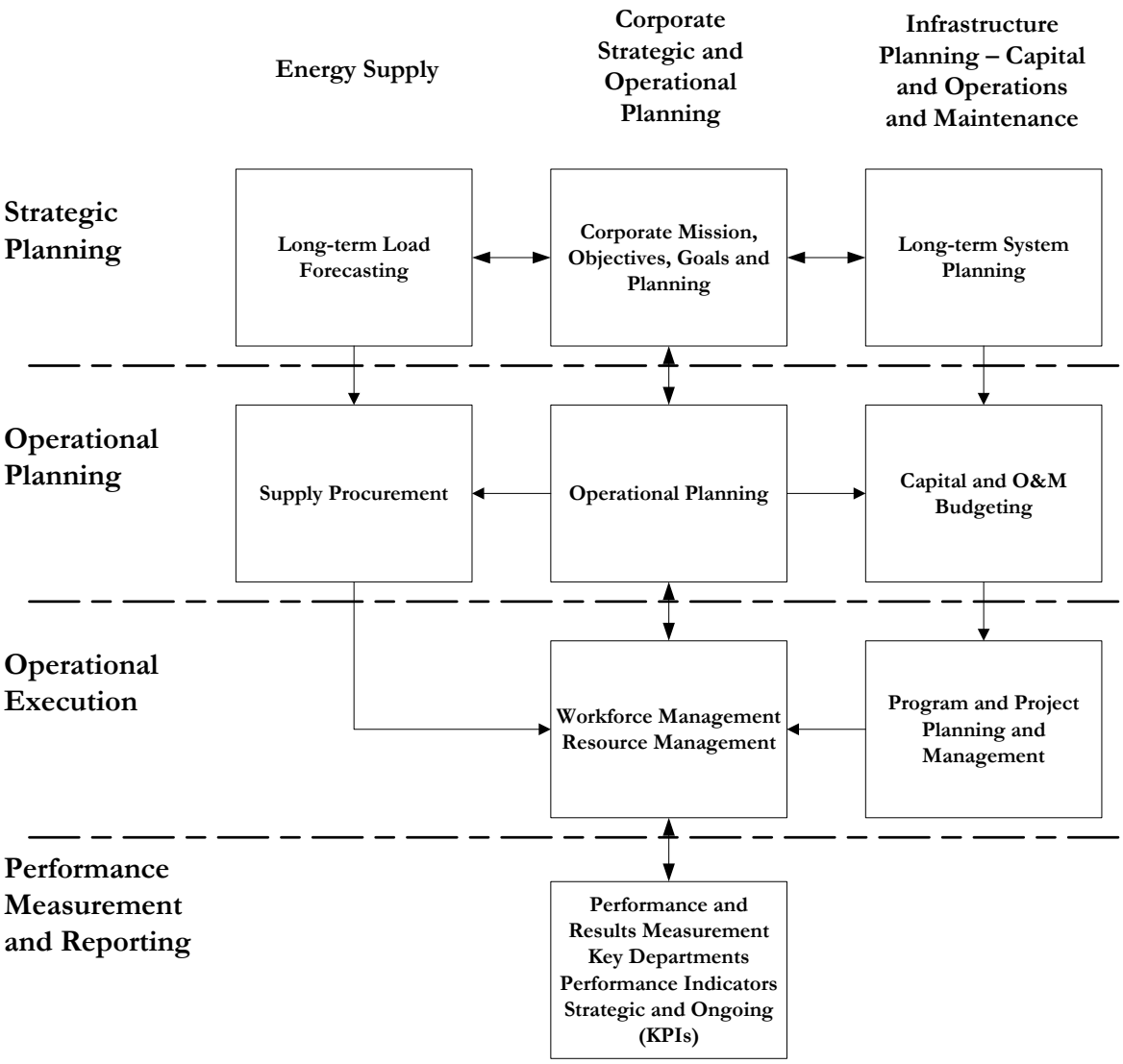
Within the context of each element, we will address the generic questions and issues, including:

- What is the purpose?
- What is the process?
- What are the inputs and outputs?
- Are there appropriate policies and procedures and how are they implemented?
- Who has responsibilities and accountabilities?
- Is the process efficient and effective?
- How do these elements compare to industry "best practices" based on our consultant's past experiences?

The audit will emphasize an assessment of National Grid's effectiveness in meeting its mission, particularly with respect to meeting its performance goals and the extent to which there are opportunities for improvement.

Schumaker & Company has organized our approach to the project using a simplified business flowchart process. Within this simplified approach, we have grouped each of the items mentioned in the RFP into individual work packages that are related in the overall flow process as shown *Exhibit IV-2*. We have divided our project team into individual groups of consultant to address each of the groups, as identified in *Exhibit IV-3*, *Exhibit IV-4*, *Exhibit IV-5*, *Exhibit IV-6*, and *Exhibit IV-7*.

Exhibit IV-2
Schumaker & Company Audit Approach



The *Strategic Planning Consultant Team* is shown in *Exhibit IV-3*.

Exhibit IV-3
Strategic Planning – Consultant Team

Name	Title	Years Exp.	Primary Role
Corporate Mission, Objectives, Goals, and Planning			
Lee E. Burgess	Executive Consultant II	23	Lead Consultant-Strategic and Corporate Planning
Dennis J. Schumaker	Executive Consultant I	31	Senior Consultant-Strategic and Corporate Planning
Long-term Load Forecasting			
Martin H. Skeer	Executive Consultant II	20	Lead Consultant-Electric Load Forecasting
Eugene N. Johnson	Sr. Engineering Consultant	30	Senior Consultant-Electric Load Forecasting
Dennis J. Schumaker	Executive Consultant I	31	Senior Consultant-Electric Load Forecasting
Long-term System Planning			
Martin J. Murphy	Executive Consultant II	29	Lead Consultant-Electric Infrastructure Planning
John Bakula	Sr. Engineering Consultant	33	Senior Engineering Consultant
Siegfried Guggenmoos	Sr. Engineering Consultant	25	Senior Engineering Consultant-Vegetation Management
Robert L. Rosenkoetter	Executive Consultant II	25	Senior Consultant-Other Capital and O&M Planning
Dennis J. Schumaker	Executive Consultant I	31	Senior Consultant-Electric Infrastructure Planning

The *Operational Planning Consultant Team* is shown in *Exhibit IV-4*.

Exhibit IV-4
Operational Planning – Consultant Team

Name	Title	Years Exp.	Primary Role
Supply Procurement			
Dennis J. Schumaker	Executive Consultant I	31	Lead Consultant – Energy Supply
Eugene N. Johnson	Sr. Engineering Consultant	30	Senior Consultant – Energy Supply
Martin J. Murphy	Executive Consultant II	29	Lead Consultant – Purchasing and Materials Management
Capital and O&M Budgeting			
Robert L. Rosenkoetter	Executive Consultant II	25	Lead Consultant-Capital and O&M Budgeting
Patricia H. Schumaker	Executive Consultant I	31	Senior Consultant-Capital and O&M Budgeting

The *Operational Execution Consultant Team* is shown in *Exhibit IV-5*.

Exhibit IV-5
Operational Execution – Consultant Team

Name	Title	Years Exp.	Primary Role
Program and Project Planning and Management			
Patricia H. Schumaker	Executive Consultant I	31	Lead Consultant-Technology Force Program and Project Planning and Management
Dennis J. Schumaker	Executive Consultant I	31	Senior Consultant-Office/Professional Force Program and Project Planning and Management
Martin J. Murphy	Executive Consultant II	29	Senior Consultant-Field Force Program and Project Planning and Management
Robert L. Rosenkoetter	Executive Consultant II	25	Senior Consultant-Office/Professional Force Program and Project Planning and Management
Workforce/Resource Management			
D. Kerry Laycock	Executive Consultant II	21	Lead Consultant-Overall Workforce/Resource Management
John Bakula	Sr. Engineering Consultant	33	Senior Consultant-Office/Professional Force Workforce/Resource Management
Martin J. Murphy	Executive Consultant II	29	Senior Consultant-Field Force Workforce/Resource Management

The *Performance Measurement and Reporting Consultant Team* is shown in *Exhibit IV-6*.

Exhibit IV-6
Performance Measurement and Reporting – Consultant Team

Name	Title	Years Exp.	Primary Role
Performance and Results Measurement (KPIs)			
Dennis J. Schumaker	Executive Consultant I	31	Lead Consultant-Electric Construction and O&M KPIs
John Bakula	Sr. Engineering Consultant	33	Senior Consultant- Electric Construction and O&M KPIs
Lee E. Burgess	Executive Consultant II	23	Senior Consultant-Corporate Planning KPIs
Siefried Guggenmoos	Sr. Engineering Consultant	31	Senior Consultant-Vegetation Management KPIs
Eugene N. Johnson	Sr. Engineering Consultant	30	Senior Consultant- Electric Construction and O&M KPIs
D. Kerry Laycock	Executive Consultant II	21	Senior Consultant-Human Resources KPIs
Martin J. Murphy	Executive Consultant II	29	Senior Consultant-Procurement and Materials Management KPIs
Robert L. Rosenkoetter	Executive Consultant II	25	Senior Consultant-Financial KPIs
Patricia H. Schumaker	Executive Consultant I	31	Senior Consultant-Technology KPIs
Martin H. Skeer	Executive Consultant II	20	Senior Consultant-Electric Capital KPIs

The *Project Management and Administration Consultant Team* is shown in *Exhibit IV-7*.

Exhibit IV-7
Project Management and Administration – Consultant Team

Name	Title	Years Exp.	Primary Role
Project Management and Administration			
Patricia H. Schumaker	Executive Consultant I	31	Engagement Manager
Dennis J. Schumaker	Executive Consultant I	31	Project Manager
Gail Stopar	Consultant	22	Project Standards and Consultant Support
Jaye Kain	Lead Consultant	20	Project Administration
Hachin Sunid	Technology Consultant	10	Project Technology Support

B. Preliminary Work Plan

As discussed earlier in this proposal, each of the key consultants will be involved in the development of the draft work plan. We will use the scope of work identified in the RFP (repeated in this section), combined with our preliminary work plan that is contained in this section, and our understanding of the business processes within National Grid learned from the kick-off presentation and orientation interviews, and combined with our consultants' knowledge and the integration of the relevant parts of other management audit work plans that we have developed over the last five years, to draft a detailed work plan for the remainder of this project.

Our preliminary work plan (on the following pages) for each of the identified areas includes the following information:

- Proposed staffing
- Work steps
- Evaluative criteria or expectations
- Potential issues or problems that could be expected:

Included as *Appendix C* is Schumaker & Company's preliminary list of the information requests required to evaluate each work plan area. Further refinement of this preliminary work plan and initial information requests will be performed as part of the project's activities.

Work Package I – Strategic Planning

Corporate Mission, Objectives, Goals and Planning

- Governance, organizational structure, missions and relationships within National Grid as they relate to the electric construction program process
- Organizational responsibilities for planning priorities and budgeting allocations for the electric business
- Role of the Board of Directors and executive and senior management in the development of budgeting guidelines and periodic budget reviews and approvals
- National Grid's financial position and the level of its rates that are factored into the budgeting process
- National Grid's use of measurable goals, metrics, key performance indicators, etc. to achieve the corporate mission and objectives, and the performance improvement process at successive levels of management
- Performance and compliance with procedures and practices related to the scope of this audit, e.g., internal controls, internal audit function and Sarbanes Oxley Act
- Management performance and compensation programs and alignment with the corporate mission, objectives and goals at all organizational levels
- National Grid's goals for modernization of its electricity transmission and distribution system in response to the Energy Independence and Security Act of 2007

Proposed Staffing

Mr. Lee E. Burgess will be the *Lead Consultant* for this area. He will be assisted by Mr. Dennis J. Schumaker as a *Senior Consultant*. This team will working closely with Mr. Robert Rosenkoetter and Mr. D. Kerry Laycock. Mr. Rosenkoetter is *Lead Consultant* for the *Capital and O&M Budgeting* work plan area and will work closely with Mr. Burgess regarding financial position/rates and budgeting issues. Mr. Laycock is *Lead Consultant* for the *Workforce Management* area and will work closely with Mr. Burgess regarding management performance/compensation issues.

Mr. Burgess has a BS from The United States Naval Academy and an MBA from The University of Michigan. His professional career includes five years at sea as a naval officer and 25 years as a management consultant almost exclusively to the utility industries. Most of these assignments have been as a lead consultant, project manager, and/or engagement director. He has experience with most aspects of utility operations including customer service, power plant engineering/construction/operations/maintenance, transmission and distribution, support services, materials management, and all aspects of executive management. A majority of his assignments have been performing management audits and prudence investigations of utility companies for state public

service commissions. In New York, Mr. Burgess has been involved in management audits of Niagara Mohawk, Rochester Electric and Gas, Brooklyn Union Gas, New York State Electric & Gas, and Long Island Lighting (all for the New York Public Service Commission). He also testified as an expert witness for the NYPSC in the prudence investigation of the construction of the Shoreham Nuclear Power Plant. More recently, Mr. Burgess has examined executive management and corporate governance of PECO Energy (Exelon), Pennsylvania-American Water Company (American Water Works Company), and Philadelphia Gas Works. Of interest is that, like American Water, National Grid is a privately held utility, owned by a European corporation.

Mr. Schumaker, CMC®, PMP®, has over 31 years of business and industry experience with both private and public sector clients, including extensive experience in the electric, gas, telephone, and water utility industries. He has been the *Engagement Manager* and/or *Project Manager* on numerous assignments in the electric, gas, water, and telecommunications industry where executive management, strategic and operations planning, and corporate governance issues have been addressed. More recently, Mr. Schumaker has examined executive management and corporate governance of PECO Energy (Exelon), Pennsylvania-American Water Company (American Water Works Company), and Philadelphia Gas Works. His consulting experience encompasses expertise in executive management and staffing, strategic and corporate planning, corporate organization and structure, project management, business process re-engineering, materials management, engineering and construction and operations and maintenance (electric, telephone, gas, and water facilities), information technology, cost allocation and affiliated transactions, and quality assurance. He began his career as a design engineer with the Bechtel Corporation, after which he joined Theodore Barry & Associates (TB&A). He acquired more than eight years of consulting experience with TB&A before becoming one of the original founders of Schumaker & Company in 1986. Mr. Schumaker holds both a Bachelor's degree in Mechanical Engineering and a Master's degree in Nuclear Engineering from Ohio State University and an MBA from the University of Michigan.

Work Steps

Our first task will be to examine the company's response to our initial data requests, which are tied to our evaluative criteria, expectations, and background information we already have on National Grid operations. As we progress through this task (as with all tasks), we will begin to outline the task report into the major areas of Background & Perspective, Findings & Conclusions, and even Recommendations segments. At this early point we will already be forming hypothesis on findings that will help guide our further review and analysis. Shortly thereafter, or concurrently in some cases based on schedule and the company's ability to respond to initial data requests, we will perform orientation interviews. In the case of this work plan area, we will talk to senior executive management (CEO, COO, senior vice presidents), lead manager of internal auditing, corporate secretary, and lead manager of any strategic planning support functions. Our interview topics will broadly cover the management systems and practices within their respective scope of responsibilities (once again, broadly following our evaluative criteria and expectations), relevant documentation and reports that define these practices and how they are implemented. We will also address any initial issues that arise from our initial data review.

For example, in response to requests for company strategic plans, we sometimes get financial budgeting documents. In this case, we will address with senior management if this is representative of their strategic planning efforts, or if there are other efforts taking place.

Our next step will be to update our work plan to add or delete additional criteria, document requests, interviews, analysis, issues, and report outline. This revised work plan will form the basis for additional information requests and interviews. While this field work progresses, we will be continually adding to our task report. In fact, it is our practice to update our task report after each interview and document reviewed/analysis completed. We should note that documentary evidence will form the basis for our endnote citations. Interviews are important, but no important piece of information or finding will be based solely on interviews. Also, as field work progresses, document requests will become narrower and more specific; even to the extent of confirming a specific fact that resulted from an interview.

When the field work is completed, the draft task report will be reviewed by project management and a professional editor. Once approved, it will be submitted to NYSDPS staff for comments. The Lead Consultant will respond to comments, make necessary changes, and perform additional field work, if necessary, and resubmit the task report to project management/editor. The task report will then be submitted to National Grid for factual comments. In some cases, if allowed by NYSDPS staff, we will sit down with key/senior management and confirm important facts and findings prior to submission of the task report.

Specific work steps for this area include:

- Review statements of company goals and objectives: their form, when prepared, by whom; how frequently reviewed, changed, and updated; and how they are communicated to the employees. Assess the use and applicability of specific goals and objectives to each of the core business segments.
- Review the nature and extent of involvement of individual senior managers and others in the strategic planning process including input from the Board. Review the clarity of understanding of individual responsibilities for these processes. Evaluate whether department and core business unit objectives are appropriately and clearly linked to goals and performance measures for individuals.
- Assess the extent to which goals and objectives are translated into measurable tasks and how well the feedback from actual results is incorporated into the efforts to achieve these goals and objectives.
- Assess the integration of the strategic planning process with other company planning processes, including financial planning, construction program planning, marketing planning, and budgeting, technology, external relations as well as core business unit planning.
- Evaluate whether the strategic planning process continually captures customer and all key stakeholders interests/issues/needs and results in the appropriate internal changes.

- Determine how effectively human resources programs are linked to business strategy; assess how this function is leading line managers through organization (management) changes.
- Review the role of the Board of Directors vis-à-vis internal controls, internal audit function, and the Sarbanes-Oxley Act, as appropriate.
  - Review selection and composition of the Board of Directors (Board) and its policies and practices for selection of Board members as well as retirement age, tenure restrictions, and other policies relative to Board membership.
  - Review all Board committees and examine their duties, frequency of meetings, and salary/fee structure.
  - Review frequency of meetings and agendas of Board of Directors and committee meetings.
  - Review the Code of Conduct/Ethics policy applicable for Board members.
- Review levels of expenditure approval within National Grid.
- Review Code of Ethics adopted by the senior financial officers, including provisions for:
  - Honest and ethical conduct
  - Full, fair, accurate, timely, and understandable disclosure in reports and documents
  - Compliance with applicable governmental laws, rules, and regulations
  - Prompt internal reporting of code violations
  - Accountability for adherence to the code
- Identify any policies and procedures supporting implementation of the Code of Ethics at National Grid companies.
- Review internal controls over financial reporting and disclosure.
- Review certifications by the CEO and CFO that they:
  - Are responsible for disclosure controls and procedures
  - Have designed (or supervised the design of) these controls to ensure that material information is made known to them
  - Have evaluated the effectiveness of these controls each quarter
  - Have presented their conclusions regarding the effectiveness of these controls
  - Have disclosed to the Audit Committee and the independent auditors any significant control deficiencies
  - Have indicated in the filing any significant changes to controls
- Determine organizational responsibilities for planning priorities and budget allocations.
  - Determine the roles of all organizations involved in planning and developing budget assumptions.

- Assess the appropriateness of organization responsibility

- Review the details of the Board of Directors and executive and senior management's involvement in the capital and O&M budgets and the budget processes.
  - Examine the roles of and relationships between regional and centralized planning and budgeting functions.
  - Determine the budget task location of all budgeting functions.
- Determine the relationship between National Grid's financial position and the level of its rates with the budgeting process.
  - Review National Grid's financial position by reviewing credit agency reports and ratings and external auditor's notes and comments.
  - Verify that current and projected rates are reflected in the budgets.
  - Assess the impact of the financial position and the level of its rates on the current budget effort.

Evaluative Criteria or Expectations

- A documented strategic plan exists that clearly establishes goals and objectives. These goals should be quantified and be directly supported by departmental goals documented in business plans. Performance indicators should reflect difficult, but achievable, levels backed by analysis and past achievement. Resources necessary to achieve goals (financial, human resources, inter-departmental support, etc.) should be detailed and reflected in budgeting documents.
- A reporting structure should be in place that routinely measures actual performance to goals with variance analysis and action steps.
- The strategic plan should be integrated with all other plans, e.g. financial/capital budget plans, resource plans, human resource plans, etc.
- The Board of Directors should number from 10 to 16 directors depending on size of corporation and extent of their operations. A majority of directors should be independent (not employees or with any material financial interest in the corporation beyond their director's pay and stock position). Preferably all directors should be independent except for the Chief Executive Officer.
- Board committees should include, at a minimum, an Audit Committee and a Nominating Committee. Both committees should be comprised entirely of independent directors. The Chair of the Audit Committee should have extensive experience in financial and/or auditing operations. Other committees can include Compensation, Risk Management, and Operations. All committees must have written charters that clearly define roles and responsibilities.
- The Board should be diverse in terms of experience. All important aspects of the corporation's business should be reflected somewhere within the experience of the independent directors.

No director should be serving on more than three other outside boards. Director candidates should be recruited and vetted through the Board Nominating Committee.

- The Board as a whole and the Audit Committee should meet quarterly, at a minimum. A portion of these meetings should be conducted in executive session. The outside financial auditors and the company's internal auditors should report directly to the Board Audit Committee. The Audit Committee and Board as a whole should have the authority and budget to hire outside expertise/consultants at their discretion. Senior company management should be routinely invited to participate/make presentations/answer questions from the directors in Board meetings. The financial and internal auditors should meet with the Audit Committee in executive session at least once a quarter.
- The Board should review and approve strategic plans and financial/budgeting plans. Board packets should routinely include reports on corporate performance (in support of the strategic plan) and status of key issues.
- The company should have a documented Ethics/Code of Conduct policy that applies to all directors, senior management, employees, and those doing business with the company (e.g. vendors and those providing professional services). There should be an ongoing ethics training process that covers the entire organization. Directors and senior management should periodically provide signed financial disclosure forms. An outside agency should provide a conduit for allegations of ethical violations and processes for making allegations should be clearly publicized in the Ethics Policy manual and company internal communication vehicles. Allegations should be investigated, investigations and the resulting actions should be documented, and allegations should be tracked in a data base (for analysis on trends). The Board should approve the Ethics/Code of Conduct policy and be apprised of any serious allegations and the results of investigations. The Corporate Secretary or Legal Department should have the authority and budget to hire outside resources to conduct investigations of allegations.
- There should be a robust process in place for tracing financial and information flows and control points and analysis on material weaknesses. Action steps should be documented to strengthen these weaknesses and regular reports should be made to the Board. This process is usually conducted by a dedicated internal controls group within the financial department or by the internal audit function.
- All technical and administrative procedures should be documented and a control process should formally exist to initiate, review, and revise procedures with appropriate signoffs. Procedures indexes should be maintained in a database. All procedures should be periodically reviewed and updated. Preferably all procedures will exist in electronic form.
- All publicly traded corporations in the United States should be able to readily demonstrate compliance with all provisions of the Sarbanes-Oxley Act and relevant requirements of the New York Stock Exchange.

Potential Issues or Problems That Could Be Expected

Increasingly we're seeing strategic planning being dominated by financial figures. Although basic corporate goals and missions may be loosely defined (e.g. be the premier electric utility in the eastern United States), there is often no integration of corporate goals to objectives (most should be quantified) drilled down into business plans. Specific performance objectives, to the extent they exist, are not tied into corporate objectives. Often there is no basis for determining these performance objectives and often they are easily achieved.

In the case of private foreign-owned firms, the Board of Directors is dominated by citizens from the country of ownership and they are often executives in that corporate structure. As such, the Board is not independent by U.S standards and often does not understand the US regulatory market and the quasi-public and social demands it places on utilities. Likewise, because Sarbanes-Oxley (SOX) does not apply outside the US or to privately-held firms, many of the requirements of SOX are not implemented. This is a problem in that, although National Grid is privately held (SOX is intended to protect shareholders), any malfeasance will have a direct impact on New York ratepayers.

The internal audit function rarely reports directly to the Chairman of the Audit Committee. Usually it reports administratively (sometimes even directly) up through company management (usually the CFO). This presents a situation whereby undue influence could be exerted on the independence of the internal audit function. Although SOX stops short of requiring this direct reporting relationship to the Board, it expresses the preferred situation that internal audit function report through the same line as the xxternal financial auditor (which in almost all cases reports directly to the Board Audit Committee).

Foreign owners of American companies often focus almost exclusively on profitability and will cut back on expenses in areas that don't affect the bottom line in the short term. These areas often include external relations, infrastructure upgrade projects (reliability), customer service, human resources, and conservation, among other areas. A strategic plan that focuses mainly on financial budget figures is a tip off to this problem.

Long-term Load Forecasting

- Models, assumptions and key drivers, and other inputs used to forecast local and system-wide load requirements
- Inputs, including demand side management (demand response, etc.), energy efficiency, and other initiatives that are factors in the forecasting process
- Organization and staffing of forecasting functions
- Extent to which the planning for electric load, as well as region-specific factors, is integrated into the overall business processes and strategies
- The New York Independent System Operator's (NYISO) role in the State's electric forecasting, as it affects National Grid's forecasting

National Grid is one of the leading electricity distribution service providers in the northeastern US, as measured by energy delivered, and one of the largest utilities in the US, as measured by the number of customers. National Grid is the largest electricity transmission service provider in the northeastern US with high-voltage 6,000 miles of transmission lines, spanning portions of upstate New York. The company owns and operates an electricity transmission network that operates at voltages ranging from 69 kV to 345 kV.

Load forecasting is the primary driver impacting utility applications, which include energy purchasing and generation, futures contract evaluation, infrastructure development, and load switching. These load forecasts are essential inputs for National Grid, together with its energy suppliers, funding institutions, electric energy generators, transmission and distribution system operators, the NYISO, and ultimately end users.

Proposed Staffing

Mr. Martin H. Skeer, PhD, will be the *Lead Consultant* for this work plan area. He will be assisted by Mr. Dennis J. Schumaker and Mr. Eugene N. Johnson as *Senior Consultants* in this area.

Dr. Skeer has more than 25 years of management consulting experience serving utilities, regulatory agencies, municipal governments and major corporations. He has participated as a *Project Manager*, *Technical Advisor*, or *Lead Consultant* in numerous energy and telecommunications industry engagements. His areas of consulting experience encompass operations and systems planning; corporate, strategic, and financial planning; load forecasting; market analysis; operations support systems development; and performance measurement. Dr. Skeer has served as *Lead Consultant* for commission ordered audits and business process reviews of many major electric and gas utilities, including Potomac Gas & Electric Company; Public Service Electric & Gas Company, Long Island Power Authority, Central Hudson Gas and Electric Company; Chelan (WA) Public Utility District; Truckee-Donner (CA) Public Utility District; Transmission Agency of Northern California, Florida Municipal Power Agency; Ameren Services Corporation, and others. Dr. Skeer holds Ph.D. and MS degrees in Engineering from

Carnegie-Mellon University, Pittsburgh, where he taught advanced undergraduate courses in engineering and numerical analysis. He received a BS in Engineering from The Cooper Union, New York City, and an MBA in Finance from American University, Washington.

Mr. Johnson brings 40 years of utility experience with knowledge of distribution asset management; work management; operations improvement; geographical information system (GIS); design; maintenance and operations; budgeting; reliability improvement; restoration; and decision support information systems. Mr. Johnson has spent most of his professional career in the electric utility industry, both working for American Electric Power and subsequently consulting to utilities. With many years of business management and engineering industry experience, he has demonstrated his strategic thinking amid demonstrated line management and internal consulting experience. Mr. Johnson's hands-on experience associated with long-term load forecasting was first gained during the late 1970s with forecasting station and circuit loading while directing a staff of 30 engineers/technicians. Other experience gained during the 2000-2005 period involved understanding the methodology used by the Distribution Planning organization to develop a 10-year forecast for each of AEP's 3,000+ distribution stations. He also has experience in planning for system expansion (stations and circuits), which also began during the late 1970s while directing a distribution engineering staff responsible for the design of new feeders serving customers in central and southern Ohio. Activities included the coordination of distribution expansion plans with plans for transmission expansion/upgrades. Recent experience, while managing the Distribution GIS Team, included working closely with the Distribution Planning organization to develop GIS tools that assisted planners in targeting reliability improvement projects, assessing asset conditions and running distribution load flow studies. He holds a Masters in Industrial and Systems Engineering, and a BS in Electrical Engineering from Ohio University. He has also completed numerous human resource and management programs, conferences, leadership training, supervisory training, and process improvements methodologies training and seminars.

Mr. Schumaker, CMC®, PMP®, has over 31 years of business and industry experience with both private and public sector clients, including extensive experience in the electric, gas, telephone, and water utility industries. His experience in load forecasting and system planning has included consulting assignments in generation planning, transmission planning, distribution planning, and associated engineering areas of multiple electric utilities. More recently, Mr. Schumaker has examined various aspects of load forecasting activities of PECO Energy (Exelon), Pennsylvania-American Water Company (American Water Works Company), and Philadelphia Gas Works. His consulting experience encompasses expertise in executive management and staffing, strategic and corporate planning, corporate organization and structure, project management, business process re-engineering, materials management, engineering and construction and operations and maintenance (electric, telephone, gas, and water facilities), information technology, cost allocation and affiliated transactions, and quality assurance. He has been the *Engagement Manager* and/or *Project Manager* on numerous assignments in the electric, gas, water, and telecommunications industry where long-term load forecasting issues have been addressed. He began his career as a *Design Engineer* with the Bechtel Corporation, after which he joined Theodore Barry & Associates (TB&A) prior to becoming one of the original founders of Schumaker & Company. Mr. Schumaker holds both a Bachelor's degree in Mechanical Engineering and

a Master's degree in Nuclear Engineering from Ohio State University and an MBA from the University of Michigan.

Models, assumptions and key drivers, and other inputs used to forecast local and system-wide load requirements

Load forecasts generally fall into three categories: short-term forecasts, up to one week; medium forecasts from a week to a year; and long-term forecasts, longer than a year. The forecasts for different time horizons impact different planning, construction and operations functions within the utility. Each forecast regime must be structured to address concomitant transmission and distribution systems requirements.

Electric utilities serve a variety of residential, commercial, and industrial customers. Electric usage patterns differ for customers that belong to different classes, but are generally similar for customers within each class, so that, load behavior is generally distinguished on a class-by-class basis for modeling purposes.

A variety of mathematical methods and constructs have been used for load forecasting. These methods encompass a variety of statistical techniques and artificial intelligence algorithms:

- Short-term forecasting methods often include a "similar day" approach employing various regression models and time series. Techniques such as neural networks, statistical learning algorithms, fuzzy logic, and expert systems are also utilized. For short-term load forecasting time-of-day factors, weather data, and customer classes are employed. Statistical approaches employ mathematical models that represents load as function of different factors such as time, weather, and customer class.
  - Forecasted weather parameters are the most important factors in short-term load forecasts, with temperature and humidity being the most commonly used load predictors.
  - The time factors include the time of the year, the day of the week, and the hour of the day. There are important differences in load between weekdays and weekends. The load on different weekdays also can behave differently. For example, Mondays and Fridays being adjacent to weekends, may have structurally different loads than Tuesday through Thursday. This is particularly true during the summer time. Holidays are more difficult to forecast than non-holidays because of their relative infrequent occurrence.
- Medium-term forecasts consider population changes, economic development, industrial construction, and technology development, taking into account historical load and weather data, the number of customers in different categories, appliances in the area and their characteristics including age, the economic and demographic data and their forecasts, appliance sales data, and other factors.
- Long-term forecasts require consideration of plausible futures, which is necessary to obtain a likelihood distribution for future energy load and associated supply cost under alternative scenarios. A portfolio model can then be employed to consider each future and determine the

energies and costs associated with that future; and then least-cost, risk constrained plans.

- A portfolio model approach determines net present value including variable and fixed components of system cost. The variable component is comprised of total fuel, ongoing operations and maintenance, spot market purchases and sales, and the value of purchase of electricity market contracts. The fixed component includes new plant costs, incremental fixed operations and maintenance cost, construction cost and conservation-related costs.
- The plan impacts forecasted load demand, as the amount of capacity available affects the price incurred for wholesale electricity, which in turn have a long-term effect on loads because of price elasticity.

Reserve margins have traditionally been expressed as a percentage of forecasted loads or a fixed level of energy surplus relative to requirements. Some long-term planners observe that larger energy reserve margins (forecasted load to capacity) are increasingly attractive the further out the planning horizon, whereby surplus requirements grow much faster than forecasted load growth. They contend:

- Long term planning traditionally limits its treatment of uncertainty to "variation" or "variability." This kind of planning does not address strategic uncertainty -- the possibility that the underlying systems and markets themselves will change, perhaps dramatically and irreversibly. It is argued that embracing strategic uncertainty means abandoning faith in averages and equilibrium. This, in turn, translates into finding strategies that enable an effective response to changing circumstances -- and protection from the direst outcomes.
- When it is recognized that it is necessary to protect constituents from an uncertain future, "insurance" becomes useful. It is hoped that insurance never has to be used. The insurance merely reduces the magnitude of the damage -- it does not eliminate it and it certainly should not be a reward, per se. Thus, some surplus to the company's anticipated need may not be used or useful, but it may afford important protection in uncertain times.
- As such, planning that does not embrace uncertainty not only fails to recognize the insurance value of resources but, in fact, contributes to a riskier industry environment as cost-effectiveness levels may change dramatically over the planning horizon (e.g., the price of oil). Planning that ignores this prospect will fail to capture the insurance value of resources. Many utilities have gotten themselves into difficulty during the energy crisis because of their exposure to the market, absent risk tolerance.

Work Steps

- Identify key organizations and personnel responsible for load forecasting functions.
- Submit initial document request (below) to obtain an overview of National Grid load forecasting models, assumptions and key drivers, and other inputs used to forecast local and system-wide load requirements.
- Meet with load forecasting staff to gain in-depth understanding of organization's purpose,

mission, planning, goals and objectives, and strategies.

- Submit detailed document requests and develop in-depth an understanding of load forecasting organization functions, processes, and practices. Revisit forecasting models, assumptions and key drivers, and other inputs in this context.
- Review and evaluate Load Forecasting organizational design and effectiveness in fulfilling requirements.
- Review and evaluate Load Forecasting organizations' staffing, responsibilities, and accountabilities.
- Assess Load Forecasting organization's cost control/cost oversight measures
- Evaluate Load Forecasting organization's efficiency and effectiveness in qualitative and quantitative terms. Perform retrospective accountability analysis to contrast prior forecast with actuals and assess nature of variances.
- Assess results and performance of Load Forecasting organization predicated on the evaluative criteria, enumerated below.
- Identify, select and assess a representative sample of load forecasting projects that are completed and/or in progress, for the purpose of identifying opportunities to improve performance.
- Assess interface with corporate Strategic & Operational Planning, Long-term Systems Planning, and Supply Procurement organizations and ascertain adequacy of Load Forecasting organization's deliverables in fulfilling mission, planning, goals and objectives, and strategies from these vantage points.

Evaluative Criteria or Expectations

- Comprehensive, integrated load forecasting for transmission and distribution facilities is performed across the New York service area.
- Local forecasting and system-wide load forecasting requirements are fully compatible.
- Short-term, medium-term and long term processes are consistent and timeframes are clearly delineated.
- Short-term forecasts are effectively infused into the operations planning process.
- Risk mitigation strategies being developed in conjunction with corporate Strategic Planning and Supply Procurement organizations within alternative forecasting scenarios.
- Impact of non-linear effects such as price elasticity, demand side management and conservation programs are incorporated in load forecasting scenarios.
- Timely load forecasts are incorporated in corporate strategic plans and Supply Procurement organization planning processes.

- Feedback from corporate Strategic Planning and Supply Procurement organizations are factored into subsequent planning cycles.
- Potential impact of future supply contracts, as to price elasticity, which the company might enter into either with IPPs or with entities outside of the region are explored.
- Simulations that true-up or reconcile previous load forecasts and actual loads are performed to hone forecasting assumptions for future applications.
- Load Forecasting case studies demonstrate effective use of load forecasts in construction program and operations planning processes.

Inputs, including demand side management (demand response, etc.), energy efficiency, and other initiatives that are factors in the forecasting process

According to National Grid's Annual Report, electricity customers have a broad selection of programs to aid them in becoming more efficient in their use of electricity, which in addition to conserving energy, enable customers to money. New York State energy efficiency programs are financed through a surcharge on customer bills called the System Benefit Charge, which funds the New York State Energy Research and Development Authority, known as NYSERDA. This organization has responsibility for delivering energy efficiency programs; and research and development on conservation, energy efficiency and renewable energy programs.

National Grid offers energy savings opportunities to residential customers through ENERGY STAR® programs for upgrading appliances, equipment and lighting in existing homes, in conjunction with incorporation of higher building code standards for new homes. National Grid participates in a home energy-saving plan for low-income utility customers through NYSERDA known as the EmPower New York program.

For commercial, industrial and municipal customers, National Grid offers the Design 2000plus program, which provides technical assistance and financial incentives to encourage the use of high-performance design features and efficient electrical equipment for new construction, renovation, and remodeling projects. With the company's Energy Initiative program customers are incented to adopt environmentally responsible practices that will reduce their energy bills while improving their facility's overall efficiency. National Grid's Small Business Service Program for small business customers – with less than 200 kilowatts of demand – can reduce energy use by up to 30 percent.

Long-term forecasts of peak load, essential in planning for an adequate electricity supply, translate into how much capacity will be needed. In forecasting peak demand, National Grid's conservation, energy efficiency, and demand side management programs are taken into consideration together with as well as load management and interruptible demands. Although these energy efficiency programs will reduce system peaks in local areas, customer response may be difficult to gauge, introducing additional uncertainty -- and hence risk, into the load forecasting process.

In concert with program incentives, analysis needs to be performed to assess consumer behavior and estimate market effects for load forecasting purposes. Towards this end, studies are required to estimate the of the impact of increased efficiency on energy bills; characterize the market response; determine a baseline for forecasting purposes; and identify near-term, intermediate, and long-term forecasting affects.

Estimating the market potential for specific energy efficiency technologies and applications, establishing key performance indicators, and determining existing baseline market conditions are important considerations for program designs and cost assessments. This is necessary for reducing uncertainty in load forecasts associated with supply planning, service cost estimation, pricing, risk management, scheduling deliveries, and power trading.

Work Steps

- Identify key organizations and personnel responsible for demand side management, energy efficiency, and other initiatives that are factors in the forecasting process.
- Submit initial document requests to obtain overview of National Grid demand side management, energy efficiency, and other initiatives.
- Meet with load forecasting staff to gain in-depth understanding of the impact of both:
  - Discretionary conservation measures (those that can be performed cost effectively at any time, such as changing out low efficiency lighting for high-efficiency lighting in existing buildings).
  - Lost opportunity conservation energy saving opportunities (those that are available for only a limited time, such as insulating and the installation of high efficiency heating and cooling systems in new buildings).
- Submit detailed document request and develop in-depth understanding of impact of specific energy efficiency technologies on load forecasts. Revisit forecasting models, assumptions and key drivers, and other inputs in this context.
- Review and evaluate Load Forecasting organizational design and effectiveness in incorporating impact of demand side management, energy efficiency, and other initiatives.
- Review and evaluate Load Forecasting organizations' staffing, responsibilities, and accountabilities for incorporating impact of demand side management, energy efficiency, and other initiatives.
- Assess Load Forecasting organization's cost control/cost oversight for incorporating impact of demand side management, energy efficiency, and other initiatives.
- Perform retrospective accountability analysis to contrast prior forecast with actuals and assess nature of variances associated with demand side management, energy efficiency, and other initiatives.

- Assess results and performance of Load Forecasting organization predicated on the evaluative criteria, enumerated below.
- Identify, select and assess a representative sample of load forecasting projects that are completed and/or in progress, for the purpose of incorporating demand side management, energy efficiency, and other initiatives.
- Assess interface with corporate Strategic & Operational Planning, Long-term Systems Planning, and Supply Procurement organizations and ascertain adequacy of Load Forecasting organization's deliverables in fulfilling mission, planning, goals and objectives, and strategies from these vantage points.

Evaluative Criteria or Expectations

- Comprehensive, integrated load forecasting effectively incorporates the impact of demand side management, energy efficiency, and other initiatives across the New York service area.
- Local forecasting and system-wide load forecasting for incorporating the impact of demand side management, energy efficiency, and other initiatives are fully compatible.
- Short-term, medium-term and long term processes for incorporating the impact of demand side management, energy efficiency, and other initiatives are consistent and timeframes are clearly delineated.
- Short-term forecasts incorporate the impact of demand side management, energy efficiency, and other initiatives.
- Risk mitigation strategies are being developed in conjunction with corporate Strategic Planning and Supply Procurement organizations to assess increased long-term uncertainties associated with demand side management, energy efficiency, and other initiatives and are being incorporated in alternative forecasting scenarios.
- Impact of non-linear effects such as price elasticity associated with demand side management and conservation programs are incorporated in load forecasting scenarios.
- Alternative load forecasts reflect the impact of demand side management, energy efficiency, and other initiatives are considered in corporate strategic plans and Supply Procurement planning processes.
- Feedback from corporate Strategic Planning and Supply Procurement organizations regarding the impact of demand side management, energy efficiency, and other initiatives are factored into subsequent planning cycles.
- Simulations to true up or reconcile previous load forecasts that incorporate demand side management, energy efficiency, and other initiatives with actual loads are performed to hone forecasting assumptions for future applications.
- Load Forecasting case studies that reflect the impact of demand side management, energy

efficiency, and other initiatives demonstrate effective use of load forecasts in construction program and operations planning processes.

Organization and staffing of forecasting functions

Load forecasting functions encompass a wide range of data gathering, data analysis, and modeling techniques, which have been significantly, influenced by information system and software technologies. In addition to requiring the analytical horsepower to utilize these capabilities effectively, it is important to understand the functional capabilities and opportunities associated with the stream of emerging load forecasting systems and technologies, which afford opportunities for more accurate load forecasting techniques. Load forecasting requirements for short-term, intermediate-term and long-term time frames differ markedly:

- Short-term forecasts are influenced by time-of-day factors, near real-time weather data, and seasonal factors. A variety of methods, which include the similar day approach, various regression models, time series, neural networks, expert systems, fuzzy logic, and statistical learning algorithms, are used for short-term forecasting. Short-term forecasts are required for each service area, reflecting the local demographics and use patterns.
- End-user modeling, econometric modeling, and their combinations are used for medium- and long-term load forecasting. Descriptions of appliances used by customers, the sizes of the houses, the age of equipment, technology changes, customer behavior, and population dynamics are usually included in the statistical and simulation models. In addition, economic factors such as per capita incomes, employment levels, and electricity prices are included in econometric models. These models are often used in combination with the end-use approach.
- Long-term forecasts also include the forecasts on the population changes, economic development, industrial construction, and technology development. Demand side management and energy efficiency programs affect loads over an extended timeframe as well.

The load forecasting organization and staffing must incorporate functional capabilities to effectively address the scale and scope of these requirements. These include processing of:

- Weather reports, operations status reports, maintenance and repair status reports for the development and update of short-term forecasting models. Substantial resources may be associated with near real-time data management and report generation.
- Reports on demographic trends, long term weather forecasts, construction programs, status of demand side management and energy efficiency programs.
- Current and future profiles of consumer, commercial and industrial customers, which are provided by marketing and customer service organizations.
- Pricing data for electric power by class of customer, and pricing trends over time, developed in conjunction with Supply Procurement, Marketing and Sales, and other corporate organization.

The Load Forecasting organization, in turn, generates load forecasts as primary drivers for Supply Procurement and corporate Strategic and Operations Planning organizations. The frequency of load forecasts and reports must be tailored to the requirements of other organization to enable them to fulfill their missions in turn.

Work Steps

- Submit initial document requests to obtain Load Forecasting organization charts and detailed job descriptions.
- Meet with load forecasting staff to gain in-depth understanding of resident modeling capabilities, systems support, and organizational interfaces.
- Review and evaluate Load Forecasting organizational design and effectiveness in fulfilling requirements with respect to best practices.
- Overlay findings with tasks related to models, assumptions and key drivers, reflecting the in-depth scrutinizing of modeling and systems capabilities in this task area.

Evaluative Criteria or Expectations

- Short-term, intermediate-term and long-term load forecasting systems and operations are highly effective.
- Forecasting models are state of the art across all time horizons.
- Staff understands the broad scope of load forecast modeling tools that are available and has a migration strategy for enhanced forecasting, if warranted.
- The level of load forecast staffing is commensurate with fulfilling its functional requirements.
- The organization design has well defined interfaces with other National Grid organizations.
- Requirements of these other National Grid organizations are been effectively addressed by the Load Forecasting organization.

Extent to which the planning for electric load, as well region-specific factors, is integrated into the overall business processes and strategies

Effective load forecasting is an imperative in a deregulated energy industry environment. Apart from normal supply and demand fluctuations due to the changes of weather and seasonal conditions, long-term trends, such perceived climate changes due global warming and massive dislocations in energy prices, have increased risk business substantially. In this milieu:

- Short-term load forecasting provides a basis for estimating load flows and decision-making to avoid system overloading.
- Medium-term load forecasting enhances network reliability and reduces occurrences of

equipment failures and blackouts.

- Long-term load forecasting is important for securing adequate sources of supply though contract evaluations and futures trading.

Decisions on capital expenditures are primarily driven by present and future demand levels, which influence the size of cables, wires and equipment, but also the system configuration as a whole, as for example, substation density. Of all factors affecting network design and the timing of upgrades and enhancements, the long-term load forecast is the most sensitive.

Capacity margins are determined by subtracting projected peak demand, which has been adjusted for load management, from planned utility and non-utility supply. Planning for future supply adequacy requires that the supply be sufficiently higher than the projected load forecast to assure that demand will be expected to exceed available supply no more than a given number of times in a specified period. In projecting what capacity margin will provide the optimum level of reliability, utilities must review the costs of increasing capacity margins versus the costs to customers of inadequate supply.

One of the attributes of uncertainty is that it grows over time. As load uncertainty grows, due to factors such as price elasticity, effectiveness of demand side management and conservation programs, there must be sufficient diversity of options to cover contingencies.

- Forecasts of peak demand are important in planning for an adequate electricity supply. These projections indicate how much electricity will be required thereby translating into how much capacity will be needed.
- In forecasting peak demand, both load management and interruptible demands are taken into consideration, as well as conservation, energy efficiency, and other indirect demand side management programs. When these are subtracted from peak demand the result is the net peak demand, used by utilities in planning for their capacity needs.

Work Steps

- Identify key organizations and personnel that interface with load forecasting staff.
- Submit initial document request (below) to obtain overview of National Grid load forecasting organizations inputs, outputs and deliverables.
- Meet with staff of organizations that interface with the Load Forecasting organization to gain in-depth understanding of how inputs, outputs and deliverables are being utilized.
- Submit detailed document request for in-depth review of Load Forecasting region-specific inputs, outputs and deliverables.
- Evaluate the Load Forecasting organization's integration into the overall business processes and strategies.

- Evaluate the effectiveness of the Load Forecasting organization's integration into overall business processes and strategies. Perform retrospective accountability analysis to contrast other organization results attributable to load forecasts with actuals and assess nature of variances for selected region-specific factors.
- Assess overall effectiveness of the Load Forecasting organizations integration into the overall business processes and strategies predicated on the evaluative criteria, enumerated below.
- Identify, select and assess a representative sample of load forecasting projects that are completed and/or in progress, to track the process of integration into the overall business processes and strategies.
- Assess corporate Strategic & Operational Planning, Long Term Systems Planning, and Supply Procurement organizations' perceptions regarding the adequacy of the Load Forecasting organization's work products from these vantage points.

Evaluative Criteria or Expectations

- Planning for electric load, as well region-specific factors, is effectively integrated into the overall business processes and strategies
- Risk mitigation strategies being developed in conjunction with corporate Strategic Planning and Supply Procurement organizations are being incorporated in alternative forecasting scenarios, which reflect region-specific factors.
- Impact of region-specific non-linear effects such as price elasticity, demand side management, and conservation programs are incorporated.
- Corporate strategic plans and Supply Procurement planning processes reflect region-specific factors.
- Business process and planning outputs demonstrate effective use of load forecasts in construction program and operations planning.

The New York Independent System Operator's (NYISO) role in the State's electric forecasting, as it affects National Grid's forecasting

As stated on its website, the NYISO manages New York's electricity transmission grid – a 10,775-mile network of high-voltage lines that carry electricity throughout the state and oversees wholesale electricity markets. By virtue of the state's geographic location the NYISO serves as the focal point for the transfer of electricity to and from the Northeastern US and Canada.

The NYISO's vision is to:

- Maintain bulk power reliability through state-of-the-art processes and technology
- Develop and manage an efficient and competitive electricity wholesale market

- Provide authoritative, credible, objective, and accurate information on electricity markets and system operations
- Ensure quality of services in every aspect of our business

The mission of the NYISO, in collaboration with its stakeholders, is to serve the public interest by:

- Maintaining and enhancing regional reliability
- Promoting and operating a fair and competitive electric wholesale market
- Achieving these objectives in a cost-effective manner
- Providing quality customer service

The NYISO administers fair markets, allows for open access to the transmission system, operates a reliable transmission system and serves as the authoritative source for all energy related matters in New York.

- The NYISO offers a variety of marketplace data and information to enable buyers and sellers of electricity in New York's competitive energy markets to make informed trading decisions.
- Furthermore, the information the NYISO provides to Market Participants enables them determine whether to invest in new technologies, reduce energy usage, or propose new power plants and transmission lines so that New Yorkers will have adequate supplies of electricity.
- New systems are regularly conceived, studied and deployed in an ongoing effort to maintain transparency and trust. At the forefront is SMD2, a leading-edge, Web-based platform.

The Comprehensive Reliability Planning Process is the NYISO's multi-tiered approach to assess and address the state's future energy needs over a 10-year span. The process includes a Reliability Needs Assessment, which is published annually and outlines the bulk power system's needs. The Comprehensive Reliability Plan, which recommends solutions to meet those needs, is also released annually. These plans identify market solutions to help New York meet its future transmission, generation and demand response needs as part of an annual process of evaluating the electric grid so it remains safe and reliable for New York residents.

Planning at the NYISO entails development of processes to ensure the long-term adequacy of the bulk power system effectively managing the load forecasting, transmission planning, and system and resource planning functions. In this regard, transmission providers are required to post information on the underlying assumptions associated with their daily load forecasts, including weather and economic assumptions.

The NYISO's provides a load forecasting model to address these requirements -- a unified system that uses a series of equations, drivers, and historical information specific to each of eleven zones in New York.

- The model employs a combination of Advanced Neural Network (ANN) and linear regression models to generate forecasts, using a non-linear approach to estimate the model's parameters.
- The load forecasting model uses historical load and weather data information for each of the NYISO' eleven zones to develop zonal load forecast models. These models are then used together with zonal weather forecasts to develop an independent load forecast for each zone. The zonal forecasts are summed to produce a forecast for the New York Control Area ("NYCA") as a whole.
- The model develops the hourly load forecasts for the current day and the next six days, a total of up to 168 hours. The NYISO reviews and re-estimates its day-ahead forecasting models prior to June of each year to keep them up to date.

The NY ISO provides a Capacity Report, which includes:

- The capacity margin and forecasted peak hour in the New York Control Area (NYCA)*
- Total of energy/reserve capability scheduled in the Day-Ahead Market for the peak hour
- Operating Reserve Requirement based on one and a half times the NYISO's largest contingency resource loss
- Transaction exports scheduled Day-Ahead from NYCA installed capacity resources that may be recalled during reserve shortage conditions.

These processes are instrumental in monitoring current transmission congestion for purposes of both short and long-term resource planning and risk management. In this context, National Grid owns and operates approximately 6,000 miles of transmission lines in upstate New York. The NYISO provides extensive database and systems support to coordinate transmission system load forecasting requirements throughout New York State as a clearinghouse to ensure smooth load flows and interoperability across the transmission network, affecting National Grid's requirements within the context of the statewide transmission infrastructure as a whole.

Work Steps

- Identify key organizations and personnel responsible for interfacing with the NYISO.
- Submit initial document request (below) to obtain overview of National Grid processes and procedures for inputting load forecasting data to NYISO.
- Meet with the Transmission system load forecasting staff to gain in-depth understanding of the organization's forecasting requirements to accommodate NYISO's load forecasting requirements.

* The calculation of the capacity margin is based upon Total Capacity Scheduled Day-Ahead, less Forecast Peak Load less Operating Reserve Requirement plus NYCA DNI Scheduled Day-Ahead plus ICAP Exports.

- Submit detailed document request and develop in-depth understanding of Transmission load forecasting organization's functions, processes, and practices with respect to NYISO. Revisit forecasting models, assumptions and key drivers, and other inputs in this context.
- Review and evaluate Transmission Load Forecasting organizational design and effectiveness in fulfilling NYISO's requirements.
- Review and evaluate the Transmission Load Forecasting organizations' staffing, responsibilities and accountabilities with respect to NYISO.
- Assess Transmission Load Forecasting organization's cost control/cost oversight measures contrasted with perceived benefits derived through NYISO's coordination efforts.
- Evaluate Load Transmission Forecasting organization's efficiency and effectiveness in supporting NYISO, from both National Grid and NYISO perspectives.
- Assess results and performance of Transmission Load Forecasting organization in interfacing with NYISO predicated on the evaluative criteria, enumerated below.
- Identify, select and assess a representative sample of Transmission load forecasting projects that are completed and/or in progress, for the purpose of identifying opportunities to improve performance in supporting NYISO requirements.
- Assess interface with corporate Strategic & Operational Planning, Long Term Systems Planning, and Supply Procurement organizations and ascertain adequacy of the Transmission Load Forecasting organization's deliverables to NYISO in fulfilling mission, planning, goals and objectives, and strategies from these vantage points.

Evaluative Criteria or Expectations

- Effective near term load forecasting for transmission facilities is performed across the New York service area per NYISO requirements.
- Near term Transmission load forecasting requirements are fully compatible with NYISO interfaces.
- Short-term forecasts provided by NYISO models are effectively infused into the operations planning process.
- Risk mitigation strategies being developed in conjunction with NYISO, corporate Strategic Planning and Supply Procurement organizations are being incorporated in forecasting scenarios.
- Impacts of non-linear effects incorporated in NYISO's models are incorporated in load forecasting scenarios.
- Simulations to true up or reconcile previous NYISO model load forecasts with actual loads are performed to hone forecasting assumptions for future applications.

- NYISO model and capacity margin case studies demonstrate effective use of load forecasts in construction program and operations planning processes.

Potential Issues or Problems that Could Be Experienced

Some of the potential areas where Schumaker & Company has seen issues or problems at various utilities include the following:

- Consistency of internal load forecasting and modeling with NYISO forecasting and modeling
- Impact of distributed generation on load flow analysis
- Timing of capital investments with National Grid goals and objectives and technical needs of other participants
- Cost sharing mechanisms among the participants

Long-term System Planning

- Infrastructure planning and engineering functions
- Priorities, guidance and other instructions for evaluations, tradeoffs and decision making, including (1) an asset condition and management process (2) using input from the asset health review process, and (3) linking asset management decisions (e.g., predictive failure analyses) to improved reliability and performance
- Development of electric system forecasts and infrastructure requirements
- Consideration of alternative resources such as distributed generation and demand response initiatives in the planning process
- Consideration of other load and infrastructure factors, such as advanced metering, smart grid, and energy efficiency initiatives, in the planning process
- Processes for identifying, developing, and justifying the need for major projects (e.g., substations, breakers, switches, transmission feeders, secondary system, etc.)
- Process and criteria for making decisions regarding replace versus repair, including how the overall construction program planning process is affected
- Planning process for: (a) network versus radial systems, (b) underground versus overhead systems, (c) reliability versus new business tradeoffs, and (d) regional versus central planning dynamics
- Extent to which benefit/cost analyses and risk analyses are considered in the decision-making process; and an assessment of the specific types of benefit/cost and risk analysis methodologies
- Optimization of tradeoffs with respect to the replacement of older technology with newer technology and the resulting impact on the useful lives and depreciation assumptions of the existing infrastructure, cash flow and system reliability

Proposed Staffing

Mr. Martin J. Murphy will be the *Lead Consultant* for this work plan area and will be assisted by Mr. John Bakula, Mr. Siegfried Guggenmoos, Mr. Robert L. Rosenkoetter, and Mr. Dennis J. Schumaker as *Senior Consultants* in this area.

Mr. Murphy has over 30 years of consulting experience. His background, which includes a blend of experience in operations, engineering, information systems, and management, provides him with a unique perspective from which to perform the required investigations, develop viable findings, and formulate appropriate recommendations for improvement. His utility consulting experience encompasses numerous management and operations audits for commissions and utilities. His assignments have focused on the review of several functional areas, including system planning, workforce management; engineering and construction; purchasing and materials management; construction program planning; affiliated interests; transportation; legal services; facilities management;

risk management and finance; operational efficiency assessment; project planning and management; organizational analysis; budgeting and cost control; and technical and economic feasibility evaluation. Mr. Murphy has served as a *Lead Consultant* on numerous management and operations reviews for electric, gas, telephone, and water utilities. He has focused primarily on areas related to operations, engineering, construction, and support services. Several of these reviews also had a particular emphasis on performing reviews of the management of the workforce within the operational units of the companies and formulating recommendations for implementing improvements. Additionally, Mr. Murphy has performed numerous audits that focused on the relationships between utilities and their affiliated interests, especially in reference to the potential for cross-subsidization and compliance with the applicable regulations. In addition, he has a solid working knowledge of the purchasing and materials management, information technology, and support services functions of utilities, having served as *Lead Consultant* for reviews of each of these functions. His educational achievements include a Bachelor's degree in Civil Engineering from Cornell University, a Master's degree in Civil and Environmental Engineering from Cornell University, and an MBA from the University of Chicago.

Mr. Bakula has 32 years of business and industry experience with both private and public sector clients. Prior to performing management consulting work, he accumulated over 30 years of experience in Commonwealth Edison's distribution operations/maintenance and customer services areas. During that time he was responsible for various aspects of distribution operations and maintenance, including emergency storm restoration and ongoing distribution operations and maintenance activities, and customer services, including call center interface, meter reading, and billing. As such, a major portion of his experience involves hands-on and department-head responsibility for distribution procedures, planning, design, and construction. His experience covered a diverse territory and systems involving the complexity of National Grid operations. His experience encompassed all aspects of a distribution utility. This experience will help insure that National Grid is utilizing the knowledge and data across the organization in meeting their corporate goals in system planning area. Mr. Bakula holds a Masters in Engineering Management from Midwest College of Engineering and a BS in Electrical Engineering from the University of Missouri at Rolla.

Mr. Guggenmoos will be the *Senior Engineering Consultant* focused on National Grid's New York electric operations vegetation management program. The vegetation management program assessment in the *System Planning* area will also entail an examination of several other audit elements, including those included in the *Corporate Mission, Objectives, Goals, and Planning*, *Capital and O&M Budgeting*, *Program and Project Planning and Managemen*t, and *Workforce Management* areas. Mr. Guggenmoos has a degree in horticulture and over 30 years of experience in the vegetation management industry. He has conducted and published research in vegetation management, supervised vegetation management contractor field crews, managed a vegetation management contracting company that operated Canada-wide and in several New England states, held a position as a utility system forester, and provided vegetation management consulting or expert services to a dozen electric utilities, several utility commissions and law firms. Included in Mr. Guggenmoos' published works are methodologies and systems for assessing the cost effectiveness of vegetation management practices and operations, assessing vegetation management program status based on tree-related electric service interruptions, linking vegetation

management budgets with reliability, predicting future reliability and the cost of reliability improvements, and assessing tree exposure risk and its impact on reliability. In assessing a vegetation management program Mr. Guggenmoos explores from corporate sponsorship of the vegetation management program through assessments of workload, budgeting, derivation and actual application of maintenance cycles, contracting methodologies and oversight, down to the expression of results in reliability, clearances achieved and cost effectiveness of the field operations. He holds a Bachelor of Science degree in Agriculture, Horticulture major, from the University of Guelph, Guelph, Ontario. He has also completed coursework on the *Fundamentals of Financial Management* through the Northern Alberta Institute of Technology in Edmonton, Alberta, and on *Understanding Finance* at the Banff Centre School of Management in Banff, Alberta.

Mr. Rosenkoetter is a CPA and has more than 30 years of experience as a consultant and functional expert on consulting engagements and management audits for a variety of regulated and unregulated industries as well as for local, national, and international government agencies and bodies. His experience and expertise includes the assessment and evaluation of operating and capital budgets, budgeting processes, financial management and affiliate relationships; the development and implementation of financial forecasting, budgeting, accounting and information systems; the evaluation of organizations, planning functions, productivity and work flow; and the identification of cost reduction opportunities. Mr. Rosenkoetter has been involved in over 30 general or focused management audits for public utility commissions, evaluating the area of financial management, including the operating and capital planning and budgeting functions. He has provided consulting assistance to the following electric utilities: San Diego Gas & Electric Company, Orange and Rockland Utilities, PECO Energy, Potomac Edison Company, Georgia Power Company, Rockland Electric Company, Colorado Springs Utilities, Guam Power Authority, Potomac Electric Power Company, Commonwealth Edison, Florida Power Corporation, Electricity of Vietnam (EVN), Nebraska Public Power District, Pacific Gas & Electric Company, PLN (public power company of Indonesia), Sacramento Municipal Utilities District, Texas Utilities, Dayton Power & Light, IPALCO (Indianapolis Power & Light Company), PREPA (Puerto Rico Electric Power Authority) and Russia's electric power industry. He was also the Project Manager for a zero-based budgeting and productivity improvement project involving budget development, training, and analysis for three annual budget cycles for all government ministries and twenty of the largest state-owned enterprises for the Government of Greece. He was also involved in a multi-year project developing a financial forecasting and budget system for Pertamina, the state-owned oil company of Indonesia. Prior to beginning his consulting career, Mr. Rosenkoetter was employed as a financial analyst in the budget department of an international petrochemical company, responsible for budget consolidation and evaluation of capital expenditure proposals. Mr. Rosenkoetter earned both an MBA in Finance and MPA (Master of Professional Accountancy) from Georgia State University, after receiving a BS in Business Administration from Auburn University.

Mr. Schumaker, CMC®, PMP®, has over 31 years of business and industry experience with both private and public sector clients, including extensive experience in the electric, gas, telephone, and water utility industries. His experience in load forecasting and system planning has included consulting assignments

in generation planning, transmission planning, distribution planning, and associated engineering areas of multiple electric utilities. More recently, Mr. Schumaker has examined various aspects of system planning activities of PECO Energy (Exelon), Pennsylvania-American Water Company (American Water Works Company), and Philadelphia Gas Works. His consulting experience encompasses expertise in executive management and staffing, strategic and corporate planning, corporate organization and structure, project management, business process re-engineering, materials management, engineering and construction and operations and maintenance (electric, telephone, gas, and water facilities), information technology, cost allocation and affiliated transactions, and quality assurance. He has been the *Engagement Manager* and/or *Project Manager* on numerous assignments in the electric, gas, water, and telecommunications industry where long-term load forecasting issues have been addressed. He began his career as a *Design Engineer* with the Bechtel Corporation, after which he joined Theodore Barry & Associates (TB&A) prior to becoming one of the original founders of Schumaker & Company. Mr. Schumaker holds both a Bachelor's degree in Mechanical Engineering and a Master's degree in Nuclear Engineering from Ohio State University and an MBA from the University of Michigan.

Work Steps

The System Planning work plan area addresses activities in the delivery of electric energy to customers and the servicing of the customer account. As such, it includes activities traditionally referred to as system operations, T&D operations and maintenance, and T&D engineering and construction. The primary focus of our review is the electric distribution operations activities of National Grid. However, to the extent that transmission assets are also operated and maintained by the same resources as distribution assets, from a workload assessment, we will need to review both transmission and distribution activities.

Our evaluation will include a review of the organization and staffing of the electric operations group in relation to its ability to perform its chartered responsibilities in an effective and timely manner. This review will investigate work and information flows, staffing levels over time, work order and work assignment procedures, and crew utilization and scheduling techniques.

We will investigate and evaluate the current practices of National Grid relative to the use of decision support systems and information technology in the management of the electrical assets (both transmission and distribution) to determine (a) whether the processes used by National Grid are consistent with currently accepted levels of technology for the electric utility industry in general, (b) whether these processes are properly designed to support the National Grid organization in providing superior service to its customers, and (c) whether National Grid attempts to tie expenditures to performance levels.

Additionally, we will evaluate the engineering design and construction management functions as these are key areas to the efficient and effective operation and construction of the electric network that is the basis for the provision of reliable electric service to the customer. The engineering design and planning

function must be capable of determining with accuracy the future requirements for electrical service and making the proper provisions for same through the timely conceptualization and design of future electric facilities. Following this step, it is the responsibility of the construction management group to bring these electric facility designs to fruition in accordance with the established schedules, budgets, and quality parameters.

As specified in the RFP, the scope elements and components of investigation listed at the beginning of this work plan area are to be included in the audit. To fulfill the requirements of this portion of the National Grid audit, Schumaker & Company would follow, but not be limited to, the following work steps:

- Evaluate assignment of crews, crew size, crew equipment, and adherence to requested completion dates.
- Obtain and review copies of division and district work order and work assignment procedures.
- Review existing charts of information flow.
- Visit each of the divisions, interviewing appropriate division and district management to determine assignment of crews and utilization of scheduling techniques.
- Review backlog of work in each division; compare performance to customer requested completion dates.
- Evaluate the decision support systems used by National Grid in identifying construction and maintenance activities relative to transmission and distribution assets.
- Assess the use of internal data (contained within the various company databases) in supporting operations and providing adequate and timely information for rational management decision making regarding transmission and distribution assets.
- Review the current management and operational structure with regard to its effectiveness in supplying fully functional systems, effective technologies, and efficient services to users.
- Review the information systems that support the distribution operations, including, but not limited to:
  - Transformer load management
  - Trouble reporting system
  - Workforce planning, scheduling, and control
  - Outage reporting
  - Materials management systems
  - AM/FM system
  - Automated dispatching
- Evaluate organizational structure and staffing of all functions responsible for the engineering design and planning of transmission and distribution assets.

- Assess short- and long-range planning processes and methods based on which National Grid plans for and designs transmission and distribution assets.
- Review National Grid's distribution load models, econometric correlations, and forecasting technologies.
- Review the company's procedures for preparing long-term demand forecasts, including the adequacy of modeling techniques and staffing and the use of externally available data.
- Evaluate the effectiveness and the reasonableness of the facilities planning process with regard to efficiencies, cost avoidance, improved standards, and lower staffing requirements.
- Determine if there is a long-range (five years) plan with specific quantifiable goals for years one and two, and in more general terms for years three, four, and five.
- Assess the distribution system monitoring process used to formulate system design and engineering characteristics.
- Review plans for facilities expansion.
- Assess the processes employed to provide sufficient capacity in the distribution system.
- Review engineering design and construction standards
- Review planning engineering process and procedures.
- Review ongoing training programs for design and planning engineers.
- Evaluate the company's construction management practices and procedures.
- Assess distribution expenditures in construction, maintenance, and emergency categories for the past five years.
- Evaluate assignment of crews, crew size, crew equipment, and adherence to requested completion dates.
  - Obtain and review copies of division and district work order and work assignment procedures.
  - Review existing charts of information flow.
  - Visit each of the service areas, interviewing appropriate management to determine assignment of crews and utilization of scheduling techniques.
- Review backlog of construction work in each division; compare performance to customer requested completion dates.
- Visit current construction sites and review procedures and systems used.
- Evaluate construction management control mechanisms, including the use of nonconformance reporting systems and determination of any additional data/information elements that act as inputs to the construction planning/budgeting process.

- Review procedures for determining which construction projects are to be performed on an in-house basis versus those that are out-sourced.
- Review construction closeout procedures, final reports, development of as-built drawings, and procedures for formulation and disposition of final inventories.
- Review the existing National Grid programs for the use of contractors to address high levels of service workload, especially on a contingency or emergency basis.
- Review the rules governing the use of contractors including local discretion, approval procedures, availability, etc.
- Evaluate the procedures and policies which govern the identification, evaluation, and selection of outside contractors.
- Review the procedures in place for certifying that potential contractors are qualified to perform the subject work in a quality manner.
- Evaluate the systems which are in place for monitoring contractor productivity, quality of work performed, and compliance with specifications and schedules.
- Review procedures for performing postmortems on completed projects, undertaken for the purpose of ensuring that schedules, budgets, and quality standards have been complied with.
- Review procedures for incorporating the results of the above-referenced postmortems into the contractor database and future contractor decisions.
- Identify and review those quality management programs which are in place to ensure that the construction projects are completed with a high level of final quality.
- Assess the extent to which benefit/cost analyses and risk analyses are considered in the decision-making process and the specific types of benefit/cost and risk analysis methodologies.
  - Review budget policies, procedures, and policies to identify benefit/cost and risk analyses that are to be performed for capital and large O&M projects.
  - Interview personnel to determine actual practices.
  - Select several capital and large O&M projects, as appropriate, to verify benefit/cost and risk analysis conducted.
  - Evaluate appropriateness and effectiveness of analysis conducted.

Evaluation Criteria or Expectations

- The overall organization of the various functions related to electric transmission and distribution should be efficient and effective with clearly defined roles and responsibilities, staffing levels that are workload driven, and adequate consolidation of activities
- Work management tools used for managing work activities should include planning, scheduling, and resource techniques, and have a level of detail sufficient for adequate control, including:

- Manpower planning
- Logical work breakdown structures
- Progress reporting
- Productivity indicators
- Reasonable administrative costs

- Processes and procedures are clear and consistent with systems in place to insure consistent application of the guidelines and procedures across similar departments within the company.
- National Grid should have a methodology to review those processes on a regular basis to insure consistent application and that they benchmark themselves against the best practices in the industry.
- Use of information technology supports National Grid by providing timely and complete management information for decision making relative to transmission and distribution assets.
- Availability of critical information at all levels within National Grid has been achieved.
- Current technology is being used and emerging technology is being assessed for incorporation as appropriate.
- The overall organization of the various functions related to the engineering planning and design of electric transmission and distribution facilities should be efficient and effective with clearly defined roles and responsibilities, staffing levels that are workload driven, and adequate consolidation of activities. Adequate resources are utilized to meet requirements.
- An assessment of the historical accuracy of forecasts shows favorable results.
- Incorporation of technological advances in meeting the requirements of the customer base is cost effectively performed.
- The staffing levels of the design and planning engineering groups are appropriate in relation to the workload.
- Analyses of overall distribution system performance indicators are favorable.
- Overall construction expenditures should be based on cost/revenue benefits to the maximum extent possible.
- Project schedule and budget performance should be monitored and significant deviations explained.
- Final costs and completion dates of selected recent projects should be reasonable consistent with initial estimates.
- Project management systems should provide timely, useful information for managing construction and major maintenance projects.
- Field force supervision is knowledgeable and uses project management information for managing construction projects.

- Sound decision-making processes should be in place with regard to contracting.
- The contractor acquisition process should be equitable and reasonable and should include thorough vendor identification and valid bid solicitation and analysis activities.
- Utilization of contractors should be consistent with workloads.
- Plans and contracts should be in place to enable acquisition of contractor services on an expeditious basis in the event of a storm or catastrophe.
- Contractual arrangements with contractors should permit significant flexibility in their use.
- Metrics/methods should be in place to measure effectiveness of those processes and procedures in improving electric service and that these improvements support National Grid's goals.
- Quality indicators should show improvement in results and processes.

Potential Issues or Problems That Could Be Expected

Some of the potential areas where Schumaker & Company has seen issues or problems at various utilities include the following:

- There is not an active and ongoing effort to identify electric utility best operating practices nor have they been incorporated into daily operations.
- There is not an active and ongoing effort to identify new technological advances and to incorporate this advanced technology into the distribution network and the daily operations of the company.
- Changes to the company's customer base (growth, shrinkage, migration) have not been taken into proper account when assessing the health of the distribution network and performing planning and design for the future.
- Sufficient capital budgets and manpower resources are not available to properly address the distribution network planning and upgrade efforts.
- A company has responded to the declining industrial base and population of its service territory, such as that found by National Grid in much of upstate New York.
- Proper predictive failure analysis procedures are not run to properly evaluate the reliability of the distribution network.
- Factors such as energy incentive initiatives, advanced metering and reading, and smart grid concepts have not been incorporated into the network.
- While vegetation management is commonly the single largest expense line in the distribution O & M budget and trees the largest cause of uncontrolled outages, it is not uncommon to find little or no link between the existing, biologically driven vegetation management workload and the budget provided; therefore, the results of such a disconnect are usually apparent in inappropriate maintenance cycles and tree-caused outages.

Work Package II – Operational Planning

Supply Procurement

- Identify and evaluate supply portfolio principles, goals and objectives for mass market default customers
- Identify and evaluate risk management strategies and practices
- Review supply procurement strategies, policies, processes, and methods
- Review National Grid's financial and physical hedging practices
- Examine National Grid's use of performance benchmarking with other utilities
- Review portfolio performance goals
- Evaluate portfolio oversight and controls
- Examine the role of demand management/response, energy efficiency, and migration of retail customers to competitive suppliers in the portfolio and procurement processes

Proposed Staffing

Mr. Dennis J. Schumaker will be the *Lead Consultant* for this area. He will be assisted by Mr. Eugene N. Johnson as a *Senior Consultant* and Mr. Martin Murphy as a *Senior Consultant* in this area.

Mr. Schumaker, CMC®, PMP®, has over 31 years of business and industry experience with both private and public sector clients, including extensive experience in the electric, gas, telephone, and water utility industries. His experience in energy procurement and supply has included consulting assignments in generation planning and power procurement of multiple electric utilities. More recently, Mr. Schumaker has examined various aspects of supply procurement activities of PECO Energy (Exelon), Pennsylvania-American Water Company (American Water Works Company), and Philadelphia Gas Works. His consulting experience encompasses expertise in executive management and staffing, strategic and corporate planning, corporate organization and structure, project management, business process re-engineering, materials management, engineering and construction and operations and maintenance (electric, telephone, gas, and water facilities), information technology, cost allocation and affiliated transactions, and quality assurance. He has been the *Engagement Manager* and/or *Project Manager* on numerous assignments in the electric, gas, water, and telecommunications industry where long-term load forecasting issues have been addressed. He began his career as a *Design Engineer* with the Bechtel Corporation, after which he joined Theodore Barry & Associates (TB&A) prior to becoming one of the original founders of Schumaker & Company. Mr. Schumaker holds both a Bachelor's degree in Mechanical Engineering and a Master's degree in Nuclear Engineering from Ohio State University and an MBA from the University of Michigan.

Mr. Johnson brings 40 years of utility experience with knowledge of distribution asset management; work management; operations improvement; geographical information system (GIS); design; maintenance and operations; budgeting; reliability improvement; restoration; and decision support information systems. Mr. Johnson has spent most of his professional career in the electric utility industry, both working for American Electric Power and subsequently consulting to utilities. With many years of business management and engineering industry experience, he has demonstrated his strategic thinking amid demonstrated line management and internal consulting experience. Mr. Johnson has gained substantial supply procurement experience from participating in performance management and process improvement efforts involving evaluation of the effectiveness of a client's supply procurement processes when compared to internally or externally defined standards of operations. He also holds a Masters in Industrial and Systems Engineering, and a BS in Electrical Engineering from Ohio University. He has also completed numerous human resource and management programs, conferences, leadership training, supervisory training, and process improvements methodologies training and seminars.

Mr. Murphy has over 30 years of consulting experience. His utility consulting experience encompasses numerous management and operations audits for commissions and utilities. His assignments have focused on the review of several functional areas, including system planning, workforce management; engineering and construction; purchasing and materials management; construction program planning; affiliated interests; transportation; legal services; facilities management; risk management and finance; operational efficiency assessment; project planning and management; organizational analysis; budgeting and cost control; and technical and economic feasibility evaluation. Mr. Murphy has served as a *Lead Consultant* on numerous management and operations reviews for electric, gas, telephone, and water utilities. He has focused primarily on areas related to operations, engineering, construction, and support services. In addition, he has a solid working knowledge of the purchasing and materials management, information technology, and support services functions of utilities, having served as *Lead Consultant* for reviews of each of these functions. More recently, Mr. Schumaker has examined various aspects of procurement and materials management activities of PECO Energy (Exelon), Pennsylvania-American Water Company (American Water Works Company), and Philadelphia Gas Works. His educational achievements include a Bachelor's degree in Civil Engineering from Cornell University, a Master's degree in Civil and Environmental Engineering from Cornell University, and an MBA from the University of Chicago.

Work Steps

With the electric restructuring that has taken place in the electric utility industry, there are three different types of resources that an electric utility procures, including electrical energy supply, equipment and materials for maintaining the distribution network, and contracted services.

- Electrical energy supply – Whereas in the past an electric utility typically built its own facilities, in many states, the electric distribution utilities typically enter contracts with affiliated or non-affiliated third parties for providing various components of their load and energy requirements.

Electric utilities typically have to take a portfolio approach to contracting for this supply.

- Identify supply portfolio goals and objectives
  - Baseload, intermediate, peaking
  - Fuel source
  - Renewables
  - Distribution generation
- Identify demand-side portfolio goals and objectives
  - Interruptable
  - Switching
  - Energy efficiency
  - Time of day pricing
- Identify financial and physical hedging practices

♦ Equipment and materials for maintaining the distribution network

- Review purchasing policies, controls, and procedures as implemented and used by National Grid.
- Assess specific programs, procedures, and practices used to meet materials and service quality, price, and delivery objectives, including:
  - Material specifications, standards, and quality assurance practices
  - Vendor/contractor evaluation criteria and performance histories
  - Vendor/contractor bidding and selection procedures
  - Contracted services, by type and magnitude
  - Blanket and other major commodity purchasing practices
  - Emergency, will call, and petty cash purchasing practices
  - Requisitioning practices
  - Project procurement practices
  - Procurement engineering and value analysis practices
  - Information systems used to evaluate and improve procurement performance
  - Trafficking, shipping, expediting, salvage and claims practices
- Review and evaluate purchasing organization and staffing levels.
- Review and evaluate the control procedures in place to ensure that the purchasing function is conducted in an equitable manner and in accordance with established guidelines.

- Review the decision-making process for selecting vendors.
- Evaluate the procedures and policies which govern the identification, evaluation, and selection of vendors.
- Evaluate systems in place for monitoring vendor product quality and compliance with specifications and schedules.
- Review the process in place for the solicitation of bids from potential vendors and evaluation of those submitted bids.
- Review system in place for maintaining and updating information on potential vendors.
- Review policies relevant to the utilization of minority- and women-owned vendors.
- Review the procedures in place for certifying that potential vendors are qualified to supply the subject services or materials in a timely manner and at the required level of quality.
- Review procedures for performing reviews of historical vendor performance, undertaken for the purpose of ensuring that schedules, budgets and quality standards have been complied with.
- Review procedures for incorporating the results of the above-referenced reviews into the vendor database and future vendor selection decisions.
- Determine availability and adequacy of statistical data and management information systems used to facilitate the decision-making process, including:
  - Construction, spares, and supplies usage
  - Failure and preventive maintenance forecasts
  - Construction forecasts
  - Turnover, obsolete inventory, and service level statistics
  - Ordering and holding costs
  - Material lead times
  - Ordering point, ordering quantity, and safety stock levels
  - Administrative cost control system
  - Inventory management system.
- Review procedures used to forecast needs for equipment and supplies, operating and maintenance materials, construction equipment and materials, transportation equipment, maintenance supplies, and other required supplies and materials.
- Evaluate use of materials requirements planning (MRP) techniques. Determine what efforts, if any, have been made in working together with vendors for supplying inventory items on an immediate or just-in-time (JIT) basis.
- Review new item request procedures.
- Review coordination between purchasing, materials management, and stores.
- Review control of capitalized inventory items.

- Evaluate the paper flow cycle and the degree of computer automation and coordination.
- Review the procedures and controls in place to avoid inventory shrinkage and theft.
- Evaluate systems and procedures employed in warehousing facilities support, inventory control, and stores management, including:
  - Review warehouse and stores space quality and quantity by major location(s).
  - Review stores staff activities by major location(s).
  - Review storage layouts and material handling procedures.
  - Review commodity codes relating to location or purchase sources.
  - Evaluate user service levels and obsolete/slow moving parts review procedures.
  - Review manual and automated records systems.
  - Review order placement, parts retrieval, and dispatching processes.
  - Review stocking strategy relative to material stored by type, quantity, and reorder criteria.
  - Review inventory tracking methodology and verification process.
  - Review physical inventory procedures, frequency and shrinkage history.
  - Determine warehousing techniques at major locations to assess efficiency of the warehousing function.
- Assess the materials distribution system to evaluate its effect on inventory levels and fill rates to user departments.

♦ Contracted services for technical services in support of the construction and maintenance of the distribution network

- Review policy and procedures for acquiring contracted services
- Review list of all contracted services and decision making process behind each service

Evaluative Criteria or Expectations

♦ Is there an integrated procurement services and materials management program that promotes efficient and effective management of its supply chain?

♦ Are the proper purchasing procedures in place to ensure adequate vendor competition and the resultant economical prices for purchased materials while still providing those required materials in a timely manner?

♦ Are the established materials management procedures and controls adequate to protect working capital investment and provide the required materials to the operating departments?

♦ The purchasing and materials management functions of a utility should be focused on

optimizing the ability of the company to procure materials at the most economical prices, while providing for effective materials requirements planning and coordination of its financial commitments with respect to procuring materials and services.

- The purchasing function should ensure that an appropriate quantity and quality of goods and services is being procured at lowest possible cost.
- The materials management function should provide efficient inventorying, distribution, and control of acquired materials and it should optimize inventory holding costs while ensuring appropriate service levels to construction, operations, maintenance, and other user departments.
- The stores function should ensure positive control and efficient distribution of material resources. Our review will evaluate organizational structure, policies, and procedures for effective and efficient coordination and management of the purchasing, materials management, and stores functions.

Potential Issues or Problems That Could Be Expected

Some of the potential areas where Schumaker & Company has seen issues or problems at various utilities include the following:

- Over reliance on outside third parties for managing the energy supply portfolio
- Ineffective use of purchasing and materials management application software for managing the supply procurement function

Capital and O&M Budgeting

- Roles of the Board of Directors, and executive and senior management
- Processes by which the Board gets involved in the capital and O&M budgets. Identify the level of budget detail the Board sees and what their responsibilities are with regard to the budgets
- Construction/capital priority setting process
- Incremental O&M expenses associated with new construction that are factored into the budgeting process
- The effects of allowed revenues/rates and financing opportunities or constraints on budget levels and priorities
- Relationships among planned/budgeted expenditures, rate case proposed expenditures, and actual expenditures
- Capital budgeting process, including project authorization, project appropriation, increase/decrease of authorization/appropriation, capital budget status reporting, validation in advance of appropriation, funding controls, and other elements of the capital budgeting process
- Budgeting guidelines, practices and procedures, including "zero-based" and other alternative methods
- Roles of and relationships between regional and centralized planning and budgeting functions
- Methodology for prioritizing and determining which capital projects get approved, including an examination of modeling software for capital and O&M budgeting
- Management and control of capital budgeting. Include the methodologies used to control and manage program and project capital costs in the near and long term; the annual process for reviewing and determining whether total capital and O&M planned expenditures are adequate; cost control systems and processes from both a top-down and bottom-up perspective; controls to ensure that increase and decreases to the construction budget/expenditures are justified and appropriately approved
- Bottom-up and top-down processes for developing the budgets for capital/construction classifications and categories

Proposed Staffing

Mr. Robert L. Rosenkoetter will be the *Lead Consultant* for this work plan area. He will be assisted by Patricia H. Schumaker as a *Senior Consultant* in this area. This team will working closely with Mr. Lee E. Burgess, who is the *Lead Consultant* of the *Corporate Mission, Objectives, Goals, and Planning* work plan area and will work closely with Mr. Rosenkoetter regarding executive management and Board input review as well as performance and results management.

Mr. Rosenkoetter is a CPA and has more than 30 years of experience as a consultant and functional expert on consulting engagements and management audits for a variety of regulated and unregulated industries as well as for local, national, and international government agencies and bodies. His experience and expertise includes the assessment and evaluation of operating and capital budgets, budgeting processes, financial management and affiliate relationships; the development and implementation of financial forecasting, budgeting, accounting and information systems; the evaluation of organizations, planning functions, productivity and work flow; and the identification of cost reduction opportunities. Mr. Rosenkoetter has been involved in over 30 general or focused management audits for public utility commissions, evaluating the area of financial management, including the operating and capital planning and budgeting functions. He has provided consulting assistance to the following electric utilities: San Diego Gas & Electric Company, Orange and Rockland Utilities, PECO Energy, Potomac Edison Company, Georgia Power Company, Rockland Electric Company, Colorado Springs Utilities, Guam Power Authority, Potomac Electric Power Company, Commonwealth Edison, Florida Power Corporation, Electricity of Vietnam (EVN), Nebraska Public Power District, Pacific Gas & Electric Company, PLN (public power company of Indonesia), Sacramento Municipal Utilities District, Texas Utilities, Dayton Power & Light, IPALCO (Indianapolis Power & Light Company), PREPA (Puerto Rico Electric Power Authority) and Russia's electric power industry. He was also the Project Manager for a zero-based budgeting and productivity improvement project involving budget development, training, and analysis for three annual budget cycles for all government ministries and twenty of the largest state-owned enterprises for the Government of Greece. He was also involved in a multi-year project developing a financial forecasting and budget system for Pertamina, the state-owned oil company of Indonesia. Prior to beginning his consulting career, Mr. Rosenkoetter was employed as a financial analyst in the budget department of an international petrochemical company, responsible for budget consolidation and evaluation of capital expenditure proposals. Mr. Rosenkoetter earned both an MBA in Finance and MPA (Master of Professional Accountancy) from Georgia State University, after receiving a BS in Business Administration from Auburn University.

Ms. Schumaker is a CPA and has over 31 years of diverse management consulting experience. She has examined similar issues at various publicly-owned utilities and public power municipalities and agencies. Her audit experience includes the full spectrum of functional reviews of gas, electric, water, and telephone utilities. Some of the areas that she has reviewed include: organization and management, human resources, financial management, affiliated relationships and cost allocations, information systems/information technology, quality improvement, and support services. Her vast experience in performing reviews in the financial management area include: Pennsylvania-American Water Company, Philadelphia Gas Works, PECO, ALLTEL Pennsylvania, Cincinnati Gas & Electric Company/Union Light, Heat and Power Company, City of Sturgis Electric Department, Commonwealth Telephone Company, Elizabethtown Gas Company/NUI Corporation, Illinois Bell Telephone Company (Ameritech), Kentucky-American Water Company/American Water Works Corporation, Kingsport Power Company, New England Telephone Company/NYNEX, New Jersey Natural Gas Company/New Jersey Resources Corporation, Pennsylvania Gas & Water Company, Pennsylvania Power & Light Company, Philadelphia Gas Works, Philadelphia Suburban Water

Company/Pennsylvania Enterprises, Southern California Gas Company, South Jersey Gas Company/South Jersey Industries Corporation, United Water New Jersey, West Texas Utilities Company/Central and Southwest Corporation, Western Kentucky Gas Company/Atmos, and U S WEST. Ms. Schumaker also performed numerous studies for utility, government, manufacturing and distribution, retail, and service clients while an auditor and consultant with Arthur Andersen and Lybrand Ross Bros. & Montgomery. She holds a BSBA in Accounting from the Ohio State University and an MBA from the University of Michigan, where she has also completed post-graduate coursework. Besides CPA, she also holds other certifications as *Certified Management Consultant* (CMC®) and *Project Management Professional* (PMP®).

Work Steps

- Determine the various roles of all organizations and positions involved in developing, approving, and monitoring the Capital and O&M Budgets for National Grid's New York operations.
  - Review the details of the Board of Directors and executive and senior management's involvement in the capital and O&M budgets and the budget processes.
  - Examine the roles of and relationships between regional and centralized planning and budgeting functions.
  - Determine the budget task location of all budgeting functions.
  - Assess the appropriateness of current roles and relationships.
  - Determine the source and reasonableness of budget assumptions.
  - Determine if appropriate organizational levels have access to, or are responsible for planning, development, approval, management, and revision of the capital and O&M budgets.
- Review budgeting policies, practices, procedures, and guidelines for completeness and clarity.
  - Review capital and O&M budget calendars of events.
  - Assess guidelines for completeness, ease of use, efficiency, and effectiveness.
  - Flow chart both the capital and O&M budget processes, as necessary.
  - Determine degree of compliance with budget procedures.
  - Walk through the budget guidelines with knowledgeable personnel to determine that actual practices followed the guidelines.
  - Determine adequacy of budget detail.
  - Compare and contrast budget and reporting categories with the chart of accounts.
  - Determine if any zero-based budgeting procedures or methodologies have been utilized.

- Determine if any other activity-based budget process have been utilized.
- Assess the appropriateness of using zero-based budgeting or some other activity-base budgeting concepts in developing the O&M budget.

♦ Determine whether a bottom-up or top-down process is used for developing the capital and O&M budgets.

- Assess the process used from the standpoint of: budget development efficiency, cost control, and operational effectiveness.
- Determine what is used for capital/construction classifications and categories.

♦ Review priority setting process for the capital budget.

- Evaluate details available.
- Determine adequacy and completeness of review.
- Assess availability of, appropriateness of, and compliance with, standard methodologies to rank or set priorities.
- Select several projects to test assumptions used in setting priorities.

♦ Determine if incremental O&M expenses associated with new construction are factored into the capital and the O&M budget processes.

- Assess the appropriateness of the expenses included.
- Determine that all capital projects have been treated equitably.

♦ Assess the effects of revenues/rates and financing opportunities or constraints on budget levels and priorities.

- Review budget instructions and assumptions used in developing the last five annual capital and O&M budgets.
- Interview personnel responsible for managing the budget preparation process.

♦ Define and evaluate the capital budgeting process, including project authorization, project appropriation, increase/decrease of authorization/appropriation, capital budget status reporting, validation in advance of appropriation, funding control, etc.

- Review how projects and funds are authorized and how authorizations and appropriations can be modified.
- Assess completeness and appropriateness of authorization, fund appropriation and the change process.
- Identify and assess how the status of capital projects are reported and validated in advance of appropriation of funds, and the extent of controls on capital funding.

♦ Identify the current methodology for prioritizing and determining which capital projects get approved

- Review the details of the methodology.
- Analyze any historical problems with using this methodology.
- Assess the appropriateness of the methodology.
- Determine if appropriate cost/benefit analysis is conducted for major programs and capital expenditures.

♦ Examine any modeling software used for capital and O&M budgeting.

- Assess effectiveness and efficiency of using this software.
- Evaluate software selection process.

♦ Determine how capital and O&M budget expenditures are managed and controlled.

- Identify the methodologies used to control and manage total company, program and project capital and O&M costs in the near and long term.
- Determine if the capital and O&M budget expenditures are reviewed on an annual basis for adequacy, how and by whom.
- Determine what cost control systems and processes are used.

♦ Determine if there are controls over revisions to the budgets.

- Determine who is responsible for initiation of the revision request.
- Evaluate the review and approval process.
- Identify any parameters or standard ranges uses.
- Determine degree of compliance by selecting several changes from the budgets to determine the adequacy of evaluation and approvals received.
- Evaluate the ability to modify the original budget and to adapt to changed circumstances or corporate plans.

♦ Compare planned/budgeting expenditures, rate case proposed expenditures, and actual expenditures.

- Prepare schedule comparing budgeted, rate case proposed, and actual expenditures for the past five years.
- Review budget variance reports (with explanations) for both the capital and O&M budgets. Evaluate variance reporting standards, policies, and procedures.
- Evaluate quality and quantity of analysis conducted on budget variances. Assess reasonableness of variance explanations. Determine the ability of National Grid to provide ad-hoc or other non-recurring analyses and reports.
- Identify significant variances.
- Assess rational provided for anomalies.

- Determine if National Grid's budget management and control procedures are effective in enhancing operational control over costs.

- Assess the degree of integration of the budget processes and systems with the accounting processes and systems, as well as with other financial processes and systems. Determine the linkage with long-term plans.
- Determine how budget forecasts are incorporated into rate case revenue requirements?
  - Identify responsibilities
  - Assess effectiveness and efficiency
- Assess the degree and effectiveness of automated systems support for the budget processes.
- Review actual versus budget expenses for both the Capital and O&M Budgets for the past five years.
- Evaluate budget processes for effectiveness and efficiency.

Evaluation Criteria or Expectations

- Organizations and positions responsible for planning, developing, managing, revising, and approving the capital and O&M budgets are appropriate for the tasks involved.
- Capital and O&M budget guidance (policies, procedures and standards) and training is adequate, complete and appropriate for the level of organization involved.
- Capital and O&M budget preparation process is simple, straightforward, and easy to use.
- The capital and O&M budgets are prepared with an appropriate level of detail in defining responsibility centers, activities, and cost categories.
- The capital budget process requires adequate review and economic evaluation and justification.
- There is an appropriate methodology to rank proposed capital budget projects.
- Past accuracy for both the capital and O&M budgets are reasonable.
- The capital and O&M budgets provide users with the appropriate level of detail and adequate technical features to enable sound control over financial operations
- The capital and O&M budgeting and control processes and systems compare actual amounts to budgeted amounts and produce reports that are timely, accurate, and conducive to management by exception.
- Both the capital and O&M budgets are utilized effectively as cost controls mechanisms.
- Variance reporting standards are well defined and complied with.
- The capital and O&M budgets are able to be revised efficiently whenever actual results to date warrant revisions.

- The capital and O&M budget processes are adequately linked to the financial planning and other accounting and operational systems.
- The capital and O&M budget systems are efficient and effective and used in a consistent manner throughout the entire National Grid, New York electric operations organization.

Potential Issues or Problems That Could Be Expected

Some of the potential areas where Schumaker & Company has seen issues or problems at various utilities include the following:

- Budgets take too long to be developed and approved, impacting the start of the budget year.
- Budgets are too difficult to develop and change, impacting on the time and effort required, therefore budgets do not get revised as often as they should.
- Budgets, especially operating budgets, reflect what was spent in prior years and not necessarily what is needed. They may not reflect the amount of money needed for the tasks involved.
- Budget variances are not examined by proper management levels and may not be explained by knowledgeable personnel.
- Budgets variances are not reported.
- Ranges for variance may be set too high or too low and may not require meaningful analysis.
- Capital budget projects may not be evaluated realistically. Savings are projected too high; expenditures are underestimated; additional operating cost may not be included.
- Capital budget projects may not be evaluated against each other using a meaningful methodology, leading to improper priorities being set.
- Lack of standardization in O&M and capital budget preparation.
- Authorizations lacking, or at least, documentation of proper authorizations.
- Capital projects being authorized based on incorrect criteria.

Work Package III – Operational Execution

Program and Project Planning and Management

- Conversion of capital and O&M plans and budgets into specific programs and projects
- Process for prioritization and approvals over various time horizons
- Program and project planning, design, estimating, engineering, costing, scheduling, and execution
- Planning and management of materials, equipment, transportation, and other logistical support for programs and projects
- Analysis and decision-making for tradeoffs to optimize the use of in-house workforce versus contractor labor
- Contractor and engineering bidding practices
- Planning and management of construction contractor projects
- Quality assurance and quality control at the program and project level
- Contractor management, project/program management, including accountability, goals, objectives, and performance measurement
- Methodology for tracking cost, work units and work quality for specific programs and projects. Identify the typical variances between original budgeted and actual capital expenditures and work units. Determine how variances are tracked and minimized in order to improve cost control, efficiency/productivity, and work quality

Proposed Staffing

The *Lead Consultant* for the *Program and Project Planning and Management* area is Patricia H. Schumaker. She will be assisted by Dennis J. Schumaker, Martin J. Murphy, and Robert L. Rosenkoetter as *Senior Consultants* in this area. All will be reviewing program and project management activities, but with a slightly different focus. Patricia Schumaker, as well as Dennis Schumaker, are both certified as *Project Management Professionals* (PMP®s) by the Project Management Institute (PMI), which is the premier certifying organization for program and project management areas.

Ms. Schumaker, PMP®, CMC®, CPA, has over 31 years of experience consulting for government agencies, utilities, telecommunications firms, manufacturing and distribution firms, and service organizations. She has considerable experience as both *Engagement Manager* and/or *Project Manager* on more than 100 projects, including management, operations, and technology reviews; business process reengineering and process outsourcing improvement projects, and technology implementation projects, for public and private sector organizations. As a PMP®, she is required to participate in continuing education programs. Her focus will be on the *Technology Force Program and Project Planning and Management*

area. Ms. Schumaker has also acted as *Lead Consultant* in the areas of organization/ management, accounting/financial management, affiliate relationships/transactions, cost allocations, information technology/systems, human resources, quality improvement, and support services (purchasing, materials management, transportation, safety, legal, risk management, records management) on numerous management and operations assessments and performance reviews. Specifically she has performed reviews of the numerous electric utilities, including Central Maine Power Company, City of Niles (MI) Utilities Department, City of Sturgis (Michigan) Electric Department, Entergy, Kingsport Power Company (AEP), Middleborough (MA) Gas & Electric Department, Pacific Gas & Electric Company, PECO Energy, Pennsylvania Power & Light Company, Union Light Heat and Power Company, West Texas Utilities Company (Central & Southwest Corporation), and others. She also has extensive experience in the gas, water, and telecommunications industries. Besides her extensive consulting experience in the information technology/systems areas, she directed the Information Services organization of ADP Network Services where her duties included development, maintenance, and operation of in-house systems and applications. She implemented new technical standards and administrative procedures and controls as part of a major reorganization. She also led the streamlining and optimizing of daily, weekly, and monthly processing. This turnaround resulted in over 50% savings of computer time and capacity, eliminated the need for additional hardware, and provided substantial cost savings annually through subsequent staff reductions. She was also notably responsible for implementing a company-wide budget system accessed by offices throughout the US. This system incorporated new features that increased reliability while decreasing processing times by 90%. She holds a BSBA in Accounting from the Ohio State University and an MBA from the University of Michigan, where she has also completed post-graduate coursework. Besides CPA, she also holds other certifications as *Certified Management Consultant* (CMC®) and *Project Management Professional* (PMP®).

Mr. Schumaker, PMP®, CMC®, has over 31 years of business and industry experience with both private and public sector clients, including extensive experience in the electric, gas, telephone, and water utility industries. His consulting experience encompasses expertise in executive management and staffing, strategic and corporate planning, corporate organization and structure, project management, business process re-engineering, materials management, engineering and construction and operations and maintenance (electric, telephone, gas, and water facilities), information technology, cost allocation and affiliated transactions, and quality assurance. He began his career as a design engineer with the Bechtel Corporation, after which he joined Theodore Barry & Associates (TB&A) as a Manager. He acquired more than eight years of consulting experience with TB&A before becoming one of the original founders of Schumaker & Company in 1986. He has been the *Engagement Manager* and/or *Project Manager* on numerous assignments in the electric, gas, water, and telecommunications industry where program and project management issues have been addressed. His focus will be on the *Office/Professional Force Program and Project Planning and Management* area.

Mr. Murphy, PE, has over 30 years of consulting experience. His background, which includes a blend of experience in operations, engineering, information systems, and management, provides him with a unique perspective from which to perform the required investigations, develop viable findings, and formulate appropriate recommendations for improvement. He has focused primarily on areas related to

operations, engineering, construction, and support services. His recent electric operations and reliability experience includes an assessment of PECO Energy and AEP/Kentucky's distribution system in its Hazard service territory. Mr. Murphy was also engaged to assist the New Jersey Board of Public Utilities (BPU) staff in reviewing and monitoring the implementation of recommendations resulting from an investigation of the system reliability for New Jersey's electric utilities. Besides his extensive utility industry experience, he has other experience specializing in the areas of ERP information system selection and implementation, manufacturing operations improvement, and business process reengineering. His educational achievements include a Bachelor's degree in Civil Engineering from Cornell University, a Master's degree in Civil and Environmental Engineering from Cornell University, and an MBA from the University of Chicago. His focus will be on the *Field Force Program and Project Planning and Management* area.

Mr. Rosenkoetter, CPA, has more than 25 years experience as a consultant and functional expert on consulting engagements and management audits for a variety of regulated and unregulated industries as well as for local, national, and international government agencies and bodies. His experience and expertise includes the assessment and evaluation of affiliate relationships and financial management, as well as the development and implementation of accounting and information systems, and financial forecasting and budgeting processes and systems; the evaluation of organizations, planning functions, productivity and work flow; and the identification of cost reduction opportunities. Mr. Rosenkoetter has been involved in approximately 25 general or focused management audits for public utility commissions, including PECO Energy, Pennsylvania-American Water Company, Philadelphia Gas Works, SBC Illinois, Cincinnati Bell Telephone Company, Orange and Rockland Utilities, National Fuel Gas Company, United Cities Gas Company, GTE Pennsylvania, Rockland Electric Company, Guam Telephone Authority, Guam Power Authority, Southern California Gas Company, GTE Illinois, United Telephone Company of Pennsylvania, Contel Telephone Company of Illinois, ALLTEL Pennsylvania, and others. Mr. Rosenkoetter earned both an MBA in Finance and MPA (Master of Professional Accountancy) from Georgia State University, after receiving a BS in Business Administration from Auburn University. His focus will be on the *Office/Professional Force Program and Project Planning and Management* area.

Work Steps

- Review program and project methodologies in place for various National Grid organizations.
- Review the conversion of capital and O&M plans and budgets into specific programs and projects.
  - Identify how capital and O&M plans are reflected in capital and O&M budgets and from these budgets into programs and projects.
  - Select several programs and projects and trace them back through either the capital or O&M budget into the planning phase, long-term plans, business plans, etc.
  - Evaluate the conversion process for effectiveness and efficiency.

- Review and assess how programs and projects are prioritized and approved over various time horizons.
- Evaluate how program and project planning, design, estimating, engineering, costing, scheduling, and execution are performed.
- Review and assess how materials, equipment, transportation and other logistical support are planned and managed for programs and projects.
- Identify how tradeoffs are analyzed and decisions made to optimize the use of in-house workforce versus contractor labor; evaluate if reasonable.
- Identify how contractor and engineering bidding practices are performed; evaluate if reasonable.
- Identify how construction contractor projects are planned and managed; evaluate if reasonable.
- Assess how quality assurance and quality control at the program and project level are handled.
- Assess how contractor management and project/program management are performed, including accountability, goals, objectives, and performance measurement.
- Review the methodology for tracking costs, work units and work quality for specific programs and projects; identify typical variances between budgets and actual expenditures and work units; and determine how variances are tracked and minimized.
  - Review policies, procedures, and guidelines for tracking actual costs and comparing them to budgets.
  - Identify types of variances and parameters for reporting variances.
  - Trace actual costs, work units, and work quality measurements through to budget comparisons and variance reporting.
  - Evaluate the form and format for the periodic reporting of variances between actual expenses, work units, and work quality and the budgets.
  - Assess the appropriateness of the type of organizations involved in the recording, reporting, management and monitoring and review of variances.

In our work, Schumaker & Company will review how each of these topics are performed by National Grid against best practices, as discussed further in the Evaluative Criteria or Expectations section of this work plan area.

Evaluative Criteria or Expectations

- The activities performed for converting capital and O&M plans and budgets to specific programs and projects is based on sound and reasonable policies, processes, and procedures.
- Programs and projects, including those having various time frames, are formally prioritized and

approved with justification included that supports decisions made.

- Program and project planning, design, estimating, engineering, costing, scheduling, and execution activities are planned and managed efficiently and effectively based on sound and reasonable policies, processes, and procedures. These activities are supported appropriately by technology systems.
- Quality assurance and quality control activities are regularly performed, including tracking costs, work units, and work quality for specific programs and projects, including variances. Activities are performed to minimize variances so as to improve the cost control, efficiency/productivity and work quality of programs/projects.
- Materials, equipment, transportation and other logistical support for programs and projects are planned and managed efficiently and effectively based on sound and reasonable policies, processes, and procedures.
- Analysis of tradeoffs between the use of in-house workforce versus contractor labor is adequately performed and decisions are made based on sound and reasonable policies, processes, and procedures. These activities are supported appropriately by technology systems.

Potential Issues or Problems That Could Be Expected

In the course of many audits, Schumaker & Company has identified a number of key issues related to program and project management. We will pay close attention to this in the course of our review of National Grid, as they are potentially significant issues for a company. Frequently we see:

- Little importance is place by senior management on using program/project management principles.
- Policies, procedures, and practices for tracking, reporting, and managing programs/projects are informal; therefore, employees do not follow best practices espoused by leading organizations, such as Project Management Institute principles.
- The lack of a standardized program/project methodology exists across the organization; without such standardization, management is unable to compare program/project progress and results.
- Few employees have the background to really understand how to manage programs and projects.

Workforce Management

- Planning, conversion, and execution of programs and projects into short-term and day-to-day work
- Work management systems that are used to schedule and manage field crews, including transportation, equipment and materials
- Roles and responsibilities of project managers, supervisors and inspectors
- Quality assurance and quality control
- Management of employee availability, utilization, efficiency, productivity and effectiveness
- Translation of information about rework, failures, repair history, etc. into corrective actions, infrastructure aging analysis, and repair versus replace decisions
- Feedback of workforce and work management systems into performance improvement opportunities

Proposed Staffing

Schumaker & Company brings extensive experience in workforce management. The combined years of experience of the three consultants assigned to this area exceeds 75 years. They offer a unique combination of operational and human resource management perspectives. They offer extensive analytical capabilities to assess workforce productivity and efficiency. More importantly, they understand the drivers of workforce productivity and efficiency and can identify the root causes of problems and recommend appropriate improvement strategies.

The *Lead Consultant* for this area will be D. Kerry Laycock. He will be assisted by Mr. John Bakula and Mr. Martin Murphy as *Senior Consultants* in this area.

Mr. Laycock, CMC®, has been consulting for more than 24 years and has partnered with Schumaker & Company for the past seven years. His clients include a wide range of public and private sector organizations including regulated and municipal utilities. Mr. Laycock has been the senior Human Resources consultant for Schumaker & Company on three Pennsylvania Public Utility Commission audits. He has been responsible for looking at the workforce management and planning from both a HR and operational perspective. For example, Mr. Laycock has audited workforce management for the customer service function of these utilities. He has looked at functional performance metrics and related these to workforce management practices including job design, staffing, training, scheduling, evaluation, and employee development. In conjunction with Phase III of the audit of Pennsylvania American Water Company, Mr. Laycock helped the company develop a workforce planning process that will allow them to predict retirements, assess the effects of loss of institutional knowledge and develop mitigation strategies. As with most utilities, Pennsylvania-American Water Company faces a significant increase in employee retirements as a result of an aging workforce. Mr. Laycock holds a Bachelors of Business Administration in Management from Eastern Michigan University and a Masters

degree in organization development from Eastern Michigan University. He is also a qualified administrator of the Myers-Briggs Type Indicator®.

Mr. Laycock also has much non-audit consulting work experience, including:

- Mr. Laycock has worked with a number of utilities on workforce management. Recently, Mr. Laycock completed a comprehensive process and job analysis of a municipal water utility. As a result of his work, the utility was able to take advantage of an early retirement program that allowed for implementation of permanent staffing reductions and operational efficiencies. Working with union/management design teams, operations and mechanic jobs were combined into a single classification. This classification is divided into five levels with each level having progressively higher licensing and competency requirements. Utilizing the combined classification, the water treatment plant now operates with five fewer employees, including one less supervisor. Similar results were achieved in the wastewater treatment plant. Overall, the project led to permanent reduction of 17 FTEs and a total annual reduction in labor and benefit costs of nearly $700,000.
- Mr. Laycock consulted for a number of years with Detroit Edison and was engaged in a variety of workforce redeployment projects aimed at helping the company prepare for deregulation. Mr. Laycock also performed workforce management consulting for Detroit Edison's credit union. His application of queuing models allowed for the expansion of the customer contact center (telephone, mail and email) to provide a wider range of banking services without a corresponding increase in staffing levels.
- Mr. Laycock has also worked on several disability management projects for a number of companies, including Detroit Edison. He has developed a proprietary database to manage medically restricted employees in use by several companies. Mr. Laycock is also part owner of a Canadian workforce management software company where he has lead key aspects of product development.

Mr. Bakula has 32 years of business and industry experience with both private and public sector clients. Prior to performing management consulting work, he accumulated over 30 years of experience in Commonwealth Edison's distribution operations/maintenance and customer services areas. During that time he was responsible for various aspects of distribution operations and maintenance, including emergency storm restoration and ongoing distribution operations and maintenance activities, and customer services, including call center interface, meter reading, and billing. The area of workforce management is critical to these organizations. Mr. Bakula's experience includes project management of large distribution projects. He was accountable for the design and development of an automated system to manage a field meter workforce. This workforce management system was a major improvement to the workforce and resource utilization. His consultative experience involved developing recommendations for reengineering the overhead and underground maintenance and construction functions for Commonwealth Edison. Also, Mr. Bakula was responsible for developing systems for a balanced scorecard for the customer service organization. His present consulting work helps businesses align their individuals and team goals with the business goals. Mr. Bakula holds a Masters in

Engineering Management from Midwest College of Engineering and a BS in Electrical Engineering from the University of Missouri at Rolla.

Mr. Murphy has over 30 years of consulting experience. His background, which includes a blend of experience in operations, engineering, information systems, and management, provides him with a unique perspective from which to perform the required investigations, develop viable findings, and formulate appropriate recommendations for improvement. His utility consulting experience encompasses numerous management and operations audits for commissions and utilities. His assignments have focused on the review of several functional areas, including workforce management; engineering and construction; purchasing and materials management; construction program planning; affiliated interests; transportation; legal services; facilities management; risk management and finance; operational efficiency assessment; project planning and management; organizational analysis; budgeting and cost control; and technical and economic feasibility evaluation. Mr. Murphy has served as a *Lead Consultant* on numerous management and operations reviews for electric, gas, telephone, and water utilities. He has focused primarily on areas related to operations, engineering, construction, and support services. Several of these reviews also had a particular emphasis on performing reviews of the management of the workforce within the operational units of the companies and formulating recommendations for implementing improvements. Additionally, Mr. Murphy has performed numerous audits that focused on the relationships between utilities and their affiliated interests, especially in reference to the potential for cross-subsidization and compliance with the applicable regulations. In addition, he has a solid working knowledge of the purchasing and materials management, information technology, and support services functions of utilities, having served as *Lead Consultant* for reviews of each of these functions. His educational achievements include a Bachelor's degree in Civil Engineering from Cornell University, a Master's degree in Civil and Environmental Engineering from Cornell University, and an MBA from the University of Chicago.

Work Steps

This audit process should determine if there are any gaps in the purpose of workforce management and its mission. It is critical that metrics are in place to measure and improve the work management system. Workforce management encompasses not only completion as scheduled, but the quality of the installation and its impact to the company's overall goals. Workforce management spans across multiple departments; therefore, responsibilities should be well defined and measured. This is always an area of concern, because the workforce management area typically does not have direct line responsibility to complete the work. At the highest level, the workforce management area of the audit should answer four broad questions:

1. Is the company making efficient use of its workforce and able to assure high quality service and reliability?
2. Is the company making adequate investment in its human capital to assure performance and meet future needs?

3. Is the company committed to quality improvement and are its employees fully engaged in the effort?
4. Is the company clear about its future goals and can it assure the availability of a skilled workforce?

Specifically the RFP for this audit requests that we evaluate the following:

- Examine how planning and execution of programs and projects are converted into short-term and day-to-day work planning and management.
- Evaluate work management systems that are used to schedule and manage field crews, including transportation, equipment, and materials.
- Review the roles and responsibilities of project managers, supervisors, inspectors, etc.
- How does NG manage quality assurance and quality control?
- How does NG measure and manage employee availability, utilization, efficiency, productivity and effectiveness?
- How are work program and project schedules managed on a day-to-day basis?
- How does information about rework, failures, repair history, etc. get translated into corrective actions, infrastructure aging analysis, repair versus replace decisions, etc?
- How do workforce and work management systems feed back into performance improvement opportunities?

It is not possible to evaluate workforce management independent of operational performance. Thus, our approach begins with a review of operational metrics followed by a number of reviews of human capital metrics. Our aim is to identify the relationship between operational performance and workforce management practices. High or low performance is often (but not always) a function of one or more workforce management issues. Specifically, we will approach this assessment using a ten-step process.

1. Operational metrics review: We begin our assessment of workforce management by looking at key metrics related to service quality and operational efficiency. These include customer satisfaction, response times, first call resolution rate, outage rates, restoration times and other factors that may be affected by workforce management practices.
2. Human capital metrics review: Here we will examine key metrics related to the selection, development and management of the company's human capital. We look at macro-level metrics such as revenue per employee, human capital value added, employee development costs per employee, and total compensation to revenue.
3. We look at standard workforce management/human resources metrics, such as staffing metrics, turnover, training and development rates and outcomes, career development, competency levels, employee survey data, labor relations measures such as grievance rates, and other relevant data.

4. In many cases, our review is limited by the availability of data. Many companies simply do not track this information. Where possible we try to capture it from available systems (even if it has not been tracked by the company), but often the lack of metrics is a key finding in or reports.
5. Workforce management systems review: Here we examine all manual and electronic systems used for workforce management. This includes the human resources information system, the timekeeping and job costing system, the workforce scheduling system, the leave administration system, the learning management system, the work management system, project management methods and any other relevant system that may be in use. We are particularly interested in number of systems, the integration of systems, the quality of data in the system, the usefulness of reports from the system, the ease of generating useful reports and the degree to which the systems are fully utilized.
6. Workforce practices and quality improvement processes review: In this review, we are looking at how the company selects, develops and deploys its human capital. In addition, we are looking at the quality improvement processes and the degree to which the workforce is fully engaged in this effort. When looking at these practices and processes, we pay close attention to the degree to which they are integrated into the everyday workings of the company. Too often, implementation of best practices fails to achieve the desired results because of lack of resources and resistance to change. In addition, the role of front line supervisions is critical and in our interviews we pay close attention to how they *actually* manage.
7. Workforce planning review: In this review, we examine the degree to which the company is able to anticipate future needs and assure the availability of a skilled workforce. We pay close attention to the degree to which the human resources function is aligned to the short and long-term objectives of the company. This includes a clear understanding of the number and type of employees needed for the future of the company. Can the company describe the workforce of the future and what is it doing to assure its availability?
8. While most companies have an executive succession plan, we look for workforce planning for all positions. In particular, we are interested in the degree to which the company is managing knowledge loss risk and adapting to changing workforce demographics.
9. Identification of workforce management and planning issues: Upon completion of our interviews and data collection, we examine the relationships between company performance and workforce management practices. We will seek to answer the questions posed in the RFP (listed above) as well as others that emerge in the course of our assessment.
10. Development of findings and recommendations: Based on our clarification of the workforce management and planning issues, we develop specific findings that point to both weaknesses and areas of outstanding performance. Where weaknesses are noted, we will provide specific recommendations for improvement.

Evaluative Criteria or Expectations

Please refer to *Potential Issues or Problems That Could Be Expected* section.

Potential Issues or Problems That Could Be Expected

In the course of many audits, Schumaker & Company has identified a number of key issues related to workforce management. We will pay close attention to this in the course of our review of NG as they are potentially significant issues for the company.

- Lack of planning and preparation for aging workforce: Utilities rely on the availability of a highly skilled and experience workforce. It is well documented that average age of utility employees is higher than for the workforce in general. This aging workforce combined with generous retirement benefits will lead to the highest level of employee retirements ever seen. The available pool of qualified workers appears to be shrinking and young employee expectations are dramatically different than those of older workers.
- The risk to utility performance cannot be underestimated. The loss of institutional knowledge and the inability to assure an adequate staffing level could have enormous consequences for a utility and its customers. Most studies show that companies are aware of the problem but have done little to prepare for it. Audits performed in recent years by Schumaker & Company confirm this.
- Obsolete job definitions: New technology, quality improvement processes and changing employee expectations all dramatically change the way people perform their jobs. Unfortunately, the experience of Schumaker & Company is that utilities tend to operate with obsolete job definitions that limit flexibility, efficiency and employee utilization. The coming high level of retirement discussed above presents a great opportunity for utilities to define the workforce of the future that is more technologically skilled and more flexible in its deployment.
- High employee turnover at customer contact points: Customer service jobs tend to be considered low skill and tend to have low pay. While these jobs may indeed require lower technical skill, they tend to be stressful and require broad knowledge of company operations. The result is often dissatisfied employees who leave as soon as a better opportunity arises. Many companies fail to appreciate the direct and indirect cost of employee turnover and it potential effect on company performance. Schumaker & Company has important insights into the workforce management practices that can support or hinder performance in customer service.
- Ineffective absence management: The combined effect of utility work rules, labor contracts, employment practices and company culture lead to high levels of employee absenteeism. Schumaker & Company finds that utilities often accept this as the norm or feel there is little they can do to address the problem. Unfortunately, with rising labor costs and demands for efficiency, utilities can no longer afford to ignore this problem.

- Lack of metrics: While most utilities capture significant operational performance data, they often have very limited human capital and workforce management data. The lack of performance metrics in this area is a common finding in Schumaker & Company audits.
- Disconnect between workforce management systems, quality management and performance management (including employee development): Many companies tend to think of workforce management in terms of work management systems (task definition and work assignment). Schumaker & Company takes a broader view of workforce management and looks at how information from a range of systems can be integrated to more effectively develop and deploy the workforce.

Work Package IV – Performance and Results Management

- Processes for feedback of performance (reliability, productivity, etc.) to the corporate mission, objectives and goals for the purpose of improving processes, redirecting resources, and changing priorities
- Role and responsibility of the Board of Directors in this feedback loop
- Management accountability for performance improvements, e.g., cost savings and productivity gains anticipated from specific capital and O&M programs and projects, and specific corporate goals
- Goals, key performance indicators, metrics
- Benchmarking, for identifying and developing performance targets
- Change management and continuous improvement processes, and any impediments that might constrain performance improvements and necessary changes
- Compensation and performance metrics
- Any additional performance measures or indicators that are needed to facilitate the corporate mission, objectives and goals, including leading indicators, metrics, key performance indicators and other measures that will help improve performance

Performance measurement and reporting is based, to a large part, on the identification and reporting of what many refer to in the industry as key performance indicators (KPIs). The naming of these indicators may vary with each utility, such as corporate performance indicators, performance metrics or measures, or scorecard indicators, but the management process surrounding the indicator is the same. These indicators are of two types:

- *Strategic Indicators* – Indicators that directly measure the progress of a strategic objective of an organization.
- *Operational Indicators* – Indicators that directly measure the results of operational activities that, although not necessarily of a strategic nature, are important indicators for measuring the efficiency or effectiveness of a business process.

Strategic objectives are attempting to measure the change in an organization, whereas operational indictors are measuring the ongoing efficiency and effectiveness of ongoing business processes. Both indictors will need to be assessed in our review.

Our approach to addressing the development of KPIs is based on two fundamental thoughts:

- The development of strategic KPIs that integrate and support National Grid's strategic plan – As with any organization, there are many items that can be measured, but the overriding questions to be answered are:

- How does the KPI support the overall strategic plan for the organization?
- What is the cost (new system development in the case where the data is not readily available) for developing the KPI relative to the impact on the strategic goals and objectives?

- The development of operational KPIs that are based on sound, practical measures that have proven useful at other utilities across the country
  - How does the KPI support the operational efficiency and effectiveness for the organization?
  - What is the cost (new system development in the case where the data is not readily available) for developing the operational KPI to measure efficiency and effectiveness?

Clearly if the KPIs in an organization do not align with the corporate goals the system is failing. Goals, objectives, and key performance indicators, and associated results should be easily understood by the personnel that they measure. National Grid needs to be looking outside their organization to ensure a continual process improvement to a reliable and safe distribution system.

Although most of our consulting assignments over the last 25 years have involved the review of existing KPIs, we have also been involved in developing specific KPIs for various organizational areas within utilities. Most recently, we are current developing KPIs (which on this particular project referred to as HR metrics) for the Human Resources area of American Water Works Corporation (specifically Pennsylvania-American Water Company).

Over the last 25 years, Schumaker & Company consultants have been developing a database of KPIs that we have seen implemented at various electric, gas, water, and telecommunications companies at which we have consulted. In the last five years, much of this information, and other information, has been collected and maintained at the Schumaker & Company data center in a knowledge management application specifically designed for Schumaker & Company.

Proposed Staffing

Each of the senior consultants assigned to the project will be involved in this work plan area.

Sample Performance Indicators, including Construction Program Planning

We are providing two examples: the first being a relatively straight forward example of a KPI whereas the second is a much more complicated example that is based on the existence of a very structured planning, design, and construction process on which various steps in the process are measured. Both of these KPIs are currently being used in an existing electric utility that we have worked with in the recent past. The first sample is a fairly universal measure that can therefore be compared to other electric utilities or business entities, whereas the second example is more specific to an organization's business

processes that, therefore, is more appropriately a KPI that is better trended over time to measure improvements at a utility rather than compared to other utilities.

KPIs are both common and unique for each organizational group within a utility. Some KPIs, such as safety statistics related KPIs, can be developed and reported for each organizational unit within a utility, whereas the most important KPIs often are unique to the specific organizational group and perhaps a key indicator to support the overall business vision and mission for the whole organization.

Sample Simple KPI

The RFP alludes to the fact that this particular request is the beginning of a larger project to develop KPIs throughout National Grid. This particular effort is to address Electric Service Delivery processes, including the planning, design, construction, operation, and maintenance of the electric distribution, transmission, substation, and metering infrastructure. Some of the KPIs that could be developed within this area are rather straight forward and easy to measure and compare to other companies. Examples include:

- *OSHA Injuries* – The number of OSHA Recordable Injuries including every occupational death and every non-fatal occupational injury that involves one or more of the following: loss of consciousness, restriction of work or motion, transfer to another job, or medical treatment (not first aid).
- *OSHA Rate* – The OSHA Recordable Rate, which is the number of OSHA Recordable Events x 200,000/actual hours. (The 200,000 hours in the formula represents the equivalent of 100 employees working 40 hours per week, 50 weeks per year, and provides the standard basis for the incidence rates.)
- *Lost Work Day Cases (LWDCs)* – The number of injuries including every non-fatal occupational injury, which involves one or more of the following: restriction of work or motion or transfer to another job and/or loss of time.
- *LWDC Rate* – Number of lost and restricted events x 200,000/actual hours.
- *Responsible Vehicle Accidents (RVAs)* – The number of vehicular accidents that are determined to be the responsibility of National Grid employees. Responsibility for a vehicular accident is determined by the National Grid Claims Department based on the facts of each accident.

Because these numbers are collected and reported on a fairly uniform basis, National Grid's statistical safety performance could be compared to other companies.

Sample Complicated KPI

However, one of the more interesting and useful approaches that we have seen for measuring planning, design, and construction activities within Electric Service Delivery is based on the existence of certain planning processes with the area. For example, if National Grid has a formal work management (WM)

process within Electric Service Delivery, then it follows that more complex KPIs could be developed. The WM group generates a number of exception reports that highlight any issues that may arise during the course of completing the established schedule. Schedule adherence and stability are the two key performance metrics that are tracked closely to ensure the effective scheduling and completion of work tasks, as detailed below:

- *Scheduling Stability* – The percentage of work tasks that start in accordance with the established schedule. 85% is the established stability target for T-5 through execution week (having the job start on time).
- *Schedule Adherence* – The percentage of work tasks that are completed in accordance with the established schedule. 84% is the established schedule adherence target.

Exhibit IV-8 and *Exhibit IV-9* present the monthly indicators for adherence and stability for 2004 through 2006 in the sample organization. In addition to improving the processes, the targets for performance were raised to drive for better performance each year. The decline in performance in third quarter 2006 was primarily attributable to the abnormal storm season.

Exhibit IV-8
Schedule Adherence
2004-2006

2004	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Percent	54.4	82.7	88.4	86.4	76.7	77.2	67.1	70.0	69.4	88.7	84.8	64.4
YTD Percent	54.4	69.0	74.9	77.8	77.6	77.5	76.3	75.8	75.0	76.4	77.1	76.0
Number of WO Tasks Baselined at T-1	675	717	614	684	848	543	513	426	669	610	600	703
Target	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0

2005	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Percent	79.1	79.7	89.3	95.3	93.4	75.9	79.1	76.2	88.5	90.1	79.4	91.6
YTD Percent	79.1	79.4	83.9	87.3	88.6	85.1	84.1	83.1	83.7	84.3	84.0	84.5
Number of WO Tasks Baselined at T-1	647	749	1,160	1,081	1,014	1,783	1,227	1,157	1,119	1,063	695	763
Target	82.0	82.0	82.0	82.0	82.0	82.0	82.0	82.0	82.0	82.0	82.0	82.0

2006	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Percent	82.1	86.6	128.1	85.8	92.2	86.1	51.0	66.5	72.6	87.8	78.9	86.7
YTD Percent	82.1	84.6	104.7	99.1	97.6	95.0	87.5	83.4	82.0	82.4	82.2	82.5
Number of WO Tasks Baselined at T-1	497	643	974	892	808	1,147	1,020	1,435	1,132	768	754	653
Target	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0

Exhibit IV-9
Schedule Stability
2004-2006

2004	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Percent		33.9	65.1	75.0	59.2	47.9	45.6	51.3	45.4	57.7	58.6	53.3
YTD Percent		33.9	46.0	56.0	56.9	55.5	54.1	53.8	52.6	53.2	53.7	53.7
Number of WO Tasks Baselined at T-1		799	504	689	821	553	559	423	733	646	664	777
Target	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0

2005	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Percent	80.9	81.8	78.2	78.2	86.5	93.4	87.4	91.2	67.1	76.3	63.9	75.2
YTD Percent	80.9	81.3	79.9	79.4	81.0	84.0	84.5	85.4	82.9	82.3	81.2	80.8
Number of WO Tasks Baselined at T-1	670	637	1,087	1,146	1,063	1,451	1,178	1,082	1,316	1,034	624	811
Target	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0	84.0

2006	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Percent	76.6	64.4	80.9	73.7	79.1	79.6	82.8	76.9	78.5	50.5	65.6	63.0
YTD Percent	76.6	69.3	74.0	73.9	74.9	76.0	77.1	77.0	77.2	74.1	73.5	72.8
Number of WO Tasks Baselined at T-1	559	825	937	1,115	874	1,276	1,037	1,463	1,180	1,217	896	799
Target	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0	86.0

For the purpose of prioritizing the work, projects that have been entered into the system within the last 24 hours are discussed in a daily morning phone call, the work screening call. All involved organizations are included and the new work is prioritized. They then take all jobs in a prioritization category and review any required schedule modifications. The schedule is reworked as required based on that information.

Of course all of the above information is based on a work management process similar to that discussed below.

Work Management System

The Work Management System is based on a standardized work control process intended to perform the following tasks:

- Provide a systematic scheduling process across the organization
- Schedule work for the organization, contract resources, and support activities
- Direct the execution of all scheduled activities
- Improve employee, system, and equipment performance through work bundling and strategic planning

The WM procedure specifies a 15-week process cycle defined as follows:

- The Work Control Schedule is developed based on priority and system conditions as influenced by available resources and the cycle plan.
- Weeks T-15 through T-6 are owned and managed by the Work Control Coordinator (WCC) (Note: "T" is defined as the scheduled week of execution of the project; therefore "T-3" would be defined as three weeks before the scheduled execution week).
- Schedule ownership is shared between the WCC and the Work Week Manager (WWM) in the T-6 week.
- Weeks T-5 to E+1 are owned and managed by the WWM (Note: "E" is the designation for the actual execution week of the project).

Exhibit IV-10 presents a summary of the established week-by-week project timeline for regularly scheduled projects.

Exhibit IV-10
Week-by-Week Project Timeline for Regularly Scheduled Projects

Work Week Number	Milestones to be Completed During Work Week
	T-15 to T-6 - Major Milestones - Owned by Work Control Coordinator (WCC)
T-15	Initial scope identification
T-12	Designs are complete for projects with value greater than $100K
T-10	Designs are complete for projects with value less than $100K
T-8	Contractor validation of scope of work that will be contracted
T-7	Work packages complete and clearance/switching requests are submitted
T-6	Schedule turnover between WCC and WWM
	T-5 to E+1 - Major Milestones - Owned by Work Week Manager (WWM)
T-5	Scope freeze applied to schedule by Friday and clearance/switching orders approved by clearance writer
T-4	Walkdown of job performed by First Line Supervisor (FLS) who also ensures that resources required, proper material, and the Work Package are available and acceptable
T-3	Required material is available by Friday of T-3
T-2	Verification that job is ready to work. Schedule is frozen to the day and time. Clearance order/switching routine are ready and/or posted
T-1	FLS performs final field review to ensure job can be performed and verifies field conditions
E-0	Work is performed
E+1	Performance review

Underlying the 15-week process cycle is an 18-month work plan, which identifies work and resource strategy/allocation for work that is scheduled for the next 18 months and beyond. The Category Owners, in conjunction with the field operations managers, identify the work that is to be completed. The work is initiated in the Work Management System following the approval of the work plan milestones.

A system of Work Order Priority Types has been established to prioritize the scheduled work in a proper manner. In general, the Fix It Now (FIN) teams handle the unscheduled emergent work (which is classified as Priority 10s and 20s) and "protect" the schedule from disruptions that would otherwise interfere with the Work Week Schedule. The following text describes the designated characteristics of the various priority classes:

- *Priority 10* – This is work that is classified as requiring an immediate response. It is generally work that is due to load off or safety-related conditions and is the most critical category of projects. A Priority 10 could also be related to summer month load conditions. It is intended that work on these items will be done on a 24-hour-per-day basis until the work is complete or until compensatory actions allow the downgrading of the priority. These projects are generally of such a nature that they will have a direct and immediate impact on the CAIDI and SAIFI statistics. Included in the Priority 10 work classification are the following types of work:
  - Public and/or employee safety at reasonably determined immediate risk
  - Customer(s) completely or partially without power
  - Customer(s) voltage out of tariff
  - Environmental incidents
  - Equipment at risk of immediate failure based on diagnostics or inspection
  - Single contingency situations that exist for critical customers as determined by the Operations Control Center
  - Out of configuration and exceeding emergency operational load limits
  - Exceptional items as determined by the DSO/TSO shift manager
  - Poles that are impeding walkway or roadway
- *Priority 20* – These projects consist of work that should begin within the next twenty-four hours and, with allowance for planning the scope, are targeted to complete within 14 days. These projects are addressed generally during normal work hours unless overtime is agreed on between the appropriate stakeholders. These items generally have a high probability of adversely affecting the CAIDI and SAIFI statistics. The work in this category includes, but is not necessarily limited to, the following types of work:
  - Fuse component out of configuration and exceeding normal operational load relay limits
  - Protective relay or communication system alarm repair
  - High probability of failure as a result of diagnostic testing or visual inspection
  - Poles that are leaning and being held up by a guy wire only
  - Oil levels on equipment where gauges are on or below a "low" reading
  - Nitrogen levels on equipment where gauges are below -6

- Exceptional items as determined by the DSO/TSO shift manager
- Cable faults with more than 20 single phase residential transformers, 10 commercial transformers, or secondary service faults
- Hot spots on equipment above 135 degrees

- *Priority 30* – This is composed of work that may be scheduled to commence within the T-5 Scope Freeze window (at T-5 the schedule and scope of regularly scheduled work are locked in and cannot be changed). If it is scheduled within T-5, the work will be executed when authorized in accordance with the established WM procedures for Scope Change Requests. These projects are intended to address existing conditions and are considered as having the potential to have a high impact on CAIDI and SAIFI. This risk of impacting CAIDI and SAIFI is the reason that the work would not be scheduled as a Priority 50. Priority 30s are, by definition, exceptions to the process and are intended to be minimized as much as is possible. The total number of Priority 30s should not exceed the total number of Priority 50s. To the extent possible, Priority 30 work is to be scheduled in accordance with the overall cycle plan. Typical projects that are within this classification include, but are not limited to the following:
  - Diagnostic program response for re-test
  - Cable faults that are not Priority 10 or 20
  - Existing conditions that are considered as having a high potential for impact on the system
  - Poles that have cracked at the base due to age-related degradation
  - Certain wildlife protection issues in areas that present a high risk to CAIDI and SAIFI
  - Exceptional items that cannot be properly scheduled as either Priority 40 or 50
- *Priority 40* – Work in this category is composed of projects that are based on a program timetable or need date. Their impact on SAIFI/CAIDI is tied to the associated program. This work is specified to be bundled and completed per the cycle plan or functional equipment groups (FEGs) to meet or exceed the program timetable and/or need date. This work is to be completed by the specified need date. Typical types of work that are within this classification include, but are not limited to the following:
  - Replacing oil in transformers
  - Replacing/repairing strip heaters in equipment compartments
  - Replacing degraded bushings
  - Repairing defective street lights, leaning poles, and broken cross arm braces
- *Priority 50* – Work in this category is composed of projects that are to be bundled per the cycle plan or FEGs. These items should constitute the bulk of the maintenance backlog and do not meet the criteria of priority 10, 20, 30, or 40. Their impact on SAIFI and CAIDI may result only if the condition degrades, which is not likely. Typical work in this category is composed of, but not limited to, the following:
  - Preventive maintenance inspections
  - Equipment painting where the integrity of equipment is not at risk
  - Replacing/removing temporary in-line disconnects

- Removing tree limbs on wire
- Replacing defective cut-outs

♦ *Priority 60* – This work is typically filler work (work that is done only when time is available) and must not impact other work groups, such as Operations, Supply, or Testing. This work is to be bundled and scheduled to the cycle plan whenever possible and does not have an impact on SAIFI/CAIDI. Typical work in this category is composed of, but not limited to, the following:

- Performing relay calibrations not requiring an equipment outage
- Removing/replacing fans on transformers
- Performing battery readings
- Replacing light bulb in stations
- Bracing poles
- Installing service wire
- Replacing old fire retardant seal with new type due to new standard
- Installing guy wire markers as needed

Data concerning the numbers and percentages of Priority 10 and 20 jobs that were completed within the prevailing time guidelines for each year can then be developed as illustrated on *Exhibit IV-11*.

Exhibit IV-11
Number and Percentage of Priority 10 and 20 Jobs Completed According to the Time Standards for All Operations Organizations Which Includes Construction and Maintenance
2002-2006

	2002	2003	2004	2005	2006
Priority 10 Tasks:					
Total Number of Tasks	5,065	5,722	5,658	5,684	6,399
Number Completed Within 24 Hours	3,987	4,708	4,242	3,946	4,697
Percent Completed Within 24 Hours	78.7%	82.3%	75.0%	69.4%	73.4%
Priority 20 Tasks:					
Total Number of Tasks	3,457	3,719	4,862	5,723	5,915
Number Completed Within 14 Days	2,946	3,246	4,143	5,000	5,468
Percent Completed Within 14 Days	85.2%	87.3%	85.2%	87.4%	92.4%

Priority 10 and 20 tasks are not necessarily considered "scheduled" projects. In most cases, this work is handled by the FIN teams, which are line crews that are dedicated to handling this work. This minimizes the impact of having to pull other crews off of the scheduled work (Priority 30, 40, 50, and 60 projects) that is handled through the week-by-week project timeline process. Data concerning the numbers of Priority 30, 40, 50, and 60 jobs that were completed within the each of the preceding five years are presented on *Exhibit IV-12*.

Exhibit IV-12
Annual Number of Priority 30, 40, 50, and 60 Jobs That Were Completed
for All Operations Organizations Which Include Construction and Maintenance
2002-2006

	2002	2003	2004	2005	2006	Percent Difference 2002 - 2006
Priority 30 Jobs Completed	7,182	6,538	3,713	2,034	2,082	-71.0%
Priority 40 Jobs Completed	10,123	9,134	6,229	8,079	17,463	72.5%
Priority 50 Jobs Completed	1,038	675	4,406	7,941	2,765	166.4%
Priority 60 Jobs Completed	285	255	977	1,632	356	24.9%
Grand Totals	**18,628**	**16,602**	**15,325**	**19,686**	**22,666**	21.7%

Summary

In summary, the development of KPIs must be done in conjunction with the various department personnel. The successful implementation of KPIs requires departmental and individual "buy-in" in addition to the two fundamental thoughts:

- Review management accountability for performance improvements, e.g., cost savings and productivity gains anticipated for specific capital and O&M programs and projects, and specific corporate goals.
  - Review policies, procedures, and guidelines to determine if responsibility for follow-up for specific capital and O&M programs is assigned to specific organizations.
  - Identify specific examples of capital and O&M programs and projects and corporate goals in the capital and O&M budgets.
  - Trace specific examples from the capital and O&M budgets to follow-up activities performed.
  - Assess quality, effectiveness and completeness of follow-up performed.
  - Evaluate any post audit reviews of programs, projects, and corporate goals.
  - Determine appropriateness of final reviewing authority and action taken.
- Review any benchmarking performed for the purpose of identifying and developing performance targets.
  - Determine if benchmarking is performed as part of long-term planning or budget development.
  - Identify factors in budgets that resulted from benchmarking performed.
  - Assess appropriateness of any benchmarking and its effect on the budgets.
- Assess if the development of KPIs integrate and support National Grid's strategic plan.

- How does the KPI support the overall strategic plan for the organization?
- What is the cost (new system development in the case where the data is not readily available) for developing the KPI relative to the impact on the strategic goals and objectives?

♦ Assess if the development of KPIs are based on sound, practical measures that have proved useful at other utilities across the country.

V. Consulting Staff Organization

This chapter presents the team that Schumaker & Company will assign to the comprehensive management audit of Niagara Mohawk Power Corporation d/b/a National Grid (National Grid). Included in the following text we identify the Schumaker & Company contact and describe the proposed project team's organization and staffing (with specific task area assignments), qualifications of each project team member for this engagement, project management members for this assignment, estimated project team hours, and the balance of the chapter provides the resume of each proposed consultant.

Schumaker & Company's senior consultants have extensive experience in management, operations, and technology consulting in a project environment. They typically hold advanced degrees and average more than 25 years of professional experience. Our proposed project team is expert in the technical aspects of electric, gas, water, and telecommunications operations, as well as relevant regulatory proceedings.

Our proposed project team brings considerable experience in performing electric utility audits, as illustrated in *Exhibit V-1*.

Exhibit V-1
Electric Utility Audit Experience

- AEP/Kentucky
- Arkansas Power & Light Company
- Baltimore Gas and Electric Company
- Central Main Power Company
- Cleveland Electric Illuminating
- City of Hillsdale
- City of Niles Utilities Department
- Columbus Southern Power Company
- Conectiv
- Consumer Power Company
- Dayton Power and Light Company
- Detroit Edison
- Entergy
- Florida Power an Light Company
- General Public Utilities
- Georgia Power Company
- GP Energy
- Illinois Power Company
- Jacksonville Electric Authority
- Kingsport Power Company
- Long Island Lighting Company
- Michigan South Central Power Agency
- Nebraska Public Power District
- New Orleans Public Service
- Niagara Mohawk Power Company
- Ohio Power Company
- Pacific Gas & Electric Company
- PECO Energy
- Pennsylvania Power & Light Company
- Public Service Electric & Gas Company
- Rockland Electric Company
- Sierra Pacific Power Company
- Springfield City Utilities
- Sunflower Electric Cooperative
- Tennessee Valley Authority
- Toledo Edison Company
- Union Electric Company
- Union, Light Heat and Power Company
- United Power Cooperative
- West Texas Utilities Company
- Wisconsin Electric Power Company

This knowledge base makes our firm uniquely qualified for the most complex and demanding of assignments.

A. Project Contact

Our Ann Arbor (Michigan) headquarters office will be responsible for managing this project. The contact information for Dennis Schumaker, our proposed *Project Manager* for this project, is as follows:

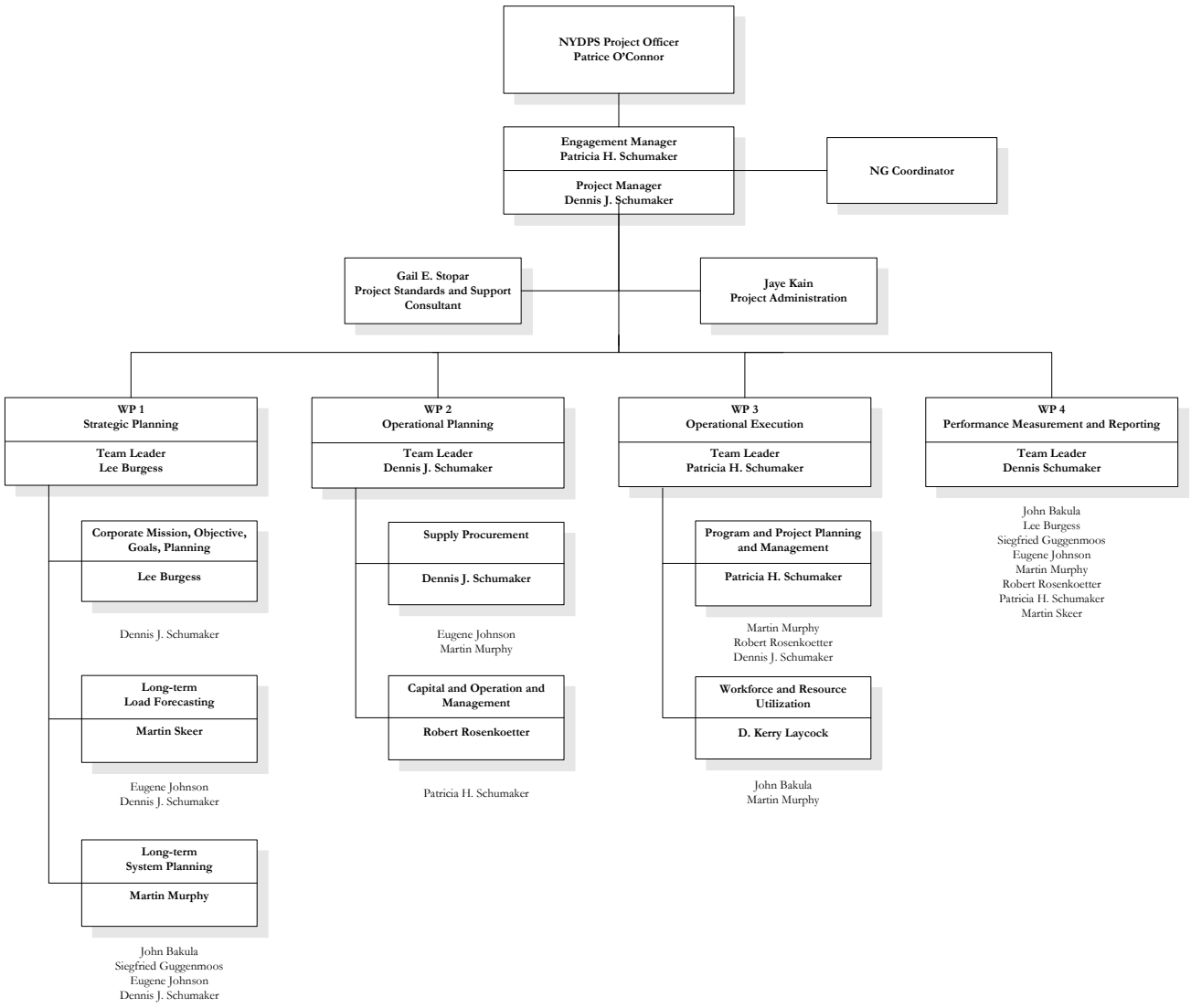
Name:	Mr. Dennis J. Schumaker	**Address:**	3101 Walnut Ridge, Ann Arbor, MI 48103
Telephone:	(734) 998-5550	**Email:**	dschumaker@schuco.com
Fax:	(734) 998-5590		

B. Proposed Staffing

The project team proposed for this assignment is composed of selected individuals, whose talents and expertise complement one another. Schumaker & Company's team has a strong working knowledge of utility company operations, as well as current industry issues. Each individual has been carefully selected according to his or her experience, technical expertise, and education in those areas for which s/he is proposed. We will bring to this review an especially strong team, a team that possesses all of the requisite skills and has worked together successfully in the past.

The project team proposed for this assignment is illustrated in *Exhibit V-2*.

Exhibit V-2
Project Team Organization



The single most important element a consulting firm brings to an assignment is the qualifications of the individual members of the consultant team. In combination, we respectfully submit that Schumaker & Company offers the New York Public Service Commission, the New York State Department of Public Service, National Grid, any parties to Case 08-E-0827, and National Grid's customers, a team that is unequaled in relevant experience, capability, and dedication to the completion of a highly successful engagement.

The educational and professional designations of each consultant are summarized in *Exhibit V-3*.

Exhibit V-3
Consultant Team Experience

Name	Responsibility	Years Exp.	Education and Professional Designations
Patricia H. Schumaker	Engagement Manager & Executive Consultant I	31	BSBA (Accounting), MBA (Operations Research) CMC®, CPA, PMP®
Dennis J. Schumaker	Project Manager & Executive Consultant I	31	BME (Mechanical Engineering), MS (Nuclear Engineering), MBA (Strategic & Corporate Planning), CMC®, PMP®, MCSE
John Bakula	Senior Engineering Consultant	33	BS (Electrical Engineering), MS (Engineering Management)
Lee E. Burgess	Executive Consultant II	23	BS, MBA, CPIM
Siegfried Guggenmoos	Senior Engineering Consultant	31	BS (Agriculture-Horticulture) post-graduate work, CPC
Eugene N. Johnson	Senior Engineering Consultant	30	BS (Electrical Engineering), MS (Industrial & Systems Engineering)
D. Kerry Laycock	Executive Consultant II	21	BS (Business Administration and Management), MS (Organizational Development), CMC®
Martin J. Murphy	Executive Consultant II	29	BCE (Engineering), MS (Engineering), MBA, PE
Robert L. Rosenkoetter	Executive Consultant II	25	BSBA, MBA (Finance), MPA (Professional Accountancy)
Martin H. Skeer	Executive Consultant II	20	BS (Civil Engineering), MS (Engineering Mechanics), MBA (Finance), Ph.D., and CMC®
Gail E. Stopar	Project Standards and Support Consultant	22	BS (Quality Management), MSA (Human Resource Management), Certificate in Accounting
Jaye M. Kain	Project Administrator	20	BS (Environmental Geoscience), BS (Geology), MS (Geology)
Hachin Sunid	Technology Support Consultant	8	BS (Computer Science Engineering)

All proposed project staff have experience with utilities and management audits. *Exhibit V-4* shows the Schumaker & Company's project team experience in relationship to all areas of these audits.

Exhibit V-4
Relevant Project Team Experience

	Executive Mgt	Electric Ops & Supply	Finance	HR	Customer Service	External Relations	Support Services	Affiliate Interest
John Bakula		•			•		•	
Lee E. Burgess	•	•		•		•	•	•
Siegfried Guggenmoos		•			•			
Eugene N. Johnson		•			•		•	
D. Kerry Laycock	•			•	•		•	
Martin J. Murphy	•	•					•	•
Robert L. Rosenkoetter	•		•					•
Dennis J. Schumaker	•	•			•	•	•	•
Patricia H. Schumaker	•		•	•	•	•	•	•
Martin H. Skeer	•	•			•	•	•	•
Gail E. Stopar	•		•	•	•		•	•

Based on the nature of the issues that need to be addressed or researched, other Schumaker & Company consultants would be made available for performing specific tasks as needed. We would discuss any need for additional Schumaker & Company resources with the NYSDPS Staff's *Project Manager* before engaging those resources on the project. Over 40 different professional staff are employed or affiliated with Schumaker & Company.

The proposed project team has worked together on several projects. Most proposed project team members have worked on prior Schumaker & Company projects. For those consultants who are not firm employees, but Schumaker & Company associates, *Exhibit V-5* indicates those projects where they have worked together with Schumaker & Company in the past.

Exhibit V-5
Associates Involvement with Schumaker & Company on Past Projects

	Philadelphia Gas Works	Pennsylvania -American Water Company	PECO Energy	Verizon NY*	AEP/ Kentucky	State of Michigan OFIS	Town of Hilton Head Island	City of Detroit	Total
Lee E. Burgess	•	•	•						3
Siegfried Guggenmoos			•		•				2
D. Kerry Laycock	•	•	•			•	•	•	6
Robert L. Rosenkoetter	•	•	•	•					4
Martin H. Skeer				•					1
Schumaker & Company Employee Participation on Same Past Projects									
Patricia H. Schumaker	•	•	•	•		•	•	•	7
Dennis J. Schumaker	•	•	•	•	•			•	6
Martin J. Murphy	•	•	•	•	•		•	•	7
Gail E. Stopar	•	•	•	•				•	5
Jaye M. Kain	•	•	•						3

* A Doherty & Company project where Dennis Schumaker, Schumaker & Company, was Project Manager for assignment.

Patricia Schumaker and Dennis Schumaker have both worked in areas where they could witness the high occupational ethics and exceptional work quality of John Bakula and Eugene Johnson, therefore recognizing them as first-rate team associates. However, these two associates have not had the opportunity to work directly on a project with Schumaker & Company staff.

C. Project Management

The quality of the final product of a consulting project is a direct result of the project team selected to perform the assignment. Astute, experienced consultants working under an appropriate project management system will produce a high-quality product. The quality standards by which we abide are specifically designed to exceed those of our competitors – giving our clients one more good reason for selecting Schumaker & Company.

The *Engagement Manager*, Patricia H. Schumaker, is responsible for ensuring that the consultant team is provided with the appropriate resources for completing its activities on a timely basis. She also performs a quality assurance role, ensuring that the work is progressing within budget and on schedule.

Ms. Schumaker is a *Project Management Professional* (PMP®) and has participated as *Engagement Manager* or *Project Manager* on audits of Central Maine Power Company, Entergy, Philadelphia Gas Works, Pennsylvania-American Water Company, PECO Energy, ALLTEL Pennsylvania, Commonwealth Telephone Company, Illinois Bell Telephone Company, Michigan State Police Communications Division, PECO Energy, US WEST, and others. Additionally, she has performed numerous other audits, including Pennsylvania Gas & Water Company (PG Energy), Kentucky-American Water Company (American Water Works), Philadelphia Suburban Water Company (Philadelphia Suburban Corporation), Water Services Corporation of South Carolina, United Water New Jersey (United Water Resources), City of Niles (MI) Utilities Department, Kingsport Power Company (AEP), Middleborough (MA) Gas & Electric Department, Pacific Gas & Electric Company, Pennsylvania Power & Light Company, Union Light Heat and Power Company, West Texas Utilities Company (Central & Southwest Corporation), City of Sturgis (Michigan) Electric Department, Elizabethtown Gas Company (NUI Corporation), New Jersey Natural Gas Company (New Jersey Resources Corporation), Pacific Gas & Electric Company, Southern California Gas Company, South Jersey Gas Company (South Jersey Industries Corporation), Western Kentucky Gas Company (Atmos), City of Niles (MI) Utilities Department, New England Telephone Company (Verizon), SBC Ameritech Indiana, Verizon NY, and Verizon PA.

The *Project Manager*, Dennis J. Schumaker, is the primary contact with the client regarding day-to-day operations of the project. Mr. Schumaker is a *Project Management Professional* (PMP®) and previously served as the *Engagement Manager* or *Project Manager* on audits of Philadelphia Gas Works, PECO Energy, AEP Kentucky, Elizabethtown Gas Company (NUI Corporation), New Jersey Natural Gas Company (New Jersey Resources Corporation), South Jersey Gas Company (South Jersey Industries Corporation), Western Kentucky Gas Company, Union Light Heat & Power Company, Middleborough Gas & Electric, Peoples Natural Gas Company, Kingsport Power Company, Pennsylvania Power & Light Company, West Texas Utilities Company, Philadelphia Suburban Water Company, General Waterworks Corporation of Pine Bluff, Kentucky-American Water Company, US WEST, City of Sturgis, City of Niles, Entergy, Conectiv, Jersey Central Power and Light Company/GPU Energy, Public Service Electric & Gas Company, Rockland Electric Company, SBC Ameritech Indiana, US WEST, Verizon New York, Water Services Corporation of South Carolina, and others, such as a customer satisfaction survey project for the Illinois Commerce Commission. Additionally, he has performed numerous other audits, including Southern California Gas Company, ALLTEL Pennsylvania, Commonwealth Telephone Company, Central Maine Power Company, United Water New Jersey, Illinois Bell Telephone Company, Pennsylvania Gas & Water Company (PG Energy), Pennsylvania-American Water Company, Verizon PA, and others.

D. Estimated Project Team Hours

Schumaker & Company's project team estimated hours/days are shown in *Exhibit V-6*. Person day estimates can be determined by dividing hours by eight.

Exhibit V-6
Estimated Hours

Staff Member	Category	Total Hours	Total Days
Patricia Schumaker	Engagement Manager and Executive Consultant I	744	93
Dennis Schumaker	Project Manager and Executive Consultant I	904	113
John Bakula	Senior Engineering Consultant	280	35
Lee Burgess	Executive Consultant II	296	37
Siegfried Guggenmoos	Senior Engineering Consultant	240	30
D. Kerry Laycock	Executive Consultant II	296	37
Eugene Johnson	Senior Engineering Consultant	336	42
Martin Murphy	Executive Consultant II	656	82
Martin Skeer	Executive Consultant II	220	28
Robert Rosenkoetter	Executive Consultant II	488	61
Gail Stopar	Project Standards & Support Consultant	224	28
Jaye Kain	Project Administrator	1,056	132
Hachin Sunid	Technology Support Consultant	64	8
Total Hours		5,804	726

Schumaker & Company's estimated hours by step, by consultant, and by work plan area are shown in *Exhibit V-7*, *Exhibit V-8*, *Exhibit V-9*, *Exhibit V-10*, and *Exhibit V-11*.

Exhibit V-7
Step I – Project Orientation and Final Work Plan Hours by Work Task

Work Loaded Tasks From Schedule	Duration	Total Hours
Step I - Project Orientation and Final Work Plan	32 days	552 hrs
Project Planning and Administration	6 days	32 hrs
Schumaker Patricia H.		16 hrs
Schumaker Dennis J.		16 hrs
Orientation Presentation and Interviews	10 days	312 hrs
Schumaker Patricia H.		24 hrs
Schumaker Dennis J.		24 hrs
Bakula John		24 hrs
Burgess Lee		24 hrs
Guggenmoos Siegfried		24 hrs
Laycock D Kerry		24 hrs
Johnson Eugene		24 hrs
Murphy Martin J.		24 hrs
Skeer Martin		24 hrs
Rosenkoetter Robert		24 hrs
Stopar Gail E.		24 hrs
Kain Jaye		24 hrs
Sunid Hachin		24 hrs
Prepare Draft Work Plan	5 days	176 hrs
Schumaker Patricia H.		16 hrs
Schumaker Dennis J.		16 hrs
Bakula John		16 hrs
Burgess Lee		16 hrs
Guggenmoos Siegfried		16 hrs
Laycock D Kerry		16 hrs
Johnson Eugene		16 hrs
Murphy Martin J.		16 hrs
Skeer Martin		16 hrs
Rosenkoetter Robert		16 hrs
Kain Jaye		16 hrs
First Progress Meeting	1 day	16 hrs
Schumaker Patricia H.		8 hrs
Schumaker Dennis J.		8 hrs
Final Work Modifications	3 days	16 hrs
Schumaker Patricia H.		8 hrs
Schumaker Dennis J.		8 hrs

Exhibit V-8
Step II – Detailed Review and Analysis Work Plan Hours by Work Task

Work Loaded Tasks From Schedule	Duration	Total Hours
Step II - Detailed Review and Analysis	150 days	3,100 hrs
Work Package I - Strategic Planning	85 days	1,020 hrs
Corporate Mission, Objectives, Goals, and Planning	85 days	240 hrs
Schumaker Dennis J.		80 hrs
Burgess Lee		160 hrs
Long-term Load Forecasting	85 days	340 hrs
Schumaker Dennis J.		80 hrs
Johnson Eugene		120 hrs
Skeer Martin		140 hrs
Long-term System Planning	85 days	440 hrs
Schumaker Dennis J.		80 hrs
Bakula John		80 hrs
Guggenmoos Siegfried		160 hrs
Murphy Martin J.		80 hrs
Rosenkoetter Robert		40 hrs
Work Package II	150 days	640 hrs
Supply Procurement	85 days	320 hrs
Schumaker Dennis J.		80 hrs
Johnson Eugene		120 hrs
Murphy Martin J.		120 hrs
Capital and O & M	85 days	320 hrs
Schumaker Patricia H.		120 hrs
Rosenkoetter Robert		200 hrs
Work Package III	85 days	800 hrs
Program and Project Planning and Management	85 days	400 hrs
Schumaker Patricia H.		120 hrs
Schumaker Dennis J.		80 hrs
Murphy Martin J.		80 hrs
Rosenkoetter Robert		120 hrs
Workforce/Resource Utilization	85 days	400 hrs
Bakula John		120 hrs
Laycock D Kerry		160 hrs
Murphy Martin J.		120 hrs
Work Package IV	85 days	640 hrs
Performance and Results Measurement	85 days	640 hrs
Schumaker Patricia H.		80 hrs
Schumaker Dennis J.		80 hrs
Bakula John		40 hrs
Burgess Lee		80 hrs
Guggenmoos Siegfried		40 hrs
Laycock D Kerry		80 hrs
Johnson Eugene		40 hrs
Murphy Martin J.		80 hrs
Skeer Martin		40 hrs
Rosenkoetter Robert		80 hrs

Exhibit V-9
Step III – Draft and Final Report Preparation Work Plan Hours by Work Task

Work Loaded Tasks From Schedule	Duration	Total Hours
Step III - Draft and Final Report Preparation	70 days	888 hrs
Draft Report Compilation	25 days	560 hrs
Schumaker Patricia H.		120 hrs
Schumaker Dennis J.		120 hrs
Murphy Martin J.		120 hrs
Stopar Gail E.		120 hrs
Kain Jaye		80 hrs
Final Report Preparation	15 days	328 hrs
Schumaker Patricia H.		64 hrs
Schumaker Dennis J.		64 hrs
Stopar Gail E.		80 hrs
Kain Jaye		120 hrs

Exhibit V-10
Workshop Hours by Work Task

Workshop Training Program	185 days	184 hrs
Project Management and Administration Processes	5 days	48 hrs
Schumaker Patricia H.		16 hrs
Schumaker Dennis J.		16 hrs
Kain Jaye		16 hrs
Strategic Planning	5 days	32 hrs
Schumaker Patricia H.		8 hrs
Schumaker Dennis J.		8 hrs
Burgess Lee		8 hrs
Johnson Eugene		8 hrs
Operational Planning	5 days	40 hrs
Schumaker Patricia H.		8 hrs
Schumaker Dennis J.		8 hrs
Johnson Eugene		8 hrs
Murphy Martin J.		8 hrs
Rosenkoetter Robert		8 hrs
Operational Execution	5 days	32 hrs
Schumaker Patricia H.		8 hrs
Schumaker Dennis J.		8 hrs
Laycock D Kerry		8 hrs
Murphy Martin J.		8 hrs
Performance Measurement and Reporting	5 days	32 hrs
Schumaker Patricia H.		8 hrs
Schumaker Dennis J.		8 hrs
Burgess Lee		8 hrs
Laycock D Kerry		8 hrs

Exhibit V-11
Project Management and Administration Work Plan Hours by Work Task

Work Loaded Tasks From Schedule	Duration	Total Hours
Project Management and Administration	280 days	1,080 hrs
Project Management	14 mons	240 hrs
Schumaker Patricia H.		120 hrs
Schumaker Dennis J.		120 hrs
Project Administration	14 mons	840 hrs
Kain Jaye		800 hrs
Sunid Hachin		40 hrs

E. Proposed Staff Resumes

The following resumes highlight the recent, relevant professional experience of our proposed consultants for this specific assignment with the NYPSC and National Grid. A background and experience summary is provided along with a listing of pertinent assignments in which the respective consultant has gained experience relevant to his/her responsibilities for this assignment.

Ms. Patricia H. Schumaker, CPA, CMC®, PMP®
Engagement Manager & Executive Consultant I

EXPERIENCE

Ms. Patricia H. Schumaker has over 30 years of experience in private industry and in consulting for state and local governmental agencies, utilities, telecommunications firms, manufacturing and distribution firms, and service organizations. She has considerable experience as *Project Manager* and has acted as *Lead Consultant* in the areas of organization and management, quality improvement, accounting and financial management, corporate governance, affiliate relationships and transactions, cost allocations, information technology and systems, human resources, customer service, and support services (purchasing, materials management, transportation, safety, legal, risk management, records management) on numerous management, operations, and technology assessments and performance reviews. Previously, she also held various positions within ADP Network Services, including *Director-Information Services*, *Director-National Accounts*, and *Director-Professional Services*, as well as other managerial, technical, and sales positions. Ms. Schumaker also performed numerous studies for utility, government, manufacturing and distribution, retail, and service clients while an auditor and consultant with Arthur Andersen and Lybrand Ross Bros. & Montgomery. She is one of the founders of Schumaker & Company, Inc., which was founded in 1986.

EDUCATION & CERTIFICATIONS

She is a *Certified Public Accountant* (CPA) and holds a BSBA in Accounting from the Ohio State University and an MBA from the University of Michigan, where she has also completed post-graduate coursework. She also holds other certifications as *Certified Management Consultant* (CMC®) and *Project Management Professional* (PMP®).

CONSULTING EXPERTISE

- Management and operations reviews and assessments
- Business process re-engineering and quality improvement program development
- Strategic and operations planning
- Competitive analyses and customer surveys
- Performance measurement development
- User requirements definition and needs assessments
- Information technology planning, integration, and optimization
- Project management services
- Quality assurance services
- Litigation support

Ms. Patricia H. Schumaker, CPA, CMC®, PMP®, continued
Engagement Manager & Executive Consultant I

PROJECT MANAGEMENT

Ms. Schumaker is a *Project Management Professional* (PMP®) and has participated as *Engagement* or *Project Manager* on numerous consulting projects for state and local governmental agencies and directly for companies, as well as providing project management services. She is a member of the Project Management Institute and has attended numerous project management training courses. She is also a member of the Microsoft Project Association, including participation in the Midwestern user group functions.

Project management software systems used include APECS, Workbench, Microsoft Project, and Microsoft Team Manager. Most recently, she has used the following specific project management tools on consulting assignments:

- Microsoft Project 2003 for planning, scheduling, resource loading, reporting, and monitoring project progress.
- @Risk for Project for dealing with the uncertainty associated with a large systems development project.
- Business Engine for developing enterprise wide resource resources loading and utilization analyses.

Over 30 years of consulting experience, Ms. Schumaker has been the *Project Manager* for over 100 different assignments, including management, operations, and technology reviews; business process reengineering and process outsourcing improvement projects, and technology implementation projects. Over 50 of these involved the review and implementation of project management or quality assurance techniques to a business or government entity's internal operations.

ELECTRIC UTILITY EXPERIENCE

Ms. Schumaker has been a Lead or Technical Consultant on more than 50 management and operations reviews and assessments and testified before three regulatory commissions. Her experience in the electric utility industry includes assignments at many organizations, including: Central Maine Power Company, City of Niles (MI) Utilities Department, City of Sturgis (Michigan) Electric Department, Entergy, Kingsport Power Company (AEP), Middleborough (MA) Gas & Electric Department, Pacific Gas & Electric Company, PECO Energy, Pennsylvania Power & Light Company, Union Light Heat and Power Company, West Texas Utilities Company (Central & Southwest Corporation), and others.

Ms. Patricia H. Schumaker, CPA, CMC®, PMP®, continued
Engagement Manager & Executive Consultant I

GENERAL UTILITY EXPERIENCE

Ms. Schumaker's specific experience in the electric, gas, water, and telecommunications industries includes assignments at over 50 different organizations. Electric utilities include: Central Maine Power Company, City of Niles (MI) Utilities Department, Entergy, Kingsport Power Company (AEP), Middleborough (MA) Gas & Electric Department, Pacific Gas & Electric Company, PECO Energy, Pennsylvania Power & Light Company, Union Light Heat and Power Company, West Texas Utilities Company (Central & Southwest Corporation), City of Sturgis (Michigan) Electric Department, and others. Gas utilities include: Elizabethtown Gas Company (NUI Corporation), Middleborough (MA) Gas & Electric Department, New Jersey Natural Gas Company (New Jersey Resources Corporation), Pacific Gas & Electric Company, Pennsylvania Gas & Water Company (PG Energy), Peoples Natural Gas Company, Philadelphia Gas Works, Southern California Gas Company, South Jersey Gas Company (South Jersey Industries Corporation), Western Kentucky Gas Company (Atmos), and others. Water utilities include: City of Niles (MI) Utilities Department, Kentucky-American Water Company (American Water), Pennsylvania-American Water Company (American Water Works), Pennsylvania Gas & Water Company (PG Energy), Philadelphia Suburban Water Company (Philadelphia Suburban Corporation), United Water New Jersey (United Water Resources), Water Services Corporation of South Carolina, and others. Telecommunications include: ALLTEL Pennsylvania, Commonwealth Telephone Company, Illinois Bell Telephone Company (SBC/Ameritech), Michigan State Police Communications Division, New England Telephone Company (Verizon), SBC Ameritech Indiana, US WEST, Verizon NY, and Verizon PA.

Ms. Patricia H. Schumaker, CPA, CMC®, PMP®, continued
Engagement Manager & Executive Consultant I

Utility Industry Restructuring Compliance, and Code of Ethics

She has conducted restructuring studies, compliance audits, and code of conduct audits of electric and gas utilities across the country. Their purpose was to ensure that incumbent utilities or their related competitive business segments did not have an unfair competitive advantage over other, non-affiliated purveyors of competitive services, and to evaluate and review the allocation of costs between competitive and non-competitive services. She has offered expert opinion, based on appropriate methodology, as to whether there was strict separation and allocation of revenues, costs, assets, risks, and functions between the utility's electric and/or gas distribution operations and its related competitive business segments. In many cases the audits determined (1) whether there was cross subsidization between utility and non-utility segments within a public utility or holding company; (2) whether the separation of utility and non-utility organizations was reasonable based on the state commission's affiliate relation and fair competition standards; (3) the effect on ratepayers on the use of utility assets in the provision of non-safety-related competitive services; (4) the effect on utility workers; (5) the effect of utility practices on the market for such services; and (6) to ensure compliance with legislation. She has given opinion on whether any other service(s) offered by utilities was a competitive service.

Utility Commission Experience

Additionally, Ms. Schumaker has performed comprehensive and/or focused performance reviews for regulatory commissions and agencies, including:

- Arizona Corporation Commission
- Arkansas Public Service Commission
- California Public Utilities Commission
- Colorado Public Utilities Commission
- Idaho Public Utilities Commission
- Illinois Commerce Commission
- Indiana Utility Regulatory Commission
- Iowa Utilities Board
- Kansas Corporation Commission
- Kentucky Public Service Commission
- Maine Public Utilities Commission
- Massachusetts Department of Public Utilities
- Minnesota Public Utilities Commission
- Montana Public Service Commission
- Nebraska Public Service Commission
- Nevada Public Service Commission
- New Mexico Public Utility Commission
- New Jersey Board of Public Utilities
- New York Public Service Commission
- North Dakota Public Service Commission
- Oregon Public Utilities Commission
- Pennsylvania Public Utility Commission
- Public Utility Commission of Ohio
- Public Utility Commission of Texas
- Public Service Commission of Utah
- South Carolina Office of Regulatory Staff
- South Dakota Public Utilities Commission
- Tennessee Regulatory Authority
- Washington Utilities & Transportation Commission
- Wyoming Public Service Commission

Ms. Patricia H. Schumaker, CPA, CMC®, PMP®, continued
Engagement Manager & Executive Consultant I

IT COMPANY MANAGEMENT EXPERIENCE

Previously, Ms. Schumaker directed the Information Services organization of ADP Network Services whose duties included development, maintenance, and operation of in-house systems and applications. She implemented new technical standards and administrative procedures and controls as part of a major reorganization. She also led the streamlining and optimizing of daily, weekly, and monthly processing. This turnaround resulted in over 50% savings of computer time and capacity, eliminated the need for additional hardware, and provided substantial cost savings annually through subsequent staff reductions. She was also notably responsible for implementing a company-wide budget system accessed by offices throughout the U.S. This system incorporated new features that increased reliability while decreasing processing times by 90%. As *Director-National Accounts* (supported major clients nationwide who generated over $50 million revenue annually) and *Director-Professional Services Division* (provided supporting analysis, study, specification, development, and implementation of large, custom business applications for clients), projects resulted in an excess of $10 million development and production revenue annually) at ADP, where she was responsible for all marketing, sales, and technical activities. She directed studies and acted as *Lead Consultant* for over 50 major clients in diverse industries.

PROFESSIONAL AFFILIATIONS

- Institute of Management Consultants (IMCUSA)
- National Board Member, IMCUSA and President, Past Vice President, and Past Professional Development Chair, IMCUSA Michigan Chapter
- American Institute of Certified Public Accountants (AICPA)
- Michigan Association of Certified Public Accountants (MACPA)
- Past Chair, Management Consulting Services Committee, MACPA
- Regional Advisory Committee, MACPA
- Project Management Institute (PMI), including memberships in the following special interest groups: consulting, government, information technology & telecommunications, risk management, and utility industry SIGs
- Past Chapter President & Board Member, Institute of Management Accountants (IMA)
- Capital Quality Initiative
- Information Technology Member, AICPA
- Information Systems Advisory Committee, Washtenaw Community College

PRESENTATION & ARTICLES

- *Incentive Compensation, Does It Work*?, MACPA, May, 1994
- *Managing Consulting* Projects, MACPA, October 2000, August 2001, November 2001

Representative project experience is listed on the following pages.

Ms. Patricia H. Schumaker, CPA, CMC®, PMP®, continued
Engagement Manager & Executive Consultant I

Philadelphia Gas Works

Engagement Manager & Executive Consultant I

- Project planning and scheduling
- Financial management
- Corporate governance & Sarbanes-Oxley Act of 2002
- Diversity/EEO
- Risk management
- Legal
- Information technology

Performed a stratified management and operations audit of Philadelphia Gas Works (PGW). The primary focus of this management and operations audit is to review those PGW business components subject to regulation by the PaPUC, specifically PGW service delivery and production, whose costs are borne ultimately by Pennsylvania ratepayers. Schumaker & Company diagnostic review of functional areas and in-depth analyses of pre-identified issues assess the condition of, efficiencies, or improvements which benefit PGW and its ratepayers. In doing so, Schumaker & Company identified which, if any, economically practical opportunities for cost saving measures can be instituted.

Pennsylvania-American Water Company

Engagement Manager, Project Manager, & Executive Consultant I

- Project planning and scheduling
- Financial management
- Corporate governance & Sarbanes-Oxley Act of 2002
- Corporate culture, management structure, and staffing levels
- Affiliate relationships/cost allocations
- Diversity/EEO
- Risk management/legal/technology
- Operational performance

Performed a stratified management and operations audit of Pennsylvania-American Water Company (PAWC) for the Pennsylvania Public Utility Commission (PaPUC) with the primary focus areas being costs borne ultimately by Pennsylvania ratepayers. Schumaker & Company's diagnostic review of functional areas and in-depth analyses of pre-identified issues assess the condition of each functional area or business unit against evaluative criteria or expected business practice to determine if appropriate management controls, processes, and systems were in place. These analyses are of sufficient depth to provide specific recommendations for changes together with projected costs and potential dollar savings or other quantifiable benefits, if any.

Wayne County Airport Authority

Senior Consultant

- Customer technology and services needs assessment
- Technology trends tracking
- Development/analysis of project plan
- ROI review (tangible & intangible)
- Security vision and strategy

Provided services to assist the Wayne County Airport Authority (WCAA) Technology Services Division in identifying technology business initiatives and updating its annual five-year technology performance plan at the Detroit Metropolitan Wayne County Airport. This project involved assessing WCAA's technology and service needs for all 30+ divisions, plus identifying the impact of airport and/or business trends on operations, as a means to identify WCAA's technology initiatives planned for the next five (5) years.

Ms. Patricia H. Schumaker, CPA, CMC®, PMP®, continued
Engagement Manager & Executive Consultant I

State of Michigan
Office of Financial and Insurance Services

Engagement Manager & Lead Consultant

- Project management
- Organization and management

Conducted an assessment of the operational and managerial aspects of the Office of General Counsel for the Office of Financial and Insurance Services (OFIS). Interviews with key management and staff consisted of reviews of the organization and chief processes for which each key person was responsible, as well as discussions of any areas of particular interest, plus review of documents and associated analyses were performed. A well balanced report that reflected both areas that hold opportunity for operational and financial improvement and those areas that demonstrate exemplary management and operation effectiveness was written and delivered.

Water Services Corporation of South Carolina

Lead Consultant

- Organizational design
- Affiliate relationships and allocation of revenues and costs
- Human resource policies and practices

Performed a management and operations review and assessment of Water Services Corporation (WSC) of South Carolina for the State of South Carolina Office of Regulatory Staff (ORS) with specific focus on the operations of the five subsidiary water and wastewater companies that operate in South Carolina, those being:

- Carolina Water Service, Inc. (CWS)
- Tega Cay Water Service, Inc. (TCWS)
- Utilities Services of South Carolina, Inc. (USSC)
- Southland Utilities, Inc. (SU)
- United Utility Companies, Inc. (UUC)

The bottom line of this project was to determine whether the rates charged to the South Carolina ratepayers can be reduced through the implementation of greater efficiencies in organizations, operations, or both. Additionally, another relevant analysis was a determination of whether the ratepayers of South Carolina are being properly and economically served by the range of corporate services that are provided to the WSC operations in South Carolina by the managers located in both West Columbia and Northbrook. Significant consideration was given to investigation of the potential benefits that would result from the consolidation or merger of the affiliated companies of WSC.

Ms. Patricia H. Schumaker, CPA, CMC®, PMP®, continued
Engagement Manager & Executive Consultant I

City of Detroit, Michigan

Project Manager and Lead Consultant

- Development and analysis of process maps (fire/public works)
- Development of findings, conclusions, and recommendations (fire/public works)

Recommended cost reduction planning and potential revenue enhancement initiatives based on process mapping and analysis of key processes for designated departments (fire and public works, plus potentially reviewing police, transportation, and health/wellness promotion in future months). These plans/initiatives address risks associated with implementation, not only within the designated departments, but especially its potential impact on the delivery of services to the residents and surrounding communities.

PECO Energy

Engagement Manager & Lead Consultant

- Project planning and scheduling
- Financial management
- Risk management
- Legal services
- Facilities management
- Information technology
- Medicare Part D program
- Diversity/EEO
- Affiliate relationships/cost allocation

Performed a stratified management and operations audit of PECO Energy (PECO) for the Pennsylvania Public Utility Commission (PaPUC) in with the primary focus areas being PECO, Exelon Energy Delivery (EED), and Exelon Business Services Company (EBSC) functional areas, whose costs are borne ultimately by Pennsylvania ratepayers. Schumaker & Company's diagnostic review of functional areas and in-depth analyses of pre-identified issues assessed the condition of each functional area or business unit against evaluative criteria or expected business practice to determine if appropriate management controls, processes, and systems were in place. These analyses were of sufficient depth to provide specific recommendations for changes together with projected costs and potential dollar savings or other quantifiable benefits, if any.

Town of Hilton Head Island

Project Manager & Lead Consultant

- Accounting and finance

Provided services related to an assessment of the Town of Hilton Head Island's current business processes, organization structure, staffing levels, and software that support the management of the Town's employee information. This study evaluated the performance of the subject organization, staffing, operations, and costs with the intended final result of identifying opportunities for improving, revising, or replacing the processes, organization structure, staffing levels, and software. Conducted an on-site analysis using the least intrusive means possible, concluding with the delivery of an oral presentation summarizing the findings to that time. Subsequently, produced a detailed draft organizational review report that was presented to the Town Board for review.

Ms. Patricia H. Schumaker, CPA, CMC®, PMP®, continued
Engagement Manager & Executive Consultant I

Verizon New York *Lead Consultant* ♦ Customer services ♦ Field operations ♦ Performance analysis and statistics	Analyzed, documented, and verified, through findings based on identifiable and measurable information and data, to ensure that Verizon NY's existing service quality plans and practices of the five VIP service objectives (customer trouble report rate, percent out of service over 24 hours, percent installation completed in five days, PSC complaints, and outliers), NY telephone service standards, and company guidelines meet applicable service quality performance standards, including reasonably foreseeable events and contingencies. Developed and documented recommendations to improve or modify these service quality practices and/or plans where existing plans and practices were not sufficient to ensure that applicable standards were met. Reviewed Verizon NY's processes for service quality performance and its employees, technology, and work processes related to the planning, design, construction, installation, maintenance, repair, and delivery of product to retail customers within Verizon NY's service territory.
Elizabethtown Gas Company ***NUI Corporation*** ***New Jersey Natural Gas Company*** ***New Jersey Resources Corporation*** ***South Jersey Gas Company*** ***South Jersey Industries Corporation*** *Lead Consultant* ♦ Restructuring ♦ Affiliate relationships/transactions ♦ Allocation of fees ♦ Competitive services/code of conduct	Conducted compliance audits of the competitive services of New Jersey's gas utilities; specifically South Jersey Gas Company (South Jersey Industries Corporation), New Jersey Natural Gas Company (New Jersey Resources Corporation), and Elizabethtown Gas Company (NUI Corporation) as part of the utility industry restructuring in New Jersey. The purpose of these audits was to ensure that the utilities or their related competitive business segments do not have an unfair competitive advantage over other, non-affiliated purveyors of competitive services, and to evaluate and review the allocation of costs between the utilities' competitive and non-competitive services.
Philadelphia Suburban Water Company *Lead Consultant* ♦ Information systems ♦ Financial management	Performed a management and operations review in which information technology was among several special objectives.

Ms. Patricia H. Schumaker, CPA, CMC®, PMP®, continued
Engagement Manager & Executive Consultant I

Pennsylvania Power & Light Company *Lead Consultant* ♦ Financial management ♦ Corporate-wide technology ♦ Management information systems	Performed a stratified management audit involving a review of financial management and information technology. Presented 18 major recommendations addressing how corporate-wide technology impacts PP&L's ability to operate efficiently in a changing environment.
Kingsport Power Company *Lead Consultant* ♦ Financial management ♦ Affiliate relationships/transactions ♦ Allocation of fees ♦ Cost allocation ♦ Information technology	Performed a comprehensive management and operations review in which she focused on various administrative and operating support services performed by the company's Tennessee operations and its affiliates, Appalachian Power Company (in Virginia) and American Electric Power Service Corporation (in Ohio).
Pacific Gas & Electric Company *Lead Consultant* ♦ Administrative and general costs for construction expenditures and operation expenses	Reviewed costs of gas pipeline expansion project (PEP). The primary objectives included determining if the appropriate level of incremental A&G and O&M costs were charged to the project before and after commercial operation, and providing the data required to project the incremental operating costs of PEP interstate and intrastate operations serving California markets. Assessed the integrated pipeline operations providing natural gas (from Canada) to Northern and Southern California's retail customers, pipeline shippers, and interruptible customers to insure that costs were equitably distributed between PG&E regulated retail customers and unregulated project shippers.
Central Maine Power Company *Engagement Manager, Lead Consultant, and Expert Witness* ♦ Organizational structure/management and staffing ♦ Executive compensation ♦ Customer service operations ♦ Management efficiency and cost control	Performed a focused management and operations review in which she investigated many of the financial management and support services functions, including work management and materials management. As *Engagement Manager*, she was actively involved in all aspects of the project.

Ms. Patricia H. Schumaker, CPA, CMC®, PMP®, continued
Engagement Manager & Executive Consultant I

Pennsylvania Gas and Water Company *Lead Consultant* ♦ Cash management/dividends ♦ Affiliate relationships and transactions ♦ Management information systems	Performed a management and operations review in which she investigated various financial and administrative focus areas.
Kentucky-American Water Company *Lead Consultant* ♦ Financial management ♦ Management information systems ♦ Affiliate relationships and transactions ♦ Allocation of fees	Performed a management and operations review in which she investigated the areas of financial management (affiliated relationships, corporate finance, financial requirements planning and economic analysis, cash management, management accounting, taxes, budgeting management and control, internal auditing, and rates) and management information systems.
West Texas Utilities Company *Lead Consultant* ♦ Financial management ♦ Support services ♦ Management information systems ♦ Affiliate relationships and transactions	Performed a management and operations review in which she investigated affiliated relationships, corporate finance, financial requirements planning and economic analysis, cash management, accounting, taxes, budgeting management and control, internal auditing, rates, support services, and management information systems.
Southern California Gas Company ***Senior Consultant*** ♦ Financial management ♦ Support functions	Performed a management and operations review in which she investigated the areas of financial management and administrative services, including cash collections and disbursements, cash forecasting, banking relationships, work order processing, accounts payable, and materials management.
Western Kentucky Gas Company ***Lead Consultant*** ♦ Financial management ♦ Customer services ♦ Management information systems ♦ Affiliate relationships and transactions ♦ Allocation of fees	Performed a management and operations review in which she investigated affiliated relationships, corporate finance, financial requirements planning /economic analysis, cash management, accounting, taxes, budgeting, internal auditing, rates, customer services (customer billing and accounting), and management information systems.

Ms. Patricia H. Schumaker, CPA, CMC®, PMP®, continued
Engagement Manager & Executive Consultant I

Entergy/Arkansas Public Service Commission

Engagement Manager & Lead Consultant

- Monitoring and control of a management and operations review
- Training to Commission staff regarding how to proceed with the monitoring and control of a management and operations review

Presented a written and oral review of the proposal prepared by the consultant team chosen by APSC to perform a review of Entergy. This review was followed by a written and oral review of the consultant team's detailed work plan. We also assisted the APSC in managing the audit, the consultant project team, and their work products.

Union Light, Heat and Power Company

Lead Consultant

- Financial management
- Customer services (billing and accounting)
- Human resources
- Support services
- Management information systems
- Affiliate relationships and transactions
- Allocation of fees

Performed a management and operations review in which she investigated the areas of affiliated relationships, corporate finance, financial requirements planning and economic analysis, cash management, management accounting, taxes, budgeting management and control, internal auditing, rates, customer services (customer billing and accounting), human resources, support services, and management information systems.

Mr. Dennis J. Schumaker, CMC®, PMP®, MCSE, MCSA
Project Manager & Executive Consultant I

Background

Mr. Dennis J. Schumaker has over 30 years of business and industry experience with both private and public sector clients, including extensive experience in the electric, gas, telephone, and water utility industries. Mr. Schumaker's consulting experience encompasses expertise in executive management and staffing, strategic and corporate planning, corporate organization and structure, project management, business process re-engineering, materials management, engineering and construction and operations and maintenance (electric, telephone, gas, and water facilities), information technology, cost allocation and affiliated transactions, and quality assurance. He began his career as a *Design Engineer* with the Bechtel Corporation, after which he joined Theodore Barry & Associates (TB&A) as a *Manager*. He acquired more than eight years of consulting experience with TB&A before becoming one of the original founders of Schumaker & Company in 1986.

Education & Certifications

Mr. Schumaker holds both a Bachelor's degree in Mechanical Engineering and a Master's degree in Nuclear Engineering from Ohio State University and an MBA from the University of Michigan. He is a:

- *Certified Management Consultant* (CMC®)
- *Project Management Professional* (PMP®)
- *Microsoft Certified Systems Engineer* (MCSE)
- *Microsoft Certified Systems Administrator* (MCSA)
- *Microsoft Certified Professional+ Internet* (MCP+I)

Consulting Expertise

Mr. Schumaker's professional experience includes the following types of assignments:

- Strategic and operations planning
- Management and operations reviews and assessments
- Business process re-engineering
- Project management services
- Quality assurance services
- Competitive analyses including customer surveys
- User requirements definition and needs assessments
- Information systems design and development
- Information technology planning, integration, and optimization

Presentations & Articles

- *Dose of One's Own Medicine*, National Project Management Institute Meeting

Mr. Dennis J. Schumaker, CMC®, PMP®, MCSE, MCSA, MCP+I, continued
Project Manager & Executive Consultant I

UTILITY MANAGEMENT & OPERATIONS AUDIT EXPERIENCE

He has been an *Engagement Manager*, *Project Manager*, *Lead Consultant*, or *Technical Consultant* on more than 50 management and operations reviews over the last 15 years and has testified before five regulatory commissions during the last nine years. His specific experience in the electric, gas, water, and telecommunications industries includes assignments at over 50 different electric, water, or gas utilities. Electric utilities include: Central Maine Power Company, City of Niles (MI) Utilities Department, Conectiv, Entergy, Jersey Central Power and Light Company/GPU Energy Kingsport Power Company (AEP), Middleborough (MA) Gas & Electric Department, Pacific Gas & Electric Company, PECO Energy, Pennsylvania Power & Light Company, Public Service Electric & Gas Company, Rockland Electric Company, Southern California Gas Company, Union Light Heat and Power Company, West Texas Utilities Company (Central & Southwest Corporation), City of Sturgis (Michigan) Electric Department, and others. Gas utilities include: Elizabethtown Gas Company (NUI Corporation), Middleborough (MA) Gas & Electric Department, New Jersey Natural Gas Company (New Jersey Resources Corporation), Pacific Gas & Electric Company, Pennsylvania Gas & Water Company (PG Energy), PECO Energy, Peoples Natural Gas Company, Philadelphia Gas Works, South Jersey Gas Company (South Jersey Industries Corporation), Western Kentucky Gas Company (Atmos), and others. Water utilities include: City of Niles (MI) Utilities Department, Kentucky-American Water Company (American Water Works), Pennsylvania-American Water Company (American Water Works), Pennsylvania Gas & Water Company (PG Energy), Philadelphia Suburban Water Company (Philadelphia Suburban Corporation), United Water New Jersey (United Water Resources), Water Services Corporation of South Carolina, and others. Telecommunications companies include: ALLTEL Pennsylvania, Commonwealth Telephone Company, Illinois Bell Telephone Company (SBC/Ameritech), New England Telephone Company (Verizon), SBC Ameritech Indiana, US WEST, Verizon NY, and Verizon PA.

His management audit work has focused on management and operations assessments and performance reviews, business restructuring and business process re-engineering and process analysis teams, affiliated transactions and cost allocations, customer satisfaction and needs assessments, performance measurement development, and information systems and technology.

Mr. Dennis J. Schumaker, CMC®, PMP®, MCSE, MCSA, MCP+I, continued
Project Manager & Executive Consultant I

Utility Industry Restructuring

Mr. Schumaker has conducted restructuring studies, compliance audits, and code of conduct audits of electric and gas utilities. Their purpose was to ensure that the incumbent utilities or their related competitive business segments do not have an unfair competitive advantage over other, non-affiliated purveyors of competitive services, and to evaluate and review the allocation of costs between competitive and non-competitive services of the utilities. He has offered expert opinion, based on appropriate methodology, as to whether there is strict separation and allocation of each utility's revenues, costs, assets, risks, and functions between the utility's electric and/or gas distribution operations and its related competitive business segments. In many cases the audits (1) determined whether there is cross subsidization between utility and non-utility segments within a public utility or holding company; (2) whether the separation of utility and non-utility organizations is reasonable based on the state commission's affiliate relation and fair competition standards; (3) the effect on ratepayers of the use of utility assets in the provision of non-safety-related competitive services; (4) the effect on utility workers; (5) the effect of utility practices on the market for such services; and (6) to ensure compliance with legislation. He has given his opinion on whether any other service(s) offered by the utilities was a competitive service.

Information Technology Experience

Mr. Schumaker has led the development and implementation of information technology plans for companies as large as a multi-billion dollar electric and gas utility, to a small 100-person municipality. These information technology plans have attempted to position an entity to capitalize on the evolving capabilities of modern information technology (hardware and telecommunications), without pursuing a technology that "stalls" the entity – either from a financial or technology perspective.

Mr. Schumaker been responsible for the overall project management and/or quality assurance of large client/server and web-based systems. He has also directed the technical aspects of both client/server and web technology projects for a variety of clients. This includes the design and development of object-oriented relational database systems for applications as diverse as the Electronic Document Management System for the Michigan Department of Environmental Quality, a physician and provider database for M-Care, a Construction Management System for O'Neal Construction, a CRM/business intelligence system for Holcim, an Auto Wash Billing System for Baltimore Cass Auto Wash, and several internal document tracking systems, time and billing, technology asset management, and project management systems.

Mr. Dennis J. Schumaker, CMC®, PMP®, MCSE, MCSA, MCP+I, continued
Project Manager & Executive Consultant I

UTILITY COMMISSION EXPERIENCE

Additionally, Mr. Schumaker has performed comprehensive and/or focused performance reviews for regulatory commissions and agencies, including:

- Alaska Public Utilities Commission
- Arizona Corporation Commission
- Arkansas Public Service Commission
- California Public Utilities Commission
- Colorado Public Utilities Commission
- Idaho Public Utilities Commission
- Illinois Commerce Commission
- Indiana Utility Regulatory Commission
- Iowa Utilities Board
- Kansas Corporation Commission
- Kentucky Public Service Commission
- Maine Public Utilities Commission
- Maryland Public Service Commission
- Massachusetts Department of Public Utilities
- Minnesota Public Utilities Commission
- Mississippi Public Service Commission
- Montana Public Service Commission
- Nebraska Public Service Commission
- Nevada Public Service Commission
- New Mexico Public Utility Commission
- New Jersey Board of Public Utilities
- New York Public Service Commission
- North Dakota Public Service Commission
- Oregon Public Utilities Commission
- Pennsylvania Public Utility Commission
- Public Service Commission of Wisconsin
- Public Utility Commission of Ohio
- Public Utility Commission of South Carolina
- Public Utility Commission of Texas
- Public Service Commission of Utah
- South Dakota Public Utilities Commission
- Tennessee Regulatory Authority
- Tennessee Valley Authority
- Washington Utilities & Transportation Commission
- Wyoming Public Service Commission

Mr. Dennis J. Schumaker, CMC®, PMP®, MCSE, MCSA, MCP+I, continued
Project Manager & Executive Consultant I

PROJECT MANAGEMENT EXPERIENCE

Mr. Schumaker is a Project Management Professional (PMP®). He has acted as *Engagement Manager*, *Project Manager*, *Lead Consultant*, or *Technical Consultant* on numerous management reviews at the request of both state and local government entities and directly for companies. These assignments involved the implementation of project management techniques to a business or government entity's internal operations. He is a member of the Project Management Institute (PMI) and has also been a presenter at a national PMI meeting, where he presented the application of PMI methodologies, titled *A Dose of One's Own Medicine*, involving a large utility client providing services in various states. He is also a member of the mid-western Microsoft Project Users Group.

Mr. Schumaker has implemented project management systems (mainframe and minicomputer-based systems) on assignments ranging from large multi-billion dollar nuclear and fossil generation projects to large ongoing software development projects. Mr. Schumaker has implemented project management systems (mainframe and minicomputer-based systems) on assignments ranging from large multi-billion dollar consulting projects to smaller ongoing software development projects. Project management software systems used include APECS, Project 2, Artemis, Workbench, Primavera, @Risk, and Microsoft Project.

With over 30 years of consulting experience, Mr. Schumaker has been the Project Manager for over 100 different assignments. Over 25 of these assignments involved the review and implementation of project management techniques to a business or government entity's internal operations. These projects included nuclear and fossil power plant projects, electric and gas transmission and distribution projects, water plant and distribution engineering and construction projects, telecommunications installation projects, and research and development projects.

PROJECT MANAGEMENT SYSTEMS AND TOOLS

Microsoft Project, APECS, Project 2, Artemis, Workbench, Primavera, @Risk for Project.

Representative projects are included on the following pages.

Mr. Dennis J. Schumaker, CMC®, PMP®, MCSE, MCSA, MCP+I, continued
Project Manager & Executive Consultant I

Philadelphia Gas Works

Project Manager & Executive Consultant I

- Project planning and scheduling
- System reliability performance and related operations
- Customer service, billing, and collection functions

Performed a stratified management and operations audit of Philadelphia Gas Works (PGW). The primary focus of this management and operations audit is to review those PGW business components subject to regulation by the PaPUC, specifically PGW service delivery and production, whose costs are borne ultimately by Pennsylvania ratepayers. Schumaker & Company diagnostic review of functional areas and in-depth analyses of pre-identified issues assess the condition of, efficiencies, or improvements which benefit PGW and its ratepayers. In doing so, Schumaker & Company identified which, if any, economically practical opportunities for cost saving measures can be instituted.

Pennsylvania-American Water Company

Executive Consultant I

- Water operations
- Customer service, billing, and collection functions
- Operational performance

Performed a stratified management and operations audit of Pennsylvania-American Water Company (PAWC) for the Pennsylvania Public Utility Commission (PaPUC) with the primary focus areas being costs borne ultimately by Pennsylvania ratepayers. Schumaker & Company's diagnostic review of functional areas and in-depth analyses of pre-identified issues assess the condition of each functional area or business unit against evaluative criteria or expected business practice to determine if appropriate management controls, processes, and systems were in place. These analyses are of sufficient depth to provide specific recommendations for changes together with projected costs and potential dollar savings or other quantifiable benefits, if any.

Wayne County Airport Authority

Project Manager & Lead Consultant

- Project planning and scheduling
- Planning concepts and practices
- Customer technology and services needs assessment
- Technology trends tracking
- Technology tools and training
- Development and analysis of project plan
- Security vision and strategy

Provided services to assist the Wayne County Airport Authority (WCAA) Information Technology Division in identifying technology business initiatives and updating its annual performance plan at the Detroit Metropolitan Wayne County Airport. Interviews with key management and staff were crucial to assess customer business needs and identify WCAA's technology initiatives for the next five (5) years, determine if changes are required of the Department of Technology services portfolio in order to continue to effectively and efficiently meet division business needs, determine the impact of current technology and/or airport business trends on the plan, and develop the plan to reflect project deliverables.

Mr. Dennis J. Schumaker, CMC®, PMP®, MCSE, MCSA, MCP+I, continued
Project Manager & Executive Consultant I

Water Services Corporation of South Carolina

Engagement Manager & Lead Consultant

- Project planning and scheduling
- Analytical discipline
- Planning concepts and practices
- Organization design
- Customer service
- Water operations
- Pricing strategies
- Technology tools and training

Performed a management and operations review and assessment of Water Services Corporation (WSC) of South Carolina for the State of South Carolina Office of Regulatory Staff (ORS) with specific focus on the operations of the five subsidiary water and wastewater companies that operate in South Carolina, those being:

- Carolina Water Service, Inc. (CWS)
- Tega Cay Water Service, Inc. (TCWS)
- Utilities Services of South Carolina, Inc. (USSC)
- Southland Utilities, Inc. (SU)
- United Utility Companies, Inc.(UUC)

The bottom line of this project was to determine whether the rates charged to the South Carolina ratepayers can be reduced through the implementation of greater efficiencies in organizations, operations, or both. Additionally, another relevant analysis was a determination of whether the ratepayers of South Carolina are being properly and economically served by the range of corporate services that are provided to the WSC operations in South Carolina by the managers located in both West Columbia and Northbrook. Significant consideration was given to investigation of the potential benefits that would result from the consolidation or merger of the affiliated companies of WSC.

PECO Energy

Project Manager and Lead Consultant

- Project planning and scheduling
- Data and statistics research and benchmarking analysis
- Executive management
- Electric and gas operations
- Electric and gas reliability
- Emergency response
- GIS
- Corporate governance
- Customer service
- Shareholder proposals
- Merger agreement review

Performed a stratified management and operations audit of PECO Energy (PECO) for the Pennsylvania Public Utility Commission (PaPUC) in with the primary focus areas being PECO, Exelon Energy Delivery (EED), and Exelon Business Services Company (EBSC) functional areas, whose costs are borne ultimately by Pennsylvania ratepayers. Schumaker & Company's diagnostic review of functional areas and in-depth analyses of pre-identified issues assessed the condition of each functional area or business unit against evaluative criteria or expected business practice to determine if appropriate management controls, processes, and systems were in place. These analyses were of sufficient depth to provide specific recommendations for changes together with projected costs and potential dollar savings or other quantifiable benefits, if any.

Mr. Dennis J. Schumaker, CMC®, PMP®, MCSE, MCSA, MCP+I, continued
Project Manager & Executive Consultant I

Verizon New York

Project Manager

- Organization and management
- Capital and maintenance planning
- Customer services and field operations
- Performance analysis and statistics
- Best practice comparisons

Analyzed, documented, and verified, through findings based on identifiable and measurable information and data, to ensure that Verizon NY's existing service quality plans and practices of the five VIP service objectives (customer trouble report rate, percent out of service over 24 hours, percent installation completed in five days, PSC complaints, and outliers), NY telephone service standards, and company guidelines meet applicable service quality performance standards, including reasonably foreseeable events and contingencies. Developed and documented recommendations to improve or modify these service quality practices and/or plans where existing plans and practices were not sufficient to ensure that applicable standards were met. Reviewed Verizon NY's processes for service quality performance and its employees, technology, and work processes related to the planning, design, construction, installation, maintenance, repair, and delivery of product to retail customers within Verizon NY's service territory.

AEP/Kentucky

Project Manager & Lead Consultant

- Asset management
- Engineering and construction
- Transmission and distribution operations
- Vegetation management

Performed an assessment of the reliability of service within AEP/Kentucky's distribution system in its Hazard service territory (a forested mountainous terrain), which has historically experienced a greater number of electric service interruptions than other AEP/Kentucky service areas and, additionally, these interruptions have tended to be longer in duration.

City of Sturgis
Sturgis, Michigan

Project Manager and Senior Consultant

- Customer survey
- Competitive assessment/benchmarking
- Electric operations, transmission, and distribution

Performed a management and operations review, conducted a customer satisfaction and needs assessment, performed a competitive assessment and benchmarking study, and developed a strategic plan. Addressed the changes occurring within the electric utility industry and the competitive threats felt by the city.

Mr. Dennis J. Schumaker, CMC®, PMP®, MCSE, MCSA, MCP+I, continued
Project Manager & Executive Consultant I

New Jersey Board of Public Utilities

Jersey Central Power and Light Company
GPU Energy
Public Service Electric & Gas Company
Rockland Electric Company
Conectiv

Engagement Manager & Lead Consultant

- Electric system reliability
- Workforce management
- Transmission/distribution operations and maintenance

Engaged to assist Board of Public Utility (BPU) staff in reviewing and monitoring the implementation of recommendations resulting from an investigation of New Jersey's electric utilities' system reliability. Assisted BPU staff in the review and investigation of the information supplied by each of New Jersey's four electric utilities, in connection with the implementation of the selected recommendations as ordered by the Board. Particular emphasis was placed on each utility's activities to improve and/or maintain CAIDI and SAIDI indicators at acceptable levels. In particular, issues regarding utilities work force management, electric system distribution planning and engineering practices, transmission and substation maintenance practices and procedures were addressed during our investigations. Worked closely with and at the direction of the BPU staff in reviewing the implementation of the recommendations.

Elizabethtown Gas Company
NUI Corporation
New Jersey Natural Gas Company
New Jersey Resources Corporation
South Jersey Gas Company
South Jersey Industries Corporation

Engagement Manager & Lead Consultant

- Restructuring
- Affiliate relations
- Competitive services
- Code of conduct

Conducted compliance audits of the competitive services of New Jersey's gas utilities; specifically South Jersey Gas Company (South Jersey Industries Corporation), New Jersey Natural Gas Company (New Jersey Resources Corporation), and Elizabethtown Gas Company (NUI Corporation) as a part of the utility industry restructuring in New Jersey. The purpose of these audits was to ensure that the utilities or their related competitive business segments do not have an unfair competitive advantage over other, non-affiliated purveyors of competitive services, and to evaluate and review the allocation of costs between the utilities' competitive and non-competitive services.

City of Niles (Michigan) Utilities Department

Engagement/Project Manager and Lead Consultant

- Management and operations

Performed a management and operations review, which was used to develop a long-term plan for this 55-person utilities department. Identified potential benefits approaching $250,000 yearly for the electric, water, and wastewater operations, which totaled $9 million in revenues annually.

Mr. Dennis J. Schumaker, CMC®, PMP®, MCSE, MCSA, MCP+I, continued
Project Manager & Executive Consultant I

Kingsport Power Company *Engagement Manager and Lead Consultant* ♦ Electric operations and distribution ♦ Executive management and human resources ♦ Cost allocation ♦ Information technology	Performed a comprehensive management and operations review which focused on executive management and human resources, electric operations (transmission, distribution, and substation) and information technology. Reviewed activities performed at Kingsport Power Company and its affiliate, Appalachian Power Company (in Virginia) and American Electric Power Service Corporation (in Ohio).
Pennsylvania Power & Light Company *Engagement/Project Manager and Lead Consultant* ♦ Executive management and organization ♦ Strategic planning ♦ Power production ♦ Fuels management ♦ Transmission and distribution ♦ Engineering and construction	Performed a management and operations review of all areas of PP&L's operations. This study included an in-depth investigation of affirmative action/EEO programs; salaries, wages, and benefits; staffing plans and levels; corporate-wide information technology; power plant materials management; nuclear de-commissioning; competitive position of in-house construction and maintenance work forces; and others. Total estimated annual and one-time savings and/or increased efficiency associated with recommendations were in excess of $70 million (annual) and $40 million (one-time).
Central Maine Power Company *Lead Consultant and Expert Witness* ♦ Organizational structure/management and staffing ♦ Electric operations ♦ Customer service operations ♦ Management efficiency and cost control	Performed a focused management and operations review evaluating organizational structure/ management/staffing, executive compensation, customer service operations, and management efficiency and cost controls.
Kentucky-American Water Company *Engagement/Project Manager and Lead Consultant* ♦ Executive management ♦ Corporate planning	Performed a management and operations review of all functions within the company and the relationships with its parent company and affiliates. Investigated the areas of executive management and corporate planning.

Mr. Dennis J. Schumaker, CMC®, PMP®, MCSE, MCSA, MCP+I, continued
Project Manager & Executive Consultant I

Middleborough Gas & Electric Department ***Middleborough, Massachusetts*** *Project Manager and Senior Consultant* ♦ Competitive assessment/benchmarking ♦ Management and operations review ♦ Communication with utility board ♦ Electric operations and distribution	Performed a competitive assessment of this municipal gas and electric department, including a management review of all functional areas and benchmarking of major performance indicators in relation to other Massachusetts municipalities and to the best practices of other public and investor-owned utilities.
West Texas Utilities Company *Engagement/Project Manager and Lead Consultant* ♦ Executive management and organization ♦ Electric operations ♦ Power generation	Performed a management and operations review involving all operations functions and the company's relationship with its parent company, CSW. Investigated the areas of executive management and organization, electric operations, and power generation.
Western Kentucky Gas Company *Engagement/Project Manager and Lead Consultant* ♦ Executive management and organization ♦ Gas operations ♦ Affiliated relationships and transactions	Performed a management and operations review of all company operations, administrative functions, and relations between WKG and its parent company, ATMOS. Significant emphasis was placed on customer service, gas operations, and organization and management changes following the recent acquisition of WKG by ATMOS.
Union Light, Heat and Power Company *Engagement/Project Manager and Lead Consultant* ♦ Organization and management ♦ Electric and gas operations ♦ Strategic and corporate planning ♦ Legal services	Conducted a management and operations review of the Kentucky division of Cincinnati Gas & Electric Company. Led the investigation of organization and management, strategic and corporate planning, electric and gas operations, and management and legal services.
Southern California Gas Company *Lead Consultant* ♦ Meter shop operations	Conducted a management and operations review of one of the largest meter shop facilities in the country.

Mr. Dennis J. Schumaker, CMC®, PMP®, MCSE, MCSA, MCP+I, continued
Project Manager & Executive Consultant I

Michigan South Central Power Agency

Engagement/Project Manager and Senior Consultant

- Customer survey
- Competitive assessment/benchmarking
- Relationship development – commercial and industrial customers
- Communication with boards and councils

Assisted in the development of a strategic plan for this agency owned by five Michigan municipalities, specifically Coldwater, Clinton, Hillsdale, Marshall and Union City. Addressed the changes occurring within the electric utility industry and the competitive threats being felt by the agency. The effort involved the performance of (1) a competitive assessment/benchmarking of the power agency and (2) a customer attitude survey (mail survey to residential and non-residential customers) to identify issues and concerns that needed incorporation in the strategic plan. The results of these efforts were presented at the agency's annual meeting with customers/owners. Following the strategic plan development, Schumaker & Company was engaged to create, design, and implement a relationship development program involving the commercial and industrial customers of each municipality.

Toledo Edison Company
Cleveland Electric Illuminating Company
National Gas and Oil Corporation
Cincinnati Gas and Electric Company

Lead Consultant and Expert Witness

- Fossil and nuclear fuel procurement
- System dispatch and power purchase
- Power plant performance

Conducted performance reviews of the fuel procurement policies and practices. These assessments included fossil and nuclear fuel procurement, system dispatch and purchase power, and power plant performance.

Baltimore Gas & Electric Company
Columbia of Maryland Inc.
Washington Gas Light Company

Engagement/Project Manager and Lead Consultant

- Gas purchasing practices

Reviewed and evaluated purchasing practices of three natural gas utilities for the Maryland Public Service Commission. In addition, he developed training materials and conducted a training program for commission staff personnel, thereby allowing them to continue the annual review and assessment of the natural gas plans submitted by each company.

Mr. Dennis J. Schumaker, CMC®, PMP®, MCSE, MCSA, MCP+I, continued
Project Manager & Executive Consultant I

Ohio Power Company ***Columbus Southern Power Company*** *Engagement/Project Manager* ♦ Fuel procurement ♦ Strategic planning ♦ Purchasing ♦ Marketing	Conducted a review of electric fuel procurement practices and procedures of two AEP subsidiary companies. Analyzed affiliated mines (surface and deep mines) and fuel procurement planning, long-term contracts, and spot procurement. Made recommendations on strategic planning, purchasing policies, and marketing programs.
Wisconsin Electric Power Company's Pleasant Prairie Unit 1 *Engagement/Project Manager and Expert Witness* ♦ Analysis of construction costs	Reviewed and evaluated cost overruns and testified in support of findings at rate proceeding. Testimony resulted in a WPSC order to remove $5 million from WEPCO's rate base request for the Pleasant Prairie project.
Nebraska Public Power District *Lead Consultant* ♦ Engineering and construction ♦ Transmission and distribution	Performed a focused management and operations review encompassing all electric generation activities, including fossil engineering and construction, fossil generation, electric transmission and distribution, operations and maintenance, and customer service operations.
Columbus Southern Power Company *Lead Consultant* ♦ Engineering and construction ♦ Transmission and distribution	Performed a focused management and operations review of electric transmission and distribution as well as engineering and construction.
New Orleans Public Service Corporation *Lead Consultant* ♦ Fossil generation ♦ Transmission and distribution operations and maintenance	Performed a focused management and operations review that encompassed all electric generation activities, including fossil generation, electric transmission and distribution, operations and maintenance, and customer service operations.

Mr. John Bakula
Senior Engineering Consultant

BACKGROUND

Mr. John Bakula has 32 years of business and industry experience with both private and public sector clients. Prior to performing management consulting work, Mr. Bakula accumulated over 30 years of experience in the customer services and distribution operations and maintenance areas of Commonwealth Edison. During that time he was responsible for various aspects of customer services, including call center interface, meter and billing, distribution operations and maintenance, including emergency storm restoration and ongoing distribution operations and maintenance activities.

EDUCATION & CERTIFICATIONS

Mr. Bakula holds a Masters in Engineering Management from Midwest College of Engineering and a BS in Electrical Engineering from the University of Missouri at Rolla.

PROFESSIONAL AFFILIATIONS AND CERTIFICATIONS

- International Utility Revenue Protection Association (IURPA)
- Institute of Management Consultants (IMC) (2002 – 2005)
- Chairman of Strategic Metering Issues Working Group (1998 – 1999)
- Edison Electric Institute (EEI) Distribution Committee
- Association of Edison Illuminating Companies (AEIC) Meter and Service Committee

REPRESENTATIVE MANAGEMENT CONSULTING EXPERIENCE

- Developed recommendations to improve capacitor program at Commonwealth Edison (2003)
- Developed procurement plan for industrial customer to find new energy supplier (2003)
- Performed assessment and provided a list of improvements for Kansas City Power & Light's metering area (2002)
- Worked as a contractor for Davies Consulting Inc. on a reliability project at Potomac Electric Power Co., where he provided an assessment of PEPCo's expenditure prioritization process and provided new methodology for prioritizing distribution expenditures for reliability work (2001)

Mr. John Bakula, continued
Senior Engineering Consultant

INTEGRATION MANAGER EXPERIENCE

Directed group responsible for benchmarking, operating measurements, process improvements, and data acquisition from the customer information system for 3.4 million customers.

- Identified gaps between the existing Meter Reading Department and industry leaders and created plans, timelines, recommendations and directed a team that shaped a new Meter Reading Department; senior executives, including company president, approved project plans
- Led a team that revamped the Maintenance & Construction Department, identifying and correcting problems associated with previous organization; company president approved implementation plans
- Led team for implementation of mobile data to 400 field meter personnel

FIELD & METER SERVICES MANAGER EXPERIENCE

Responsible for Meter Service Department and all field meter activities, involving 490 employees, $27 million expense budget, and $18 million investment budget.

- Served as Committee Chairman for Strategic Metering Working Group of the Edison Electric Institute
- Reorganized department with a 25% ($.75 M savings) reduction in department heads, while improving all key performance measures over the previous year
- Replaced two major computer systems, the automatic meter reading and inventory computer systems, on time and on budget to meet Y2k compliance without impacting customers

METER SERVICES MANAGER EXPERIENCE

Responsible for all revenue metering strategies, policies, meter inventory, meter shop, engineering design, installation, automatic meter reading system, theft of service program, independent power producers, and inter-utility metering.

- Directed improvements that accomplished a 30% labor reduction, while improving all inventory performance measures without any union grievances
- Facilitated five-day culture change workshops for all distribution company department heads and administrators; performed follow-up survey of management showed a clear change in management employee satisfaction
- Proposed and implemented a reorganization that eliminated billing problems for largest revenue customer metering installations with a 20% labor reduction without any union grievances

Mr. John Bakula, continued
Senior Engineering Consultant

METER SERVICES MANAGER EXPERIENCE, CONTINUED

- Reorganized field dispatching operations reducing labor requirements by over 50% ($.5M savings) at the same time standardizing customer contact process across the company
- Acted as an expert witness for metering and billing before the Illinois Commerce Commission (ICC) concerning billing experiment, where ICC successfully ruled for the company's billing experiment

SECTION ENGINEER EXPERIENCE

Directed group that was responsible for distribution standards and specifications for electrical distribution system.

SUPPORT SERVICES MANAGER EXPERIENCE

Managed departments at T & D Northern Division and was responsible for:

- Tree trimming/landscaping
- Transportation
- Stores
- Training (overhead, underground, and substation)
- Safety and industrial hygiene
- Distribution contracting overhead, URD, trenching, and underground
- Assisted the Northern Division Operating Manager in managing Construction, Engineering, and Testing departments

Established contracting operations for the company where no contracting had been performed enabling completion of many key projects. Developed contractor work specifications, contract inspector organization and administered contracts for overhead, underground, trenching, and service contractors.

PROFESSIONAL PLACEMENT EXPERIENCE

As *Corporate Lead* of professional placement services, Mr. Bakula was responsible for the company's professional placement and college recruitment.

DEPARTMENT HEAD, SUPERVISOR EXPERIENCE

Various engineering assignments in Chicago and suburban offices in electrical distribution design and planning for 4KV, 12KV, and 34KV, including:

- Responsible for analyzing customer tickets and issuing trouble tickets during storm restoration
- Responsible for initiating idea for computer-based sorting of customer tickets during storm restoration replacing manual customer ticket sorting.

Mr. Lee E. Burgess
Executive Consultant II

BACKGROUND

Mr. Lee Burgess, a Schumaker & Company associate, has more than 23 years of consulting experience to the utilities and regulatory industry. He was previously a *Senior Associate* with Theodore Barry & Associates for five years, a *Partner* of Metzler & Associates for over 10 years, *President* of L. E. Burgess Consultants, Inc. for six years, and was most recently *Vice President of Operations* for Navigant Consulting, Inc. He also served for five years as a *US Navy Line Officer* where he saw combat duty in Vietnam and gained broad-based experience in engineering, maintenance and materials management, shipyard construction, personnel, and administration. He has testified as an *Expert Witness* on utility management before the New York Public Service Commission (NYPSC), the Connecticut Department of Public Utility Control (CDPUC), the Pennsylvania Public Utility Commission (PAPUC), the Missouri Public Service Commission (MPSC), the Florida Public Service Commission (FPSC) and the California Public Utilities Commission (CPUC).

EDUCATION & CERTIFICATIONS

Mr. Burgess holds a Master of Business Administration Degree from the University of Michigan and a Bachelor of Science Degree from the United States Naval Academy. He is also a Certified Practitioner of Inventory Management (CPIM).

CONSULTING EXPERTISE

Mr. Burgess has worked on various consulting assignments for over 70 clients and has managed projects for over 40 clients. He has also participated in over 30 management audits. Through this broad-based experience, he has developed high level expertise in:

- Organizational effectiveness
- Strategic/business planning
- Workforce management
- Corporate performance improvement
- Ethics
- Internal controls
- Transmission and distribution
- Customer operations
- Engineering and construction
- Power plant maintenance and operations
- Fuels management
- Supply chain management
- Affiliate relations and transactions

Mr. Lee E. Burgess, continued
Executive Consultant II

PROJECT MANAGEMENT EXPERIENCE

Mr. Burgess has considerable experience in managing a wide range of consulting projects. The size and complexity of these projects have ranged from small, single issue evaluations for small utilities, to comprehensive reviews of all company functions for the largest utilities in the industry. The following is a representative list of his consulting experience. Others are available upon request.

- *Alaska Energy Authority* – Review of construction programs
- *Atlanta Gas Light Company* – Review of gas supply and planning
- *Atlantic Electric Company* (two audits) – Comprehensive reviews of all company functions
- *Avatar Utilities, Inc.* – Review of affiliate relations between the holding company, service companies, and water utilities; testified in two state jurisdictions on the results
- *The Brooklyn Union Gas Company* – Review of organization, strategic/business planning, manpower planning, marketing, equal employment opportunity/affirmative action, engineering and construction, system planning, capital budgeting, computer information systems, gas supply, ethics and internal control, and customer operations
- *Cincinnati Gas & Electric Company* (two audits) – Reviews of gas supply/planning
- *Commonwealth Edison Company* – Comprehensive review of all company functions for the Illinois Commerce Commission, subsequently managed a follow-up review of fossil fuel management
- *Commonwealth Utilities Corporation* (Saipan, Northern Marianas) – Comprehensive review of all utility functions of this remote island utility for U.S. Department of Interior
- *Connecticut Light & Power* – Review of all utility functions related to their gas business. Review of purchasing and materials management, internal auditing, and customer operations
- *Connecticut National Gas Corporation* – Review of all company functions
- *Dayton* Power & Light Company – Review of fossil fuel management
- *East Ohio Gas Company* – Review of gas supply
- *Entergy Corporation* – Assisted utility in organizing non-regulated business and establishing affiliated relationships between regulated and non-regulated businesses

Mr. Lee E. Burgess, continued
Executive Consultant II

ORGANIZATION EFFECTIVENESS, STRATEGIC AND BUSINESS PLANNING, AND CORPORATE PERFORMANCE EXPERIENCE

Mr. Burgess has performed numerous evaluations of utility organizational effectiveness as well as strategic planning, business planning, and the measurement of corporate performance. Mr. Burgess has performed these assignments for the following utilities:

- *Philidelphia Gas Works* – Performed a stratified management audit of PGW for the Pennsylvania Public Utility Commission, in which he investigated executive management, planning, external relations, and corporate governance functions
- *Pennsylvania-American Water Company* – Performed a stratified management audit of PAWC for the Pennsylvania Public Utility Commission, in which he investigated the executive management, planning, external relations, and corporate governance functions, as well as corporate culture, management structure, and staffing levels.
- *PECO Energy* – Performed a stratified management audit of PECO Energy for the Pennsylvania Public Utility Commission, in which he investigated executive management, planning, external relations, and corporate governance functions
- *KTL, Inc.* – Developed and wrote the first strategic plan for the non-regulated companies of Kansas City Power and Light Company;, which was conducted a seminar for senior management on strategic planning
- *Atlantic Electric Company – Lead Consultant* evaluating company organization, strategic/business planning, corporate performance (to include non-regulated companies) as part of a comprehensive management audit of all company management and operations, which was conducted for the New Jersey Board of Regulatory Commissioners
- *The Brooklyn Union Gas Company – Lead Consultant* evaluating organization, strategic/business planning and corporate performance as part of a focused management audit, conducted for the New York Public Service Commission.
- *Commonwealth Edison Company – Lead Consultant* evaluating organization planning, strategic/business planning, and corporate performance as part of a comprehensive management audit of this multi-billion dollar electric utility, which was conducted for the Illinois Commerce Commission.
- *Commonwealth Utilities Corporation* (Saipan, Northern Marianas) – *Lead Consultant* conducting a review of organization and all planning functions for this remote island utilities, which was conducted for the utility and the U.S. Department of Interior.

Mr. Lee E. Burgess, continued
Executive Consultant II

ORGANIZATION EFFECTIVENESS, STRATEGIC AND BUSINESS PLANNING, AND CORPORATE PERFORMANCE EXPERIENCE, CONTINUED

- *Connecticut Light and Power Company – Lead Consultant* evaluating organization and strategic planning as part of a diagnostic management review, which was conducted for the Connecticut Department of Public Utility Control
- *Connecticut Water and Gas Corporation – Lead Consultant* evaluating organization/strategic planning in a diagnostic management review, which was conducted for the Connecticut Department of Public Utility Control
- *Illinois Bell Telephone Company – Technical Advisor* to a commission staff conducting management audit in the areas of organization, strategic/business planning, and corporate performance.
- *Long Island Lighting Company – Lead Consultant* evaluating organization, strategic/business planning, and corporate performance as part of a focused management audit, which was conducted for the New York Public Service Commission
- *Los Angeles Department of Water & Power – Lead Consultant* evaluating organization and strategic/business planning as part of a comprehensive review.
- *Niagara Mohawk Power Corporation – Lead Consultant* evaluating organization, strategic/business planning, and corporate performance as part of a focused management audit, which was conducted for the New York Public Service Commission
- *The Peoples Gas & Light Company/North Shore Gas Company – Lead Consultant* evaluating organization planning, strategic/business planning, and corporate performance as part of a comprehensive management audit of this multi-billion dollar gas utility, which was conducted for the Illinois Commerce Commission
- *Philadelphia Electric Company* – Evaluated the senior management and construction management organization as it related to the construction of the Limerick II Nuclear Generating Station, which was conducted for the Pennsylvania Public Utility Commission; testified as an expert witness on this topic in regulatory hearings

Mr. Lee E. Burgess, continued
Executive Consultant II

ETHICS AND INTERNAL CONTROLS EXPERIENCE

Mr. Burgess has conducted reviews of the ethics programs and internal controls of major utilities, including:

- *Philadelphia Gas Works* – Performed a stratified management audit of PGW for the Pennsylvania Public Utility Commission, in which he investigated the executive management, planning, external relations, and corporate governance functions
- *Pennsylvania-American Water Company* – Performed a stratified management audit of PAWC for the Pennsylvania Public Utility Commission, in which he investigated the executive management, planning, external relations, and corporate governance functions, as well as corporate culture, management structure, and staffing levels.
- *PECO Energy* – Performed a stratified management audit of PECO Energy for the Pennsylvania Public Utility Commission, in which he investigated the executive management, planning, external relations, and corporate governance functions.
- *The Brooklyn Union Gas Company* – Conducted an in depth review of the company's ethics and internal control programs for the New York Public Service Commission, including an analysis of the effectiveness of past company programs
- *Northeast Utilities* – Conducted an in depth review of the internal audit department, which included a review of company internal controls, which was conducted for the Connecticut Department of Public Utility Control
- *Vermont Public Service Company* – Conducted a review of the internal controls, ethics procedures, and Board of Director oversight for the Vermont Public Service Commission

Mr. Lee E. Burgess, continued
Executive Consultant II

Transmission and Distribution Experience

Mr. Burgess has considerable and diverse experience in the area of transmission and distribution (T & D) operations, maintenance, outage planning, storm restoration and response, and right of way/tree trimming, including:

- *Madison Gas and Electric Company* – Project Manager implementing a work force management program for the T & D department. Scope included tree trimming and storm restoration
- *Atlantic Electric Company* – Project Manager for two comprehensive management audits, which included analysis of transmission, distribution, storm restoration, tree trimming, and associated capital budgeting, planning, and support systems
- *Commonwealth Edison Company* – Project Manager for a comprehensive management audit, which included all transmission and distribution functions. Coordinated a follow-up engineering study of Edison's T & D system in response to a major storm outage
- *Commonwealth Utilities Corporation* (Saipan, Northern Marianas) – Project Manager for a comprehensive review of this remote island utility. Scope included as analysis of practices and support systems for aging distribution lines in high vegetation areas
- *Los Angeles Department of Water and Power* – Project Manager for a comprehensive audit that included analysis of all T & D functions and planning, budgeting, and outage management systems and practices
- *Rochester Gas & Electric Company* – Project Manager for a comprehensive audit, which included analysis of all T & D functions and associated support systems and practices

Supply Chain Management Experience

Mr. Burgess is a professionally *Certified Practitioner of Inventory Management* (*CPIM*) through the American Production and Inventory Control Society (APICS), and has been actively involved with developing the state of the art in purchasing and materials management practices in the utilities industry. A brief description of his experience in this area is as follows:

- *Commonwealth Edison Company – Lead Consultant* for an evaluation of the purchasing and materials management functions of this multi-billion dollar corporation
- *Arkansas Power & Light – Lead Consultant* evaluating purchasing and materials management practices

Mr. Lee E. Burgess, continued
Executive Consultant II

SUPPLY CHAIN MANAGEMENT EXPERIENCE, CONTINUED

- *Public Service Electric and Gas Company – Lead Consultant* for an evaluation of the purchasing and materials management function of this multi-billion dollar corporation
- *Rochester Gas & Electric Company* – Performed a focused review of purchasing and materials management
- *People Gas Light & Coke Company/North Shore Gas Company* – Performed an evaluation of purchasing and materials management for this multi-billion dollar gas distribution utility
- *Atlantic Electric Company – Lead Consultant* for a review of purchasing and materials management practices
- *Orange & Rockland Utilities, Inc. – Lead Consultant* in a review of purchasing and materials management
- *Nebraska Public Power District* – Performed a project to evaluate the need for a new materials management information system, assisted in justifying this expenditure, and helped implement the system
- *Niagara Mohawk Power Corporation – Engagement Director* and *Project Manager* of a project to evaluate the corporate, nuclear, and fossil purchasing departments and procedures; Project Manager and Lead Consultant on a follow-up process re-engineering effort for corporate-wide purchasing, contracting, and materials management
- *Northeast Utilities* – Performed two in-depth reviews of purchasing and materials management, including MIS applications
- *Omaha Public Power District* – Conducted an in-depth review of materials management practices
- *Kansas City Power & Light Company – Project Manager* and *Lead Consultant* on a comprehensive review of the company's purchasing and materials management functions
- *Todd Shipyards (San Diego, California and Seattle, Washington)* – Performed a broad-based operations review of major shipbuilding support functions, which included procurement, inventory control, and material transportation and handling
- *Lagoven, S.A. (Venezuela)* – Performed a manpower planning and operations review, which included improving purchasing and materials management functions for this major international oil company

Mr. Lee E. Burgess, continued
Executive Consultant II

Supply Chain Management Experience, Continued

Mr. Burgess also performed reviews of purchasing and materials management practices and their impact on other corporate functions for the following utilities.

- The Brooklyn Union Gas Company
- Commonwealth Utilities Corporation (Saipan, Northern Marianas)
- Connecticut Light & Power Company
- Connecticut Material gas Corporation
- Houston Lighting and Power Company (South Texas Project)
- Illinois Power Company (Clinton Nuclear Generating Stations Construction)
- Lakeland Department of Electric and Water Utilities (Florida)
- Los Angeles Department of Water & Power
- Madison Gas & Electric Company
- Naperville Electric Department
- Orange & Rockland Utilities, Inc.

Manpower Planning & Workforce Management Experience

Mr. Burgess has expertise in the area of manpower planning and work force management, having worked with many utilities over the past 22 years on a wide variety of manpower planning and productivity issues. This experience is summarized below:

- *Baker & Botts (Houston Light and Power Company)* – Performed litigation support advising HC&P's council of workforce productivity issues related to the construction of the South Texas Project (Nuclear Generating Station)
- *GPU Energy* – Evaluated workforce productivity systems and procedures for GPU's fossil power production. Evaluated the systems for all three GPU operating companies Pennsylvania Electric Company, Metropolitan Edison Company and Jersey Central Power and Light Company
- *Georgia Power Company* – Evaluated workforce management systems in the Nuclear and Fossil Power Restriction departments on a comprehensive management audit for the Georgia Public Service Commission
- *Gulf States Utilities Company* – Implemented a workforce productivity system at the construction site of the River Bend Nuclear Generating Station
- *Todd Shipyards* (San Diego, California and Seattle, Washington) – Performed a review of labor productivity and work management systems

Mr. Lee E. Burgess, continued
Executive Consultant II

MANPOWER PLANNING & WORKFORCE MANAGEMENT EXPERIENCE, CONTINUED

- *Lagoven, S. A.* (Venezuela) – Performed a broad based manpower planning review for the corporation
- *Illinois Power Company* – Implemented a workforce productivity and methods improvement program at the construction site of the Clinton Nuclear Generating Station
- *Lakeland Department of Electric and Water Utilities* – Evaluated workforce productivity systems in the Power Generating Division
- *Long Island Lighting Company* – Evaluated manpower planning systems as part of a review of corporate perspective (organization & strategic planning), which was conducted for the New York Public Service Commission
- *Nebraska Public Power District* – Evaluated workforce productivity systems at the District's fossil and nuclear generating stations
- *New York State Electric & Gas Corporation* – Evaluated workforce productivity systems at each of the corporation's fossil generating stations
- *Niagara Mohawk Power Corporation – Lead Consultant* evaluating manpower planning and work management systems as part of a focused management audit, which was conducted for the New York Pubic Service Commission
- *Oklahoma Gas & Electric Company* – Evaluated workforce productivity systems at the company's fossil generating station
- *Omaha Public Power District* – Implemented workforce productivity systems at the North Omaha (fossil) and Fort Calhoun (nuclear) Generating Stations
- *Madison Gas Electric Company* – Implemented a workforce productivity system in transmission and distribution engineering and field forces
- *Public Service Company New Mexico* – Implemented a workforce productivity system at the San Juan Generating Station
- *Tennessee Valley Authority* – Implemented a workforce productivity measuring system at the construction site of Hartsville Nuclear Generating Stations; subsequently developed a methods improvement program using the results of the earlier efforts
- *Texas Utilities* – Reviewed work management and productivity at the construction site of the Comanche Peak Nuclear Reach Generating Station; advised the company on workforce productivity issues in preparation for regulatory proceedings

Mr. Lee E. Burgess, continued
Executive Consultant II

MANPOWER PLANNING & WORKFORCE MANAGEMENT EXPERIENCE, CONTINUED

- *State of Alaska* – Advised State attorneys on workforce productivity issues related to the construction of the Trans Alaska Pipeline System
- *New York Public Service Commission* – Conducted an investigation into the workforce management programs and workforce productivity in the construction of the Shoreham Nuclear Generating Station; testified as an expert witness on workforce productivity and the quantification of productivity

GOVERNMENT EXPERIENCE

- Public/regulatory agency clients include:
- California Public Utilities Commission
- Connecticut Department of Public Utility Control
- Georgia Public Service Commission
- Illinois Commerce Commission
- Kentucky Public Service Commission
- New Jersey Board of Regulatory Commissioners
- New York Department of Public Service
- Pennsylvania Public Utility Commission
- Public Utilities Commission of Ohio
- U.S. Department of the Interior
- Public Utility Commission of Texas

AFFILIATE RELATIONSHIPS EXPERIENCE

Mr. Burgess has performed numerous assignments in evaluating the organization, process and procedures, and accounting controls that define the relationship between a utility's regulated and non-regulated business. He has performed these evaluations for state public service commission and helped utilities organize and establish non-regulated companies. The following are recent consulting engagements that Mr. Burgess has conducted:

- *Entergy Corporation* – Assisted the utility in establishing the organization of its newly formed non-regulated businesses and established procedures to govern transactions between the regulated and non-regulated business
- *SCE Corp – Project Manager* for a comprehensive review of the affiliate relations between SCE Corp, Southern California Edison Company, and Mission Energy (non-regulated), which was performed for the California Public Utilities Commission

Mr. Lee E. Burgess, continued
Executive Consultant II

AFFILIATE RELATIONSHIPS EXPERIENCE, CONTINUED

- *PGE/PGE Enterprises – Project Manager* for a comprehensive review of the affiliate relations between PGE and PGE Enterprise, which was performed for the California Public Utilities Commission
- *KLT, Inc.* – Developed the Strategic Plan of Kansas City Power and Light Company's non-regulated business to include affiliate relationships with the regulated parent company. Conducted a seminar for senior management on these relationships.
- *Avatar Utilities* – Conducted an in-depth review of the relationship between regulated water utilities (multi-state) and the non-regulated business. This review included costs allocations between regulated businesses operating in several state regulatory jurisdictions.
- *Southern California Edison/ San Diego Gas & Electric Company* – Performed an in-depth investigation of the cost allocation charges between regulated and non-regulated businesses (as part of a larger rate investigation) of PG&E Enterprises and associated companies. Filed testimony of the results of the analysis.

Mr. Burgess has also evaluated the affiliate relationships between the regulated and non-regulated business, as part of a broader review of management practices, for the following utilities:

- Public Service Electric & Gas Company
- Atlantic Electric Company

Mr. Lee E. Burgess, continued
Executive Consultant II

Utility & Telecommunications Experience

Additionally, he has performed other reviews for firms, including:

- Alaska Energy Authority
- Arkansas Power and Light Company
- Atlanta Gas Light Company
- Atlantic Electric Company
- Avatar Utilities Incorporated
- Baker & Botts (Houston lighting and Power Company)
- The Brooklyn Union Gas Company
- Carolina Power and Light Company
- Central Power & Light Company
- Cincinnati Gas and Electric Company
- Clay Electric Cooperative
- Commonwealth Edison Company
- Commonwealth Utilities Corporation (Saipan, Northern Marianas)
- Connecticut Light and Power Company
- Connecticut Natural Gas Corporation
- Consumers Power Company
- Dayton Power and Light Company
- East Ohio Gas Company
- Entergy Corporation
- Florida Cities Water Company
- General Public Utilities Company
- Georgia Power Company
- Gulf States Utilities Company
- Houston Lighting and Power Company
- Illinois Bell Telephone Company
- Illinois Power Company
- Isham, Lincoln & Beale (Commonwealth Edison Company)
- Kansas City Power & Light Company
- Kentucky Utilities Company
- KLT, Inc.
- Lagoen, S. A. (Veneznela)
- Lakeland Department of Electric and Water Utilities (Florida)
- Lincoln Electric System (Nebraska)
- Long Island Lighting Company
- Los Angeles Department of Water and Power
- Louisville Gas and Electric Company
- Madison Gas and Electric Company
- Missouri Cities Water Company
- Naperville Electric Department (Illinois)
- Nebraska Public Power District
- New York State Electric and Gas Corporation
- Niagara Mohawk Power Corporation
- Northeast Utilities
- Ohio Gas Company
- Oklahoma Gas and Electric Company
- Omaha Public Power District
- Orange & Rockland Utilities, Inc.
- Pacific Gas & Electric Company
- The Peoples Gas Light and Coke Company/North Shore Gas Company
- PECO Energy
- Philadelphia Gas Works
- Public Service Company of New Mexico
- Public Service Electric and Gas Company
- Rochester Gas and Electric Corporation
- San Diego Gas & Electric Company
- Southern California Edison Company
- System Energy Resources, Incorporated
- Tennessee Valley Authority
- Texas Utilities
- Todd Shipyards (San Diego and Seattle)
- Toledo Edison Company
- Tucson Electric Power Company
- UGI Utilities, Inc.
- U.S. Navy
- Wisconsin Electric Power Company

Mr. Lee E. Burgess, continued
Executive Consultant II

MANAGEMENT AUDIT EXPERIENCE

Mr. Burgess is one of the foremost authorities in conducting management audits of electric, gas, telephone, and water/wastewater utilities. He has participated in 39 management audits over the past 19 years, most as a *Project Manager* and *Lead Consultant*. His management audit experience includes the following organizations:

- Arkansas Power & Light Company
- Atlanta Gas Light Company
- Atlantic Electric Company (two audits)
- The Brooklyn Union Gas Company
- Cincinnati Gas & Electric Company (three audits)
- Commonwealth Edison Company
- Commonwealth Utilities Corporation
- Connecticut Light and Power Company (two audits)
- Connecticut National Gas Corporation
- Dayton Power & Light Company (three audits)
- East Ohio Gas Company (two audits)
- Georgia Power Company
- Houston Lighting and Power Company
- Illinois Bell Telephone Company
- Kentucky Utilities Company
- Lakeland Department of Electric and Water & Utilities (Florida)
- Long Island Lighting Company
- Los Angeles Department of Water & Power
- Louisville Gas & Electric Company
- Madison Gas & Electric Company
- Naperville Electric Department (Illinois)
- Nebraska Public Power District
- New York State Electric & Gas Corporation
- Niagara Mohawk Power Corporation
- Ohio Gas Company
- Oklahoma Gas & Electric Company
- Orange & Rockland Utilities, Inc.
- Pacific Gas & Electric Company
- The People Gas Light & Coke Company/Northshore Gas Company
- PECO Energy
- Philadelphia Gas Works
- Public Service Electric & Gas Company
- Rochester Gas & Electric Company
- Southern California Edison Company
- Toledo Edison Company
- Wisconsin Electric Power Company

Mr. Lee E. Burgess, continued
Executive Consultant II

LITIGATION & TESTIMONY EXPERIENCE

- *California Public Utilities Commission* – Presented direct testimony on a comprehensive investigation into the management, costs, and cost allocations regarding PG&E Enterprises construction of the Pipeline Expansion Project
- *Florida Public Service Commission* – Presented testimony in a rate case hearing on affiliate relations and cost allocations of Avatar Utilities and Florida Water Company
- *Missouri Public Service Commission* – Presented testimony in a rate case hearing on affiliate relations and cost allocations of Avatar Utilities and Missouri Cities Water Company
- *Pennsylvania Public Utility Commission* – Presented testimony in the rate case hearing regarding a retrospective construction management audit of Philadelphia Electric Company's Limerick Unit 2; testimony specifically concerned project management of Limerick 2's construction, which included PECo's executive management oversight, and the management and conduct of the audit
- *Connecticut Department of Public Utility Control* – Testified regarding management audit approach and quantification methodologies (1988)
- *State of New York Department of Public Service* – Presented testimony regarding productivity, construction management, and quantification methodologies in the prudence audit of Shoreham Nuclear Generating Station (1982)
- *Trans Alaska Pipeline System* – *Support Consultant* in the area of construction project management for Ragovin, Hugh, & Lenzner in a rate case/litigation involving prudence issues related to the project

Mr. Siegfried Guggenmoos, B.Sc.(Agr.),P.Ag, Ecological Solutions Inc. Senior Engineering Consultant

EXPERIENCE

Mr. Siegfried Guggenmoos has over 30 years of business and industry experience with both private and public sector clients, including extensive experience in the electric/gas utility and transportation industries. Mr. Guggenmoos' consulting experience encompasses expertise as a professional agrologist in the vegetation management industry. He is known in the industry for his problem solving, innovation and new interpretations combining technical, environmental and financial domains, as well as for translating ecological, arboricultural principles into action in implementation and communication strategies. He has held research positions at agricultural and horticultural agencies working on herbicides, growth regulators and pesticide residues. Mr. Guggenmoos was *Vice President* and *General Manager* of a national Canadian vegetation management contractor, Ace Vegetation Control Service, Ltd. in Nisku, Alberta, and later went on to become the *Supervising Forester* and *Senior Consulting Forester* at TransAlta Utilities in Sherwood Park, Alberta. Mr. Guggenmoos is now president and founder of Ecological Solutions Inc. (Ecosync) located in Sherwood Park, Alberta.

EDUCATION & CERTIFICATIONS

Mr. Guggenmoos holds a Bachelor of Science degree in Agriculture, Horticulture major, from the University of Guelph, Guelph, Ontario. He has also completed coursework on the *Fundamentals of Financial Management* through the Northern Alberta Institute of Technology in Edmonton, Alberta, and on *Understanding Finance* at the Banff Centre School of Management in Banff, Alberta.

CONSULTING EXPERTISE

His professional experience includes the following types of assignments:

- Quantification of power line tree exposure risk and options for improving reliability
- Reviews of vegetation management program quality and effectiveness
- Long term vegetation management funding review and forecasts
- Development of vegetation management program alternatives/modifications
- Development of computer tools for financial assessments of vegetation management program alternatives
- Development of least cost vegetation management by synchronizing economics and ecology

Mr. Siegfried Guggenmoos, B.Sc.(Agr.),P.Ag, continued
Senior Engineering Consultant

CONSULTING EXPERTISE, CONTINUED

- Development of a system of quantification for power line residual tree risk, permitting establishment of targeted, reliability levels based on line priority
- Development of a process for predicting the impact of under funding vegetation management on future reliability and funding requirements
- Vegetation management and greenhouse gas mitigation measures for a competitive energy market
- Quantification, monitoring, and verification of biotic greenhouse gas mitigation measures
- Contributions to development of government policy and regulation

VEGETATION MANAGEMENT EXPERIENCE

Mr. Guggenmoos has been involved in many vegetation management projects. Projects include assessments of the tree exposure risk to reliability, assessments of workload and resource requirements, technical quality, contractor compliance with standards, cost effectiveness of vegetation management programs and development of alternative approaches. Methodologies applied include statistical analysis of field observations and development of models forecasting reliability and funding impacts.

With Schumaker & Company, he was a *Senior Consultant* on a stratified management and operations audit of Pennsylvania Energy Company (PECO) for the Pennsylvania Public Utility Commission (PaPUC) with the primary focus areas being PECO, Exelon Energy Delivery (EED), and Exelon Business Services Company (EBSC) functional areas. Mr. Guggenmoos focused on vegetation management issues providing a measure of the potential for, or risk of, tree-conductor conflicts and clarified the influence of design and operating decisions on maintenance costs and reliability risks.

Also as *Senior Consultant* with Schumaker & Company on a management audit for the Kentucky Public Service Commission, Mr. Guggenmoos focused on vegetation management issues as part of the reliability of service assessment within AEP/Kentucky's distribution system in its Hazard service territory (a forested mountainous terrain), which has historically experienced a greater number of electric service interruptions than other AEP/Kentucky areas and, additionally, interruptions of longer duration.

Mr. Guggenmoos contributed to the articulation of industry best practices set out in the *Utility Vegetation Management Final Report March 2004* to FERC arising from the investigation of the August 14, 2003 Northeast Blackout.

Mr. Siegfried Guggenmoos, B.Sc.(Agr.),P.Ag, continued
Senior Engineering Consultant

Vegetation Management Experience, Continued

As part of some of the projects he has managed, he conceptualized an ecological approach to vegetation management for electrical utilities that simultaneously minimizes costs and tree related outages as well as developed a method for determining the optimal clearance between electric lines and trees, a potential cost-saving method for many utilities.

While guiding a project for the Forestry Group of TransAlta, Mr. Guggenmoos directed the design and implementation of a record keeping/reporting system that facilitates assessments of site and unit costs, productivity, and future needs, and conceptualized financial interpretation of data arising from TransAlta Forestry reporting system. The financial interpretation subsequently permitted an assessment of the value of program choices, crew configurations, supervision, stability of work force, etc.

His vegetation management experience also encompasses developing an incentive contract, which shared productivity gains with contractors and their field staff while ensuring safety, quality, and customer satisfaction were not jeopardized. He has also developed a number of programs that provide quick assessments of the value of current vegetation management practices vs. proposed alternatives, as well as computerized templates for tracking budgets, scheduling crews, monitoring reporting accuracy, and uniformity.

Project Experience

- **Puget Sound Energy, Inc.**, Bellevue, Washington, February 2008 – ongoing
  Storm hardening the electric transmission system
- **FortisBC**, Trail, British Columbia, March 2008 – April 2008
  Audit and assessment of contractor tree pruning work quality, completeness, clearance achieved and compliance with standards. Statistical comparisons between crews, contractors, and geographic areas were made. Program efficiency and the extent of hot spotting were assessed.
- **AltaLink**, Calgary, Alberta, March 2007 – May 2008
  To satisfy the recommendations set out in a report titled Quantification of Vegetation Management Work, Risks & Resource Requirements used to support a change in transmission tariffs accepted in 2007, extended the sampling for within and outside right of way work volumes to achieve a 95% confidence level. Re-calculated the annual volume increment, which must be removed to achieve a least cost, sustainable maintenance program, the cumulative workload liability and the projections for its elimination.

Mr. Siegfried Guggenmoos, B.Sc.(Agr.),P.Ag, continued
Senior Engineering Consultant

PROJECT EXPERIENCE, CONTINUED

- **Pennsylvania Public Utility Commission, PECO**, Philadelphia, PA, June 2006 – March 2007
  As a sub-contracted partner of Schumaker & Company performing a Stratified Management Audit of PECO, assessed PECO's vegetation management program for its cost effectiveness and ability to avoid and minimize tree-related electric service interruptions. Provided recommendations for vegetation management program improvement.
- **AltaLink**, Calgary, Alberta, April 2006 – February 2007
  Supported AltaLink in a rate case requesting substantially increased vegetation management funding, based on work previously performed and detailed in the report Quantification of Vegetation Management Work, Risks & Resource Requirements. Provided responses to questions arising from the Alberta Energy and Utilities Board and interveners through the General Tariff Application process. The Alberta Energy and Utilities Board accepted all the quantification and recommendations of the aforementioned Ecological Solutions Inc. report including the recommended level of vegetation management funding.
- **Olive Waller Zinkhan & Waller LLP**, Regina, Saskatchewan, July 2006 – October 2006
  Provided expert analysis of SaskPower vegetation management practices, procedures, and policies in the context of both a specific tree failure incident, which resulted in a wildfire and personal injury, and the utility vegetation management industry in general.
- **AltaLink**, Calgary, Alberta, February 2006 – June 2006
  Developed a detailed work tracking and reporting system for right of way maintenance work comprised of a weekly timesheet and a database. The database yields reports on total expenditures and work units completed by activity type, line location, contract type, contractor, work order, productivity and unit costs.
- **AltaLink**, Calgary, Alberta, June 2005 – February 2006
  Supported a change in transmission tariffs, undertook studies to quantify AltaLink transmission system exposure to trees, current vegetation management workload inventory and its rate of change. Determined the annual volume increment, which must be removed to achieve a least cost, sustainable maintenance program. Developed a predictive model to forecast funding requirements based on a range of investment scenarios. Examined the current tree risk levels and trends in the context of the total tree exposure and the current workload liability. Findings and recommendations were set out in a report titled Quantification of Vegetation Management Work, Risks & Resource Requirements.

Mr. Siegfried Guggenmoos, B.Sc.(Agr.),P.Ag, continued
Senior Engineering Consultant

PROJECT EXPERIENCE, CONTINUED

- **AltaLink**, St. Albert, Alberta, April 2005 – June 2005
  Developed and wrote a general standards and specifications document for the construction of new rights of way with a particular focus on the treatment of vegetation and its residues.
- **National Grid USA**, Westborough, Massachusetts, January 2003 – March 2005
  Developed the protocol to quantify the current level of tree risk along the right of way edge. Coordinated the project involving three other contractors. Performed statistical data analysis, made projections for the exposure to tree risk for the entire transmission system, correlated the found average tree risk by voltage class to the historical interruption experience and developed mitigation strategies that will reduce transmission line tree-caused interruption risk 40% to 80% for 25-50% of the cost of traditional methods.
- **AltaLink**, St. Albert, Alberta, March 2004 – May 2004
  Developed a contractor timesheet and an accompanying Activity Code Manual for tracking work type and units completed by location, crew, contractor, work order number, maintenance or hot spotting.
- **Kentucky Public Service Commission, AEP/Kentucky**, Hazard, Kentucky, August 2002 – February 2003
  As a sub-contracted partner of Schumaker & Company assessed the role of trees and the delivered vegetation management program on the reliability of service within AEP/Kentucky's Hazard service territory, an area that has historically experienced a greater number of, and longer duration electric service interruptions than other AEP/Kentucky service areas. The total assignment involved six consultants in roughly 700 hours of effort during a 6-month period.
- **AltaLink**, St. Albert, Alberta, May 2003 – November 2003
  Developed standards and specifications for AltaLink's vegetation management program.
- **Mathews - Daniel, Atco Electric**, Edmonton, Alberta, June 2001 – September 2001
  Assessment of specific and general field practices for due diligence and reasonable care following a tree failure (Chisholm area of Alberta) that resulted in a forest fire.
- **Fire Protection Division**, Alberta Environmental Protection, Edmonton, Alberta, October 2000 – December 2000
  North American survey of Regulation to Limit the Risk of Power Line Caused Forest Fires; assessment and recommendations for Alberta approach.

Mr. Siegfried Guggenmoos, B.Sc.(Agr.),P.Ag, continued
Senior Engineering Consultant

PROJECT EXPERIENCE, CONTINUED

- **West Kootenay Power**, Trail, British Columbia, December 1999 – March 2000
  Assessment of contractor tree pruning work quality, completeness, clearance achieved and compliance with standards. Statistical comparisons between crews, contractors, and geographic areas were made. Program efficiency and the extent of hot spotting were assessed.
- **Suncor Energy Inc.**, Calgary, Alberta, October 1999 – December 1999
  Identified potential feedstocks and drivers of availability and costs for North American alternate energy projects. Quantified the volumes and costs of the feedstocks.
- **TransAlta Corporation**, Calgary, Alberta, October 1996 – October 1999
  Developed estimates of the greenhouse gas impacts of installing power line rights of way.
- **TransAlta Corporation**, Nova Gas Transmission, Calgary, Alberta, October 1996 – September 1999
  Managed contract for research into the carbon pool effects of right of way installation and operation for various ecosystems.
- **TransAlta Corporation**, Isobord, Calgary, Alberta, April 1999 – September 1999
  Calculated the net greenhouse gas balance for a strawboard facility.
- **California Public Utility Commission**, San Francisco, California, February 1999 – March 1999
  Expert witness for the state of California in a suit against Pacific Gas & Electric Company alleging mismanagement of the vegetation management program.
- **West Kootenay Power**, Trail, British Columbia, January 1999 – March 1999
  Assessment of contractor tree pruning work quality, completeness and compliance. Statistical comparisons between crews, contractors, and geographic areas.
- **Suncor Energy Inc.**, Fort McMurray, Alberta, September 1997 – December 1997
  Identified potential feedstocks for a Canadian alternate energy project. Quantified the volumes and costs of the feedstocks.
- **Bennett Jones Verchere, Alberta Power**, Edmonton, Alberta, May 1997 – July 1997
  Assessment of specific and general field practices for due diligence and reasonable care following a tree failure (Mitsue area of Alberta) that resulted in a forest fire necessitating suppression costs approaching $50 million.
- **TransAlta Utilities**, Calgary, Alberta, March 1997 – June 1997
  Development and assessment of vegetation management strategies compatible with reliability centered maintenance.

Mr. Siegfried Guggenmoos, B.Sc.(Agr.),P.Ag, continued
Senior Engineering Consultant

PROJECT EXPERIENCE, CONTINUED

- **SaskPower**, Regina, Saskatchewan, October 1996 – February 1997
  Based on field data, compared ecological and economic effects of status quo vegetation management practices to other potential practices over a twenty-year time frame. Showed that the introduction of another vegetation management practice would save 66% over the current practices.
- **TransAlta Utilities**, Calgary, Alberta, December 1995 – March 1996
  Provided a 12-year retrospective assessment of the degree of error inherent in the vegetation inventory, current inventory estimates and budget projections for the next five years. Provided system reliability projections based on operational options available.
- **TransAlta Corporation**, Calgary, Alberta, January 1995 – March 1996
  Originated a conceptual approach on how to verify soil carbon changes over soils with broadly variable characteristics. This led to the development of a field sampling methodology (at Lethbridge Research Station, A&AFC), which received the endorsement of the western Canadian soil research community.
- **TransAlta Corporation**, CASA, Calgary, Alberta, June 1995 – January 1996
  Identified forest management measures that hold the potential of decreasing Alberta's net CO2 emissions. Quantified the potential size of the greenhouse gas mitigation effects of each measure.
- **TransAlta Corporation**, Calgary, Alberta, January 1995 – January 2000
  Evaluation of international projects for their greenhouse gas offset potential as well as identifying weaknesses and recommending economically suitable monitoring and verification methods.

RESEARCH

Mr. Guggenmoos has extensive experience in industry research, and has initiated research in right-of-way ecology and wildlife impacts. He has conducted research into growth rates after brush mowing and tree trimming and continues to conduct research on the effectiveness and develops costs of alternative vegetation management methods and equipment and the efficacy of herbicides, adjuvants, and growth regulators.

Mr. Siegfried Guggenmoos, B.Sc.(Agr.),P.Ag, continued
Senior Engineering Consultant

PRESENTATIONS

- Industrial Vegetation Management Association of Alberta, 2005, 2003, 2001, 1993, 1991
- International Society of Arboriculture 1989, 1996, 2003, 2006
- Pacific North West Chapter ISA 1991, 2000
- Western Chapter ISA, 2003
- EEI Natural Resources Conference, 2003, 2001
- International Right of Way Association, 2003
- Western Power Institute, 2000

PROFESSIONAL AFFILIATIONS

- Founding Member, Canadian Association of Railroad Applicators
- Founding Member, Utility Arborist course, Industrial Vegetation Management Association of Alberta
- Seminar Planning Chairman, Industrial Vegetation Management Association of Alberta
- Government Liaison Committee, Industrial Vegetation Management Association of Alberta
- Past Director, Industrial Vegetation Management Association of Alberta
- Past President, Industrial Vegetation Management Association of Alberta
- Summarizer, Non-crop brush & weeds, Expert Committee on Weeds, Western Section
- Member: Alberta Institute of Agrologists, International Society of Arboriculture, Utility Arborist Association, Industrial Vegetation Management Association of Alberta, Agricultural Institute of Canada

Mr. Siegfried Guggenmoos, B.Sc.(Agr.),P.Ag, continued
Senior Engineering Consultant

ARTICLES

- Brush control. Research Reports, Expert Committee on Weeds, Western Section, 1989, 1990, 1991, 1992, 1993
- Herbicide Trials. IVMAA Reporter, Winter 1987, p37.
- Economics of Herbicides for Brush Control. 1987. IVMAA Reporter, Winter 1987, p38, Spring 1988, p25.
- The Canadian Dream. 1988. IVMAA Reporter, Summer 1988, p5, Fall 1988, p4.
- Evaluating Brush Control. 1988. IVMAA Reporter, Winter 1988, p22.
- Evaluations Of Three Herbicides For Control And Regrowth Of Poplar. 1988. IVMAA Reporter, Winter 1988, p23.
- Enhancement of Phenoxy Effects on Brush by Addition of Assist. 1988. IVMAA Reporter, Winter 1988, p25.
- Presentation to Spring General Meeting of IVMAA. IVMAA Reporter, Winter/Spring 1990, p3.
- Late Season Foliar Metsufuron Methyl For Poplar Control. 1990. IVMAA Reporter, Winter/Spring 1990, p35.
- Enhancement of Phenoxy Effects on Brush by Addition of Assist. 1990. IVMAA Reporter, Winter/Spring 1990, p36.
- Cattle Grazing as an Alternative to Herbicides. 1990. IVMAA Reporter, Winter 1990, p17.
- TransAlta Utilities Reporting System-A Management Tool. Journal of Arboriculture, 16(2), 1990.
- Ecological Aspects of Herbicide Usage on Power Line Rights-of-Way. Journal of Arboriculture, 18(4), 1992
- Poplar stem and root control comparisons for 2,4-D, diphenoprop, dicamba and triclopyr. 1992. IVMAA Reporter, Winter 1992, p16.
- Effects of water volume variations on triclopyr efficacy. 1992. IVMAA Reporter, Winter 1992, p16.
- Metsulfuron methyl for poplar spp control. 1992. IVMAA Reporter, Winter 1992, p17.
- TransAlta compares girdling to triclopyr ester for poplar control. 1995. IVMAA Reporter, Winter 1995, p9.
- News From TransAlta Utilities. Country Power, Winter 1995, p5.

Mr. Siegfried Guggenmoos, B.Sc.(Agr.),P.Ag, continued
Senior Engineering Consultant

ARTICLES, CONTINUED

- News From TransAlta Utilities. Country Power, Spring 1995, p6.
- News From TransAlta Utilities. Country Power, Summer 1995, p9.
- New program controls tree management. Electric Light and Power, 73(2), 1995.
- Outage Statistics - As a Basis for Determining Line Clearance Program Status. UAA Quarterly, 5(1), Fall 1996.
- Herbicides, Not a Silver Bullet. UAA Quarterly, 8(4), Summer 2000.
- Managing Tree-Conductor Conflicts by Risk Assessment, UAA Quarterly, 9(4), Summer 2001
- Effects of Tree Mortality on Power Line Security, Journal of Arboriculture, 29(4), July 2003.
- Understand Your Tree Liability. Electric Perspectives, 28(4), 2003
- Managing Trees to Improve the Bottom Line, IVMAA Reporter, Fall 2003.
- Managing Trees to Improve the Bottom Line, EnergyPulse, April 2004, Energy Central Network at: http://www.energypulse.net/centers/article/article_display.cfm?a_id=688
- Tree Management Stops Outages and Improves Profit. Natural Gas & Electricity 21:5 p.10-15, December 2004.
- *The Neglected Option for Avoiding Electric System Storm Damage & Restoration Costs – Managing Tree Exposure.*
- Quantification of Vegetation Management Work, Risks & Resource Requirements. Ecological Solutions Inc. for AltaLink Management Ltd. March 2006. Alberta Energy and Utilities Board, AML 2007-2008 GTA Volume 2 Appendices excluding Depreciation Study. https://www3.eub.gov.ab.ca/eub/dds/iar_query/ShowAttachment.aspx?DOCNUM=449798, Appendix F, April 13, 2006.
- Side Line Tree Risk Assessment and Mitigation. UAA Quarterly, 14(4), Fall 2006.
- Outside Right-of-Way Tree Risk Along Electrical Transmission Lines. Mar. 2007 Utility Arborist Association web site. Available at http://www.utilityarborist.org/professional_resources.htm
- Increased Risk of Electric Service Interruption Associated with Tree Branches Overhanging Conductors. UAA Quarterly, 15(4), Fall 2007.

Mr. Eugene N. Johnson, PE
Senior Engineering Consultant

Background

Mr. Eugene N. Johnson brings 40 years of utility experience with knowledge of distribution asset management; work management; operations improvement; geographical information system (GIS); design; maintenance and operations; budgeting; reliability improvement; restoration; and decision support information systems. With many years of business management and engineering industry experience, Mr. Johnson has demonstrated his strategic thinking amid demonstrated line management and internal consulting experience. With a bias for action and strong analytical skills developed through leadership of and participation in numerous operation improvement teams, Mr. Johnson's excellent project and budget management talents have contributed to numerous successful projects on time and within budget.

As principal of Cornerstone Consulting Firm, LLC, Mr. Johnson recently assisted American Electric Power in recasting a key portion of their distribution capital budget to the number of units to be accomplished at projected unit costs and recommended information technology changes needed to monitor ongoing units and unit costs from existing work management and financial systems, and helped Lansing, Michigan Board of Water & Light in reviewing the state of its GIS efforts recommending short- and long-term actions.

Education & certifications

Mr. Johnson holds a Masters in Industrial and Systems Engineering, and a BS in Electrical Engineering from Ohio University. He has also completed numerous human resource and management programs, conferences, leadership training, supervisory training, and process improvements methodologies training and seminars.

Professional Licenses and Certifications

- Registered Professional Engineer, Ohio
- Licensed Residential Real Estate Appraiser, Ohio

Utility Experience

Mr. Johnson has spent most of his professional career in the electric utility industry. Representative experience is included on the following pages.

Mr. Eugene N. Johnson, PE, continued
Senior Engineering Consultant

American Electric Power ***Columbus, OH*** *Senior Consultant* *July-October 2007* ♦ Benchmarking ♦ O&M cost analysis ♦ Weighted process expenditure measures	Developed and recommended internal benchmarking methodology (unit cost vs. effectiveness) to allow Leaders of AEP's seven Distribution organizations to compare operating practices that account for 80% of AEP's annual Distribution Capital plus O&M expenditures. Separate benchmarks were developed for new business, service restoration, asset replacement, reliability, and capacity additions. Effectiveness measures were created from combining weighted process measures specific to each expenditure category.
American Electric Power ***Columbus, OH*** *Senior Consultant* *September-October 2006* ♦ Distribution services ♦ Historical cost analysis ♦ Cost recommendations	Developed and recommended a methodology to an American Electric Power (AEP) team for monitoring installed units and unit costs for 45 categories of distribution capital expenditures. Utilized the methodology to provide historical units and unit costs for AEP's 15 company-state jurisdictions and developed a simplified forecasting method for future budgeting. Recommended changes to existing information technology systems to automate the collection and reporting of units completed and their associated unit costs.
Lansing Board of Water & Light ***Lansing, MI*** *Senior Consultant* *November 2006* ♦ GIS application review ♦ Futures analysis	Jointly, with UMS Group, reviewed the current state of geographical information system (GIS) including staffing and implementation issues. Developed estimated costs and benefits for upgrading GIS platform and applications development. Recommended staffing levels, strategy for GIS platform upgrade and prioritized list for future application development.

Mr. Eugene N. Johnson, PE, continued
Senior Engineering Consultant

American Electric Power
Columbus, OH

GIS Manager & Decision Support
(2000-2005)

- GIS data modeling
- Budget conversion
- Customer reliability

- Managed a 100 employee organization with three managers and five supervisors across 11 states. That organization was responsible for posting and maintaining changes to the American Electric Power (AEP) distribution geographical information system (GIS) data model containing location of five million customers served by five million poles and 200,000 miles of conductor.
- Managed the on time and within budget completion of a five year-$20 million project to convert digital and paper maps and asset records of four former CSW (Central & Southwest Corporation) subsidiary companies, serving 2 million customers in four states, to the AEP Distribution GIS platform.
- Lead the evolution of GIS from a mapping tool to asset management decision support tool.
- Developed customers experiencing multiple interruptions (CEMI) analysis of 6000 circuits with five million customers to target asset investments to critical circuits for improved customer reliability.

Laser King Car Wash
Lancaster, OH

Managing Member
(2004 – Present)

- Prepared business plans
- Secured financing

Prepared business plan, secured financing, and managed construction of a $1.5 mil three bay automated touch-less car wash and manage daily operations including marketing, accounts receivables and accounts payables.

American Electric Power
Columbus, OH

Principal Engineer
(1995-2000)

- Data mart development
- Historical metrics
- Performance improvements

- Lead the development of numerous data marts to feed a management decision support system for the distribution business unit making numerous safety, performance, and unit costing measures available to managers and their employees. Translated business unit needs to corporate data elements and communicated requirements to information technology developers and trained users.
- Developed metrics to compare historical operations of AEP and Central and Southwest Corp oration (CSW) distribution business units prior to merger of AEP and CSW in 2000.
- Participated in teams to improve performance of distribution field personnel.

Mr. Eugene N. Johnson PE, continued
Senior Engineering Consultant

American Electric Power
Columbus, OH

Manager Operations Improvement & Sr. Engineer (1990-1995)

- Planning and scheduling
- Budgeting and reporting
- Field force networks

- Lead the implementation of a daily work planning and scheduling process across a seven state area. Process included preparation of daily work schedules, reporting of completion of scheduled work, documentation of reasons schedule could not be followed and using documentation to improve scheduling.
- Participated in teams that implemented activity based budgeting and reporting processes.
- Participated in teams that implemented the first wide and local area network information technology applications that supported accomplishment of work of field forces.

American Electric Power
Columbus, OH

Industrial Engineering Supervisor (1980-1990)

- Job-site performance measures
- Performance evaluation

- Designed and implemented a process to measure job-site performance of distribution line crews across a seven state area using daily payroll reporting and standardized job estimates.
- Trained 1500 line employees in methods of time reporting, job estimates, performance evaluation and factors affecting job performance.
- Participated on consultant/employee teams recommending "right-sizing" of work force based on elimination of low value work tasks.

American Electric Power
Columbus, OH

Manager Management Performance Analysis/Corporate Planning Analyst-CSP (1977- 1980)

- Corporate planning/budgeting
- Performance measures

- Participated in the implementation of a subsidiary corporate planning and budgeting process.
- Worked directly with senior management to design and develop management performance indicators.

American Electric Power
Columbus, OH

Student/Associate/Section Engineer & Director of Engineering-CSP (1965-1980)

- Customer requirements

- Interfaced with customers to design electric facilities to meet their energy requirements.
- Prepared studies and plans for future expansion of the electric distribution network.
- Managed, as *Director*, directly/indirectly a staff of 30 including supervisor, engineers, technicians, and clerical employees.

Mr. D. Kerry Laycock, CMC®
Executive Consultant II

EXPERIENCE

Mr. Laycock has twenty-one years of experience as a management and organizational consultant. Mr. Laycock has been involved in a wide range of large-scale change initiatives, operational assessments and the design and presentation of training. The primary focus of his work in recent years is organizational structure, work process and job design. Recent projects include utility process and job redesign, municipal restructuring and HR systems redesigns for payroll, disability management, employee selection and year-end compensation. He began his work facilitating quality circles in the automotive industry. Today his clients include business, government and nonprofit organizations.

- Ann Arbor Water Utilities
- Blue Cross Blue Shield & Blue Care Network
- City of Ann Arbor, Michigan
- City of Battle Creek, Michigan
- City of Dearborn, Michigan
- City of Detroit, Michigan
- City of Southfield, Michigan
- Continental Teves, Inc.
- Cousins Environmental Control/BBC
- DaimlerChrysler, AG
- DTE Energy/Detroit Edison
- Detroit Medical Center
- Domino's Pizza, Inc.
- Domtar Gypsum
- Edison Credit Union
- Ford Motor Company
- Henry Ford Health System
- Holiday Retirement Corporation
- Oakland & Washtenaw Counties
- Michigan Department of Mental Health
- Michigan Office of Financial & Insurance Services-General Counsel
- Michigan Supreme Court
- PECO Energy
- Pennsylvania-American Water Company
- Philadelphia Gas Works
- Pfizer, Inc.
- R. R. Donnelley & Sons Co.
- Town of Hilton Head Island, South Carolina
- Trinity Health/St. Joseph Mercy Hospital
- Time Warner Cable
- United Methodist Retirement Communities
- U. S. Environmental Protection Agency
- Washtenaw Intermediate School District

Mr. D. Kerry Laycock, CMC, continued
Executive Consultant II

EDUCATION & CERTIFICATION

Mr. Laycock is a *Certified Management Consultant*, as a member of the Institute of Management Consultants (IMC). This certification mark represents evidence of the highest standards of consulting and adherence to the ethical canons of the profession. Less than 1% of all consultants have achieved this level of performance.

Mr. Laycock holds a Bachelors of Business Administration in Management from Eastern Michigan University and a Masters degree in organization development from Eastern Michigan University. He is also a qualified administrator of the Myers-Briggs Type Indicator®.

In addition to consulting, he has taught graduate and undergraduate courses in organizational behavior and organizational development. He also serves on the boards of directors of a number of nonprofit organizations.

Representative projects are included on the following pages.

Mr. D. Kerry Laycock, CMC, continued
Executive Consultant II

Philadelphia Gas Works *Executive Consultant II* ♦ Executive management and human resources ♦ Customer service ♦ Diversity/EEO	Performed a stratified management and operations audit of Philadelphia Gas Works (PGW). The primary focus of this management and operations audit is to review those PGW business components subject to regulation by the PaPUC, specifically PGW service delivery and production, whose costs are borne ultimately by Pennsylvania ratepayers. Schumaker & Company diagnostic review of functional areas and in-depth analyses of pre-identified issues assess the condition of, efficiencies, or improvements which benefit PGW and its ratepayers. In doing so, Schumaker & Company identified which, if any, economically practical opportunities for cost saving measures can be instituted.
Pennsylvania-American Water Company *Executive Consultant II* ♦ Executive management and human resources ♦ Corporate culture, management structure, and staffing levels ♦ Diversity/EEO ♦ Customer service	Performed a stratified management and operations audit of Pennsylvania-American Water Company (PAWC) for the Pennsylvania Public Utility Commission (PaPUC) with the primary focus areas being costs borne ultimately by Pennsylvania ratepayers. Schumaker & Company's diagnostic review of functional areas and in-depth analyses of pre-identified issues assess the condition of each functional area or business unit against evaluative criteria or expected business practice to determine if appropriate management controls, processes, and systems were in place. These analyses are of sufficient depth to provide specific recommendations for changes together with projected costs and potential dollar savings or other quantifiable benefits, if any.
PECO Energy *Lead Consultant* ♦ Executive management and human resources ♦ Customer service ♦ Merger review	Performed a stratified management and operations audit of PECO Energy (PECO) for the Pennsylvania Public Utility Commission (PaPUC) in with the primary focus areas being PECO, Exelon Energy Delivery (EED), and Exelon Business Services Company (EBSC) functional areas, whose costs are borne ultimately by Pennsylvania ratepayers. Schumaker & Company's diagnostic review of functional areas and in-depth analyses of pre-identified issues assessed the condition of each functional area or business unit against evaluative criteria or expected business practice to determine if appropriate management controls, processes, and systems were in place. These analyses were of sufficient depth to provide specific recommendations for changes together with projected costs and potential dollar savings or other quantifiable benefits, if any.

Mr. D. Kerry Laycock, CMC, continued
Executive Consultant II

State of Michigan Office of Financial and Insurance Services *Senior Consultant* ♦ Organization and management review	Conducted an assessment of the operational and managerial aspects of the Office of General Counsel for the Office of Financial and Insurance Services (OFIS). Interviews with key management and staff consisted of reviews of the organization and chief processes for which each key person was responsible, as well as discussions of any areas of particular interest, plus review of documents and associated analyses were performed. A well balanced report that reflected both areas that hold opportunity for operational and financial improvement and those areas that demonstrate exemplary management and operation effectiveness was written and delivered.
City of Detroit, Michigan *Lead Consultant* ♦ Development and analysis of process maps (fire) ♦ Development of findings, conclusions, and recommendations (fire)	Recommended cost reduction planning and potential revenue enhancement initiatives based on process mapping and analysis of key processes for designated departments (fire and public works, plus potentially reviewing police, transportation, and health/wellness promotion in future months). These plans/initiatives address risks associated with implementation, not only within the designated departments, but especially its potential impact on the delivery of services to the residents and surrounding communities.
Edison Credit Union *Principal Consultant* ♦ Organization and management analysis ♦ Customer service and call center operations ♦ Best practice comparisons	Mr. Laycock is currently working on a project to upgrade technology and work processes for the banking call center of Edison Credit Union. ECU holds over $480 million in assets for employees of Detroit Edison, Michigan Consolidated Gas and the parent company, DTE Energy. This project will document all current customer-facing processes and banking transactions, and evaluate supporting technology and customer service personnel. The analysis will include identification and tracking of new performance metrics, time studies, issue analysis and an assessment of customer preferences. Project deliverables include process optimization, and technology upgrade recommendations, an optimized staffing model, standardized training protocols and on-line knowledge management objects tied to each step of the work processes.

Mr. D. Kerry Laycock, CMC, continued
Executive Consultant II

City of Ann Arbor

Senior Consultant

- Organization and management analysis
- Capital and maintenance planning
- Customer services and field operations
- Best practice comparisons

Mr. Laycock has worked for the City of Ann Arbor over the past two years on a city-wide reorganization. Originally, the project was limited to the water utilities and was intended to accommodate the effects of an early retirement program and achieve permanent staffing reductions and operational efficiencies. Working with union/management design teams, operations and mechanic jobs were combined into a single classification. This classification is divided into five levels with each level having progressively higher licensing and competency requirements. Utilizing the combined classification, the water treatment plant now operates with five fewer employees, including one less supervisor, producing an annual operating cost reduction of more than $300,000.00. Similar results were achieved in the wastewater treatment plant.

Based on the success of this effort, the City of Ann Arbor has consolidated its former departments into four service areas and has expanded the process and job redesign initiatives. In Public Services, 28 classifications were reduced to three broadly-defined, broadly-skilled classifications yielding substantial efficiencies and staffing reductions. For example, the new Field Operations Technician: Forestry and Facilities combines 12 classifications from parks maintenance and facilities maintenance. This has allowed for an 8 percent staffing reduction (12 FTEs) producing an annual savings of over $700,000.00. All field operations work in the Public Services Area has been redesigned. (Public Services include the former, Street Maintenance, Solid Waste, Parks Operations and Maintenance, and Utilities Field Operations departments.)

Among the current projects is a redesign of clerical positions. Clericals in 27 union-represented classifications are being combined into a single classification and will be assigned work throughout their service area. This will result in 6 FTEs eliminated in the FY 04-05 budget and an additional 6.5 in subsequent budgets.

The process and job redesign effort is expected to conclude in about a year. Currently, Mr. Laycock is leading process redesign initiatives in procurement and development. The new development process will integrate current planning functions with building and code enforcement and be supported by new work management software.

Mr. D. Kerry Laycock, CMC, continued
Executive Consultant II

Detroit Edison *Principal Consultant* ♦ Organization and management analysis ♦ Reorganization assessment and implementation	Mr. Laycock performed a variety of organizational assessments and restructurings for Detroit Edison over a period of five years. He planned and facilitated the restructuring of Design Engineering and Technical Support Engineering into a combined Engineering Support Organization. He managed a reorganization of the Corporate Auditor's Office. In addition, he helped design and establish a Customer Relationship Management function within the marketing organization.
United States Environmental Protection Agency *Senior Consultant* ♦ Organizational assessment ♦ Employee surveys	Completed a team assessment for the Program Managements Network Team responsible for computer network administration for the National Vehicle and Fuel Emissions Laboratory. Conducted an organizational assessment and staff development process for the Program Management Network Team. The assessment included the completion and interpretation of the Campbell-Hallam™ team development survey, which was followed by feedback and action planning sessions with management and staff. Based on his recommendations, the EPA is moving forward customer service improvement and team development strategies. Mr. Laycock was also recently engaged by the EPA's Motor Vehicle Emission Simulator (MOVES) development team on a role clarification quality assurance process initiative.
Town of Hilton Head Island *Lead Consultant* ♦ Human resource assessment	Provided services related to an assessment of the Town of Hilton Head Island's (Town) current business processes, organization structure, staffing levels, and software that support the management of the Town's employee information. This study evaluated the performance of the subject organization, staffing, operations, and costs with the intended final result of identifying opportunities for improving, revising, or replacing the processes, organization structure, staffing levels, and software. Conducted an on-site analysis using the least intrusive means possible, concluding with the delivery of an oral presentation summarizing the findings to that time. Subsequently, produced a detailed draft organizational review report that was presented to the Town Board for review.
City of Southfield *Lead Consultant* ♦ Reorganization assessment and implementation	Recently completed a reorganization of Public Works Department (DPW) in response to the imminent retirement of a number of senior managers and declining revenues.

Mr. D. Kerry Laycock, CMC, continued
Executive Consultant II

City of Battle Creek ♦ Organization and management analysis ♦ Call-center implementation	Mr. Laycock recently completed an assessment of the City's Citizen Response Management (CRM) system and made organizational, process and technology recommendations. He is currently working with the City and a technology partner to implement new, technology, optimized issue and request management processes and performance based-job designs.
City of Dearborn, Michigan *Senior Consultant* ♦ Organizational review, analysis, and assessment	Assisted the City of Dearborn, who like many organizations, was faced with delivering essential services to its citizens with a reduced level of resources, by performing an assessment of selected departments, specifically the Assessor's Office and Camp Dearborn, as a means to streamline and consolidate its operations, eliminate non-essential services, and optimize overall level of resources involved in achieving its goals.
Washtenaw County *Senior Consultant* ♦ Organizational analysis Facilitation	Performed work for the count's trial court, which involved a number of initiatives over the past 10 years, including confidential work performed for the juvenile court. Another engagement focused on the facilitation of a number of community-wide human services meetings.
Washtenaw County *Senior Consultant* ♦ Organizational analysis ♦ Facilitation	Completed an evaluation of the Environmental Health and Building Services departments, with a primary focus on the customer service aspects of both functions. Based on Mr. Laycock's recommendations, the County is moving forward with a reorganization plan and job changes. Mr. Laycock also provided facilitation skills in work focused on leading meetings for the County Board of Commissioners, plus work involving facilitation of Parks Commission planning retreats and the Agricultural Lands and Open Spaces task forces.
Michigan Supreme Court, State Court Administrative Office *Senior Consultant* ♦ Facilitation	Worked as facilitator for the SCAO Collections Advisory Committee, which is comprised of Judges and Court Administrators from around the state.

Mr. Martin J. Murphy, PE
Executive Consultant II

BACKGROUND

Mr. Martin J. Murphy has over 30 years of consulting experience. His background, which includes a blend of experience in operations, engineering, information systems, and management, provides him with a unique perspective from which to perform the required investigations, develop viable findings, and formulate appropriate recommendations for improvement. His utility consulting experience encompasses numerous management and operations audits for commissions and utilities. His assignments have focused on the review of several functional areas, including workforce management; engineering and construction; purchasing and materials management; construction program planning; affiliated interests; transportation; legal services; facilities management; risk management and finance; operational efficiency assessment; project planning and management; organizational analysis; budgeting and cost control; and technical and economic feasibility evaluation.

EDUCATION & CERTIFICATIONS

His educational achievements include a Bachelor's degree in Civil Engineering from Cornell University, a Master's degree in Civil and Environmental Engineering from Cornell University, and an MBA from the University of Chicago.

CONSULTING EXPERIENCE

Mr. Murphy has served as a *Lead Consultant* on numerous management and operations reviews for electric, gas, telephone, and water utilities. He has focused primarily on areas related to operations, engineering, construction, and support services. Several of these reviews also had a particular emphasis on performing reviews of the management of the workforce within the operational units of the companies and formulating recommendations for implementing improvements. Additionally, Mr. Murphy has performed numerous audits that focused on the relationships between utilities and their affiliated interests, especially in reference to the potential for cross-subsidization and compliance with the applicable regulations. In addition, he has a solid working knowledge of the purchasing and materials management, information technology, and support services functions of utilities, having served as *Lead Consultant* for reviews of each of these functions.

Mr. Martin J. Murphy, PE, continued
Executive Consultant II

CONSULTING EXPERIENCE, CONTINUED

Mr. Murphy also has significant experience and expertise in the area of computer systems implementation and operation. He has reviewed the systems environments at several utilities and commercial operations and formulated recommendations for improvements. Additionally, he has performed requirements definitions for hardware and software systems and assisted in the selection and implementation of the selected system.

PROFESSIONAL AFFILIATIONS

- *Registered Professional Engineer* (New York, Connecticut, and Illinois)
- American Production and Inventory Control Society

PRIOR EXPERIENCE

Prior to joining Schumaker & Company, Mr. Murphy was the Director of MIS for Chicago Pneumatic Tool Company, an international manufacturing firm based in Rock Hill, SC. Prior to that he was the President of M.J. Murphy & Company, a management consulting firm serving the utility and manufacturing industries. Before that, Mr. Murphy was a Senior Manager with the Management Consulting Department of KPMG Peat Marwick in Charlotte, North Carolina. Specifically, he served as Manager of their Carolinas Operations Improvement Group. As a Manager at Theodore Barry & Associates he was a member of their Management and Operations Analysis Group located in Cambridge, Massachusetts. Previous to this he worked as a consulting environmental engineer.

Mr. Murphy's relevant project experience is listed on the following pages.

Mr. Martin J. Murphy, PE, continued
Executive Consultant II

Philadelphia Gas Works *Executive Consultant II* ♦ System reliability performance and related operations ♦ Materials management and stores ♦ Fleet management ♦ Facilities management	Performed a stratified management and operations audit of Philadelphia Gas Works (PGW). The primary focus of this management and operations audit is to review those PGW business components subject to regulation by the PaPUC, specifically PGW service delivery and production, whose costs are borne ultimately by Pennsylvania ratepayers. Schumaker & Company diagnostic review of functional areas and in-depth analyses of pre-identified issues assess the condition of, efficiencies, or improvements which benefit PGW and its ratepayers. In doing so, Schumaker & Company identified which, if any, economically practical opportunities for cost saving measures can be instituted.
Pennsylvania-American Water Company *Executive Consultant II* ♦ Water operations ♦ Materials management and stores ♦ Fleet management ♦ Facilities management ♦ Operational performance	Performed a stratified management and operations audit of Pennsylvania-American Water Company (PAWC) for the Pennsylvania Public Utility Commission (PaPUC) with the primary focus areas being costs borne ultimately by Pennsylvania ratepayers. Schumaker & Company's diagnostic review of functional areas and in-depth analyses of pre-identified issues assess the condition of each functional area or business unit against evaluative criteria or expected business practice to determine if appropriate management controls, processes, and systems were in place. These analyses are of sufficient depth to provide specific recommendations for changes together with projected costs and potential dollar savings or other quantifiable benefits, if any.

Mr. Martin J. Murphy, PE, continued
Executive Consultant II

Water Services Corporation of South Carolina

Lead Consultant

- Customer service
- Water operations
- Pending litigation
- Pricing strategies
- Technology tools and training

Performed a management and operations review and assessment of Water Services Corporation (WSC) of South Carolina for the State of South Carolina Office of Regulatory Staff (ORS) with specific focus on the operations of the five subsidiary water and wastewater companies that operate in South Carolina, those being:

- Carolina Water Service, Inc. (CWS)
- Tega Cay Water Service, Inc. (TCWS)
- Utilities Services of South Carolina, Inc. (USSC)
- Southland Utilities, Inc. (SU)
- United Utility Companies, Inc. (UUC)

The bottom line of this project was to determine whether the rates charged to the South Carolina ratepayers can be reduced through the implementation of greater efficiencies in organizations, operations, or both. Additionally, another relevant analysis was a determination of whether the ratepayers of South Carolina are being properly and economically served by the range of corporate services that are provided to the WSC operations in South Carolina by the managers located in both West Columbia and Northbrook. Significant consideration was given to investigation of the potential benefits that would result from the consolidation or merger of the affiliated companies of WSC.

PECO Energy

Lead Consultant

- Electric and gas operations
- Electric and gas reliability
- Materials management and stores
- Fleet management

Performed a stratified management and operations audit of PECO Energy (PECO) for the Pennsylvania Public Utility Commission (PaPUC) in with the primary focus areas being PECO, Exelon Energy Delivery (EED), and Exelon Business Services Company (EBSC) functional areas, whose costs are borne ultimately by Pennsylvania ratepayers. Schumaker & Company's diagnostic review of functional areas and in-depth analyses of pre-identified issues assessed the condition of each functional area or business unit against evaluative criteria or expected business practice to determine if appropriate management controls, processes, and systems were in place. These analyses were of sufficient depth to provide specific recommendations for changes together with projected costs and potential dollar savings or other quantifiable benefits, if any.

Mr. Martin J. Murphy, PE, continued
Executive Consultant II

City of Detroit, Michigan *Consultant* ♦ Development and analysis of process maps (fire/public works) ♦ Development of findings, conclusions, and recommendations (fire/public works)	Recommended cost reduction planning and potential revenue enhancement initiatives based on process mapping and analysis of key processes for designated departments (fire and public works, plus potentially reviewing police, transportation, and health/wellness promotion in future months). These plans/initiatives address risks associated with implementation, not only within the designated departments, but especially its potential impact on the delivery of services to the residents and surrounding communities.
Kentucky-American Water Company *Lead Consultant* ♦ Engineering and construction ♦ Workforce management ♦ Purchasing ♦ Materials management ♦ Land and facilities management ♦ Risk management	Performed a comprehensive management and operations review in which his primary responsibilities included evaluating the engineering and construction function and various support services including purchasing and materials management, risk management, and facilities management. Recommended improved utilization of the KAWC engineering group and better control of the charges emanating from the corporate engineering group. Suggested implementing an integrated purchasing and inventory control software package to improve KAWC's ability to monitor and control inventory levels.
Verizon PA *Senior Consultant* ♦ Network performance metrics review ♦ Performance assurance plan review ♦ Performance data reporting accuracy review	Performed a review and evaluation of the performance metrics and related remedies of Verizon Pennsylvania, Inc. for the Pennsylvania Public Utilities Commission. Reviewed Verizon's efforts to ensure that measurements are input, captured, and reported on an accurate basis. This included review of the Verizon methods and procedures for the areas of training, implementation of process changes, documentation of the Performance Assurance process steps, and assuring quality handling of CLEC service requests. Concentrated on documenting activities that impacted order processing, maintenance and repair, billing, and collocation requests.

Mr. Martin J. Murphy, PE, continued
Executive Consultant II

Verizon New York

Senior Consultant

- Organization and management analysis
- Capital and maintenance planning
- Customer services and field operations
- Performance analysis and statistics
- Best practice comparisons

Analyzed, documented, and verified, through findings based on identifiable and measurable information and data, to ensure that Verizon NY's existing service quality plans and practices of the five VIP service objectives (customer trouble report rate, percent out of service over 24 hours, percent installation completed in five days, PSC complaints, and outliers), NY Telephone Service Standards, and company guidelines meet applicable service quality performance standards, including reasonably foreseeable events and contingencies. Developed and documented recommendations to improve or modify these service quality practices and/or plans where existing plans and practices were not sufficient to ensure that applicable standards were met. Reviewed Verizon NY's processes for service quality performance and its employees, technology, and work processes related to the planning, design, construction, installation, maintenance, repair, and delivery of product to retail customers within Verizon NY's service territory.

AEP/Kentucky

Project Manager & Lead Consultant

- Asset management
- Engineering and construction
- Transmission and distribution operations
- Vegetation management

Performed an assessment of the reliability of service within AEP/Kentucky's distribution system in its Hazard service territory (a forested mountainous terrain), which has historically experienced a greater number of electric service interruptions than other AEP/Kentucky service areas. Reviewed crew scheduling, training, and communications systems for effectiveness. Evaluated field crew staffing levels with relation to the historical work loadings and the amount of overtime being charged. Performed observations and analysis of technician crews in the field and the tools and systems at their disposal. Reviewed dispatch center and storm response procedures and planning. Reviewed design engineering procedures and the engineering and technical standards utilized.

Mr. Martin J. Murphy, PE, continued
Executive Consultant II

New Jersey Board of Public Utilities

Jersey Central Power and Light Company /GPU Energy
Public Service Electric & Gas Company
Rockland Electric Company
Conectiv

Lead Consultant

- Work force management
- Distribution operations
- Engineering and construction
- Electric distribution planning

Engaged to assist Board of Public Utility (BPU) staff in reviewing and monitoring the implementation of recommendations resulting from an investigation of New Jersey's electric utilities' system reliability. Assisted Board Staff in the review and investigation of the information supplied by each of New Jersey's four electric utilities, in connection with the implementation of the selected recommendations as ordered by the Board. Particular emphasis was placed on each utility's activities to improve and/or maintain CAIDI and SAIDI indicators at acceptable levels. In particular, issues regarding utilities work force management, electric system distribution planning and engineering practices, transmission and substation maintenance practices and procedures were addressed during our investigations. He worked closely with and at the direction of the BPU Staff in reviewing the implementation of the recommendations.

New Jersey Board of Public Utilities
Newark, New Jersey

Elizabethtown Gas Company/ NUI Corporation
New Jersey Natural Gas Company/ New Jersey Resources Corporation
South Jersey Gas Company/ South Jersey Industries Corporation

Lead Consultant

- Restructuring
- Affiliate relations
- Competitive services
- Code of conduct

Conducted compliance audits of the competitive services of New Jersey's gas utilities; specifically South Jersey Gas Company (South Jersey Industries Corporation), New Jersey Natural Gas Company (New Jersey Resources Corporation), and Elizabethtown Gas Company (NUI Corporation) as part of the utility industry restructuring in New Jersey. The purpose of these audits was to ensure that the utilities or their related competitive business segments do not have an unfair competitive advantage over other, non-affiliated purveyors of competitive services, and to evaluate and review the allocation of costs between the utilities' competitive and non-competitive services.

Mr. Martin J. Murphy, PE, continued
Executive Consultant II

Kingsport Power Company *Lead Consultant* ♦ Operations ♦ Workforce management ♦ Engineering and construction ♦ Procurement and materials management ♦ Transportation management	Performed a comprehensive management and operations review in which his primary responsibilities included evaluating the operations/engineering and construction function and various support services, including reviews of the workforce management function. Developed recommendations pertaining to implementation of improved computer systems for materials management and transportation management. Recommended enhancements to maintenance and construction work estimating and monitoring system.
Commonwealth Edison ***Central Illinois Public Service*** ***Louisville Gas and Electric Company*** ***City of Syracuse, New York*** ***City of Orchard Park, New York*** ***City of Chicago, Illinois*** *Project Manager and Design Engineer* ♦ Design engineering ♦ Environmental engineering	Managed and performed various consulting engineering design projects, with specific expertise in environmental engineering. Responsibilities involved all phases of the engineering design process including conceptual planning, design, equipment specification, purchasing, construction, and start-up.
New York City and several other New York State Municipalities *Project Manager* ♦ Power supply and rate forecasting	Managed and performed analytical studies to determine the effects of proposed changes in the New York State power supply situation (especially relating to nuclear plants) on various classes of electric consumers in several municipalities, including New York City. Calculated revenue requirements, forecasted rates adjusted for price elasticity under alternative scenarios, and quantified the impacts.
West Texas Utilities Company *Lead Consultant* ♦ Purchasing ♦ Materials management ♦ Transportation management	Performed a comprehensive management and operations review in which his responsibilities included evaluating the purchasing, materials management, and transportation functions. Focused on the effective monitoring and control of inventory levels through the implementation and utilization of an integrated purchasing and inventory control software package. Enhanced WTU's ability to take economic advantage of its volume purchasing power by more effective centralization of the purchasing process.

Mr. Robert L. Rosenkoetter, CPA
Executive Consultant II

BACKGROUND

Mr. Robert Rosenkoetter, a Schumaker & Company associate, has more than 25 years experience as a project manager, task manager, and functional expert on management consulting engagements in the telecommunications, electric and gas utility, extractive, and service industries, as well as numerous national, state, and local governments.

He has designed, directed, and participated in performing management audits for utilities, public commissions, and government agencies throughout the United States and abroad. He has analyzed and evaluated organizations, designed and implemented accounting and information systems, and performed numerous analytical and financial reviews to reduce costs and improve effectiveness and efficiency.

He started his consulting career with Arthur Young & Company (now, Ernst & Young) and worked in their USA and international practices, with long-term consulting assignments in Europe and Asia. Prior to beginning his consulting career, he was employed by Cities Service Company, responsible for conducting budget and capital expenditure analysis.

EDUCATION & CERTIFICATIONS

Mr. Rosenkoetter earned both an MBA in Finance and MPA (Master of Professional Accountancy) from Georgia State University, after receiving a BS in Business Administration from Auburn University. He is also a Certified Public Accountant.

UTILITY MANAGEMENT & OPERATIONS ASSESSMENT EXPERIENCE

Mr. Rosenkoetter has served as the *Project Manager*, *Lead Consultant*, or *Senior Consultant* for many utility projects involving electric, gas, telecommunications, water, and waste-water utilities, as illustrated on the following pages.(1993)

Mr. Robert L. Rosenkoetter, CPA, continued
Executive Consultant II

ELECTRIC UTILITY MANAGEMENT & OPERATIONS ASSESSMENT EXPERIENCE

Mr. Rosenkoetter has served as the *Lead Consultant* for the following electric utility projects:

- Affiliate compliance audit of Sempra Energy utilities, in which his responsibilities included assessing compliance by San Diego Gas & Electric Company and Southern California Gas Company with the affiliate transaction rules promulgated by the California Public Utilities Commission for the year ended December 31, 2006, and addressing potential audit issues in the eight areas in which the CPUC has issued specific affiliate transaction rules.
- Original cost audit of Commonwealth Edison, in which his responsibilities included reviewing additions to ComEd's delivery electric utility plant over a 20-year period from 1985 to 2004, verifying the appropriateness of the recorded original cost and accumulated depreciation as of December 31, 2004, and determining that the capitalization policy, property unit catalog, and system for recording capital costs are appropriate and have been maintained and applied in a consistent manner.
- Merger compliance review of PECO Energy (PECO) for the Pennsylvania Public Utility Commission (PaPUC) during a stratified management and operations audit.
- Prudency review of Georgia Power Company in the management of its coal contracts for the Georgia Public Service Commission. (2005)
- Financial management audit of the Potomac Edison Company for the Maryland Public Service Commission. Responsibilities included the review of organizational units, policies, and systems relating to all accounting and finance functions. (1996)
- Comprehensive management audit of Rockland Electric for the New Jersey Board of Public Utilities. Work included reviewing and assessing accounting and finance functions, organizations, systems, and documentation, including cost allocations with affiliated organization to determine the existence of cross-subsidization and to evaluate the efficiency and effectiveness of affiliate relationships. (1994)

Mr. Robert L. Rosenkoetter, CPA, continued
Executive Consultant II

ELECTRIC UTILITY MANAGEMENT & OPERATIONS ASSESSMENT EXPERIENCE, CONTINUED

- Management audit of the Guam Power Authority for the Public Utilities Commission of the Territory of Guam. Work included the review and assessment of the finance and accounting functions, the CAM and all affiliate transactions of the local electric power utility on the island territory of Guam. (1993)
- Management audit of GTE's northeastern regional telephone operations for the Illinois Commerce Commission. Responsibilities included reviewing and assessing affiliated interest transactions and all finance and accounting policies, procedures, functions, and systems.
- Ethics oversight review of Orange and Rockland Utilities for the New Jersey Board of Public Utilities. This work included assessing the organizations, practices, and procedures governing all finance and accounting functions, as well as all transactions between affiliated entities and cost allocation transactions. (1997)

Mr. Rosenkoetter also served as the *Senior Consultant* for the following electric utility projects:

- Financial management and affiliated interest review of PECO Energy (PECO) for the Pennsylvania Public Utility Commission (PaPUC) during a stratified management and operations audit.

GAS UTILITY MANAGEMENT & OPERATIONS ASSESSMENT EXPERIENCE

Mr. Rosenkoetter has served as the *Lead Consultant* for the following gas utility projects:

- Stratified management audit of Philadelphia Gas Works (PGW) for the Pennsylvania Public Utility Commission (PaPUC), in which his responsibilities included a review of financial management activities.
- Affiliate compliance audit of Sempra Energy utilities, in which his responsibilities included assessing compliance by San Diego Gas & Electric Company and Southern California Gas Company with the affiliate transaction rules promulgated by the California Public Utilities Commission for the year ended December 31, 2006, and addressing potential audit issues in the eight areas in which the CPUC has issued specific affiliate transaction rules.
- Merger compliance review of PECO Energy (PECO) for the Pennsylvania Public Utility Commission (PaPUC) during a stratified management and operations audit. (2003-2004) (1992)

Mr. Robert L. Rosenkoetter, CPA, continued
Executive Consultant II

GAS UTILITY MANAGEMENT & OPERATIONS ASSESSMENT EXPERIENCE, CONTINUED

- Audit of San Diego Gas & Electric's Energy Efficiency Program expenses from 1998 through 2002 for the California Public Utilities Commission
- Audit of competition transition costs (CTC) of San Diego Gas & Electric Company. Work included testing compliance of the company's CTC application with state requirements and performing an assessment of recorded and unrecorded sunk costs and projections of future costs during the transition period. (1998)
- Management audit of the National Fuel Gas Company for the Pennsylvania Public Utility Commission. Responsibilities consisted of reviewing and assessing finance and accounting functions, including affiliate transactions, cost allocation methodologies and assignment of cost between regulate and non-regulated activities and between parent organization and state utility operations. (1996)
- Supporting United Cities Gas Company in its defense of its cost allocation manual (CAM) and cost allocations to affiliated entities in a contested management audit with the Tennessee Regulatory Authority. Work consisted of reviewing and analyzing recommendations made and the company's responses and assisting in preparing testimony for the Tennessee Public Service Commission hearing. (1995)
- Focused management audit of Southern California Gas Company for the California Public Utilities Commission. Responsibilities included the review, analysis, and evaluations of the cost allocation model (CAM) and affiliate interests transactions between this utility and its parent holding company and other affiliated subsidiaries.

Mr. Rosenkoetter also served as the *Senior Consultant* for the following gas utility projects:

- Financial management and affiliated interest review of PECO Energy (PECO) for the Pennsylvania Public Utility Commission (PaPUC) during a stratified management and operations audit.

Mr. Robert L. Rosenkoetter, CPA, continued
Executive Consultant II

TELECOMMUNICATIONS MANAGEMENT & OPERATIONS ASSESSMENT EXPERIENCE

Mr. Rosenkoetter has served as the *Lead Consultant* in for the following telecommunications projects:

- Performed a management audit of the Illinois Bell Telephone Company for the Illinois Commerce Commission in which he advised commission auditors on the review and assessment of all finance and accounting functions, procedures, policies, and systems
- Audit of the Verizon New York retail sales performance for the New York Public Service Commission. Responsibilities included the review of the organization and activities of the capital and maintenance planning functions. (2004)
- Audit of Verizon PA's performance metrics/related penalties and remedies for the Pennsylvania Public Utility Commission. Responsibilities included a review of performance metrics documentation; data extraction procedures; data storage, backup, retrieval/security; change management processes; and billing credits. (2003)
- Focused management audit of the effects of the SBC/Ameritech merger for the Illinois Commerce Commission. Responsibilities included assessing the appropriateness of SBC Illinois's affiliate transactions, cost allocations, and the separation of regulated and non-regulated activities. (2003)
- Management audit of Cincinnati Bell Telephone Company for the Kentucky Public Service Commission. Responsibilities included the review of organizational units, policies, procedures, and systems relating to all accounting and finance functions. He also served as a *Task Leader* in the review of transactions with affiliated entities. (1999)
- Focused management audit of the customer service functions of the Southern New England Telephone Company (SNET). Work included reviewing and assessing billing, credit, and collections organizations, policies, functions, and systems.(1998)

Mr. Robert L. Rosenkoetter, CPA, continued
Executive Consultant II

TELECOMMUNICATIONS MANAGEMENT & OPERATIONS ASSESSMENT EXPERIENCE, CONTINUED

- Stratified management audit of GTE's telephone operations in the State of Pennsylvania for the Pennsylvania Public Utilities Commission. This work included the review and assessment of all organizations, policies, procedures, and systems relating to all finance, accounting and international functions, and also included the review of all transactions with affiliated entities, GTE's cost allocation practices and their cost allocation manual (CAM). (1995) (1998)
- Management audit of the California Deaf and Disabled Telecommunications Program for the California Public Utilities Commission. Responsibilities included evaluating the finance and accounting policies, procedures, functions, processes, and systems.
- Management audit of the Guam Telephone Authority for the Public Utilities Commission of Guam. Responsibilities included the review and assessment of the finance and accounting functions and transactions between affiliated entities. (1994)
- Management audit of United Telephone of Pennsylvania for the Pennsylvania Public Utility Commission. This work consisted of assessing policies, procedures, functions, and systems concerning affiliated transactions, collection and bad debt, and finance and accounting. (1991)
- Management audit of the Tennessee telephone operating companies of the Telephone Electronics Corporation for the Tennessee Regulatory Authority. Responsibilities included the review and assessment of organizational units, policies, procedures, and systems related to all finance and accounting functions. (1991)
- Management audit of Contel of Illinois for the Illinois Commerce Commission. Responsibilities included reviewing and assessing all policies, procedures, practices, and systems relating to accounting and finance functions and transactions with affiliate organizations. (1989)
- Management audit of Alltel of Pennsylvania for the Pennsylvania Public Utility Commission. Responsibilities included the review and assessment of all finance and accounting organizations, functions, policies, and procedures, as well as affiliated transactions. (1988)

Mr. Robert L. Rosenkoetter, CPA, continued
Executive Consultant II

WATER & WASTEWATER MANAGEMENT & OPERATIONS ASSESSMENT EXPERIENCE

- Stratified management audit of Pennsylvania-American Water Company (PAWC) for the Pennsylvania Public Utility Commission (PaPUC), in which his responsibilities included a review of financial management activities.
- Management audit of the Colorado Springs Utilities for the City of Colorado Springs, including assessing all accounting and finance functions, systems, staffing, and activities, including cost allocations and the cost allocation manual and shared services and resources of the City and electric, gas, water, and waste-water utilities.

OTHER RELEVANT EXPERIENCE

Mr. Rosenkoetter has also served as *Project Manager* or *Lead Consultant* on a variety of other related consulting engagements and management audits on behalf of telecommunications and gas and electric utility companies, public commissions, and regulatory bodies, including:

- *Project Manager* in providing technical assistance to EVN (the electric power company of Vietnam) in implementation of a Financial Management Information System (FMIS) for the U.S. Trade and Development Agency (TDA). (2001-2002)
- *Project Manager* for the migration of a billing system data base from Sybase to Oracle for Alltel's cellular business. (2000 - 2001)
- *Practice Manager* overseeing the implementation of financial systems at Bangor Hydro, Boston Gas Company, CMS, Consolidate Natural Gas Company (CNG), Dayton Power & Light, IPALCO, Louisville Gas & Electric, and PREPA (Puerto Rico Electric Power Authority). (1998 - 2000)
- *Project Manager* in the design of a regulatory financial information system for the Russian electric power industry for USAID. (1997 - 1998)
- *Lead Consultant* in a management review of PLN, the electric power company of Indonesia for the World Bank. (1994)

Mr. Robert L. Rosenkoetter, CPA, continued
Executive Consultant II

UTILITIES AND COMMISSIONS SERVED

- Alltel Corporation
- Alltel of Pennsylvania
- Bell South
- Boston Gas Company
- California Public Utilities Commission
- California Deaf & Disabled Telecom. Program
- Cincinnati Bell Telephone Company
- CMS Energy
- Colorado Springs Utilities
- Commonwealth Edison Company
- Contel of Illinois
- Contel/GTE of New York
- Consolidated Natural Gas Company
- Dayton Power & Light
- D.C. Public Service Commission
- Electricity of Vietnam (EVN)
- Florida Department of Human Resources
- Florida Power Corporation
- GTE North – Illinois
- GTE – Pennsylvania
- Guam Power Authority
- Guam Telephone Authority
- Guam Public Utilities Commission
- Illinois Bell Telephone Company
- Illinois Commerce Commission
- IPALCO
- Maryland Public Service Commission
- National Fuel Gas Corporation
- Nebraska Public Power District
- New Jersey Board of Public Utilities
- New York Public Service Commission
- Orange & Rockland Utilities, Inc
- Pacific Gas & Electric Company
- PECO Energy
- PECO Energy
- Pennsylvania Public Utility Commission
- Pertamina Oil Company of Indonesia
- PLN (public power company of Indonesia)
- Potomac Edison
- Potomac Electric Power Company
- PREPA (Puerto Rico Electric Power Authority)
- Rockland Electric Company
- Sacramento Municipal Utilities District
- Sempra Energy
- Southern Bell Telephone Company
- Southern California Gas Company
- Southern New England Telephone Company
- State of Maine
- Telephone Electronics Corporation
- Tennessee Regulatory Authority
- Texas Utilities
- United Cities Gas Company
- United Telephone Company of Pennsylvania
- U.S. Trade Development Agency
- Verizon New York
- Verizon Pennsylvania

Mr. Martin H. Skeer, Ph.D., CMC®
Executive Consultant II

EXPERIENCE

Dr. Skeer has more than 25 years of management consulting experience serving utilities, regulatory agencies, municipal governments and major corporations. He has participated as a *Project Manager*, *Technical Advisor*, or *Lead Consultant* in numerous energy and telecommunications industry engagements. His areas of consulting experience encompass operations and systems planning; corporate, strategic, and financial planning; market analysis; operations support systems development; and performance measurement.

Dr. Skeer has served as *Lead Consultant* for commission ordered audits and business process reviews of many major energy and telecommunications companies.

- Electric and gas utilities include: Potomac Gas & Electric Company; Public Service Electric & Gas Company, Long Island Power Authority, Central Hudson Gas and Electric Company; Chelan (WA) Public Utility District; Truckee-Donner (CA) Public Utility District; Transmission Agency of Northern California, Florida Municipal Power Agency; Ameren Services Corporation and others.
- Telecommunications carriers include Verizon, Quest, Bell Atlantic and NYNEX (before they merged), Sprint-United, Contel (before it merged with General Telephone), General Telephone (GTE – before it merged with Bell Atlantic and became Verizon), and numerous Independent Telephone Companies.

Dr. Skeer has actively participated in functional analyses and operational reviews for these companies. He has assessed opportunities for improved service quality and cost savings; conducted in-depth interviews with company management and operations personnel; reviewed proprietary documentation; performed quantitative and qualitative analyses; and documented findings and recommendations in reports to the top corporate management and regulatory commissions. He has prepared specific plans and benefit/cost analysis for implementing proposed recommendations.

Before entering the consulting profession, Dr. Skeer was a *Manager of Engineering Economics* at Bell Telephone Laboratories (Murray Hill, New Jersey) and a *Technical Project Coordinator* for Network Planning and Operations (Holmdel, New Jersey). He subsequently was a *Manager of AT&T Corporate Strategic Planning* (New York City), reporting to the Office of the Chairman.

Mr. Martin H. Skeer, Ph.D., CMC®, continued
Executive Consultant II

Experience, Continued

He established an independent consulting practice spanning a 21-year time frame, during which time he performed the aforementioned management audits and operations reviews. During the six-year period, from 1997 to 2003, he was a *Managing Executive Consultant* at Navigant Consulting (a.k.a., Resource Management International) – a New York Stock Exchange-listed consulting firm – where he had project management responsibility for engagements with such clients as Silicon Valley Power (City of Santa Clara, CA), the City of Anaheim (CA), and the Florida Municipal Power Agency.

Education & Certifications

Dr. Skeer is a *Certified Management Consultant*, as a member of the Institute of Management Consultants (IMC). He was a *Licensed Professional Engineer* in New York and New Jersey.

Dr. Skeer holds Ph.D. and MS degrees in Engineering from Carnegie-Mellon University, Pittsburgh, where he taught advanced undergraduate courses in engineering and numerical analysis. He received a BS in Engineering from The Cooper Union, New York City, and an MBA in Finance from American University, Washington.

He was a recipient of full-tuition four-year teaching assistantship at Carnegie-Mellon University; a four-year New York State Scholarship; and was a Member of the Sigma XI Honorary Engineering Society.

Project Management & Consulting Expertise

Dr. Skeer, as a *Lead Consultant*, conducted management audits and operations and effectiveness reviews of major energy and telecommunications companies. He was responsible for evaluation of performance and business practices which, for various electric utilities and local exchange carriers, have encompassed the following functional areas (in alphabetic order):

- Business and strategic planning
- Central office and outside plant operations
- Customer services
- Directory publishing
- Economics of equipment replacement
- Engineering and construction
- External affairs
- Governmental and regulatory affairs
- Marketing and product management
- Network planning
- Operator services
- Organization and executive management
- Performance measurement
- Process reengineering
- Procurement/make-versus buy decisions
- Software capabilities
- Technology deployment
- Workforce management

Mr. Martin H. Skeer, Ph.D., CMC®, continued
Executive Consultant II

ELECTRIC UTILITY PROJECT MANAGEMENT & CONSULTING EXPERTISE

As a *Lead Consultant* Dr. Skeer conducted financial and technical analysis on behalf of the Transmission Agency of Northern California and Level 3 Communications to supplant an existing System Control and Data Acquisition (SCADA) microwave system with a fiber optic network. He worked with the Level 3 team to develop requirements and formulate contractual arrangements for indefeasible right to use, colocation, and professional services contractual agreements. (2005 – 2006)

Dr. Skeer conducted an operations review for the Chelan (WA) Public Utility District (CPUD) that identified the most attractive options for increasing the efficiency and effectiveness of the existing outside party/joint use program.

- He provided an independent, expert review that evaluated organization, operations and administration functions; assessed the outside party/joint use program relative to CPUD's current and future requirements and industry best practices; and identified key issues for further analysis and action. He assessed activities associated with operating and administering joint use of CPUD assets.
- As activities were highly fragmented across organizations and personnel, Dr. Skeer developed a "virtual cost center" analysis to bring disparate activities together in a cohesive framework so that the underlying costs and personnel resources could be clearly defined. With building blocks in place, underlying costs associated with these activities were identified, which provided a basis for establishing a compensatory rate structure to ensure that CPUD customers were not subsidizing third parties. (2004 – 2005)
- As a subject matter expert on pole loading and shared electric/telecom use, Dr. Skeer developed a proprietary utility pole-loading model in conjunction with the CPUD engagement, to assess critical field structural overloading problems associated with distribution and transmission infrastructures from both functional and policy perspectives. This analysis provided an expeditious means of determining loading profiles relative to NESC standards, including actual stresses under "as built" field conditions, together stress that would occur under critical snow and wind "design loads." The model analyzed the incremental contribution of each attaching entity (electric, telecom, cable television & fiber) together with the cumulative loading of all attaching entities. (2005)

Mr. Martin H. Skeer, Ph.D., CMC®, continued
Executive Consultant II

ELECTRIC UTILITY PROJECT MANAGEMENT & CONSULTING EXPERTISE, CONTINUED

Dr. Skeer prepared a market evaluation of Central Hudson Gas & Electric surplus lands along the company's rights of way and freestanding sites. Issues included: willingness to take "subject to" contracts; time allowance for site plan approval; revenue requirements over time; phased rollout of properties to maximize returns and realize expedient sales. (2005)

Dr. Skeer prepared a business case to assess financial opportunities that were afforded by assets of Potomac Electric Power Company's (PEPCo's) communications antenna leasing business, involving transmission and communications tower sites that serve as platforms for wireless facilities. He incorporated business models that assigned existing lease rights to a third party in exchange for a lump sum payment in the current year. Business case analysis encompassed: value propositions and rationale; current operating environment; business strategy; competitive assessment; critical success factors; business risk factors; pro forma financial results; organizational roles within PEPCo; possible exit strategies and sunk costs. (2003)

ELECTRIC UTILITY & COMMISSION PROJECT MANAGEMENT & CONSULTING EXPERTISE

Dr. Skeer developed a series of business cases to assess the potential increase in revenues from Ameren Service Corporation's' joint use assets from technical, market and financial perspectives. He identified target firms in key sectors for potential acquisition; collected and analyzed data on competitive pricing of services; and created a preliminary scope and framework for the new Ameren Services business model and revenue targets. Preliminary resource requirements and key risks and drivers for successful implementation were identified. (2001)

As *Project Manager*, Dr. Skeer conducted business case analysis and network planning studies on behalf of Florida Municipal Power Agency to build and lease an 850-mile backbone fiber network for providing SCADA and broadband telecommunication services to its 20+ member cities. He assessed the viability of leasing unused dark fiber capacity on the backbone network to offset network capital expenditures. The project entailed establishing specific route options for building the proposed fiber network; optimizing fiber network capacity, preparing capital and operations budget estimates, and preparing design/build performance specification for the fiber network construction phase. He was awarded the contract for implementation study after completion of analysis that gauged project feasibility and identified a preferred network configuration comprised of leased and new-construction facilities. (1999 – 2000)

Mr. Martin H. Skeer, Ph.D., CMC®, continued
Executive Consultant II

ELECTRIC UTILITY & COMMISSION PROJECT MANAGEMENT & CONSULTING EXPERTISE, CONTINUED

As *Project Manager*, Dr. Skeer assessed market opportunities for sale of fiber transport services (bandwidth) and fiber capacity (dark fiber) for the Cities of Santa Clara (a.k.a. Silicon Valley Power) and Anaheim. He supported the municipalities in determining the merits of prospective partnership agreements with telecommunications service providers for the purpose of sharing construction and operating costs. Dr. Skeer evaluated the replacement value of the Cities' fiber optic backbone routes as a basis for establishing business relationships and joint business opportunities. He negotiated telecommunications services partnership agreements between the municipal utilities and competitive local exchange carriers. He developed business models of the existing and expected information industry players (e.g., CATV operators, local and long distance telephone companies, competitive access providers), and their possible roles as partners or licensees of local transport. (1997 – 1999, 2002 – 2003)

As *Project Manager*, Dr. Skeer developed business strategies for deploying an advanced telecommunications network throughout the Truckee-Donner (California) Public Utility District (TDPUD) serving area for the purposes managing the District's internal operations more efficiently; delivering more competitive services and "increasing accessibility to the information superhighway" on behalf of TDPUD's constituents; and providing strategic telecommunications services as a potential source of additional revenues. He identified and evaluated strategic alternatives for informed decision making with respect to the TDPUD's electric utility's role in telecommunications, laying the groundwork for detailed investigations to support infrastructure development and substation analysis. He also conducted negotiations for structuring joint ventures on behalf of TDPUD, which included:

- An agreement to facilitate conduit construction planning and implementation on behalf of a long distance carrier by establishing a preferred route layout within the strategically located Donner Pass corridor (across the High Sierras), and obtaining construction permits.
- Construction of a 32-mile aerial fiber optic network that would accommodate requirements of both TDPUD and a CATV provider on a single, shared backbone facility. Business and residential services, for Internet, data transport, security, and telephony were to be provided on jointly owned fiber under a partnership arrangement. (1998 – 1999)

Mr. Martin H. Skeer, Ph.D., CMC®, continued
Executive Consultant II

ELECTRIC UTILITY & COMMISSION PROJECT MANAGEMENT & CONSULTING EXPERTISE, CONTINUED

Dr. Skeer, as *Lead Consultant*, negotiated a resale and interconnection agreement between CLECo (Central Louisiana Electric Co.) and BellSouth; assisted CLECo in determining where it might develop metropolitan area networks within communities and between communities in their service territory. He examined various distribution alternatives, including: wireless, cable, fiber, and Digital Subscriber Line, to determine the most economical and compatible arrangements for its target market. (2000)

On behalf of Toronto Hydro, Dr. Skeer developed a business model to assess the market for broadband telecommunications services in the City of Toronto, and the capital investment associated with broadband fiber network construction to accommodate demand within major office building in the company's service area. He valuated the market value of Toronto Hydro's facilities that provide access to a substantial majority of office buildings throughout the metropolitan area. (2000)

TELECOMMUNICATIONS PROJECT MANAGEMENT & CONSULTING EXPERTISE

Dr. Skeer supported Schumaker & Company in the analysis, documentation, and verification of Verizon NY's existing service quality plans and practices of five "VIP" service objectives (including customer trouble report rate, percent out of service over 24 hours, percent installation completed in five days, PSC complaints, and outliers) in the context of NY telephone service standards. He assessed company guidelines with respect to applicable service quality performance standards, including reasonably foreseeable events and contingencies. He developed and documented recommendations to improve or modify these service quality practices and/or plans where existing plans and practices were not sufficient to ensure that applicable standards were met. Reviewed Verizon NY's processes for service quality performance and its employees, technology, and work processes related to the planning, design, construction, installation, maintenance, repair, and delivery of product to retail customers within Verizon NY's service territory. (2005)

Mr. Martin H. Skeer, Ph.D., CMC®, continued
Executive Consultant II

TELECOMMUNICATIONS PROJECT MANAGEMENT & CONSULTING EXPERTISE, CONTINUED

Dr. Skeer, as a *Lead Consultant*, participated in State Of Colorado Proceedings on Qwest's (a.k.a. Us West Communications, Inc.'s) compliance with Part 271 of the Telecommunications Act of 1996 (Act). He assisted with preparation of the Commission Staff's Report on Qwest's "Statement of Generally Available Terms" (known ss SGAT). He prepared reports on Interconnection, Unbundled Network Elements for Switching and Transmission Systems, Local Loop Transmission, Line Splitting, and Network Interface Devices. He also addressed issues related to Operations Support Systems, Maintenance and Repair, Change Management and General Terms And Conditions. (2000 – 2001)

Dr. Skeer, as a *Lead Consultant*, prepared the Arizona Corporation Commission Staff's Final Operations Support System (OSS) Report, which enunciated Staff's point of view and recommendations for consideration of the application of Qwest to the Federal Communications Commission for providing interLATA telecommunications services that originate in Arizona (pursuant to the 1996 Telecommunications Act). This study encompassed preordering, ordering, provisioning, and maintenance & repair functions, change management processes, and stand-alone test environment. (2001 – 2002)

As a *Lead Consultant*, Dr. Skeer evaluated Global Crossing's telecommunications network assets and its prospects for emergence from bankruptcy. He developed an analytical framework to determine Global Crossing's worldwide attachable assets. He prepared interrogatories and supporting claims incorporated in formal Opinion transmitted to Pension Benefit Guarantee Corporation's attorneys and filed with Bankruptcy court. (2001)

Mr. Martin H. Skeer, Ph.D., CMC®, continued
Executive Consultant II

TELECOMMUNICATIONS PROJECT MANAGEMENT & CONSULTING EXPERTISE, CONTINUED

Dr. Skeer served as *Consultant* and *Technical Advisor* in a management audit of the Department of Central Management Services (DCMS), an Illinois state agency responsible for providing voice, data, and video services to all governmental institutions, computer centers, and universities. The study involved a prudence audit of management strategies for development of the Illinois statewide network and telecommunications operations; procurement strategies related to the use of long-term contracts and the purchase of network equipment and internal phone systems; and adaptability of strategies in consideration of rapid technological changes, adjustments in the regulatory environment, and competition in the telecommunications industry that may have affected the attractiveness of these approaches. Dr. Skeer documented recommendations to improve operations efficiency, increase cost-effectiveness, and enhance service quality which led to an overhaul of DCMS strategic plans and operations policies including the restructure of master agreements with prime network service contractors. (1993 – 1994)

Dr. Skeer served as *Technical Advisor* to District of Columbia Commission, during which time he resolved issues pertaining to adoption of telecommunications service quality standards for Bell Atlantic. This was pursuant to a Service Quality Working Group, convened by Commission, failing to reach a consensus in recommending a comprehensive set of District service quality standards. He performed analysis to resolve outstanding issues, and prepared a report specifying comprehensive set of quality standards included in Commission's Final Order. (1994 – 1995)

Dr. Skeer, as a *Lead Consultant* and *Technical Advisor*, participated in a court-mandated study to promote modernization of New York State's telecommunications infrastructure. He advised Staff in assessing NYNEX's network construction program and modernization plans, including the structure and capability of future networks, unbundling of future telephone networks through open network architecture, and comparably-efficient interconnection principles. Dr. Skeer considered the relationship of CATV and broadband data services, and infrastructure interconnection issues involving principal interexchange carriers (AT&T Network Services, MCI, and Sprint); vendors (Northern Telecom and AT&T Network Systems); enhanced service providers (Teleport); and large users (IBM). He prepared a technical report and recommendations incorporated in DPS' final report. (1992 – 1993)

Mr. Martin H. Skeer, Ph.D., CMC®, continued
Executive Consultant II

TELECOMMUNICATIONS PROJECT MANAGEMENT & CONSULTING EXPERTISE, CONTINUED

As a *Lead Consultant*, Dr. Skeer developed and conducted orientation programs to explore telecommunications policies, economics, and technology-related provisions of the Telecommunications Act of 1996. He addressed potential impact on local exchange, long distance, wireless, cable, and Internet service providers; analyzed the Act's provisions applicable to electric utilities and strategies for offering telecommunications services within its citywide franchise area; and provided training, covering multimedia product and service offerings, industry convergence, interconnection, theory of total element long-run incremental costs, and arbitration issues. (1996 – 1997)

OTHER TELECOMMUNICATIONS EXPERIENCE

As *Project Manager*, developed comprehensive strategy to address future telecommunications requirements of the City of West Sacramento's business community; and assessed physical telecommunications infrastructure required to fully support City's economic development plan. Assessed gaps between infrastructures required to meet future traffic demand and infra-structure in place or planned by commercial telecommunications providers; and assessed impact of the economic development strategy on jobs creation within West Sacramento. Developed conceptual designs and broad gauge cost estimates for a telecommunications system to meet the current and future needs of businesses in the City. Analyzed high-level conceptual designs, which incorporated infrastructure, transmission facilities, network electronics, head-end equipment, and other network elements required for service delivery to businesses in targeted development zones. (1998-1999)

As *Lead Consultant*, performed in-depth analysis of Tennessee statewide telecommunications infrastructure. Conducted meetings with general managers of 25 local exchange companies and principal long distance carriers. Analyzed long-range network technology deployment strategies of common carriers. Compiled database delineating current and planned telecommunications network architectures. Contributed to development of telecommunications master plan for accommodating advanced telecommunications services. Recommended specific modifications to enhance network compatibility and interoperability. Prepared report to Steering Committee citing necessary revisions to company plans for realizing long-term inter-networking objectives. (1993-1994)

Mr. Martin H. Skeer, Ph.D., CMC®, continued
Executive Consultant II

Other Telecommunications Experience, Continued

As *Lead Consultant*, devised process for assessing local exchange company performance for the Public Utility Commission of Ohio. Established comprehensive database to compare and evaluate local exchange companies across the state. Prepared report of data requirements for measuring carrier performance and productivity, and evaluating rate-of-return issues. Provided specifications for data management and report generation using relational database software. (1992)

As *Expert Witness*, provided testimony on the impact of telecommunications in rural service areas. Prepared report in conjunction with proposed toll rate restructuring plan, initiated by South Carolina Telephone Association on behalf of consortium of member companies. Considered needs of rural constituencies, and economic and financial impact of telecommunications on quality of life issues. (1991)

Other Relevant Experience

As *Consultant* to the Small Business Administration, provided managerial and technical assistance to over 100 small businesses, from startups to established firms. Counseling and training were directed towards resolution of organizational, financial, marketing, and technical and "systemization" problems. Support included business case development, financial analysis, competitive analysis, technology deployment and risk assessment for companies seeking loans to expand or strengthen business capabilities. (2005 – 2006)

As *Expert Witness* before United Nations international arbitration tribunal, provided testimony associated with cellular phone technology and marketing strategies; developed business case for development, manufacture, and distribution of cellular phone product. (1997-1998)

Mr. Martin H. Skeer, Ph.D., CMC®, continued
Executive Consultant II

OTHER RELEVANT EXPERIENCE, CONTINUED

Conducted telecommunications planning for the Santa Clara Convention Center to address requirements for accommodating a diverse array of conventions and conferences. High-profile events generally involved leading edge, multi-media technology for staging effective programs and exhibits. The study addressed: the importance telecommunications services of convention center profitability; technology needed to differentiate the Santa Clara facility and achieve a competitive advantage compared to other convention centers; and streamlining operations that can be achieved through enhanced telecommunications capability. The study process entailed: conducting focus groups and interviews; preparing scripts and questionnaires to ensure key points are addressed and that informative, meaningful discussion were stimulated; comparative analysis with a panel of other convention centers; and identifying operations cost saving opportunities. (2001)

As *Strategic Planning Manager*, explored alternatives to meet increased demand for custom chips and memories. Conducted analysis of make-versus-buy alternatives. Developed financial model of device business which considered construction of state-of-the-art plant; expanding and upgrading existing manufacturing facilities in outmoded plant; and increased reliance on the external merchant market as source of supply for proprietary devices. Prepared Electronic Components Market Strategy and Rationale study for office-of-the-chairman demonstrating viability of the expansion alternative, recommending construction go-ahead. (1985)

As *Technical Specialist*, analyzed manufacturing standard costs for wire and cable and switching systems plants. Performed correlation studies to identify key parameters affecting economy-of-scale and productivity. Developed financial model of manufacturing operations to address make-versus-buy decisions for network systems and transfer pricing considerations. (1984)

As Illinois state superior court-certified expert in telecommunications and engineering economics, provided testimony and developed damage models of undisclosed costs associated with nationwide long distance telephone service offering; assessed network performance factors affecting service quality; evaluated software used for marketing long distance telephone service. (1994)

Dr. Skeer's other relevant project experience while at Bell Laboratories and AT&T Corporate Strategic Planning is listed on the following pages.

Mr. Martin H. Skeer, Ph.D., CMC®, continued
Executive Consultant II

Verizon New York

Senior Consultant

- Capital program planning
- Maintenance program planning
- Network planning and engineering

Addressed those activities related to the capital and maintenance planning of Verizon New York during a review of Verizon's retail service quality efforts, including construction program planning, maintenance program planning, and network planning and engineering. Analysis of the adequacy of funding of service quality improvements from a perspective of capital investment and ongoing maintenance as contained in the current view of Verizon's capital and maintenance budgets included overall company/corporate objectives (top-down view), summation of specific analyses of plant (bottom-up view), and commission retail service quality performance requirements. Business processes for the identification, prioritization, and inclusion of capital projects in capital programs were studied. How well managers could assess the impact on service performance of proposed changes (increases or reductions) in capital and expense budgets was also measured and an assessment of planned deployment of technology and its ability to satisfy current and future operating requirements, the interrelationships between inside (ISP) and outside (OSP) plant, and the management processes associated with efficient and productive utilization of company and network resources was reviewed. (2003-2004)

Bell Laboratories

Technical Project Coordinator

- Facilitation
- Report definition
- Cost reduction

Chaired series of joint AT&T/customer meetings with Boeing (aerospace), Bank of America (financial), General Motors (manufacturing), and Carter Hawley Hale (retail); chaired joint AT&T/Bank of America strategic planning conference on future telecommunications requirements of banking industry. Contributed to report defining systems architecture requirements to leverage products across market segments, increase systems and service compatibility among lines of business, and reduce development and production costs. (1978-1979)

AT&T

Strategic Planning Manager

- Re-engineering analysis
- Corporate strategic planning

Developed model utilizing portfolio theory to assess strength/ weakness of newly formed AT&T lines of business relative to key competitors. Applied model to identify weaknesses in critical technologies, affecting allocation of resources for research and development and calling for increased development of alliances with third parties to round-out capabilities. Contributed to corporate strategic planning report recommending specific actions to strengthen firm's competitive position in providing integrated solutions. (1982-1983)

Mr. Martin H. Skeer, Ph.D., CMC®, continued
Executive Consultant II

Bell Laboratories

Technical Manager

- Best practice development
- Departmental management
- Systems integration

Developed engineering-based cost methods, study tools, and unit costs to meet federal, state and internal cost requirements for local and long distance voice, data, and video services. Managed development of large-scale computer systems and databases for derivation of fully distributed and long run incremental costs. Integrated large-scale information systems, which combined operations and accounting data from nationwide operations centers. Developed exchange network cost allocation models for assigning common costs to services. Evaluated levels of long distance network plant utilization and productivity. Provided inputs to functional accounting systems. Transferred prototype systems to nationwide computer operations center and supported first applications shakedown. (1974 – 1976)

Bell Laboratories

Technical Project Coordinator

- Service implementation
- Task force management
- Productivity improvements

Development of private network services to meet full range of telecommunications needs of large corporations. Service implementation involved far-flung development, manufacturing, operations, and marketing organizations. Responsible for resolving critical development issues. Managed task forces to implement performance improvements. Established requirements for operations and administrative centers to meet service quality/performance standards. Assessed productivity improvements through introduction of advanced technology and operations support systems. Developed service attitude measurement questionnaires for first applications customers. Assessed customer perception of service features and effectiveness of operations systems through surveys of key customer segments. (1977 – 1979)

Bell Laboratories

Technical Supervisor

- Standards analysis
- Correlation studies

Analyzed manufacturing standard costs for wire and cable and switching systems plants. Performed correlation studies to identify key parameters affecting economy-of-scale and productivity. Developed financial model of manufacturing operations to address make-versus-buy decisions for network systems and transfer pricing considerations. (1975 – 1976)

Mr. Martin H. Skeer, Ph.D., CMC®, continued
Executive Consultant II

Energy and Telephone Utilities Experience

- Ameren Corporation
- Bell Telephone Company of Pennsylvania
- Central Hudson Gas & Electric Company
- Contel of Illinois, Inc.
- Contel of Texas, Inc.
- Contel/GTE New York
- Continental Telephone Company of Pennsylvania
- General Telephone Company of Pennsylvania
- GTE Corporation
- GTE North-Illinois Operations
- GTE North-Pennsylvania Operations
- Guam Telephone Authority
- Illinois Bell Telephone Company
- New York Telephone Company
- Qwest Communications, Inc.
- South Central Bell Telephone Company in Kentucky
- Telephone Electronics Corporation
- Toronto Hydro
- United Telephone Company of Pennsylvania, Inc.
- United Telephone Company of Texas, Inc.
- Verizon New York, Inc.

Regulatory Authorities and Associations Experience

- Anaheim (CA), City of
- Arizona Corporation Commission
- Burlington (VT), City of
- Chelan (WA) Public Utility District
- Colorado Public Utilities Commission
- District of Columbia Public Service Commission
- Florida Municipal Power Agency
- Guam Public Utility Commission
- Illinois Commerce Commission
- Kansas Corporation Commission
- Kentucky Public Service Commission
- Long Island Power Authority
- New York Public Service Commission
- Pennsylvania Public Utility Commission
- Pension Guarantee Trust Corporation
- Potomac Electric Power Company
- Public Service Electric & Gas Company
- Public Utilities Commission of Ohio
- Public Utility Commission of Texas
- Sacramento Builders Exchange
- Silicon Valley Power (Santa Clara, CA)
- Small Business Development Center (CA)
- Tennessee Public Service Commission
- Transmission Agency of Northern California
- Truckee-Donner (CA) Public Utility District
- West Sacramento (CA), City of

Ms. Gail E. Stopar
Project Standards and Support Consultant

BACKGROUND

Ms. Gail Stopar has 22 plus years of business and personnel management, corporate and academic training, software engineering, and technical writing experience in the computer, banking, and automotive industries. She has comprehensive experience leading documentation and training areas, composing, editing, and maintaining documents, databases, web sites and spreadsheets. Additionally, Ms. Stopar has extensive cross-functional experience in computer software/tools, quality methodology, and software engineering. Her experience has demonstrated her ability to interact and communicate effectively across all organizational levels; develop and teach employees, management, and public courses; work independently or as part of a team; prioritize and problem-solve effectively during crunch times and/or while multi-tasking; and service both internal and external customers. Prior to joining Schumaker & Company, she held various positions with Schoolcraft College, Digital Equipment Corporation, Program Planning Professionals, Inc., Software Services, Virtual Services, Inc., World Computer Corporation, Oakland County's Computer Services (MI), and Macomb County Schools Employees Credit Union (MI).

EDUCATION & CERTIFICATIONS

Ms. Stopar holds an MSA in Human Resource Management from Central Michigan University and a BS in Quality Management from Cleary University. She also holds an Associate in Liberal Arts with a concentration in Business/Computer Science from Schoolcraft College and a Certificate in Accounting from Oakland Community College.

PROFESSIONAL AFFILIATIONS & CERTIFICATIONS

- Microsoft Office Specialist core-certified in Microsoft Project 2000 and Microsoft Outlook 2002, and expert-certified in Microsoft Word 2002
- Founder and current member of the Microsoft Project Users Group (now MPUG) – holding MPUGlobal Board of Directors position, 1997-2001
- Editor-in-Chief of *The Project Network Magazine*, the MPUGlobal quarterly publication, 1997-2001
- Adjunct Faculty for Schoolcraft College (MI) Continuing Education Services Business and Computer division, 2001-2006
- Member of Association of Proposal Management Professionals (APMP), 2004-2007

ARTICLES PUBLISHED

- *Business Continuity: Security Starts Within*, Executive Renaissance Forums Fall 2003 newsletter, *The Forum*

Ms. Gail E. Stopar, continued
Project Standards and Support Consultant

SENIOR MANAGEMENT EXPERIENCE

Ms. Stopar was a *Business Director* with Program Planning Professionals, Inc. (Pcubed) where she managed the General Motors North American business account and all of its program management specialists. Responsibilities included new business development, expanding existing contracts, developing new relationships and contract opportunities, and managing overall profitability and staff of the assigned business. Strategic internal corporate planning and multi-level client management interfacing developed the client account and coordinated/facilitated Pcubed's resources and payroll into a one million dollar annual revenue stream. Her human resource (HR) skills were invaluable in planning and developing ways to build organizational effectiveness, manage employee morale, build teams, and enhance productivity; while working to improve employee career development through designed and delivered training programs and HR initiatives. Her professional credibility in upholding corporate and client confidentiality with senior management level issues and employee personnel matters in accordance with all generally accepted, corporate and government standards has lead to efficient and productive work environments.

As a *Business Unit Manager*, Ms. Stopar established, marketed and managed Pcubed's interest in MPUG, the Microsoft Project Users Group, a Pcubed/Microsoft® corporate partnership. She was instrumental in the launch of MPUG as a recognized organization, MPUG's global growth, and building Pcubed's relationship with Microsoft. Management responsibility for all operational business functions with a full-time staff and 85 worldwide volunteer officers covering 11 regional chapters included membership communication, statistical reporting, maintenance, and tracking performed through database and web site technologies. Her delivery of technical support, networking opportunities, newsletters, and shared expertise to thousands of Microsoft® Project software users while marketing Pcubed strategic corporate planning was critical to provide sales leads and establish world-wide recognition of Pcubed's Project Management knowledge.

ACCOUNTING EXPERIENCE

While at Macomb County Schools Employees Credit Union, she was an accounting assistant and computer operator where she reviewed policies, audited controls, and reconciled six financial accounts, while maintaining an efficiently running computer system. While at World Computer Corporation, she managed the accounts payable system. MPUGlobal's membership accounting system was handled using QuickBooks software and Ms. Stopar assists with the Schumaker & Company accounting practices.

Ms. Gail E. Stopar, continued
Project Standards and Support Consultant

PROJECT MANAGEMENT EXPERIENCE

Ms. Stopar has participated as *Project Manager* on numerous projects for a variety of companies, as well as providing project management services. She has attended and taught numerous project management training courses, and is a member of the Microsoft Project Users Group (MPUG).

Most recently, she has used Microsoft Project 2002 and 2003 for planning, scheduling, resource loading, reporting, and monitoring project progress.

With over 22 years of business experience, Ms. Stopar has been the *Project Manager* for many different assignments, including human resource management, quality reviews; training, software engineering, process improvement, and technology implementation projects.

In addition to the everyday project management of a *Business Unit Manager*, Ms. Stopar developed and delivered corporate training to staff and management professionals' in project management methodologies and tools (Primavera® and Microsoft® Project) as well as Project Management Institute (PMI) standards to fulfill career development goals. Corporate and Microsoft Project Users Group (MPUGlobal, now MPUG) member training was developed and delivered via Microsoft® events, user meetings, and scheduled class sessions.

As a *Software Engineer* for Digital Equipment Corporation, she designed, developed/programmed, and tested Computer Numerical Control (CNC) communications software (on/off-site), while providing in-depth U.S. product software technical support to companies like Westinghouse, Thiokol, EG&G, Boeing, and Cummins Engine. Major responsibilities included development and updating of project schedules, tracking online systems problems and corrections, and coordinating software releases. To establish open communications with a disbursed engineering team in France, U.S., Italy and Germany, she communicated software engineering activities, maintenance, and tracking through a working library database. Thereby, earning Ms. Stopar a 1989 Digital Equipment Corporation Software Services Excellence Award.

As an *Adjunct Faculty Member* for Schoolcraft College (MI) for six years, Ms. Stopar provided American Management Association (AMA) certification courses to the general public and all levels of computer courses for the Continuing Education Services division. Many of which needed development.

Ms. Gail E. Stopar, continued
Project Standards and Support Consultant

Technical Writing and Documentation Experience

As *Documentation Services Manager*, Ms. Stopar was responsible for strategic departmental planning relating to contract work for Ford Motor Company, internal and external customers, and multimedia/Web development. Her focus to work with clients, like the Ford Fairlane Training & Development Center (FTDC), to ensure training and documentation efforts were kept to their standards during new or revised project efforts produced best-in-class results. She has supported management and human resource initiatives regarding policy and procedure development, job description development, International Standards Organization (ISO) 9000 certification process project endeavors, and design and development of course materials including hardcopy and electronic help. Direct reports included Technical Writers, Instructional Systems Designers, and Multimedia Technicians.

As *Senior Technical Writer*, Ms. Stopar has performed as team lead for product engineering writer staff; developed work statements and large-scale proposals for field sales teams; created custom project engineering quotes, estimates, test plans, schedules and functional specifications for new sales; and documented new or existing software products. During an effort to coordinate Digital Equipment Corporation's U.S. engineering writer process for standardized writing methodology, Ms. Stopar received a Corporate Team Recognition Award.

As *Editor-in-Chief* of *The Project Network Magazine*, the MPUGlobal organization's quarterly publication for three-plus years, Ms. Stopar was responsible for membership communication. All articles, advertising, graphics, and announcements were written, reviewed, and/or edited.

Web Site Development Experience

Ms. Stopar developed, launched (1997), and maintained the MPUGlobal (now MPUG) web site (www.mpug.org) for its first four years using Microsoft® FrontPage. In order to improve the system over time, later development included the use of Microsoft's Visual Interdev for active server pages, online security site connections, online application processing, and online membership payments.

Ms. Stopar also developed, launched (2004), and maintained the Association of Proposal Management Professionals Greater Midwest Chapter website (www.apmp.org/midwest) using Microsoft® Publisher and Microsoft® FrontPage.

Most recently Ms. Stopar developed and launched (2005) the Michigan Chapter of the Institute for Management Consultants USA website (www.imcmi.org) using Microsoft® Publisher.

Ms. Gail E. Stopar, continued
Project Standards and Support Consultant

ACADEMIC EXPERIENCE

Ms. Stopar has extensive experience interacting with both the corporate employee and collegiate individuals in classroom settings and business seminars. Having worked with a variety of business experiences and technical expertise levels of computer users, she has been able to evaluate, recommend and develop new courses to accommodate weaknesses in existing offerings. While a *Business Unit Manager*, she developed and delivered corporate training to staff and management professionals' in project management methodologies and tools (Primavera® and Microsoft® Project) as well as Project Management Institute (PMI) standards to fulfill career development goals. Corporate and Microsoft Project Users Group (MPUGlobal) member training was developed and delivered via Microsoft® events, user meetings, and scheduled class sessions.

As an *Adjunct Faculty Member* for Schoolcraft College (MI) for six years, Ms. Stopar provided American Management Association (AMA) certification courses to the general public and all levels of computer courses for the Continuing Education Services division.

As an *Audio Visual Training Coordinator*, she created and produced professional training productions in VHS tape format for credit union computer operations that include:

- Computer Maintenance: An Operator's Responsibility
- Data Processing Fundamentals
- Introduction to Your In-House Computer System
- Numerous internal training productions

Ms. Stopar's relevant project experience is listed on the following pages.

Ms. Gail E. Stopar, continued
Project Standards and Support Consultant

Philadelphia Gas Works *Consultant, Analyst, & Editor* ♦ Data and statistics research and benchmarking analysis ♦ Focused analyses in various functional areas ♦ Document preparation and delivery	Performed a stratified management and operations audit of Philadelphia Gas Works (PGW). The primary focus of this management and operations audit is to review those PGW business components subject to regulation by the PaPUC, specifically PGW service delivery and production, whose costs are borne ultimately by Pennsylvania ratepayers. Schumaker & Company diagnostic review of functional areas and in-depth analyses of pre-identified issues assess the condition of, efficiencies, or improvements which benefit PGW and its ratepayers. In doing so, Schumaker & Company identified which, if any, economically practical opportunities for cost saving measures can be instituted.
Pennsylvania-American Water Company *Consultant, Analyst, & Editor* ♦ Data and statistics research and benchmarking analysis ♦ Focused analyses in various functional areas ♦ Document preparation and delivery	Performed a stratified management and operations audit of Pennsylvania-American Water Company (PAWC) for the Pennsylvania Public Utility Commission (PaPUC) with the primary focus areas being costs borne ultimately by Pennsylvania ratepayers. Schumaker & Company's diagnostic review of functional areas and in-depth analyses of pre-identified issues assess the condition of each functional area or business unit against evaluative criteria or expected business practice to determine if appropriate management controls, processes, and systems were in place. These analyses are of sufficient depth to provide specific recommendations for changes together with projected costs and potential dollar savings or other quantifiable benefits, if any.
City of Detroit, Michigan *Consultant and Analyst* ♦ Data research and investigation (public works) ♦ Performance measures/metrics or other quantitative assessments (public works)	Recommended cost reduction planning and potential revenue enhancement initiatives based on process mapping and analysis of key processes for designated departments (fire and public works, plus potentially reviewing police, transportation, and health/ wellness promotion in future months). These plans/initiatives address risks associated with implementation, not only within the designated departments, but especially its potential impact on the delivery of services to the residents and surrounding communities.

Ms. Gail E. Stopar, continued
Project Standards and Support Consultant

Water Services Corporation of South Carolina

Consultant

- Human resource policies and procedures
- Turnover rates and compensation
- Training policies and practices

Performed a management and operations review and assessment of Water Services Corporation (WSC) of South Carolina for the State of South Carolina Office of Regulatory Staff (ORS) with specific focus on the operations of the five subsidiary water and wastewater companies that operate in South Carolina, those being:

- Carolina Water Service, Inc. (CWS)
- Tega Cay Water Service, Inc. (TCWS)
- Utilities Services of South Carolina, Inc. (USSC)
- Southland Utilities, Inc. (SU)
- United Utility Companies, Inc. (UUC)

The bottom line of this project was to determine whether the rates charged to the South Carolina ratepayers can be reduced through the implementation of greater efficiencies in organizations, operations, or both. Additionally, another relevant analysis was a determination of whether the ratepayers of South Carolina are being properly and economically served by the range of corporate services that are provided to the WSC operations in South Carolina by the managers located in both West Columbia and Northbrook. Significant consideration was given to investigation of the potential benefits that would result from the consolidation or merger of the affiliated companies of WSC.

PECO Energy

Consultant, Editor, and Analyst

- Data and statistics research and benchmarking analysis
- Focused analyses in various functional areas
- Document preparation and delivery

Performed a stratified management and operations audit of PECO Energy (PECO) for the Pennsylvania Public Utility Commission (PaPUC) in with the primary focus areas being PECO, Exelon Energy Delivery (EED), and Exelon Business Services Company (EBSC) functional areas, whose costs are borne ultimately by Pennsylvania ratepayers. Schumaker & Company's diagnostic review of functional areas and in-depth analyses of pre-identified issues assessed the condition of each functional area or business unit against evaluative criteria or expected business practice to determine if appropriate management controls, processes, and systems were in place. These analyses were of sufficient depth to provide specific recommendations for changes together with projected costs and potential dollar savings or other quantifiable benefits, if any.

Ms. Gail E. Stopar, continued
Project Standards and Support Consultant

Verizon New York *Analyst & Editor* ♦ Document management and administration ♦ Quality control ♦ Report preparation	Documented the findings based on identifiable and measurable information and data, to ensure that Verizon NY's existing service quality plans and practices of the five VIP service objectives (customer trouble report rate, percent out of service over 24 hours, percent installation completed in five days, Public Service Commission (PSC) complaints, and outliers), NY Telephone Service Standards, and company guidelines meet applicable service quality performance standards, including reasonably foreseeable events and contingencies. Compiled, wrote, and coordinated input from ten consultants to produce the final reports delivered to the PSC.
City of Dearborn, Michigan *Analyst* ♦ Camp Dearborn	Provided investigational assistance for an operations review and assessment of Camp Dearborn that included reviewing all key positions, evaluating staffing levels, reviewing operating revenues and expenditures and business policies, and more.
Program Planning Professionals, Inc. (Pcubed) *Business Director & Business Unit Manager* ♦ Account management ♦ New business development & strategic planning ♦ Project planning ♦ Proposal development ♦ Client solutions ♦ Staffing allocation & development ♦ Editor-in-chief ♦ Web site development	Responsible for new business development within major corporate sectors/accounts, expanding existing contracts, developing new relationships and contract opportunities, and managing overall profitability and staff of assigned business. Managed budget planning for headcount, staff and client training, facilities, outside services, and marketing. Initiated and/or lead organizational improvement activities. Coordinated business planning and project management efforts between program managers and customers while ensuring satisfaction. Established MPUG's own billing system and monitored invoicing, applications for membership, and accounts payable/receivable. Lead, coached and mentored direct reports through effective management and leadership techniques. Established and managed an MPUGlobal Board of Directors adhering to Roberts Rules-of-Order. Created and maintained the MPUGlobal website (www.mpug.org). Acting editor-in-chief for quarterly 16-20 page newsletter.

Ms. Gail E. Stopar, continued
Project Standards and Support Consultant

Digital Equipment Corporation

Senior Technical Writer & Software Engineer

- Documentation development
- Project management
- Software design, development, testing and deployment
- Technical support

Developed and updated project schedules, tracked online systems problems and corrections, and coordinated software releases. Created custom project engineering quotes, estimates, test plans, schedules and functional specifications for new sales and worked independently to meet those goals. Established open communications with product engineering team in France and European support groups in Germany. Identified new or expanding business opportunities. Ensured clarity, completeness, technical accuracy, and quality of documents produced. Lead programmer for design, development, and testing of CNC Communications Software (on/off-site) using VAX Fortran and Assembler languages, and provided U.S. customer base in-depth technical support for this manufacturing communications software.

Schoolcraft College

Adjunct Faculty

- American Management Association (AMA) certification courses
- Computer courses

Supported and delivered established business and computer courses for the Continuing Education Services division. Whenever possible, evaluated, recommended and developed new courses to accommodate weaknesses in existing public offerings.

- Managing the Customer Satisfaction Process – AMA
- Fundamentals of Business Writing – AMA
- Getting More Done Through Delegation – AMA
- How to Interview Effectively – AMA
- How to Build High Performance Teams – AMA
- Computer Basics
- Internet for Seniors
- Microsoft® Office 2000 and 2002 – An Introduction
- Microsoft® Office 2000 and 2002 – Level 2: Applying & Integrating Applications
- Microsoft® Windows98 (and 98 for Seniors)
- Microsoft® XP – An Introduction
- Microsoft® Word XP – Level 1 and Level 2
- Microsoft® Excel – Level 1
- Computer Art with a Flair! – Microsoft® Paint, PowerPoint, Publisher, and Adobe® PageMaker
- Creativity with Microsoft® Word: For the Beginner
- Microsoft® PowerPoint 2002 – Presentation Software for Effective Communication

Ms. Jaye M. Kain
Project Administrator

BACKGROUND

Ms. Jaye M. Kain has over 20 years of business experience. Her background, which includes a blend of experience in project administration and management, training, scientific research, and grant writing, provides her with a unique perspective from which to manage investigations and evaluate findings of investigators. Her communication skills make her a natural facilitator for the assimilation of data produced by seemingly disparate specialties.

EDUCATION & CERTIFICATIONS

Ms. Kain holds one Bachelor's degree in Environmental Geoscience and a second Bachelor's degree in Geology from Edinboro University of Pennsylvania. She also holds a Master of Science in Geology from the University of Michigan.

CONSULTING EXPERIENCE

Ms. Kain served as the Project Administrator on the Schumaker & Company's PECO Energy management audit for the PAPUC.

Ms. Kain has served as a *Project Director* for a variety of programs. Her focus was primarily on scientific grants funded by state and federal programs such as the Department of Energy, Environmental Protection Agency, and Department of Natural Resources. After a grant was awarded, organizations contracted Ms. Kain to oversee the spending and subsequent reporting to the appropriate agency(ies). This created a situation where Ms. Kain had the opportunity to establish a long-term relationship with the clients and acted on their behalf and in their best interest.

In the case of the City of Ecorse, Michigan, as money flowed in, residents and business owners became interested in applying for more funds. The contract became long-term and has, at last count, eight people assigned to procuring and managing the grant programs.

DOCUMENTATION EXPERIENCE

Ms. Kain also has significant experience and expertise in the area of documentation control. She has served as document specialist for numerous organizations and implemented the initial system documentation for an investor driven start-up. Additionally, she has been responsible for the project's subcontracting and subsequent reporting to federal agencies and is well acquainted with federal and international standards.

Ms. Jaye M. Kain, continued
Project Administrator

PROFESSIONAL AFFILIATIONS

- International Association of Geochemistry
- Geological Society of America
- Association of Women Geologists

PRIOR EXPERIENCE

Prior to joining Schumaker & Company, Ms. Kain was with:

- Neighborhood Funding Resources, Michigan as *Lead Grant Writer & Project Director* – a corporation established to assist cities in obtaining federal funding for community based projects.
- The Ann Arbor IT Zone, Michigan as *Manager* – a non-profit organization dedicated to helping local entrepreneurs and information technology professionals.
- The Richard Hale Shaw Group, Michigan as *Business Manager* – where she was more specifically the operations manager and performed business development/marketing for a group of developers and trainers in programming languages.

Ms. Kain's relevant project experience is listed on the following pages.

Ms. Jaye M. Kain, continued
Project Administrator

Philadelphia Gas Works *Project Administrator & Analyst* ♦ Project administration and support ♦ Analytical support for diagnostic review of functional areas and in-depth analyses of pre-identified issues	Performed a stratified management and operations audit of Philadelphia Gas Works (PGW). The primary focus of this management and operations audit is to review those PGW business components subject to regulation by the PaPUC, specifically PGW service delivery and production, whose costs are borne ultimately by Pennsylvania ratepayers. Schumaker & Company diagnostic review of functional areas and in-depth analyses of pre-identified issues assess the condition of, efficiencies, or improvements which benefit PGW and its ratepayers. In doing so, Schumaker & Company identified which, if any, economically practical opportunities for cost saving measures can be instituted.
Pennsylvania-American Water Company *Project Administrator & Analyst* ♦ Project administration and support ♦ Analytical support for diagnostic review of functional areas and in-depth analyses of pre-identified issues	Performed a stratified management and operations audit of Pennsylvania-American Water Company (PAWC) for the Pennsylvania Public Utility Commission (PaPUC) with the primary focus areas being costs borne ultimately by Pennsylvania ratepayers. Schumaker & Company's diagnostic review of functional areas and in-depth analyses of pre-identified issues assess the condition of each functional area or business unit against evaluative criteria or expected business practice to determine if appropriate management controls, processes, and systems were in place. These analyses are of sufficient depth to provide specific recommendations for changes together with projected costs and potential dollar savings or other quantifiable benefits, if any.
PECO Energy *Project Administrator & Analyst* ♦ Project administration and support ♦ Analytical support for diagnostic review of functional areas and in-depth analyses of pre-identified issues	Performed a stratified management and operations audit of PECO Energy (PECO) for the Pennsylvania Public Utility Commission (PaPUC) in with the primary focus areas being PECO, Exelon Energy Delivery (EED), and Exelon Business Services Company (EBSC) functional areas, whose costs are borne ultimately by Pennsylvania ratepayers. Schumaker & Company's diagnostic review of functional areas and in-depth analyses of pre-identified issues (including affiliate transactions) assessed the condition of each functional area or business unit against evaluative criteria or expected business practice to determine if appropriate management controls, processes, and systems were in place. These analyses were of sufficient depth to provide specific recommendations for changes together with projected costs and potential dollar savings or other quantifiable benefits, if any.

Ms. Jaye M. Kain, continued
Project Administrator

Water Services Corporation of South Carolina

Project Administrator & Analyst

- Project administration and support
- Analytical support

Performed a management and operations review and assessment of Water Services Corporation (WSC) of South Carolina for the State of South Carolina Office of Regulatory Staff (ORS) with specific focus on the operations of the five subsidiary water and wastewater companies that operate in South Carolina, those being:

- Carolina Water Service, Inc. (CWS)
- Tega Cay Water Service, Inc. (TCWS)
- Utilities Services of South Carolina, Inc. (USSC)
- Southland Utilities, Inc. (SU)
- United Utility Companies, Inc. (UUC)

The bottom line of this project was to determine whether the rates charged to the South Carolina ratepayers can be reduced through the implementation of greater efficiencies in organizations, operations, or both. Additionally, another relevant analysis was a determination of whether the ratepayers of South Carolina are being properly and economically served by the range of corporate services that are provided to the WSC operations in South Carolina by the managers located in both West Columbia and Northbrook. Significant consideration was given to investigation of the potential benefits that would result from the consolidation or merger of the affiliated companies of WSC.

City of Ecorse
Ecorse, Michigan

Project Director

- Community rebuild grant
- Emerald ash borer grant
- Community build team
- Technology tools\infrastructure

Performed a variety of services for the City of Ecorse, Michigan including grant writing and project management. The grants were for such disparate topics as sediment remediation and EPA Phase II to community education and tree planting workshops for middle school children.

- Phase II site remediation
- Great Lakes
- NFL Carbon Mitigation Project
- Ecorse Rowing Club
- Eco-fair 2006

The overall purpose of the contract with Ecorse was to remedy years of pollution and neglect in the Downriver Detroit area and assist the leaders in their quest for an economically viable community still faced with crime and high unemployment.

Ms. Jaye M. Kain, continued
Project Administrator

Friends of the Detroit River ***Dearborn, Michigan*** *Project Manager & Lead Consultant* ♦ Project management ♦ Grant writing ♦ Volunteer database	Managed the state and federal grant writing for the Friends of the Detroit River group holding the Required Action Permit (RAP) for the Detroit River. After the Environmental Protection Agency and Michigan Dept. of Natural Resources awarded grants, she managed all project time tables, subcontracting, and agency reporting and then developed a marketing strategy and e-mail campaign for fund raising, volunteer, and awareness events.
U.S. Green Building Council Michigan *Project Director* ♦ Grant writer ♦ Public policy committee	Acted as *Grant Writer* and *Project Director* for Southeastern Michigan's chapter of the national organization. The first Michigan Dept. of Energy grant received was to hold a series of seminars promoting sustainable development and assist planning departments in changing their code to reflect Leadership in Energy and Environmental Design standards. By bringing in architects and engineers knowledgeable in the practice of sustainability and offering sample code to local officials, small communities were given the opportunity to join the movement taking place nationally at virtually no initial cost to the town's budget. Also developed public policy committee marketing opportunities and standards in accordance with national standards, and was instrumental in instituting a speaker's bureau for use by local communities in gaining support from residents and business owners.
Urban Farming ***Detroit, Michigan*** *Consultant & Project Director* ♦ Standards and practices ♦ Obtained 501C3 status ♦ Business development and marketing	Guided the grass-roots Urban Farming organization and obtained their non-profit status. Wrote community grants soliciting funds from state programs, national foundations, and individual supporters. Also spearheaded a campaign to take the organization to a multi-city level with the intention of making this a national volunteer-based organization dedicated to end hunger in the inner cities through community operated gardens built on abandoned properties. Drafted letters of support to serve as templates for public officials and petition drives.
Richard Hale Shaw Group ***Ann Arbor, Michigan*** *Business & Operations Manager* ♦ Network security ♦ Website maintenance ♦ Document specialist ♦ Trade shows	Provided support to the Richard Hale Shaw Group that offered worldwide training opportunities to corporations with medium to large information technology departments. Managed all aspects of training sessions (on- and off-site), trade shows, and online courses. She recruited new consultants and acted as document specialist for accounting and certification purposes, maintained the website, and conducted customer surveys, (updating and managing the database).

Mr. Hachin Sunid, MCSE, MCSA, MCP, A+
Technology Support Consultant

Background

Mr. Hachin Sunid has eight plus years as a *Computer Professional*, including three years as a *Network Administrator/Engineer*. He is a productive self-starter with a strong work ethic, consistently achieving goals set before him and demonstrating, proven experience in network/hardware/operating system troubleshooting, PC assembly, system integration and technical support.

Having performed various professional functions for various professional organizations like Office World Inc., BriteView Technologies, and Stone Computers, Mr. Sunid is able to effectively communicate and work with all forms of management, engineers, administrators, and end users.

Technical Skills Summary

- *Operating Systems & Enterprise Applications*: Windows 2003 Server, Windows Server 2000, Unix, Apache, Active Directory, MS Exchange, ISA Server, SQL, Symantec Anti Virus Corporate Server, SharePoint Server, Symantec Backup Exec
- *Protocols & Technologies*: VLAN, TCP/IP, PPTP, IPSec, NetBIOS, DNS, DHCP, SMTP, POP3, IMAP, Terminal Services, Remote Desktop, Telnet, MMC, IIS
- *Connectivity & Hardware*: WIFI, Ethernet, Cabling, Routers, Switches, Firewalls, Network Printers
- *Desktop & Programming*: Windows 95/98/2000/XP/Vista, Office 2000/XP/2003/2007, Outlook, Ghost, VMware, C++, VB, VBscript, VBA, PHP, HTML

Education & Certifications

Mr. Sunid holds a Bachelor of Science in Computer Science Engineering Technology from the University of Toledo.

Technical Certifications

- Microsoft Certified Systems Engineer (MCSE) 2000 and 2003
- MCSE 2000 and 2003: Security
- MCSE 2000 and 2003: Messaging
- Microsoft Certified Systems Administrator (MCSA) 2000 and 2003
- MCSA 2000 and 2003: Security
- MCSA 2000 and 2003: Messaging
- Microsoft Small Business Specialist
- Microsoft Certified Professional (MCP)
- CompTia A+ (A+)

Mr. Hachin Sunid, MCSE, MCSA, MCP, A+, continued
Project Standards and Support Consultant

NETWORK ADMINISTRATOR/ ENGINEER RESPONSIBILITIES

- Remote and onsite installation, development, management, and support of hardware and software associated with clients and Schumaker & Company's information system and networks
- Design and implementation of LAN/WAN technologies along with as needed troubleshooting of various issues including network connectivity, software/hardware conflicts, and general break/fix
- User administration, file/directory, net applications, database, backup, security, hardware, etc.
- Overseer of information technology functions including administration of Windows 2000/2003, Active Directory, DNS server, Exchange server and SQL server, etc.
- Setup and management of handheld devices
- Documentation of all network hardware and software, including operating procedures and policies
- Develop, publish, and maintain in house web sites, such as OWA and SharePoint 2007 server
- Develop VB scripts for group policies, as well as custom applications using VBA.

Mr. Hachin Sunid's relevant project experience is listed on the following pages.

Mr. Hachin Sunid, MCSE, MCSA, MCP, A+, continued
Project Standards and Support Consultant

Philadelphia Gas Works *Technology Support Consultant* ♦ Installation and configuration of job site computer network ♦ Hardware/software troubleshooting	Performed a stratified management and operations audit of Philadelphia Gas Works (PGW). The primary focus of this management and operations audit is to review those PGW business components subject to regulation by the PaPUC, specifically PGW service delivery and production, whose costs are borne ultimately by Pennsylvania ratepayers. Schumaker & Company diagnostic review of functional areas and in-depth analyses of pre-identified issues assess the condition of, efficiencies, or improvements which benefit PGW and its ratepayers. In doing so, Schumaker & Company identified which, if any, economically practical opportunities for cost saving measures can be instituted.
Pennsylvania-American Water Company *Technology Support Consultant* ♦ Installation and configuration of job site computer network ♦ Hardware/software troubleshooting	Performed a stratified management and operations audit of Pennsylvania-American Water Company (PAWC) for the Pennsylvania Public Utility Commission with the primary focus areas being costs borne ultimately by Pennsylvania ratepayers. Schumaker & Company's diagnostic review of functional areas and in-depth analyses of pre-identified issues assess the condition of each functional area or business unit against evaluative criteria or expected business practice to determine if appropriate management controls, processes, and systems were in place. These analyses were of sufficient depth to provide specific recommendations for changes together with projected costs and potential dollar savings or other quantifiable benefits, if any.
PECO Energy *Technology Support Consultant* ♦ Installation and configuration of job site computer network ♦ Hardware/software troubleshooting	Performed a stratified management and operations audit of PECO Energy Company (PECO) for the Pennsylvania Public Utility Commission in with the primary focus areas being PECO, Exelon Energy Delivery, and Exelon Business Services Company functional areas, whose costs are borne ultimately by Pennsylvania ratepayers. Schumaker & Company's diagnostic review of functional areas and in-depth analyses of pre-identified issues assessed the condition of each functional area or business unit against evaluative criteria or expected business practice to determine if appropriate management controls, processes, and systems were in place. These analyses were of sufficient depth to provide specific recommendations for changes together with projected costs and potential dollar savings or other quantifiable benefits, if any.

Mr. Hachin Sunid, MCSE, MCSA, MCP, A+, continued
Project Standards and Support Consultant

Wayne County Airport Authority *Technology Analyst* ♦ Customer technology and services needs assessment ♦ Technology trends tracking ♦ Technology tools and training	Provided services to assist the Wayne County Airport Authority (WCAA) Information Technology Division in identifying technology business initiatives and updating its annual performance plan at the Detroit Metropolitan Wayne County Airport. Interviews with key management and staff were crucial to assess customer business needs and identify WCAA's technology initiatives for the next five (5) years, determine if changes are required of the Department of Technology services portfolio to continue to effectively and efficiently meet division business needs, determine the impact of current technology and/or airport business trends on the plan, and develop the plan to reflect project deliverables.
Town of Hilton Head Island *Technology Support Consultant* ♦ Installation and configuration ♦ Hardware/software troubleshooting	Provided services related to an assessment of the Town of Hilton Head Island's current business processes, organization structure, staffing levels, and software that support the management of the Town's employee information. This study evaluated the performance of the subject organization, staffing, operations, and costs with the intended final result of identifying opportunities for improving, revising, or replacing the processes, organization structure, staffing levels, and software. Subsequently, produced a detailed draft organizational review report that was presented to the Town Board for review.
Ameri-serv Group *Information Technology Specialist* ♦ On-going technical support ♦ Installation, configuration, general maintenance, network design and implementation	Performed a customer relationship management (CRM) systems review for this small service firm. Developed a disaster recovery plan for the older existing systems and began to develop and implement a migration plan for moving key line of business applications to a new software application platform. Migrated Ameir-serv to a Microsoft Small Business Server and implemented new firewall and Internet access. Provide ongoing support and administration for the past two years.

Mr. Hachin Sunid, MCSE, MCSA, MCP, A+, continued
Project Standards and Support Consultant

City of Dearborn, Michigan

Information Technician/Support Consultant

- Customer technology and services needs assessment
- Technology tools and training

Assisted the City of Dearborn, who like many organizations, was faced with delivering essential services to its citizens with a reduced level of resources, by performing an assessment of selected units, specifically Camp Dearborn, as a means to streamline and consolidate its operations, eliminate non-essential services, and optimize overall level of resources involved in achieving its goals. Also provided consulting services to the City's Technology Committee regarding a definition of its role in relation to its five subcommittees, to MIS, and to City administration so that problems are efficiently resolved and progress is steady; definition of the role of the five subcommittees; and establishment of a one-year development plan to carry forward the recommendations of a previously-defined Technology Committee report.

O'Neal Construction

Information Technology Specialist

- On-going technical support
- Installation, configuration and troubleshooting of hardware and software related issues on desktops and the network.
- Hardware, software and networks troubleshooting

Originally engaged to correct technical problems associated with a Netware to Windows NT migration by another vendor, Schumaker & Company has been the IT department for O'Neal Construction for the last ten years. Numerous security and configuration issues were addressed in the original migration. Assisted in IT improvements, including workstation hardware and software upgrades, reconfiguring of Windows NT server, implementation of Exchange mail system, and enhancing Internet access capabilities. Recommended to management and implemented the migration to a new server and all new workstations to meet performance needs of the users. Provided ongoing network support. Performed five different server migrations and four different workstation/laptop refreshes.

Also designed and developed a construction cost projection model to develop cost projections on individual projects using ODBC connector to access historical construction costs for O'Neal's FOREFRONT accounting system (a Btrieve database) on a real time basis. The application used OLE to populate the information into an Access database for further analysis and presentation. It permits O'Neal Construction project managers to create real time costs projections throughout the construction project.

VI. Schedules and Budgets

This chapter presents the proposed schedule and budgets for the Schumaker & Company project team to perform the forthcoming review of Niagara Mohawk Power Corporation d/b/a National Grid (National Grid). This chapter summarizes much of the detailed information that is contained in *Appendix B*. Schumaker & Company uses Microsoft Project for estimating its projects. Various detailed (oversized) worksheets are contained in *Appendix B* as backup materials to the summary information contained in this chapter.

A. Overall Total Project Costs

Our overall total project cost (showing individual professional fees and out-of-pocket expenses and support services separately stated) is shown in *Exhibit VI-1*.

Exhibit VI-1
Project Summary Costs

	$
Professional Fees	$1,130,540
Travel Expenses	$211,612
Services and Materials	$22,612
Total	**$1,364,764**

Our overall total project cost by staff members, using fully loaded billing rates, is shown in *Exhibit VI-2*.

Exhibit VI-2
Total Project Costs

Staff Member	Category	Rate	Total Hours	Total Fees	Total Days
Patricia Schumaker	Engagement Manager and Executive Consultant I	$292	744	217,248	93
Dennis Schumaker	Project Manager and Executive Consultant I	$292	904	263,968	113
John Bakula	Senior Engineering Consultant	$273	280	76,440	35
Lee Burgess	Executive Consultant II	$273	296	80,808	37
Siegfried Guggenmoos	Senior Engineering Consultant	$273	240	65,520	30
D. Kerry Laycock	Executive Consultant II	$273	296	80,808	37
Eugene Johnson	Senior Engineering Consultant	$273	336	91,728	42
Martin Murphy	Executive Consultant II	$273	656	179,088	82
Martin Skeer	Executive Consultant II	$273	220	60,060	28
Robert Rosenkoetter	Executive Consultant II	$273	488	133,224	61
Gail Stopar	Project Standards & Support Consultant	$145	224	32,480	28
Jaye Kain	Project Administrator	$70	1,056	73,920	132
Hachin Sunid	Technology Support Consultant	$148	64	9,472	8
Total Hours			5,804	1,364,764	726

B. Overall Project Schedule

Our overall schedule is shown in *Exhibit VI-3*.

Exhibit VI-3
Project Schedule

ID	Task Name	Duration	Start	Finish
0	**Management Audit of National Grid**	**280 days**	**Mon 10/20/08**	**Fri 11/13/09**
1	Contract Award	1 day	Mon 10/20/08	Mon 10/20/08
2	**Step I - Project Orientation and Final Work Plan**	**32 days**	**Mon 10/20/08**	**Tue 12/2/08**
3	Project Planning and Administration	6 days	Mon 10/20/08	Mon 10/27/08
4	Orientation Presentation and Interviews	10 days	Tue 10/28/08	Mon 11/10/08
5	Prepare Draft Work Plan	5 days	Tue 11/11/08	Mon 11/17/08
6	Draft Work Plan Submission to NYSDPS	1 day	Tue 11/18/08	Tue 11/18/08
7	Draft Work Plan Review	5 days	Wed 11/19/08	Tue 11/25/08
8	First Progress Meeting	1 day	Wed 11/26/08	Wed 11/26/08
9	Final Work Modifications	3 days	Thu 11/27/08	Mon 12/1/08
10	Final Work Plan Submission and Approval	1 day	Tue 12/2/08	Tue 12/2/08
11	**Step II - Detailed Review and Analysis**	**150 days**	**Wed 12/3/08**	**Tue 6/30/09**
12	**Work Package I - Strategic Planning**	**85 days**	**Wed 12/3/08**	**Tue 3/31/09**
13	**Corporate Mission, Objectives, Goals, and Planning**	**85 days**	**Wed 12/3/08**	**Tue 3/31/09**
14	Interviews and Information Collection	60 days	Wed 12/3/08	Tue 2/24/09
15	Review and Analysis	60 days	Wed 12/10/08	Tue 3/3/09
16	Draft Task Report	20 days	Wed 3/4/09	Tue 3/31/09
17	**Long-term Load Forecasting**	**85 days**	**Wed 12/3/08**	**Tue 3/31/09**
18	Interviews and Information Collection	60 days	Wed 12/3/08	Tue 2/24/09
19	Review and Analysis	60 days	Wed 12/10/08	Tue 3/3/09
20	Draft Task Report	20 days	Wed 3/4/09	Tue 3/31/09
21	**Work Package II**	**150 days**	**Wed 12/3/08**	**Tue 6/30/09**
22	**Supply Procurement**	**85 days**	**Wed 3/4/09**	**Tue 6/30/09**
23	Interviews and Information Collection	60 days	Wed 3/4/09	Tue 5/26/09
24	Review and Analysis	60 days	Wed 3/11/09	Tue 6/2/09
25	Draft Task Report	20 days	Wed 6/3/09	Tue 6/30/09
26	**Long-term System Planning**	**85 days**	**Wed 3/4/09**	**Tue 6/30/09**
27	Interviews and Information Collection	60 days	Wed 3/4/09	Tue 5/26/09
28	Review and Analysis	60 days	Wed 3/11/09	Tue 6/2/09
29	Draft Task Report	20 days	Wed 6/3/09	Tue 6/30/09
30	**Capital and O & M**	**85 days**	**Wed 12/3/08**	**Tue 3/31/09**
31	Interviews and Information Collection	60 days	Wed 12/3/08	Tue 2/24/09
32	Review and Analysis	60 days	Wed 12/10/08	Tue 3/3/09
33	Draft Task Report	20 days	Wed 3/4/09	Tue 3/31/09
34	**Work Package III**	**85 days**	**Wed 12/3/08**	**Tue 3/31/09**
35	**Program and Project Planning and Management**	**85 days**	**Wed 12/3/08**	**Tue 3/31/09**
36	Interviews and Information Collection	60 days	Wed 12/3/08	Tue 2/24/09
37	Review and Analysis	60 days	Wed 12/10/08	Tue 3/3/09
38	Draft Task Report	20 days	Wed 3/4/09	Tue 3/31/09
39	**Workforce/Resource Utilization**	**85 days**	**Wed 12/3/08**	**Tue 3/31/09**
40	Interviews and Information Collection	60 days	Wed 12/3/08	Tue 2/24/09
41	Review and Analysis	60 days	Wed 12/10/08	Tue 3/3/09
42	Draft Task Report	20 days	Wed 3/4/09	Tue 3/31/09
43	**Work Package IV**	**85 days**	**Wed 12/3/08**	**Tue 3/31/09**
44	**Performance and Results Measurement**	**85 days**	**Wed 12/3/08**	**Tue 3/31/09**
45	Interviews and Information Collection	60 days	Wed 12/3/08	Tue 2/24/09
46	Review and Analysis	60 days	Wed 12/10/08	Tue 3/3/09
47	Draft Task Report	20 days	Wed 3/4/09	Tue 3/31/09
48	**Step III - Draft and Final Report Preparation**	**70 days**	**Wed 7/1/09**	**Tue 10/6/09**
49	Draft Report Compilation	25 days	Wed 7/1/09	Tue 8/4/09
50	Submission of Draft Report to NYDPS	0 days	Tue 8/4/09	Tue 8/4/09
51	NYDSPS Review of Draft Final Audit Report	10 days	Wed 8/5/09	Tue 8/18/09
52	Release of Draft Report to National Grid	0 days	Tue 8/18/09	Tue 8/18/09
53	National Grid Review of Draft Final Audit Report	15 days	Wed 8/19/09	Tue 9/8/09
54	Receipt of National Grid Comments on Final Draft Report	0 days	Tue 9/8/09	Tue 9/8/09
55	Third Progress Meeting - Draft Report Review and Exit Conference	1 day	Tue 9/15/09	Tue 9/15/09
56	Final Report Preparation	15 days	Wed 9/16/09	Tue 10/6/09
57	Final Report Submittal	0 days	Tue 10/6/09	Tue 10/6/09
58	**Workshop Training Program**	**185 days**	**Wed 12/3/08**	**Tue 8/18/09**
59	Project Management and Administration Processes	5 days	Wed 12/3/08	Tue 12/9/08
60	Strategic Planning	5 days	Wed 2/4/09	Tue 2/10/09
61	Operational Planning	5 days	Wed 4/8/09	Tue 4/14/09
62	Operational Execution	5 days	Wed 6/10/09	Tue 6/16/09
63	Performance Measurement and Reporting	5 days	Wed 8/12/09	Tue 8/18/09
64	**Project Management and Administration**	**280 days**	**Mon 10/20/08**	**Fri 11/13/09**
65	Project Management	14 mons	Mon 10/20/08	Fri 11/13/09
66	Project Administration	14 mons	Mon 10/20/08	Fri 11/13/09

A more detailed schedule is provided in *Appendix B*.

Hours and Professional Fees

Based on our past experience, staff hours were determined by estimating the number of staff hours for each task area using the work breakdown structure. These hours were then used to determine the total expected costs of the project for our professional fees, including travel costs and supplies and materials, using our project cost estimating model.

Schumaker & Company's estimated hours by step, by consultant, and by work plan area are shown in *Exhibit V-7*, *Exhibit V-8*, *Exhibit V-9*, *Exhibit V-10*, and *Exhibit V-11*. Our consultants charge their time on a daily basis to a maximum of 10 hours. Time worked in excess of 10 hours per day is not billed to the client.

Exhibit VI-4
Step I – Project Orientation and Final Work Plan Hours by Work Task

Work Loaded Tasks From Schedule	Duration	Total Hours	Total Cost
Step I - Project Orientation and Final Work Plan	32 days	552 hrs	$139,240
Project Planning and Administration	6 days	32 hrs	$9,344
Schumaker Patricia H.		16 hrs	$4,672
Schumaker Dennis J.		16 hrs	$4,672
Orientation Presentation and Interviews	10 days	312 hrs	$75,144
Schumaker Patricia H.		24 hrs	$7,008
Schumaker Dennis J.		24 hrs	$7,008
Bakula John		24 hrs	$6,552
Burgess Lee		24 hrs	$6,552
Guggenmoos Siegfried		24 hrs	$6,552
Laycock D Kerry		24 hrs	$6,552
Johnson Eugene		24 hrs	$6,552
Murphy Martin J.		24 hrs	$6,552
Skeer Martin		24 hrs	$6,552
Rosenkoetter Robert		24 hrs	$6,552
Stopar Gail E.		24 hrs	$3,480
Kain Jaye		24 hrs	$1,680
Sunid Hachin		24 hrs	$3,552
Prepare Draft Work Plan	5 days	176 hrs	$45,408
Schumaker Patricia H.		16 hrs	$4,672
Schumaker Dennis J.		16 hrs	$4,672
Bakula John		16 hrs	$4,368
Burgess Lee		16 hrs	$4,368
Guggenmoos Siegfried		16 hrs	$4,368
Laycock D Kerry		16 hrs	$4,368
Johnson Eugene		16 hrs	$4,368
Murphy Martin J.		16 hrs	$4,368
Skeer Martin		16 hrs	$4,368
Rosenkoetter Robert		16 hrs	$4,368
Kain Jaye		16 hrs	$1,120
First Progress Meeting	1 day	16 hrs	$4,672
Schumaker Patricia H.		8 hrs	$2,336
Schumaker Dennis J.		8 hrs	$2,336
Final Work Modifications	3 days	16 hrs	$4,672
Schumaker Patricia H.		8 hrs	$2,336
Schumaker Dennis J.		8 hrs	$2,336

Exhibit VI-5
Step II – Detailed Review and Analysis Work Plan Hours by Work Task

Work Loaded Tasks From Schedule	Duration	Total Hours	Total Cost
Step II - Detailed Review and Analysis	150 days	3,100 hrs	$861,500
Work Package I - Strategic Planning	85 days	1,020 hrs	$283,020
Corporate Mission, Objectives, Goals, and Planning	85 days	240 hrs	$67,040
Schumaker Dennis J.		80 hrs	$23,360
Burgess Lee		160 hrs	$43,680
Long-term Load Forecasting	85 days	340 hrs	$94,340
Schumaker Dennis J.		80 hrs	$23,360
Johnson Eugene		120 hrs	$32,760
Skeer Martin		140 hrs	$38,220
Long-term System Planning	85 days	440 hrs	$121,640
Schumaker Dennis J.		80 hrs	$23,360
Bakula John		80 hrs	$21,840
Guggenmoos Siegfried		160 hrs	$43,680
Murphy Martin J.		80 hrs	$21,840
Rosenkoetter Robert		40 hrs	$10,920
Work Package II	150 days	640 hrs	$178,520
Supply Procurement	85 days	320 hrs	$88,880
Schumaker Dennis J.		80 hrs	$23,360
Johnson Eugene		120 hrs	$32,760
Murphy Martin J.		120 hrs	$32,760
Capital and O & M	85 days	320 hrs	$89,640
Schumaker Patricia H.		120 hrs	$35,040
Rosenkoetter Robert		200 hrs	$54,600
Work Package III	85 days	800 hrs	$222,200
Program and Project Planning and Management	85 days	400 hrs	$113,000
Schumaker Patricia H.		120 hrs	$35,040
Schumaker Dennis J.		80 hrs	$23,360
Murphy Martin J.		80 hrs	$21,840
Rosenkoetter Robert		120 hrs	$32,760
Workforce/Resource Utilization	85 days	400 hrs	$109,200
Bakula John		120 hrs	$32,760
Laycock D Kerry		160 hrs	$43,680
Murphy Martin J.		120 hrs	$32,760
Work Package IV	85 days	640 hrs	$177,760
Performance and Results Measurement	85 days	640 hrs	$177,760
Schumaker Patricia H.		80 hrs	$23,360
Schumaker Dennis J.		80 hrs	$23,360
Bakula John		40 hrs	$10,920
Burgess Lee		80 hrs	$21,840
Guggenmoos Siegfried		40 hrs	$10,920
Laycock D Kerry		80 hrs	$21,840
Johnson Eugene		40 hrs	$10,920
Murphy Martin J.		80 hrs	$21,840
Skeer Martin		40 hrs	$10,920
Rosenkoetter Robert		80 hrs	$21,840

Exhibit VI-6
Step III – Draft and Final Report Preparation Work Plan Hours by Work Task

Work Loaded Tasks From Schedule	Duration	Total Hours	Total Cost
Step III - Draft and Final Report Preparation	70 days	888 hrs	$183,216
Draft Report Compilation	25 days	560 hrs	$125,840
Schumaker Patricia H.		120 hrs	$35,040
Schumaker Dennis J.		120 hrs	$35,040
Murphy Martin J.		120 hrs	$32,760
Stopar Gail E.		120 hrs	$17,400
Kain Jaye		80 hrs	$5,600
Final Report Preparation	15 days	328 hrs	$57,376
Schumaker Patricia H.		64 hrs	$18,688
Schumaker Dennis J.		64 hrs	$18,688
Stopar Gail E.		80 hrs	$11,600
Kain Jaye		120 hrs	$8,400

Exhibit VI-7
Workshop Hours by Work Task

Work Loaded Tasks From Schedule	Duration	Total Hours	Total Cost
Workshop Training Program	185 days	184 hrs	$48,808
Project Management and Administration Processes	5 days	48 hrs	$10,464
Schumaker Patricia H.		16 hrs	$4,672
Schumaker Dennis J.		16 hrs	$4,672
Kain Jaye		16 hrs	$1,120
Strategic Planning	5 days	32 hrs	$9,040
Schumaker Patricia H.		8 hrs	$2,336
Schumaker Dennis J.		8 hrs	$2,336
Burgess Lee		8 hrs	$2,184
Johnson Eugene		8 hrs	$2,184
Operational Planning	5 days	40 hrs	$11,224
Schumaker Patricia H.		8 hrs	$2,336
Schumaker Dennis J.		8 hrs	$2,336
Johnson Eugene		8 hrs	$2,184
Murphy Martin J.		8 hrs	$2,184
Rosenkoetter Robert		8 hrs	$2,184
Operational Execution	5 days	32 hrs	$9,040
Schumaker Patricia H.		8 hrs	$2,336
Schumaker Dennis J.		8 hrs	$2,336
Laycock D Kerry		8 hrs	$2,184
Murphy Martin J.		8 hrs	$2,184
Performance Measurement and Reporting	5 days	32 hrs	$9,040
Schumaker Patricia H.		8 hrs	$2,336
Schumaker Dennis J.		8 hrs	$2,336
Burgess Lee		8 hrs	$2,184
Laycock D Kerry		8 hrs	$2,184

Exhibit VI-8
Project Management and Administration Work Plan Hours by Work Task

Work Loaded Tasks From Schedule	Duration	Total Hours	Total Cost
Project Management and Administration	280 days	1,080 hrs	$132,000
Project Management	14 mons	240 hrs	$70,080
Schumaker Patricia H.		120 hrs	$35,040
Schumaker Dennis J.		120 hrs	$35,040
Project Administration	14 mons	840 hrs	$61,920
Kain Jaye		800 hrs	$56,000
Sunid Hachin		40 hrs	$5,920

Various detailed (oversized) worksheets are contained in *Appendix B* as backup materials to the summary information contained in this chapter.

Schumaker & Company consultants would be available for testimony at the conclusion of the project, if necessary, at our standard billing rates.

Travel Expenses/Supplies and Materials Expenses

All travel and supplies and materials expense are included in our fully loaded billing rates. In conducting these investigations, approximately 60% of the Schumaker & Company project team's hours will be spent on-site. Travel expenses have been estimated based on this level of on-site involvement. In calculating estimated supplies and materials costs, the assumption has been made that National Grid will provide office space, telephones, and access to copying and fax services while our project team consultants are on-site. Our price includes provision of the following:

- Electronic copies of the task reports and draft reports, and 10 copies of the final report
- Copying and miscellaneous supplies
- Communications, including telephone, overnight freight, postage, and facsimile transmission while not on-site

Our normal procedure for all task and draft reports is to transmit an electronic version of the report, which can be printed locally and any necessary copies made for distribution from that local copy. The costs for all task draft reports and draft reports (which are transmitted in electronic form), as well as the cost of printing 10 hardcopies of the final report, which are to be provided to the Commission. If Staff determines that the consultant should provide additional printed copies of the final report, the consultant will be reimbursed for its cost of printing these additional copies.

On-Site Space

The consultant team will require approximately 500 square feet of office space, with three to four desks (or equivalent table space) – an unused conference room would be sufficient, two locking file cabinets, and one additional table for setting up a printer, which we will provide. We will also require access to a copier and a fax machine while on-site.

We will need high speed Internet access with the capability of establishing a virtual private network (VPN) connection to our office network. This can either be provided through a connection to the utility's LAN with a firewall that permits VPN connections or through a totally separated high speed connection to the Internet (DSL or fractional T1).

Schumaker & Company will use our own laptops and will provide a portable printer at any job site, if appropriate. As a result, the office space provided will need to be secure, so that consultants can leave their equipment and printer overnight.

C. Invoicing Procedures

Schumaker & Company normally submits a semi-monthly invoice for fees and expenses associated with a project with a copy of the monthly progress report attached (sent the end of the month only). The invoice will include the following:

- Professional fees are determined by multiplying the time spent by the consultant on these investigations during the reporting period by the individual's professional billing rate.
- Travel expenses are included in our fully loaded billing rates
- Services and materials are included in our fully loaded billing rates.

We ask that payment be made via ACH direct deposit within 30 days. Our accounting records are available in our Ann Arbor office for inspection and audit.

VII. Qualifications of the Firm

A. Qualifications of the Consulting Firm

Schumaker & Company is a management consulting and professional services firm committed to assisting utilities and telecommunications firms, state and local governments, and companies in the manufacturing and service industries.

Firm Background

Since our inception as a Michigan corporation in 1986, we have continually expanded our scope of services. Currently, our consultants provide expertise in strategy, management and operations assessments and reviews, business process reengineering and quality improvement, project management and quality assurance, technology implementation, and competitive assessments and customer surveys. We are an employee-owned firm, and a certified woman-owned business in Michigan, Pennsylvania, New Jersey, North Carolina, California, Illinois, Delaware, City of Detroit (Michigan), and Wayne County (Michigan). To better support our national client base, Schumaker & Company maintains offices in four strategic locations across the country, specifically:

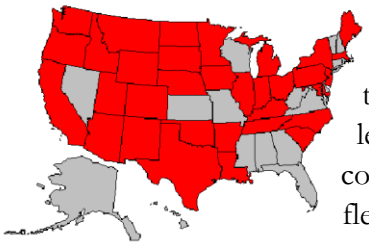
Managing Change,
Defining Solutions

Schumaker & Company is results-oriented – our goal is to bring about practical improvement, not propose academic theoretical scenarios. We focus on the implementation of solutions. We have a dual perspective: determining the right solutions (based on objective analysis) and a framework to get from here to there; in other words, a way to manage the change.

Our People

Schumaker & Company has a unique blend of functional knowledge and hands-on management experience. Our senior consultants have extensive experience in management, operations, and technology consulting in a project environment. They typically hold advanced degrees and average more than 25 years of professional experience. Our project team is expert in the technical aspects of electric, gas, water, and telecommunications operations, as well as relevant regulatory proceedings. Many of our consultants are *Certified Management Consultants* (CMCs),[2] *Project Management Professionals* (PMPs),[3] *Certified Public Accountants* (CPAs),[4] *Professional Engineers* (PEs), *Microsoft Certified Professionals* (MCPs),[5] *Microsoft Certified System Engineers* (MCSEs), or *Microsoft Certified Systems Developers* (MCSDs). Schumaker & Company is also a *Microsoft Certified Partner*. This combined knowledge base of technology, along with operations and management issues, makes our firm uniquely qualified for the most complex and demanding assignments. Our corporate culture is fast moving, technologically advanced, and readily adapted to meet a variety of client needs.

Our consultants have conducted comprehensive and focused management and operations assessments of organizations nationwide. Schumaker & Company has performed consulting assignments for clients in 33 states. Our clients benefit from the competence, knowledge, and attention of a core team of highly skilled professionals who work well together. This structure enables us to offer the recognized expertise, senior-level staffing, and administrative support characteristic of larger firms, without comparable overhead. Additionally, we provide the important benefits of flexibility and attentiveness that only smaller firms can offer.



A detailed description of the experience and qualifications for all consultants who will be assigned to this project are included in *Chapter V – Consulting Staff Organization*.

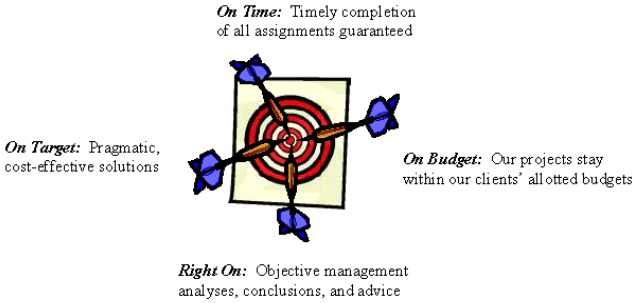
Ability to Respond Rapidly

At Schumaker & Company, we take pride that we can provide rapid senior management response to a wide variety of client needs. Our culture, size, and use of the latest technology give us a flexibility that our competitors envy. Our consultants and staff have a depth and breadth of experience that will allow us to provide our clients with a final work product in a reasonable time frame and commit to meeting our clients' timeframe, not ours. In addition, we have demonstrated our ability to respond creatively to challenges or obstacles that arise during the course of any project.

[2]/ "CMC" and CMC logo are certification marks of the Institute of Management Consultants (IMCUSA) that are registered in the US and other nations.
[3]/ The PMI logo is a trademark of the Project Management Institute (PMI) that is registered in the United States and other nations. "PMP" and PMP logo are certification marks of PMI that are registered in the US and other nations.
[4]/ The CPA logo is a service mark of the American Institute of Certified Public Accountants (AICPA); CPAs are certified by their respective Board of Accountancy organization in the state where s/he is registered.
[5]/ The MCP, MCSE, and MCSD certifications are designations of Microsoft Corporation.

Managing Change, Defining Solutions

We work closely, yet unobtrusively, with management to identify specific opportunities for improvement and develop solutions. We develop practical implementation plans to help manage change and achieve the desired improvements. We are committed to delivering results that are:



Our clients retain Schumaker & Company, often for multiple assignments, due to the excellent firm credentials that we bring to projects. These credentials are briefly described in the following paragraphs.

We use technology to enable a fast and flexible response to client needs. Recently, for example, one of our clients experienced several delays before the start of a project; despite these delays, the end date was mandated and could not be postponed. We responded by developing a database application to expedite data gathering/reporting, and accomplished the project within the mandated timeframe. Also, we achieved these results using less staff than other firms proposed. We pride ourselves on our ability to respond creatively to challenges and obstacles that often arise during the course of any project.

We commit to meeting the client's timeframe, not ours. Many of our assignments have deadlines that are mandated by legislation or regulatory agencies and must be met, regardless of the effort involved. Staff departments find themselves bound by obligations created by a regulatory process into which they had no input. You have a job to do and deadlines to meet. Our role is to relieve that time pressure, not to create additional workload for you.

We deliver value-based recommendations to clients. As part of our utility consulting studies, we focus on issues of cost effectiveness and level of service provision and how these issues will impact the company, ratepayers, and other stakeholders. We quantify costs and benefits (both one-time and recurring) of various actions and alternatives under consideration. We also discuss non-quantifiable benefits and costs as part of our recommendations and describe both actual and potential costs and risks to the organization. Our recommendations are always based on sound findings, conclusions, and supporting analyses that clearly demonstrate how benefits outweigh costs and risks. As a result, nearly 100% of our recommendations have been accepted and implemented by our clients.

Our services are cost-effective. Our project teams are comprised of seasoned executives and senior consultants who bring extensive management and industry experience to bear in developing creative, yet practical, solutions to problems. We use technology to leverage our staff's time, and keep the firm's

administrative burden low, so that our clients are not paying for excessive overhead. Our staff is comprised of seasoned talent, which ensures that our clients are not paying for consultants to learn at the client's time and expense.

We are unwaveringly objective. In all our dealings with clients, we maintain independence and objectivity. This allows us to provide the right solution to the identified problems at hand. This ability to "step back" from the situation and view it without organizational or political bias often allows us to develop simple, yet effective, solutions – solutions that may not be readily apparent to those deeply entrenched in the daily operations of the organization.

Exhibit VII-1 presents a summary of the advantages that a Schumaker & Company project team has.

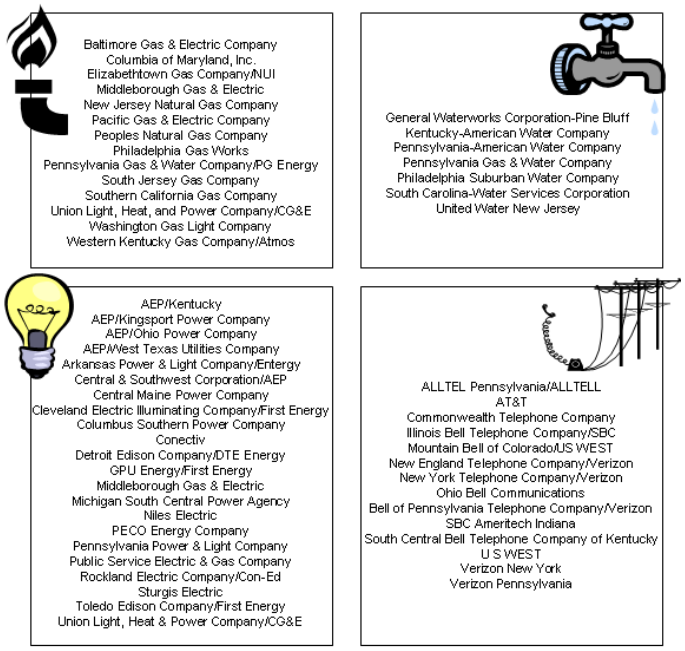
Exhibit VII-1
Schumaker & Company Areas of Expertise

Extensive Utility Industry Experience	Our team has worked with more than 100 utility industry clients. Assignments have involved all sectors of the utility industry, including work for utilities, regulators, municipalities, and industry and professional associations. We fully appreciate the legal, regulatory, financial, and cultural factors that complicate planning and operations in the utility industry's competitive environment.
Extensive Regulatory Experience	We have a clear understanding of the purpose and value of the regulatory process, as well as extensive experience in conducting commission assignments, which gives us a keen appreciation for the multifaceted needs of regulators.
Proven Methodologies	Through our broad experience with management, operations, and technology processes, we have developed proven methodologies to identify opportunities for improvement and develop recommendations specifically targeted at improving business processes and systems.
Professional Staff	Our consultants consistently meet the highest standards of professional competence and certification, and each is expert in multiple functional areas.
Management Perspective	We bring a sound, comprehensive management perspective to each project and, accordingly, formulate viable recommendations that significantly improve overall effectiveness short- and long-term.
Operations Expertise	Our consultants have prior backgrounds as managers and staff in many different kinds of utility operations, which allows us to bring real-life experience to our consulting projects.
Information Technology Expertise	Because of our strong expertise in information technology, we can incorporate the latest technology-based capabilities into our recommendations and ensure that our clients achieve the maximum leverage on their information technology investments.
Cross-Functional Experience	As our consulting practice is also involved with industries other than the utility sector, we bring advanced methodologies, techniques, and systems from those industries to our utility clients.
Outstanding Consulting Work	As a consulting firm and as individuals, we have demonstrated a commitment to work known for its high quality and objectivity, which is completed on time and on budget.
Implementation Success	We have an enviable record of correctly quantifying expected benefits of recommendations and securing agreement to implement them, followed by successful implementation in a timely manner.
Expert Testimony	Several project team members have provided expert testimony before public utility commissions.
Client References	We believe the most reliable measure of a consulting firm's performance is the testimony of former clients. We invite all prospective clients to contact our references for feedback on our strong commitment to independent and accurate analyses and viable recommendation development.

Prior Utility Experience

We have conducted comprehensive and focused management, operations, and technology studies at the request of public and municipal utilities, telecommunications firms, state and local governmental agencies, manufacturing firms, and service organizations in 33 states.

We understand the needs of our utility sector clients. Our success has been based on the breadth and depth of experience that we bring to our utility assignments. Our extensive experience with utility clients gives us an edge in understanding and meeting their unique needs. We understand the often complex roles and relationships between key stakeholders and the impact of these relationships during project execution. We understand the importance of multi-stakeholder input and involvement. We know the cost-effectiveness and level of service concerns that both utility and regulatory officials face, and the potential public visibility that can follow. We believe that quick response and early results are valuable in such situations. We know how to monitor and review practices and processes without disrupting the conduct of normal business or becoming an intrusive force. Our consultants have performed a wide variety of assignments ranging from large, comprehensive studies to small, focused studies, as well as implementation projects. Our project management team is extremely familiar with efficient and effective practices for directing and managing such efforts.



Schumaker & Company has served numerous clients in different areas of the utility industry.

Collectively combining our perspectives ensures successful results for clients. Many of our projects have dealt specifically with technology itself; other projects focused on how technology is integrated into the work environment. Our ability to combine both perspectives ensures successful results for our clients. Our role has been to work closely with management to assess program, functional, or technical validity; identify specific opportunities for improvement; and develop practical plans for implementation. A survey of our clients reveals that we have successfully fulfilled this role by working closely, yet unobtrusively, with management.

Clients are satisfied with the results we deliver. In recent years, Schumaker & Company has completed more than 100 major management, operations, and technology projects in the utility industry. Approximately 80% of our projects are for clients with whom we have previously worked. Their willingness and desire to repeatedly work with our firm indicates their satisfaction with our work.

Exhibit VII-2 contains a summary of the specific expertise that Schumaker & Company brings to all of its utility assignments.

Exhibit VII-2
Schumaker & Company Utility Expertise

Regulatory Issues	Examination and evaluation of regulatory practices for public service commissions, including response to changes from competitive entry, technology introduction, service substitution, conservation, cost of service, and customer demands.
Management and Operations Assessments	Evaluation of the overall effectiveness of management, organizational structure, information and work flow, decision processes, policies and practices, and major operating procedures for all aspects of the utility or company to streamline operations and optimize efficiency. Assessment of individual functional units to identify opportunities for improvement through business process re-engineering.
Performance Measurement	Definition and quantification of accurate performance indicators. This process involves establishing acceptable benchmarks for evaluation and providing a continuing vehicle to track performance.
Affiliated Transactions	Investigation and assessment of the processes and methodologies by which affiliated relationships and intercompany allocations are calculated, billed, reported, and evaluated.
Engineering & Construction	Examination, evaluation, and implementation of engineering and construction management processes. Implementation of our recommendations has proven to result in increased effectiveness, shortened lead times, and improved interfaces.
Fuels Management	Analysis and development of procurement practices and fuel requirements planning. Ensure proper contractual, transportation, receiving, storage, and inventory logistics for gas, coal, oil, and uranium.
Information Systems and Technology Optimization	Assessment of technology and systems deployment, maintenance, support, and operations groups to create recommendations to streamline operations and reduce costs. Assistance in strategic migration path engineering by developing and implementing long-range strategic technology and systems plans. Planning, design, development, and implementation of information systems. Assistance in selection of computer and telecommunications hardware and software.
Customer Service	Evaluation of the provision of customer service to the utility's ratepayers, especially in relation to how effectively the needs of the customer for information and problem resolution are handled.
Power Plant Operations	Review and assessment of electric energy production and delivery systems, such as load forecasting, power production and dispatch, purchase and sale, and power plant operations and maintenance.
Power Pool Operations	Assessment of the economic purpose, operating procedures, benefits and problems, and strategic direction associated with major U.S. power pools.
Work Force Management	Design and implementation of comprehensive programs to improve workforce productivity, reduce labor costs, and improve departmental cooperation. Enhance decision-making and shorten lead times for business processes.
Technical Assessments	Assessment, design, and implementation of management practices, procedures, and systems in facility operations and maintenance, often extending to customer service, meter reading, transmission and distribution, power plants, fuel and natural gas procurement, engineering and construction activities, licensing, quality assurance, physical plant operations, research and development, environmental affairs, and workforce management.
Human Resources	Review of functional staffing levels in relation to assigned responsibilities and industry benchmarks. Investigation and assessment of the compensation levels of salary grades and hourly positions, including base rate, perquisites, benefits, and short- and long-term incentives.
Nuclear	Evaluate nuclear power plant operations, such as operating characteristics, historical and current industry factors, NRC requirements and concerns, and need for economic dispatch of units. Determine the relative level of management prudence and overall effectiveness as it relates directly to nuclear operating facilities and programs.

Typical Projects

Our firm and staff have been involved in numerous management and operations review, planning, process review, and technology implementation projects. Additionally, we have provided project management services. Our role has been to work closely with utilities and regulatory entities to optimize operations through a comprehensive review of processes, people, and technology within various organizations. Examples of the types of services that we typically provide include:

- Management and operations reviews and assessments
- Competitive assessments and customer surveys
- Strategic and operations planning
- Business process reengineering and quality improvement programs development
- Performance measurement development
- Project management and quality assurance services
- Project management and work management systems implementation assistance
- Information technology planning and optimization

When performing these services, our consultants perform the following activities:

Management and Operations Reviews and Assessments – We evaluate the overall effectiveness of a utility's management, organizational structure, information and work flow, decision processes, and major operating policies and procedures as a means by which to streamline operations, increase efficiency, and optimize profit potential. During this type of study, we also perform assessments of individual functional units to identify opportunities for improvement. In addition, these studies often focus on how information technology can be successfully integrated into the work environment.

Competitive Assessments and Customer Surveys – We develop and analyze results from customer surveys to assist management in evaluating the customer's perception of the effectiveness and efficiency of a utility. We also perform competitive assessments to assist the utility in benchmarking their operations against those of similar organizations. Studies such as these allow the organization to view their operations through the eyes of the recipients of their services, as well as their peers.

Strategic and Operations Planning – We assist clients through strategic and operations planning processes that are designed to provide results. Generally, one of the most important process elements involves gathering key participants who work together to develop and agree on all that a strategic plan entails. It is typically best that key participants meet off-site where they can focus their complete and undivided attention on the identification of underlying assumptions; mission; and strengths, weaknesses, opportunities, and threats (SWOT) analysis. These sessions lead to development of specific goals and objectives, commitments to action, timetables, and the foundation for comprehensive roll-out plans.

Business Process Reengineering and Quality Improvement Programs Development – We work together with a utility to evaluate its overall effectiveness or the effectiveness of a particular unit within

its organization, including a review of policies, procedures, activities, staffing levels, performance measurements, annual expenditures and capital expenditures. We provide assistance in defining and critiquing specific business processes, flow of work activities, strategies, outputs and levels of customer service, and in developing recommendations for improvements through the use of process analysis teams to identify redundant or unneeded activities, bottlenecks in processes, etc.

Performance Measurement Development – We define and quantify fundamental indicators by which management can accurately measure performance. This process involves establishing acceptable benchmarks to evaluate management and providing a vehicle for continued performance tracking.

Project Management and Quality Assurance Services — We provide dedicated, professional project managers and quality assurance managers who can direct the undertaking and implementation of large, comprehensive projects involving people, process, and technology. We subscribe to the Project Management Institute's *Project Management Body of Knowledge*. Our staff is skilled in the latest project management tools, techniques, and methodologies for addressing key knowledge areas, such as integration management, scope management, time management, cost management, quality management, human resource management, communications management, risk management, and procurement management, as a means to keeping projects on time and within budget while at the same time upholding the quality level desired by management.

Project Management and Work Management Systems Implementation Assistance – We select and implement computerized project management or work management systems. Results include increased productivity, improved coordination between departments and overall decision making, shortened lead times, and increased profitability. We incorporate the identification of performance indicators, conduct orientation sessions, develop systems and procedures, and train personnel.

Information Technology Planning and Optimization – When our clients are concerned about the overall effectiveness of management, organizational structure, technical environment, or major operating policies and procedures with regard to information technology or data processing functions, we perform assessments of their development, maintenance, support and operations activities; recommend alternatives; and assist in the implementation of changes as a means of streamlining operations and reducing costs. We assist our clients in determining the basic direction of their information systems and technology plans and ensuring that they align with the organization's overall strategies and plans. We help to determine the information needs of different levels of users as input to planning, designing, developing, and deploying systems and applications.

Firm Stability

Schumaker & Company has experienced continuous growth resulting in a level of financial viability and resource acquisition that allow us to take on large projects. We have a large number of consultants and associates available for staffing projects. We have always been able to perform our clients' projects in a

comprehensive and timely manner. Our projects have typically ranged from a one-person, $5,000, 50-hour effort to a 20-person, $1 million, 9,000-hour effort. Most of our projects range from $200,000 to $1 million in billings. Our projects often involve several consultants over many months. We have the requisite project management methodologies in place to effectively control such large efforts.

Testimony by Schumaker & Company Staff

Schumaker & Company staff members have provided expert testimony to a number of state commissions, including:

Year	Commission	Subject
1993	Maine	Focused Management Audit of Central Maine Power Company
	Illinois	Focused Management Audit of the Affiliated Transactions of Illinois Bell Telephone Company
1992	Philadelphia	Management Audit Follow-up of the Philadelphia Gas Works
	Arkansas	Management Audit of General Waterworks of Pine Bluff
	Ohio	Fuel-Related Practices of Cleveland Electric Illuminating
1991	Ohio	Fuel-Related Practices of Cleveland Electric Illuminating
	Ohio	Fuel-Related Practices of Toledo Edison Company
1990	Ohio	Fuel Procurement Practices of Columbus Southern Power Company
	Ohio	Fuel Procurement Practices of Ohio Power Company
	Maine	Customer Service System Project Implementation of Central Maine Power Company
1989	Ohio	Fuel Procurement Practices of Ohio Power Company
1986	Ohio	Fuel Procurement Practices of Cleveland Electric Illuminating
1984	Ohio	Fuel Procurement Practices of Toledo Edison
	Ohio	Fuel Procurement Practices of Cleveland Electric Illuminating
1983	New York	Allowable Costs of Shoreham Nuclear Plant
1982	Wisconsin	Cost Overrun of Pleasant Prairie Project
1981	Pennsylvania	Formation of GPU Nuclear Corporation

Prior Experience

The following table provides a partial list of our most relevant projects for state and local governments, telecommunications firms, utilities, service companies, and manufacturing firms with which our consultants have worked during the last several years. Descriptions of selected projects follow. We urge you to call the references in this selected projects list to obtain corroborating feedback regarding our strong commitment to independent objectivity and superior results.

Consultant Representative Assignments

ELECTRIC, GAS, & WATER UTILITIES

AEP/Kentucky
AEP/Kingsport Power Company
AEP/Ohio Power Company
AEP/West Texas Utilities Company
American Natural Resources
Arkansas Power and Light Company/Entergy Corporation
Baltimore Gas & Electric Company
Central Maine Power Company
Cincinnati Gas and Electric Company (CG&E)
Cleveland Electric Illuminating Company
Columbia of Maryland, Inc.
Columbus Southern Power Company
Conectiv
Consumers Power Company
Cooperative Power Association
Dayton Power and Light Company
Detroit Edison Company
Electricity Supply Board of Ireland
Elizabethtown Gas Company/NUI Corporation
Empire Electric District Company
Enbridge
Florida Power and Light Company
Georgia Power Company
General Waterworks Corporation (Pine Bluff)
GPU Energy
Illinois Electric Co., Illinois Power Co.
Iowa-Illinois Gas & Electric Company
Jacksonville Electric Authority
Jersey Central Power and Light Company
Kentucky-American Water Company
Metropolitan Edison Company
Michigan South Central Power Agency
Michigan Wisconsin Pipeline
Missouri Public Service Company
Nebraska Public Power District
New Jersey Natural Gas Company
New Orleans Public Service Inc.
Niagara Mohawk Corporation
Pacific Gas and Electric Company
PECO Energy Company
People's Natural Gas Company
Pennsylvania-American Water Company
Pennsylvania Gas & Water Company
Pennsylvania Power & Light Company
Philadelphia Gas Works
Philadelphia Suburban Water Company
Public Service Electric and Gas Company
Rockland Electric Company
Sierra Pacific Power Company
Springfield City Utilities
Southern California Edison Company

ELECTRIC, GAS, & WATER UTILITIES, CONTINUED

Southern California Gas Company
South Jersey Gas Company
Sunflower Electric Cooperative
Tennessee Valley Authority
Toledo Edison Company
Union Electric Power Company
Union Light, Heat and Power Company/CG&E
United Water New Jersey
Utilicorp United, Inc.
Washington Gas Light Company
Water Services Corporation
Western Kentucky Gas Company
Wisconsin Electric Power Company

TELECOMMUNICATIONS COMPANIES

ALLTEL, Inc.
American Telephone & Telegraph Company (AT&T)
Bell of Pennsylvania Telephone Company
Commonwealth Telephone Company
Contel (Illinois and Texas)
Illinois Bell Telephone Company
Mountain Bell of Colorado
New England Telephone Company
New York Telephone Company
Ohio Bell Communications
SBC Ameritech Indiana
South Central Bell Telephone Company of Kentucky
United Telephone of Texas
U S WEST
Verizon New York
Verizon Pennsylvania

STATE GOVERNMENT AGENCIES

Alaska Regulatory Commission
Arizona Corporation Commission, Utilities Division
Arkansas Public Service Commission
California Public Utilities Commission
Colorado Public Utilities Commission
Idaho Public Utilities Commission
Illinois, Illinois Commerce Commission
Indiana Utility Regulatory Commission
Iowa Utilities Board
Kansas Corporation Commission
Kentucky Public Service Commission
Maine Public Utilities Commission
Maryland Public Service Commission
Massachusetts Department of Public Utilities
Michigan Commission for the Blind
Michigan Department of Agriculture
Michigan Department of Community Health
Michigan Department of Corrections

Consultant Representative Assignments, Continued

STATE GOVERNMENT AGENCIES, CONTINUED

Michigan Department of Environmental Quality
Michigan Department of Labor
Michigan Department of Management & Budget
Michigan Department of Treasury
Michigan Department. of Consumer & Industry Services
Michigan Family Independence Agency
Michigan Insurance Bureau
Michigan MAIN
Michigan Office of Financial and Insurance Services
Michigan State Hospital Finance Authority
Minnesota Public Utilities Commission
Mississippi Public Service Commission
Montana Public Service Commission
National Transportation Safety Board
Nebraska Public Service Commission
Nevada Public Service Commission
New Jersey Board of Public Utilities
New York Public Service Commission
North Dakota Public Service Commission
Ohio Public Utilities Commission
Oregon Public Utilities Commission
Pennsylvania Public Utility Commission
Public Service Commission of Utah
Public Service Commission of Wisconsin
Public Utility Commission of Texas
South Carolina Office of Regulatory Staff
South Dakota Public Utilities Commission
Synthetic Fuels Corporation
Tennessee Regulatory Authority
Tennessee Valley Authority, Board of Directors
U.S. Air Force - Wright Patterson Air Force Base
U.S. Army, Information Management Offices
Washington Utilities & Transportation Commission
Wyoming Public Service Commission

LOCAL GOVERNMENT AGENCIES

City of Clinton (Michigan)
City of Coldwater (Michigan)
City of Dearborn (Michigan)
City of Detroit (Michigan)
City of Hillsdale (Michigan)
City of Marshall (Michigan)
City of Niles (Michigan)
City of Philadelphia (Pennsylvania)
City of Springfield (Missouri)
City of Sturgis (Michigan)
City of Union City (Michigan)
Michigan South Central Power Agency
Town of Hilton Head Island (South Carolina)
Town of Middleborough (Massachusetts)
Wayne County Airport Authority (Michigan)

MANUFACTURING/DISTRIBUTION FIRMS

Accuma Corporation
A.C. Spark Plug
Amoco Oil
Ann Arbor Plastics
Applied Dynamics International
Bank Building Corporation
Bosquett & Company
Design & Test Technologies
General Motors/Chevrolet & Pontiac Divisions
Griffith Labs
Holcim Corporation
Owens Corning
Rockwell/Eaton AIL

SERVICE COMPANIES

The ABOW Companies
Baltimore Cass Auto Wash
Bank of Montreal
Coopers & Lybrand
Crocker International
C.S. Mott Foundation
E.D.S.
E. F. Hutton
Henry Ford Community College
High Scope Educational Research Foundation
Home Box Office
Intech Leasing
JARC
LaLonde & Co.
Main Hurdman
Manufacturers Hanover Trust
M-CARE
NBD Bank, NA
O'Neal Construction
Servant Publications
Thorondor International

RETAIL FIRMS

Albert's
Busch's Valu Land
Circus World Toy Stores
K-Mart Corporation

ELECTRIC UTILITY ASSIGNMENTS

PECO Energy Company
Philadelphia, Pennsylvania

June 2006 – August 2007

Mr. John Clista
Management Audit Supervisor
Pennsylvania Public Utility Commission
Bureau of Audits, 3rd Floor East
Commonwealth Keystone Building
400 North Street
Harrisburg, PA 17120
(717) 772-0317
jclista@state.pa.us

Mr. Richard A. Schlesinger
Sr. Rate Specialist/Regulatory Process Lead
PECO Energy Company
Regulatory & Governmental Affairs
2301 Market Street S15-2
Philadelphia, PA 19103
(215) 841-5771
rich.schlesinger@peco-energy.com

Assisting the Pennsylvania Public Utility Commission (PUC) staff in a stratified management and operations audit of PECO Energy Company. This audit consisted of three phases. The first phase was a diagnostic review assessing the condition of each functional area or business unit against evaluative criteria or expected business practice. While this review was primarily limited to determining if appropriate management controls, systems and processes are in place, it is of sufficient scope to identify significant problems, if any, requiring additional focused analysis. The second phase was an in-depth analysis of pre-identified areas or issues. These analyses are of sufficient depth to provide specific recommendations for changes together with projected costs and potential dollar savings or other quantifiable benefits, if any. The third phase was an in-depth, focused analysis of two issues (emergency response and GIS) approved by the Bureau of Audits resulting from the diagnostic review.

This assignment involved ten consultants in roughly 4000 hours during a 13-month effort for a total project cost of approximately $843,000.

AEP/Kentucky
Hazard, Kentucky

August 2002 – April 2003

Mr. John Rogness
Kentucky Public Service Commission
211 Sower Blvd., P.O. Box 615
Frankfort, KY 40601
(502) 564-3940 ext 229
jarogness@mail.state.ky.us

Mr. Errol Wagner, Administrator
AEP/Kentucky
101 A Enterprise Drive, P.O. Box 5190
Frankfort, KY 40602-5190
(502) 696-7010
ekwagner@aep.com

Performed an assessment of the reliability of service within AEP/Kentucky's distribution system in its Hazard service territory (a forested mountainous terrain), which has historically experienced a greater number of electric service interruptions than other AEP/Kentucky service areas and, additionally, these interruptions have tended to be longer in duration. This assignment involved six consultants in roughly 700 hours of effort during a 6-month effort for a total project cost of approximately $145,000.

ELECTRIC UTILITY ASSIGNMENTS

New Jersey Board of Public Utilities
Newark, New Jersey

Conectiv
GPU Energy
Public Service Electric & Gas
Rockland Electric

November 2000 – April 2001

Mr. Chris Molner
Principal Utility Mgmt Analyst
New Jersey Board of Public Utilities
Two Gateway Center, 8th Floor
Newark, NJ 07102-5003
(973) 648-7690
molner@bpu.state.nj.us

Assisted New Jersey Board of Public Utilities (BPU) staff in reviewing and monitoring the implementation of recommendations resulting from an investigation of system reliability of New Jersey's electric utilities. Assisted Board staff in the review and investigation of information supplied by the utilities (Conectiv, GPUE, Public Service Electric & Gas Company, Rockland Electric Company) in connection with implementation of the selected recommendations as ordered by the Board. Worked closely with BPU staff in reviewing implementation of recommendations to assist in fulfilling the Board's obligation to assure that, notwithstanding the changes occurring in the electric industry, customers are provided reliable, safe, and adequate service now and in the future, in which particular emphasis was placed on activities to improve and/or maintain CAIDI and SAIDI indicators at acceptable levels, including issues regarding work force management and construction program planning were addressed. Additionally, performed assessments of each utility's system, specifically the distribution system planning and engineering practices, load flow analysis, transmission and substation maintenance practices and procedures, and adequacy of lightning protections. This assignment involved three consultants in roughly 900 hours of effort during a 5-month effort for a total project cost of approximately $221,000.

ELECTRIC UTILITY ASSIGNMENTS

Illinois Commerce Commission
Springfield, Illinois

May 1999 – March 2000

Mr. Ken Kirchner
Consumer Counselor
527 East Capitol Avenue
Springfield, IL 62701
(217) 785-8438
kkirchne@icc.state.il.us

Designed survey to measure customer satisfaction with electric service reliability and quality, clarity of billing, rates, and services. Provided an Electric Service Customer Satisfaction Survey Rules to instruct electric service providers to administer the survey and to understand, interpret, and present its results. Conducted workshops to train electric service providers to implement the customer satisfaction survey. This assignment involved five consultants in approximately 750 hours of effort during a 10-month period for a total project cost of approximately $130,000.

City of Sturgis
Sturgis, Michigan

April 1997 – January 1998

Mr. John Griffith
Department Superintendent
130 N. Nottawa, P.O. Box 280
Sturgis, MI 49091
(269) 659-7204

Performed a management and operations review of various city departments, conducted a customer satisfaction and needs assessment, and developed a strategic plan. Addressed the changes occurring within the electric utility industry and the competitive threats felt by the electric operations department. The effort involved: (1) performing a competitive assessment and benchmarking and (2) surveying customer attitudes to identify issues that required addressing in the strategic plan (3) conducting a management and operations review of the relevant city departments and (4) assisting the electric utility in conducting a strategic planning session. This assignment involved three consultants in approximately 620 hours of effort during a 7-month period for a total project cost of approximately $60,000, with a strategic planning effort undertaken in January 1998.

ELECTRIC UTILITY ASSIGNMENTS

Town of Middleborough Gas & Electric Department
Middleborough,
Massachusetts

December 1996 – February 1998

Mr. James Collins
Mr. James Smith (Retired)
General Manager
Middleborough Gas & Electric Dept.
32 South Main Street
Middleborough, MA 02346
(508) 946-3777

Performed a competitive assessment of the operations of this municipal gas and electric department, which included a management review of all functional areas, benchmarking of major performance indicators in relation to other Massachusetts municipalities and the best practices of other public and investor-owned utilities. Two consultants spent about 300 hours over a four-month period. Subsequently Schumaker & Company has been providing strategic planning and information technology assessment and planning services to this organization. The costs of these projects totaled approximately $150,000.

City of Coldwater Board of Public Utilities
Coldwater, Michigan

November 1996

Ms. Sue Rubley
Mr. Dwight C. Woodman (Retired)
Director
8 West Chicago Street, P.O. Box 469
Coldwater, MI 49036-0469
(517) 279-9531

Developed, performed, and analyzed the results of a customer survey (a follow-up to a survey two years earlier) to assess satisfaction with the city utility and other city services. Three consultants worked about 200 hours over three months for a total project cost of approximately $25,000.

Michigan South Central Power Agency
Litchfield, Michigan

December 1995 – June 1997

Mr. Glenn White
Mr. Jack Bierl
720 Herring Road
Litchfield, MI 49252
(517) 542-2346

Developed and implemented a relationship development (key accounts) program aimed at the larger commercial and industrial customers. We developed an ongoing communication/public relations program for the agencies, councils, and member communities. This project involved four consultants in approximately 1,600 hours of effort during an 18-month period, totaling about $130,000, with follow-up assignments having been subsequently performed.

ELECTRIC UTILITY ASSIGNMENTS

Kingsport Power Company
Kingsport, Tennessee

February – September 1996

Mr. William H. Novak
(formerly of Tennessee Regulatory Authority)
now with Atlanta Gas Light
(404) 584-4000
Tennessee Regulatory Authority
460 James Robertson Parkway
Nashville, TN 37243-0505
(800) 342-8359

Ms. Judy Gallo
Senior Rate Coordinator
American Electric Power Service Corporation
1 Riverside Plaza
28th Floor, Rate Department
Columbus, OH 43215
(614) 578-2209

Performed a comprehensive management review of an American Electric Power (AEP) operating company. The review included evaluations of customer service, electric operations, and many of the administrative, financial, and technology support activities provided by AEP Service Corporation. Examined the methods used by AEP Service Corporation and Appalachian Power Company (another AEP operating company) for billing for services provided to Kingsport Power Company. This project, representing $96,400, involved five consultants in 700 hours of effort over four months.

Michigan South Central Power Agency
Litchfield, Michigan

December 1994 – December 1995

Mr. Jack Bierl
720 Herring Road
Litchfield, MI 49252
(517) 542-2346

Assisted in developing a strategic plan for this power agency, owned by five Michigan municipalities: Coldwater, Clinton, Hillsdale, Marshall, and Union City. The plan addressed the changes within the electric utility industry and the competitive threats felt by the agency. Performed a competitive assessment and benchmarking of the power agency and surveyed customer attitudes (mail survey to residential and non-residential customers) to identify issues for the strategic plan. Four consultants spent about 600 hours over a 12-month period on these assignments for a project total of approximately $50,000.

ELECTRIC UTILITY ASSIGNMENTS

A 1935 Public Utility Holding Company
Confidentiality Requested

May 1995 – September 1995

Reviewed charges for services provided by a public utility holding company to its affiliates. The review was used to determine whether the services were reasonable, necessary, non-duplicative and calculated in compliance with appropriate allocation formulas. This four-month project involved five consultants and approximately 1,000 hours for a total cost of approximately $150,000.

Hillsdale Utilities Department
Hillsdale, Michigan

November 1994

Mr. Rick Rose
45 Monroe Street, P.O. Box 271
Hillsdale, MI 49242-0271
(517) 437-3387

Developed a strategic plan that included a mission statement; identified the organization's strengths, weaknesses, opportunities, and threats; and formulated long-term goals and objectives.

Pennsylvania Power & Light
Allentown, Pennsylvania

February 1993 – June 1994

Mr. John Clista
Bureau of Audits
Pennsylvania Public Utility Commission
400 Third Street
Commonwealth Keystone Bldg.,
P.O. Box 3265
Harrisburg, PA 17105-3265
(717) 772-0317

Mr. William Hecht
Chairman, President & CEO
Pennsylvania Power & Light Company
Two North Ninth Street
Allentown, PA 18101-1179
(610) 774-5151

Performed a stratified management review, beginning with an initial diagnostic review of all functional areas in the PP&L organization. This was followed by in-depth investigation of 23 issues pre-identified by the PAPUC and PP&L, including affirmative action/EEO programs; salaries, wages, and benefits; staffing plans and levels; corporate-wide information technology; nuclear de-commissioning; power plant materials management; a competitive assessment of in-house construction; and maintenance workforces. Found, for example, that PP&L had been unable to achieve its objectives for improving its information technology and systems. Made 18 major recommendations were made, including detailed steps necessary for bringing technology up-to-date. PP&L accepted 153 of 156 recommendations and within a month implemented 30 and expected to complete another 50 within six months. Total estimated savings and/or increased efficiency associated with our recommendations exceeded $70 million (annually) and $40 million (one-time). This 17-month engagement involved over 20 consultants and 9,000 to 10,000 hours for a total project cost of approximately $911,300.

ELECTRIC UTILITY ASSIGNMENTS

Central Maine Power Company
Augusta, Maine

February – September 1993

Ms. Joanne Steneck
Maine Public Utilities Commission
242 State Street
State House Station 18
Augusta, ME 04330-6845
(207) 287-3831
joanne.steneck@maine.gov

Mr. David Flanagan (Retired)
President
Central Maine Power Company
83 Edison Drive
Augusta, ME 04336
(207) 623-3521

Evaluated CMP's organizational structure and staffing, executive compensation, customer service operations, management efficiency, and cost controls. Our findings and conclusions were referenced when Commissioners granted only 31% of $83 million dollars requested. Savings we identified were credited for $26 million of the reduction. Following the rate decision, CMP's Board approved an integrated cost-containment plan (with capital and operating budget reductions and a 42% cut in its quarterly dividend); the restructuring saved $10 million in its first year. CMP emerged a stronger, more viable competitor, on a course to permanent improvement in all aspects of business management. This seven-month engagement involved seven consultants and about 2,500 hours for a total project cost of approximately $242,400.

Toledo Edison Company
Cleveland Electric Illuminating Company
Columbus, Ohio

Phase I: August 1991 – December 1991
Phase II: August 1992 – December 1992

Mr. Ray Strom
Project Coordinator
Public Utilities Commission of Ohio
180 East Broad Street
Columbus, OH 43215-3793
(614) 466-7534

Ms. Eileen Mikkelson
Manager
Regulatory Affairs and Revenue Requirements
Centerior Energy
6200 Oak Tree Boulevard
Independence, OH 44131
(216) 447-2753

Investigated the fuel procurement policies and procedures for fossil and nuclear fuels and provided testimony on the findings and conclusions.

ELECTRIC UTILITY ASSIGNMENTS

Public Service Electric and Gas
Newark, New Jersey

March 1991 – December 1991

Mr. Pete Landrieu
Vice President, Fossil Production
Public Service Electric and Gas Company
80 Park Plaza, P.O. Box 570
Newark, NJ 07102
(201) 430-8195

Assisted in preparing a long-range strategic generation plan. Assessed PSE&G's computer information systems for generation planning and scenario analysis. Reviewed selected scenarios for political and qualitative considerations and prepared a comprehensive presentation for senior management. Two consultants spent approximately 2,000 hours of effort over ten months.

City of Niles Utilities Department
Niles, Michigan

April 1991 – June 1991

Mr. Bernard A. Van Osdale (Retired)
City Administrator
City of Niles
508 East Main Street
Niles, MI 49120
(269) 683-4700

Performed a management and operations review and assisted in developing a long-term action plan. For this 55-person municipal department, we identified potential annual benefits approaching $250,000. This three-month engagement involved four consultants and more than 250 hours of effort.

Arkansas Public Service Commission
Little Rock, Arkansas

April 1991 – February 1992

Ms. Donna Gray
Director, Audits and Financial Analysis
Arkansas Public Service Commission
1000 Center Building
Little Rock, AR 72201
(501) 682-5720
dkgray@psc.state.ar.us

Trained Arkansas Public Service Commission (APSC) members in how to monitor and control a management and operations review of Arkansas Power and Light Company and its parent organization, Entergy Corporation. This project included a written and oral review of the proposal and detailed work plan prepared by the team of outside consultants selected by APSC to perform the management review. Assisted the APSC in managing the project, which included quality control checks of the outside consultant project team and its results. This 11-month assignment involved three consultants and approximately 750 hours for a total project cost of approximately $95,000.

ELECTRIC UTILITY ASSIGNMENTS

West Texas Utilities Company
Abilene, Texas

December 1989 – October 1990

Mr. Richard Greffe
Assistant Director
Public Utility Commission of Texas
1701 North Congress Avenue
Austin, TX 78711
(512) 458-0338

Mr. Dennis Sharkey
Vice President Administration
West Texas Utilities Company
301 Cypress Street
Abilene, TX 79601
(915) 674-7000

Performed a comprehensive management and operations review of a wholly owned subsidiary of Central and South West Corporation, a registered public utility holding company. Our review included assessments of all functional areas within WTU, and of WTU's relationships and transactions with its parent and other affiliate companies. We identified ways to save over $2.5 million annually. All 85 recommendations were accepted. This assignment required 11 months, engaging over ten consultants for 4,500 hours for a total project cost of approximately $451,160.

Central Maine Power Company
Augusta, Maine

July 1990 – October 1990

Ms. Joanne Steneck
Maine Public Utilities Commission
242 State Street
State House Station 18
Augusta, ME 04330-6845
(207) 287-3831
joanne.steneck@maine.gov

Mr. Robert Connell
Mr. Wilbert Whitney
Central Maine Power Company
83 Edison Drive
Augusta, ME 04336
(207) 623-3521

Performed a focused management review of the implementation for CMP's Customer Service System. Provided testimony at a general rate hearing in which a portion of the implementation costs was disallowed for ratemaking purposes, due to mismanagement at CMP. This four-month assignment included two consultants and approximately 500 hours for a total project cost of approximately $48,800.

ELECTRIC UTILITY ASSIGNMENTS

Ohio Power Company
Columbus Southern Power Company
Columbus, Ohio

December 1988 – March 1990

Mr. Ray Strom
Project Coordinator
Public Utilities Commission of Ohio
180 East Broad Street
Columbus, OH 43215-3793
(614) 466-7534

Mr. Paul Daley (Retired)
Director Rates Department
AEP Service Corporation
1 Riverside Plaza
Columbus, OH 43215
(614) 687-3033

Reviewed the fuel-related practices and procedures of these companies for two consecutive years, including overall organizational structure, management decision processes, and the computer information systems supporting these activities. Provided testimony on our findings and conclusions. This 12-month review involved three consultants and more than 1,000 hours.

Union Light, Heat and Power Company
Cincinnati, Ohio

October 1988 – August 1989

Mr. Aaron Greenwell
Director
Kentucky Public Service Commission
211 Sower Blvd., P.O. Box 615
Frankfort, KY 40601
(502) 564-8119
adgreenwel@mail.state.ky.us

Mr. David Zanitsch
Manager, Gas Operations
Cincinnati Gas and Electric Company
139 East Fourth Street
Cincinnati, OH 45202
(513) 287-3356

Performed a management and operations review of ULH&P, a subsidiary of Cincinnati Gas and Electric Company. Essentially run as a single company, our review covered all areas of both operations, including management and organization, electric operations (excluding power production and fuels management), gas supply and operations, customer services, financial management, human resources, marketing and external relations, and corporate services. We also reviewed ULH&P's relationships and transactions with its parent company and other affiliate companies. This 11-month assignment involved more than 10 consultants and 2,000 hours for a total project cost of approximately $250,000.

GAS UTILITY ASSIGNMENTS

Philadelphia Gas Works
Philadelphia, Pennsylvania

October 2007 – July 2008

Mr. John Clista
Management Audit Supervisor
Pennsylvania Public Utility Commission
Bureau of Audits
3rd Floor East,
Commonwealth Keystone Building
400 North Street
Harrisburg, PA 17120
(717) 772-0317
jclista@state.pa.us

Mr. Nicholas J. Vaccarino
Director, Strategic Development
Philadelphia Gas Works
800 West Montgomery Avenue
Philadelphia, PA 19122
(215) 684-6790
Nick.Vaccarino@pgworks.com

Assisted the Pennsylvania Public Utility Commission (PaPUC) in performing a stratified management and operations audit of Philadelphia Gas Works (PGW). The primary focus of this audit was to review those PGW business components subject to regulation by the PaPUC, specifically PGW service delivery and production, whose costs are borne ultimately by Pennsylvania ratepayers. Specifically, our firm looked for economies, efficiencies, or improvements which benefit PGW and its ratepayers. In doing so, Schumaker & Company identified which, if any, economically practical opportunities for cost saving measures can be instituted. The first phase was a diagnostic review assessing the condition of each functional area or business unit against evaluative criteria or expected business practice. While this review was primarily limited to determining if appropriate management controls, systems and processes were in place, it was of sufficient scope to identify significant problems, if any, requiring additional focused analysis. The second phase was an in-depth analysis of pre-identified areas or issues. These analyses were of sufficient depth to provide specific recommendations for changes together with projected costs and potential dollar savings or other quantifiable benefits, if any.

This nine-month engagement involved seven consultants and approximately 2,300 hours for a total project cost of approximately $526,000.

Enbridge
Toronto, Canada

April 2004 – July 2004

Mr. Eric Kobosh/Mr. Andrew Benedict
Opvantek
28 South State Street, 2nd Floor
Newtown, PA 18940
(215) 968-7790
vantage@vantage-mgt-solutions.com

Collaborated on a multi-million dollar asset management solution delivery to Enbridge, a large energy utility in Canada. Partnered with Opvantek (previously VMSI) and Accenture as a subcontractor to deliver two major enhancements to Pipe Maintenance Tracking System (PMTS), a gas asset management system. This assignment involved four consultants over a four-month time period totaling approximately 870 hours and $55,000 in costs.

GAS UTILITY ASSIGNMENTS

New Jersey Board of Public Utilities
Newark, New Jersey

Elizabethtown Gas Company
NUI Corporation

New Jersey Natural Gas Company
New Jersey Resources Corporation

South Jersey Gas Company
South Jersey Industries Corporation

July 2000 – October 2000

Mr. Jim Rekulak
Principal Utility Mgmt Analyst
New Jersey Board of Public Utilities
Two Gateway Center
8th Floor
Newark, NJ 07102-5003
(973) 648-4516
rekulak@bpu.state.nj.us

Conducted compliance audits of the competitive services of New Jersey's gas utilities, specifically South Jersey Gas Company (South Jersey Industries Corporation), New Jersey Natural Gas Company (New Jersey Resources Corporation), and Elizabethtown Gas Company (NUI Corporation), as a part of utility industry restructuring in New Jersey. The purpose was to ensure that the utilities or their related competitive business segments do not have an unfair competitive advantage over other, non-affiliated purveyors of competitive services, and to evaluate and review the allocation of costs between the utilities' competitive and non-competitive services. We offered our expert opinion, based on appropriate methodology, as to whether there was strict separation and allocation of each utility's revenues, costs, assets, risks, and functions between the utility's electric and/or gas distribution operations and its related competitive business segments. The audits determined whether there was (1) cross subsidization between utility and non-utility segments within a public utility or holding company; (2) whether the separation of utility and non-utility organizations was reasonable based on the New Jersey Board of Public Utilities (BPU) affiliate relation and fair competition standards; (3) the effect on ratepayers of the use of utility assets in the provision of non-safety-related competitive services; (4) the effect on utility workers; (5) the effect of utility practices on the market for such services; and (6) ensured compliance with New Jersey legislation. The audits provided the BPU with the information needed to determine whether the competitive services identified are in any way cross-subsidized by the individual utility's regulated activities and to determine the reasonableness of the lump-sum charges (i.e. service contract rates) and time-and-materials charges encountered in a competitive environment. This assignment involved five consultants in approximately 1,700 hours of effort during a 3-month effort for a total project cost of approximately $357,000.

GAS UTILITY ASSIGNMENTS

Pacific Gas & Electric Company
San Francisco, California

June 1994 – September 1994

Mr. James Wuehler
California Public Utilities Commission
CACD: Accounting and Auditing Branch
California State Building
505 Van Ness Avenue
San Francisco, CA 94102-3298
(415) 703-2655

Ms. Karen Forsgard
Project Coordinator
Pacific Gas & Electric Company
77 Beale Street, P.O. Box 770000
San Francisco, CA 94177
(415) 973-6069

Performed a compliance audit of the costs of PG&E's gas pipeline expansion project to determine if the appropriate level of incremental A&G and O&M costs were charged to the project before and after commercial operation in November 1993. We also provided data needed to forecast the incremental operating costs of expanding interstate and intrastate pipeline operations serving California markets. Reviewed PG&E's integrated pipeline operations that supply natural gas from Canada to California for retail customers, pipeline shippers, and interruptible customers. Our review showed that the intended project costing had been properly implemented, ensuring an equitable distribution of costs between regulated retail customers and unregulated project shippers. Seven consultants spent approximately 1,500 hours over four months in which Schumaker & Company was one of the subcontractors.

Pennsylvania Gas & Water Company
Wilkes-Barre, Pennsylvania

April 1992 – May 1993

Mr. Thomas Sheets
Pennsylvania Public Utility Commission
400 Third Street
Commonwealth Keystone Bldg., P.O. Box 3265
Harrisburg, PA 17105-3265
(717) 772-0317

Mr. Robert Lopatto
Pennsylvania Gas and Water Company
One PEI Center
Wilkes-Barre, PA 18711-0601
(717) 829-8600

Reviewed PG&W gas operations; cash flow statements; dividends paid to PG&W's parent company (Pennsylvania Enterprises, Inc.); allocation of fees (affiliated relationships and transactions with affiliated companies); management information systems; data processing; staffing and compensation levels; and recruiting, hiring, and promotion. Schumaker & Company was a subcontractor on this assignment.

GAS UTILITY ASSIGNMENTS

Philadelphia Gas Works
Philadelphia, Pennsylvania

1991

Mr. Thurman Bullock
Commissioner, Philadelphia Gas Commission
1515 Arch Street, 9th Floor
Philadelphia, PA 19102
(215) 686-6682

Mr. William Gallagher
Philadelphia Gas Works
800 West Montgomery Avenue
Philadelphia, PA 19122
(215) 684-6489

Performed a follow-up review two years after a management and operations review that involved reviewing results of additional studies recommended during the management audit and developing a request for proposal for long-term strategic options.

Baltimore Gas & Electric
Columbia Gas of Maryland.
Washington Gas Light
Baltimore, Maryland

March 1988 – June 1990

Mr. Charles Kruft
Chief Auditor Maryland Public Service Commission
William Donald Schaefer Tower
6 St. Paul Street, 16th Floor
Baltimore, MD 21202-6806
(301) 333-6020

Mr. Frank Hollewa
Vice President Gas Supply
Washington Gas & Light Company
6801 Industrial Rd.
Springfield, VA 22151
(703) 750-4265

Mr. Steve Shaiko
Director Gas Control
Washington Gas & Light Company
6801 Industrial Rd.
Springfield, VA 22151
(703) 750-4804

Performed a two-year review of gas supply and purchasing practices. This unique project included formal training of Maryland Public Service Commission staff members in gas supply review methods and the establishment of formal MPSC gas purchasing reporting requirements for the three companies beginning in 1989. Schumaker & Company provided oversight to MPSC staff during an internal review of gas supply plans submitted for 1989/90 by these gas distribution companies. This 27-month assignment involved three consultants and approximately 1,000 hours for a total project cost of approximately $99,880

GAS UTILITY ASSIGNMENTS

Western Kentucky Gas
Owensboro, Kentucky

April 1989 – December 1989

Mr. Aaron Greenwell
Audit Manager
Kentucky Public Service Commission
211 Sower Blvd., P.O. Box 615
Frankfort, KY 40601
(502) 564-8119
adgreenwel@mail.state.ky.us

Mr. Earl Fischer (Retired)
President
Western Kentucky Gas Company
311 West Seventh Street
Owensboro, KY 42302
(502) 685-8000

Performed a management and operations review that covered all areas of this gas company's operations: management and organization, gas supply and operations, customer services, financial management, human resources, marketing and external relations, and corporate services. Also reviewed WKG's relationships and transactions with its parent company (Atmos Energy Corporation) and other Atmos affiliate companies in Louisiana and West Texas. (WKG's service territory was essentially a rural area with many smaller communities in Kentucky.) This project was particularly successful in that the results of the study were presented by all three participants – specifically, the WKG president, a Kentucky Public Service Commission representative, and Schumaker & Company's engagement manager – before the Subcommittee on Management Analysis during the NARUC 1990 Summer Meeting. This nine-month project involved 10 consultants and more than 3,000 hours for a total project of approximately $343,360.

Philadelphia Gas Works
Philadelphia, Pennsylvania

March 1989 – November 1989

Mr. Thurman Bullock
Commissioner, Philadelphia Gas Commission
1515 Arch Street, 9th Floor
Philadelphia, PA 19102
(215) 686-6682

Mr. Dennis Stinson
Philadelphia Gas Works
800 West Montgomery Avenue
Philadelphia, PA 19122
(215) 684-6314

Reviewed all operational areas, including organization structure and planning (corporate policy, philosophy, strategic planning; corporate and operations planning; organizational structure, authority and responsibility; human resources; capital program planning; gas operations organization and work-management effectiveness); systems supply; finance and accounting; procurement of outside services and nonfuel commodities; support functions; and quality of service (corporate mission, customer billing, meter reading, customer dispute process, office operations, energy theft, and customer relations). This nine-month engagement involved 15 consultants and approximately 4,000 hours for a total project cost of approximately $400,000.

TELECOMMUNICATIONS ASSIGNMENTS

Verizon New York
New York, New York

October 2003 – September 2004

Mr. John Coleman
Service Quality Audit Project Manager
Office of Telecommunications
New York Office of Public Services
Three Empire State Plaza
Albany, NY 12223-1350
(518) 486-2947
john_coleman@dps.state.ny.us

Mr. Dick Jasinski
Project Liaison
Verizon New York, Inc.
1095 Avenue of the Americas
New York, New York 11530
(212) 395-5186
dick.jasinski@verizon.com

As a subcontractor, Schumaker & Company consultants held *Project Manager*, *Lead Consultant*, and *Senior Consultant* posit ions to perform a review and evaluation of Verizon NY's efforts to provide retail service quality that consistently met the requirements of the New York telephone service standards, as required by the New York Public Service Commission (PSC). In February 2002, the PSC ordered Verizon NY to institute a retail service quality plan, so named the Verizon Incentive Plan (VIP). After comparing 2002 service results with the same period in 2003, results generally declined and the PSC ordered an investigation to be conducted to review Verizon NY's retail service quality effort from four perspectives: performance, analysis, capital expenditures and maintenance, and best practices.

Analyzed, documented, and verified, through findings based on identifiable and measurable information and data, to ensure that Verizon NY's existing service quality plans and practices of the five VIP service objectives (customer trouble report rate, percent out of service over 24 hours, percent installation completed in five days, PSC complaints, and outliers), NY Telephone Service Standards, and company guidelines meet applicable service quality performance standards, including reasonably foreseeable events and contingencies. Developed and documented recommendations to improve or modify these service quality practices and/or plans where existing plans and practices were not sufficient to ensure that applicable standards were met. Reviewed Verizon NY's processes for service quality performance and its employees, technology, and work processes related to the planning, design, construction, installation, maintenance, repair, and delivery of product to retail customers within Verizon NY's service territory. This one-year assignment involved 11 consultants (of which Schumaker & Company provided four) and required over 6,900 hours for a total project cost of approximately $1,600,000.

TELECOMMUNICATIONS ASSIGNMENTS

Verizon Pennsylvania
Philadelphia,
Pennsylvania

May 2003 – September 2003

Mr. Louis Mazza
Project Officer
Pennsylvania Public Utility Commission
Bureau of Audits
400 Third Street
Commonwealth Keystone Bldg.,
P.O. Box 3265
Harrisburg, PA 17105-3265
(717) 772-0300
lomazza@state.pa.us

Mr. Jim MacDonald
Executive Director-Network Operations
Verizon Pennsylvania
741 Zeckendorf Blvd., Room 410
Garden City, New York 11530
(516) 832-3686
james.p.macdonald@verizon.com

As a DCI subcontractor, performed a review and evaluation of Verizon PA's performance metrics and related remedies, as required by the Pennsylvania Public Utility Commission (PAPUC). The PAPUC supported Verizon PA's application for Section 271 relief (i.e. authorization for offering long distance service within its serving area), based on satisfactory performance with respect to the FCC's 14 check list items, which define areas in which incumbent local exchange carriers must demonstrate that they have irrevocably opened their markets to local competition by providing non-discriminatory support to competitive local exchange carriers. The PAPUC ordered the investigation to be conducted one year after approval of Verizon PA's Section 271 application Reviewed Verizon PA's processes for performance metric development (pre-ordering, ordering, provisioning, maintenance/repair, network performance, billing, operator services, and general standards) from source system inputs (including operational support systems and manual data input) to the data mart, where performance reporting occurred. Examined the utility's underlying information and operations support systems that provided data for use in calculating the performance metrics and remedies. Obtained the source information from Verizon and attempted to replicate the information and calculations in a separate data warehouse using various technologies, such as Oracle 8i, SAS, and Microsoft SQL server tools. Developed computer code to represent the C2C performance metrics and worked with Verizon PA and the PAPUC to resolve differences identified. Also ran comparisons, compiled, and documented results for pre-ordering and maintenance/repair metrics. This five-month assignment involved 14 consultants (of which Schumaker & Company provided five) and required over 4,700 hours for a total project cost of approximately $990,000.

WATER UTILITY ASSIGNMENTS

Pennsylvania-American Water Company
Hershey, PA

August 2007 – June 2008

Mr. John Clista
Audit Supervisor & Project Officer
Pennsylvania Public Utility Commission
Bureau of Audits, 3rd Floor East
Commonwealth Keystone Building
400 North Street
Harrisburg, PA 17120
(717) 772-0317
jclista@state.pa.us

Mr. Louis Tschachler
American Water
800 Hersheypark Drive
Hershey, PA 17033
(717) 533-5000
www.amwater.com

Assisted the Pennsylvania Public Utility Commission (PaPUC) staff in a stratified management and operations audit of Pennsylvania-American Water Company (PAWC). Specifically, it was intended that the management audit encourage economies, efficiencies or improvements which benefit the utility and its ratepayers and identify which, if any, cost saving measures can be instituted. The ultimate purpose was to explore economically practical opportunities for giving ratepayers lower rates and/or better service.

This audit consisted of three phases. The first phase was a diagnostic review assessing the condition of each functional area or business unit against evaluative criteria or expected business practice. While this review was primarily limited to determining if appropriate management controls, systems and processes were in place, it was of sufficient scope to identify significant problems, if any, requiring additional focused analysis. The second phase was an in-depth analysis of pre-identified areas or issues. These analyses were of sufficient depth to provide specific recommendations for changes together with projected costs and potential dollar savings or other quantifiable benefits, if any. The third phase was an in-depth, focused analysis of two issues approved by the Bureau of Audits resulting from the first phase, specifically items in the human resources and water operations areas.

This assignment involved eight consultants in roughly 3,093 hours during a 10-month effort for total project costs of approximately $651,694.

WATER UTILITY ASSIGNMENTS

Water Services Corporation
West Columbia, South Carolina
Northbrook, Illinois

June 2006 – February 2007

Mr. Willie J. Morgan PE
Program Manager
State of South Carolina Office of Regulatory Staff
Water/Wastewater Department
1441 Main Street, Suite 300
Columbia, SC 29201
(803) 737-0827
wmorgan@regstaff.sc.gov

Mr. Steve Lubertozzi
Chief Regulatory Officer
Utilities Inc.
2335 Sanders Road
Northbrook, IL 60062
(847) 498-6440
smlubertozzi@uiwater.com

Assisted the South Carolina Office of Regulatory Staff (SOR) staff to conduct a management audit of Water Services Corporation (WSC) with regard to five subsidiary water and wastewater companies operating in South Carolina with a focus on the following three areas: 1) basic corporate decision-making; 2) major operational activities; and 3) staff functions. The final report consisted of audit findings and management recommendations. A cost/benefit analysis accompanied each recommendation.

The bottom line of this project focused on WSC was to determine whether the rates charged to the South Carolina ratepayers could be reduced through the implementation of greater efficiencies in organizations, operations, or both. Additionally, another relevant analysis was the determination of whether the ratepayers of South Carolina were being properly and economically served by the range of corporate services provided to the WSC operations in South Carolina by the managers located in both West Columbia and Northbrook. Significant consideration was given to the investigation and quantification of potential benefits that would result from the consolidation or merger of the affiliated companies of WSC.

This assignment involved four consultants in roughly 520 hours of effort during a 5-month effort for a total project cost of approximately $75,000.

WATER UTILITY ASSIGNMENTS

United Water New Jersey
Harrington Park, New Jersey

April 1996 – August 1996

Mr. Jim Rekulak, Project Officer
State of New Jersey Board of Public Utilities
Two Gateway Center, 8th Floor
Newark, NJ 07102-5003
(201) 648-2026
rekulak@bpu.state.nj.us

Mr. Walton Hill
United Water Management & Services
200 Old Hook Road
Harrington Park, NJ 07640
(800) 664-4552 (Extension 2880)

Analyzed financial management, information technology and other support services, customer service, and human resources in this comprehensive management and operations review. Schumaker & Company was a subcontractor on this assignment, in which seven consultants spent 1,500 hours during a five-month period, with fees and expenses totaling $65,500.

General Waterworks Corporation of Pine Bluff
Pine Bluff, Arkansas

February 1992 – June 1992

Ms. Donna Gray
Director, Audits and Financial Analysis
Arkansas Public Service Commission
1000 Center Building
Little Rock, AR 72201
(501) 682-5720
dkgray@psc.state.ar.us

Mr. Walton Hill, UWM&S
(Formerly General Waterworks Corporation)
200 Old Hook Road
Harrington Park, NJ 07640
(800) 664-4552 (Extension 2880)

Performed a management and operations review, including a review of affiliated relationships and transactions. At the request of the Arkansas Public Service Commission, our final report was submitted as testimony in a general rate hearing of General Waterworks Corporation of Pine Bluffs. This five-month assignment involved four consultants and approximately 500 hours.

WATER UTILITY ASSIGNMENTS

Pennsylvania Gas & Water Company
Wilkes-Barre, Pennsylvania

April 1992 – May 1993

Mr. Thomas Sheets
Pennsylvania Public Utility Commission
400 Third Street
Commonwealth Keystone Bldg., P.O. Box 3265
Harrisburg, PA 17105-3265
(717) 772-0317

Mr. Robert Lopatto
Pennsylvania Gas and Water Company
One PEI Center
Wilkes-Barre, PA 18711-0601
(717) 829-8600

Reviewed PG&W gas operations; cash flow statements; dividends paid to PG&W's parent company (Pennsylvania Enterprises, Inc.); allocation of fees (affiliated relationships and transactions with affiliated companies); management information systems; data processing; staffing and compensation levels; and recruiting, hiring, and promotion. Schumaker & Company was a subcontractor on this assignment.

Kentucky-American Water Company
Lexington, Kentucky

November 1990 – June 1991

Mr. Aaron Greenwell
Audit Manager
Kentucky Public Service Commission
211 Sower Blvd., P.O. Box 615
Frankfort, KY 40601
(502) 564-3940
adgreenwel@mail.state.ky.us

Mr. Robert Edens
General Manager
Kentucky-American Water Company
2300 Richmond Road
Lexington, KY 40502
(606) 268-6317

Performed a comprehensive management and operations review involving executive management, corporate planning, operations planning, engineering and construction, transmission and distribution, treatment and pumping, financial systems, customer service and marketing, human resource management, support functions, and comparative analysis. This project also included a review of Kentucky-American's relationships and transactions with its parent company (American Water Works Company) and other affiliate companies (primarily American Water Works Service Company). This eight-month engagement involved over 10 consultants and 2,000 hours of effort for a total project cost of approximately $223,307.

WATER UTILITY ASSIGNMENTS

Philadelphia Suburban Water Company
Philadelphia, Pennsylvania

September 1989 – September 1990

Mr. John Clista
Pennsylvania Public Utility Commission
400 Third Street
Commonwealth Keystone Bldg., P.O. 3265
Harrisburg, PA 17105-3265
(717) 772-0317

Mr. Richard Hugus
Vice President and Treasurer
Philadelphia Suburban Water Company
762 Lancaster Avenue
Bryn Mawr, PA 19010
(610) 527-8500

Performed a comprehensive management review involving all company functions. Specific emphasis was placed on staffing and compensation levels, management information systems, allocation of fees from affiliated companies, customer service, engineering and construction, operations and maintenance, water purchase agreements, and capacity planning. This project also included PSW's relationships and transactions with its parent company and other affiliate companies. This 13-month engagement involved 10 consultants and over 3,000 hours for a total project cost of approximately $289,400.

B. Qualifications of Individual Consultants

Our team is composed of selected individuals, whose talents and expertise complement one another, allowing Schumaker & Company to provide a highly skilled and well-rounded team. The single most important element Schumaker & Company brings to an assignment is the breadth and depth of our project team's experience. Our team has a strong working knowledge of management and organization issues, as well as the application of information technologies to streamline operations. Each individual has been carefully selected according to his or her experience, technical expertise, and education in the areas for which he or she is proposed. Our consultants are seasoned veterans with many years of consulting, industry, and financial management experience, as described both in this chapter and in their individual resumes. They are mature and experienced, with advanced degrees and practical business management experience, consistently meeting high standards of professional competence within their disciplines and demonstrating the team skills needed to work collaboratively with client organizations.

A detailed description of the experience and qualifications for all consultants who will be assigned to this project are included in detail in *Chapter V – Consulting Staff Organization*, where we identify the lead consultant and the name and experience of each consultant member who will be involved, including the specific area(s) to which each will be assigned. Resumes for our proposed consultants can also be found in *Chapter V – Consulting Staff Organization* (location as designated in the request for proposal). Also, a background and experience summary is provided there along with a listing of pertinent assignments in which the respective consultant has gained experience relevant to his/her responsibilities for this assignment

Appendix A – Management Audit Project Management Manual

A project must be well planned and managed to ensure that the client's objectives are realized and to prevent disruption of the subject entity's operations. To this end, Schumaker & Company is dedicated to ensuring that a thorough, detailed work plan is developed and executed, and that the project is completed on schedule, within budget. We use conventional, as well as Schumaker & Company proprietary, project management and control tools and techniques that include (but are not limited to) project meetings, progress or status reporting, tracking and monitoring of project schedules, budget performance monitoring and reporting, issues tracking and resolution, and change control management.

Combining computer technology and the Internet, Schumaker & Company developed a package of tools that enhanced collaboration with document management and issues tracking. We integrated the best of various commercially available tools and technologies, along with our own, to make communicating and sharing project information easier.

Due to the document size, in the interest of submitting less paper, and the proprietary nature of the business processes referenced in this document, only one copy of this document was provided under separate cover.

Appendix B – Detailed Project Worksheets

Microsoft Project was used to develop the estimated resources required by work task to perform this project. These worksheets are provided in this chapter.

Appendix C – Preliminary Information Request Listing

Schumaker & Company's preliminary list of the information requests required to evaluate each work plan area is provided in a separate document. Further refinement of this preliminary work plan and initial information requests will be performed as part of the project's activities.