Virgin Islands Water & Power Authority

Implementation Plan

Supporting

Virgin Islands Water & Power Authority

Management Audit

September 2, 2015

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A. INTRODUCTION

WAPA is pleased to submit this Implementation Plan for review by its Governing Board and the VIPSC. The Implementation Plan is in response to the recommendations contained in the Management Audit Report prepared by Vantage Energy Consulting LLC which was issued on February 3, 2015. The Implementation Plan provides WAPA's commitment to act on the recommendations by addressing opportunities for improvement in operational effectiveness and improving service to our customers.

Of the 35 Recommendations contained in the Audit Report, WAPA has accepted 26 of them completely, accepted in-part 0, and rejected 9.

As required in the initial RFP, this Implementation Plan details the actions to be taken, the expected completion dates, the individuals responsible for implementing each recommendation and cost benefit support where applicable.

WAPA management wishes to express its appreciation to the Audit staff and to Vantage Energy Consulting LLC for their collective efforts in assisting WAPA in furthering the company's program for continuous improvement. From the perspective of management this report is a very positive outcome to an extensive process and we look forward demonstrating the successful implementation of the audit recommendations that management recommends for acceptance.

B. STATUS OF ACCEPTANCE

The status of management's recommendation for acceptance of each recommendation is provided in the table below:

Recommendation		Status
III-R1	Implement a comprehensive strategic planning process with fixed timing for updates, prioritization of initiatives, input from all stakeholders and which should be led by a full time, mid to senior level manager, with the use of outside expertise to facilitate. (Priority: High)	***The Authority's management recommends acceptance of this recommendation and has begun the process along with its Governing Board to complete a Strategic Plan***
III-R2	Complete the IRP as defined, assuring input and oversight by both internal and external personnel, in order to assure that the results meet all needs of WAPA as defined in the original IRP proposal. Prior to, or in conjunction with the independent IRP	***The Authority has already started the IRP with Black and Veatch and it is scheduled to be completed in August of 2015***

	complete American Society of Mechanical Engineers (ASME) performance test on each gas turbine, HRSG and steam turbine to determine baseline heat rates and turndown.an (Priority: High)	
III-R3	Redevelop the generation fleet so as to meet four key objectives; (1) reliability as measured by Equivalent Forced Outage Rate (EFOR) and availability; (2) efficiency as measured by heat rate (BTU/KWH); (3) operational effectiveness as measured by optimal staffing, reasonable non-fuel O&M budget and comprehensive reporting and monitoring, and (4) organizational effectiveness through the retention of an experienced, senior officer to lead the changes. (Priority: High)	*Through the IRP process the Authority will determine the best plan of action going forward for generation fleet that will produce increased efficiency and operational effectiveness*
III-R4	Develop a comprehensive Root Cause Analysis program that includes the identification, tracking and correction the underlying cause of equipment problems and failures. (Priority: Medium)	*After every outage or generation failure the Authority currently conducts root cause analysis to determine root cause of failure*
III-R5	Prepare a revised 2015 Electric O&M Budget and a five year Capital Plan that reflects current data. (Priority: Medium)	*Budget was not revised but projects were either postponed or scheduled for a later date until funding is available. Currently in the process of updating the five year capital plan.*
III-R6	Develop a more formal process for justification of capital projects and institute a feedback mechanism in which actual impacts or results of a capital project are measured afterwards relative to how they met the goals of the strategic plan. (Priority: Medium)	*The Authority has implemented a formal process of justification and ranking of all capital projects to determine which projects provides optimum reliability and/or efficiency*
IV-R1	Address the need for an experienced generation expert who can provide the management team and the plant team with the expertise needed in the upcoming years as WAPA makes its transition to new fuels, technology and the changing dynamics of renewable energy sources. (Priority: High)	*Management has determined that the current staff has the experience and expertise to handle transitions in technology, fuels and dynamics of energy resources. All supplemental experience is achieved by consultant and contracts on a as needed basis.*
IV-R2	Develop a senior management organization that reflects functional reporting relationships, a reasonable span of control,	*Management of the Authority has implemented several recent changes to the organization chart to reflect*

	minimal layers, and the recognition of current challenges to WAPA. (Priority: Medium)	*functional relationships to optimize efficiencies*
V-R1	Conduct a thorough organizational assessment that leads to an optimal organizational structure and right sized staffing plan that can better align the organization with the future needs of WAPA and its customers. (Priority: Medium)	*Authority has begun the process of conducting a thorough investigation of the organization and has begun taking steps to right size the Authority staffing level.*
V-R2	Investigate the potential for reducing the size of the Fuels Control Group at each power plant after the completion of the propane conversion project. (Priority: High)	*During the planning stages of the LPG project the fuels control group were to retrained and moved to vacant positions*
V-R3	Restructure the production maintenance staff at the Richmond and Harley generating plants to focus on core competencies and reduce the maintenance costs of each facility. (Priority: High)	*Management believes that the current structure and continual training of maintenance staff has resulted in the core competencies necessary to reduce the cost of the facility.*
V-R4	Conduct a bottom up evaluation of T&D on each island that addresses structure and titles, crew sizes, and the number of crews. (Priority: Medium)	*Accepted : A study was already conducted to determine staffing needs of the T & D department. This includes the implementation of the AMI system.*
V-R5	Perform a bottoms up process evaluation and staffing analysis of Customer Service that considers current and future requirements. (Priority: Medium)	*Accepted: The customer service division is now under review*
V-R6	Move the support services function under an officer level individual. (Priority: Medium)	*Management has already placed the Director of Corporate Services Position under the COO*
V-R7	Perform a bottoms up process evaluation and staffing analysis of Customer Service that considers current and future requirements. (Priority: Medium)	*Duplicated*
V-R8	Conduct a thorough staffing evaluation of the fleet and materials functions. (Priority: Medium)	*Management accepted this finding and has begun reviewing the staffing of fleet and materials functions*
V-R8	Conduct a thorough review of all business and human resources programs and update those that are out of date or inconsistent with best practices. (Priority: Medium)	*Accepted: Administrative processes and procedures always being reviewed and updated*
VI-R1	Reorganize the Special Projects into a Project Management organization and	*Management recommends that this division add one additional staff in*

	provide the appropriate project management tools to manage complex multi-discipline projects. (Priority: High)	*order to manage all major renewable energy or change projects within the Utility such as LPG, Solar, Wind, or Administrative Buildings.*
VI-R2	Review the schedule and progress on the AMI implementation, and determine if the current schedule is feasible. (Priority: Low)	*This schedule is constantly reviewed. The Project is 65% completed*
VI-R3	Ensure that the concerns with new system improvement related IT systems are properly addressed, by expanding the responsibility of the Information Technology Organization. (Priority: Low)	*Systems are constantly reviewed and updated for all new technologies and efficiencies*
VII-R1	Create a position of Chief Water Operations that reports directly to the Chief Executive Officer, with direct control of water related operations, capital projects, budgeting, and implementation of all strategies. (Priority: High)	*Management does not currently accept or reject this recommendation but continues to evaluate if the position is necessary. Currently the Water divisions report to the COO*
VII-R2	Conduct an independent study to determine the risk to the RO system from hurricanes, the cost for backup using the IDE's versus other options. The study should explicitly address the savings that can be achieved by retiring the IDE's and reducing staffing to the level needed post-IDE removal. (Priority: Low)	*Management has already reduced staffing with regard to water production staff that were task with operatizing the IDE's. As for the hurricane risk study the Authority, based on the current contract with Seven Seas, will discuss this recommendation with the company to determine of study is needed or has been already been conducted.*
VII-R3	Consider eliminating the Assistant Superintendent positions as opportunities occur. (Priority: Medium)	*Management continues to reviewing the plan for right sizing and has not made a determination on these positions*
VII-R4	Perform a water loss audit in accordance with IWA/AWWA methodologies (International Water Association/American Water Works Association) as part of its Water Loss Reduction Program. (Priority: High)	*Accepted: Business plans seeks to reduce losses through funding replacement of aging infrastructure. Water operations staff has conducted a preliminary water loss analysis.*
VII-R5	WAPA should consider discontinuing standpipe service or if the standpipe service is considered a vital community service, find ways to reduce costs. (Priority: Low)	*Not Accepted: Management disagrees and clearly understands Standpipe has a critical need within the community to provide water and is a revenue stream that is needed for the system.*

VII-R6	Delay the start of the proposed Nazareth Water Line Expansion until a major decision can be made regarding overall line replacement, discolored water issues are completely resolved and better estimates on long-term water and electricity costs are known. (Priority: Medium)	*Not Accepted: Business Plan determined this project is not feasible at this time.*
VII-R7	Take steps with the appropriate legislative body and regulators to implement a monthly Base Facility Charge for its different classes of services. (Priority: Medium)	*Accepted : The Authority is constantly discussing the issue of customer charge with legislators and regulators*
VII-R8	Distinguish between water distribution upgrades and extensions and adopt associated funding policies. (Priority: Low)	*Accepted: The business plan and engineering addressed all CIP projects and reviewed feasibility of each project.*
VII-R9	Perform an economic analysis to determine the need for the backup IDE's. (Priority: Low)	*Management recommends the backup IDEs remain in place in the case of emergency or in the event that the RO plant fails to provide water.*
VIII-R1	Continue to inform the Legislature, Governor, and all stakeholders of the magnitude of the non-payment by the government agencies and its potential impact on the financial viability of WAPA. (Priority: Medium) (Priority: High)	*Accepted : The Authority is constantly discussing outstanding receivables with government and regulators.*
VIII-R2	Encourage the legislature to establish a direct payment procedure for payment of utility bills by government entities.	*Single Payer fund was already established by law. Discussion with current administration has resulted in DOF requesting information to implement the Single Payer Utility Fund,*
VIII-R3	Seek approval, from the Legislature, for a monthly Base Facility Charge for its water rates.	*Accepted: The Authority continues to contact the Legislature in regards to obtaining the authority to implement a customer charge for the water system to help upgrade and maintain the system.*
VIII-R4	Establish a vigorous marketing initiative to take advantage of its reduced rates and develop increased electricity sales with pre-existing, existing and new commercial customers. (Priority: Medium)	*Accepted: The Authority has begun the process through key accounts division to review commercial and Large power customer needs. There are also efforts to get back customers that have left the system through the key accounts division.*

VIII-R5	Initiate a program to determine if WAPA is collecting all of the revenue to which it is entitled and prepare a plan for remediation. (Priority: High)	*Accepted: Through Troubled accounts policy old outstanding receivable are being collected.*
VIII-R6	Calculate the actual cost to provide street lighting service and, if appropriate, investigate an alternate cost-based rate structure. (Priority: Medium)	*Accepted : The actual cost of streetlights has already been calculated at 10.6 million dollars annually.*

C. ACTION PLAN BY RECOMMEDNATION

The following are the actual action plans for each recommendation made, Vantage has bundled recommendations that would be done together or by the same team in groups in order to facilitate the presentation.

IP1 - STRATEGIC PLANNING

Recommendation – III-R1

III-R1 **Implement a comprehensive strategic planning process with fixed timing for updates, prioritization of initiatives, input from all stakeholders and which should be led by a full time, mid to senior level manager, with the use of outside expertise to facilitate. (Priority: High)**

Prepare a new strategic plan by mid-2015. While management has indicated its intent to update the strategic plan by mid-2015, Vantage re-iterates our concern that the strategic planning process needs to become institutionalized as an ongoing process of continuous improvement and risk management. Furthermore, annual strategic planning updates should become the prelude to the capital and expense budgeting and resource planning processes.

Assign full time responsibility for the management of the planning process and performance monitoring for the 2014 -2015 Strategic Plan. As far back as the 1996 Stone and Webster management audit and the 2002 Strategic Plan, there were recommendations that WAPA change its culture as to the way it plans and manages for the future. As a first step in this change process, we are recommending that strategic planning becomes institutionalized by allocating resources and assigning full time responsibility for strategic planning. This responsibility should extend well beyond the administration of the annual planning process, and include:

- Coordination with budget and finance to assure that strategic goals are properly funded.
- Assure that metrics are in place to monitor and control performance.
- To routinely report performance and non-compliance to executive management and the Board the strategic planning objectives.
    - For high priority initiatives reporting should be at a minimum monthly.

- Significant deviations from the plan's objectives will necessitate a remedial action plan.
- Document in the budget process how individual major expenditures, capital improvements, and proposed staffing further the goals of the strategic plan.

Assign a mid to senior level manager to be the project manager and champion for each strategic objective identified in the strategic plan. It can be assumed that if an issue, whether viewed as a threat or opportunity for WAPA, is defined as a strategic goal, a manager will be assigned responsibility to manage all activities associated with its implementation and performance. Generally, the higher the priority the greater the need for a higher level of management oversight. This manager will work with the Strategic Planning manager to assure compliance to the established program and expected performance.

Develop a process to rationally assign a priority ranking for all initiatives. Based on Vantage's discussions with management, the Board and various stakeholders, it is likely that the 2014/2015 Strategic Plan will identify more than four strategic goals with ranging priority. As a means to differentiate the resource commitment among these objectives as conditions and events change, the Priority Ranking process will help management avoid a crisis management or knee-jerk reaction to emerging issues without assessing its impact on the strategic objectives. There are numerous ways to assign priority including both quantitative and qualitative assessment. While it is an inexact "science", the process by which risk probability and impact is derived helps management to consider, communicate and act upon each strategic goal in a rational manner.

Invite input into the Strategic Planning process from a range of WAPA stakeholders. While the Board and management must accept responsibility for the final product and its implementation, other stakeholders such as the Public Service Commission, consumer representatives and political representatives have a perspective and stake in WAPA's success. In isolation, WAPA management cannot fully assess the needs of its constituents and achieve their support unless the process is inclusive.

WAPA RESPONSE

Accepted: Strategic Plan is currently in the planning stages with the Vice Chair of the Governing Board assuming the lead on the project.

ACTION OR IMPLEMENTATION STEPS

Step 1 – Assign a full-time person to coordinate the Strategic Plan and other key planning initiatives that require focused oversight. This step is imperative because without full-time attention, the project may get sidetracked.

Step 2 – Assign a management team to be responsible for this overall effort.

Step 3 – Hire a third party consultant with expertise in developing utility strategic plans to act as a facilitator.

Step 4 – Prepare a list of stakeholders who have an interest and develop a working committee. As a minimum, the stakeholders should include the VIPSC, Legislature, Energy Board, environmental and customer groups.

Step 5 – Establish a formal schedule for development of the Strategic Plan, including internal and external meetings, dates for presentation to Senior WAPA management and for draft and final presentation to the Governing Board.

Step 6 – Communicate the results of the Strategic Plan to all employees.

Step 7 – Have all department heads prepare operational plans in response.

COST BENEFIT

While the actual cost benefit cannot be derived for this recommendation, the following comment can be made. The cost of a full time Strategic Planning Group with outside consultants should cost between $200,000 and $400,000 per year depending on the level of manager and the amount of outside consultant use. Benefits derive from a better focused use of both capital and operating resources as well as improved direction for management and staff. Finally all stakeholders and employees will have a better understanding of the issues facing WAPA and future plans to address the issues.

Anecdotally, the three major municipal bond credit rating agencies, have indicated that businesses with proactive strategic planning and enterprise risk management programs are considered less risky and thus justify a slightly higher long term bond rating, ceteris paribus. A single increase in bond rating can translate into a lower cost of debt over the life of the bonds. Even in today's market, a 20 year municipal bond can be 25 – 50 basis point lower (.25% - .5%) between an A and AA rating. Assuming the lower range, at $300 million in long term debt, an improvement in rating can lower WAPA's annual interest charges by $1 million.

WAPA INDIVIDUAL RESPONSIBLE

Joan Foy/Lorelei Farrington/Julio Rhymer

EXPECTED COMPLETION DATE

June 2016

IP2 - GENERATION PLANNING

Recommendation - III-R2

III-R2 **Complete the IRP as defined, assuring input and oversight by both internal and external personnel, in order to assure that the results meet all needs of WAPA as defined in the original IRP proposal. Prior to, or in conjunction with the independent IRP complete American Society of Mechanical Engineers (ASME) performance test on each gas turbine, HRSG and steam turbine to determine baseline heat rates and turndown.an (Priority: High)**

As stated above, we applaud the move to a comprehensive IRP. However we believe it must include the following analysis to assure that it meets the needs of the Virgin Islands. Vantage also raises the concern that the current contract amount may not be adequate to conduct a comprehensive IRP.

- New generating units, of all sizes, that are not currently being used by WAPA should be considered. This includes Reciprocating Internal Combustion Engines (RICE) of sizes between 5MW and 25MW.
- Consideration to replacing all non-optimum, generating units should be considered irrespective of "stranded cost" concerns.
- Consider newly emerging storage systems, such as Lithium Storage systems which can cost on the order of $1,000 per KW.[31]
- The potential savings in fuel, LPG or LNG, should be considered through the replacement of the fleet with RICE engines or other technology.
- The flexibility to accept all renewable sources, through a reasonable net metering program that currently exists, by using quick start, reliable technologies.
- Include discussions and informal buy-in from the PSC, the legislature and the EPA as part of the data collection and analysis process in order to assure that an optimum solution is not ignored because of outdated policies. Each party has a specified regulatory or legal responsibility in assuring the best outcomes.
- Consider alternate sites for new technologies, particularly on St. Croix where the current station is on one end of the island. Specifically, either this IRP or follow-up analysis

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[31] / Activity in this area of battery storage is improving. A recent development can be found at http://www.renewableenergyfocus.com/view/39883/nec-energy-solutions-to-install-energy-storage-system-in-california/#.VAg1c1CZgGM.email and a good resource to review is IRENA's "Electrify Storage and Renewables for Island Power – A Guide For Decision Makers"

related to system integrity should address a more diverse geographic location for new units.

- Complete the following American Society of Mechanical Engineers (ASME) performance test on each gas turbine, HRSG and steam turbine to establish a base-line heat balance and performance profile to support the dispatch ranking of each unit:
    - Gas Turbines – ASME Gas Turbine Performance Test Code PTC 22
    - HRSG - ASME HRSG Performance Test Code PTC 4.4
    - Steam Turbine - ASME Steam Turbine Performance Test Code PTC 6.6

WAPA RESPONSE

Accepted – The IRP study has begun and will be completed by December of 2015.

ACTION OR IMPLEMENTATION STEPS

Step 1 – Hire IRP consultant – **Black and Veatch Hired**

Step 2 – Assign both an administrative and technical person to provide oversight on the project. **Project oversight – CFO – with Technical Staff – Assistant COO, T& D Director**

Step 3 – Assemble a Stakeholder Committee to review the IRP progress and results. The same group selected for the Strategic Plan would make sense since the IRP results would tie directly into it.

Step 4 – Review the consultant work plan to assure that all areas included in the RFP are being adequately addressed. (Vantage has a concern that the current contracted amount for this project may not be adequate to include all of the scope required.

Step 5 – Independent of the IRP, conduct the ASME tests specified above. Ideally the data from these tests should be available for the IRP team.

Step 6 – Provide draft results to Stakeholder Committee for review.

Step 7 – Complete the IRP, with its various alternatives and provide to the Governing Board and the Stakeholder Committee.

Step 8 – Prepare a new generation plan and present to the VIPSC, Government and the public.

COST BENEFIT

The cost of a proper IRP is about $500,000 (this is well above the current contracted amount). The ASME tests will also cost $300,000 to $400,000 to compete. Benefits can be huge. We provide the actual estimate for savings from a modern fleet in recommendation III-R3 below.

WAPA INDIVIDUAL RESPONSIBLE

JOAN FOY/AKEYLA CLARKE/JULIO RHYMER/COURY HODGE/CLINTON HEDRINGTON

EXPECTED COMPLETION DATE

August 2015

IP3 – GENERATION UPGRADES

Recommendation – III-R3, III-R4, IV-R1, VII-R9

III-R3 **Redevelop the generation fleet so as to meet four key objectives; (1) reliability as measured by Equivalent Forced Outage Rate (EFOR) and availability; (2) efficiency as measured by heat rate (BTU/KWH); (3) operational effectiveness as measured by optimal staffing, reasonable non-fuel O&M budget and comprehensive reporting and monitoring, and (4) organizational effectiveness through the retention of an experienced, senior officer to lead the changes. (Priority: High)**

This is the most significant and broadest recommendation in this report. It provides the mechanism for moving WAPA forward, shedding itself of past mistakes and developing a generating infrastructure that readily adopts to the changes being driven by conservation, renewables, and alternate fuel supplies.

The implementation of this recommendation starts with the strategic plan. A clear understanding, endorsed by the Governing Board, the VIPSC and the new government must drive the impetus for the changes. The IRP must be the technical backbone of the endeavor, providing details on technology, unit sizing and implementation economics.

A new senior manager is a necessity. Someone who has experience with a broad range of technologies, the management of new unit installation and who is not burdened by past decisions.

III-R4 **Develop a comprehensive Root Cause Analysis program that includes the identification, tracking and correction the underlying cause of equipment problems and failures. (Priority: Medium)**

A Root Cause Analysis program seeks to identify the origin of a problem. It uses a specific set of steps, with associated tools, such as a Maintenance Management System to find the primary cause of the problem, which typically includes:

- Physical causes
- Human causes

- System or process causes

An effective Root Cause Analysis program considers all three types of causes. It involves investigating the patterns of negative effects, finding hidden flaws in the system, and discovering specific actions that contributed to the problem. This often means that RCA reveals more than one root cause. A typical Root Cause Analysis program includes the following six steps:

- Define the problem.
- Collect the data on the maintenance management system (Maximo).
- Identify the causal factors (physical, human and/or system).
- Identify the root cause.
- Recommend and implement solution.
- Track and communicate results.

The implementation of a Root Cause Analysis program will directly impact the reliability and availability of the Richmond and Harley units.

IV-R1 **Address the need for an experienced generation expert who can provide the management team and the plant team with the expertise needed in the upcoming years as WAPA makes its transition to new fuels, technology and the changing dynamics of renewable energy sources. (Priority: High)**

As stated above, while WAPA's management team is, in general, very skilled, it does not have the high level expertise it needs for the upcoming transition. We will discuss this issue in more detail later in the report, but believe this issue can be solved through the hiring of a single person or small team with the requisite expertise to provide sound advice to WAPA over the next five years. This recommendation is in contrast to the current plan for an Independent Advisory Contractor) that would provide extensive oversight and duplicative management function in the generating plants. Our review of this plan is discussed in the section under generation planning.

VII-R9 **Perform an economic analysis to determine the need for the backup IDE's. (Priority: Low)**

The analysis should consider O&M implications, the value of the space presently occupied by the IDEs, the lack of a stem source, and the ability to bring in skid mounted RO systems should a catastrophic failure occur to the existing RO equipment.

WAPA RESPONSE

Through the IRP process the appropriate generation mix will be determined to provide optimal efficiency and reliability of not only the generation units but the transmission and distribution system.

After every outage a root cause analysis is conducted to determine cause of the outrage. The outage management system also provides an excellent tool to determine the cost and length of each outage.

The Authority management believes that the Authority has the personnel to efficiently and reliably manage and operate the plant facilities and future changes in technology and fuel types.

The Authority will meet with Seven Seas to discuss the risk factors associated with the loss of the ROs. Then we will assess the economic risk in conjunction with Seven Seas in the event of a natural disaster.

ACTION OR IMPLEMENTATION STEPS

Step 1 – The first functional step required is the retention of an experienced senior manager with experience in a broad range of generation technologies, plant operations, reliability driven operations, as measured by Equivalent Forced Outage Rate (EFOR) and availability; efficiency as measured by heat rate (BTU/KWH); operational effectiveness as measured by optimal staffing, reasonable non-fuel O&M budget and comprehensive reporting and monitoring, and organizational effectiveness as measured by a high level of morale.

Step 2 – Using the information, analysis, and recommendations gained from the Strategic Plan, IRP, and ASME testing, formulate a comprehensive long-term generation plan that addresses the four objectives stated in the recommendation. This plan should include the following elements:

1. Identification of new generation technologies that meet the needs of WAPA.
2. An overall schedule for implementation.
3. A budget for each identifiable project.
4. A project schedule for each discrete construction project.
5. Development of RFPs for solicitation bids for new units.
6. Development of a review process and team for selecting winning technologies.

Step 3 – Prepare a plan for funding the projects.

Step 4 – Review staffing requirements in lieu of new operational profile, maintenance requirements.

Step 5 – Review requirements for training, stores, procedures, and all other support requirements.

Step 5 – Develop a comprehensive performance monitoring program that includes:

1. EFOR tracking.
2. Root cause analysis tracking.

3. Heat rate target and tracking program.
4. Operational effectiveness reviews that include evaluations of plant management teams, plant assessment's for safety, housekeeping, and compliance with regulatory requirements.

Step 6 – Once decisions are made on technology, decide whether the spare IDE is needed, economic, or even functional given changes to the system.

COST BENEFIT

Our analysis was based on data form the FY 2014 and completion of the draft report in September 2014. Therefore, it does not reflect the recent drop in oil prices. Given the uncertainty as to whether current prices will remain low, we believe the analysis is still valid.

Cost

The basic cost will be for new generating units. Prices are typically advertised at about $800 to $1000 per kW installed. Given the increased cost of working in the Caribbean, we will use $1,300 per kW and assume this includes spare parts, training and startup. On average the St Thomas, Harley Station had a peak load over the last four years of about 70 MW and the St. Croix, Richmond Station had an average peak of 48 kW. Therefore if we assume all base load is replaced and existing CTs are used for reserve margin, WAPA would need to purchase about 120 MW of generation at a cost of $1,300 per kW for a total cost of $156 million.

Savings

While the primary savings is due to reduced fuel consumption due to improved heat rates, there are also other savings that cannot be easily quantified.

1. Assume that RICE units firing on LPG are added that total 80 MW (50mw for STT and 30mW for STX), with an installed cost $1300 per kW. (This assumes a 30% adder for installation in USVI due to logistical issues.) This results in a cost of $104 million for the new generation.)
2. This would permit normal operation of the system with the new RICE units and/or combined cycle units.
3. Heat rate savings would be based on a blend of new RICE units at about 8,000 Btu/kWh, combined cycle at about 11,000 Btu/kWh and simple cycle at about 14,000 Btu/kWh. Assuming a difference from a new system with an average of 9,000 Btu/kWh and the old system at 14,000 Btu/kWh, we achieve a 36% decrease in heat rate which results in a fuel savings of ($125 mil * 36% = $45 million)
4. In addition to heat rate savings, the new system would improve system reliability by permitting more cost effective spinning reserve and lower cost reserve alternatives.

WAPA INDIVIDUAL RESPONSIBLE

Vernon Alexander/Joan Foy

EXPECTED COMPLETION DATE

December 2015 for decision on changes to the system

IP4 – BUDGETING

Recommendation – III-R5, III-R6

RECOMMENDATION –III-R5, III-R6

III-R5 **Prepare a revised 2015 Electric O&M Budget and a five year Capital Plan that reflects current data. (Priority: Medium)**

The 2015 Electric Budget was prepared with April 2014 data and does not account for the delay in the LPG project. The 5 year Capital plan is dated.

III-R6 **Develop a more formal process for justification of capital projects and institute a feedback mechanism in which actual impacts or results of a capital project are measured afterwards relative to how they met the goals of the strategic plan. (Priority: Medium)**

It is of vital importance that capital spending have a strategic purpose that can then be measured to see how well it met its objectives. When reasons such as "Cut Cost" or "System Improvement" are used, the actual costs and improvements should be specified in the request. The sponsor of the project should then be required to measure the impact of the project once completed and report on the effectiveness.

WAPA RESPONSE

The Authority currently has justification process for all capital projects that ranks projects by priority. The priority ranking is based on factors such as reliability and efficiency.

ACTION OR IMPLEMENTATION STEPS

Step 1 – Establish a team to prepare the new O&&M and Capital budget

Step 2 – Develop a schedule, analytical criteria for decision on projects, and a review process.

Step 3 – Prepare draft budgets, compare to the results of the recent strategic plan, IRP, staffing studies and other analysis that affects both O&M and capital budgets.

Step 4 - Provide input to the rates and finance group so that long term plans can be developed.

Step 5 – Present to Management and the Governing Board.

COST BENEFIT

This can be prepared with internal staff, so there should be no incremental cost.

Savings accrue from better use of capital and avoiding the need for funding certain projects.

WAPA INDIVIDUAL RESPONSIBLE

Julio Rhymer

EXPECTED COMPLETION DATE

September 2015

IP5 – EXECUTIVE ORGANIZATION

Recommendation – IV-R2, V-R1

IV-R2 **Develop a senior management organization that reflects functional reporting relationships, a reasonable span of control, minimal layers, and the recognition of current challenges to WAPA. (Priority: Medium)**

The current organization for the senior management team is provided in Chapter 2 and shows the large number of direct reports, as well as isolation of some important departments that are facing critical issues. Vantage believes that the Governing Board and the Chief Executive Officer should take a long and hard look at organizational structure, the employees that fill this structure, and the specific expectations of every employee there. Earlier in the report we discuss the need to develop and implement strategic, resource and financial planning tools that will provide a roadmap for management to work toward. Below we offer our guidance as to how the senior management structure should look, with some comments on the expectations of the managers in those roles.

Span of Control - Reduce the number of direct reports. Typically a CEO will have five to eight major departments reporting to the position, with an additional one or two advisory reports. Currently the CEO has the following direct reports:

- **Chief Financial Officer** – Currently responsible for accounting, cash management, grants/grant administration, and customer service. (Currently Customer service reports here, but may be moved to an operational area later as the AMI changes stabilize.)
- **Chief Operating Officer** - Currently responsible for power plants and water production and distribution.
- **Director of Transmission and Distribution –** Responsible for system planning, substation maintenance, line department and meter testing.
- **Chief Information Officer** – Limited to corporate IT issues only.
- **Director of Human Resources** – Personnel and Safety.
- **General Counsel** – Internal and external legal services.

- **Director of Corporate Communications** – Responsible for coordination of external and internal communications.
- **Director of Special Projects** – Responsible for large projects.
- **Manager Internal Audit**–Reports administratively to CEO and functionally to the Governing Board.

Based on our experience within the utility industry, and more specifically, our understanding of the challenges WAPA is currently facing, we recommend some changes to this organization. The purpose of the changes is to permit the CEO to focus and interact with the department heads who are dealing with critical issues, to provide a higher level of input to the CEO of some key departments and to provide the level of professional oversight other groups need. Our proposal would include:

- **Chief Financial Officer:** Responsibilities would include all aspects of financial operations and management. This would permit the CFO to focus on the financial health of WAPA, its need to prepare accurate and timely budgets and financial forecasts, direct revenue collection, interact with rating agencies and financial institutions, and to work with both the PSC and VI Government to institute sound rates and tariffs. The Customer Service Department should ultimately be moved out of this group. If it is moved, it probably should report to the CAO.

- **Chief of Electrical Operations:** Currently these two departments operated under separate managers. However, the power generation, T&D, engineering, and probably AMI will be working as integrated operational components in the future. WAPA will be forced to utilize its own generation, increasing levels of both WAPA owned and independent renewable resources, a T&D system that is managed at both plant and distribution end by a SCADA system and monitored by an Outage Management System (OMS) while utilizing the AMI system for real time feedback on system status. The Chief of Electrical Operations will be the single person responsible for assuring that all of the new technologies, fuel sources, information data flow and most importantly customer operational expectations are met.

- **Chief of Water Operations** – Currently the water system is treated based on the old structure in which the power plant produced water and the distribution department tried to deliver as much as possible. With supply now provided by the Seven Seas contract through a Reverse Osmosis (RO) system, the link to the power plant is effectively severed. (Note, later in the report we suggest that the existing IDE systems be retired.) The water operations at WAPA are small in comparison to the electric, but just as important to the health and economic success of the Virgin Islands. The water production problem has been solved, but the need to replace the old, leaking and constrained infrastructure must be addressed at a high level. The new Chief of Water Operations would be the champion of the many changes that need to take place, reporting directly to the CEO and with clear, focused and undivided responsibilities.

- **Chief Administrative Officer** - There are a number of administrative and support functions within any utility that are important, need strategic and tactical direction, and

strong, focused leadership. The Chief Administrative Officer would provide the high level leadership needed as WAPA goes through this transition period and relive the CEO of direct day to day responsibility. Vantage suggests that Human Resources, Information Technology, Communications, Safety, Security, Procurement and Warehousing and Fleet Management all report through this position. These are important departments and need direct, full time leadership. It also allows more direct focus on the analysis and transformation that we are proposing in several of the support services areas.

- **Chief Project Management Officer** – Currently there is a Director of Special Projects with a very small team, limited resources and tools. WAPA is facing a huge task of completing a number of large, high cost projects on a tight integrated schedule that must be coordinated and successful if WAPA is to conquer its challenges. The LPG project has already been delayed and its successful completion is the linchpin to WAPA's future. The refurbishment of the power plants, conversion to LPG of its units and the installation of new technologies will take a significant level of project management that should not be placed on the shoulders of the current power plant management team. The completion of the Maximo MMS, AMI, OMS, and integration of SCADA are all key projects require significant oversight. Finally, the water system on St. Croix and St. Thomas are in dire need of replacement and expansion. This will be an expensive and difficult project and will need very strong project management support. This department requires a senior level manager with broad knowledge of WAPA as well as its contracting and procurement methods.

- **Chief Legal Counsel** - This is a support department to the CEO and needs direct reporting.

- **Internal Audit Manager** – The Internal Audit Department's integrity is dependent upon their absolute independence from all influence. The department must be assured of the ability to audit and report on sensitive and often provocative topics without fear of intervention by senior management. Therefore, this important function must report directly to the Governing Board.

V-R1 **Conduct a thorough organizational assessment that leads to an optimal organizational structure and right sized staffing plan that can better align the organization with the future needs of WAPA and its customers. (Priority: Medium)**

While the full assessment will take time to complete, WAPA does have the ability to realign its senior team and the high level organizational structure immediately. Using the analysis we provide and the descriptions of roles and responsibilities as the basis for job titles, a proposed high level organizational structure that allows for improved lines of communication and functional area efficiencies should result:

WAPA RESPONSE

The Authority has already implemented several organizational changes to optimize the effectiveness and efficiencies of the organization.

ACTION OR IMPLEMENTATION STEPS

Step 1 – Prepare a simple analysis that describes the current interaction between the CEO and all direct reports. This should be done with a facilitator who can detail the level of interaction, the importance of those interactions, the consequences of having more or less time available to address key issues. This document serves as a guide in deciding what functions should report directly to the CEO and those that should be managed at a lower level.

Step 2 – Consider alternate organizations, taking into account the need to focus on major issues while other issues are left to other reports. Weigh the impact or importance of issues each group faces in allotting valuable CEO time.

Step 3 – Prepare a reporting structure that assures the CEO gets all information needed on a timely basis. A daily and weekly "dash board" report should provide on the fly data, and regularly scheduled meeting with fixed agendas and reports should provide detail. The balance of meeting should be ad hoc and based on emerging issues.

Step 4 – Codify the new structure in new formal job descriptions, required competencies, experiential and educational requirements, etc. Align those with compensation, internal succession and talent development programs. Revise all necessary Company documentation, policies, procedures, etc. as required.

COST BENEFIT

The costs for a restructuring would range between $50,000 - $150,000 depending upon the level of consultant support required. The timing of this initiative will coincide with the HR reviews detailed in section IP8 below for an effective integration and cost savings.

WAPA INDIVIDUAL RESPONSIBLE

Hugo Hodge/Denise Nibbs

EXPECTED COMPLETION DATE

September 2015

IP6 – GENERATING PLANT STAFFING

Recommendation – V-R2, V-R3, V-R4

V-R2 **Investigate the potential for reducing the size of the Fuels Control Group at each power plant after the completion of the propane conversion project. (Priority: High)**

Once the LPG project is completed, the work requirements for the fuels group should be investigated for possible adjustments.

V-R3 **Restructure the production maintenance staff at the Richmond and Harley generating plants to focus on core competencies and reduce the maintenance costs of each facility. (Priority: High)**

Typically an organization design and right sizing study is required to assure that the plant operation and maintenance processes are analyzed and mapped to maximize the effectiveness of the recent installed technology enablers (i.e. distributed control system, maintenance management system, GE Mark IV turbine controls, automatic voltage regulator) are deployed to support these processes.

Develop contractual agreements or master service agreements with select major equipment vendors (i.e. turbine/generator, transformer, pump, valve) service organizations. In addition, seek to outsource the following non-core functions:

- Welding
- Pipe fitting
- Insulating
- Painting
- Structural construction
- Mechanical construction
- Electrical construction
- Facilities maintenance

The realignment of the Richmond and Harley maintenance department, as detailed on the following plant staffing summaries would result in a reduction of 36 positions for both plants. The majority of the WAPA reductions are associated with the outsourcing of non-core competency activities to local vendors, which would be at a significantly lower cost.

WAPA RESPONSE

The Authority has assembled a committee that consists of the COO, CFO and HR Director to review the organization and each division to determine the needs of the organization. Through the planning process of the LPG project it was decided that the members of the fuel controls group will be trained and placed in vacant positions throughout the organization.

ACTION OR IMPLEMENTATION STEPS

Step 1 – Assemble a team that includes representatives from management at each plant, (perhaps a union representative from each plant), the HR Department, the Strategic Planning group and finance. The team should understand that its goal is to develop recommendations for a bottoms up staffing plan that considers all new technology, typical staffing for similar units, any unique characteristics of the Virgin Islands, and the managements desire to operate in a safe, efficient and responsible manner.

Step 2 – Immediately eliminate those positons that are clearly not required anymore. These include those associated with the IDE operations.

Step 3 – Conduct an industry wide analysis of how utilities are staffing similar power plants. Identify specific vulnerabilities that must be addressed in the Virgin Islands.

Step 3 - Once the IRP and new generation plan is completed, a compete reassessment of staffing will be required. New technologies require much less maintenance. Further, WAPA already has too many employees in positions that are no longer needed.

COST BENEFIT

The preliminary analysis in the Vantage report projects 17 reductions at Richmond and 19 reductions at Harley. Assuming $75,000 per employee the immediate savings would be $2.7 million.

WAPA INDIVIDUAL RESPONSIBLE

Julio Rhymer/Gregory Rhymer, Denise Nibbs/ Kevin Smalls/Ira Bowry/John Woodson

EXPECTED COMPLETION DATE

December 2015

IP7 – T&D AND CUSTOMER SERVICE STAFFING

Recommendation – V-R4, V-R5, V-R6

V-R7 **Conduct a bottom up evaluation of T&D on each island that addresses structure and titles, crew sizes, and the number of crews. (Priority: Medium)**

While our audit did not do an in-depth analysis of T&D organization, there appear to be enough inconsistencies that an in-depth, bottoms up analysis is warranted. It is our understanding that new vehicles are scheduled for purchase over the next few years. Given the new vehicles, the new Outage Management System, better communication, SCADA and other technologies, a better structure and workforce size may be appropriate

V-R5 **Perform a bottoms up process evaluation and staffing analysis of Customer Service that considers current and future requirements. (Priority: Medium)**

While we have recognized the need for this evaluation approach throughout WAPA, there are several factors that we wish to call out for specific inclusion in the customer service review. These include:

- Consider the workload changes that will occur as a result of AMI with particular attention to the timing of the changes. This will include the elimination of meter reading routes but must also consider the need to maintain the new devices.
- Develop a strategy with goals and objectives for moving additional customers away from in-person cash payments to direct pay, increased use of payment locations and the use of the new kiosks.
- Consider additional cross training of customer service reps and utilize teams on a WAPA rather than island by island basis. This may require additional phone lines especially on St. Croix but this is a minimal cost.
- Better utilize inter-island transportation. Customer Service representatives, meter readers and revenue protection personnel can be shuttled to separate islands to meet work peaks and valleys if the work load and work force is viewed as a WAPA team rather than an Island work group. Transportation between St. Thomas and St. John is inexpensive and quick. Air travel between St. Thomas and the other islands is more expensive but still far less than the cost of extra personnel. It is likely that WAPA can greatly reduce the cost of this travel through special arrangements with the private carriers.
- Take a proactive approach to managing the customer service demand and associated staffing rather than reacting to demand. Customers can be channeled and demand managed while still providing quality service. This includes a number of tools including; better teaming, the use of call backs, improved call volume analysis and outbound communication to customers to encourage timing shifts in their behavior. (I.e. informing customers of less busy times to try and reach a customer service representative.)
- Assume responsibility for revenue protection and collections insuring customer service has control and accountability for the entire process from meter reads to revenue collection.
- Combine the staffing analysis with the design and layout of all future facilities.

At a minimum, the meter reading and meter services departments face very significant changes as a result of AMI. These changes will occur regardless of the ultimate reporting relationship established. The meter reading department will transition from physical meter reading to a much smaller, more technically skilled complement of employees who service meters and perform occasional special reads. This assumes that WAPA makes the logical transition of both water and electric meters to AMI in the same geographic area. We anticipate that through read reductions from full AMI implementation[32], better teaming and cross training that the current

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[32] WAPA may find that even with full AMI implementation, certain locations do not logically or economically lend themselves to AMI. Full implementation means all practical locations.

meter reading compliment of twenty-one could be reduced to as low as four individuals. Two would support St. Thomas and St. John and two would support St. Croix. The ramp down to this level requires a controlled and planned approach, which can likely be accomplished through attrition.

The traditional customer service function also has opportunity for long term staffing reductions while also improving service levels. Utilities have long struggled with transitioning customers from a local presence with physical call center offices to more automated and remote interfaces. The economics overwhelmingly support using teams of individuals in call centers to smooth peaks and valleys. For WAPA this would model would enable calls coming into WAPA to enter a master multi island queue and then be answered by the first available agent on any of the three islands. This model requires adequate telephony and systems functionality but is otherwise a long proven and relatively simple model to implement. Customer service could likely see a reduction of 10-15 percent in staff over time while maintaining or improving service quality. This would translate to approximately 4-6 FTEs.

V-R6 **Move the support services function under an officer level individual. (Priority: Medium)**

The support services functions of IT, fleet, materials and purchasing should be moved under a single supporting services organization. As part of this reorganization we suggest the following processes be evaluated:

- Consolidation of the warehouse management functions and purchasing into a supply chain organization that has better visibility and control of material and supplies.
- Expansion of the information technology functional responsibility to better control and oversee systems deployment, systems planning and training.
- Explore opportunities for outsourcing of certain functions such as fleet maintenance as the fleet standardization model moves forward.
- Eliminate one to one reporting relationships especially in the management ranks.
- Reappraise and justify all functions being performed internally.
- Evaluate the impact of current changes on the staffing needs. For example, vehicle standardization should lead to productivity improvements.

WAPA RESPONSE

Accepted: Study conducted for the Transmission and Distribution Departments with recommendations made that will also affect customer service credit and billing functions. The Authority is currently reviewing the impact of the recommended changes.

ACTION OR IMPLEMENTATION STEPS

The T&D and Customer Service Department reviews are combined because there is a great deal of crossover in job functions and responsibilities.

Step 1 - Assemble a team that includes representatives from all associated groups. The team should understand that its goal is to develop recommendations for a bottoms up staffing plan that considers all new technology, typical staffing for similar utilities, any unique characteristics of the Virgin Islands, and the managements desire to provide quality service at a reasonable cost

Step 2 - Immediately eliminate those positons that are clearly not required anymore. Review the list provided in the recommendation above and determine potential changes.

Step 3 - Determine the specific activities that must be done, the location where the work is performed, and the optimum group for delivering service. This should be done on a T&D and Customer Service wide basis.

Step 3 - Prepare a report offering alternative to management and the Governing Board.

COST BENEFIT

There were a total of 10 positions identified in St Thomas, 4 in St. John's and 10 in St. Croix for T&D with a potential savings of $1.8 Mil per year.

WAPA INDIVIDUAL RESPONSIBLE

Clinton Hedrington/Julio Rhymer

EXPECTED COMPLETION DATE

Spring 2016

IP8 – HUMAN RESOURCES RECOMENDATIONS

Recommendation – V-R8

V-R8 **Conduct a thorough review of all business and human resources programs and update those that are out of date or inconsistent with best practices. (Priority: Medium)**

At a minimum, the following actions are needed:

- Develop a comprehensive strategic communications plan. A comprehensive communications plan is a critical weapon in the arsenal of highly effective leaders and organizations. WAPA would be well-served to recruit a Communications Director who can steer the company toward greater engagement with its internal and external stakeholders, not only in the way it sends communications out, but also in the way it mines data to help drive decisions going forward.
- Commit to raising employee morale. WAPA does community engagement activities, buys employees company tee shirts to build a team spirit, and no doubt engages in other departmental and company-wide events. Certainly all of the WAPA employees that were encountered by this consultant were very friendly and seemed like a wonderful group with whom to work. But morale goes deeper, and requires the company to pay attention to what employees need, what motivates them, what barriers do they encounter, etc., and to take action against those. Consulting facilitation would be beneficial to create a plan to address the many prongs of morale and cultural issues WAPA faces.
- The policies and procedures manual needs to be updated, which would require a review of all policies and practices, revisions where necessary, and the production, distribution, and communication of new documents.
- Hire a consultant to conduct a comprehensive compensation program evaluation. Working closely with senior management, the consultant would help WAPA create a system that would be sensitive to market fluctuations and support the acquisition of needed talent and the movement and opportunities for internal employees. The assessment would include an articulation of their compensation philosophy that drives their market positioning, external market data for their positions, a review of the internal jobs to assure the written job descriptions accurately reflect the needed skills and experience, an assessment of the internal pay positioning, and strategy to adjust any discrepancies. A tighter compensation process will provide a strong basis for job pricing, employee movement and recruiting, particularly during the upcoming times of change.
- The performance evaluation program needs to operate under a policy that is thoughtful and consistently applied. The assessment tool needs to be updated and the results integrated with professional development and internal movement opportunities. Supervisors need to be trained on the new program so that WAPA has accurate evaluation documentation to support any personnel actions going forward.
- Review the union contracts for any necessary work rule changes that would create efficiencies in work assignments, crew size, scheduling, etc. Change the language so that promotional opportunities are merit-based rather than seniority-based.
- Develop a comprehensive employee development program that speaks to the overarching continuing needs of the organization.
    - Tie professional development to the performance assessment program as part of the communications regarding opportunities and expectations of employee engagement.
    - Include leadership skills, professional business skills, interpersonal skills, technical skills, safety training, etc. as appropriate by level and position.
    - Supervisory and managerial skills training would be beneficial to those moving into supervisory roles and has not been a focus for the utility. Leadership

succession planning tied to professional development along a career path will support the continued success of WAPA during a changing future.

- Leadership and other 'soft skills' training ought to be routinely employed to build the capabilities of the broad professional and technical employee populations. UVI is able and willing to partner with WAPA to create custom programs that can be delivered with economies of scale.
- Training – both technical and safety – will need to be enhanced to meet the specifications of the new technologies.
- A knowledge-capture and transfer program would be a cost-effective way to provide a basis for an employee training program.

WAPA RESPONSE

Accepted: The Authority constantly reviews and updates its policies and business procedures.

ACTION OR IMPLEMENTATION STEPS

Step 1 – Assemble a team to address each item in the recommendation.

Step 2 - Prepare a separate plan of action for each item.

Step 3 – Develop separate cost benefit analysis for each action item.

COST BENEFIT

The above recommendations can be addressed in the most cost-effective way by:

A) Hire an HR/OD consultant who can provide the necessary consulting support for the Culture Change initiatives and communications, Policy & Procedures updates, the Labor Contract review, the Performance Management review & associated training, and the overall Employee Training Development Program. An integrated approach for these programs will yield the optimal results and will reduce the direct and indirect costs of managing and hiring multiple consulting firms. The anticipated cost for this bundled approach would range from $230,000 to $450,000 depending upon the type of firm selected.

B) Hire a compensation consulting firm to conduct the compensation study. Firms that also have deep expertise in benefits programs would be able to provide any necessary support for a total compensation approach. Costs for a compensation study would likely be $75,000 - $125,000.

C) Changes in the progression of employees covered under labor agreements would require internal discussions/negotiations with the unions. This should be able to be effectively handled with internal resources and would have no direct additional costs.

The benefits of these combined programs need to be considered on a long-term scale. Providing a more highly trained workforce at all levels reduces the need for outside hires and external consultants. The cost of filling a position from the outside ranges

from 1 to 5 times the position salary, depending upon the level of the job. This number includes direct hiring costs, recruiting and interviewing time of all parties, onboarding time, loss of productivity of supervisory personnel while the new employee comes up to speed, etc. Promoting from within eliminates many of those costs. A more highly-skilled workforce is also positioned to see new opportunities from a broader base of knowledge, make better decisions, mitigate risks by increased information and awareness, etc. While challenging to quantify, the potential savings can be substantial.

Finally, a culture of engagement, pride, and creativity will spur increased productivity. PCG research indicates that even very busy environments yield on average 65% productive engagement. The remaining percentage is lost to travel between/within facilities, conversations among co-workers about personal issues, bosses, work concerns, etc. This is magnified in times of change, when concerns about their personal and professional well-being may take center stage. Managing this environment is critical. Even a 10% increase in focus and productivity would have a significant effect on VIWAPA's bottom line.

WAPA INDIVIDUAL RESPONSIBLE

Clinton Hedrington/Julio Rhymer

EXPECTED COMPLETION DATE

Spring 2016

IP9 – PROJECT MANAGEMENT ORGANZIATION

Recommendation – VI-R1, V-R2

VI-R1 **Reorganize the Special Projects into a Project Management organization and provide the appropriate project management tools to manage complex multi-discipline projects. (Priority: High)**

Review the current WAPA Capital Project Procedures and realign the Project Management Organization to assure that the approved capital projects are completed on schedule and under budget. Provide a more sophisticated Project Management technology enabler (i.e. Primavera) to assist in the management of multiple complex projects. Develop a Project Verification Process to measure the success of a given project and assure the previously expected benefits are achieved.

We would suggest an organization that looks something like what is shown below. The final organization should be determined once the number, length and complexity of projects is defined, and the number and type of internal resources is determined. An alternative may be to contract out project management to some degree as well.

VI-R2 **Review the schedule and progress on the AMI implementation, and determine if the current schedule is feasible. (Priority: Low)**

Based on a review of on-going AMI installations in the US the current deployment schedule may be too aggressive and difficult to attain. In addition the AMI needs to be expanded to include an automation of the WAPA water distribution system as part of the overall effort on loss reduction and line replacement prioritization.

Review the current schedule and determine if additional resources are required to meet the completion date.

WAPA RESPONSE

Management has reviewed the current Special Projects Division structure and believes that the division serves the Authority well by managing special projects such as the LPG, renewable energy and the future development of Administration Buildings of the Authority.

Management has reviewed the schedule of the AMI project has proven to be feasible and effective. Currently, project is 95% complete in the St. Thomas/St John District and 55% complete territory wide.

ACTION OR IMPLEMENTATION STEPS

Step 1 – Identify the array of projects that this group will need to address over the next five years.

Step 2 – Conduct a search for a Senior Manager to lead the group.

Step 3 - Identify the tools needed to handle projects, including scheduling and cost management systems.

Step 4 - Determine the types of personnel needed, inducing engineers, schedulers, and planners

COST BENEFIT

The primary benefit will better run and controlled projects that are completed on time and budget.

WAPA INDIVIDUAL RESPONSIBLE

Vernon Alexander, Julio Rhymer, Clinton Hedrington

EXPECTED COMPLETION DATE

December 2015

IP10 – IT IMPROVEMENTS

Recommendation – VI-R3

VI-R3 **Ensure that the concerns with new system improvement related IT systems are properly addressed, by expanding the responsibility of the Information Technology Organization.** (Priority: Low)

A single department should be charged with the responsibility to ensure that the complex systems being installed are fully integrated into the planning, operations and maintenance processes. In addition, the associated processes should be mapped to assure maximize effectiveness and minimize any redundancies. The actual implementation of each of the above enablers should then be coordinated with impacted departments under the responsibility of the Project Management team.

WAPA RESPONSE

Not Accepted: Management believes that the current IT department along with the automation group works well in the planning, operation and implementation of all technology driven projects.

ACTION OR IMPLEMENTATION STEPS

Step 1 – Determine the systems, procedures and responsibilities that this department should encompass. Determine how it will interface with user departments.

Step 2 – Prepare a plan for upgrading or replacing software and systems.

Step 4 – Develop an IT strategy that communicates the department's role and services.

COST BENEFIT

A properly functioning IT department will enable every other WAPA department to run in a more efficient manner.

EXPECTED COMPLETION DATE

IP11 – WATER DEPARTMENT SSUES

Recommendation – VII-R1, VII-R2, VII-%3, VII-R4, VII-R5, VII-R6, VII-R7, VII-R8

VII-R1 **Create a position of Chief Water Operations that reports directly to the Chief Executive Officer, with direct control of water related operations, capital projects, budgeting, and implementation of all strategies. (Priority: High)**

This individual should be a strong manager, capable of addressing the organizational needs of the water department as well as the extensive construction program that is likely to occur. The individual should also have excellent communication skills and be able to work at repairing WAPA's image that suffers as a result of the discolored water problem and the current high water rate. The Individual should also be part of the team tasked with bringing back old customers that have left the system, working to bring on new customers when extensions are proposed, and dealing with external stakeholders regarding a revised tariff structure.

VII-R2 **Conduct an independent study to determine the risk to the RO system from hurricanes, the cost for backup using the IDE's versus other options. The study should explicitly address the savings that can be achieved by retiring the IDE's and reducing staffing to the level needed post-IDE removal. (Priority: Low)**

VII-R3 **Consider eliminating the Assistant Superintendent positions as opportunities occur. (Priority: Medium)**

We do not know the current circumstances regarding retirements or the qualifications of the current position holders, so we would simply suggest that management address these changes as opportunities present themselves.

VII-R4 **Perform a water loss audit in accordance with IWA/AWWA methodologies (International Water Association/American Water Works Association) as part of its Water Loss Reduction Program. (Priority: High)**

We recommend that the Authority consider performing a water loss audit in accordance with IWA/AWWA methodologies (International Water Association/American Water Works Association) as part of its Water Loss Reduction Program. A water audit performed in this manner will help the Authority better understand its real and apparent water losses so that informed decisions can be made on where to focus efforts on water loss mitigation. Real losses consist of water leaks in pipes and storage tanks, and water main breaks. The key impact of reducing real water losses is a direct reduction in water use and a corresponding decrease in the cost of purchased water. Apparent losses consist of unauthorized consumption of water and

water loss through meter under-registration and data handling errors. The key impact of reducing apparent water losses is an improved revenue stream and a more equitable distribution of cost to the customer.

WAPA is moving forward with an Advanced Metering Infrastructure. These new meters will be more accurate and, during the meter installation process, allow for a review of connections to help identify unauthorized un-metered connections. The Authority should also consider District Metering which would be the installation of in-line meters within the distribution system piping to record flows to discreet areas within the distribution system. Data regarding flows to discreet areas would provide the basis of an assessment of levels of water loss. Real loss can be estimated based on a minimum flow rate for a given area. The Minimum Night Flow (MNF) usually occurs between 2:00 am and 4:00 am. This technique could assist staff in identifying the priority areas for distribution system renewal and replacement projects to reduce real water losses.

A review of large-user meters should be made to make sure they are the proper type and are properly sized for the actual water use by the customer. Meters that are too large will not accurately measure the volume of water being used by the customer. The size of the meter should be compared with the actual historical use data and if warranted, a smaller meter installed. By appropriately sizing meters, potential apparent losses caused by under-metered flows could be reduced.

VII-R5 **WAPA should consider discontinuing standpipe service or if the standpipe service is considered a vital community service, find ways to reduce costs. (Priority: Low)**

There are private companies providing standpipe services in direct competition with the Authority. If the Authority cannot provide the same level of service at a less expensive price, it should not be in the standpipe business or it could lease its facilities to provide companies that are currently providing standpipe services. If there are residents or businesses that are dependent on the Authority providing the service and it is a benefit to the community, the Authority should aggressively find ways to reduce costs of providing the services such as centralizing the delivery points and automating the service to reduce the labor and maintenance overhead costs of the standpipe facilities.

VII-R6 **Delay the start of the proposed Nazareth Water Line Expansion until a major decision can be made regarding overall line replacement, discolored water issues are completely resolved and better estimates on long-term water and electricity costs are known. (Priority: Medium)**

With all of the other priorities the Authority has with replacement of leaking water mains, any expansion of the system should not occur without binding commitments from the developments to connect to ensure the Authority will be reimbursed for the capital cost of the project in a reasonable amount of time such as 15 to 20 years. The Authority could finance the cost or the project and pass the cost of debt service on to the developments through a service agreement.

VII-R8 **Distinguish between water distribution upgrades and extensions and adopt associated funding policies. (Priority: Low)**

Typically utilities differentiate between how funds are sourced for different types of projects.

- Replacement of existing water mains due to age and water loss should be budgeted and funded under the existing policies and paid for through grants and capital improvement funds. Most of the existing infrastructure on St. Croix would fit into this category.
- Line extensions into new areas of development should be funded internally based on a sound economic return or a decision that the extension best serves the community needs. The proposed Nazareth Water Line Expansion on St. Thomas, which could potentially serve an expanded area with a number of potential commercial customers, would qualify here, if there are adequate commitments to make it cost effective.
- New water distribution pipe extensions required to serve new developments, whether they are single family homes or commercial projects, should be funded and constructed by the developer. Funding and construction could be performed by the Authority with funds being recouped from the developer through a surcharge over a reasonable period of time at the same interest rate the Authority pays.
- The cost for water main upgrades to provide a higher level of service to redeveloped properties or existing properties that previously had other sources of water would be borne by the property owner. Funding and construction could be performed by the Authority with funds being recouped from the developer through a surcharge over a reasonable period of time at the same interest rate the Authority pays.

WAPA RESPONSE

Not Accepted. Management continues to review the current organizational structure of the water system. Currently the Authority's water system management reports to the Chief Operating Officer of the Authority.

The Authority will work with Seven Seas to determine economic risk and the viability and feasibility of a study.

Management has determined that standpipe sales pay a critical role within the community since potable water is not available throughout the territory. This creates private economic activity and an important source of revenue for the Authority.

Through the implementation the Water business plan the Authority has postponed the Nazareth water expansion project because it was not economically feasible to complete at this time for the Authority.

The water business plan has prioritized expansion, replacement, and maintenance projects. Within this business plan each project has a ranking based on either line loss improvement, customer growth, or revenue enhancement.

ACTION OR IMPLEMENTATION STEPS

We have included all of the recommendations above into this implementation plan, because it will require the efforts in all areas to drive this department forward.

Step 1 – Identify or recruit the right personnel to run the department.

Step 2 – Provide both authority and guidance to the new COO to act on all of the other recommendations.

Step 3 - Perform analysis as needed, using external expertise where required, to address the following:

- Conduct an independent study to determine the risk to the RO system from hurricanes, the cost for backup using the IDE's versus other options. The study should explicitly address the savings that can be achieved by retiring the IDE's and reducing staffing to the level needed post-IDE removal.
- Perform a water loss audit in accordance with IWA/AWWA methodologies (International Water Association/American Water Works Association) as part of its Water Loss Reduction Program.
- Analyze the economics of the standpipe service based on cost and/or a policy stating that the standpipe service is considered a vital community service.
- Delay the start of the proposed Nazareth Water Line Expansion until a major decision can be made regarding overall line replacement, discolored water issues are completely resolved and better estimates on long-term water and electricity costs are known.
- Distinguish between water distribution upgrades and extensions and adopt associated funding policies.

COST BENEFIT

The potential savings of reduced water losses, an expanded distribution system can be significant. Preliminary analysis suggests that the savings in water loss reductions can more than offset the cost of the project.

Simply reducing the losses on St. Croix to target levels will save over $2 million per year. In addition, there could be increased incremental revenue form new sales as lines are extended.

WAPA INDIVIDUAL RESPONSIBLE

Hugo Hodge/Rupert Pelle/Noel Hodge/Julio Rhymer

EXPECTED COMPLETION DATE

Middle 2016

IP12 – LEGISLATIVE ISSUES

Recommendation – VIII-R1, VIII-R2, VIII-R3, VIII-R4

VII-R7 **Take steps with the appropriate legislative body and regulators to implement a monthly Base Facility Charge for its different classes of services. (Priority: Medium)**

A base facility charge would essentially be a monthly "readiness to serve charge" that would recoup costs to offset expenses that the Authority incurs to provide service to a customer regardless if they use any water. Expenses such as maintenance of the pipeline in front of the house, cost of the water production facility, customer service meter reading and billing, general administrative overhead of the Authority, etc. Yes, these expenses are also recouped within the water usage rate, but it is not equitable that a customer can enjoy the convenience, reliability, and security of a metered water connection but not contribute to the expenses of the Authority on a monthly basis regardless of water usage. A base facility charge is an equitable charge for all customers and will help provide a more stable revenue stream that would further the Authority's goal of meeting the required debt service coverage ratio and funding needed capital improvements.

VIII-R1 **Continue to inform the Legislature, Governor, and all stakeholders of the magnitude of the non-payment by the government agencies and its potential impact on the financial viability of WAPA. (Priority: Medium) (Priority: High)**

WAPA should take it upon itself to prepare an annual report for the legislature that lists the outstanding bills by each government agency and the length of time that the amount has been past due. The report should specify the financial impact for WAPA and also discuss the rate impact on its paying customers.

VIII-R2 **Encourage the legislature to establish a direct payment procedure for payment of utility bills by government entities.**

WAPA should work with the legislature to emphasize the importance of the government agencies keeping current with the payment of their electric bills. The legislature must understand that the scarce tax dollars that are collected and allocated for the payment of utility bills are in fact not spent for the purposes for which they are collected. The legislature should be aware that one of the unintended consequences of non-payment of utility bills by the government agencies is reduced level of service for the other utility customers. Further, WAPA will be forced to increase its rates to recover the costs of government loans issued to WAPA to help it maintain its financial integrity due to non-payment by the government agencies. Based on this understanding, it should be easier for the legislature to enact a direct payment procedure. More importantly, a direct payment procedure is more equitable to WAPA, WAPA's non-government customers and also the taxpayers of the Virgin Islands.

VIII-R3 **Seek approval, from the Legislature, for a monthly Base Facility Charge for its water rates.**

WAPA should determine the level of customer-related costs it incurs to serve its water customers. Based on this information, WAPA should develop a monthly charge per customer to recover these costs. This would be fair to customers and it would provide some measure of revenue stability for the water entity of WAPA.

VIII-R4 **Establish a vigorous marketing initiative to take advantage of its reduced rates and develop increased electricity sales with pre-existing, existing and new commercial customers. (Priority: Medium)**

With the prospect of WAPA's electricity rates being significantly reduced in the near future, it should establish a marketing initiative that focuses on commercial customers who have recently left the WAPA system; those who have reduced usage but remain on the WAPA system; and those who are potential new customers. WAPA needs to assemble a team to identify all of the potential customers and develop marketing material to share with these customers. Also, WAPA should seek the necessary regulatory or legal authority to offer incentive or economic development rates and to enter special contracts. WAPA may want to research the tariffs and contracts of other utilities to enable it to develop some meaningful parameters for the tariffs and contracts.

WAPA RESPONSE

The Authority on several occasions have submitted information to the legislature in regards to a customer charge for the water system.

Management continues to inform the Government of the Virgin Islands in regards to the outstanding receivables. This is an ongoing effort.

The Single Payer Utility Fund law was enacted. In recent talks with the GVI, there is a commitment to implement the Fund to alleviate some of the issues with GVI payments going forward. Discussions were also centered on how to resolve the Streetlight and past due receivables.

Management has implemented through its key accounts division a process to retain current commercial and large power customer along with recruiting key customers back to the grid through providing a concierge service to these customers.

ACTION OR IMPLEMENTATION STEPS

The recommendations listed above must fall on the senior management of WAPA and the Governing Board. We provide the following specific steps.

Step 1 – Develop a plan to present each initiative to the new Governor and Legislature.

Step 2 - Prepare separate reports that outline the problem, proposed solution, cost/benefit and impact on rate payers.

Step 3 - Present all required actions to the appropriate groups.

COST BENEFIT

The actions above will better align rates and tariffs with users and drive customers to make better decisions.

WAPA INDIVIDUAL RESPONSIBLE

Julio Rhymer/Marlene Francis

EXPECTED COMPLETION DATE

September 2015

IP13 – REVENUE COLLECTION

Recommendation VIII-R5, VIII-R6

VIII-R5 **Initiate a program to determine if WAPA is collecting all of the revenue to which it is entitled and prepare a plan for remediation. (Priority: High)**

WAPA should consider instituting a revenue assurance program. They may be surprised at the findings. Recently, Bermuda Electric Light Company ("BELCO") completed a comprehensive review of its tariffs and losses and found considerable benefit from the initiative. More specifically Bermuda found the following:

> "While there were obvious economic reasons to expect customer to slo-pay, lo-pay, and no-pay their utility bills, many of the reasons uncovered were not expected. Some customers were connected by BELCO but were not correctly setup in the billing system. Others were disconnected by BELCO and then they reconnected themselves without BELCO knowing. Some commercial customers were assigned incorrect rate classes while other commercial customers had invalid metering/wiring configurations. All tolled – these revenue assurance gaps from unbilled, under-billed and theft grew to 5.5% of gross revenue at a time when overall revenue was decreasing because of the economy."

Many of these concerns seem applicable to the WAPA system also. Vantage believes it warrants further review. WAPA should initiate a program to audit its tariffs and the appropriate application of those tariffs. The program should also identify and account for any losses and determine the potential to convert those losses to potential revenue.

VIII-R6 **Calculate the actual cost to provide street lighting service and, if appropriate, investigate an alternate cost-based rate structure. (Priority: Medium)**

Although the safety of the residents of the Virgin Islands as well as the safety of its tourists is an important consideration, it is impossible to determine how much WAPA and its ratepayers are subsidizing this service without a better understanding of the cost to provide the service. In order to be fair to all parties, WAPA should perform a cost study to determine what it costs to provide street lighting service. Based on the results of the study, all of the parties will have a better understanding of the magnitude of the subsidy that WAPA and its ratepayers are providing to keep the streets well lit. Based on the feedback we have received, WAPA is likely to find that the subsidy it is providing cannot be justified and that it must develop a cost-based rate for street lighting to be submitted to the PSC for approval.

WAPA RESPONSE

Management continues to review its collection process. The enactment of a Trouble accounts policy along with creation of a collection division has assisted in these efforts. Also standard operating procedures for the billing and collection process are being completed to ensure all customers all are billed monthly and revenues are collected.

Management completed a count and analysis streetlight service cost and determined that the annual streetlight cost is $10.6 million.

ACTION OR IMPLEMENTATION STEPS

COST BENEFIT

The potential benefit of collecting revenues on time cannot be overstated. While we could not develop a firm estimate for uncollected revenues, it is likely to be in the $ million.

Similarly street lighting revenues do not meet costs. Increased revenue for a tariff that better correlates to actual use is required.

WAPA INDIVIDUAL RESPONSIBLE

EXPECTED COMPLETION DATE

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September 17, 2015

Johann A. Clendenin, Chairman
Virgin Islands Public Services Commission
Barbel Plaza, No. 8 Estate Ross,
Charlotte Amalie,
St. Thomas, USVI 00804

RE: PSC Staff Analysis of 2015 Comprehensive Management Audit Report of the Water & Power Authority

Chairman Clendenin:

This report is provided as an appendix to the February 3, 2015 Management Audit Report ("Audit Report") conducted by Vantage Energy Consulting, LLC ("Vantage"). This report presents and addresses – as provided for in the overall protocol for the process of the Management audit – Georgetown Consulting Group, Inc.'s ("GCG") assessment of the findings and recommendations contained in the Vantage Audit Report on the management and operations of the electric power and water systems of the Virgin Islands Water & Power Authority ("WAPA"). The Audit Report presents a number of critically important findings and recommendations that identify to the Commission and the public not only the root causes, but the systemic issues, that underlie WAPA's historic and continuing inability to operate production and delivery systems efficiently and reliably, in accordance with best utility practices, and at affordable consumer rates. The impacts of the historic and current deficiencies identified have been financially and economically devastating to consumers, businesses and to the territorial economy as stated by the Management Audit Report. The Management Audit Report does speak highly of the abilities and qualifications of the current WAPA management and indicates that management can implement the Audit Report recommendations effectively to significantly reduce cost and improve service levels. We specifically highlight in this appendix certain recommendations that we believe deserve immediate attention and action by stakeholders including the Commission, WAPA and its Board and consumers to implement significant savings and produce concurrent improved service.

Background

The Audit Report was undertaken pursuant to the June 2009 Global Settlement Agreements for the Electric and Water Systems Rate Cases (Dockets 575 and 576). These settlement agreements required an independent management assessment of WAPA's electric power and water utility

systems. A previous management audit of WAPA's power and water systems was conducted in the mid 1990's. It is generally held that management audits of a utility's management and operations is an indispensable tool available to a regulatory body and represents an important resource in identifying best practice improvements in a utilities' management and planning processes, operational effectiveness and overall efficiency.[1]

Although the management audit was required under the 2009 Global Rate Settlement Agreements, it was substantially delayed for a number of years without explanation from WAPA and not initiated until the 2012 base rate proceedings commenced, where it was pointed out that the Audit Report requirement from the prior rate cases and Stipulation had not been undertaken. The process was initiated by WAPA in 2013, and Vantage was retained in May, 2014 to conduct the required Audit Report. The Audit Report was to proceed under the direction of an Audit Steering Committee ("ASC"), which was consisted of two technical consultants to the VI Public Services Commission ("PSC") and three WAPA management representatives; however, the Audit Steering Committee failed to operate as called for under the Global Settlement Agreements.[2] This deficiency may have led to a different prioritization of audit areas than may have occurred had the ASC functioned as required under the settlement agreements. The end result, however, continues to provide an opportunity to achieve significant savings and improved service if the recommendations are implemented.

The primary goal of the audit was to perform an examination of all functional aspects of the WAPA governance, management, organization, maintenance and operation of its electric power and water utility systems and, then to narrow the scope of the audit to focus in depth on processes, systems, organization, and staffing, as well as performance, for the purposes of defining potential changes that offer the most significant opportunities for improvement and consumer savings. There are numerous critically important findings and recommendations contained in the Audit Report. The Audit Report resulted in numerous findings and 34 specific recommendations with the recommendations being prioritized in the report as follows: High Priority – offering an immediate impact to safety, reliability or significant cost savings; Medium Priority – offering long-term cost savings, improved operability, or improved management capability; and, Low Priority – offering overall improvement in operations, rate structure and communication of information.

The February 3, 2015 Vantage Audit Report recommendations, their priority, and economic benefits to consumers are summarized in the table that follows. WAPA in its September 2, 2015 supplemental report and implementation plan commenting on the Vantage Audit Report recommendations was to comment on each Vantage recommendation and indicate its acceptance or rejection of the recommendation. In the WAPA response it says:

> *"Of the 35 Recommendations contained in the Audit Report, WAPA has accepted 26 of them completely, accepted in-part 0, and rejected 9. As required in the initial RFP, this*

[1] A gap of 18 years from the current to the prior Audit is considered very long. In addition, contrary to accepted auditing practices there was not and has been no regular or periodic review to assess whether the recommendations of the prior Audit were implemented effectively and produced the intended results.

[2] The division of effort between an initial phase and a more detailed second phase was not directed by the ASC as called for and the approval process for the initiation of the second detailed phase was undertaken by WAPA alone rather than the ASC.

Implementation Plan details the actions to be taken, the expected completion dates, the individuals responsible for implementing each recommendation and cost benefit support where applicable."

We have been unable to determine in the WAPA submission with certainty which recommendations have been rejected. WAPA, in a number of cases in its September 2nd report, clearly indicated its acceptance or rejection of a recommendation; however, in many cases it did not clearly indicate acceptance or rejection. In those cases, we have simply inserted the word "Unknown" in the table below. We suggest that during WAPA's presentation to the Commission on September 23, 2015 it clearly advise the Commission and other stakeholders which of the Vantage recommendations it has accepted and which it has rejected. For each rejected Vantage recommendation it should provide the factors influencing its rejection.

Summary of Recommendations

Priority		Recommendations	Accept/Reject	Consumer Savings[3]
High	*III-R1*	Implement a comprehensive strategic planning process.	*Accepted.*	
High	*III-R2*	Complete IRP as defined.	*Accepted.*	
High	*III-R3*	Redevelop generation fleet to meet: • Reliability and availability; • Efficiency; • Operational effectiveness; • Organizational effectiveness.	*Unknown.*	$30 - $45 M
Medium	*III-R4*	Develop Root Cause Analysis program.	*Accepted.*	
Medium	*III-R5*	Prepare a revised 2015 O&M Budget and a 5-yr. CIP.	*Accepted.*	
Medium	*III-R6*	Develop formal process for justification of CIPs.	*Accepted.*	
High	*IV-R1*	Retain experienced generation expert or retain IAC or sell generation assets to IPP.	*Rejected.*	
Medium	*IV-R2*	Develop senior management organization - reporting relationships, spans of control, layers, and recognition of challenges.	*Partially Accepted.*	

[3] In most cases WAPA did not provide any benefit – costs analysis of consumer savings. In the cases of rejected recommendations it provided no analysis of the alternative it is pursuing and potential consumer benefits.

Medium	*V-R1*	Conduct organizational assessment - optimal structure and right sized staffing	*Accepted.*	
High	*V-R2*	Investigate reducing the Fuels Control Group.	*Accepted.*	
High	*V-R3*	Restructure maintenance staff at Richmond and Harley plants.	*Rejected.*	$3.0 - $6.8 M
Medium	*V-R4*	Conduct evaluation of T&D operations	*Unknown.*	$1.0 - $1.8 M
Medium	*V-R5*	Perform evaluation and staffing analysis of Customer Service.	*Accepted.*	$0.3 - $0.45 M
Medium	*V-R6*	Move the support services function under an officer level individual.	*Accepted.*	
Medium	*V-R7*	Conduct a thorough staffing evaluation of the fleet and materials functions.	*Accepted.*	$0.5 - $1.0 M
Medium	*V-R8*	Conduct a thorough review of all business and human resources programs.	*Accepted.*	
High	*VI-R1*	Reorganize Special Projects into a Project Management organization.	*Unknown*	
Low	*VI-R2*	Review schedule and progress on the AMI implementation.	*Unknown.*	$0.6 - $1.1 M
Low	*VI-R3*	Expand the responsibility of the Information Technology Organization.	*Unknown.*	
High	*VII-R1*	Create a position of Chief Water Operations reporting to the CEO.	*Unknown.*	
Low	*VII-R2*	Conduct an independent study to determine the risk to the RO system from hurricanes, the cost for backup using the IDE's versus other options.	*Unknown.*	$1.5 - $2.5 M
Medium	*VII-R3*	Consider eliminating the Assistant Superintendent positions.	*Unknown.*	
High	*VII-R4*	Perform a water loss audit as part of its Water Loss Reduction Program.	*Accepted.*	
Low	*VII-R5*	Consider discontinuing standpipe service or find ways to reduce costs.	*Rejected.*	$0.3 - $0.7 M

Medium	*VII-R6*	Delay the start of the Nazareth Water Line Expansion until major decisions can be made.	***Rejected.***
Medium	*VII-R7*	Take steps with the appropriate legislative body and regulators to implement a monthly Base Facility Charge for its different classes of services.	***Accepted.***
Low	*VII-R8*	Distinguish between water distribution upgrades and extensions and adopt associated funding policies.	***Accepted.***
Low	*VII-R9*	Perform an economic analysis to determine the need for the backup IDE's.	***Rejected.***
Medium	*VIII-R1*	Continue to inform the Legislature, Governor, and all stakeholders of the magnitude and impact of the non-payment by the government agencies.	***Accepted.***
Medium	*VIII-R2*	Encourage the legislature to establish a direct payment procedure.	***Accepted.***
Medium	*VIII-R3*	Seek approval, from the Legislature, for a monthly Base Water Facility Charge.	***Accepted.***
Medium	*VIII-R4*	Establish a vigorous marketing initiative with pre-existing, existing and new commercial customers.	***Accepted.***
High	*VIII-R5*	Determine if WAPA is collecting all of the revenue it is entitled and prepare a plan for remediation.	***Accepted.***
Medium	*VIII-R6*	Calculate actual cost to provide street lighting, investigate an alternate cost-based rate structure.	***Accepted.***

Timely implementation is critical to consumers obtaining the efficiency gains and cost savings identified in the Audit Report. Lost time represents lost savings and a delay in improved service. The Audit Report identifies annual savings in the range of $36.3 - $59.4 million above and beyond the projected savings in the on-going process of substitution of propane for fuel oil, or the short-term savings currently enjoyed as a result of the collapse of oil prices. The level of savings anticipated by implementation of the Audit Report recommendations requires that appropriate human and capital resources be immediately devoted to the implementation plans necessary to accomplish the recommendations in the Audit Report – especially the recommendations

designated "High" priority. To put this importance into perspective, for every month there is a delay implementing the recommendations of the Audit Report cost consumers will be required to pay, in direct costs, approximately an additional $4 million, and local businesses and the economy will incur incalculable lost revenues and opportunities.

It is important to point out that while Vantage concludes that WAPA current management has the capabilities to implement the Audit Report recommendations to produce the significant savings identified and the concurrent improved service, there is no explanation as to why the recommendations in the Audit Report could not have been identified and implemented by management prior to this date. We believe this to be a significant omission of the Audit Report that sought to identify root causes of current deficiencies and to make recommendations as to how a repetition of the current environment of inefficient operations and poor service could be avoided in the future.

GCG Analysis

The Audit Report represents the first "independent" assessment and audit of WAPA management and operations since the comprehensive 1996 Stone & Webster Management Consultants Audit Report. Based on our review, Vantage has presented a transparent Report of its assessment and audit of WAPA management and operations. With respect to its findings, the Audit Report presents a number of critically important findings that identify to the Commission and the public not only the root causes, but systemic issues, that underlie WAPA's inability to operate production and delivery systems efficiently, in accordance with best utility practices, and at affordable consumer rates. As previously stated, the impacts of the deficiencies identified have been financially and economically devastating to consumers, businesses and to the territorial economy.

Significant Findings

We specifically, highlight in this appendix certain Vantage findings and recommendations that deserve immediate attention and action by key stakeholders including the Commission, WAPA and its Board to maximize savings and improved service to customers. The Vantage findings and recommendations that are most notable are related to items having the greatest impact to consumers, businesses, and the local economy, and severely compromising WAPA's ability to operate cost effectively and that deserve immediate corrective attention are enumerated below:

- *"Implement comprehensive strategic planning and integrated resources planning."*
- *"Redevelop the generation fleet so as to meet four key objectives: (i) reliability and availability; (ii) efficiency; (iii) operational effectiveness; and (iv) organizational effectiveness."*
- *"The capacity of the existing generators is too large to economically operate ...; and the fleet of combined cycle generation ... can only be run in an inefficient, simple cycle mode when load conditions are low."*

- *"..., the heat rate of the existing WAPA units is not likely to be reduced to levels that can be achieved ... with new technologies."*

- *"..., WAPA should consider replacing the aged, inefficient fleet of combined cycle Units with highly efficient reciprocating internal combustion engine (RICE) units properly sized to meet the current and future load requirements and patterns... typical RICE units operate at a heat rate of 8,100 btu/kWh ... and can be installed in blocks of 7 mw ... it is estimated that the heat rate of the fleet would be reduced by 38% resulting in a commensurate reduction in fuel costs. In addition, there would be reductions in staffing and maintenance costs.*

- *"Perform a thorough organizational assessment leading to an optimal organizational structure and right sized staffing plan that can better align the organization with future needs."*

- *"As WAPA's business shrinks, it has not effectuated a corresponding reduction in its labor force." "The nearly 10% growth in total WAPA staffing levels over the past thirteen years indicates significant missed opportunities to take advantage of efficiencies due to the implementation and adoption of new technologies, systems and practices."*

- *"..., the late payments by various government entities and hospitals have resulted in significant receivables and led to serious cash flow constraints..., the elasticity associated with rising energy rates has caused revenue to fall despite increased rates... these two problems has resulted in limits on the ability for WAPA to pay its creditors on a timely basis."*
  ;
- *"Accounts receivable continues to be an albatross for WAPA. It has impacted its credit ratings, access to capital resources, ability to fund necessary maintenance and replace antiquated or obsolete equipment."*

The Audit Report indicates that efficiency savings available through an upgrade of generation fleet is estimated to save consumers from $30 to $45 million annually. Staffing savings due to new units and redevelopment is estimated to save consumers up to an additional at $3.0 to 6.8 million annually. Finally, staffing savings due to organizational changes is estimated to save consumers up to an additional $1.8 to $3.3 million annually. These savings are all additive to the propane savings which are soon to be implemented.

The above findings are significant, we agree with each and they should be implemented at the earliest date possible.

Findings with Inadequate Support

The Audit Report also contains findings with which we disagree, either totally or in part. First, we disagree with the finding and primary recommendation concerning the IAC; however, we agree

with the alternative IAC recommendation of Vantage. We believe the conclusion reached by Vantage lacks adequate foundation and is not supported based on any objective information and data included in the Audit Report. The finding is: *"Vantage analysis of the proposed Independent Advisory Contractor (IAC) initiative concludes that it is not the best alternative at this time."* We disagree with the proposition that there were indeed alternatives. The IAC implementation was a binding agreement stipulated to by WAPA in part to implement the Rate Financing Mechanism ('RFM") program that provided WAPA $16 million annually. With regard to this finding of not being the best alternative, we would simply point to key objectives for the IAC that were agreed to in the Stipulation and juxtapose those objectives with related power plant operations and maintenance findings and recommendations contained in the Audit Report (with which Vantage agrees). There is a significant overlap between the Vantage recommendations and the scope specified for the IAC. We conclude that the underlying support for Vantage's IAC recommendation lacks adequate foundation to be a standalone recommendation. As an example, the IAC work scope objectives require that the IAC assist Harley plant personnel in: generation maintenance outage planning & scheduling; preventive and predictive maintenance assessments; development of performance improvement projects (PIP's); technical and engineering support; special studies, failure and root cause analyses; performance benchmarking; budgeting for operational requirements, PIP's, and CIP's; procurement services; and the preparation of a "gap" analysis quantifying gaps within the context of a model power plant employing reasonable operating and maintenance practices taking into consideration the age and technologies of the units deployed at the Harley Plant all leading to development of training programs and mitigation measures. These were the responsibilities and objectives the IAC was required to undertake and achieve. Meanwhile, Audit Report findings and recommendations related to WAPA's power plant operations and maintenance management planning identified the following deficiencies and associated recommendations:

- *"... if WAPA does not move to add an experienced generation expert and make the bold moves to modernize its generation fleet, then we would recommend that the Governing Board either consider instituting the IAC program as proposed..."* The Stipulation concerning the IAC was executed in Sep. 2011. The Stipulation required that the IAC was to have been operational before the end of 2012 to provide experienced generation expertise. In spite of WAPA acknowledging this shortcoming 4-years ago, WAPA has failed to add the experienced expertise, which four-years later is now being recommended by Vantage.

- *"Develop a comprehensive Root Cause Analysis program that includes the identification, tracking and correction of the underlying cause of equipment problems and failures."* This Vantage recommendation is actually part of the work scope developed 4-years ago for the IAC. No action has been taken by WAPA to date.

- *"Address the need for an experienced generation expert who can provide the management team and the plant team with the expertise needed in the upcoming years as WAPA makes its transition to new fuels, technology and the changing dynamics of renewable energy sources."* This recommendation succinctly summarizes the IAC work scope developed 4-years ago. No action has been taken by WAPA to implement.

- *"Restructure the production maintenance staff at the Richmond and Harley generating plants to focus on core competencies and reduce the maintenance costs of each facility."* The IAC work scope includes a comprehensive GAP assessment, which should have been completed for the Harley plant two years ago and could have served as a template for the Richmond plant.

- *"... is in contrast to the current plan for an Independent Advisory Contractor) that would provide extensive oversight and duplicative management function in the generating plants."* This demonstrates a misunderstanding of the IAC. While the IAC would provide extensive training and expertise that does not currently exist, it would have no management functions. This was specifically acknowledged as a requirement in the Stipulation and is enumerated further in the IAC work scope.

When the above findings and recommendation from the Audit Report are juxtaposed with the key objectives for the IAC, as contained in the September 2011 Stipulation and in the IAC work scope, we fail to see in the Audit Report any underlying support for the Vantage's primary IAC recommendation. In fact it is a plain reading of the Audit Report that lack of implementation of the IAC, and by extension implementation of key audit recommendations, cannot lead to any other conclusion that significant costs have continued to have been incurred by WAPA that could have been avoided. Unfortunately these additional costs have been and will continue to be passed on to consumers unless the PSC does not permit imprudent costs to be passed through. In fact, as discussed above we see quite the opposite in the Audit Report—reinforcement of the IAC work scope as included in the Stipulation and in the RFP work plan. At WAPA's request the PSC permitted the RFP for IAC services to be re-issued. WAPA has advised that once again it has rejected the IAC and will not retain such services – in direct contravention with the provisions of the 2011 Stipulation and much needed work will not be undertaken.

There is also one finding in the Audit Report that we believe needs to only partially be accepted by WAPA. That is the recommendation concerning project management which is:

> *"Reorganize the Special Projects into a Project Management organization and provide the appropriate project management tools to manage complex multi-discipline projects."*

We certainly agree that much stronger project management is needed at WAPA inclusive of appropriate tools; however, we don't believe a separate project management organization would be a prudent step. The need for the deployment of project management tools cuts across all of WAPA's organization inclusive of production, delivery, customer service and corporate services. Each of these existing organizations within WAPA need to have in their tool box project management tools and personnel trained in the use of such tools. These requirements are part of the everyday responsibilities of any utility organization. We believe a separate organizational unit would lead to dysfunctionality and would not allow for the prioritization of an organizational needs by the organization responsible for meeting those needs and instead would result in internal politics.

Deficiencies in the Audit Report

We offer a comment on the lack of Audit Report findings and recommendations in perhaps one of the most critical areas directly impacting maintenance, outages, and rates. The Audit Report identifies the systemic issue leading to the lack of cash for maintenance and does offer the following recommendation:

- *"Continue to inform the Legislature, Governor, and all stakeholders of the magnitude of the non-payment by the government agencies and its potential impact on the financial viability of WAPA."*

However, while informative this is not a meaningful recommendation for resolving this long-standing issue, which is impacting not only every consumer, but every business and the local economy. This only results in a forum for providing information. What is needed are viable alternative recommendations to address the systemic issue of the long standing government accounts receivables which all parties have agreed has led to deferred generator maintenance, increasing forced outages, poor efficiency, deteriorating service quality, and higher that necessary costs to consumers. During the implementation and follow-up phase of the auditor's engagement this recommendation should be supplemented with viable recommendations for addressing the government accounts receivable problem. In addressing the issues consideration should be given to the following:

- What are the cost consequences of the lack of funds on consumers?
- Should WAPA defer required maintenance due to a lack of funds?
- Should WAPA be required to announce publically in situations where lack of funds threaten to disrupt maintenance and result in high cost and poor service?
- Would the inclusion of street light and possibly other services in overall base rates result in higher or lower over rates?
- Are such deferrals in required maintenance a violation of WAPA bond covenants?
- Does the current high level of Government receivables represent "free service" and as such potentially violate WAPA bond covenants?

No comments were included in the Audit Report on WAPA not complying with it service rules which would not permit such a high level of receivables to exist.

Implementation of the Audit Report Recommendations

The next phase of the management audit is the implementation of and follow-up on the recommendations. The objective or the bottom line of the Vantage Audit Report as viewed by stakeholders (i.e., WAPA, PSC, government agencies, bondholders, rating agencies, residents, and businesses) is a reduction of consumer costs, improvement of WAPA's management and operations in their delivery of water and electric power, and insuring that electric power and water services are provided in a reliable and continuous manner. The Vantage recommendations are all

directed at achieving these objectives; however, their recommendations should be viewed as the means by which these objectives are attained for stakeholders. GAO's Government Auditing Standards[4] (commonly referred to as the "Yellow Book") include standards to guide auditors, such as Vantage, in the performance of their work to insure that it can be relied on to provide fair, objective, reliable, and useful assessments of auditee performance. The Yellow Book establishes follow-up as an integral part of due professional care of an auditor such as Vantage. The Commission should take notice of these auditing guidelines and standards.

With respect to implementation of recommendations and follow-up, the Yellow Book provides as follows:

> *"Management of the audited entity is primarily responsible for directing action and follow-up on recommendations . . . .*
>
> *"...auditors should have a process that enables them to track the status of management's actions on significant or material findings and recommendations from their prior audits . . . .*
>
> *"Due professional care also includes follow-up on known findings and recommendations from previous audits that could have an effect on the current audit objectives to determine whether prompt and appropriate corrective actions have been taken."*

As stated above reducing consumer costs, improving management and operations, and providing reliable and continuous service manner are major objectives of the Audit Report. To achieve these objectives, the implementation of the Vantage recommendations rest with WAPA management who is responsible for resolving and implementing recommendations promptly and effectively achieving the objective of each recommendation. At the same time, the Vantage role did not stop with the finalization of its Audit Report. Government (Yellow Book) auditing standards provide that the auditor is responsible for following up to see that appropriate actions are taken by WAPA and that stakeholders attain the intended results of their recommendations. This requires that the auditor must work with those at WAPA who will be responsible for the implementation of their recommendations to realize the benefits intended by the recommendations.

The objectives contained in the Vantage Audit Report are clear and unambiguous – to reduce consumer costs, improve WAPA management and operations, and provide reliable and continuous service. The Audit Report recommendations paint a picture of what should be achieved; but it is now up to WAPA to take action on these recommendations – specifically, the "High" priority recommendations should be afforded the upmost attention.

The management audit is now at its most critical phase. Everyone recognizes that the recommendations themselves are not going to do anything to lower costs, improve management and operations or improve service quality. Effective oversight and follow up is essential to the stakeholders achieving the full benefits of the Audit Report. It was this lack of oversight and

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[4] Government Auditing Standards - 2011 Revision. By the Comptroller General of the United States

follow-up that led to the failure of the 1996 Stone & Webster management audit to fully achieve the benefits from its recommendation. It should be one of the highest priorities of WAPA board and the PSC to insure that the Vantage Audit Report doesn't meet the same fate. Getting action on the Vantage Audit Report recommendations will be critical to achieving a successful outcome of the Audit Report. Below we have outlined a suggested audit oversight protocol for the purpose of giving increased attention to the implementation of the Vantage recommendations.

Commission's Monitoring and Oversight Role

The Vantage Audit Report contains 34 specific recommendations for implementation by WAPA. These recommendations are categorized into three levels of importance with ten (10) being designated as "High," eighteen (18) designed as "Medium," and six (6) designated as "Low." From the Commission's perspective the most critical outcome resulting from Vantage's Audit Report work are the actions that result therefrom. Do the Audit Report results bring about consumer savings, improve management and operations, and improved service quality? To determine if these outcomes are achieved, the Commission will need to answer two questions:

- What improvements were made as a result of Audit Report?
- Did the improvements achieve the desired results?

An effective recommendation monitoring and oversight protocol will make it possible for the Commission to answer these questions. The Commission's monitoring and oversight protocol will itself need to address a number of critical priorities. These include:

- Transparency – At the present time, there has been no meaningful, if any, public hearings on or public input to the Audit Report, its findings, recommendations and the initially developed implementation action plans. The public needs to understand the role of the management audit and the importance of its findings and recommendations. During the implementation phase public hearings need to be held to keep the public informed of WAPA management progress in the implementation of Audit Report recommendations.
- Implementation plan development – Detailed Implementation Plans need to be finalized for each of the Audit Report recommendations. WAPA has prepared an initial draft of these plans, but they are substantially incomplete. In some cases the draft plans may suffice; however, in most cases these plans need to be more fully developed to include priority recognition and the urgency associated therewith, a detailed schedule of activities, identification of the resources to be deployed in terms of personnel and investment, expected returns in terms of consumer rate reductions, improvements to management and operations efficiency, and service quality delivered to consumers.
- Implementation plan monitoring – The Commission must establish a firm basis for monitoring and follow-up actions which include active status monitoring activities and the evaluation of WAPA actions taken its recommendations and results achieved.
- Key recommendations designed as "High" priority – Special attention should be paid to key recommendations designated as a "High" priority by Vantage. While each of the recommendations should be pursued, those that have been labeled "High" are significant that added emphasis should be placed on implementation.

- Reporting – Periodic reporting and public hearings should be held. We would recommend that with respect to the implementation actions associated with "High" priority that these occur every 3-months and that every 6-month reporting on WAPA progress in implementation of "Medium" and "Low" priority recommendations occur.

Recommended PSC Monitoring and Oversight Protocol

Significant annual savings to consumers, approaching $50 million annually, as well as service improvements are expected to be derived through the implementation of the Vantage Audit Report recommendation. Accordingly, we recommend the PSC adopt a definitive monitoring and oversight protocol for the purpose of implementing the Audit Report findings and recommendations and assuring the necessary follow-up activities are undertaken to accomplish the objectives and consumer benefits of each recommendation.

The implementation and follow-up protocol we recommend should consist of the following:

1. Appoint a Hearing Examiner to oversee the implementation and follow-up of the Audit Report recommendations.
2. Pursuant to best auditing practices, WAPA should retain Vantage to assist in the implementation of the Audit Report recommendations.
3. Vantage should immediately prepare the initial follow-up status report concerning WAPA implementation activities of Audit Report recommendations covering the first six-months (February – August 2015) of WAPA implementation activities, progress and results obtained. This status report should be completed in less than 45-days.
4. The first follow-up report should be completed and submitted to the Hearing Examiner who shall hold the first implementation follow-up status conference.
5. The Hearing Examiner working in conjunction with WAPA executive management, PSC staff and other stakeholders should finalize other key components of the implementation and follow-up protocol which would include:

    - *Resolution of Items of Disagreement:* WAPA has indicated that it does not fully agree to implement all of Vantage's recommendations. The areas of disagreement must be resolved to get a buy-in to a single set of recommendations that should be implemented. Getting to an agreement may be challenging. WAPA does have the authority to manage and operate the utility. The Audit Report was performed to have an independent party identify areas of cost reduction and improved service as already discussed in the report. The PSC has the authority to set rates based on prudent actions and sound recommendations which we believe that Audit Report to contain. Any agreed to revised set of recommendations and protocols should be presented to the PSC for review and approval. If approved, these recommendations and protocols would set the basis for the rate support for implementation, and the timelines for future cost reductions.

    - *Transparency Component:* The Transparency Protocol should be implemented for the purpose of communicating relevant actions on each recommendation to the

Commission, WAPA Board, and all interested stakeholders. The implemented protocol should consist of providing to stakeholders copies of:

- Vantage Audit Report
- WAPA's initial Implementation Plan
- Modifications to the Implementation Plan
- Periodic follow-up reports on implementation progress

This information should be developed and maintained on either WAPA or the Commission website which shall contain all of the latest up to date information on the implementation of Audit Report recommendations. There should be a link from one website to the other.

- *Implementation Plan Development Component:* Preliminary implementation action plans have been developed for each recommendations put forward by Vantage. For the most part these are incomplete. Many recommendations have considerable value to consumers and their implementation should not be delayed.

  These action plans should first and foremost be based on the priority recognition assigned by Vantage and the urgency associated therewith. All implementation plans should include:

  - Implementation manager,
  - Detailed identification of activities,
  - Milestones and expected completion date,
  - Identification of the resources to be deployed in terms of personnel and budget authorized for expenditure by implementation manager,
  - Expected returns in terms of consumer rate reductions, improvements to management and operations efficiency, and service quality delivered to consumers.

  Vantage has assigned a "priority" ranking to each of its recommendations based upon what it believes to be the importance to stakeholders. We believe that WAPA implementation actions should reflect the priority rankings developed by Vantage. Based on the priority recognition and the urgency associated therewith we believe that WAPA's management actions should reflect this urgency. The following characteristics should govern WAPA management action in developing and executing implementing action plans.

Priority of Audit Report Recommendation	Proposed WAPA Implementation Characteristics
High	▪ Urgency is demanded. Immediate action required. ▪ Executive management must be designated the responsibility to implement and be held accountable. ▪ A detailed action plan, timetable and implementation objectives agreed upon by the WAPA Board and the PSC. ▪ Resources assigned and an approved implementation budget authorized. ▪ Implement proposed actions. ▪ On a quarterly basis measure and report completion progress against the agreed action plan. ▪ Hold and participate at quarterly PSC/public meetings on Audit Report recommendations.
Medium	▪ Action required within two months or an agreed timeframe. ▪ Executive management must be designated the responsibility to implement and be held accountable. ▪ A detailed action plan, timetable and implementation objectives agreed upon by the WAPA Board and the PSC. ▪ Resources assigned and an approved implementation budget authorized. ▪ Implement proposed actions. ▪ On a semi-annual basis measure and report completion progress against the agreed action plan. ▪ Hold and participate at semi-annual PSC/public meetings on Audit Report recommendations.
Low	▪ Action required within three months or an agreed timeframe. ▪ Senior management must be designated the responsibility to implement and be held accountable. ▪ A detailed action plan, timetable and implementation objectives agreed upon by the WAPA Board and the PSC. ▪ Resources assigned and an approved implementation budget authorized. ▪ Implement proposed actions. ▪ On a semi-annual basis measure and report completion progress against the agreed action plan. ▪ Hold and participate at semi-annual PSC/public meetings on Audit Report recommendations.

- *Implementation Plan Monitoring Component:* Implementation plan monitoring and follow-up involves both determining the progress being made to implement each action plans associated with each recommendation, and taking those actions required to restore effective implementation when progress is not adequate. The Commission has an ongoing responsibility for such monitoring and follow-up. The status of all open action plans and recommendations should be determined on a regularly scheduled basis. For example, we have proposed that for "High" priority recommendations be conducted on a 3-month basis and "Medium" and "Low" priority recommendations be conducted on a 6-month basis. This will enable to Commission to avoid having any recommendation permitted to remain inactive.

  Another important part of implementation monitoring is follow-up when it is determined that implementation activities are inadequate. When status monitoring identifies dormant recommendations, follow-up should determine why action is not being taken. It may then be possible to take additional steps to counter objections or implementation difficulties. It may also be possible to develop agreeable alternatives that will meet the objectives to which the recommendation was directed. Alternatively, it may become apparent that the environment has changed such that the problem no longer exists or the recommendation is no longer relevant or feasible.

- *Key Recommendations Designated as "High" Priority Component:* All Audit Report recommendations are to be aggressively pursued; however, those designated "High" priority require additional steps and are to be more aggressively monitored. These should be monitored and require disclosure on the status of implementation progress on a 3-month basis. Further if as a result of the 3-month follow-up it is disclosed that implementation actions are not progressing as outlined, additional steps should be promptly recommended by Vantage for consideration. Follow-up should be elevated as appropriate based on the significance of the recommendation and the need for prompt action.

- *Periodic Reporting:* Periodic reporting and conference and/or public hearings should be held. We recommend that with respect to the implementation actions associated with "High" priority recommendations that Vantage be required to present a follow-up status report every 3-months. Likewise, Vantage should submit a follow-up status report every six-months reporting on WAPA progress in implementation of "Medium" and "Low" priority recommendations.

6. The Hearing Examiner should schedule working sessions every 3-months to review the status of implementation activities and follow-up status. Vantage should presents status reports for consideration emphasizing the status of "High" recommendations and any corrective actions required to keep the implementation of these "High" priority activities on schedule. Likewise Vantage should present on a 6-month basis the status of "Medium" and "Low" priority recommendations and any corrective actives to keep their implementation on schedule.

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