TO:       The Honorable Chairman and Members  
of the Board of County Commissioners  

FROM:    Ken Burke  
         Clerk of the Circuit Court  
         Ex Officio County Auditor  

SUBJECT: Follow-Up Review to Audit of Operations & Maintenance  
of County Traffic Signals  

DATE:    April 15, 2010  

For your review and filing in the Official Records, I am enclosing a copy of the follow-up  
review dated April 15, 2010 on the above-referenced audit.  
I hope you find this report helpful in ensuring Pinellas County government provides the  
best possible service to our citizens.  

cc:      Robert S. LaSala, County Administrator  
         Jim Bennett, County Attorney  
         Peter J. Yauch, Director of Public Works and Transportation  
         Jan R. Herbst, Director Public Works  
         Claretha N. Harris, Chief Deputy Director, Finance Division  
         Ernst & Young
FOLLOW-UP REVIEW TO AUDIT OF OPERATIONS & MAINTENANCE OF COUNTY TRAFFIC SIGNALS

Audit Services
Division of Inspector General

Ken Burke, CPA*
Clerk of the Circuit Court
Ex Officio County Auditor

Hector Collazo, Jr., CFE, CFS, CISA, CIG
Director, Audit Services
Inspector General/Chief Audit Executive
Division of Inspector General

Audit Team
Flo Riggie, CIGA, CISA, ITIL-F, Internal Auditor II
Scott Stees, CIGA, CIA, CFE, CISA, CGFO – Senior Internal Auditor

APRIL 15, 2010
REPORT NO. 2010-08

*Regulated by the State of Florida
April 15, 2010

The Honorable Chairman and Members
of the Board of County Commissioners

We have conducted a follow-up review to the Audit of Operations & Maintenance of County Traffic Signals. The objective of our review was to determine the implementation status of our previous recommendations.

Of the three recommendations contained in the audit report, we determined that two have been implemented and one has been partially implemented. The status of each recommendation is presented in this follow-up review.

We appreciate the cooperation shown by the staff of the Public Works Transportation Department during the course of this review.

Respectfully Submitted,

Hector Collazo, Jr., Director
Audit Services, Division of Inspector General

Approved:

Ken Burke, CPA*
Clerk of the Circuit Court
Ex Officio County Auditor

*Regulated by the State of Florida
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Scope and Methodology

We conducted a follow-up review to the audit of the Operations & Maintenance of County Traffic Signals. The purpose of our follow-up review is to determine the status of previous recommendations for improvement.

The purpose of the original audit was to:

- Determine if the Traffic Signals used in the County meet Federal, State and professional guidelines and standards.
- Determine if the Traffic Signals and related supplies in inventory are sufficient to react to emergency situations.
- Determine if the computerized traffic control systems are able to react to varying driving patterns, both predetermined and as needs arise.
- Determine if the cost accounting procedures reflect reasonable cost-of-services for the number of employees assigned to Traffic Signal Operations.
- Determine if the billings to the State and municipalities are sufficient to recover the full cost of routine and special work on Traffic Signals located at intersections at State and municipalities' intersections located in the County.

To determine the current status of our previous recommendations, we surveyed management to determine the actual actions taken to implement recommendations for improvement. We performed limited testing to verify the process of the recommendations for improvement.

Our follow-up audit was conducted in accordance with the International Standards for the Professional Practice of Internal Auditing and the Principles and Standards for Offices of Inspector General, and accordingly, included such tests of records and other auditing procedures, as we considered necessary in the circumstances. Our follow-up testing was performed during the month of February 2010. The original audit period was October 1, 2006 through September 30, 2007. However, transactions and processes reviewed were not limited by the audit period.
Overall Conclusion

Of the three recommendations in the report, we determined that two were implemented and one was partially implemented. We commend management for implementation of two of our recommendations and for their plans to expand on our recommendation to include an interactive web site. We continue to encourage management to fully implement the remaining recommendation.

Background

The Highway Department’s Traffic Operations Division maintains mostly all County operated Traffic Signals, serving as a contractor for 18 municipalities and three fire districts within the County. The Cities of Clearwater and St. Petersburg maintain their own traffic signals.

Traffic Signal activities are under the direction of one manager and one supervisor with 18 employees. They maintain 354 Traffic Signals, 72 School Crossing Signals, 31 Firehouse Signals, and 16 Pedestrian Crossing Signals. There are 348 of these signals owned by other agencies. The Traffic Signal employees’ duties are primarily routine inspection and maintenance work, emergency work, intersection rebuilding, assembly and repair work at the Traffic Signal shop, and ground-level preventive maintenance work. Other work includes the installation and maintenance of Opti-Com equipment, which allows Fire Department personnel to control an intersection’s traffic lights; and the installation and maintenance of cameras and computerized imaging equipment, both of which are used by the Traffic Control Division.

The Traffic Control Division consists of a manager and eight employees. They monitor traffic at approximately 19 intersections and other locations in the County. Using computerized software, three traffic control systems are able to detect traffic movement needs (Adaptive Control Software), and are able to modify minimum signal times to react to predetermined driving patterns [Intelligent Traffic System (ITS) and Advanced Traffic Management System (ATMS)].

Of the $21.3 million budgeted for Fiscal Year 2007 for the Department of Public Works, $3.7 million was budgeted for the Traffic Engineering, Traffic Control and Intelligent Transportation System Departments.
STATUS OF RECOMMENDATIONS

This section reports our follow-up on actions taken by management on the Recommendations for Improvement in our original audit of Operations & Maintenance of County Traffic Signals. The recommendations contained herein are those of the original audit, followed by the current status of the recommendations.

1. Costs Of Maintaining Traffic Signals For Other Entities Has Resulted In Annual Unrecovered Costs Of About $300,000.

Our comparison of the $1,874,669 of traffic signal costs and expenses deemed by management to be allowable and allocable for recovery by the County for Fiscal Year 2007 Traffic Signal operations to the Traffic Signal billings of $1,170,769 shows a short-fall of $703,900 for the year based on the original financial information supplied by management at the time of the audit fieldwork. As discussed below, additional analysis was performed by management subsequent to our fieldwork that reduced the amount to approximately $300,000. This amount is not recovered from other agencies, and is being incurred by Pinellas County taxpayers. This recovery issue is related to two areas:

- Recovery From The State: The State Federal Department of Transportation (FDOT) sets the rates that the County services will be allowed to charge the State for reimbursement to the County for its traffic signal maintenance and operational services to the FDOT's traffic signals located in the County; and

- Municipalities And Fire Districts: The agreements with the Municipalities and the Fire Districts set the reimbursement rates. The agreements for the Municipalities expire in September 2010 and the Fire Districts in March 2009.

Included in the $1,874,669 of allowable and allocable traffic signal costs are the costs to maintain and operate traffic signals at County-owned intersections. The current Highway Department reporting summary does not generate the cost purpose identification to determine if a portion of this amount is the Pinellas County Highway Department's subsidizing the maintenance and operations of FDOT, Municipalities and Fire Districts' intersections.

The Highway Department does not summarize its actual annual costs for maintaining and operating traffic signals at intersections owned by FDOT, all Municipalities and all Fire Districts. In addition, the Department does not summarize its actual annual costs for maintaining and operating its own intersections' traffic signals. As a result, it is unable to account for the entire $1,874,669 identified and budgeted as allocable and allowable for such maintenance and operational work. The reason for summarizing cost data is the billing restrictions imposed by the FDOT and agreements with Municipalities and Fire Districts. Each year, FDOT sets a fixed reimbursement rate for all Florida Counties' signal maintenance and operation work. Municipalities and Fire Districts' billing rates are governed by agreements.
At the time of our audit, the Highway Department has not summarized its Work Orders’ cost-of-service by intersections ownership, and therefore, we could not determine how much the shortfall is related to the State, Municipalities and Fire Districts. Management is currently obtaining this information.

The Highway Department financial reporting information should be able to evaluate, on an ongoing basis, the cost of servicing traffic signals at other entities’ intersections. Billings for these services, determined by agreements, may then be compared and evaluations made to determine if adjustments are needed in the rate schedules or the service being provided by the County.

Subsequent to our audit fieldwork, management supplied new and adjusted information related to the allocation process. The data was produced by the department and an external consultant. The new information supplied by Public Works’ management adequately states the reasons for the gap between Traffic Operations Department’s costs and billings to intersection owners. A comprehensive analysis of this new information reveals the critical shortcomings from the present cost accounting system, which are:

- Work Orders include hours and materials used for non-specific intersection time charges for training, meetings, shop repairs, supervision, etc.
- Overhead is applied to the labor costs for such non-specific intersection work.
- The costs for non-specific intersection work are not built-in to the overhead multiple calculation.

The pro forma elimination of the overhead applied to non-specific intersection labor reduces the original $703,900 gap by approximately $600,000. The restated gap of $300,000 (approximate) is generally in agreement with the outside consultants’ gap estimate of $308,061. After the pro forma restatement of the costs/billings gap, as noted above, the remaining $300,000 of unallocated costs would have increased the overhead multiple and in doing so increased the billing gap between the County and the State, and Municipalities and Fire Districts by $75,000 and $225,000, respectively. The new gaps would be approximately: State ($141,000) and Municipalities and Fire Districts ($210,000).

**Recommendation:** Management provide, at a minimum, annual Traffic Signal Work Order billing summaries for each major source of traffic signal maintenance, operations and repair services. These work sources should include: (1) the State’s FDOT; (2) the County’s Municipalities, as a group; (3) the Fire Districts, as a group; (4) the Highway Department (for services to County-owned signals); (5) other County Departments; and (6) all others. These billings should account for all costs, labor costs, overhead, equipment usage and materials used as if the entity being billed would pay full cost. Actual billings should clearly show any downward adjustment to the full cost amount to agree with the billings for stipulated amounts or agreed-upon amounts. This downward adjustment should be clearly labeled as "Cost-Sharing by the County" or similar language to identify the cost to the County for providing traffic signal services to these entities.

In addition, management should also consider three options to this situation:
Status of Our Recommendations
Follow-Up Audit of Operations & Maintenance of County Traffic Signals

- Short-Term: Analyze the services being supplied for County and other owned intersections to determine if unneeded services and related costs for required services are being performed which may be reduced.
- Long-Term for Municipalities/Fire Districts: With the "Cost-Sharing" data clearly identified, the renewal of existing agreements with Municipalities and Fire Districts should be at a level to break even.
- Long-Term for State: The agreement with FDOT should be equitable so that Pinellas County taxpayers are not subsidizing expenses that should be paid by the State.

Status:

Partially Implemented. We support Management’s use of cost information gathered in the work management system from Fiscal Year 2008/2009 to establish rates which will provide break-even level revenue collections for agreements with municipalities expiring at the end of September 2010. We recognize that the County does receive benefit from FDOT supplied signal equipment use on all County maintained intersections valued at $1.6 million over the past four years which results in reduced maintenance costs. We encourage management to continue to work with FDOT to receive revenue compensation at a break-even level.

2. The Traffic Control Center Needs To Effectively Measure Improvements To Traffic Flow In The County Resulting From The Use Of Computer-Driven Traffic Signalization.

The County Traffic Control Center has not established benchmarks to report on results against the standards for the performance of the Computer-Driven Traffic Signals installed in the County. Since the funding for the new computer traffic systems is derived from the County gas tax revenue, the taxpayer should be assured that the benefits being received are cost justified and this information is available to the public. As a result, the disclosure of the benefits associated with improvements to the County’s traffic flow from buying and using computer technology may be appreciated by County taxpayers and others affected by traffic flow in the County.

Currently, the County is reporting on one statistic, an estimate of the dollar value of the fuel savings by users of County roadways, since the inception of the computer-based systems. This amount is $1.3 million, which management stated is based on Federal standards for traffic efficiency improvements.

The installation of the expanded computer-driven traffic signalization is new to Pinellas County and the Traffic Control Center has not, at this time, addressed the need for formal benchmarks for measuring the benefits of improvements in traffic flow in the County as a result of the use of computer-driven monitoring of major intersections’ traffic.
Our review of several City and County websites found different types of information and benchmarks being tracked and reported to the public. Listed are the most common items covered:

- Number of intersections controlled by the County’s computer systems;
- Number of directional miles controlled by the computer systems;
- Number of Dynamic Message Signs being used and the estimated savings in travel time from the posting of incident warnings to travelers;
- Improved response time to accidents and other incidents via the monitoring of traffic at major intersections by Closed Circuit Television (CCTV);
- Reduced number of injuries, deaths and extensive property damage caused by intersection accidents;
- Estimated annual reduction of travel time in terms of vehicle hours and dollar savings of wear and tear on such vehicles;
- Estimated travel time savings in terms of reduced gallons of fuel consumption and the related current dollar savings;
- Estimated reduction of exhaust emissions in terms of tons of hydrocarbons, carbon monoxide and nitrogen oxides; and
- Comparison of the dollar savings due to improved travel time, vehicle maintenance savings and fuel cost savings to the computer systems’ annual operating costs in a benefit/cost ratio.

The use of new technology in the area of the computerized traffic system for intersections has been perused by a number of Cities and Counties in the United States, with the installations being promoted by State and Federal government. Like all technology areas, there is a large range of functionality and cost related to the system service received. The establishment of benchmarks for the benefits to be received helps define the depth of the system required, maintains the levels of performance and helps define system needs/costs.

**Recommendation:** Management consider developing a set of statistical benchmarks for measuring the improvement of traffic flow in the County resulting from its investments in computer hardware and software. Once developed, management should consider posting the results of the benchmarks on its Internet website. Since tracking performance could be time consuming, only the items that identify benefits that Pinellas County defines as important should be reported.

**Status:**

Implemented. Management includes statistics on cost and fuel savings as well as accident prevention and traffic flow on the public website. Videos explaining the new systems and its benefits are also available for public view. Management continues to develop benchmarks for traffic flow as enhancements are made to the system and additional phases are implemented. This is and should be an ongoing process. We commend management for expanding on our recommendation by planning an interactive website.
3. **The Public Works' Hurricane Booklet And The Highway Department's Hurricane Plan Should Cover The Potential Risk That The Warehouses Storing Traffic Signals May Not Be Accessible To Employees Due To Post-Hurricane Flooding.**

The Highway Department's Hurricane Plan for traffic signal recovery does not address a possible delay in accessing replacement equipment because the two storage areas are located in flood zones. The Highway Complex at Drew Street and US Highway 19 North is in a Level "E" Evacuation area, which means it is moderately vulnerable to flooding. The Storage facility on 118th Avenue is in a Level "B" Evacuation area, which means it is at a high vulnerability level for flooding. However, the 118th Avenue warehouse, which is located at the north side of 118th Avenue, west of the 40th Street intersection, has a deep moat on three sides of the building facing away from 118th Avenue. Access to this warehouse by County employees for supplies to repair the traffic signal network could be delayed until floodwaters have subsided, thus slowing recovery efforts. The Public Works' Hurricane Booklet and the Highway Department's Hurricane Plan should address the potential for access restrictions to its facilities because of flooding and the problem that this inaccessibility may cause to the post-recovery efforts by employees.

**Recommendation:** Public Works management update its Hurricane Booklet and the Highway Department's Hurricane Plan to note the likely prospects for the inaccessibility of its traffic signal warehouse facilities to Highway Department employees in post-hurricane emergency operations to repair traffic signals at major intersections in the County. Modifications to the Plans should be made to eliminate undue delay due to flooding of these facilities.

**Status:**

Implemented. Management updated the Department's Hurricane Booklet, inventory spreadsheets for shipping containers and tractor trailers, and location maps that show the location of the post-emergency inventory for the Pinellas County Signal Shop. Non-evacuation zone locations for containers have been identified. The completion of a category 5-rated Public Works Emergency Responders Building (ERB) is expected in August 2010. Upon completion, storm recovery materials will be moved to the ERB warehouse providing a long term solution.