

**PALM BEACH COUNTY
BOARD OF COUNTY COMMISSIONERS
AGENDA ITEM SUMMARY**

Agenda Item #:

5 G-1

Meeting Date: September 25, 2007

Consent Regular
 Ordinance Public Hearing

Department: Facilities Development & Operations

I. EXECUTIVE BRIEF

Motion and Title: Staff requests direction on proceeding with the design and construction of a Thermal Energy Storage system to supplement the Judicial Center Central Energy Plant (CEP).

Summary: In June 2007, the Board authorized proceeding with the expansion of the Judicial Center Central Energy Plant (R2007-0871) to serve the Governmental Center and the 1916 Courthouse as well as ultimately the build-out on Block D. The purpose of this phase of the project is to replace the Governmental Center roof mounted chiller plant which has reached its operational life expectancy by replacing and expanding the existing CEP chillers to accommodate the additional load. Also, the replacement of the existing chillers will eliminate the current refrigerant which is now banned by the EPA. As is typical for new and replacement HVAC projects, the County's consultant was tasked to examine the potential of alternative energy and energy cost saving systems including Thermal Energy Storage (TES). A TES system is designed to store cooling energy during "off-peak" hours thereby benefiting from reduced electrical rates. The analysis shows that the TES alternative for this project would reduce ongoing electrical costs by at least \$205,000/yr (before the construction of the Block D Building and \$265,000/annually with the Block D Building) when compared to operating the proposed new central chiller plant without TES. However there is a net increase in capital cost of \$1.3 M and requires the siting of a water storage tank on the property which not only requires approval from the City of West Palm Beach but the loss of 20 parking spaces. In order for the design to proceed further, Board direction is required with regard to the inclusion of TES in the further design of the CEP Expansion. Staff is presenting this to the BCC for direction as; 1) this analysis indicates favorable payback terms, but recognizes the immediate capital budget constraints and additional appropriation required, and 2) if chosen for long term financial reasons, the design money is at risk until (and if) the water storage tank is approved by the City. **(Capital Improvements Division) Countywide/District 7 (JM)**

Background and Policy Issues: The chiller system for the Governmental Center has reached its useful life expectancy and needs to be replaced. A feasibility study was conducted that recommends an expansion of the Judicial Center CEP to meet the needs of the Governmental Center, Historic Courthouse, and accommodate provisions for a future 350,000 square foot office building north of the Government Center on Block D. The project also serves the needs of replacing the existing chillers at the CEP which are nearing the end of their useful life as well as replacing an outdated, environmentally unfriendly refrigerant. The construction cost of the current project is estimated at \$11 Million and is included in the FY 07 and FY 09 CIP budgets.

* CONTINUED ON PAGE 3 *

Attachments:

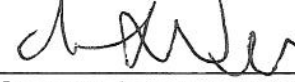
Site Plan/ Artist's Rendering of Proposed Water Storage Tank

Recommended by: _____


Department Director

9/12/07
Date

Approved by: _____


County Administrator

9/19/07
Date

II. FISCAL IMPACT ANALYSIS

A. Five Year Summary of Fiscal Impact:

Fiscal Years	2007	2008	2009	2010	2011
Capital Expenditures	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>
Operating Costs	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>
External Revenues	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>
Program Income (County)	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>
In-Kind Match (County)	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>	<u>-0-</u>
NET FISCAL IMPACT	<u><u>-0-</u></u>	<u><u>-0-</u></u>	<u><u>-0-</u></u>	<u><u>-0-</u></u>	<u><u>-0-</u></u>

ADDITIONAL FTE POSITIONS (Cumulative) _____

Is Item Included in Current Budget? Yes _____ No _____


Budget Account No: Fund _____ Department _____ Unit _____ Object _____
Reporting Category _____

B. Recommended Sources of Funds/Summary of Fiscal Impact: There is no additional budget impact as a result of this item. If direction is received by the Board to proceed with TES, the \$150,000 necessary to support the additional design phase fees would be from the approved project contingency. The additional \$2.3M in construction costs would be requested as additional project funding as part of the FY 09 CIP.


C. Departmental Fiscal Review: _____

III. REVIEW COMMENTS:

A. OFMB Fiscal and/or Contract Development & Control Comments:

 9.5.07

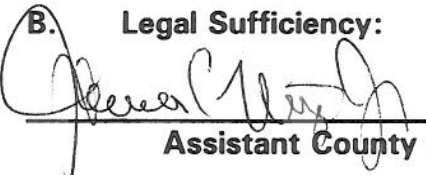
 OFMB

 9/16/07

 Contract Dev. and Control

CN
9/14/07

B. Legal Sufficiency:

 9/18/07

 Assistant County Attorney

C. Other Department Review:

BACKGROUND & POLICY ISSUES (CONT'D)

As is typical prior to undertaking any new or replacement HVAC system of significant size, the County tasks the consultants with evaluating the feasibility and potential cost and energy savings associated with alternatives to conventional HVAC designs. In the past alternate system design alternatives have not been determined to be feasible due to the long payback periods, increased maintenance costs or incompatibility with the County's operational characteristics. TES systems specifically have been evaluated before and the two drawbacks are 1) long payback periods, and 2) operating hours for the facility which did not allow for the production of chilled water during "off-periods." The first drawback is overcome here by the size (load) of the system. The second drawback of the system is overcome here due to 8-10 hours operating days. As a matter of comparison the Main Detention Center/Sheriff's Office Administration Building has similar loads but the operating period is 24 hours daily.

A TES chilled water system is designed to store cooling energy during "off-peak" hours thereby benefiting from reduced electrical rates. A TES system produces and stores chilled water at night and then pumps it to the buildings during the day. In addition to the loads for the Judicial Center, Government Center, 1916 Courthouse, the system would be designed to accommodate a future 350,000 sf office building on Block D.

A new TES system that has been recommended by the project's consultant would increase the capital project budget by \$2.3M, of which, FPL would provide a \$1M rebate at project completion, so net cost to the County is \$1.3M. The operating savings would initially be \$205,000/annually and increase to \$265,000/year when the Block D Office Building is added. This equates to a 6 year payback period on the capital investment and after Year 6, the savings are real.

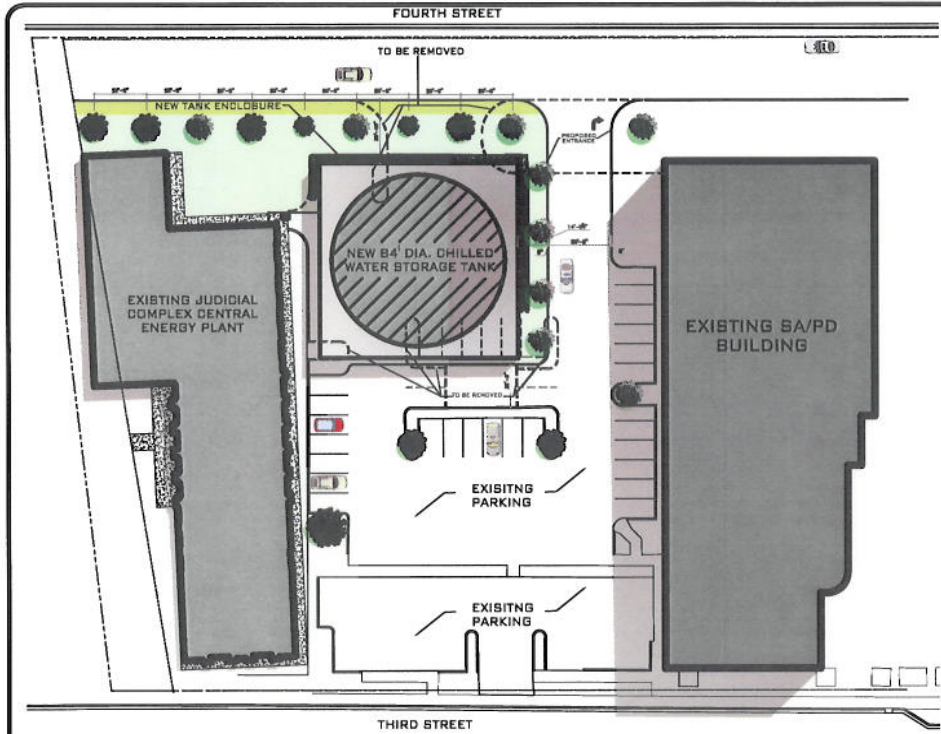
Florida Power & Light (FP&L) encourages energy efficient design by offering cash incentives to help defray the cost of installing additional equipment required for the TES to operate. FP&L's energy conservation programs are aimed at reducing the peak electrical load on the utility system and they offer reduced rates for customers operating in non-peak times (evening hours). It is during these non-peak times that the TES system is storing cooled water for use during the day time, thereby taking advantage of the lower electrical rates. Even though the rebate from FPL does not occur until project completion, the rebate agreement would be signed at this time and FPL would then be committed to the rebate even if the rebate program is discontinued before project completion. As a result, the "risk" associated with the FPL rebate is minimal and evaluating the payback period taking into account the rebate ("net capital cost") is appropriate.

This analysis also assumes that the \$1.3 M upfront net costs would not be financed (like the proposed funding for the CEP Expansion project) so as to avoid the interest charges on the borrowed money.

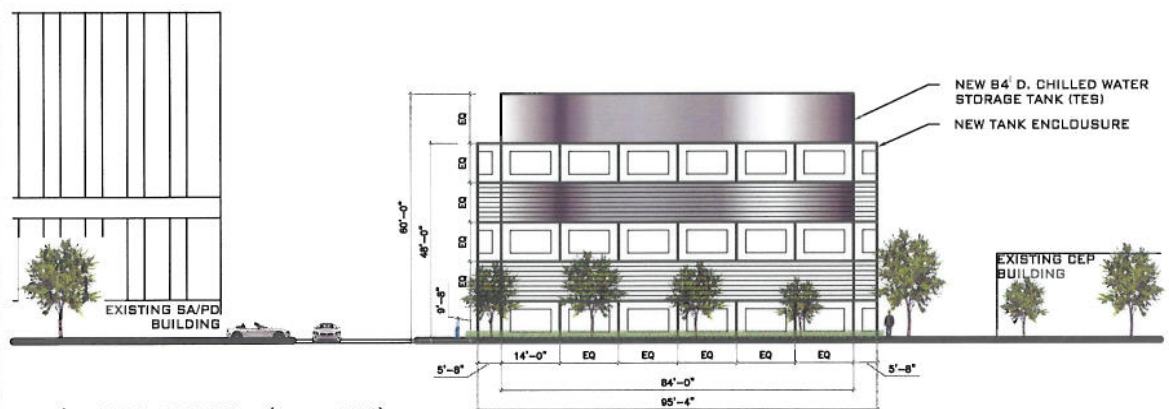
In addition to considering the financial impacts of the decision, the Board must consider the risk associated with the gaining approvals for the water storage tank. The TES system supplement would include a new chilled water storage tank to be located immediately adjacent to the existing CEP. It is estimated to be 85' in diameter and 60' tall and would be located in the current parking lot between the CEP and the SA/PA Building. The parking lot would be reconfigured and would result in the net loss of 20 parking spaces. A site plan/ artist's rendering of the tank are included as Attachment 1. Because of the added exterior storage tank, the City of West Palm Beach's site plan approval would be required which could take a year to obtain. In order to not delay the project which needs to proceed as the equipment at the Government Center is failing, Staff proposes that it proceed with the design of the system with the intent to add the TES equipment at a later date, once we have the City's approval. The additional cost (which could be absorbed by the current project budget contingency) would be \$150,000 in professional fees to design the TES and obtain site plan approval from the City. If City approval cannot be obtained, the consultant fees would be lost.

There is nothing in the City's land development code that would preclude the approval of a water storage tank in this location and the storage tank is vertically and horizontally shielded on three of four sides by County properties. The loss of parking spaces are not a significant consideration in this analysis.

As a result, the Board's consideration should focus mainly on whether it can and desires to increase its initial capital outlay to realize the on-going operating savings, and whether it is willing to proceed with the TES design subject to the potential loss of \$150,000 in design fees in the event that the water storage tank is not approved by the City.



OVERLAY SITE PLAN
Proposed TES Location
SCALE 1/32" = 1'-0"



NORTH ELEVATION - (proposed TES)
SCALE 1" = 30'



NW SITE - (existing)
SCALE = N.T.S.



NW SITE - (proposed)
SCALE = N.T.S.

TO THE BEST OF MY KNOWLEDGE AND BELIEF, I HAVE COMPILED THE INFORMATION HEREON ACCORDING TO THE PROFESSIONAL STANDARDS AND PRACTICES CURRENTLY IN EFFECT IN THE STATE OF FLORIDA.

AUG 31, 2007 6:54 AM SHW
E:\WORK\HANSON\CEP\PROJECTS\10-100.DWG

REVISION	DATE
CENTRAL ENERGY PLANT WEST PALM BEACH, FL	
DRAWN BY: JRM CHECKED BY: JRM DATE: 08/27/07	DESIGNED BY: JRM DATE: 08/27/07
Project No. 10-100.DWG Date: 08/27/07 Scale: AS NOTED Plot Date: AUGUST 29, 2007	
HANSON ENGINEERING, INC. 1811 West Palm Beach, Florida 33406-1666 Phone: (561) 471-0070 Fax: (561) 471-5000 Office Hours: 9:00 AM - 5:00 PM	
THERMAL ENERGY STORAGE SITE PLAN DOWNTOWN WEST PALM BEACH CENTRAL ENERGY PLANT	
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