

DATE ISSUED: November 15, 2000

REPORT NO. 00-256

ATTENTION: Rules, Finance & Intergovernmental Relations Committee
Agenda of November 20, 2000

SUBJECT: Community Concourse Energy Savings Measures

SUMMARY

Issue - Should the City Manager enter into an amendment to the Master Energy Efficiency Service Contract (ESCO) with Onsite Energy Corporation (Onsite) to implement energy savings measures for the Community Concourse except replacement of the central plant chillers and cooling tower?

Or in the alternative should the Mayor and Council authorize the City Manager to execute one of the following two alternative agreements:

Alternative A: Take the existing chillers off line and accept chilled water for the Community Concourse from an independent provider through an agreement with NRG Energy Center San Diego LLC ("NRG");

Alternative B: Expand the scope of the amended ESCO with Onsite to replace the chillers, cooling tower and implement energy saving measures?

Manager's Recommendation - Since the future of the Community Concourse remains uncertain, the next phase of the ESCO with Onsite should consist of all energy savings improvements except replacement of the chillers and cooling tower.

Other Recommendations - None

Fiscal Impact - In Fiscal Year 2000, the cost of producing and distributing chilled water for the Community Concourse at the Central Power plant was approximately \$285,000. The City's share of this cost was approximately \$198,000. In Fiscal Year 2001, due to the increased cost of electricity, it is anticipated that the total cost will be approximately \$316,000. The cost of the proposed improvements totaling \$953,713 (including interest) will take approximately 4.6 years to amortize and be financed at the current contract rate 6.29% and paid back through energy savings. Once these costs are amortized the amended ESCO will result in estimated net energy cost savings of \$305,873 over seven years.

BACKGROUND

The Central Power plant provides chilled and hot water for both domestic consumption and environmental space conditioning for the City Administration Building, the Development Review Center, the Convention and Performing Arts Center, and the Civic Theater. The chiller

plant consists of three Carrier Model 19-C units, along with associated valves, pumps, motors and piping, all of original 1964 vintage. The central plant is operated and maintained by the Convention Center Corporation, and the costs are shared between the City and the Convention Center pursuant to a 1998 contract.

As part of the Civic Center Master Plan study, the City retained LSW Engineers to perform an independent assessment of the Central Power plant. LSW concluded that the plant is in fairly good condition for its age. However, the existing chillers have exceeded the projected useful life remaining. Industry standards identify 23 years as the median useful, and the existing chillers have been in service 36 years. Even though preventive maintenance procedures are regularly performed, LSW concluded that a major operational failure may likely occur within the next seven years. In addition, the chillers use R-11 refrigerant which has limited availability.

Condenser water for the chillers is provided by a wood frame cooling tower located on the roof over Golden Hall. It also was installed in 1964 and is in poor condition. According to industry standards the median useful life of a wood frame cooling tower is approximately 20 years.

According to LSW Engineers, approximately \$1,500,000 to \$2,000,000 is immediately required to replace equipment and upgrade equipment to a moderate level of operational efficiency. However, the Convention Center technicians responsible for operating and maintaining the central plant feel the likelihood of a failure that would result in a loss of air conditioning is remote. This is due to the fact that there is planned redundancy in the system. Usually only one chiller of the three is operating except during peak times. On those occasions when all three are operating, it is at much reduced load. If one of the chillers were to fail, the other two could handle the load.

DISCUSSION

The main challenge with the central plant is inefficiency. In each of the past three fiscal years, the City's energy cost to operate the Community Concourse facilities has exceeded \$1.1 million. Of this amount, an estimated \$136,000 per year was the cost of electricity to operate the central plant. Through research with industry sources, LSW forecast that the average cost per kilowatt hour will increase approximately twenty-five per cent in Fiscal Year 2001 over the average cost during Fiscal Year 2000 and an increase of between three and nineteen percent over the next five years. Because of the currently volatile energy market, it is imperative to implement all feasible energy savings measures to limit these increased costs. The proposed amendment to the ESCO with Onsite would be consistent with the recent policy direction by the Mayor and Council to develop energy conservation projects (R-2001-525).

In 1999, the City entered into the original ESCO with Onsite in which covered four City facilities: the Crabtree Building, the World Trade Center, Pump Station No. 2, and the Central Library. An assessment of each facility was performed and a scope of work established to identify all feasible energy savings upgrades and improvements. Onsite then performed this work, the cost of which was financed at a very favorable rate (6.29%) to be paid back through energy savings. The amortization periods vary slightly for each facility, but once the costs are amortized, the City continues to receive the benefit of the energy savings. In preparing their

response the Request for Proposals, Onsite and the other respondents used the central plant as the example for their analysis. As a result we have a good understanding of what energy savings improvements could be accomplished. This would include at a minimum replacement of existing pumps, fan motors and air handler drives with variable speed devices, replacement of the existing steam boiler with hot water heaters and domestic hot water heat exchangers, and replacement the existing building control system with a state-of-the-art, digital energy management and control system.

Although replacement of the chillers would provide additional energy savings, it would be imprudent to invest the level of capital in the central plant without knowing how long of a time period would be available to amortize the costs. According to the analyses performed by both LSW and Onsite, seven years is the time needed to amortize these costs. The proposed energy savings measures without replacement of the chillers and cooling tower could be amortized over 4.6 years. Once the future of the Community Concourse is known, and a time line is established, one of the two alternatives listed above should be implemented. At that time, if it is determined that the Concourse will remain substantially in the same configuration in excess of seven years, replacement of the chillers and cooling tower is a sound capital investment. If a shorter time line is developed, the NRG chilled water contract provides a flexible short-term solution that avoids most of the capital expenditure.

Alternative A

NRG proposes to provide the City with chilled water, generated offsite and distributed to the Community Concourse via a “district cooling” network. The existing chillers would be decommissioned, but remain in place as an emergency backup. The existing distribution pumps and control valves would need to be upgraded to make district cooling more efficient and provide better air conditioning throughout the Concourse facility. Although not currently part of their proposal, NRG has indicated a willingness to provide interest-free financing for these necessary improvements over the seven-year term of the agreement. The annual contract cost of the NRG proposal is estimated to be \$338,000 in the first year of a seven-year agreement. In addition, NRG estimates that the cost of “failure to supply” insurance will be \$30,000 per year, payable by the City. Costs in subsequent years will increase at a rate commensurate with CPI and the cost of electricity. It is also estimated that modifications and upgrades of the current Central Power plant and CAB air handling system of approximately \$314,000 will be required to allow the existing facility to make optimum use of imported chilled water.

LSW Engineers performed an independent analysis of NRG’s proposal and estimated that, in addition to the cost of chilled water, the City would incur additional costs of approximately \$34,000 per year for staffing, pumping electricity and miscellaneous repairs. LSW determined within the seven year threshold, the NRG proposal is a viable short-term solution to the City’s need for a reliable source of chilled water at the Concourse.

Alternative B

An expanded amendment to the ESCO with Onsite would include replacement of the chillers and cooling towers with more efficient equipment and continued operation of the central plant (in

addition to the items listed above). This would include the capital cost of \$2,635,829 (including interest), when financed at 6.29% under the existing Onsite contract. There will be guaranteed net savings in energy costs of \$924,122 within ten years and estimated total savings of \$2,351,617 over fifteen years. For the purpose of calculating the guaranteed savings, it was assumed that the cost of electricity will remain stable for the next five years and escalate at 3.5% per year thereafter. However, since energy costs are likely to increase at a higher rate, the level of savings will increase commensurately. This would significantly extend the useful life of the facility by investing in capital improvements. The amortization period is estimated at seven years, which could be shorter if energy prices continue to rise.

According to LSW Engineers' analysis, Onsite's proposal is a viable long-term solution to the City's need for a reliable source of environmental space conditioning and will provide substantial energy savings over time. If the Concourse remains in its current configuration in excess of seven years, the costs can be fully amortized.

OTHER ALTERNATIVE

Do not authorize execution of any of the agreements. This is not recommended due to the lost energy savings that would result.

Respectfully Submitted,

William T. Griffith Approved: George I. Loveland
Real Estate Assets Director.....Assistant City Manager

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