

NEW HAVEN CITY PLAN COMMISSION ADVISORY REPORT

RE: 200 ORANGE STREET/165 CHURCH STREET (New Haven City Hall),
Authorization to enter into a 10-year Energy Services Agreement with UTC Power Corporation for a 400kW Fuel Cell Installation (Chief Administrative Officer).

REPORT: 1449-13

ADVICE: Approval

BACKGROUND

As part of the City's efforts to reduce energy consumption and energy costs, the Office of Sustainability and the Engineering Department undertook a study of options to more efficiently provide energy to City Hall and the Hall of Records. The option selected is the installation of a fuel cell that provides nearly all of the complex's electricity, 60% of the heat, and 30% of the cooling needed for the two buildings, while relying on the existing energy center (shared with 157 Church) for the balance of the thermal load.

Fuel cells generate electricity by electrochemically combining hydrogen and oxygen to produce electricity, water, and heat. The hydrogen is created in the unit by reforming natural gas. Fuel cells do operate by combustion, resulting in dramatically lower air emissions. Also, the significant waste heat produces on-site can be recovered to meet thermal loads, a process referred to as co-generation. By extracting more usable energy from the fuel than separately producing electricity and thermal energy, the fuel cell is more efficient and reduces utility costs.

Due to the size of the unit (L 28'8" x W 11' x H 9'11") and its weight (60,000 lbs), the unit will be located on the small, low platform fronting Orange Street to the south side of the Hall of Records. A thermal rejection unit (consisting of six fans and associated equipment) will be located on the roof of the Hall of Records, along with auxiliary chiller equipment. An absorption chiller will be located in the space under the larger plaza outside the Hall of Records. The location was chosen due to its close proximity to the existing thermal systems serving the two buildings and the availability of suitable access.

The City proposes to enter into an Energy Services Agreement (ESA) for the fuel cell with UTC Power, rather than purchase the fuel cell outright. Under the ESA, the City pays a fixed sum (approximately \$430,000 - \$450,000 per year) for the equipment over 10 years and also must purchase natural gas to fuel the unit. UTC Power is responsible for all of the capital and maintenance costs for the unit, and has agreed to provide the City with an uptime guarantee. The project is anticipated to save the City approximately \$1 million over 10 years, depending on energy prices.

PLANNING CONSIDERATIONS

The fuel cell will be installed in a high visibility area that will highlight the presence of the technology installed at City Hall and the Hall of Records. Including this project, the New Haven will have five distinct fuel cell installations: the Greater New Haven Water Pollution Control Authority, the Yale Peabody Museum, 360 State, and the Combined Utility Plant at Roberto Clemente and Hill Central schools.

The area where the fuel cell will be installed is commercial/institutional in nature, and is not anticipated to have any negative impacts on the surrounding properties.

ADVICE

The reduction of both the environmental footprint of the City and energy costs results in a win-win that will serve as an example for not only other City buildings but also other facilities in New Haven. The fuel cell will be a visible example of clean, green Connecticut technology providing environmental and financial benefits in the community. The City Plan Commission recommends the approval of the aforementioned resolution.

ADOPTED: February 16, 2011
Edward Mattison
Chair

ATTEST: 
Karyn M. Gilvarg, AIA
Executive Director