

**Connecticut Center for Science & Exploration (CTCSE)**  
**Project Milestones**  
**for Funding by the Connecticut Energy Efficiency Fund (CEEF)**  
**Update (April 10, 2006)**

I. Overview

The project is contractually managed by The Connecticut Light and Power Company (“CL&P”) through the use of a Blanket Purchase Order No. 02227282 (“BPO”) with individual releases against that BPO. The project will be reviewed by the Energy Conservation Management Board (“ECMB”) quarterly at ECMB meetings on the second Tuesday of the month following the end of the quarter.

The Center and CL&P have entered into a contract totaling \$1 million over five years (2005-2009). Project technical and financial milestones were established. For any questions, please contact Rebecca Meyer, CL&P at (860) 832-4924.

2006 Milestones				
Time	Total Payment Amount	Financial	Technical-Energy Efficient Design	Technical – Energy Efficient Exhibits and Outreach
October 2006	\$200,000	II-B, C, D, E	III-A, B, C, D, E, F, G	IV-A, B, C, D

II. Financial Milestones

- B. Center will secure prior or concurrent funding from the CCEF before CL&P authorizes release of CEEF monies to the Center and Center will provide proof of CCEF funding upon request by CL&P or ECMB.**

Complete. The CTCSE has issued a \$200,000 invoice to the Connecticut Clean Energy Fund. The Connecticut Clean Energy Fund will issue a check for \$200,000 in April/May to meet their 2006 commitment to the CTCSE. This will meet the Center’s milestone of securing prior or concurrent funding as CL&P, on CEEF’s behalf, will issue \$200,000 payment in April/May 2007.

- C. Center will provide CL&P and the ECMB with financial statements and agreements that affect this CEEF financial agreement. This includes proper disbursement of funds (\$200,000 each year) from the CCEF over the next five years (2005-2009).**

Complete. Financial agreement between the Connecticut Clean Energy Fund and CTCSE was made available to CL&P in early December 2005.

- D. Center will meet all required Technical Milestones.**

Complete. See separate section.

- E. Distribution of CEEF monies for year (2006) to Center (\$200,000).**

Not complete. This milestone is dependent upon review by ECMB to determine if milestones have been completed. Once approval is attained at April 2007 ECMB meeting, CL&P will authorize \$200,000 payment to CTCSE.

### III. Technical Milestones

#### Energy Efficient Design

- A. Include CL&P and CL&P's Energy Advocate in all appropriate design and architectural team meetings from the initial meeting through completion of the Center.**

Complete. CL&P and CL&P's Energy Advocate (Fuss & O'Neill) were involved in first design team meeting in early July. On July 18, an Energy Analysis was completed by Steven Winter Associates (design consultants hired by the CTCSE). The CTCSE decided to alter some of the building design and on September 16, CL&P's Energy Advocate (Fuss & O'Neill) received the second design plans for the CTCSE. A second energy analysis was completed in October 2006 (See III-D).

A meeting between CL&P Energy Conscious Construction team, Fuss & O'Neill consultants, Steven Winters Associates, and Pelli Clarke Pelli Architects (Center's design team) was held on Thursday, December 22, at Pelli Clarke Pelli's New Haven offices. The meeting was to discuss energy-efficiency measures in the CTCSE.

In 2007, CL&P and CL&P's Energy Advocate (Fuss & O'Neill) continue to be involved in design team meetings. 2007 meetings and energy analyses of the Center will be submitted for the 2007 Milestones in October 2007.

- B. Center's design and architectural team will strongly consider and discuss the use of all energy efficient measures in the Center that are proposed by CL&P and CL&P's Energy Advocate.**

Complete. See III-A and III-D.

- C. Center's design and architectural team will attain LEED certification for the Center. CL&P and CL&P's Energy Advocate will assist and advise the Center in seeking LEED certification through the implementation of energy efficient measures.**

Complete. Based on Steve Winter Design, Inc.'s Energy Analysis, dated October 12, 2006 (accurate through January 31, 2007) and other design analyses, the Center's design and architectural team anticipate attaining Gold LEED certification for the Center.

- D. Center's design and architectural team will work with CL&P and CL&P's Energy Advocate to strive to attain the highest energy-efficient standards established by energy-efficient building guidelines, such as LEED and Advanced Building Design guidelines. The Center shall strive to achieve its target to be at least 15% more energy efficient than the 2005 Connecticut State Building Code, and shall meet a minimum standard to be at least 10% more energy efficient than the 2005 Connecticut State Building Code. The ECMB shall evaluate the Center to ensure that it is constructed at least 10 % more energy efficient than the 2005 Connecticut State Building Code.**

Complete, see above. The final energy-efficiency determination will not occur until Fall 2007 or Spring 2008. The Center's board has made clear its commitment to the use of this building as a tool for teaching about sustainability and efficient building technology, and that energy-efficiency is not an area to be cut. The Center's architects are aware that they must meet the minimum standard of 10% more energy-efficient than the 2005 Connecticut State Building Code—ASHRAE 90.2001 (and all pertinent addenda) standards.

Based on Steve Winter Design, Inc.’s Energy Analysis, dated October 12, 2006 (accurate through January 31, 2007), the design of the CTCSE should meet the minimum standard of 10% more energy-efficient than the 2005 Connecticut State Building Code—ASHRAE 90.2001 (and all pertinent addenda) standards. A copy of the full Energy Analysis will be made available to all ECMB members and consultants at April 11, 2007 ECMB meeting.

On page ii of the Energy Analysis, Steve Winters Associates, Inc. reports:

***“The table below shows the regulated energy savings versus ASHRAE/IESNA Standard 90.1-1999, which is the basis for determining LEED credits, and ASHRAE/IESNA Standards 90.1-2001, which is the basis for determining utility incentives and meeting the Energy Conservation & Load Management Board performance target of 15%.***

Case	Regulated Energy Cost Savings vs. ASHRAE/IESNA	
	90.1-1999	90.1-2001
Base C: Design Case	16.30%	13.50%
AltG1: Design w/single pane clear low-e in Science Alley (North and South elevations only)	15.26%	12.43%

*Taking into account a PV system that generates 70,000 kWh per year the results would be as follows:*

Case	Regulated Energy Cost Savings vs. ASHRAE/IESNA	
	90.1-1999	90.1-2001
Base C: Design Case	19.42%	16.73%
AltG1: Design w/single pane clear low-e in Science Alley (North and South elevations only)	18.38%	15.65%

*The results also show that versus ASHRAE/IESNA Standard 90.1-2001 the design as currently proposed with PVs meets the savings target of 15%, but without PVs doesn't.*

**E. Center’s design and architectural team will strongly consider and discuss the use of all renewable energy installations in the Center that are proposed by the CCEF.**

Complete. Center has been in discussions with Connecticut Clean Energy Fund regarding use of renewables. In 2006, the Center continued to work with the Connecticut Clean Energy Fund on plans for renewable energy sources (photovoltaic or fuel cell) for the Center. According to Steve Winter Design, Inc.’s Energy Analysis, dated October 12, 2006 (accurate through January 31, 2007):

*“...savings do not include the benefit for solar photovoltaic panels and fuel cells. Although, the general benefit of these systems have been discussed, the details of the systems have not been determined (e.g., which of the fuel cell technologies will be implemented.”*

**F. Draft design standards will be provided to CL&P at quarterly intervals.**

Complete. Design standards (plans) were provided to CL&P’s energy consultants and C&LM staff in October 2006 and December 2006. A copy of the full Energy Analysis will be made available to all ECMB members and consultants at April 11, 2007 ECMB meeting.

**G. Final design standards will be provided to CL&P at quarterly intervals.**

Incomplete (Due to Construction Schedule Only). Final design standards are not available as CTCSE building will not be completed until Fall 2008. Draft design standards are being made available.

**IV. Energy Efficient Exhibits and Outreach**

**A. Center will continue to include CL&P in the development of energy efficient exhibits. The Center will consider input from the ECMB regarding the development of energy efficient exhibits.**

Complete. On March 27, 2006, a meeting was held at the Center offices in Hartford. Attending the meeting were members of the ECMB (Louise E. DiCocco-Beauton, Roger Koontz and Joel Gordes), CL&P (Joseph Swift and Rebecca Meyer). A preliminary exhibit plan was distributed to all ECMB Science Center committee members and suggestions were given to the exhibit designers—Thinc Design. On August 17, a meeting was held at the Center's Hartford offices to discuss updates to the exhibit design and layout. Jeff Gaudiosi, Louise DiCocco-Beauton and Joel Gordes participated in the meeting. A redesign meeting was held in November and several memorandums (from CCEF and CL&P) were distributed to the Center, Thinc Design and ECMB Science Center Committee members.

On March 7, 2007, a new exhibit design was delivered to CL&P, the CCEF and all Science Center Committee members. Edits and comments were incorporated into a response memorandum to the exhibit designers-Thinc Design. On March 14, CL&P's Rebecca Meyer delivered an overview of the new exhibit design to ECMB members at the March ECMB meeting. Copies of the new exhibit design were made available to all ECMB members. This new exhibit design and subsequent concessions meets the 2006 milestones of submitting exhibit designs and working with the two funds and CL&P.

**B. Include CL&P in development of energy efficient educational outreach programs.**

Complete. The CTCSE is currently working with CL&P and The United Illuminating Company to develop the eesmarts™ program into its curriculum.

The Center's Web site offers educational information through the AT&T Learning Connection (<http://www.ctsciencecenter.org/vignette.php>). The site offers a "Science of Building" video series which teaches about the scientific principles involved in the construction of the Center. As the construction proceeds, a video featuring the science of energy efficiency and renewable energy measures in the Center will be produced.

**C. Provide progress of fabrication of energy efficient exhibits to CL&P at quarterly intervals.**

Complete, see IV-A.

**D. Provide final design of energy efficient exhibits to CL&P at quarterly intervals for their inspection and input.**

Incomplete (Due to several redesigns of the exhibit design and Construction Schedule Only). The Center will continue to share all draft designs and the final design with the CCEF, CCEF and CL&P.