

CHATSWORTH BOYS AND GIRLS CLUB

EarthCraft Light Commercial Platinum certified building

The Chatsworth project supports the Boys and Girls Club commitment to providing vibrant, healthy spaces for children to play and learn in an environmentally responsible building. The Chatsworth project team took an abandoned structure and transformed it into a near net zero certified high performance building that will serve the client's program needs with low energy and water usage, low maintenance costs, and is specifically designed for the health and wellness of the children that it will serve.

Project Success

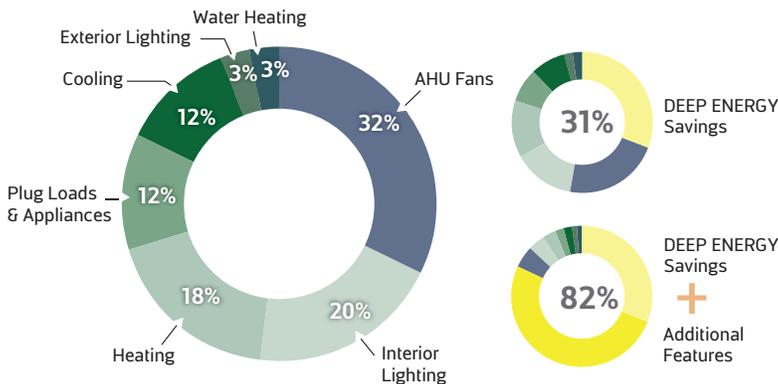
This club serves the local community children through a facility built for occupant well-being and energy and water efficiency solutions which support operational savings. As a grantee of the Nonprofit Energy & Water Efficiency Initiative it has committed to achieving a 20% annual utility reduction. The project owner has also committed to fulfill the requirements of the EarthCraft for Light Commercial (ECLC) DEEP ENERGY Package which results in a minimum of 31% energy savings over a code building (Figure 1). The project estimates a projected 82% energy savings through features that include: photovoltaics, energy efficient heating, ventilation and air conditioning (HVAC) and water heating systems and improved envelope insulation (Figure 2). In addition the project team strives to achieve the first ECLC Platinum certification.



BUILDING SPECIFICATIONS:

Where:	Chatsworth, GA	
Building Use:	Pre School Facility	
Project Type:	Major Renovation	
Climate zone:	4A	
Square Feet:	3,000	
Floors:	1	
ECLC Certification:	Platinum	
Owner:	Boys & Girls Club	
General Contract:	Cope Brothers Construction	

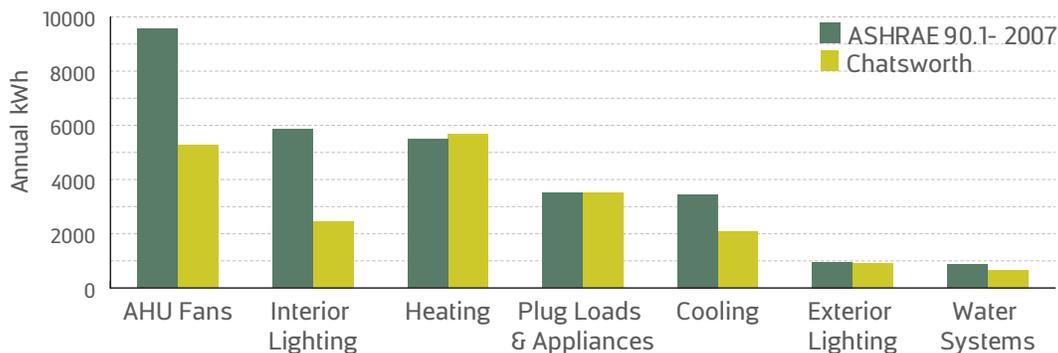
Figure 1. Energy use segmented by end-use and comparisons of DEEP ENERGY and Additional Features savings added to the energy picture.



What is driving energy savings?

- Space cooling and ventilation fans – improved wall and roof insulation and improved HVAC efficiencies.
- Interior lighting – reduced lighting power density through LED fixtures and controls. The reduction in lighting power density led to a slight heating energy penalty.
- Exterior lighting – reduced lighting power density through LED fixtures and controls.
- Domestic hot water – higher efficiency water heater.

Figure 2. Overall efficiency savings are driven by reductions in air handler fans, interior and exterior lighting and domestic hot water.



Unique Challenges

The existing building was a shell that had to be retrofitted with new HVAC, restrooms, kitchen and plumbing. Additional challenges for improvement included: envelope tightness, lighting systems and window efficiency. The HVAC designer was challenged with building a high efficiency system that supports fluctuating occupancy, since the building supports both after school and summer programs. The required outcome was a building that is versatile – built for occupant well-being, with affordable retrofits and maintained with simple operation.

EarthCraft Light Commercial Program Impact

The ECLC certification provided an environmental lens to guide the design decisions and challenge the project team to explore new areas of opportunities. A design charrette was held with the project design team and the owner to discuss the program, review the credit worksheet and assess ways the ECLC program supports the owner's goals.

ECLC program credits such as designing for occupant well-being align with the goals of the organization and were given a high priority. This credit opened new opportunities to provide a healthy space for the children by focusing on building features such as maximizing daylight, managing noise, specifying low VOC finishes and selecting colors that support space functions.

Water efficient fixtures and making the decision to not install an irrigation system contribute to lowering the impact on water usage. Landscaping with native and adaptive plant species and using organic mulch lowers both water usage and maintenance.

The environmental building features will be used as teaching materials for the children. Each feature will be highlighted in educational signage and materials. Future projects slated to expand environmental stewardship education include a vegetable garden, bicycle path and rain barrels.

DEEP ENERGY Program Impact



The Deep Energy Package raises the bar for energy savings in ECLC buildings by requiring a minimum energy savings (calculated from an ASHRAE 2007 90.1 baseline) by 25%. The first step in this process is to conduct an assessment of the existing building and provided a list of recommendations for improving the building envelope, systems and site.

In response to the recommendations, the roofline and gables as well as the envelope block wall cavities were spray foamed. The windows and exterior doors were replaced with tighter, more efficient ones. These measures made a notable improvement to the insulation values as well as airtightness of the envelope.

LED lighting with occupancy controls, ENERGY STAR® appliances and high efficiency HVAC and hot water systems contribute to lower the electricity usage. The project is tracking near net zero energy usage by lowering the overall load and installing a

photovoltaic array on the roof that will produce 10 KW of electricity per year. This array will provide 82% of the building's energy needs.

DEEP ENERGY Package Highlights

ENVELOPE

- Window u-factor of 0.33 and SHGC of 0.31
- All orientations have overhangs providing shade
- ENERGY STAR® roof
- Continuous air barrier, rigid air barriers installed, envelope penetrations sealed
- Spray foam of roof and CMU blocks improves wall R-value and insures air barrier penetrations sealed and airtight
- All air handlers and ductwork within building thermal envelope

WATER EFFICIENCY

- 2 point-of-use water heaters with energy factor of 0.99
- High-performance plumbing fixtures; WC 1.28 gpf, Faucets 0.25 gpm, Urinals 0.125 gpf

HEATING AND AIR CONDITIONING

- 16 SEER high efficiency heat pump

LIGHTING & CONTROLS

- 100% vacancy/occupancy sensors installed for all interior spaces
- Multi-level lighting controls for outdoor lighting
- All LED lighting
- Exterior lighting to have integral motion and photocell controls

OTHER ENERGY EFFICIENCY MEASURES

- ENERGY STAR appliances
- Tablets versus desktop or laptop computers
- Renewable energy strategy: 10kW solar panels to approach net zero energy