



Forest Products Laboratory Energy Savings ♻️ What are we doing to “GO GREEN”?

Continuing energy-efficient upgrades and cost saving measures



FY 2008 energy savings created or enhanced by Research Facilities Engineering (RFE) staff

1. Upgraded to energy-efficient light fixtures in various areas.
 - Saved \$2,730 on electric bill.
2. Legally changed the disposal path of process water to the storm sewer instead of the sanitary sewer.
 - Saved \$39,046.38 on water/sewer bill.
3. Replaced two sinks with one hand sanitizer in Building 33 men’s room.
 - Saved faucet replacement cost (\$738).
 - Restroom now has estimated water savings of 22,680 gallons per year.
4. Eliminated all lawn watering. Our geographic area receives enough annual rainfall to sustain most landscaping without supplementation.
 - Savings are evident, but difficult to quantify.
5. RFE personnel are working with FPL researchers to both provide and increase efficiency of process equipment that is used to investigate and improve methods of extracting energy sources from wood waste products.

The Multi-Use Lab, currently under construction at FPL, is designed to be LEED “silver” certified.

LEED (The Leadership in Energy and Environmental Design Green Building Rating System™) is a third-party certification program that promotes a whole-building approach to sustainability.



Initiated Energy Savings Performance Contract (ESPC)

Johnson Controls (JCI)



Objectives: Identify and implement energy conservation measures (ECMs) and meet energy reduction goals.

Selected Johnson Controls (JCI). JCI has completed the initial proposal phase of the process.

- JCI can generate energy savings of about \$174,000 annually for FPL by investing approximately \$1.75 million in ECMs, with a simple payback of about 10 years.
- Significant ECMs include installing building environmental management controls, modifying building HVAC systems, upgrading to energy-efficient lighting, modifying utility distribution systems, and installing some minor renewable energy projects.

An ESPC is a no-upfront-cost contracting method where an energy service company (ESCO) provides and finances energy improvements for Government agencies, which repay the ESCO from the resulting energy savings. ESPCs were created by the Energy Policy Act of 1992, reauthorized by the Energy Policy Act of 2005, and are encouraged by Executive Order 13123 of 1999.

- FPL will repay JCI over 21 years, using the savings generated by the energy improvements, with a total payback of about \$4.1 million.

JCI is currently conducting a detailed energy survey. The detailed survey will identify exactly which ECMs are proposed, guarantee the projected annual energy savings, outline how the savings will be measured and verified, and state the exact total payback amount. FPL hopes to have the delivery order for this work in place before the end of calendar year 2009.

Chartered FPL Green Team

Created to meet Forest Service goals for Sustainable Operations and to comply with Executive Order 13423, Sec. 3 (a)(v) pollution and waste prevention and recycling, and the USDA goal of 40% recycling rate by December 2010.



Objectives

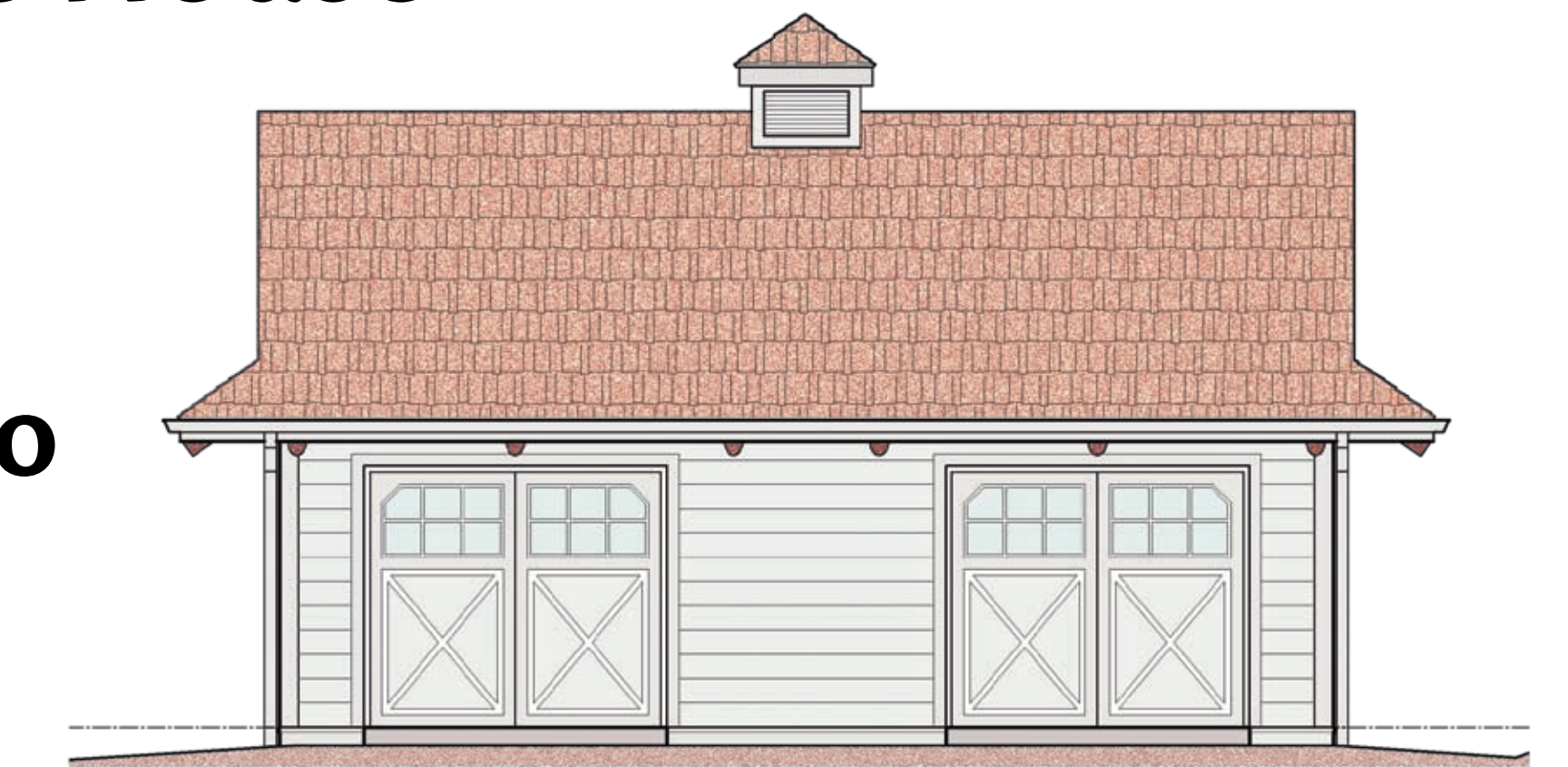
- Generate enthusiasm and sustained effort, and serve as a conduit for broad employee involvement, in reducing waste and conserving resources.
- Request ideas from employees on opportunities to improve conservation efforts at the Lab.
- Educate employees on comparative impact of various actions.
- Evaluate current practices impacting the FPL waste stream and present findings to Green Team Executive Leader.
- Navigate efforts to implement the Management-approved action plan, with the assistance and support of staff throughout FPL.

Activities

- Distributed new recycling containers throughout the FPL campus.
- Conducts educational brown-bag seminars.
- Submits weekly “Green-u-cation” e-mails that provide topics for further discussion and stimulate broader employee involvement.
- Actively seeks opportunities to divert used research materials from the waste stream.
- Provides an interactive Excel sheet to employees for calculating the energy draw in particular lab settings.

The Carriage House

Integrating renewable resources into housing



Resources such as small-diameter timber, harvested rainwater, energy from wood waste, and energy from the sun are all plentiful and renewable. Using these resources efficiently can provide a sustainable support system for cold climate housing by reducing our reliance on nonrenewable fuels and making better use of our forest resources. The technologies to harness and use these resources are being developed, tested, and evaluated under real-world conditions.

The Carriage House project is designed to demonstrate and validate several points:

- Combination of a BioMax biopower system with solar energy (photovoltaics) can provide power needs for residential structures in cold climates.
- Rainwater can be reliably harvested and treated for potable use.
- Systems to save energy and water are safe, reliable, and provide sustainable security.
- Technologies are available and work well in cold climates.

The Carriage House, a contemporary two-car garage, is appropriately scaled to fit its site and to complement the Research Demonstration House on FPL grounds. It will demonstrate the technical feasibility of using small-diameter roundwood and other small-diameter material in the conventional housing market.



The energy and water harvesting systems in the Carriage House are designed to supply the energy needs and the potable water requirements for an average residential home in a cold climate.