

“Net Zero” Fish Research Facility Receives Huge Incentive

The OSU Sustainability Office and the John L. Fryer Aquatic Animal Health Laboratory (AAHL) were presented with a sizeable energy incentive check this week from Energy Trust of Oregon. The recent installation of a water-to-water heat pump at the AAHL provides heated and chilled water for fish research tanks throughout the facility. The design of the system incorporated a host of energy-efficiency measures rendering it eligible for the \$196,054 rebate check. This rebate amounts to almost 50% of the total project costs.

At the check presentation, Lyn Schmidt from Energy Trust gave everyone involved in the project a huge pat on the back. The project had been almost 5 years in the making; from the inception of the idea, to the design, fund raising and final construction and implementation. Lyn said it was one of the top 20 largest energy saving projects in Oregon this year.

Not only do the new heat pumps have a coefficient of performance or COP of 3.9 (in other words, for every 1 kWh consumed it produces 3.9 kWh heat energy), the system utilizes energy from the facilities effluent, which would otherwise go down the drain- literally. New heat exchangers extract “waste” heat energy from the effluent, transferring it to the process well water without ever mixing the 2 water sources. This water then sources the heat pumps, which produce heated water up to 28°C. In addition, a useful “by-product” of the heat pump system is that the lab can now provide chilled water down to 3°C. This allows researchers to study a wide range of aquatic species and pathogens or mimic conditions we experience in the environment.

Each component of the system is programmed to adjust automatically according to the temperature and flow demands of the lab. The new digital controls can be monitored and operated remotely via a web browser and each point is alarmed so the manager immediately knows if something goes awry. Variable frequency drive pumps ramp up or down according to demand, providing even more energy savings. The estimated saving are 784,000 kWh, or an estimated annual reduction of the power bill of up to \$20,000.



The lab is proud to call themselves a “net zero” facility. A ground mounted [solar array](#) that was installed adjacent to the AAHL 3 years ago produces over 50,000 kWh more energy than the lab consumes annually, thus providing excess energy for neighboring buildings. Since installation, the AAHL solar system has offset 2,336, 261 lbs of CO₂, the equivalent of 1,113.2 mature trees.

Discussions are already on the way to reinvest some of the Energy Trust rebate towards more energy savings for the lab. The plan is to switch all of the fluorescent lighting over to efficient LED fixtures and lamps, saving almost 50% in energy use; with approximately 200 lamps in the facility that will be a significant energy saving of an estimated 8000 kWh and a financial saving of almost \$1000 per year.



Ruth explains how the new system recycles heat from the effluent to source the heat pumps



*Lyn Schmidt with Energy Trust of Oregon presents the check to:
(front row: left to right) Ruth Milston-Clements, Jerri Bartholomew,
Stella Coakley, Lowell Fausett, (back row: left to right) Joshua
Hackenbruck and Brandon Trelstad*