

*“Taking care of the precious gifts we’re given results in a balancing act of what we can do to sustain ourselves while caring for that which sustains us.” Kakumyo Lowe, Dharma Rain Zen Center.*

## “Living Use” guides Energy Stewardship at Dharma Rain Zen Center



*OIPL Solar Workshop hosted at the Center*

The Dharma Rain Zen Center in southeast Portland offers a place where people can receive instruction in Zen practice and Buddhist teachings and form a community that supports Zen in everyday life. It facilitates children’s programs, a seminary, workshops and community outreach. In May 2005, several monks attended a workshop by Oregon Interfaith Power & Light (OIPL) on Energy Efficient Building and Renovations. Speaking with one of the monks of Dharma Rain, Kakumyo Lowe, we learned that perceived barriers to any project could be

overcome with greater understanding and open-mindedness.

Kakumyo’s initial thought was that the Center’s budget was too limited to undertake many of the energy efficiency improvements. However, in talking with others at the workshop and hearing of their successes, he discovered that a solar photovoltaic (PV) project and many simpler yet effective measures were financially feasible. Also, leaders of the congregation felt that it was an investment worth considering.

The spiritual motivations for the Dharma Rain Zen Center’s projects come from the teaching of “living-use,” a term that means whatever comes into life is an offering that is to be appreciated and cared for. “Taking care of the precious gifts we’re given results in a balancing act of what we can do to sustain ourselves while caring for that which sustains us,” says Kakumyo. In a practical sense, the balancing act became what the Center could afford to undertake in their energy stewardship efforts.

Previously, the Center upgraded the old drafty windows in their 1914 house and implemented passive cooling and ventilation for all three of their buildings. They also purchased renewable energy from Portland General Electric, replaced some inefficient appliances and generally made sure not to use energy when they did not need it. An energy audit provided by OIPL in summer 2005 gave them ideas to further hone their energy practices and suggested more energy efficient technologies as well as assessing solar potential. Some of the recommendations included the following:

1. Replace “Exit” light fixtures throughout building with LED Exit lights that are 90 percent more efficient.
2. Consider replacing light bulbs in meditation space fixtures to standard screw-in compact fluorescent bulbs. This will save approximately 3500 kWh per year (assuming 30 hours use per week and 2-60W bulbs per fixture) or about \$270 per year.
3. When kitchen refrigerator fails, be sure to replace with best Energy Star model. This will save 30 percent or more, relative to current 1100 kWh per year usage.
4. Put a timer on the electric water heater. Given the small usage of hot water – and only at specific times – it’s best to leave this water heater turned off 80-90 percent of the time.

By fall, the monks had already followed up with most of these suggestions, and were planning to take their stewardship to the next level—the roof.

**Solar Installation:** After receiving several bids on a 2.7 kW PV system, Kakumyo presented the winning bid to the board of directors. Some of the board's questions about the project had to do with possible hidden costs of the system. Does this system lose efficiency over time and what are the replacement and/or retirement costs? Thanks to Oregon's mild climate, the PV panels efficiency decreases only 1 percent per year, and the components are environmentally benign, so there is no retirement cost. The \$22,400 system only cost about \$11,000 after receiving a \$3,500 incentive from the Energy Trust of Oregon and going through the Oregon Office of Energy Business Energy Tax Credit pass through for non-profits, which covered another \$7,500 of the cost. The Dharma Rain Zen center was able to take advantage of the state's Business Energy Tax Credit Pass Through because one of their own members was a business owner. The business owner gladly invested in the solar installation in return for the tax credits. However, Kakumyo said that he had at least three other investors ready to take advantage of the tax credit opportunity. The additional \$11,000 needed for the system was met through individual donations from members and constituents of the Zen center.

**About the System:** The system is comprised of a 2.7 kW PV solar panel system connected to an Aurora solar power inverter. This inverter is then linked to the Portland area power grid. The system generates anywhere from 33-50% of the buildings energy needs depending on the time of year. For instance, the building's energy use formerly ranged from 20-30 kWh per day. With the panels, it now uses 3-10 kWh per day, depending on the time of year. This equates to savings on energy costs of \$1-\$2 a day. Recently, during summer months, Kakumyo stated that they have generated excess energy with their system. This means that they are introducing additional energy into the Portland power grid. This earns the Center energy credits that can then be applied towards future energy bills.



*Meter and inverter box*

**Challenges of the Installation:** The Dharma Rain Zen Center had been facing a bit of a problem with rain themselves. Their roof was on its last legs and had many leaks, which they dealt with by placing buckets underneath the leaks and tarps on certain areas of the roof. However, in order to install a solar PV system they were going to need a roof that had a life of about 20-30 years. So they decided to simultaneously re-roof their building and prepare for solar panel installation. Pacific West Roofing was willing and able to work with Stapleton Solar to ensure that the new roof was compatible with the solar PV system that the Center wanted to have installed. One of the largest challenges for the roofers was removing pipes and other obstructions that would prevent installation of the solar panels. In addition, the re-roofing job itself was very complex due to the shape of the Zen center's roof. Once the roof was installed the solar panel installation began and was completed in the summer of 2007 with the systems itself going online in September of that same year. In the end, the Center center was able to lump the two jobs into one, saving them time and money.

The Dharma Rain Zen Center hopes their example of living-use stewardship will be followed in the community and among other Buddhist Sanghas throughout the Northwest. Kakumyo says their community is very supportive of their efforts and appreciates the positive presence the Center brings to the neighborhood. The completion of the system not only shows Dharma Rain's commitment to the betterment of the Earth, but also encourages their members and the community to share in this commitment as well.