

# Troutdale Terrace: Innovations in Energy Conservation

By Larry Dillenbeck, Communications Manager

Troutdale Terrace is a unique affordable housing development, which incorporates multiple innovative strategies for energy conservation and sustainability. The project is an example of the practical application of old energy conservation techniques and the early adoption of new technology. The developers of this project, Winkler Development Corporation, see this as a model for environmentally responsible affordable housing communities. "We wanted to be practical and innovative in our approach to this development. We asked ourselves how can we be practical and gain a little savings at each choice point along the way. Ideally, we would be able to create a living community that was not only more comfortable, but also save residential energy costs and preserve natural resources as much as possible. We see this as a smarter, more thoughtful approach to affordable housing," said Jim Winkler, President of Winkler Development Corporation.

Troutdale Terrace is a 228 unit affordable housing community built on 14 acres on a sloping site overlooking the Columbia River and I-84. 100 percent of the units are affordable to households earning at or below 60 percent of the area median income. The community consists of twelve 18-plex buildings, one 12-plex building and a 4,000+ square foot community center. Each residential building has three stories and each unit will have a washer, dryer and microwave in addition to the standard appliances of refrigerator, range and dishwasher.

The energy conservation strategies of this development work together systematically to not only conserve energy but put the cost savings into the hands of the residents. "Families should spend their money on their children, not on their utility bills," according to Winkler. These strategies include:

- \* Reduce space heating costs-- Utilizing higher performing glass in the windows and R-60 insulation in the attic to minimize energy leaks, space heating cost are reduced as



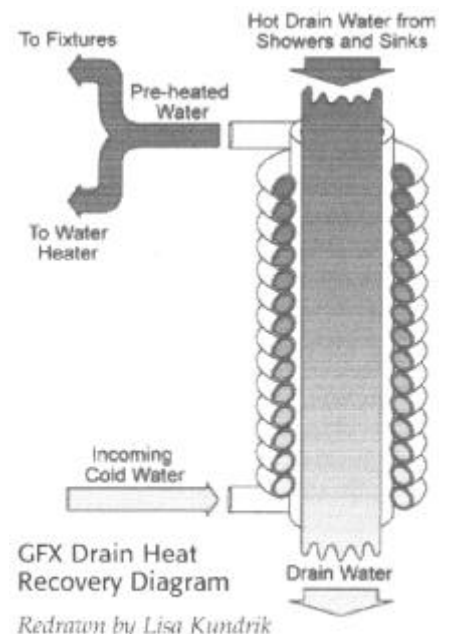
Finishing touches to the Troutdale Terrace development include the drought tolerant landscaping pictured here. Units became available at the first of August 2002.

- much as 25 percent and make the living space more comfortable.
- \* Reduce lighting costs---Using all plug-in compact fluorescent lighting which are less costly, longer lasting and use less energy.
- \* Reduce appliance operating costs---Each unit's appliances are Energy Star® compliant appliances that are 10 percent more energy efficient than the July 1, 2001 minimum Federal Government standards. The washing machines are full size, front loaded units which use less water and spin faster so the clothes take less energy and time to dry.
- \* Reduce (hot) water usage---Since hot water usage is the single biggest energy cost in an apartment, a combination of strategies will be used to save energy and cost. Low flow showerheads, ultra efficient Marathon® water heaters and drain heat recovery technology provide significant energy and cost savings. Even the landscaping of the area will consist of xeriscape (drought tolerant) plants and slow growing lawn to minimize water usage and minimize maintenance costs. These combined energy and resource efficient strategies are expected to result in a 30 to 40

percent reduction in energy cost and usage.

The utilization of drain heat recovery technology is perhaps the most interesting energy saving feature of this project. Troutdale Terrace is the largest drain heat recovery project in the nation. 202

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units will be equipped with a Gravity Film eXchanger (**GFX**) which is a simple plumbing device that replaces a section of vertical drainpipe with an all copper heat exchanger. The heat exchangers consist of 2" and 3" diameter by 60" lengths of copper drainpipe with half inch tubing coiled tightly around them. As hot water is used, it goes down the drain clinging to the inside surface as a thin film that efficiently transfers the heat through the copper drain line to the cold water as it simultaneously flows up through the **GFX** coils. 50 to 85 percent of the heat can be transferred to the cold supply water through the copper without contamination because the water flows do not contact each other. The heat transfer significantly pre-heats the incoming water, therefore reducing the work of the water heaters and cutting the amount of energy/money spent to heat the water.

These energy savings add up quickly. The predicted savings amount to about \$0.23 saved every shower. Assuming 404 people showering every day, the potential savings is \$2,826.32 per month or \$33,915.80 a year for the 202 **GFX** units. The avoided energy costs mean the system can pay for itself in a few years. Enough energy is saved by the

**GFX** per shower to light up approximately 187 11-watt compact fluorescent lights for an hour.

The US Department of Energy's Energy Information Administration estimated that in 1995 residential water heaters consumed 740 billion KWh of energy and commercial water heaters consumed 320 billion KWh. Approximately 80 to 90 percent of all this hot water energy goes down the drain carrying with it billions of KWh and billions of dollars. Much of this wasted energy can be recovered with **GFX** technology. **GFX** is long lasting, has no moving parts and requires no maintenance, so it will return the investment quickly and provide continuing energy cost reductions in any location using and draining hot water.

In addition to these energy saving features, Troutdale Terrace also has many design elements that target the needs of young families with children and the need to provide opportunities for "latchkey" kids to have safe opportunities for learning and fun. The 4000+ square foot **Community Center** will include the leasing/management office, a large community room with fireplace, an attached kitchen, computer room, children's playroom, an area for mediation/

stretching and restrooms. The community room will have a big screen TV and library of family videos, books and audiotapes children can borrow. Services will include a "messy" art/play room where kids can be creative and play with paints, clay, etc., a childcare **program**, computer training classes, art classes, kids club, homework club, social events, special activities, education activities, as well as information and referral services through local social service agencies.

In June 2001, the State Housing Council approved a \$14,056,688 Risk Sharing Loan for this project with tax incentives for energy efficiency. The total estimated cost for this project is \$22,491,256. The project is currently more than 50 percent complete with the first few units being rented as of August 1, 2002. Troutdale Terrace offers a great model for the successful incorporation of energy and resource efficiency, sustainable building principles, and unique design elements to meet tenants needs. It is an inspirational example for other builders and developers to join in the sustainability movement.



Photos Courtesy of Green Depot, Inc. Story From: **The Clearing House**, a newsletter for partners in the housing and community service arenas produced by Oregon Housing and Community Services; Summer 2002. Complete newsletter is posted @ <http://216.239.57.100/search?q=cache:x6EL7Rbx6UwJ:www.hcs.state.or.us/whatisnew/newsletter/pdfs/summer02.pdf+Community+Action+Program+GFX&hl=en&ie=UTF-8>