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"Zero-energy" homes planned in Issaquah

By **Sonia Krishnan**
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Your future home could come from the recycling bin.

Solar energy would power it.

The best part? Utility bills would be next to nothing.

They're called "zero-energy" homes — homes designed to produce as much electricity as they consume. And in Issaquah, city officials are planning an unusual partnership with a builder to construct King County's first community by 2009.

"This would be the first step in a new paradigm for green development," said Brad Liljequist, sustainable-building and lead urban-design consultant for the Issaquah project.

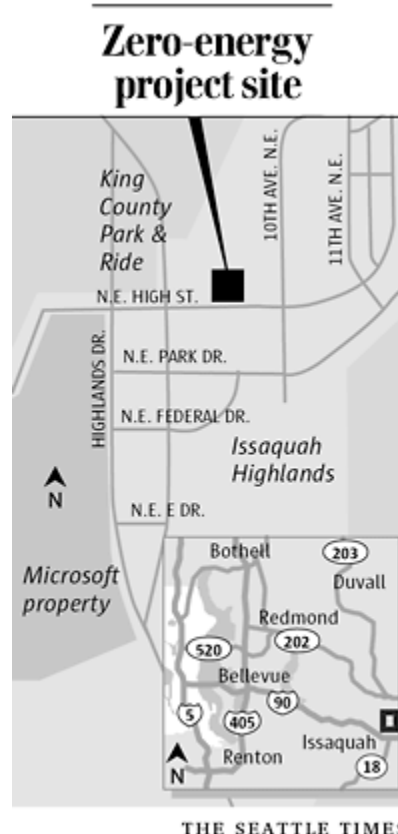
The 10 energy-saving town houses in the Issaquah Highlands will be aimed at the median market.

"We don't want this to be for an exclusive few," he said.

The city's efforts follow in the path of a U.S. Department of Energy program pushing zero-energy home construction. "Building America" began in 1995, with a goal to trim household energy use by 70 percent by 2020.

About 2,000 zero-energy homes have been built around the country since 2003, said Tim Merrigan, senior program manager for the National Renewable Energy Laboratory in Golden, Colo.

Federal and state tax credits, coupled with financial incentives from utility companies, are driving the trend forward, builders say.



While the ultimate goal is to get to zero, most homes end up slashing utility bills 50 percent to 70 percent, Merrigan said.

That's enough to draw increasing numbers of buyers in fast-growing states such as Arizona and California, where residents face some of the nation's highest energy costs. In Washington state, another zero-energy community is planned for Lopez Island, San Juan County.

The timing seems ripe.

In November, the environmental catchphrase "carbon neutral" was selected as The New Oxford American Dictionary's "Word of the Year." Three months later, a team of international climate scientists declared humans to blame for global warming. And late last month, former Vice President Al Gore's documentary on global warming, "An Inconvenient Truth," won an Oscar.

"You could say it's reached a tipping point," Merrigan said.

Residential buildings in America contributed 21 percent of the country's carbon-dioxide emissions to the environment in 2005, according to the U.S. Department of Energy. Inefficient heating and cooling systems, poor insulation and energy-sucking appliances, such as outdated refrigerators, are mostly to blame for high fuel consumption.

Then there's the "standby factor."

Keeping appliances such as stereos, computers and televisions plugged in all day consumes between 500 and 1,000 kilowatt-hours a year per household, said Alan Meier, scientist for Lawrence Berkeley National Laboratory, who has written on the phenomenon.

That's comparable to about one month of power consumption, he said, and equals at least 700 pounds in carbon-dioxide emissions.

"Standby power is one of the biggest obstacles to achieving a zero-energy home," Meier said.

In Issaquah, staff members say they're undeterred by the challenges. The City Council recently approved \$50,000 to study the project. Over the next two years, the city plans to collaborate with a builder and develop the project's design and energy-efficient standards. It will run an educational program for homebuilders and homeowners once the project is built.

The town homes would sit on a half-acre on Northeast High Street in the Issaquah Highlands. The proposed site was donated by Port Blakely Communities, developer of the Highlands, to use as a demonstration tool for future homebuilding, said Judd Kirk, president of Port Blakely.

According to preliminary plans, the homes will range from 500 to 1,700 square feet. The project would:

- Reduce water use by 50 percent over the average household by installing low-flush toilets that use stormwater collected from rooftops and filtered in a nearby tank. This reclaimed water would not be



PREMIER HOMES

This zero-energy community is in Sacramento, Calif. The 10 proposed town houses in Issaquah would have similar energy-efficient features.

used for drinking or showering.

- Produce no stormwater discharge through green roofs and permeable pavement.
- Use a "very high percentage" of locally sourced or recycled materials.
- Use highly durable materials, such as metal roofing instead of asphalt shingles and hardwood floors instead of carpeting.

Issaquah is ahead of most cities when it comes to building "green," environmental advocates say. In 2004, for instance, the city hosted tours and seminars on the Built Green Idea Home — a model home in the Highlands — to inspire people about eco-friendly choices.

"We're trying to be responsive to climate change," said David Fujimoto, manager of Issaquah's resource-conservation office. "Our goal is to really push the envelope and encourage new construction to achieve the highest level of environmental performance possible."

Recycled materials play a big role in zero-energy homes. Lumber planks made from wood and plastic bottles are used for decks, doors or window frames. And fibers taken from recycled newspapers are turned into insulation.

Using the latest technology, zero-energy homes are fitted with rooftop solar panels that convert the sun's rays into electricity.

During the Northwest's long summer days, the homes would send extra kilowatts back to the local utility grid. In the dark winter months, the homes would draw on that power. At the end of the year, the home's net energy use should, theoretically, equal zero.

Most zero-energy homes also come with tankless water heaters, energy-efficient appliances, heavy insulation and improved air-conditioning and heating systems.

The intricate systems help keep indoor temperatures stable, said Chuck Murray, energy specialist for Washington State University and a consultant for Issaquah's project.

If homeowners produce more electricity than they use, utility companies are required to credit them for it under Washington's net-metering law. And, under a state law that took effect last year, those who generate solar energy for the power grid could earn up to \$2,000 a year in cash reimbursements through 2014.

Zero-energy homebuilders say they're seeing more demand as fuel prices rise.

"When we started doing this four years ago, gas was \$1.50 a gallon. Energy efficiency was not in the top five things homeowners were looking for," said John Ralston, vice president of sales and marketing for Premier Homes in Roseville, Calif., near Sacramento.

But sales have taken off so well that an all-solar development is under way in Yuba City, Ralston said.

State-of-the-art-efficiency doesn't come cheap.

The features could tack about \$100,000 on to the Issaquah units, Liljequist said. Rebates and tax credits would help offset that, he said. And strides in technology have made solar panels cheaper and easier to work with than in years past.

But most of all, he said, shrinking square footage will keep costs in line.

"Rather than having that extra-large bonus room, we want to put that money towards living more lightly on the earth," he said.

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