



A Portland sustainability center could sprout in 2010

by Dylan Rivera, *The Oregonian*

After more than a year of technical studies, the greenest large-scale building in the world appears poised to start construction at Portland State University next year.

The \$90 million Oregon Sustainability Center -- for several years a gauzy notion but this year funded by the Oregon Legislature -- will be a showcase of the state's green building innovation that draws visitors, researchers and designer-developers from across the world. It will rely solely on its own solar panels for energy and use no more water than falls on the site, among other major environmental feats.

An artist's rendering shows the Oregon Sustainability Center, designed by Portland firms SERA Architects and GBD Architects, expected to break ground next year. Cutting edge among Earth-friendly buildings, the design shows solar panels oriented to the sun and a long-planned Portland Streetcar extension through the block

That's according to its many partner-sponsors, among them the Oregon University System, the city of Portland and dozens of nonprofits promoting the green life in all its aspects.

The project could break ground as early as spring -- and has ambitions that extend well beyond Portland.

Those backing it want Oregon to own the green-building industry: Researchers inventing new energy efficiency products, nonprofits that promote those products, and policymakers that push for them would all be housed in the building. The building itself, a glass flower of a tower, would promote real estate-related firms and the companies that supply their Earth-friendly products.

The driving goal: to become a magnet for any business or government looking to meet its sustainability challenges while growing green jobs in Oregon.

"It's like a petri dish of sustainability," said Lew Bowers, central city division manager for the Portland Development Commission. "That's why the mix of tenants is very conscious."

Gov. Ted Kulongoski believes strongly that that kind of day-to-day collaboration is crucial to growing green jobs, spokeswoman Jillian Schoene said.

"It's this level of partnership that Oregon needs to continue the state's leadership in sustainability and green job creation," Schoene said.

Kulongoski included \$80 million in bonds for the project in his budget, and the state Legislature approved it, giving the project huge momentum. The bonds must be paid back by building tenants, including the universities that place professors and classrooms there.

But until recent weeks, it was not certain whether the building could actually be built to meet the environmental goals the organizers had set for it.

The sustainability center is intended to meet the Living Building Challenge, a new green building certification program that lays out the most all-encompassing green standards in the industry.

Among the many requirements, the building has to use no more energy over the course of a year than it can produce with renewable energy made on site. Buying credits for wind power made elsewhere doesn't count.

That might not be very hard to accomplish in a relatively flat, one-story building or a small home in the woods, said Lisa Abuaf, senior project manager for the PDC.

Sprawling industrial centers can have acres of roof space where you could plop hundreds of solar panels. One-story construction can cost as little as \$50 a square foot.

Not so in a downtown high-rise setting. The sustainability center's roof would cover half a city block, about half an acre. High-rise construction costs as much as \$350 a square foot.

"You just have a smaller footprint and a similarly large energy demand and water demand," Abuaf said.

The sustainability center would attempt to grab all the solar power that naturally hits the site. A rooftop solar array, angled southward towards the sun like a flower, could total up to 22,000 square feet. That alone would generate nearly 40 percent of the building's energy.

Solar-powered sun shades, canopies -- even solar power integrated into the structure itself -- would cover the rest.

Still, the building could not generate enough power to cover its costs if it weren't for massive energy conservation measures. The latest in energy-efficient heating and cooling systems are assumed in the building. Additionally, the tenants have agreed to a wider range of temperatures -- hotter in the summer and cooler in the winter -- than most office buildings.

All those efforts will help reach a target of about 75 percent less energy use than a standard office building, said Dennis Wilde, principal with Gerding Edlen Development Co., which did a feasibility study of the project for the PDC.

A few months ago, the building appeared to cost \$105 million, far higher than the \$80 million in bonds the university system has authority to use.

So the design team cut costs to \$90 million. They made it 11 stories instead of 12 and planned for a thicker building to make each floor more efficient, Wilde said.

"We just kind of squeezed hard on it until we figured out how we could do it," he said. "Now, we're confident we're in striking distance."

In coming weeks, the PDC hopes to have more details of financing options for the project. Donations from foundations and grants from federal economic stimulus and energy-efficiency programs could lower the cost. Donated materials from local companies also could drive down costs.

The Oregon Environmental Council and the Earth Advantage Institute are leading the group of mostly nonprofit tenants and plan to hire a professional fundraiser for the project soon.

State higher education authorities still need to issue the bonds. The Portland City Council will be asked to approve housing some city offices in the building and potentially help pay for a long-planned \$5 million streetcar realignment through the block.

The building's many challenges will make it one of a kind and pioneering, but it's fundamentally an urban office building, Bowers said. That means there's a large market of office construction-related industries that could learn from the center and spend money on the Oregon-made expertise that it exhibits.

"We could learn from this, but it is a prototype," Bowers said. "It will be more expensive (than a conventional building). Any prototype is."

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A 'living building' means:

Over the course of 12 months, it produces as much power as it consumes, all from on-site renewable energy.

All the water occupants use comes from rainfall, except as required by local health codes.

All wastewater and storm water are managed on-site.

All occupants have access to operable windows for fresh air and daylight.

It has "design features intended solely for human delight and the celebration of culture, spirit and place," according to the Living Building Challenge of the Cascadia Region Green Building Council

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