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Sustainable Development

CENTENNIAL MILLS
Portland, Oregon

Sustainable Development
Goals, Policies, and Resources

September 21, 2007

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Introduction

Embrace Sustainability: Redevelop Centennial Mills in an ecologically, economically, and culturally sustainable manner. This statement is one of five core redevelopment principles identified in the City of Portland's 2006 Centennial Mills Framework Plan. Viewing this project through the lens of sustainability offers an exciting challenge and opportunity to showcase state of the art sustainable development in a city that sets the standard for it. This paper highlights for the developer an approach for incorporating this sustainability principle, which in this paper is parsed into five goals, each with options to guide the design and development of Centennial Mills. This paper also summarizes related city policies and goals, and outlines financial incentives available for developers who incorporate sustainable design.

Redevelopment creates the opportunity to invest in our region's natural capital—the land, waterways, habitat, atmosphere and ecosystem services, by mitigating past and preventing new impairments and seeking opportunities for regeneration. To accomplish these sustainability objectives, the project should incorporate some or all of the following strategies: sustainable site design; adaptive reuse of existing structures; working with the natural hydrologic cycle by rehabilitating the urban watershed; reducing the carbon footprint using highly efficient, integrated heating and cooling systems; constructing innovative Gold or Platinum LEED certified buildings; creatively designing open space that is welcoming and highlights historic, cultural and natural features; significantly reducing construction waste; and harvesting and conserving available natural resources, including wind, solar, rain and geothermal.

Centennial Mills Sustainability Design Goals

Accomplishing the goals listed below will elevate this local project into an international model for large-scale sustainable development.

1. **Design for community livability; provide open spaces and natural amenities.**
2. **Seek the highest LEED certification level feasible.**
3. **Reduce the carbon footprint by 50 percent through energy efficient design.**
4. **Showcase integrated stormwater management systems.**
5. **Promote social equity and local economic development.**

1. Design for community livability; provide open spaces and natural amenities.

- Reclaim the Willamette River as the city's centerpiece and celebrate it as one of the area's foremost economic, environmental and social assets.
- Feature green space amenities across the infill, creating public gathering places in which to live, work, play and learn. Landscape with native and drought resistant plants that do not require long-term irrigation.
- Contribute to a vibrant, walkable "24-hour" neighborhood that features community activities, provides a strong sense of place, contributes to a rich community experience and helps deter crime.
- Champion transportation alternatives that reduce traffic congestion while promoting healthy, clean mobility, by designing broad, well-lit pedestrian and bicycle passage ways and ready access to the light rail, bus or streetcar. Portland's bicycle network should extend across Centennial Mills and include waterfront pathways. Visible bike racks and clear signage both promote bicycling.

2. Seek the highest LEED certification level feasible.

Oregon Health Sciences University, Center for Health and Wellness

LEED Platinum

Case Study:

Portland's Gerding Edlen Development (GED), the developer of more LEED certified buildings *than any other developer in the world*, calculated the hard and soft green premiums for the OHSU LEED Platinum building on Portland's South Waterfront. After tax credits and other financial incentives, the green premium was only 1.13 percent of the total project cost, or $1,699,299. The OHSU facility will generate a return on investment of just over one year, after which energy savings are projected to be $600,000 annually. According to Dennis Wilde, a GED principal, *"Achieving LEED certification depends more on creativity and determination than it does on funding."* See Appendix I.

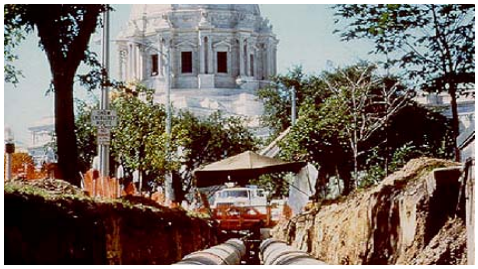
- Plan for early integrated building design, a primary factor in meeting LEED criteria at the lowest cost.
- Convene a pre-design eco-charrette bringing the entire development team together, including designers, architects, subcontractors and a commissioning agent to build a common understanding of sustainability objectives and collectively discover solutions to design challenges. Well prepared eco-charrettes lead to creative development solutions and savings that help offset investments in green materials and technologies.
- PDC's green building certification requirement is LEED Silver, though in recent years 14 PDC-funded projects have surpassed that requirement, achieving LEED Gold and Platinum and reducing building energy use up to 60 percent below code.

3. Reduce the carbon footprint by 50 percent through energy efficient design.

- Design a north-south building orientation to take advantage of the natural light and the sun's energy for passive solar and photovoltaic arrays. Proper orientation can capitalize on vegetative shading and airflows for summer cooling, and the northern facade should be designed to minimize winter heat loss.
- Passive systems include daylighting to reduce artificial lighting needs and lower the building's heat and energy load while creating a healthy, productive environment for building occupants. Use of highly efficient compact fluorescent and LED lamps also reduce thermal load and energy costs.

Case Study: District Energy St. Paul

District energy is used to power 80 percent of downtown St. Paul, Minnesota, and has successfully done so for 20 years. During this time period, energy charges have been raised only $0.02 per kWh. St. Paul's carbon emissions have declined by 60 percent. With no building boilers and chillers to maintain, operationing costs have declined 20 to 25 percent, and combined heat and cooling have improved energy efficiency 30 to 70 percent, depending on the building.



- Consider designing for district energy to provide Centennial Mill's heating and cooling needs. District energy is used in Portland's Brewery Blocks in the Pearl District to share heating and cooling resources between adjacent buildings. It is also being developed on the city's South Waterfront District. These efficient, closed-loop systems can reduce costs and generate energy from clean renewable resources.

4. Showcase integrated stormwater management systems.

- Design an innovative stormwater management system that prevents stormwater from reaching the combined sewer overflow system. Recognize stormwater as a resource and maximize the opportunities for reuse in toilets, for heat and in landscaping. Mimic nature using vegetative systems that reduce the quantity while improving the quality of stormwater, enhance urban wildlife habitat, reduce energy use, meet watershed health goals, and improve the aesthetics of the built environment.

Oregon Convention Center Rain Garden

- Set a goal of 100 percent onsite stormwater reuse and infiltration using strategies that may include rain gardens, decorative detention ponds, eco-roofs, bioswales and pervious surfaces.

- Innovative stormwater management and conveyance techniques can also include the following objectives:

    - Create a system that brings stormwater full circle and closes the hydrologic loop through capture, filtering, reuse, evapotranspiration and infiltration.
    - Provide interactive and public education opportunities for onsite stormwater management.
    - Enhance the quality and quantity of habitat available for salmon species listed under the Endangered Species Act.

5. Promote social equity and local economic development.

- Offer a wide range of residential options to meet a variety of family housing needs. Mixed-use, mixed-income development contributes to an integrated, livable, family-oriented city. Providing green affordable housing for families with lower incomes is a priority of the Portland Development Commission and the City Council.

- Promote import substitution by working with local contractors during design and construction to source local materials, goods and services. Create live-work spaces for tenants who offer services that are normally imported. Import substitution helps the city and region become more economically self-reliant by developing supply chains that enhance local business ownership, and thus local wealth. Provide tenant space for locally-owned businesses to enhance the local economic multiplier effect. The bottom line is that development needs to pencil out for the developer, community, city and region.

Case Study:

Station Place Tower

Station Place is a stunning 14-story tower of glass and steel located near mass transit and essential Portland services. Located on a reclaimed brownfield site, its 176 apartments are home to nearly 200 seniors with limited incomes. This mixed-use development demonstrates that large-scale affordable housing can be attractive, of high quality and compatible with adjacent up-scale condominiums.

Its use of innovative systems, green building expertise, and funding from local government sustainability programs have inspired local affordable housing providers and interest from all over the world. In addition to using safer materials and energy efficient windows that offer panoramic views, the building uses an innovative rainwater harvesting system in which rainwater is collected from rooftops, filtered, cleaned, stored in a 22,000-gallon cistern and piped into a plumbing stack for flushing 76 toilets. The cistern also provides the secondary water supply for fire suppression.

Portland's Sustainability Goals

Centennial Mills will be developed within the city's unique ethos. Portland is known internationally for its progressive sustainability milieu, and the City's citizens, development and business communities, projects, initiatives, policies, plans and ordinances all help create this backdrop. Listed below is a sample of Portland's sustainability goals to provide the developer with background information for developing Centennial Mills sustainably.

Reduce City government greenhouse gas emissions to 10 percent below 1990 levels by 2010

In 1993, Portland became the first local government in the U.S. to adopt a formal plan to address global warming. On a per capita basis, Portland and Multnomah County carbon emissions have fallen 12.5 percent since 1993, an achievement unequalled by other major U.S. cities.

In March 2007, the City Council passed a resolution acknowledging the *Architecture 2030* goal of constructing net-50 percent carbon buildings by 2010, and net-zero carbon buildings by 2030.

Promote a sustainable energy future, improving energy efficiency by 10 percent in all city sectors, by the year 2000

The City exceeded its initial energy efficiency goal and is now developing higher targets. The energy efficiency program has saved the City over $18 million in energy costs. Currently, the savings equal more than $2.3 million per year, over 15 percent of the government's total energy bill.

Use 100 percent renewable energy for all City facilities and equipment (including traffic and streetlights), by 2010

Contract negotiations with an Eastern Oregon wind farm that are nearing completion will enable the achievement of this renewable energy goal.

Reduce oil and natural gas consumption by 50 percent community-wide, by 2032

The city's oil use reduction goal was established in response to a report by a Portland 2007 *Peak Oil Task Force*. Among other strategies the City is expanding its non-fossil fuel transportation options, which includes requiring City vehicles to use 20 percent biodiesel. Some bureaus are already using Biodiesel 99 in their fleets.

Increase Portland's recycling rate from 54 to 75 percent of the total waste stream, by 2015

Several new waste management programs are being implemented that will facilitate the achievement of this bold city goal.

Increase commercial/industrial tree canopy from 7 to 15 percent and in rights-of-way from 17 to 35 percent

Portlanders vigorously enjoy their city's natural setting. About 26 percent of the City is covered by a tree canopy. In 2003, the City Council adopted the Urban Forestry Management Plan, which established these goals.

Portland Policy Requirements

- **Construction of City-owned facilities' projects are required to achieve a minimum of LEED Gold certification and must:**
    - recycle at least 75 percent of all construction and **demolition** waste;
    - achieve 30 percent beyond City of Portland's **Stormwater** Management Manual baseline code requirements;
    - achieve 30 percent **water savings** beyond the Energy Policy Act of 1992 baseline code requirements;
    - achieve 30 percent **energy savings** beyond Chapter 13 of the Oregon Structural Specialty Code baseline requirements;
    - **commission** its buildings, as required by the State Office of Energy to be eligible for the Sustainable Building Business Energy Tax Credit.
    - construct **eco-roofs** and/or use Energy Star rated roofing material.
- **Incorporate *green street* facilities into all City-funded development, redevelopment or enhancement projects.** Green streets use vegetated facilities that mitigate stormwater with on-site infiltration, provide attractive streetscapes and enhance neighborhood livability by introducing park-like elements that serve as urban greenways.
- **The Portland Development Commission's (PDC) *minimum* green building requirement for commercial projects it helps fund is LEED Silver certification.**

  PDC's Green Building Policy (90 kb)

Sustainability Resources and Incentives

Organizations which can provide assistance and incentives:

- Energy Trust of Oregon
- The Oregon Department of Energy
- The City of Portland's Office of Sustainable Development
- The U.S. Department of Energy
- Local utilities such as PacificCorp, PGE, and NW Natural.
- Enterprise Foundation, for greening affordable housing

Incentives

Expediting Major Projects

The Bureau of Development Services (BDS) has a **Major Projects Group** that consists of projects costing around $40 million and above. For a fee of $100,000, BDS will provide direct, early and consistent assistance to help developers walk through the permitting process and other requirements in Portland. **Contact:** Nora Mullane, (503) 823-4281

Developer Bonuses

Building owners are eligible for a maximum 35 percent discount on their municipal stormwater fee for qualifying eco-roofs, and FAR bonuses are available for installing eco-roofs.

Contacts:

Tom Liptan, Bureau of Environmental Services, 503-823-7267
Troy Doss, Bureau of Planning, 503-823-5857

For a detail listing of green building technical and financial resources see the document prepared by the Portland Development Commission at:
http://www.pdc.city/DOCUMENTS/sustainability/green-sustainable-resource-list-funding-tech-support.doc

Financial Incentives

Federal Funding

Tax Incentives Assistance Project: Provides information to homeowners and businesses that qualify for federal incentives through the 2005 Energy Policy Act. Pass-through options are available to non-profits. Incentives focus on energy efficiency and alternative sources of energy. http://www.energytaxincentives.org/

Local, State and Utility Incentive Programs

Alliance to Save Energy: Provides information and web links to state incentive programs.
http://www.ase.org/content/article/detail/2356

***DSIRE:* Database of State Incentives for Renewable Energy**.
http://www.dsireusa.org/

PacificCorp
Energy Exchange Program – provides payments to large Commercial & Industrial customers for curtailing pledged loads.

Partner with Oregon in Business Energy Tax Credits–Tax credits in Oregon for businesses that complete energy efficiency modifications or investments.
See http://oregon.gov/ENERGY/CONS/BUS/BETC.shtml

Summary of Specific Oregon Incentive and Grant Programs

Business Energy Tax Credit (BETC)

Incentive Type: Corporate Tax Credit

Eligible Efficiency Technologies: Lighting, Heat recovery, Caulking/Weather-stripping, Duct/Air sealing, Building Insulation, Comprehensive Measures/Whole Building

Eligible Renewable/Other Technologies: Passive Solar Space Heat, Solar Water Heat, Solar Space Heat, Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Renewable Transportation Fuels, Geothermal Electric, Geothermal Heat Pumps, CHP/Cogeneration, Hydrogen, Industrial Waste, Refueling Stations, Ethanol, Methanol, Biodiesel, Fuel Cells (Renewable Fuels)

Applicable Sectors: Commercial, Industrial, Multi-Family Residential

Amount: 35 percent of eligible project costs, distributed over five years

Maximum Incentive: $3.5 million

Carryover Provisions: Credit taken as 10 percent in first and second years, 5 percent in each year thereafter; excess credit may be carried forward eight years; those with eligible project costs of $20,000 or less may take credit in one year.

Eligible System Size: Not specified

Equipment/Installation Requirements: System must be new and in compliance with all applicable performance and safety standards; must pass preliminary and final certification of the ODOE review process.

Project Review/Certification: "Sustainable Buildings" must achieve LEED Silver Certification in addition to other ODOE requirements.

Authority 1: OAR 330-090-0105 to 330-090-0150 (eff. 1/1/06)

Date Enacted: 1/1/80

Expiration Date: None

Website: http://egov.oregon.gov/ENERGY/CONS/BUS/BETC.shtml

Contact:

Suzanne Dillard
Oregon Department of Energy
625 Marion Street, N.E.
Salem, OR 97301-3737
Phone: (503) 373-7565
E-Mail: Suzanne.C.Dillard@state.or.us
Web site: http://www.energy.state.or.us

BEF - Renewable Energy Grant

Incentive Type: Private Grant Program

Eligible Renewable/Other Technologies: Solar Thermal Electric, Photovoltaics, Wind, Biomass, Hydroelectric, Geothermal Electric, Animal Waste-to-Energy

Applicable Sectors: Nonprofit, Local Government, Tribal Government

Amount: Up to 33 percent of total capital costs

Website: http://www.b-e-f.org/grants/renew_criteria.shtm

Contact:

Renewable Energy Programs - BEF
Bonneville Environmental Foundation
133 SW 2nd Avenue, Suite 410
Portland, OR 97204
Phone: (503) 248-1905
Fax: (503) 248-1908
E-Mail: information@B-E-F.org
Web site: http://www.B-E-F.org

Energy Trust – New Building Efficiency Incentives

Incentive Type: State Grant Program

Eligible Efficiency Technologies: Lighting, Air conditioners, Motors, Motor-ASDs/VSDs, Comprehensive Measures/Whole Building, Custom/Others pending approval

Applicable Sectors: Commercial, Industrial, Agricultural, Institutional

Amount: Standard: Up to $50,000; Custom: Up to $200,000; LEED-NC: Up to $200,000

Maximum Amount: $250,000

Equipment Requirements: Energy efficient equipment must meet program specifications available on the website.

Project Review/Certification: In certain cases, a post-installation review may be conducted by the New Building Efficiency program prior to payment of the incentive.

Website: http://energytrust.org/

newbuildingefficiency/index.html

Contact:

The Energy Trust of Oregon
851 SW Sixth Ave., Suite 1200
Portland, OR 97204
Phone: (503) 493-8888
Phone 2: (866) 368-7878
Fax: (503) 546-6862
E-Mail: new.building.efficiency@energytrust.org.
Web site: http://www.energytrust.org

Energy Trust – Building Efficiency Program Incentives

Incentive Type: State Rebate Program

Eligible Efficiency Technologies: Dishwasher, Water Heaters, Lighting, Lighting Controls/Sensors, Furnaces, Boilers, Heat pumps, Air conditioners, Building Insulation, Motors, High Efficiency Unit Heaters, Gas Fryers, Convection Ovens

Applicable Sectors: Commercial, Industrial, Agricultural

Incentive Amount: Varies with technology. Lighting incentives are at minimum $150

Maximum Incentive: $500,000 per calendar year

Project Review/Certification Building Efficiency program representatives conduct post-installation inspections of projects and can create a plan to ensure proper equipment installation and use.

Website: http://www.energytrust.org/buildingefficiency/index.html

Contact:

Energy Trust of Oregon
Building Efficiency Program
851 SW Sixth Avenue
Portland, OR 97204
Phone: (877) 510-6800
Phone 2: (503) 493-8888
E-Mail: building.efficiency@energytrust.org
Web site: http://www.energytrust.org

Energy Trust – Solar Electric Buy-Down Program

Incentive Type: State Rebate Program

Eligible Renewable/Other Technologies: Photovoltaics

Applicable Sectors: Commercial, Industrial, Residential, Nonprofit, Schools, Local Government, Agricultural, Institutional

Incentive Amount: Residential: $2.00/W DC for Pacific Power customers; $2.25/W for PGE customers; Commercial: $1.00/W for Pacific Power customers, $1.25/W for PGE customers

Maximum Incentive: Residential: $10,000 per site; Commercial: $35,000 total incentive

Eligible System Size: Maximum of 25 kW or current net metering limit; Exceptions for larger systems are possible if approved for interconnection with the utility

Equipment Requirements: Systems must be new, UL listed, comply with all applicable standards, and carry a minimum 2-year warranty on parts and labor; inverters must carry a minimum 5-year warranty; panels must carry a minimum 20-year warranty.

Installation Requirements: Installations must comply with all federal, state, and local codes and meet detailed siting criteria; Systems must be grid-connected, net-metered, and installed by a qualified Energy Trust solar contractor.

Ownership of Renewable Energy Credits: Residential: First 5 years are owned by customer/producer; Commercial: First two years are owned by Customer/producer. Ownership reverts to Energy Trust for remainder of 20 years.

Effective Date: 5/2003

Website: http://www.energytrust.org/RR/PV/index.html

Contact:

Kacia Brockman
The Energy Trust of Oregon
851 SW Sixth Ave., Suite 1200
Portland, OR 97204
Phone: (503) 493-8888 Ext.x 223
E-Mail: info@energytrust.org
Web site: http://www.energytrust.org

Public Benefits Funds

Incentive Type: Public Benefits Fund

Eligible Efficiency Technologies: Refrigerators/Freezers, Water Heaters, Lighting, Furnaces, Boilers, Heat pumps, CHP/Cogeneration, Heat recovery, Windows, Processing and Manufacturing Equipment

Eligible Renewable/Other Technologies: Solar Water Heat, Solar Space Heat, Solar Thermal Electric, Photovoltaics, Wind, Biomass, Hydroelectric, Geothermal Electric, Direct-Use Geothermal Energy, Fuel Cells (Renewable Fuels)

Applicable Sectors: Commercial, Industrial, Residential, General

Public/Consumer, Utility, Institutional

Types: Renewables, energy efficiency, low-income assistance

Total Fund: $10 million for renewables, $40 million for energy efficiency annually

Charge: 3 percent charge for Pacific Power and Portland General Electric customers; 1.25 percent charge for NW Natural Gas customers

Authority 1: ORS 757.612 et seq.

Website: http://www.energytrust.org/RR/index.html

Contact:

Peter West
The Energy Trust of Oregon
851 SW Sixth Ave., Suite 1200
Portland, OR 97204
Phone: (503) 493-8888 Ext.x209
E-Mail: info@energytrust.org; Web site: http://www.energytrust.org

Appendix I

Oregon University Health Sciences University
Center for Health and Healing
LEED Platinum Building

Developer	Gerding Edlen Development Company
Size	16 stories – medical space, labs, retail 412,000 sf 3 levels underground parking
Completed	Summer 2006
Client Architect MEP Design + Commissioning General Contractor Civil Engineering Landscape Architecture Third-party Commissioning Sustainability Advisors	Oregon Health Sciences University GBD Architects Interface Engineering Hoffman Construction Otak Walker Macy Glumac Brightworks
Annual Resource Savings	• Electricity: 4.2m kWh • Natural Gas: 395k therms • CO2: >3,400 tons • Potable Water: >2.1m gallons • Construction waste recycled: 3,741 tons
Project Value	$150 million
Green Premiums	Soft costs estimation: $235,000 Energy efficiency estimation: $975,299 Additional Measures: Solar PV and Thermal: $886,000 Green Roofs @ $9/SF: $180,000 Bioreactor: $950,000
Financial Incentives	BETC: $801,000 BETC Solar: $173,000 Energy Trust: $214,000 Other: Solar $189,000, Turbines $100,000, Bioreactor $50,000
Total Green Costs	$3,226,299
Total Green Savings	$1,527,000
Net Green Costs	$1,699,299
percent Green Premium	1.13 percent

Source: http://www.gerdingedlen.com/project.php?id=62