

**ReThinking Development:
Portland's Strategic Investment in Green Building
Progress Report: FY 2000-2002
Five-year Strategic Plan: FY 2003-2007**



"Integrating sustainability into our business plan gives our employees a sense of collective purpose. We hope our lessons learned will be of value to other companies that, like us, feel a commitment to redefine business as usual."
-Hank Ashforth, President, Ashforth Pacific

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Introduction

In City Hall two years ago, Mayor Vera Katz introduced Portland's green building program, G/Rated, to 400 green building advocates—business leaders, design and construction professionals, and community activists. Over the past 24 months, interest in green building has exploded nationwide, and sustainable construction practices have become a key strategy in creating livable neighborhoods that balance environmental protection and growth.

Innovative building and site design techniques that conserve resources, minimize site impacts, and are healthy—typically referred to as “green building”—are gaining currency in the design and construction industry. The City's effort to promote green building has fast become the gold standard nationally. Portland is now considered a global center of green building, home to the most LEED-registered buildings¹ in the US, dozens of green design and construction firms, a nationally recognized salvage materials retailer, and a robust cluster of green building-related manufacturers and vendors. Responding to local demand for environmentally friendly development practices has led to dozens of demonstration projects on the ground, from mainstream commercial development to a unique garden shed made from natural materials.

Underlying this success are public and private partnerships and integrated service delivery tying green building practices to the City's community and economic development efforts, River Renaissance, the Clean River Plan, and Metro's 2040 Plan. The G/Rated tagline, “buildings suitable for all” symbolizes development that protects and enhances local ecological systems, stimulates the green economy and provides plentiful housing, commercial buildings, and urban open space. As green building practices have become more widespread, it is no longer difficult to design a building to be 30 percent more efficient than the Oregon Energy Code. A variety of new, resource-efficient products are making their way to the market. And with utility costs rising quickly, a growing number of development projects are installing new technologies like integrated photovoltaics, energy monitoring systems, and ecoroofs.

This report provides an overview of the City's green building accomplishments in 2000-2002 by the Office of Sustainable Development Green Building Division and Portland Development Commission (PDC). The report also looks ahead with a synopsis of strategic actions that the City needs to accomplish in the coming five years to accelerate green building practices and stimulate Portland's green economy.

History

In 1999, the Sustainable Portland Commission (SPC) commissioned the Portland Energy Office to convene a planning process to study the viability of a green building technical assistance program. An advisory committee was formed that included developers, architects, and representatives of several City bureaus, and 13 public meetings were held throughout 1999. This process resulted in City Council unanimously adopting two

Stronger Communities, Economic Opportunities

Green building provides the framework and tools to build in an economically advantageous manner while conserving natural resources and minimizing the ecological degradation from the built environment. Green building practices deliver several benefits to Portland residents and businesses, including:

- Providing long-term financial savings for building owners and occupants;
- Saving energy and natural resources;
- Helping the City meet its goals to reduce global warming;
- Reducing the use of toxic materials;
- Enhancing the quality of indoor environments, where people spend upwards of 80 percent of their time.
- Minimizing site impacts by protecting and enhancing natural spaces; and
- Minimizing damaging storm water runoff and construction-related erosion.

In addition, green building expertise and technologies are central elements in an emerging environmental industry sector and provide the opportunity to strengthen and diversify Portland's economy. By promoting and applying green building practices, the City can help stimulate economic growth and build demand for innovative and efficient building materials, energy systems, and related services provided by local firms.

¹ Leadership in Energy and Environmental Design (LEED) is a green building rating system developed by the U.S. Green Building Council. LEED is becoming the most widely used tool in the U.S. to help design and evaluate the environmental performance of a building.

documents, the Green Building Options Study (August 1999) and Green Building Initiative Action Plan (December 1999).

Building on the City's international reputation for balancing community development, growth management, and environmental stewardship, City Council articulated a strategy for improving the quality, cost effectiveness, and safety of the built environment while reducing stress on the natural environment. The product of extensive public input, research, and review, the effort reflected the needs of the building and development community and sought to address the barriers currently slowing the widespread application of ecological building practices.

To move the nascent Green Building Initiative forward, Commissioner-in-charge Dan Saltzman, with Council's approval, completed a number of critical green building policy goals in 2000:

- Moved the Green Building Initiative into the newly created Office of Sustainable Development (OSD);
- Gave the initiative official status as a City program and renamed it the Green Building Division.
- Developed the successful Green Investment Fund (GIF) to support a wide range of commercial and residential green building projects

These actions formed the foundation of Portland's G/Rated program, moving the City's effort from research and planning to implementation.

Mission

Coordinated by OSD's Green Building Division, G/Rated successfully demonstrates the expertise and resources of six City bureaus— Environmental Services, General Services, Development Services, Portland Development Commission, and Water—to deliver comprehensive services to the development and building community, home owners, businesses, and the City's own project and facilities managers. The effort has two fundamental objectives:

- 1. Expand market demand** by educating building industry professionals and the public about the benefits of green building; and
- 2. Make green buildings practices easier to implement** by reducing regulatory and financial barriers and developing technical services and resources for building industry professionals.

To accomplish this, OSD's Green Building Division focused on increasing the application of green building practices by offering technical assistance and incentives, removing regulatory disincentives, and providing training and resources to developers, contractors, and design professionals. In addition, we leveraged existing City resources and formed innovative partnerships with City bureaus and local organizations to accelerate interest and action within Portland's building construction and design community.

Accomplishments & Opportunities

The Green Building Initiative set an aggressive goal for the first two years: implement green building and site design practices in at least 600 housing units and 3 million square feet of new and retrofitted government, commercial, and mixed-use development. To achieve these numbers, the program ramped up quickly in the summer and fall of 2000.

The core of G/Rated revolves around four strategic areas: organization and policy development; demonstration projects; technical resources and outreach and incentives. These address the most important and cost-effective strategies to overcome current gaps in information and services related to green building practices.

"During my travels throughout the US, I consistently hear from others about their envy of Portland as a city with an environmental conscience and highly desirable future. I believe that a significant reason for this is the leadership and innovation of the City of Portland's Office of Sustainable Development. The G/Rated staff's contributions to our design and constructions community's knowledge of sustainable development, coupled with funding of pioneering technologies and resources in the green building arena, are contributing to our reputation as a Mecca for high-performance buildings and environmentally responsible growth. It is not serendipitous that Portland has been selected as the best city on this planet to host the 2004 International Green Building Conference and Exposition!"

Nathan Good
CH2MHILL

Strategy 1: Organization and Policy Development

Goal: Establish an organizational structure for providing comprehensive green building-related technical assistance and training services, research, and policy development.

Accomplishments: OSD Green Building Division has leveraged limited City resources and existing City conservation programs in launching G/Rated. The effort reduced service delivery fragmentation by creating an umbrella program for water, energy, stormwater, pollution, and waste conservation in buildings. In addition, the program has successfully implemented policies that encourage conservation and cost-savings in City facilities and City-funded affordable housing and private-sector development.

1. **Created organizational framework and hired staff.** Hired a staff of four including program manager, green building specialist, architect, and public relations and outreach coordinator.
2. **Developed and implemented a two-year strategic plan** that details goals, objectives, deliverables, benchmarks, and budget.
3. **Created partnerships** with local developers, homeowners, builders, design professionals, City bureaus, trade associations, local public agencies, and Portland State University to leverage expertise and resources.
4. **Raised over \$300,000 in grants and sponsorships** to supplement program budget needs and expand programming.
5. **Developed and adopted green building policy and resolution for City-owned facilities.** Requirements and guidelines cover new construction, retrofits, operations and maintenance practices, and infrastructure.
6. **Developed and adopted green building policy and ordinance for City-funded private sector development.** LEED-based requirements are now in place for City-funded private-sector development through PDC.

Opportunities: Improve & Expand Service

Interest in green building is increasing. At the national level, three percent of all new commercial buildings are using the LEED rating system. Locally, the number of developers, designers, business and homeowners implementing green building strategies grows each month. Expanding the service area and breadth of services is a top priority to help build local capacity and widespread application of green building practices.

1. **Establish inter-bureau “high performance buildings” review committee** to help implement and track City facilities green building policy. The committee, which will include the City’s urban planners, bureau design professionals, and project managers, will provide technical assistance on major capital projects and produce an annual report to City Council on the progress of implementing the City facilities green building policy. The group will also periodically review and make improvements to all green building requirements and tracking tools (e.g., Portland LEED).
2. **Improve service and capacity** by integrating cross bureau expertise into a consolidated green building team. Capacity needs include water conservation, stormwater management, naturescaping, and construction management.
3. **Expand services Metro-wide.** A majority of development that impacts local watersheds, airshed, transportation system, and land uses is concentrated in surrounding communities. OSD’s Green Building Division is exploring partnerships with Metro, local municipalities, Energy Trust of Oregon, Climate Trust and other funders to expand green building services to the 24 communities throughout the region.

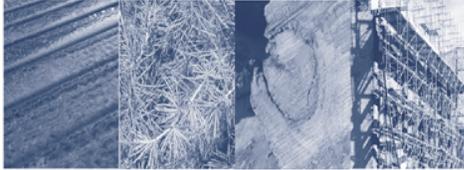
Strategy 2: Demonstration Projects

Goal: Facilitate the design and construction of at least four innovative demonstration green buildings in Portland.

Accomplishments: In 1999/2000 OSD Green Building Division conducted two studies on the costs and benefits of implementing green building in City facilities and affordable housing projects. The studies provided the data to move forward with demonstration projects and implementation of a City-facilities green building policy. We worked with the Bureau of General Services (BGS) and Bureau of Environmental Services (BES) to implement and track green building practices at a new operations center at the Columbia Boulevard Wastewater Treatment Plant, emergency communications center, and new and retrofitted fire stations. In addition, we created a “greening affordable housing” working group that included the Bureau of Housing and Community Services, PDC, Housing

Development Center, and other affordable housing stakeholders to develop a set of 60 requirements and voluntary green building guidelines for all PDC-administered affordable housing projects.

ReThink



Innovation in Ecological Design and Construction

A Platform for Learning: ReThink Lecture & Workshop Series

In February 2003, OSD's Green Building Division launched ReThink: Innovation in Ecological Design and Construction. It is Portland's first comprehensive green building certificate program targeting local building design & construction professionals as well as homeowners.

The 16-week course taught by 77 local and regional experts provides technical training around four core building productivity and conservation modules: water, energy, building materials and economics. The kick-off event with Dr. David Suzuki, internationally recognized and environmental activist, drew 600 people to Portland State University.

A diverse roster of 150 architects, developers, engineers, contractors, homeowners, students and members of the business community are enrolled in ReThink. The success of ReThink goes beyond the sold out enrollment and 600 people attending the kick-off event. Enrollment and sponsorship have covered all program expenses.

performance urban design (passive solar, daylighting, natural ventilation), regionally produced materials, on-site energy and water conservation technologies (building integrated photovoltaics, fuel cells, rainwater harvesting), and indoor health (biophilia, healthy indoor air quality, non-toxic materials).

1. Helped establish **green building strategies into new and retrofitted City facilities** by drawing on the technical resources described in Strategy 3 below. (See Appendix B. for list of City projects and Appendix A. for affordable housing projects administered through PDC.)
2. Developed process to **document and evaluate demonstration projects** using the Portland LEED rating system. City projects are monitoring green building strategies implemented and their associated costs and expected utility savings.
3. Published two studies on the costs and benefits of applying green building practices in City-funded development; **"Green City Buildings: Applying The LEED Rating System"** and **"Low Income Housing Rehabilitation for Sustainability and Affordability."**

Opportunities: Next Generation Green Buildings

The need to move beyond building conservation and efficiency towards eco-effectiveness, where buildings have a positive impact on communities' environmental and community health, is crucial. For example, buildings account for 35 percent of U.S. emissions of carbon dioxide, the heat-trapping gas primarily responsible for climate change. The next wave of technological and design innovations will shift the role buildings have in producing energy, capturing water for reuse, enhancing biodiversity, and protecting occupant health. Building materials and systems will be evaluated by their life cycle impacts from extraction through disposal. Waste and pollution will be eliminated. To accomplish this, we must cultivate new prototype development and test technologies. It will take strategic investment to encourage innovative manufacturing, engineering, and design practices; new policies to encourage public-private partnerships; and a willingness to encourage regulatory flexibility.

1. Establish **High Performance Business Center** in partnership with the Northwest Energy Efficiency Alliance and local design firms. The business center will demonstrate the benefits of a high performance workplace, including daylighting, energy and water efficiency, and recyclable, regionally produced, low-toxic finish materials and furnishings. The center will focus on research and training while showcasing local design firms, vendors, and manufacturers.
2. Partner with Portland State University, Portland Community College, and the University of Oregon to establish an **"Ecological Urban Design Studio"** to explore high

3. Conduct **green building services and manufacturing capacity study**. To supplement PDC's new economic development strategy, this study would provide data on the current levels of green development-related business activity (professional services, local manufacturing, vendors, building science research, etc.). In addition, it will provide recommendations on how to grow local business capacity and key strategic areas of investment that Portland and the State of Oregon should focus on to encourage sector growth.
4. Implement **design competition for ecological mixed-use project**. In partnership with PDC and private-sector developer, build an innovative mixed-use project that tests the latest ecological design concepts, materials, and technologies. Conduct research on costs and use of different design and construction strategies.
5. Partner with neighborhood associations to foster community self-sufficiency and sustainable infrastructure for basic necessities.

Strategy 3: Technical Assistance & Outreach

Goal: Provide technical resources and outreach activities to facilitate the design and construction of green buildings, build local capacity, and support green building-related services and products.

Accomplishments: While there are individuals and a handful of businesses with expertise in resource-efficient design and construction practices, G/Rated has improved access to technical resources and helped local expertise mature. Outreach and training activities has further expanded market demand for green buildings among building users and owners by creating the G/Rated "green building brand." In the two years since G/Rated was launched, OSD's Green Building Division has provided technical assistance to over 300 projects, coordinated dozens of trainings, presented to 140 organizations, businesses, and neighborhood groups, presented at national conferences, and coordinated the region's only tour of green homes.

1. Created **green building design and construction guidelines for multiple project types**. OSD's Green Building Division has published four guidebooks: *Portland LEED* for new and major retrofitted commercial projects; *High Performance Workspaces* for commercial tenant improvement projects; *Greening Affordable Housing*, for low-income housing projects; and *Take Action*, for residential projects. Each guidebook includes best practices, innovative strategies, model specifications, technical fact sheets, and a resource guide for local products and services.
2. Provided **on-going technical expertise and information** to designers, developers, builders, businesses and homeowners. Services were led by OSD's Green Building Division in partnership with BES and Water Bureau conservation staff and PDC project managers.
3. Provided **on-going code and other regulatory conflict assistance** in partnership with BDS. In addition, helped develop a rainwater harvesting code guide for residential and specific commercial buildings.

No Longer Fringe: Media Coverage of Green Building Takes Off

Measured in terms of sheer volume, editorial coverage devoted to green building innovation in 2002 marks a turning point in public awareness and interest in this topic. Respected, national news publications such as the *New York Times*, *USA Today*, *Time* magazine and *The Wall Street Journal* are taking a serious look at green building projects, technologies and resources.

The connection between the natural environment and urban design has piqued the interest of a number of journalists who are keen to report on "green" business trends. To quote a *Daily Journal of Commerce* reporter, "Ecological concepts that were once connected with 'hippie' are now simply 'hip.'" Memorable headlines from 2002 include:

- "Buildings That Breathe," *Time Magazine*, August 2002
 - "Green Evolution," *San Diego Tribune*, August 2002
 - "Economy doesn't hinder environmental practices," *Boston Business Journal*, October 2002
 - "Garden Rooftops Popular in Portland," *New York Times*, November 2002
 - "Ecoroof lures urbanites, planners back to garden," *USA Today*, December 2002
 - "Mainstreaming Green," *Daily Journal of Commerce Magazine*, November 2002
 - "Mod Cob," *Oregonian Homes & Gardens* – promoting Build It Green Tour, Sept 2002
 - "Green City Walks the Talk," *Portland Business Journal*, August 2002
 - "House of Straw," *Portland Tribune*, June 2002
 - "Real Green, The Economics of eco-building," *NW Builder*, March 2002
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4. Held **trainings and workshops targeted at specific industry sectors**. Coordinated trainings focused on design and construction best practices. Trainings have included on-site stormwater management, mold and moisture prevention, pervious pavement, using fly ash in concrete, home remodeling 101, greening affordable housing, and integrating the LEED rating system into projects.
5. Published **case studies and technical briefs** on 20 local green building projects and 12 emerging technologies including ecoroofs, rainwater harvesting, fuel cells, and natural ventilation strategies.
6. Built **green building kiosk** at BDS Permit Center. The kiosk includes fact sheets, technical briefs, resource guides, and a computer terminal linked to the G/Rated website.
7. Debuted ReThink: Innovation in Ecological Design and Construction, **the region's first comprehensive green building certificate program** targeting local building design and construction professionals as well as homeowners. The 16-week course, taught by local and regional experts, provides technical training around four core building productivity and conservation modules: water, energy, building materials and economics. It is designed to be an annual program.



The Bacon-Brenes House combines rainwater harvesting, salvaged materials, and passive solar design in an elegant NE Portland infill project

8. Orchestrated **Build it Green! Tour of Homes**, a tour of 15 houses that incorporate green building practices and technologies. More than 700 people attended the first tour in September 2002.

Opportunities: Build Local Capacity

Technical assistance and outreach is the foundation for the G/Rated program. Through assistance and outreach, G/Rated articulates the benefits of green building and developed targeted services to speed market transformation. In the coming five years, G/Rated will focus on expanding services metro-wide, streamlining inter-bureau conservation and code conflict services, developing a targeted communications plan, and continuing to publish technical and marketing materials.

1. **Expand technical assistance** to include green construction practices, construction and demolition recycling, on-site stormwater management, and ecological landscaping practices.
2. Develop **green operations and maintenance protocol and best practices** for City-owned facilities (transferable to private sector development).
3. Create **green specifications and procurement standards** for City facilities (building materials, furnishings, flooring, paints, etc.).
4. Develop a **regional green building database** listing regional vendors, manufacturers, and service providers in partnership with the Cascadia Region Green Building Council and other municipal and state agencies in British Columbia, Washington, and Oregon.
5. Develop a **communications plan** to build brand recognition, solidify Portland's reputation as a green building knowledge center, and expand general interest in green building practices.
6. Develop **marketing packets and point-of-sale materials** for commercial and residential markets. Materials focus on economic, health, durability, and environmental benefits.
7. Coordinate the local host committee for the **2004 US Green Building Council's International Green Building Conference**. Provide leadership to position Portland as a center of green building practices and services.

Strategy 4: Incentives

Goal: Expand access to green building-based financial incentives for developers and builders to stimulate innovation and investment in green building practices.

Accomplishments: Portland has the greatest concentration of LEED-registered and other green development projects in the US. Through Commissioner Saltzman's efforts to establish the Green Investment Fund (GIF), Portland became the first city to develop a green building incentive program. The incentive program has been a success, helping accelerate local market transformation by reducing the higher front-end costs of green projects, especially related to energy modeling, building commissioning, and LEED certification. The GIF enjoys wide support in the design, development, and construction community. (See Appendix E. or a list of all GIF projects funded to date.)

1. Established **performance-based grant program** to fund innovative green building projects. The \$800,000 Green Investment Fund distributed grants to 69 projects in four tracks: affordable housing, residential, commercial, and emerging technologies. Created green building ratings criteria to rank eligibility and track incentives.
2. Improved access to **existing loans and rebates** offered by Fannie Mae, Pacific Power, PGE and Oregon Office of Energy.
3. Worked with Oregon Office of Energy to create **LEED-based Business Energy Tax Credit (BETC)**. The new BETC provides an income tax credit based on a building's square footage and LEED rating.

Opportunities: Seed the 'Green Economy'

The end of GIF funding creates a need to establish a stable, on-going incentive program. As with the effort to consolidate conservation services, G/Rated will work with City bureaus and Metro to develop a single grant program for private-sector site and building innovations and new green technology business opportunities. Another important area of focus will be streamlining and accelerating the permitting requirements for green, high performance buildings. Market transformation is almost guaranteed if the City can create a separate fast track for green buildings coupled with zoning code incentives.

1. Fund and implement **on-going green innovations grant program** based on the Green Investment Fund. Partnering with BES, Water Bureau, and Metro, create an ongoing grant fund to pay for innovative site and building improvements and research and business opportunities that showcase best practices and new technologies.
2. Partner with Oregon Office of Energy and area lenders to promote and **streamline BETC "pass through" process**. Streamlining the BETC pass through will give for-profit, non-profit, and government building owners access to up front funding to pay for efficiency improvements.
3. Create **fast track permitting for LEED-registered projects**. Work with BDS to develop protocol that reduces permitting delays for innovative building practices.
4. Develop and adopt **zoning code incentives** for green building practices (e.g., height and floor area ratio bonuses similar to the current FAR bonuses).

Program Benchmarks: Results 2001-2002

At the start of 2001, G/Rated's two-year goal (based on the Green Building Initiative adopted by City Council, December 1999) was to adopt green building and site design practices in at least 600 units of housing and three million square feet of commercial, and mixed-use development throughout the City. Even with a drastic slowdown in new construction starts over the past two years, we have still exceeded the original program goals.

As of February 2003, 26 commercial and mixed-use buildings, totaling **3,388,000 sq. ft.** of space are LEED certified² or registered with an additional **143,800 sq. ft.** of commercial projects participating in the GIF program. Through the Green Investment Fund and PDC's 'Greening Portland's Affordable Housing' requirements, **1314 units** of housing are implementing green building strategies (an additional 30 affordable and market-rate housing projects with almost 2000 units are in financing and pre-design phase). In addition, OSD's Green Building Division has provided technical assistance to hundreds of developers, homeowners and homebuilders through direct assistance, ReThink and other trainings, and Build it Green! Tour of Homes.

² Twenty-four projects are LEED 2.0 or 2.1 registered (3 metro-area projects are certified, the Jean Vollum Natural Capital Center, Viridian Place, and American Honda NW Regional Facility); one is in the LEED- Existing Buildings pilot program; and one is in the LEED- Commercial Interiors pilot program.

With the adoption of the Green Building Policy for City facilities in January 2001 (Resolution No. 35956), the Bureau of General Services, Water Bureau, Bureau of Environmental Services, and Parks Bureau have been implementing green building practices in a variety of projects. Because projects funded prior to the adoption of the Green Building Policy were exempt (e.g., projects funded through the fire station bond), only two projects are currently going through LEED certification. However, a great deal of activity is underway to implement the policy. Activities include training for bureau project managers, development of procurement standards and requirements for operations and maintenance and tenant improvement projects that fall outside the scope of LEED certification. See Appendix B. for details on activities related to City facilities. In addition a Green Infrastructure working group has been formed and is moving forward in a variety of areas (see Appendix C for details).

Next Steps: Refining the Benefits of Green Buildings

The next phase of benchmarking will focus on examining a sample of commercial, mixed use, and residential projects when they are completed and fully occupied. We will collect data in two areas, resource savings over code buildings (through an innovative contract with the Climate Trust for LEED-certified projects) and the hard and soft costs of implementing green features (these results will generate real data for calculating pro formas, return on investment, and utility savings over time). This will help round out data being collected around the country to create a body of credible research that documents the impacts of green building practices from economic, environmental, and occupant health perspectives.

Budget & Funding Overview

OSD's Green Building Division is funded by residential Solid Waste and Recycling franchise fees and commercial Solid Waste and Recycling tonnage fees. In June 2000, the residential franchise fee was increased by 1.55% to offset a portion of the costs of the new division.

Green Building Division Budget FY 2000-2004

	2000-01	2001-02	2002-03	2003-04 (projected)	TOTAL
Personnel	\$166,072	\$263,369	\$324,563	\$363,390	\$1,117,394
Professional Services	\$13,350	\$30,573	-	\$25,000	\$82,273
External Materials & Services (includes GIF)	\$ 11,701	\$331,577	\$217,776	\$337,812	\$898,866
Internal Services & Overhead	\$34,700	\$38,720	\$108,323	\$104,409	\$286,152
TOTAL	\$225,823	\$664,239	\$650,662	\$830,611	\$2,384,685

In July 2000, Commissioner Saltzman identified funding to launch the Green Investment Fund, a one-time \$700,000 allocation from the Solid Waste and Recycling Reserve Fund. Later, \$100,000 was added from OSD's FY 2001-02 budget. Sixty-nine projects totaling \$524,000 have been funded with an additional \$128,000 available for a new round of projects in FY 2003-04. To date the GIF has leveraged over \$200 million in new and retrofitted development throughout Portland.

Green Investment Fund Budget FY 2000-2004 (Projected)

	2000-01	2001-02	2002-03	2003-04 (projected)	TOTAL
Overhead	-	\$ 435	\$8,050	\$31,000	\$39,485
Residential Grants	-	\$39,000	\$39,000	-	\$78,000
Commercial Grants	\$10,000	\$225,000	\$66,250	\$23,750	\$325,000
Affordable Housing Grants	-	-	\$35,000	-	\$120,000
Emerging Technologies Grants	-	\$17,000	\$51,500	\$40,500	\$109,000
2003/04 Grants Program	-	-	-	\$128,514	\$128,514
TOTAL	\$ 10,000	\$ 281,435	\$ 199,800	\$ 308,764	\$ 800,000

Appendix A: PDC Green Building 2001-2002 Progress Report

Since partnering with Commissioner Dan Saltzman and OSD to launch the Green Building Initiative in November 1999, the Portland Development Commission has worked to integrate sustainability into every component of its business. PDC has taken a comprehensive approach, updating its mission statement to reflect its commitment to sustainability, requiring all projects to incorporate green building techniques, and establishing a new Applied Sustainability Initiative. By continuing to lead on these issues and work with its public and private partners, PDC will meet its goal to be the nation's leading development agency on sustainability issues.

PDC Green Building Policy

On January 10, 2001, Portland City Council unanimously adopted the Portland Green Building Policy that requires green building practices in all City-funded and financed projects. PDC, as the agency responsible for City-financed development, developed a specific policy to guide its portfolio of projects. Working with stakeholder groups, commission staff crafted the policy that was adopted by the PDC board in January 2002.

The PDC Green Building Policy sets tiered standards for incorporating high-performance, green building strategies for the range of project types that PDC develops and finances. All development projects (new and major retrofits to commercial, institutional, mixed-use, and high-rise residential projects) where PDC project financing is at least \$200,000 and where the total project is 10,000 square feet or more, are required to meet the LEED-certified standard. Projects are encouraged to meet the requirements for the more stringent "Silver" standard or higher, as appropriate. Currently, three commercial projects receiving PDC funding are projected to reach LEED certified status or higher. See below for a list of projects. All industrial and lower-density housing development are encouraged (but not required) to meet the certified standard. The Commission may grant full or partial exceptions as necessary. In all cases, projects are directed to incorporate green building techniques in all aspects of design and construction wherever possible.

Greening Portland's Affordable Housing

In August 2000, working with the OSD, Bureau of Housing and Community Development, and other affordable housing stakeholder groups, PDC published *Greening Portland's Affordable Housing*, a series of 66 required and voluntary green building strategies for housing projects. The document sets threshold criteria that must be met, and a range of preferential criteria that are encouraged as well. The guidelines were established to increase the environmental performance and durability for all affordable housing in Portland, representing cost-effective options that go beyond current codes and standards.

Although criteria were adopted in 2000, the first projects to be funded were not selected until May 2001 with construction starting in 2002. PDC conducted an evaluation report on PDC housing projects constructed during the past two years. Overall, the report shows that the criteria have been well received. All criteria are either cost neutral or have modest up front costs (within the original goal of 0 to 5 percent). Many contractors have become familiar with green building practices and an increasing number of vendors stock green products at competitive prices. For a copy of the report contact Andy Wilch at PDC, 503-823-3212.

PDC Applied Sustainability Initiative

Through its Applied Sustainability Initiative, PDC seeks to incorporate sustainability principles into every step of the urban development process, including design, financing, construction, and operation. In doing so, PDC will facilitate the growth of market opportunities related to sustainable development. Currently, these opportunities are limited due to a lack of resources, including leadership, effective supply chains, demand analysis, and capital.

PDC Projects Implementing Green Features

Project	Location	Project Type	PDC Funding	Private Funding	Status	Green Criteria
Biltmore Hotel	310 NW 6th	Affordable housing (75 rehabbed units)	\$3,000,000.00	Undetermined	RFP Phase	Green affordable housing criteria
Buka's Place	2700 NE Killingsworth	Affordable housing (7 units)	\$384,317.00	Undetermined	RFP Phase	Green affordable housing criteria
Cascade Station	Airport Way	Infrastructure	\$105,687.00	\$14,000,000.00	Complete	On site stormwater management, bioswales

Clinton Ridge Apartment	SE 92nd & Clinton	Affordable housing (29 units)	\$786,756.00	\$1,919,721.00	RFP Phase	Green affordable housing criteria
Columbia Knoll	82nd & NE Sandy Blvd	Affordable housing	\$1,300,000.00	\$22,700,000.00	Pre-Construction	MOU for LEED certification
Dammore Hotel	NW Burnside & Park	Affordable housing (180 units)	\$10,000,000.00	\$7,000,000.00	Pre-Construction	Green affordable housing criteria
Dolph Court	SW Portland	Affordable housing (100 units)	\$500,000.00	\$14,000,000.00	Predevelopment MOU	Green affordable housing criteria
Douglas Meadows	2628 SE 125th Avenue	Affordable housing (8 units)	\$586,341.00	Undetermined	Construction Phase	Green affordable housing criteria
Fabulous Four	4006 NE 8th Ave	Affordable housing (5 units)	Undetermined	Undetermined	RFP Phase	Green affordable housing criteria
Fenwick Place	Interstate Corridor	Affordable housing	\$1,000,000.00	\$3,800,000.00	Pre-Construction	Green affordable housing criteria
Heritage Building	3934 NE MLK Jr. Blvd	Office Commercial	Undetermined	Undetermined	Predevelopment DDA	Silver LEED
Holman-Clark Road Intersection Upgrade	NE 105th & Holman	Infrastructure	\$27,432.00	Undetermined	Pre-Construction	Underground stormwater vaults
Interstate Headstart	Interstate Ave	Affordable housing	\$2,200,000.00	Undetermined	Complete	Green affordable housing criteria
Johnson Creek Commons	7940 SE 72nd	Affordable housing (16 rehabbed units)	Undetermined	Undetermined	RFP Phase	Green affordable housing criteria
Lincoln Woods	2405 SE 130th Avenue	Affordable housing (68 special needs units)	\$450,000.00	Undetermined	RFP Phase	Green affordable housing criteria
Los Jardines	60th & NE Killingsworth	Affordable housing (42 units)	\$691,355.00	\$6,152,853.00	Complete	Green affordable housing criteria
Mid-County Apartments	SE 127th & Taggart	Affordable housing (44 units)	\$560,000.00	Undetermined	RFP Phase	Green affordable housing criteria
MLK & Fremont	3310 NE MLK Blvd	Mixed-use	Undetermined	Undetermined	Predevelopment MOU	Silver/Gold LEED
Museum Place	SW Columbia & 10th Ave	Mixed-use grocery & housing (142 units)	\$3,000,000.00	\$34,000,000.00	Construction Phase	MOU for LEED certification
Museum Place Condos	SW 10th & Jefferson	For sale housing (207 condos)	none	\$85,000,000.00	Pre-Construction	MOU for LEED certification
National Meeting Company	6360 NE MLK	Industrial/ Office	PDC land Sale	Undetermined	Predevelopment MOU	Green roof, bioswale, green materials
Pacific Tower	NW 4th Ave & Flanders	Affordable housing (156 units)	\$4,100,000.00	\$9,175,013.00	Construction Phase	LEED Silver or Gold
Parcel 1 at RiverPlace	SW River Drive	Market rate housing (156 units)	\$1,800,000.00	\$50 Million	Pre-Construction	Green affordable housing criteria
Portland Hospital Services Corporation	18498 NE Portal Way	Manufacturing/Light Industrial Use	\$233,500.00	\$5,000,000.00	Construction Phase	Urban brownfield remediation, near transit, structured parking
Powerhouse	5206 NE 14th Place	Affordable housing (6 special needs units)	\$235,000.00	Undetermined	RFP Phase	Green affordable housing criteria
Riverside Parkway Corporate Center	NE Portal Way & 185th	Infrastructure	\$25,000.00	Undetermined	Complete	Revegetation & trail improvements
Riverside Parkway Corporate Center	NE Portal Way & 185th	Infrastructure	\$4,433.00	Undetermined	Complete	Energy efficiency lighting, refrigeration, Separated sewer lines to reduce solids in discharge
Rose Town Center Plaza	Lents-Scattered Sites	Affordable housing (35 units)	Undetermined	Undetermined	RFP Phase	Green affordable housing criteria
St. Francis	1136 & 1120 SW 11th Ave	Affordable housing (132 units)	\$5,100,000.00	\$10,000,000.00	Construction Phase	Green affordable housing criteria
Station Place	9th & Lovejoy	Affordable housing (176 units)	\$25,000,000.00	\$31,200,000.00	Pre-Construction	Green affordable housing criteria
Swan Island Dairy	Swan Island	Enterprise zone	\$821,278.00	\$10 Million	Construction Phase	Green affordable housing criteria
The Terraces	NE Broadway & 82nd	Affordable housing (16 special needs units)	\$320,000.00	Undetermined	RFP Phase	Green affordable housing criteria
Vanport Square	NE MLK & Alberta	Mixed-Use (housing, retail, commercial)	\$20,000,000.00	Undetermined	Predevelopment MOU	Green affordable housing criteria
Villas de Mariposas	5000 NE Killingsworth	Affordable housing (51 units)	\$1,025,000.00	Undetermined	RFP Phase	Green affordable housing criteria
Willow Tree	311 NE Division,	Affordable housing (17 units)	\$200,000.00	Undetermined	RFP Phase	Green affordable housing criteria
Yards at Union Station- Phase 5	Naito Pkwy	Mixed income housing (56 units)	Undetermined	Undetermined	RFP Phase	Green affordable housing criteria
YWCA	SW 10th Ave	Affordable housing	\$3,200,000.00	\$4,000,000.00	Complete	Green affordable housing criteria
		(25 units)				

Next Steps: Policy to Implementation

PDC is committed to broadening the scope and effectiveness of its Green Building Policy, *Greening Portland's Affordable Housing* criteria, and moving forward with the Applied Sustainability Initiative. Within PDC, efforts are currently underway to bring additional resources to these initiatives to enhance the program and incorporate changes into PDC's Green Building Policy Implementation Plan. Actions in the coming year include:

1. **Consolidate Green Building Functions.** PDC seeks to centralize monitoring of the Green Building Policy into a single position and coordinate internal activities related to real estate development, product procurement, operations, deconstruction activity, and organizational behavior to more quickly advance the Commission's efforts to catalyze sustainable urban development.
2. **Further Implement Green Building Policy.** The passage of the PDC Green Building Policy occurred at approximately the same time as the Shilo decision. Due to this decision and the resulting cutbacks in PDC project activity, many objectives of the Policy have not been fully realized. PDC now seeks to expand its focus by advancing its Applied Sustainability Initiative.
3. **Analyze Best Practices.** PDC continues to work with OSD and U.S. Green Building Council to incorporate new research and knowledge into PDC project activity. In addition, PDC continues to research best practices related to affordable housing, and to incorporate these strategies into its affordable housing criteria.
4. **Implement PDC-wide Green Building Training.** In partnership with OSD, PDC will hold a series of LEED and Greening Portland's Affordable Housing trainings for all relevant project managers.
5. **Revise Greening Portland's Affordable Housing criteria.** Work with OSD to revise the *Greening Portland's Affordable Housing* criteria in 2003 to update strategies and create separate pathways for wood stick frame projects (single family through four-story multi-family) and concrete/steel structures (typically five stories and above). Areas of improvement will include the Mechanical Electrical and Plumbing Engineering (MEP) design documents.
6. **Implement supply chain analysis.** Portland leads the country with 22 LEED-registered development projects. However, there is a significant gap between these projects and mainstream construction practices. PDC is partnering with Ecotrust, Hayward Lumber, OSD, ReDirect Guide and others to identify the supply chain issues that prevent green building practices from being adopted industry-wide. Pricing, sourcing, and branding issues being investigated.
7. **Implement product and services demand analysis.** While Portland is perceived nationally as a center of sustainable development, local demand for products that incorporate sustainable design or sustainable technologies varies and has not been successfully documented. PDC is contracting with local businesses to gauge the depth and character of current and future demand for "green" housing, office, and lifestyle products.
8. **Examine innovative revenue growth models.** PDC is working with OSD, local developers and PGE's Green Building Services group to identify innovative revenue opportunities based on green building practices.
9. **Foster new business models.** PDC is partnering with OSD, Ecotrust, and private business leaders to develop new business models for small, local businesses and larger companies, based on sustainable products and business practices. A Sustainability Institute, where consumers, small businesses, and others can become "sustainably certified," is being pursued.

Appendix B: Greening City Facilities 2001-2002 Update

The Bureau of General Services (BGS), Bureau of Environmental Services (BES), Bureau of Parks & Recreation, Water Bureau, and Office of Transportation share responsibility of constructing and maintaining the over 150 City-owned facilities. To comply with the City's Green Building Policy, bureaus have begun taking steps to green their facilities and track progress.

The majority of construction in terms of activity and funding is dedicated to infrastructure improvements; sewer and stormwater system improvements as part of the CSO project; Water Bureau-related pump stations and line replacements; and street improvements. A Sustainable Infrastructure Team has been created to look at

opportunities to reduce the environmental impacts and extend durability of alternative paving, streetscaping, and stormwater management (see Appendix C. for more details).

Over the past two years, construction activity on City facilities has been relatively modest. Major projects include continuing tenant improvements to the Portland Building, implementing the Fire GO Bond projects, and major retrofits to the Emergency Communications Center and Columbia Blvd. Wastewater Treatment Operations Center. The primary challenge to the City's Green Building Policy, is getting each of the different bureaus responsible for facilities to implement the policy consistently and to track the results over time. The following activities are underway:

1. Developed **green building requirements for Architects/Engineers (A/E) Request for Proposals**. BGS contacted all firms holding Flexible Service Contracts and other business partners to notify about the Green Building Policy.
2. Created **tenant improvement sustainable practices protocol**. In 2001, BGS partnered with OSD to create green building standards for commercial interiors retrofits. A working group including OSD, Multnomah County, Hoffman Construction, PSE Architects and YGH Architects reviewed best practices and adopted the Environmental Building News' GreenSpec protocol. In addition, OSD issued '*Creating a High Performance Workspace*,' the G/Rated tenant improvement guide to complement the greening T/I protocol for City facilities.
3. **Sustainable procurement practices**. The Bureau of Purchases is developing sustainable procurement practices. Focus areas include **Furniture, Building Materials, and Operations and Maintenance Practices**. Final protocol will be released in spring 2003.
4. Developing **sustainable operations and maintenance protocol** for City facilities. BGS to complete the protocol by summer 2004.
5. **Hiring staff with green building experience**. BGS hired its first project manager in October 2002 with extensive green building experience. In the future new hires will be ranked on their level of green building expertise.

Greening City Facilities: Progress to Date

Operations Building, Columbia Blvd Wastewater Treatment Plant > *Bureau of Environmental Services*

The Columbia Boulevard Wastewater Treatment Plant processes sewage into clean water, fuel and soil amendment. The newly renovated Operations Building, the treatment plant's computerized "mission control" center will become the City's first 'LEED Gold' rated building. 'LEED' is the national green building standard. The Operations Center was completed in late 2001. A recently installed fuel cell, powers the Operations Building.

Green features: Improved indoor air quality, energy efficiency exceeds building code by 10%, n-site fuel cell that converts the treatment center's waste methane into electricity, 75% of construction waste was salvaged or recycled, 25 % of new products have recycled content, 20% are locally manufactured, sustainably certified wood, low-toxic building materials and furnishings, daylighting and lighting controls, innovative stormwater management, native plants.

Emergency Communications Center (911 Center) > *Bureau of Emergency Services & Bureau of General Services*

An existing building completed in 1993 houses the City's emergency communications services; informally referred to as the '911 Center'. The building is being renovated and expanded to accommodate added services and technologies. The challenge is to create space that supports and enhances the ability of emergency personnel to respond quickly, and construct it while they are still working in the same building. The Bureau of General Services is working to achieve a LEED Certified rating. The 911 Center was completed in 2002.

Green features: Energy efficiency that exceeds the building code by 20%, improved indoor air quality, including measures to protect occupants during construction work, bioswales and stormwater filters to clean surface water before discharging it into the ground, high-efficiency irrigation that uses a weather station to determine when and how much to water plants, daylighting of office and meeting spaces, recycled content materials such as fly ash, a waste product, used to increase strength of concrete, improved lighting quality to make working at computer monitors easier, reducing need for air conditioning by switching from CRT to flat-panel computer monitors, building controls that will allow monitoring and management of ongoing energy use; building commissioning to ensure that complex designs are completed and operate as intended.

Fire Stations GO Bond Projects > *Portland Fire Bureau & Bureau of General Services*

In 1998, voters passed a bond to renovate and expand Portland's fire and emergency facilities to meet growing service demands and meet seismic and other building codes. Since the Fire GO Bond was passed prior to the adoption of the Green Building Policy, these projects are exempt from meeting LEED certification. However, A/E design teams have been directed to use the LEED rating system and provide as many LEED points as possible within our project budgets. For the three new fire stations within the PGE service area, we are designing them to meet PGE's Earth Advantage Program.

Station 12 & 16 Green features: Designed to PGE Earth Advantage standards, construction waste material recycling, use of low toxicity materials and products, native landscaping, innovative stormwater management including bioswales, ecoroofs, and storm filters, efficient operable windows with thermal break for fresh air ventilation, energy envelop insulation and HVAC package system, use of recycled-content building products, building commissioning, daylighting controls.

Clubhouse at Heron Lakes Country Club > *Bureau of Parks & Recreation*

Heron Lakes Country Club in North Portland is a public golf course built around sensitive wetlands along the Columbia Slough. Owned by the City, the new clubhouse combines sustainable design principles and environmental stewardship. It houses a pro shop, restaurant, conference facilities, offices, lobby and restrooms and separate cart barn. The project will be LEED certified.

Green features: Innovative stormwater management including pervious pavers and bioswales, water source heat pump for efficient heating and cooling of the building, natural ventilation with operable windows, structural wood framing from salvaged timbers from a former building, efficient water use, natural lighting and efficient electrical light fixtures, recycled content building materials and wood from sustainably harvested forests, healthy indoor air quality and low-toxic building materials and furnishings.

Office of Sustainable Development Office > *Office of Sustainable Development*

OSD's new 5,000 sq. ft office is located in the Jean Vollum Natural Capital Center, a historic Pearl District warehouse rehabilitated by Ecotrust to house environmentally and socially conscious businesses and organizations. The office features tenant improvements that exemplify low cost, functional, and resource efficient design strategies.

Green features: Desk stations built from manufacturer rejected certified wood doors, metro recycled paint, certified sustainable wood floors, daylighting, low toxicity adhesives and finishes, wool carpeting - a rapidly renewable material, operable high performance certified wood windows, energy efficient lighting, and reuse of existing building materials.

New Chemical Disinfection Facility > *Water Bureau*

The water Bureau is building a new chemical disinfection facility. Design was already 90% complete when the Green Building Policy went into effect. However, enough modifications were made for this project to meet LEED Silver. Construction began in September 2002.

Appendix C: Sustainable Infrastructure Team 2001-2002 Update

Background

Infrastructure—streets, water and sewer systems, and more—is a significant portion of what the City designs, builds, operates, and maintains. It only makes sense that we should be as concerned about this as we are about our buildings. The Office of Transportation was tasked with leading a Sustainable Infrastructure (SI) Team for the City. Besides Transportation, Water, Environmental Services, and Sustainable Development also participated.

A year ago the SI Team's report to City Council focused on three issues: what the City was already doing, the lack of a rating system (e.g., LEED green building standards) that could be applied to infrastructure, and our plan to create our own guiding principles to ensure our infrastructure is sustainable from initial planning to ultimate disposal.

During the second year, the SI Team reached out to the local engineering and construction community to get their perspective on current infrastructure practices and future opportunities. The people involved included representatives from local consulting companies, universities, professional associations, and other infrastructure experts. The SI Team expanded to include the Parks Bureau, selected three priority areas to focus on, created task forces for each priority area, and initiated a sustainability training program for City infrastructure employees.

Vision and Guiding Principles

The City's infrastructure is designed, constructed, operated, maintained, and taken out of service in a manner that meets our needs today while allowing future generations to meet their economic, social and environmental resource needs. The SI Team researched guiding principles used by a number of other organizations in similar efforts. Other principles we looked at included the CERES Principles, the Bellagio Principles; Canada's Code of Environmental Stewardship, the National Association of Counties (NACO) Principles of Sustainable Development, and more.

The SI Team looked at refining the current Sustainable City Principles and considered a number of other alternatives that could serve as guiding principles. In the end, we decided to have the task force develop consensus on concise and effective guidelines on a project-specific basis. Our intent now is to initiate change in three areas of infrastructure where the need is great and the impact can be sizable. Project-specific guiding principles developed by each task force will help the SI Team establish the overall guiding principles for all City infrastructure projects.

The SI Team brainstormed a list of 18 separate topic areas. The topics raised ranged from public recycling facilities to CIP coordination, from training to renewable energy, and from heavy-duty vehicles/fuels to recycling trench spoils. A matrix and rating system was created to compare the objectives, justification, and current status of each alternative. This work resulted in the selection of three top priorities:

1. Streetscaping
2. Alternative paving materials
3. Stormwater efficiency

The SI Team created a task force for each of the priority topic areas. A draft scope of work and an overall objective was prepared for each task force. Co-chairs were selected for each task force based on experience and interest. Details for each task force are listed below.

Streetscaping Task Force

Co-chairs: Jean Senechal, PDOT and Kathy Murrin, Parks

Objective: Evaluate alternative designs and recommend practices and materials for streetscaping that are cost effective, incorporate low maintenance requirements, and conserve resources. Existing practices will be assessed and a recommendation to modify the existing sites to meet these goals will be proposed. If necessary, changes to the City's development guidelines will be recommended to ensure that these practices are permitted.

Description: Current street area landscaping practices, specifically related to median strips, traffic circles, and public facilities with landscaping (not including parks), will be evaluated in an effort to be more sustainable and to reduce the resource use and costs associated with landscaping. The planning, installation and maintenance practices for street area landscaping should consider resource usage, maintainability, traffic management, public safety, and aesthetics.

Alternative Paving Materials Task Force

Co-chairs: Steve Fancher, BES and Steve Townsen, PDOT

Objective: Develop a comprehensive database of materials that may be used in lieu of traditional asphalt and Portland cement concrete pavement for use in streets, driveways, parking areas, and sidewalks. The comprehensive database will include research, locations where the material is used, suggested product applications, limitations, assessment of cost effectiveness, testing, and maintenance. Information will be assembled in a comprehensive report. The team may structure a forum for industry experts to present materials and conduct site visits.

Description: Many pavement and concrete alternatives benefit stormwater runoff, the local ecosystem, street trees, and neighborhood aesthetics. New products will be rigorously tested before being specified for widespread application. Our research will be shared with other City bureaus, developers, contractors, and other municipal and state agencies.

Stormwater- Water Efficiency Task Force

Co-chairs: Dawn Hottenroth, BES and Don Holmes, BWV

Objective: Reduce stormwater runoff and domestic water usage. Develop recommendations for commercial and residential stormwater use. Develop policy and/or code changes regarding stormwater use. Establish a process for bureaus to effectively communicate potential stormwater use projects.

Description: The task force will explore opportunities for the City to use stormwater for purposes that traditionally don't need a potable source (i.e. toilet flushing and irrigation). This task force will research what other municipalities have done and explore a variety of potential uses for stormwater for indoor and outdoor uses. Potential products include enhancements to current residential rainwater harvesting guidelines, developing commercial usage/design guidelines, pilot projects for dual water systems, multi-bureau outreach strategy for communicating reuse policies to residential and commercial customers, and other creative approaches for reusing stormwater runoff.

Strategy/Timeline

The SI Team is responsible for coordination between the task forces, cross task force education and outreach efforts, and reporting the end results back to bureau managers and City Council. The three task forces kicked off their research with a half-day sustainability orientation on February 4 attended by more than 100 City employees. The project timeline has four major milestones:

- Phase 1: List of current and best practices compiled: May 2003
- Phase 2: Research on technologies, practices, other alternatives: October 2003
- Phase 3: Recommendations and Plan for pilot projects: December 2003
- Final report to City Council: March 2004

Appendix D: City of Portland City Facilities Green Building Policy

Policy Statement

The City of Portland shall incorporate green building principles and practices into the design, construction, and operations of all City facilities, City-funded projects, and infrastructure projects to the fullest extent possible. Furthermore, the City will provide leadership and guidance to encourage the application of green building practices in private sector development. This policy is expected to yield long-term cost savings to the City's taxpayers due to substantial improvements in life-cycle performance and reduced life-cycle costs.

In addition, the City shall evaluate all land purchases for future development on the basis of reducing environmental impacts that include but are not limited to transit and bicycle accessibility, urban and brownfields redevelopment, solar access, on-site stormwater mitigation capacity, and vegetation and habitat restoration.

Background

Development and construction practices are main contributors to the depletion of natural resources and a major cause of air and water pollution, solid waste, deforestation, toxic wastes, health hazards, global warming, and other negative consequences. Buildings use one-quarter of all the world's wood harvest. Buildings consume two-fifths of all material and energy flows. Fifty-four percent of U.S. energy consumption is directly or indirectly related to buildings and their construction. Building construction and operations account for 35 percent of U.S. CO₂ emissions.

As Portland grows, so does the need to create additional strategies to counter the negative impacts of rapid growth – degradation to air and water quality, natural resource depletion, and inefficient land use practices. The built environment represents a major opportunity for the City, along with local designers, engineers, developers, builders, lenders, appraisers, and other sectors of the building trades, to address local and global environmental degradation. Promoting energy and resource efficient building practices is one such strategy.

Green building practices provide the framework and tools to build in an efficient, healthy, and ecologically responsible manner. Encouraging green building practices is in the public's interest because these techniques:

1. Promote Portland's energy, land use, environmental and growth-management policies.
2. Conserve energy, water and other natural resources.
3. Strengthen established goals related to increased density, mixed use and transit-oriented development, stormwater and erosion control; brownfield redevelopment, and increased bicycle and pedestrian access.
4. Save building owners and tenants money through increased operation and maintenance efficiencies.
5. Improve indoor air quality and the health, well being, and productivity of occupants.
6. Help reduce public infrastructure costs related to development.
7. Minimize local ecological degradation (habitat, air, soil, and water) through efficient site and building design, sustainable construction practices, and low impact building materials and operational practices.
8. Keeps money in the local economy and creates new local industries and jobs.

Integrated Design and Life Cycle Analysis

Successful green buildings depend on applying whole-systems strategies to rigorous life cycle analysis. Effective integrated design strategies consider and solve a variety of relevant issues simultaneously. Life cycle analysis helps assess the net present value of the design, construction, operation, maintenance, and disassembly of a facility as well as the health and productivity of its occupants. When integrated design and life cycle analysis are combined, better and more affordable building strategies emerge. Currently, design and construction budgets for City-owned facilities are established using square-foot formulas based on industry standards (facility type, land value, and other factors affecting cost prior to design). In addition, construction and operations budgeting occurs separately—making it difficult to invest in green building practices that may have higher up front costs. In order to develop green building strategies that have the most beneficial economic and environmental benefits, the City needs to apply 20 to 30 year life cycle costing that integrates construction and operations and maintenance budgets into all building related capital improvements.

The Office of Management and Finance will lead a workgroup to include the Bureau of General Services, Office of Sustainable Development, Fire Bureau, Bureau of Environmental Services, Bureau of Parks and Recreation,

Portland Department of Transportation, and Water Bureau to develop a life cycle analysis tool for estimating the design, construction, and operations and maintenance budgets for all City Capital Improvement Projects (CIP).

Why The LEED™ Rating System?

The City of Portland Green Building Policy is tied, in part, to the Leadership in Energy and Environmental Design™ (LEED™) rating system developed by the US Green Building Council (USGBC). The USGBC was formed in 1993 to accelerate the adoption of green building practices, technologies, policies, and standards. The USGBC developed LEED™ to help stimulate green building market transformation. USGBC membership consists of more than 400 organizations including product manufacturers, environmental non profit organizations, building and design professionals, building owners, and local and state governments. The City of Portland joined the USGBC in 1999.

LEED™ is a third party certification system designed for rating new and existing commercial, institutional, and high-rise residential buildings. The use of LEED™ helps to establish minimum performance levels, create a common design and construction practices framework, and allows Portland to measure its sustainable building performance relative to other jurisdictions using LEED™. In addition, USGBC provides technical rulings, training, networking and marketing to members.

Public Infrastructure Improvements

City-provided public infrastructure that supports development (such as streets, sewers, and water facilities) needs to be constructed, operated and maintained in such a way that is consistent with the goals and objectives defined in this policy for City buildings. Over the years, the City's primary infrastructure bureaus have made significant changes in their construction, operation and maintenance practices in order to conserve natural resources, reduce pollution, and minimize health hazards. Where the *Portland LEED™ Green Building Rating System* provides an established rating and certification system for new and major retrofit construction projects, there is currently no known comparable rating system for sustainability with respect to infrastructure improvements. The development of such a rating system shall be considered.

Definitions

Green building: an integrated framework of design, construction, and operations practices that encompasses the environmental, economic, and social impacts of buildings. Green building practices recognize the interdependence of the natural and built environments and seek to minimize the use of energy, water, and other natural resources and provide a healthy, productive indoor environment.

Portland LEED™ Green Building Rating System: City performance-oriented green building certification system designed for rating new and existing commercial, institutional, and high-rise residential buildings based on the US Green Building Council's LEED™ Rating System. Guidelines will reflect existing local standards, evolving national and international guidelines, and the priorities of the City of Portland and its residents.

Integrated design: A holistic process that considers the many disparate parts of a building project, and examines the interaction between design, construction, and operations to optimize the energy and environmental performance of the project.

LEED™: Leadership in Energy and Environmental Design™ rating system is a third party certification system designed for rating new and existing commercial, institutional, and high-rise residential buildings developed by the US Green Building Council.

LEED™ Certification: Different levels of green building certification – certified, silver, gold, and platinum - are awarded based on the total credits earned in each of several categories: sustainable sites, water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality.

Life-cycle: The consecutive, inter-linked stages of a product - beginning with raw materials acquisition and manufacture, the product's fabrication, construction, use, and ultimate waste management (recovery, recycle or disposal).

Life-cycle analysis: an evaluation tool that assesses the net present value of the design, construction, operation, maintenance, and disassembly of a facility as well as the health and productivity of its occupants, the costs of measurable external environmental impacts, and the cost of measurable and relevant social impacts.

Operations and maintenance: costs directly related to the operation, maintenance, repair, and management of a property and the utilities that service it. These include insurance, property taxes, utilities, maintenance, and management expenses.

Sustainable development: "Meeting the needs of the present without compromising the ability of future generations to meet their own needs" - *The World Commission on Environment and Development, The Brundtland Commission, 1987*. Sustainable development seeks to balance human development, growth, and equity with ecological stewardship.

Whole-systems thinking: a process through which the interconnections of systems are actively considered, and solutions are sought to address multiple problems at the same time.

II. Policy Descriptions

Policy Strategy #1

The City of Portland shall incorporate green building practices into all facilities projects constructed, owned, managed or financed by the City.³

Building Types

1. New Construction and Major Retrofits

New construction and major retrofit projects undertaken by the City or its contractors shall meet the "Certified" level of *Portland LEED™ Green Building Rating System*. In addition, projects are encouraged to obtain the highest Portland LEED rating (Silver, Gold, or Platinum) possible. All projects must be registered and certified by the USGBC in accordance to its rules and procedures. This applies to projects regardless of funding source or amount; applies to projects accomplished both in-house or through architect/engineer (A-E) contracts; and applies to design associated with all procurement methods, including design-build. *Portland LEED™ Green Building Rating System* shall be adopted no later than February 2001.

Guidelines Development

Lead: Office of Sustainable Development - Green Building Division

Partners: Bureau of General Services, Bureau of Parks and Recreation, Bureau of Fire and Rescue, Bureau of Environmental Services, Water Bureau, Planning Bureau, Office of Planning and Development Review, Portland Development Commission

Timeline: February 2001

2. Interior-Tenant Improvements (T/I)

Interior-tenant improvement projects undertaken by the City or its contractors shall apply the *Portland Interior - T/I Green Building Guidelines*. This applies to projects regardless of funding source or amount; applies to projects accomplished both in-house or through architect/engineer (A-E) contracts; and applies to design associated with all procurement methods, including design-build. *Portland Interior - T/I Green Building Guidelines* shall be adopted no later than March 2001.

³ This policy shall not apply to projects funded prior to the adoption of this policy. However, these projects shall still implement green building strategies to the maximum extent practicable.

Guidelines Development

Lead: Bureau of General Services

Partners: Office of Sustainable Development – Green Buildings Division, Bureau of Parks and Recreation, Bureau of Fire and Rescue, Bureau of Environmental Services, Water Bureau, Office of Planning and Development Review

Timeline: March 2001

3. Operations and Maintenance (O & M)

All City operations and maintenance practices undertaken by the City or its contractors shall apply *Portland Green Building Operations and Maintenance Guidelines*. This applies to all facilities, regardless of size and contract type (e.g. either in-house or outsourcing contracts). *Portland Green Building Operations and Maintenance Guidelines* shall be adopted no later than September 2001.

Guidelines Development

Lead: Bureau of General Services

Partners: Bureau of Parks and Recreation, Bureau of Environmental Services, Bureau of Fire and Rescue, Office of Sustainable Development - Green Building Division

Timeline: September 2001

Implementation

The Office of Sustainable Development Green Building Division will coordinate the activities of all City agencies to develop, implement, and enforce the actions as described in the City of Portland Green Building Policy. An inter-bureau *Green Building Advisory Group* shall help develop and periodically update all City of Portland green building guidelines as described above. The Directors of all City bureaus shall be responsible for ensuring that the facilities they construct, manage or occupy meet these guidelines.

Exemptions

The City will develop an *exemptions process* to review any project where meeting the City's required green building guidelines is not appropriate. Such projects must submit documentation in accordance with exemption process to the Office of Sustainable Development for review during the project's schematic design and cost estimating.

City facility construction projects that are unoccupied or serve specialized functions (e.g. pump station, garage, storage building, etc.) are not subject to the City's green building guidelines and do not need to go through the exemption process.

All exempt projects must still incorporate and document appropriate green building measures to the maximum extent practicable. The exemption process shall be developed by the Office of Sustainable Development no later than March 2001. Exemption criteria will address conflicts related to project size, siting, building and zoning regulations, City policies, USGBC certification, and project costs (based on life cycle analysis).

Exception Criteria Development

Lead: Office of Sustainable Development - Green Building Division

Partners: Bureau of General Services, Bureau of Parks and Recreation, Bureau of Fire and Rescue, Bureau of Environmental Services, Water Bureau, Planning Bureau, Office of Planning and Development Review **Timeline:** March 2001

Evaluation

The Office of Management and Finance and the Portland Development Commission will work with the Office of Sustainable Development Green Building Division to collect buildings data and issue a report to City Council reviewing the City's progress in meeting the City of Portland Green Building Policy as part of the City budget review process.

Policy Strategy #2

The Portland Development Commission (PDC) shall adopt Portland LEED™ Green Building Rating System, City of Portland Green Building Policy goals and incorporate green building practices into each of its ongoing and future program areas.

Description

For all PDC program areas - including nine current urban renewal areas and development loan and grant fund programs - PDC shall work with stakeholders to promote green building practices and shall adopt the *Portland LEED™ Green Building Rating System* by September 30, 2001. Projects and program areas shall adhere to these standards unless identified as exceptions. The PDC Board shall approve exemption criteria for such projects or areas by September 30, 2001. Commission staff shall work with staff from the Office of Sustainable Development to develop strategies and tools for promoting green building techniques in Commission program areas. Standards adopted in each program area shall apply to projects accomplished both in-house and through architect/engineer (A-E) contracts; and shall apply to design associated with all procurement methods, including design-build. Where life-cycle cost analysis indicates that energy and resource-efficient practices, materials, and equipment are cost effective, project managers will be encouraged to employ such practices.

Affordable Housing

In consultation with the Office of Sustainable Development's Green Building Division, PDC shall issue mandatory *Affordable Housing Green Building Guidelines* to be considered in its evaluation of requests for proposals and developer negotiations for all affordable housing projects receiving PDC funding.

Policy Strategy #3

The construction, operation, and maintenance of public infrastructure that serves building development shall be examined in order to determine the opportunity and need for a sustainability rating system for infrastructure similar to *Portland LEED™ Green Building Rating System*.

Description

Initially, each of the City's primary infrastructure bureaus shall document its previous and ongoing efforts to improve practices that minimize the use of energy, water, and other natural resources and provide a healthy, productive environment. Opportunities for additional changes in construction, operation, and maintenance practices shall be reviewed. The primary infrastructure bureaus shall work with the Office of Sustainable Development to determine the need for a sustainability rating system and/or the development of a set of guidelines that would provide for green practices for infrastructure improvements. A report to Council shall be provided regarding these findings.

Report Development

Lead: Office of Transportation

Partners: Bureau of Environmental Services, Water Bureau, Office of Sustainable Development

Timeline: December 2001

Policy Strategy #4

The City shall promote the voluntary application of the Green Building Guidelines in private sector building design, construction, and operations.

Implementation

The Office of Sustainable Development's Green Building Division will facilitate the adoption of green building practices in the private sector by:

- a. assembling and providing access to technical expertise and information about green building in the residential, commercial, and institutional building sectors;
- b. resolving code and other regulatory conflicts with green building practices;
- c. conducting workshops and training targeted at specific building-industry sectors;
- d. developing building type specific, green building resource guides; and
- e. expand market demand by educating Portland area residents and businesses.

Appendix E: Green Investment Fund (GIF) Grants Matrix & Summary

LEED Incentive Grants Summary (\$20,000 Grants)

Project	Description	Bldg. Size (sq. ft.)	Status	LEED Rating
The Brewery Blocks	Mixed use; Blocks 2 & 4	666,732	Completed	2 at Gold
One Waterfront Place	New commercial & parking garage	490,000	Financing phase	Gold
Museum Place South	Mixed use; Safeway & housing	273,000	In construction	Certified
Toyota yard @ Terminal 4	Auto processing facility	70,000	In design	Certified
Lewis & Clark Social Sciences	Multipurpose building	51,000	In construction	Gold
Ecotrust Natural Capital Center	Rehab mixed use; retail & office	70,000	Completed	Gold
Multnomah Co. Hillsdale Library	County library	33,700	In construction	Silver
Lewis & Clark College Housing	Student housing	27,000	Completed	Certified
Oak Park Building	Rehab commercial	18,000	Completed	Silver
Ode to Rose's	Mixed use; retail & office	5,500	Completed	Silver
Sundance Development	Retail building	4,500	Completed	Silver
Barric Investments	Mixed use; retail & office	2,500	Completed	Silver
TOTAL		1,691,932 sq. ft.		

Commercial Innovation Grants Summary (\$5,000 Grants)

Project	Description	Bldg. Size (sq. ft.)	Status	Case Study Focus
Museum Place YWCA/St. Francis	St. Francis housing	89,900	Completed	Deconstruction, efficient energy systems
Portland Relief Nursery	Rehab storefront for low income childcare	16,500	Completed	Daylighting, playground, natural ventilation
1022 Restaurant	Vacant warehouse to restaurant	6,000	In construction	Color Kinetics/LED lighting, natural ventilation
Arciform Workshop/Office	Expand exist bldg. on brownfield	4,000	Completed	SIPS cost benefit study
Oregon Natural Resources Council	Rehab exist. Office bldg., site development	3,500	Completed	HVAC, daylighting, on-site stormwater
Fremont Storefront Retail Bldg.	New two-story retail building	3,000	Completed	Radiant heating in retail, natural ventilation
People's Food Co-op	Addition to food coop	3,000	Completed	HVAC/refrigeration, lighting, site/stormwater
Purple Parlor Café	1897 Victorian rehab café; apartment above	3,000	Completed	Green rehab, salvage materials, mixed use
Alberta Cooperative Grocery	New neighbor food coop, Interior T/I	2,900	Completed	Tenant Improvement w/energy efficient lighting, salvage materials, on-site composting
Lynch Building Renovation	Rehab com bldg. & apt above for retail	2,800	In permits	Ecoroof, greenhouse, rainwater harvest
Friends of Trees Non-Profit	1911 house into office/matl. storage	2,500	Completed	Radiant heating system, naturescaping, permeable paving
Pistils Plant Nursery	New retail & greenhouse	2,200	Completed	Rainwater, ecoroof, composting center
Community Cycling Service	Interior T/I with volunteer labor	2,000	Completed	Tenant Improvement w/100% recycled & salvaged materials
Hot Lips Pizza in Ecotrust Bldg.	Restaurant	1,500	Completed	Energy efficiency, oven heats dishwashing water
Zona Rosa Inc. Restaurant	Restaurant	1,000	Completed	Daylighting, recycled and non-toxic materials
TOTAL		143,800 sq. ft.		

Emerging Technologies Grants Summary

Project	Description	Grant Amt.	Status	Case Study Focus
Helen Gordon Child Development Center	PSU's daycare for children of students	\$20,000	In construction	Design/install air quality monitoring system
PSU & College Housing Northwest	New Stephen Epler Hall classrooms & dormitory above	\$15,000	In construction	Esthetic and visible rainwater collection system filtered through planters, stored underground to flush toilets in restrooms
Portland Development Commission	Village of the Headwaters HAP bldg.	\$11,000	In design	GFX drainwater heat recovery in low-income apartment building
Peoples Food Coop	Coop grocery renovation	\$10,000	Completed	Ground source heat pump for radiant cooling with night passive ventilation
PSU's Mechanical Engineering Department	Monitor new ecoroof on Mult. County bldg.	\$10,000	In construction	Verify ecoroof performance for storm-water & thermal effect to bldg. interior
Solar 7.83 Design Studio	Addition of on-site compost human waste	\$10,000	In design	Demonstrate human waste treatment within house with compost system
The Natural Building Convergence	Portland conference on Natural Building	\$7,000	May 2002	International Conference on Natural Building in Portland Final Report
The Heritage Building LLC	Renovation of existing commercial building	\$5,000	In design	Rainwater harvesting on commercial office building to flush toilets
Russell Development	Installation of a microturbine in a commercial building	\$4,000	Completed	High-efficiency, gas fired microturbine for backup power in commercial building
Tabor Consulting Group	Residential graywater System to flush toilets	\$5,000	In design	Demonstrate graywater collection and treatment for flushing toilets in house
Boys and Girls Aid Society	Rigler Elementary School gazebo	\$4,000	In construction	Gazebo in community garden to collect rainwater for garden irrigation
Unlimited Choices	Two ramps for ADA access to shelters	\$4,000	Completed	Demonstration of plastic lumber as alternate for toxic treated wood
DaVinci Arts Middle School	Conversion of tennis court into water garden	\$4,000	Completed	Rainwater from roof to artful water garden to teach stormwater management

Affordable Housing Grants Summary

Project	Description	Units	Grant Amt.	Status	Innovations
Station Place, REACH Community Development	Mixed income senior housing tower	176	\$70,000	In construction	Rainwater harvesting for 76 toilets and irrigation, radiant heating, efficient lighting, fly ash in concrete, low toxic finishes
Village at the Headwaters, Housing Authority of Portland & Winkler Development	Mixed income housing (apartments & townhouses)	131	\$50,000	In construction	Creek daylighting, heat recovery, efficient windows & envelops, low toxic finishes, efficient lighting

Residential Grants Summary (\$3,000 Grants)

Applicant	Location	Description	Start	Innovations
Alexander, Ric	NE	Small remodel - SFR	7/1/2001	80% salvage and reused materials
Bacon-Brenes, Kristin & Matt	NE	New construction - SFR	5/1/2001	Rastra block, passive solar, rainwater harvesting for all water, small house on infill lot, Flexcar, salvage materials
Blake, Aaron & Davis, Christina	NE	New construction - 2 townhouses	7/1/2001	Atrium daylighting, rainwater harvesting, certified woods, salvage framing lumber, bamboo cabinets, vented rain screen
Blatner, Neil	SW	Remodel - SFR	5/1/2001	Zero hazardous waste, certified wood & salvaged lumber, small PV (5%), DEQ compliant wood stove
Bohn, Dan	NE	Remodel & site improvements - SFR	9/1/2001	Extensive use of salvage materials, on-demand hot water heater, rainwater harvesting system
Bunn, Andrew & Spitz, Tullan	SE	Remodel -SFR	6/1/2001	Car Sharing, bicycle commuting, certified wood, low toxic materials and finishes
Coon, Jim & Cheryl	NW	Remodel -SFR	3/15/2001	Naturescaping, renovated house while staying within footprint, radiant floor, salvage wood throughout, Wheatboard in cabinets

Davenport, Katherine	NE	Addition & new garage - SFR	2/12/2001	Salvage plants, rainwater harvesting, salvage materials throughout, home office, web site history of process
Everhart, Tad and Smith, Barry	SE	New house	5/1/2001	Small size, rainwater harvesting, linoleum flooring,, plastic plumbing, natural cooling
Ferbel, Pedro & Lakeman, Mark	SE	Remodel & site improvements - SFR	8/1/2001	Accessory building built with cob, strong community involvement, Natural Building Convergence
Hassin, Dave	NE	New construction - SFR	4/1/2001	PGE Earth Advantage, certified flooring, low-toxicity finishes, permeable paving, native plants, natural cooling
Human Solutions	SE	New construction - 8 townhouses	12/1/2001	Permaculture, reduced parking, on-site stormwater management, low-toxic finishes, mold-resistant construction
Johnson Creek Commons	SE	New construction - Duplex	11/1/2001	Permaculture, reduced parking, bioswale, salvage wood flooring, salvage framing materials, radiant heat, low-toxic finishes
Kelley, Craig & Sybil	NE	Remodel -SFR	5/1/2001	High efficient natural gas furnace, native plants, rainwater harvesting, efficient windows, ACQ wood decking, PEX plastic plumbing
Kingsley, Charles & Debenham, Anna	SE	Remodel -SFR	3/1/2001	Restore historic house, permaculture, non-toxic finishes, replacement window sashes, radiant heating, salvage materials
Lando, Pat & Brauner, Jody	SE	Remodel -SFR	10/1/2001	Rainwater harvesting, Wheatboard flooring, eliminate lawn, 8 shade trees, native plant landscaping
Peninsula CDC	N	New construction - SFR	5/1/2001	Plastic lumber deck, advanced framing, blower door test, PGE Earth Advantage
Opdyke, Patricia	N	Renovate SF	10/1/2001	Removed lawn, Trex planters, wildlife habitat, salvage plants, small house (800 SF) remodel
Richard, Tim	NE	Remodel > 50% - SFR	4/1/2001	Concrete removed & reused, eliminate lawn, native plants, efficient windows, extensive use of salvage materials
Ruber, Michelle & Moosman, Diana	NE	Remodel - SFR	4/2/2001	Kitchen cabinets made from recycled siding, shade trees, daylighting, salvage, certified and renewable materials, low-toxic finishes
Scott, Alan & Rivas-Scott, Ana	SE	Remodel & addition - SFR	7/1/2001	Radiant heating in floor, PEX plastic plumbing, solar water heating, salvage lumber, , rainwater harvesting, native & hardy plants, small house
Smith, Derek	NE	Remodel - SFR	TBD	High efficiency appliances, native plants, certified wood fence
Smith, Kendra and Bonfort, Jon	NW	New SF	9/2/2001	Certified wood throughout house, rainwater harvesting, naturesscaping, low-toxic finishes, PGE Earth Advantage
Spring, Amy & Tom	SE	Remodel - SFR	5/1/2001	92% gas replaces oil furnace, salvage materials, low-toxic materials, high-efficiency appliances
Sulaski, Cynthia	N	Remodel - 2nd floor - SFR	10/1/2001	Permaculture landscaping, shade trees, FlexCar
Wilson, Jim & Manning, Stephen	SE	Remodel > 50% - SFR	9/1/2001	Daylighting, certified wood, hydronic heat, rainwater harvesting, on-demand hot water, metal roof

Commercial LEED Incentive Track

1. The Brewery Blocks, W. Burnside and 11th Street

This highly visible five-block project, located at the former Blitz-Weinhard Brewery in The Pearl District, bridges the central business district and River District by adding 1.7 million sq. ft. of urban retail, Class A office space, and residential housing with parking underground. The historic preservation of the Weinhard Brewhouse and the Armory Building will complement the new construction. Three buildings are completed and Blocks 2 and 4 have received grants to assist with LEED Gold Certification.

2. One Waterfront Place, 1201 NW Naito Parkway

One Waterfront Place is a proposed 256,000-sq. ft., 12-story commercial office building, 234,000 sq. ft., four-story parking garage and pedestrian plaza. The building is designed to minimize heat gain on the east and west facades and incorporate day-lighting and other energy efficiency measures. The office tower will have a raised floor HVAC design to maximize the building's concrete thermal mass while providing increased tenant flexibility. It will also

feature two ecoroofs and shading trellises on the top floor of the parking garage to clean stormwater and reduce heat island effect. Project is awaiting a major tenant to begin construction.

3. Museum Place South, S. W. Jefferson and SW 11th

Museum Place is three-block redevelopment near the Portland Art Museum and is the centerpiece of the revitalization effort underway in the West End. It includes 250 unit market-rate condominiums, affordable rental housing (the St. Francis), renovated YWCA, and Museum Place South – a 273,000-sq. ft. mixed use project with a Safeway grocery store and 320 mixed income rental housing units above. The project is a partnership between the Housing Authority of Portland, Sockeye Development LLC, Homer Williams, and the Portland Development Commission. This project is in construction phase.

4. Toyota Yard at Terminal 4, 11040 N. Lombard

Toyota Logistics Services and the Port of Portland are redeveloping a 98-acre auto processing facility at Terminal 4 to achieve a LEED Certified certification. Currently in the planning stage, the project is focusing on energy efficiency, site illumination to avoid light pollution, stormwater management mitigation, native landscaping, and rainwater harvesting.

5. Lewis and Clark College Social Sciences Building, 615 SW Palatine Hill Road

Located on the North Campus of Lewis and Clark College, the Social Sciences Building is a three-level, 51,000-sq. ft. building scheduled for occupancy in June 2004. The exterior brick-clad, gable roofed forms will be compatible with the historic features of the campus. The project will be the second LEED rated building to be built at Lewis and Clark, signaling the college's commitment to environmental education and implementing green building practices on a campus-wide scale. Green features will include a raised floor HVAC, natural ventilation, day-lighting, smart controls, exposed structure and green materials educational laboratory for the students. Construction has just begun.

6. Ecotrust Natural Capital Center, 721 NW 9th

The Ecotrust Natural Capital Center is a 40,000-sq. ft. rehabilitation of a historic 1895 warehouse in the Pearl District with a new 10,000-sq. ft. third level. The building is the first LEED Gold renovated building in the country and one of only two certified LEED Gold buildings in the Portland metro area to date. The building was designed as a gathering place for environmentally and socially responsible ideas, goods and services. The retail, restaurant, and office project includes a conference center, public environmental education displays, bike storage with showers, and ecoroof. Other green features include extensive use of recycled content and salvaged materials, smart energy controls, and high efficiency lighting. During the construction, the project achieved a 98% recycling rate – highest ever for a major renovation project in Oregon. Tenants include Ecotrust, Patagonia, the Certified Forest Products Council, Progressive Investment Management, the Wild Salmon Center, Hot Lips Pizza, Shorebank Pacific, and the City of Portland Office of Sustainable Development. The building is 95% occupied.

7. Multnomah County Hillsdale Library, 1525 SW Sunset Blvd.

Located on the site of the current Hillsdale Library, the project will double the size of the current library to 12,000 sq. ft. and provide 11,700 sq. ft. parking garage below. The Hillsdale Library is the first project to meet Multnomah County's recently established policy requiring new construction projects to achieve LEED Silver certification. The project will focus on daylighting to reduce energy use and automatic shading devices to reduce heat gain.

8. Lewis and Clark College Student Housing, 615 SW Palatine Hill Rd.

The new student housing on the South Campus of Lewis and Clark College expands on-campus residences from 1000 to 1400. The first phase includes the construction of three buildings (42,000-sq. ft. per building) that combines housing, café and student activity space. Building A2 is applying for a LEED Certified certification. The project is completed and occupied.

9. The 1913 Oak Park Building, 733 SW Oak

Formally known as the Balfour-Guthrie Building, this two story cast-in-place concrete structure with stone veneer is simultaneously applying for a LEED Silver rating *and* listing on the National Register of Historic Places. Thomas Hacker and Associates Architects occupy the basement and first floor and the Energy Trust is the tenant on the second level. The renovation included significant repair and reconstruction to honor the historic structure while also upgrading building systems to achieve energy efficiency and daylighting. This project is an excellent case study for how to achieve historic renovation while applying sustainable design principles. The building is completed and occupied.

10. Ode to Rose's, 4444 NE Fremont Avenue

Ode to Rose's is a 5,500 sq. ft. wood-framed new building, providing 2500 sq. ft. of ground level retail and 3000 sq. ft. of office space above. Designed for LEED Silver certification, this building type and size is being built in many areas of Portland and will serve as an excellent case study of cost-effective, green development. The building is complete and occupied.

11. Sundance Development, NE 12th and Alberta

Built on a small lot, this 4,500-sq. ft. retail building is another good prototype of small, cost-effective infill development applying for LEED Silver certification. Green measures were carefully selected balancing initial investment with life cycle analysis. The building is complete and occupied.

12. Barric Investments, 5018 NE 22nd and Alberta

This 3,520-sq. ft. commercial building provides production and retail space for emerging businesses in Portland's Alberta St. neighborhood. Aiming for a LEED Silver certification, this building includes a rainwater harvesting system, on-site stormwater management, hydronic radiant heating, natural ventilation, and solar shading. The building is complete.

Commercial Innovation Grant Track

1. St. Francis Affordable Housing, SW 11th & Madison

The demolition of the existing St. Francis Hotel provided the opportunity to study the feasibility of selective deconstruction of an old urban building and the salvage of useable building materials. The Housing Authority of Portland has many projects similar to this one and learned how the selective deconstruction can be done on other projects. The deconstruction is completed and units are being rented.

2. Portland Relief Nursery, 8425 N. Lombard

The Portland Relief Nursery is a 16,500 sq. ft. renovation of a retail space in St. Johns into a community-based, multi-service facility to house a model child abuse and neglect prevention project. The grant helps to develop improved daylighting and playground development for stormwater management in this child care facility. The project is complete and operating.

3. 1022 Restaurant, 1022 W. Burnside

A vacant warehouse is being renovated into a 6000 sq. ft. restaurant. Many green features are being incorporated into the renovation. The grant funds are dedicated to a case study of an innovative LED electrical lighting system for its low power use, low heat output, and long life. Additionally, the case study focuses on natural ventilation strategies for this high occupancy space and function. The project is finishing construction phase.

4. Arciform Workshop and Office, N. Interstate & Skidmore

This two story, irregularly shaped commercial building will include a workshop area and showroom on the ground floor, an office mezzanine with sunroom, and second floor retail space. The grant will support documentation and a case study of the cost-effectiveness of construction using structural insulated panels (SIPs). The panels reduce lumber usage by approximately 70 percent. The project is complete and occupied.

5. Oregon Natural Resources Council, 5825 N. Greeley Avenue

This is a phased renovation to be a model of green principles. The grant was applied to energy efficiency upgrades and HVAC and lighting installations. Construction is complete.

6. Fremont Storefronts Retail Building, NE 14th and Fremont

This project is studying the functionality and cost benefit of an innovative hydronic radiant floor heating and natural cooling system in a commercial retail building. Other features include increased insulation, reflective roof, and compact fluorescent lighting, and innovative use of materials including flat, galvanized sheet metal siding and custom-made sheet-metal window frames. The building is complete and occupied.

7. People's Food Co-op, 3029 SE 21st Avenue

To celebrate its 30th birthday, People's Food Co-op recently completed its first major renovation and addition featuring many sustainable design principles. The grant focuses on the integration of refrigeration and space heating/cooling for energy efficiency. Other green features include expanded bike parking, native plantings, on-site rainwater harvesting and stormwater mitigation, use of natural materials include cob and strawbale, and energy efficient lighting. Grand opening recently occurred.

8. Purple Parlor Café, 3560 N. Mississippi

The Purple Parlor is a rehabilitation of a historic Victorian home on NE Mississippi into a new mixed-use restaurant with housing above. The project embodies “thinking globally, acting locally” by partnering with the Rebuilding Center to use local salvaged building materials and install used lighting and plumbing fixtures. Other features of the project include installing energy efficient lighting and developing a menu that focuses on locally grown organic food. The project is complete and has been open for about a year.

9. Alberta Cooperative Grocery, 1500 NE Alberta

Three years in planning, neighborhood activists opened the City's first new food Co-op in several years. The new space incorporates recycled content and salvaged materials, on-site composting center, energy efficient lighting, low toxic finishes and community educational display illustrating where food comes from. The project is complete and operating.

10. Lynch Building Renovation, 5417 NE 30th

This project rehabilitates an aging commercial building to incorporate rainwater harvesting for toilet flushing, passive solar gain and green construction materials. The project is currently in permit review.

11. Friends of Trees Non-Profit, 3117 NE MLK Blvd.

Friends of Trees renovated an old, inner city house for their offices and supply depot. The grant supported an upgrade of the heating system to a hydronic radiant system. This case study tracks the cost and benefits of installing such a system in an older structure. Construction is complete.

12. Pistils Plant Nursery, 3815 N. Mississippi

This new business markets organically grown plants and is an in-fill development. Plants will be irrigated on site with rainwater and a small, two-story retail building with ecoroof garden. The project is complete and operating.

13. Community Cycling Center, 1700 NE Alberta

The Community Cycling Center – a local non-profit organization that rebuilds bikes for low-income people and offers training programs for neighborhood youth – moved into a new space down the street from their former location. The grant focused on the feasibility of using salvaged materials in a tenant improvement project. The project is complete.

14. Hot Lips Pizza in the Ecotrust Building, 721 NW 9th

Hot Lips Pizza is opening a new location in the Ecotrust Building and is showcasing a variety of strategies to green a tenant improvement project. The grant assists in recapturing waste heat from the pizza oven to heat the hot water used for washing dishes. The project is complete.

15. Zona Rosa Inc. Restaurant, 2135 SE Division

Zona Rosa, a successful food cart vendor in Portland that serves healthy food is opening their first restaurant. They are renovating a space to maximize daylighting, energy efficiency, use of green materials, and educational materials. The project is complete.

Emerging Technologies Grant Track

1. Helen Gordon Child Development Center, 12th and Mill St. on PSU campus

PSU's Facilities Department and Chemistry Department are designing and installing an air quality monitoring system in the new addition and the existing building of the Helen Gordon Child Development Center on PSU's campus. PSU's Chemistry Department has designed an on-site, low-cost method for monitoring indoor air quality. Indoor air quality monitoring has traditionally been very expensive due to collection on site and testing in a remote laboratory. This pneumatic focusing gas chromatography system may be patented after this project. This study will attempt to determine a connection between low-toxic building products and improved indoor air quality, to study the effectiveness of higher than normal ventilation rates, to explore possible intangible effects such as enhanced job performance, and will serve as an educational research project. A final report will document a 12-month cycle of occupancy.

2. PSU and College Housing Northwest, Stephen Epler Hall, Classrooms and Student Dormitory

The new Stephen Epler Hall at 12th and Montgomery St. on PSU's campus is a new six-story student dormitory with classrooms on the ground level. Rainwater is collected off the roof, flows esthetically through visible downspouts into raised planters where it is filtered by the plantings. From the planters it flows across a plaza in open channels into on-grade plantings for further bio-filtering before it is collected in an underground cistern. From the cistern the rainwater is pumped to the ground floor classroom restrooms to flush the toilets. Rainwater is also used for landscape irrigation. Educational signage will inform students and the public about the system. Water savings over a 12-month period will be documented and the cost-effectiveness of the design will be reviewed.

3. Portland Development Commission and "Village at the Headwaters" apartments by The Housing Authority of Portland, Barbur Blvd. At Dolph Court:

This residential development will include affordable housing, market rate housing and townhomes on a former Elks Lodge building and parking lot. The stormwater from the hills above the site currently are piped underground. This project will daylight the "creek" to form a small pond as the focus for the development. The creek is a tributary of Tryon Creek. Within the affordable housing building, GFX technology will capture heat from drainwater of the tub/showers and pre-heat incoming cold water headed to the water heaters. Significant energy savings are possible for heating water for residential uses.

4. People's Food Co-op, 3029 SE 21st Ave.

This two-story renovation of an old grocery building includes a very integrated demonstration of green technologies. The innovation supported by this incentive is for a ground source heat pump to efficiently heat and cool this grocery. This is the first demonstration of "radiant cooling" in a concrete slab floor. Cold water from the ground source heat pump will be circulated in tubing within the slab floor in summer and the space will be passively cooled. Nighttime ventilation with passive heat stratification will further lower summer nighttime temperatures within the building. The internal heat gains from refrigeration are always a challenge for cooling small grocery markets. Results of monitoring this system will give direction for cooling strategies for other small commercial buildings.

5. PSU's Mechanical Engineering Department, Multnomah County Building Eco-roof Monitoring

PSU's Mechanical Engineering Department will design and install the necessary equipment to measure the performance of the new ecoroof on the Multnomah County building at SE Grand and SE Hawthorne. The equipment is being installed during construction of the ecoroof. Monitoring will establish the effectiveness of rainwater retainage and discharge to a level of accuracy that has not been documented to date. The effect of the ecoroof on the thermal performance within the building will also be studied.

6. Solar 7.83 Design Studio, 2323 SE Tamarack Ave.

This is a residential demonstration project for on-site human waste composting and rainwater harvesting. Compost toilets are allowed in Portland and more study of various options is necessary to define best practices

and products. The system in this project is a new composting toilet technology. Approximately 40 to 50 percent of all potable water in a residence is used for flushing toilets or wasted by leaking toilets.

7. 2002 Natural Building Convergence , SE Portland

The Office of Sustainable Development was a co-sponsors for The Natural Building Convergence held in Portland in May 2002 to encourage the use of natural building materials (cob, salvage wood, clay plasters) by building small public structures. Educational workshops and classes brought Portlanders face-to-face with some of the country's leading proponents of natural building. The permanent structures are the legacy of the conference and inspire community interest in natural building.

8. The Heritage Building LLC, 3934 NE Martin Luther King Jr. Blvd.

This multi-layer rainwater harvesting system for a multi-tenant retail/office building in inner NE Portland will collect rainwater from 10,000 sq.ft. of rooftop and 15,000 sq.ft. of parking lot. Rainwater from the parking lot will be filtered. All rainwater will be stored in a cistern and used to flush toilets and for landscape irrigation. The developer has experience with rainwater harvesting on a smaller commercial office building but this system is more ambitious and can be replicated on other existing buildings of this size.

9. Tabor Consulting Group, 1600 SE 59th Avenue

Tabor Consulting Group's graywater reclamation residential project will demonstrate the cost-effectiveness and replicability of collecting and treating graywater from sinks, tub/showers and laundry for reuse in flushing a home's toilets. The advantage of graywater is its availability in summer when rainwater is not available for flushing toilets. When the graywater system is refined, it can be combined with rainwater harvesting for year-around toilet flushing.

10. Boys and Girls Aid Society, Rigler Elementary School Community Gardens, 5401 NE Prescott St.

This small gazebo in the middle of a community garden in the Rigler Elementary schoolyard is a provocative rainwater collection demonstration. An inverted pyramid roof collects rainwater into the "community well" basin where it overflows to an underground cistern. Students then use a hand pump to pump water to the surface to water the community gardens. It teaches students the value of water and the ancient ways of sharing from the community well.

11. Unlimited Choices, 4848 SE Division St.

Unlimited Choices retrofit shelters and houses to service people in wheelchairs by building access ramps, widening hallways and making bathrooms wheelchair accessible. This grant was used to build two exterior access ramps to shelters and the material used, a wood-recycled plastic composite, was demonstrated as an alternate to toxic, treated wood.

12. DaVinci Arts Middle School, 2508 NE Everett St.

This is an exemplary example of a school/community partnership to teach students stormwater management strategies and giving the students the opportunity to build their design. DaVinci School students and Urban Waterworks volunteers tore up an existing tennis court and created a beautiful water garden from rooftop rainwater collection. Water is stored in above-ground tanks for irrigation and overflows to a year-around pond. The pond has a recirculating pump and "flow forms" to avoid stagnation. In a major rain, overflow from the pond goes to a retainage basin near a small outdoor amphitheater. The students planted all trees and landscaping. Eventually, the water garden may even process rainwater runoff from the neighboring soft-drink processing plant.

Affordable Housing Grant Track

1. Station Place, NW Ninth and Lovejoy

Station Place is a 176 unit mixed income senior housing project developed by REACH Community Development, one of the nation's premiere non-profit affordable housing providers. The building has a 17,000-sq. ft. footprint and rises 14 stories. The grant supports the design and installation of a rainwater harvesting system and a variety of green strategies identified in PDC's guidelines for greening affordable housing. Rain water will be collected

from rooftops, filtered and cleaned, stored in a 22,000-gallon cistern on the lower level and piped into a plumbing stack for flushing 76 toilets. The cistern also provides the secondary water supply for fire suppression. The REACH design team developed the rainwater harvesting system design with the collaboration of the Bureau of Development Services to ensure that it would meet plumbing codes. REACH will be monitoring the system and reporting to OSD and BDS on final costs, construction and operations.

2. Village at the Headwaters, SW Barbur and Dolph Place

Village of the Headwaters includes three mixed income housing projects sited around a newly daylight creek. A partnership with OSD, Bureau of Environmental Services and Portland Department of Transportation to daylight a tributary of Tryon Creek that is currently piped under the property and Barbur Boulevard, Headwaters combines 56 units of affordable housing with 60 market rate apartments and 15 for sale townhouses. BES will restore an open space site above the property. PDOT will rebuild the culvert located below the property at Barbur to be stream and fish-friendly. The project showcases how streams can be restored through public-private cooperation and site planning that takes natural stormwater management into account. The project is also a good example of achieving higher densities without sacrificing environmental values.

Residential Grant Program

1. Alexander, Ric - 3607 NE 14th Avenue

Ric is a young contractor who is renovating a small older home on a modest budget (under \$6,000). His project will add 270-sq. ft. to a 578-sq. ft. house, and he has set a goal to use 80% salvaged and recycled materials, including flooring, siding, framing lumber, pavers, windows and trim.

2. Bacon-Brenes, Matt and Kristin - 4057 NE 14th Avenue

Matt and Kristin are applying voluntary simplicity principles to the design of a new house on an infill lot. Their architect, Andre DeBar, and contractor Dave Heslam of Coho Construction, are leaders in the green building movement. The house includes innovative Rastra block construction, a rainwater harvesting system with 3150 gallons of storage; passive solar heating, low-toxic finishes and many salvage materials. About 300 people visited during the Build It Green! Tour in 2002.

3. Blake, Aaron and Christina Davis - NE 14th Place near Wygant

Aaron is a young architect who has designed and built a pair of new sustainable townhouses for a 5000-sq. ft. infill lot. His design shows how high-density houses on small lots can be good-looking and compatible with the neighborhood. Features include natural daylighting, and cooling, rainwater harvesting, vented rain screen for weather resistance, salvage framing lumber, energy efficient heating and appliances and a home office workplace.

4. Blatner, Neil - 9355 SW 12th Drive

Neil is a contractor whose concern for forest health led to his commitment to use lumber milled from blown-down and drought-killed trees, in addition to salvage wood. He also plans a small photovoltaic electricity system.

5. Bohn, Dan - 5034 NE 13th Avenue

Dan manages the Community Cycling Center where salvage bike parts are remade into bikes for low-income people. Dan is renovating on a low budget, using many salvage products and materials. He built a rainwater harvesting system out of recycled components. He is installing high-efficiency point-of-use hot water heating, replacing a lawn with native plants, and using safe, non-toxic interior finishes.

6. Bunn, Andrew and Tullan Spitz - 1410 SE 51st Avenue

Andrew and Tullan are owner-builders renovating on a tight budget with no outside financing. They are keeping the house small, using wood from a certified, sustainably harvested forest, and purchasing Energy Star efficient appliances.

7. Coon, Jim and Cheryl - 2939 NW 53rd Drive

The Coons extensively remodeled a 1953 house located on 8-1/2 acres of wooded property. They are removing invasive plants and restoring the forest. They kept the house within its existing footprint, unusual for a high-end

remodel. All the wood in cabinets, doors and trim is salvage. They installed radiant heat, and used recycled-content materials like Wheatboard (made from waste straw). Framing lumber from existing house was re-used in remodel.

8. Davenport, Katherine - 2730 NE Schuyler

Katherine is managing her first remodel on a modest budget-- a renovation to add a home office and garage. She values reuse and salvage and her house showcases many examples. The bathroom floor is made of cast-off tiles, interior doors are from an old hotel, and she personally broke up and reused concrete from the driveway for backfill and pathways. She created a detailed web site with text and photos illustrating weekly progress and events.

9. Everhart, Tad - 539 SE 55th

Tad removed carpet from his house to reduce allergens, and taught himself how to install linoleum to replace it. The carpet was donated to the Rebuilding Center. He shares a driveway to reduce impermeable surface, stores rainwater in underground cisterns and has replaced lawns with native plantings. All finishes are low-toxic. An arbor provides summer shading and cooling.

10. Ferbel, Pedro and Mark Lakeman - 8512 SE 8th

Mark and Pedro are renovating a house to provide living space for five people. They built a small sanctuary from cob, a traditional earth material. Cob is truly sustainable: local, very little embodied energy, completely safe and non-toxic, strong and durable, encourages artistic design and is completely bio-degradable at the end of its life. The sanctuary has involved several dozen people in its construction, including in the Natural Building Convergence, and received more visitors than any other house on last year's home tour.

11. Hassin, Dave - 5036 NE 30th

Dave owns Terrafirma Building. His company builds new houses on infill lots in the Alberta Street area. The houses are small, include certified wood flooring, non-toxic finishes, advanced fresh air ventilation and lots of daylight. David participates in the PGE Earth Advantage program. He works with all his subcontractors to create a 'green team' committed to job-site recycling, safer materials and products, and efficient use of wood.

12. Human Solution's Douglas Meadows - 2628 SE 125th

Architects Robertson Merryman Barnes and developer Human Solutions have collaborated to design and build a model of sustainable affordable housing. Highlights include on-site stormwater management, native and edible plant landscaping, safe, low-toxic materials and finishes, energy efficient heating, lighting and appliances, daylighting, proper ventilation to control moisture and mold.

13. Rose CDC Duplex - 7940 SE Duke Street

This new duplex, located at Johnson Creek Commons, was completely framed with salvage lumber from the Rebuilding Center, a first as far as we know. Wood floors are salvage fir. Heating system is "Turbonics" type hydronic. Rainwater goes into an on-site bioswale. All interior flooring and finishes are low-toxic. A good example of greening affordable housing.

14. Kelley, Craig and Sybil - 635 NE Roselawn

Craig is a construction supervisor for Housing Development Center. He and Sybil are renovating an old house. They are salvaging as much as possible, removing lead and asbestos hazards, removing an underground oil tank, installing a high efficiency furnace, using natural materials like linoleum and slate, and installing rainwater harvesting.

15. Kingsley, Charles and Anna - 3019 SE Woodward

Charles and Anna purchased a former drug house that had been badly degraded and damaged, and have restored its historic character. They refurbished existing wood flooring, installed replacement window sash to keep the historic look while upgrading energy efficiency, installed radiant heat, pre-plumbed for solar, started a permaculture garden and built a wonderful fence from sawmill off-cuts. Kitchen counters are made of salvage wood.

16. Lando, Pat and Brauner, Jody - 2859 SE Brooklyn

Pat is a landscape architect and has been a leader in on-site stormwater management and rainwater harvesting in Portland. His rainwater harvesting system meets the City's new code guide. He has also replaced lawn with native plants, and manages all stormwater on site. The new floor is finished Wheatboard, made from recycled waste straw.

17. Peninsula Community Development Corporation - 10111 N Allegheny

Peninsula CDC is constructing an affordable new house for a family making under 80% of median income. It meets PDC green guidelines using no-cost/low-cost measures, such as low-toxicity finishes, improved fresh air ventilation, and saving trees on the site. The house meets the strict energy efficiency requirements of PGE's 'Earth Advantage' program.

18. Opdyke, Patricia - 8971 N. Fortune Avenue

Pat has completely removed the lawn on her site, put in native plants, built a compost pile and worm bin, and created wildlife-friendly habitat in her yard by providing water, food and cover.

19. Richard, Tim - 4543 NE 23rd Avenue

Tim is an architect at a Portland firm that is a leader in green design. He has recycled much of the old house, used salvage materials, installed high efficiency heating equipment and replacement windows, and used salvage plants in landscaping.

20. Ruber, Michelle - 4623 NE 18th Avenue

Michelle remodeled and enlarged a kitchen to accommodate five occupants. She and her contractor turned salvage cedar siding into cabinets, trim and ceiling finish. She used salvage materials including windows and doors. Natural materials include linoleum and slate. The all-natural paints are safe enough to eat.

21. Scott, Allen and Ana - 3716 SE 13th Avenue

Alan's remodel includes deconstruction and recycling, salvage framing lumber, solar water heating, energy-efficient window and insulation upgrades, radiant hydronic heat, bamboo flooring, low-toxic paints, Energy Star lights and appliances, advanced framing, polyethylene plastic plumbing, and purchase of Green Power.

22. Smith, Derek - 5205 NE 26th Avenue

Derek is the sustainability coordinator for Norm Thompson company. His remodel maintains the small (932-sq. ft.) footprint of the original house. He has planted native plants, installed efficient irrigation and removed hazardous outdoor wood to create a wildlife-friendly yard. A new fence has been built with sustainably harvested wood. All finish materials are low-toxic.

23. Smith, Kendra and Jon Bonfort - 10565 NW Skyline Blvd.

Jon and Kendra have built a new timber-framed home that maximized use of certified woods in all aspects, from timbers down to cabinet doors. They have a rainwater harvesting system. All finishes, including exterior wood protectants, are low-toxic. Their lot is above a stream, so they are saving trees and using native plants. On-site stormwater management includes pervious paving. They plan to install a photovoltaic system to make electricity from the sun.

24. Spring, Amy and Tom - 5003 SE Carlton Street

Amy has been researching sustainability and applying the information to her house and yard. She has salvaged materials, including cabinets, from the Rebuilding Center. She is using non-toxic finishes like formaldehyde-free Medite II. She has decommissioned an oil tank and installed a high efficiency furnace with an upgraded air filter. All new appliances and lighting are Energy Star rated.

25. Sulaski, Cynthia - 4005 N. Colonial

Cynthia is adding a second floor to her 1928 bungalow. She is planting shade trees for natural cooling and native plants for backyard wildlife. She has removed carpet and used non-toxic finishes.

26. Wilson, Jim and Stephen Manning - 4412 SE Salmon

Jim and Stephen's renovation project completely restores an older house and modernizes the floor plan. They have added daylighting, removed lawn, added a salvage wood deck, and improved energy efficiency with an on-demand water heater, high efficiency furnace, and Energy Star appliances.

Appendix F: G/Rated Publications

The G/Rated program is continually doing original research and developing tools to better serve the green building industry.

'Green City' - GB Division Quarterly Newsletter

Each quarter, the G/Rated staff publishes Green City, the Office of Sustainable Development's green building newsletter. Each issue highlights a local project, latest technologies and in-depth topic.

Creating a High Performance Workspace: G/Rated Tenant Improvement Guide >>August 2002

This helpful resource guide identifies key steps toward ensuring healthy, productive, durable, and resource-efficient workspaces. It includes dozens of helpful strategies, fact sheets, model specifications, a glossary of terms, and a list of regional vendors and product manufacturers.

Portland LEED >>July 2002

Portland LEED, a supplement to the U S Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) rating system, tailors the national standard to local building and development requirements while maintaining third party verification and official certification by the USGBC.

Green Paints, Primers, Sealants, and Adhesives Fact Sheet >>July 2002

G/Rated has compiled an exhaustive list of low-toxic paints, sealants, and adhesives for a variety of applications on the job site. It includes contact information on manufacturers and local vendors.

Stimulating Market Transformation: Green Investment Fund Evaluation Report - FY 2000-01 >>November 2001

An overview of OSD's Green Investment Fund (GIF) grants program for FY 2000-01 – 28 commercial grants and 35 residential grants.

Green Building Resource Manual for Affordable Housing >>April 2001

A helpful resource manual includes 100 pages of strategies, resources and vendors to "green" affordable housing projects with little-to-no additional costs. Linked to the PDC's threshold strategies.

City of Portland Green Building Standard and Policy >>January 2001

Portland's Green Building Policy, adopted by unanimous consent by City Council, outlines strategies for City facilities and infrastructure.

Assessing the Need For Green Building - Design and Construction Sector Survey Results >>December 2000

Results from interviews and surveys of area builders, designers, engineers, and other building sector professionals on the barriers to widespread application of green building practices. Includes a review of building trends through 2000.

Low Income Housing Rehabilitation for Sustainability and Affordability >>July 2000

This study reviews the benefits of installing aggressive energy and resource efficient measures to an affordable housing project. Strategies were reviewed for payback and environmental benefits.

Greening City Buildings: Applying the LEED Rating System >>June 2000

A cost/benefit analysis of applying LEED design criteria to city buildings.

Green Building Initiative Action Plan >>December 1999

A two-year action plan for promoting resource-efficient and healthy building practices. The study, the culmination of nine months of public outreach, outlines four strategy areas: organization & policy development, demonstration projects, technical resources & outreach, and incentives.

Green Building Options Study >>September 1999

This exhaustive study reviews opportunities, barriers, and possible strategies for developing a municipal green building program. It reviews policies, programs, and incentives from throughout the US.

Appendix G. Benchmarking the G/Rated Program

Energy Conservation

- CO₂ emissions reductions beyond Oregon Energy Code
- Energy savings (BTUs and kilowatts) beyond Oregon Energy Code
- Percent of energy produced on-site

Water Conservation

- Water savings above code
- Percent of stormwater treated on-site
- Number of gallons of rainwater captured and reused on-site

Materials Conservation and Waste Reduction

- Percent of construction waste reused and recycled
- Percent of materials having at least 20 percent post-consumer recycled content
- Percent of materials from sustainably harvested renewable sources
- Percent of non-toxic and low-VOC materials

Habitat and Biodiversity

- Acreage of habitat created or restored
- Site disturbance impacts
- Percentage of impermeable surface area of total site

Transportation

- Access to transit (number of bus and MAX lines within 1/4 mile, frequency of service)
- Bicycle end-of-trip facilities
- Presence of high quality pedestrian-oriented design features
- Alternative transportation management plan for the building
- State-of-the-art fiber technology installed

Market Impact

- Percent of all City facilities square footage that meets the City's green building standards
- Percent of all City building permits that meet the City's green building standards

Capacity Building

- Number of City staff trained in the principles of green building and the application of the rating system
- Number of educational workshops and trainings conducted
- Number of presentations to local governments, building trade groups, and community organizations
- Promotion and outreach: press coverage analysis, website hits, number of brochures distributed, number of presentations