35817

CITY COUNCIL
AGENDA ITEM
STAFF SUPPLEMENTAL REPORT

TO:	Commissioner Dan Saltzman
FROM:	Susan Anderson, Director, Energy Office
DATE:	8/24/99
REQUESTED PLACEMENT DATE	Sept 1, 1999
RE:	***Green Building Options Study***

I RECOMMENDATION/ACTION REQUESTED

Resolution to Accept ***Green Building Options Study*** and Direct Energy Office to develop a two-year Action Plan based on Study's recommendations to be reported back to Council on Dec 1, 1999

II BACKGROUND/ANALYSIS

Why Green building practices are important to the City of Portland:

Economics: Green building practices are more cost effective than standard building practices over the long run Green buildings tend to perform better in the marketplace because of superior aesthetics, comfort and performance This often translates into higher initial sales prices and rents In addition resource efficient building practices help reduce building's operating and maintenance costs, thus making them more affordable over time In the commercial sector, reduced water and energy costs allow for increased profit margins and more competitive leasing arrangements In the housing sector, increased operations and maintenance efficiencies can free capital to help reduce debt burden. Designing structures that are desirable, long lasting, and operate as efficiently as possible can produce an investment to the building owner that is unmatched in return and security in the long run

Further, green building practices helps reduce environmental impacts related to buildings such as increased CO_2 emissions, water and sewer runoff, and natural resource extraction that ultimately impact the entire community's livability For example, if only 10 percent of homes in the U S used solar water-heating systems, the U S would avoid 8 4 million metric tons of carbon emissions each year Reducing the average house's energy use by 40% and water use by 30% reduces its CO_2 emissions by almost 45,000 pounds and avoid the creation of over 4 million gallons of wastewater over its 30- year lifetime Such environmental impacts also have an economic impact as cities are forced to spend money to treat pollution, lay additional pipe, built roadway capacity, etc

The City recognizes the economic benefit of conservation through efficiency efforts such as the *City Energy Challenge* and *BIG (Business, Industry, and Government) Water Conservation Program* However, the City could do more by updating certain construction and maintenance policies and practices For instance, when the City develops a construction program and budget, project elements are generally analyzed on the project's design and construction costs only (front-end or first costs without including operations and maintenance costs). The design and construction contract is then awarded to the lowest bidder This process of "value engineering" does not properly account for a building's long-term costs such as operations and maintenance and environmental impacts (i e , runoff, impervious surface area, and pollution from transportation)

Thus, value engineering creates a substantial barrier to incorporating energy and resource efficient components that are cost effective over the long-term but have higher up front costs By investing in green building practices using life-cycle costing, the City and other developers and building owners could identify new opportunities for long-term savings in the areas of water conservation, materials selection, siting, and solid waste reduction.

Growth: Here in Portland, the impacts of rapid development (in 1998 the City issued 3,477 commercial and 4,062 residential permits) are noticeably affecting livability and local and regional ecosystem health As noted above, buildings have a tremendous impact on the environment during construction and occupancy Not only are natural resources depleted but land use patterns are altered Highways and neighborhood streets become more congested, undeveloped land is developed, and public monies to pay for infrastructure are stretched In addition, development that spreads across the landscape makes it more difficult for communities to provide alternative transportation options, thus increasing the number of energy intensive, polluting vehicle miles traveled per capita.

Buildings together use one-third of all the energy consumed in the U S, and two-thirds of all electricity They are a major source of the pollution causing urban air quality problems, and the pollutants that cause climate change They account for 49 percent of sulfur dioxide emissions, 25 percent of nitrous oxide emissions, and 10 percent of particulate emissions, all of which damage urban air quality Further, energy use in buildings produces 35 percent of carbon dioxide emissions, the chief pollutant related to climate change

Buildings also impact natural resources A standard wood-framed home consumes over one acre of forest and the waste created during construction averages from 3 to 7 tons At Portland's current rate of homebuilding, this adds up to the equivalent of clear cutting almost 70% of Forest Park annually The majority of new development in the region is being built on "greenfields" or land previously unbuilt on Such practices threaten agricultural lands, fragment the landscape, reduce wildlife habitat, and alters site hydrology Meanwhile, the majority of existing abandoned and degraded sites ("brownfields") within the City – lands most suitable for new development – are much slower to redevelop

Green building addresses regional growth at the site level by insisting on building practices that minimize site disturbance, link to existing transportation and land use infrastructure, reduce resource consumption, increase energy and water efficiency, and reduce, reuse, and recycle building materials Green building practices provide exciting and creative solutions to growth management by restoring and enhancing brownfields, increasing vegetation cover and wildlife habitat, and renovating existing buildings to a higher and better use

Habitat Preservation & Restoration: Dramatic regulatory action related to water quality and habitat preservation is on the horizon Willamette River steelhead trout and other species have been recently listed as a threatened species as stipulated by the Endangered Species Act (ESA) In addition, the Environmental Protection Agency (EPA) issued a recommendation to classify Portland's harbor as a Superfund site The ESA listing will most likely impact proposed development within riparian and sensitive watershed areas The City and Metro are currently developing a comprehensive habitat and restoration plan for the region's waterways in response to

the ESA listing Currently, changes to the City's *Erosion and Sediment Handbook, Flood Hazard Areas Code, Bank Stabilization Notebook,* and Metro's *Title 3* regulations are being considered as part of the City's response ESA listings

Green building practices provide a series of "best management practices" to minimize or eliminate runoff, erosion, and streambank restoration Low water, native vegetation can eliminate erosion and reduce the amount of water and maintenance current standard landscaping requires On-site stormwater retention can treat and slow stormwater runoff Reduced building footprints and pervious paving systems can also help reduce runoff

Health & Productivity: A mounting body of work has linked productivity to building performance A variety of studies show a 6 –15 percent increase in productivity in structures built to maximize daylighting, natural ventilation, and indoor air quality (IAQ) through reduced use of toxic materials (i e , low VOC paints, materials, and laminates). Degradation of heath and reductions in productivity related to worker productivity and sick leave has economic impacts Since a typical employer spends almost 70 times more on salaries as on energy, a green building can significantly reduce a building's payback ***and*** help make a business more profitable by simply providing a more comfortable working environment

Health concerns related to IAQ have also become a major health concern in homebuilding Respiratory disease has increased nearly 50 percent in the last decade Many building materials can have an adverse effect on indoor air quality Paints, laminates, floor finishes, cabinets, particleboard, and certain structurally engineered building systems off gas and contain carcinogens found in some volatile organic compounds (VOC's) Since, we spend upwards of 80 percent of our time indoors, the environmental quality of building materials and ventilation are key elements to creating healthy homes and workspaces

Emerging Markets: Green building expertise - including builders, architects, engineers, systems and materials manufacturers, energy and environmental consultants, reusable building materials suppliers, and landscape architects - constitutes an important local market sector By promoting and applying green building practices, the City will support and stimulate further sector growth and help drive down the cost of building materials, energy systems, and other green building components The Portland Development Commission (PDC) and Sustainable Portland Commission (SPC) are currently analyzing the local environmental services industry in order to expand market opportunities Many of the technologies and skills related to green building are a key part of the emerging environmental industry sector The *Strategic Industry Study in the Environmental Services Industry* will be published later this summer

III FINANCIAL IMPACT:

The Energy Office already has staff time allocated to complete the two-year action plan. Other partners have agreed to dedicate minimal staff time to help create action plan

IV. LEGAL ISSUES

N/A

V CONTROVERSIAL ISSUES

N/A The resolution only requests a Green Building Action Plan be drafted No actions that affect current City staff, policies, and programs with budget implications are requested at this time

VI LINK TO CURRENT CITY POLICIES

- Portland's Sustainable City Principles, adopted 1994
- City's Energy Policy, updated 1990
- City's Comprehensive Plan and Zoning Code
- Metro's Urban Growth Management Functional Plan
- Stormwater Manual
- ESA Listing including changes to City's Erosion and Sediment Handbook, Flood Hazard Areas Code, Bank Stabilization Notebook, and Metro's Title 3 Regulations
- Oregon's Building and Energy Codes
- City's Construction Recycling Ordinance

VII. CITIZEN PARTICIPATION

The ***Green Building Options Study*** was authored by 160 local and regional building practices "experts " In April and May 1999, six public workshops were held to capture potential policy and program strategies that the City could implement to promote green building practices In addition a green building steering committee, comprised of a local developer, architects, engineer, affordable housing provider, and City employees was formed to provide guidance to the report and public outreach throughout the study period

There will be brief testimony from local developers, City bureau staff, and other green building advocates including

- Susan Anderson, Director, Portland Energy Office
- Ed McNamara, Director of Development, Prendergast & Associates
- Dennis Wilde· Project Manager, Gerding Edlen Development Co
- Rosemarie Cordello Executive Director, Sustainable Communities NW
- John Echlin Architect, Sera Architects, member Sustainable Portland Commission
- David Kish Director, Bureau of General Services
- Margaret Mahoney. Director, Office of Planning and Development Review
- Abe Farkas Development Director, Portland Development Commission

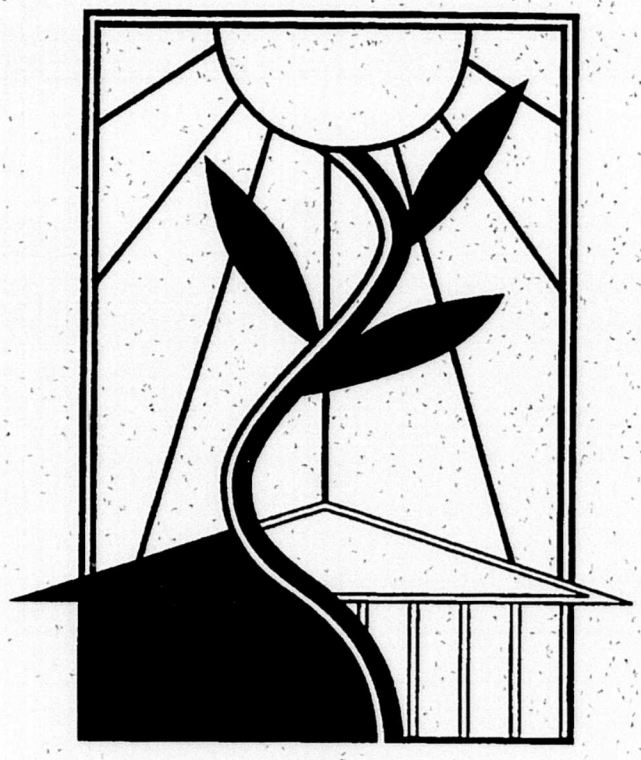
VIII OTHER GOVERNMENT PARTICIPATION

The ***Green Building Options Study*** was commissioned by the Sustainable Portland Commission (SPC) The work was coordinated by the Portland Energy Office in Partnership with the Planning Bureau and Office of Planning and Development Review

The public workshops included staff from many City bureaus (34 total participants)

Green Building Options Study

The City's Role in Promoting Resource Efficient and Healthy Building Practices



City of Portland Energy Office

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Susan Anderson, Director
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August 1999

Acknowledgements

The Portland Energy Office would like to express thanks and appreciation to each member of the Green Building Steering Committee and Sustainable Portland Commission for their interest, persistence, and guidance in developing this report. Many different points of view were brought to the Steering Committee helping to shape an inclusive and open process. We also thank the Bureau of Buildings and Planning Bureau for co-sponsoring this effort.

The Portland Energy Office would like to acknowledge each of the 165 work session participants who volunteered their time to this effort. Their expertise and dedication to the process and green building can not be underscored enough.

The Energy Office completed this report under the direction of Susan Anderson. The research, writing, and assembling the work session results was coordinated by Rob Bennett with additional support from Sheryl Bunn, Matt Emlen, Elizabeth Johnson-Kuhn, Curt Nichols, Sarah Reid, and David Tooze. Special thanks to Janet Gillaspie of Environmental Strategies for coordinating and facilitating the work sessions.

This report was made possible by funding from the U.S. Department of Energy.

Table of Contents

I. Executive Summary

Development and construction practices are main contributors to the depletion of natural resources and a major cause of unwanted side effects such as 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 Buildings account for 35% of U.S. CO_2 emissions

As Portland grows, so to 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. Promoting resource efficient and healthy building practices, also known as green building, is one such strategy Green building, a loosely defined set of strategies, provides the framework and tools to build in an efficient, healthy, and ecologically responsive manner and strengthens established policies related to increased density, mixed use and transit-oriented development, neighborhood and regional centers, and increased bicycle and pedestrian access

Encouraging green building practices makes sense and is in the public's interest because they

- Promote Portland's energy, land use, environmental and growth-management policies.
- Save building owners and tenants money through increased operations and maintenance efficiencies
- Improve indoor air quality and related health, well being, and productivity of occupants
- Help reduce public infrastructure costs related to development
- Minimize local ecological degradation (habitat, air, soil, and water) through efficient site design, low impact building practices and materials, and reduced operating costs
- Keep more money in the local economy and creates new local industries and jobs

What Is A Green Building?

Green buildings are structures and their surrounding landscapes designed, constructed, and operated to minimize short and long-term negative impact on the environment Green building practices incorporate

- energy efficiency
- water conservation
- waste minimization
- pollution prevention
- resource-efficient materials
- improved indoor air quality

Such practices help conserve natural resources, minimize mined rare metals and persistent synthetic compounds, improve environmental quality, and increase the long-term value of a project

Options Study Goal and Objectives

This Study was coordinated to identify policy and program strategies the City could implement to help make green building practices ***the*** standard building practice in the City of Portland The following objectives were addressed

- Identify key local green building stakeholders.
- Develop consensus definition of green building.
- Identify the reasons why green building is important to the City.
- Identify existing regional, state and local programs that promote green building practices
- Identify obstacles the City must overcome to help increase green building practices in Portland
- Identify policy and program options the City can implement to promote green building practices
- Provide comprehensive public participation throughout the project.

Options Study Background

In January 1999, at the request of the Sustainable Portland Commission (SPC), the Portland Energy Office - in partnership with the Office of Planning and Development Review - convened a Green Building Steering Committee to provide direction with conducting the Green Building Options Study and public workshops. The Steering Committee was composed of representatives from City bureaus, private sector, and non-profit community that are involved in the building industry.

Six community work sessions were held in April and May 1999 to identify a range of possible strategies to promote resource efficient building practices. The work sessions drew 165 participants including developers, architects, lenders, trade representatives, business leaders, engineers, builders, consultants, activists, and government officials to determine what the City's potential roles in stimulating/promoting green building practices are[2]

Each work session examined a particular topic area to identify potential green building strategies the City could implement The topic areas focused on where the City could have the most impact commercial building supply-side and consumer-side demand, residential supply-side and consumer-side demand, financing and incentives, regulations, and "greening" city operations Over the course of the work sessions a variety of themes kept re-emerging, providing the framework to prioritize strategies and recommendations Strategy options are organized into the following categories below

- Consumer and Industry Education
- Incentives
- Regulations
- Greening City Facilities

Study Recommendations

The following recommendations draw upon the 60 strategy options listed in the report (Appendix A) to identify key strategic directions that the City should pursue Recommendations were prioritized with direction and review by the Sustainable Portland Commission and Green Buildings Steering Committee Workshop participants also provided written feedback. Recommendations were prioritized using the following criteria

- Recommendations must encourage the City to adopt approaches that are consistent with the theme and practices of sustainability as reflected in the *Sustainable City Principles*
- The options and recommendations should provide an agenda of near-term actions that the City can take to rapidly promote the use of green building practices, as well as longer-term actions that will lead to a significant and sustainable shift toward green building practices in new and existing buildings
- The City should take rapid steps to "walk the talk" by stressing near-term actions that demonstrate the City's commitment to green buildings in its own practices and policies The most effective approach to increase public and industry awareness is for the City to lead the way and take swift, visible, and significant strides in incorporating green building concepts and practices in its own operations.
- The City must increase inter-bureau cooperation and partnering with industry and community stakeholders to better deliver green building technical services, resources, and marketing.

1. **City-Wide Green Building Policy and Ordinance.** Create policy and ordinance to establish the City's long-term commitment to promoting green building policies and practices in Portland and provide the foundation for subsequent actions.
2. **Green Building Development Guidelines and Rating System.** Develop guidelines and Rating System for green building design, construction, maintenance, and operations to serve as the benchmark and design tool for all City facilities and funded projects
3. **City Facilities Operations and Maintenance Practices** Identify strategies to improve and better track operations and maintenance practices for all City facilities
4. **City Budgeting Analysis Process and Financial Tools for Construction and Maintenance Projects** Review current budget analysis and financial tools to better support green building practices using life-cycle assessment and full cost accounting
5. **Inter-Bureau 'Green Building Assistance Program.'** Develop a comprehensive green building program to coordinate all green building efforts within the City Program will provide technical resources, training and education, and marketing expertise related to green building practices for City staff and private developers and contractors.
6. **'Green Building Incentives.'** Review current financial and regulatory incentives related to development to improve and expand incentives that encourage green building practices

Next Steps

- Form an Advisory Committee to work with the Energy Office to develop a Green Building Action Plan
- Form targeted working groups to evaluate strategy recommendations
- Develop workplan, timelines, and budget implications for each strategy recommendation that takes into account timing, supplementary activities that are already underway, and City planning considerations
- Circulate draft Action Plan for comments and generate broader awareness of City's green building efforts
- Present Green Building Action Plan to City Council December 1, 1999.

Want to Know More, Get Involved

For more information about green building practices, contact

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II. Introduction

Background

The City of Portland has a national and international reputation as a community that successfully balances environmental stewardship, community development and growth management The City's policies related to transportation and land use planning, energy conservation, recycling, and natural resource protection have bolstered livability and expanded economic growth As the region expands, so to does the need to create additional strategies to counter the negative impacts of growth – degradation to air and water quality, natural resource depletion, and inefficient land use practices Promoting energy and resource efficient building practices, also known as green building or sustainable development, is one such strategy Green building, a loosely defined set of strategies, provides the framework and tools to build in an efficient, healthy, and ecologically responsive manner and strengthens established policies related to increased density, mixed use and transit-oriented development, neighborhood and regional centers, and increased bicycle and pedestrian access

Ecological Design

"any forms of design that minimizes environmentally destructive impacts by integrating itself with living processes" - Sim Van Der Ryn in *Ecological Design*, 1996

Development and construction practices are main contributors to the depletion of natural resources and a major cause of unwanted side effects such as air and water pollution, solid waste, deforestation, toxic wastes, health hazards, global warming, and other negative consequences With more than 76 million residential buildings and nearly 5 million commercial buildings in the U S today and another 38 million buildings expected to be constructed by 2010,[1] the pace of ecological degradation is anticipated to quicken In 1998, the City of Portland issued 3,477 commercial and 4,062 residential permits, one of the busiest years on record

The growing awareness of the cumulative, negative impacts on the environment and human health and wellbeing is moving green building into the mainstream Programs are being developed at the local, regional, and federal levels throughout the U S linking environmental stewardship with livability Initiatives include

- Austin, TX *Green Building Program*
- Santa Monica, CA *Green Building Development Guidelines*
- San Diego, CA city-adopted Green Building Ordinance
- U S Navy's new construction policies requiring all facilities and infrastructure-related design and construction to incorporate sustainable design principles
- Boulder, CO *Green Points Program*
- San Francisco CA *Green Building Ordinance and Guidelines*
- State of New York *Green Building Tax Credit*
- Hennepin County, MN *Sustainable Design Guide and Rating System*

The Pacific Northwest, in particular, has recently been the center of a variety of green building initiatives Projects include

- Seattle City Light's *NW Regional Sustainable Building Action Plan*
- Oregon Housing and Community Services Department's *Green Building Task Force*
- Oregon Natural Step *Construction Working Group*
- City of Seattle *Sustainable Building Action Plan*
- HBA's *Build A Better Clark County Program*

[1] Department of Energy's *Center of Excellence for Sustainable Development* http://www sustainable doe gov/buildings/gbintro htm

The fundamentals of green building are not new Over the past 20 years, a variety of piecemeal city and state policies promoting resource efficient building practices have been enacted Specifically, Oregon's Building and Energy Codes and Portland's Sustainable City Principles, Energy Policy, Zoning Code, and recycling ordinances encourage energy and resource efficient building practices The policies state the City should efficiently use and reduce demand for natural resources, promote energy efficiency, waste reduction, and recycling, purchase products based on long term environmental and operating costs, and educate citizens and businesses

In response, City bureaus have developed a variety of conservation programs targeted at the design and construction industry These include education, technical assistance, and incentives in the areas of energy and water conservation, pollution prevention, and solid waste management

- BEST (Businesses for Environmentally Sustainable Tomorrow)
- Climate Wise
- City Energy Challenge
- Pollution Prevention program
- Commercial construction recycling ordinance
- B I G (Business, Industry Government) water conservation program

However, there are large gaps in the City's effort to promote green building practices Programs do not address all elements of design, construction, and demolition/reuse and technical resources are lacking Certain City policies related to building are incompatible, marketing and outreach is limited, and existing programming is fragmented In order to achieve market transformation to make green building practices ***the*** standard building practice in Portland, a comprehensive set of strategies and programmatic improvements are needed

The Portland Energy Office, in partnership with the Bureau of Buildings and Planning Bureau, has developed the following green building policy and program options for commercial, residential, and City-owned facilities In April and May, 1999, the City hosted six targeted work sessions attracting 165 design and building related professionals to identify a range of possible strategies to promote efficient building practices This report contains strategy options organized into the following categories

1. Building supply-side and consumer-side demand (education, technical services, and outreach)
2. Financing and incentives
3. Regulations
4. "Greening" City-owned facilities and procurement policies

This report builds on the recently completed *NW Regional Sustainable Building Action Plan* – a two-year collaboration lead by Seattle City Light to "identify the most critical and practical steps needed to make sustainable building the standard practice in the Pacific Northwest "[2] The plan outlines seven strategies that will inform Portland's green building efforts in the future
*** shared vision *regional guidelines * analytical models * financial incentives * awards program * industry education * public education**

Buildings: A Large Sucking Sound

- Buildings account for one-sixth of the world's freshwater withdrawals
- 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
- Buildings account for 35% of U S CO_2 emissions
- Twenty – 30% of North American Landfill space is take up by construction and demolition debris At least half could have been recycled
- Thirty-percent of new and renovated buildings is the U S have poor indoor air quality (IAQ)

Augenbroe Godfried and Annie R Pearce *Sustainable Construction in the United States of America A Perspective to the Year 2010* CIB-W82 Report, June 1998 , Roodman, D and N Lenssen *A Building Revolution How Ecology and Health Concerns Are Transforming Construction* Worldwatch Paper 124, 1995 , Austin Green Builder Program website

[2] Seattle City Light *NW Regional Sustainable Building Action Plan* pp. 7-8

Vision Statement

The City of Portland and every local developer and contractor will apply ecological building practices that conserve energy and natural resources, protect human health, preserve local and regional environmental quality, and increase the structure's long-term value

Green Buildings...

- ❖ Use natural resources and materials efficiently, use materials and products based on their life-cycle environmental impacts
- ❖ Conserve water usage, reduce runoff, and treat waste on-site.
- ❖ Maximize energy conservation and efficiency, use renewable energy resources
- ❖ Reduce building footprints, simplify building shapes, and maximize space efficiency (smaller is better)
- ❖ Optimize building orientation, integrate natural daylight and ventilation.
- ❖ Improve interior and exterior environments leading to increased productivity and better health, reduce or eliminate toxic and harmful materials and finishes in facilities and their surrounding environment
- ❖ Minimize the use of mined rare metals and persistent synthetic compounds.
- ❖ Reduce, reuse and recycle materials in all phases of construction and deconstruction; reduce harmful waste products produced during construction
- ❖ Apply maintenance and operational practices that reduce or eliminate harmful effects on people and the natural environment
- ❖ Plan for future flexibility, expansion, and building demolition

See Appendix B for more detailed green building guidelines

Options Study Goal

To identify policy and program strategies the City could implement to help make green building practices ***the*** standard building practice in the City of Portland

Project Objectives

- Identify key local green building stakeholders
- Develop consensus definition of green building
- Identify the reasons why green building is important to the City
- Identify existing regional, state and local programs that promote green building practices
- Identify obstacles the City must overcome to help increase green building practices in Portland
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- Provide comprehensive public participation throughout the project

Green Building Defined

Green building is defined as structures and their surrounding landscapes designed, constructed, and operated to minimize short and long-term negative impact on the environment Green building practices incorporate energy efficiency, water conservation, waste minimization, pollution prevention, resource-efficient materials, and improved indoor air quality to help conserve natural resources, minimize mined rare metals and persistent synthetic compounds, improve environmental quality, and increase the long-term value of a project It extends these concepts to the entire life cycle[3] of the built environment - planning, design, construction, operation and maintenance, renovation, demolition - bringing further benefits to our community in the form of environmental quality, economic vitality and social equity

Current building practices comply with Oregon's Building Code Green building practices, however, stipulate going beyond the Code in certain areas Green building practices also address areas where few, if any requirements or minimal performance standards exist (i e , site orientation, solar access, water conservation, environmentally responsive building materials, durability, etc)

[3] "Life-cycle costs means the sum of the present values of investment costs, capital costs, installation costs, energy costs, operating costs, maintenance costs, and disposal costs, over the lifetime of the project, product, or measure "
William J Clinton, Executive Order, *Greening The Government Through Efficient Energy Management*, June 3, 1999

III. Why is Green Building Important to the City of Portland?

Economics: Green building practices are more cost effective than standard building practices over the long run Green buildings tend to perform better in the marketplace because of superior comfort and performance This often translates into higher initial sales prices and rents[4] In addition resource efficient building practices help reduce building's operating and maintenance costs, thus making them more affordable over time In the commercial sector, reduced water and energy costs allow for increased profit margins and more competitive leasing arrangements In the housing sector, increased operations and maintenance efficiencies can free capital to help reduce debt burden Designing structures that are desirable, long lasting, and operate as efficiently as possible can produce an investment to the building owner that is unmatched in return and security in the long run

Further, green building practices helps reduce environmental impacts related to buildings such as increased CO_2 emissions, water and sewer runoff, and natural resource extraction that ultimately impact the entire community's livability For example, if only 10 percent of homes in the U S used solar water-heating systems, the U S would avoid 8 4 million metric tons of carbon emissions each year[5] Reducing the average house's energy use by 40% and water use by 30% reduces its CO_2 emissions by almost 45,000 pounds and avoids the creation of over 4 million gallons of wastewater over its 30- year lifetime [6] Such environmental impacts also have an economic impact as cities are forced to spend money to treat pollution, lay additional pipe, built roadway capacity, etc

The City recognizes the economic benefit of conservation through efficiency efforts such as the *City Energy Challenge* and *BIG (Business, Industry, and Government) Water Conservation Program* However, the City must do more by updating certain construction and maintenance policies and practices if it is to comply with ESA regulations and other conservation policies For instance, when the City develops a construction program and budget, project elements are generally analyzed on the project's design and construction costs only (front-end or first costs without including operations and maintenance costs) The design and construction contract is then awarded to the lowest bidder The low bid process does not properly account for a building's long-term costs such as operations and maintenance and environmental impacts (i e , runoff, impervious surface area, and pollution from transportation)

11 Reasons Why Green Building Makes Sense

1. Promotes Portland's energy, land use, environmental and growth-management policies
2. Saves the building owner money through increased operations and maintenance efficiencies
3. Slows demand for non-renewable energy and other natural resources through efficiency improvements
4. Extends longevity of local natural resources
5. Increased demand helps reduce the costs of green building goods and services
6. Improves the indoor air quality and related health, well being and productivity of occupants
7. Reduces public infrastructure costs related to development
8. Minimizes local ecological degradation (habitat, air, soil, and water) through efficient site design, low impact building practices and materials, and reduced operating costs
9. Keeps more money in the local economy instead of flowing to other resource-producing states, nations or non-local investors
10. Creates new local industries and jobs
11. Helps reduce long run operating costs to residents and businesses

[4] Village Homes in Davis CA – a mostly passive solar housing subdivision commands $11 more per square foot than homes nearby – William Browning, *"Building a Greener Portland"* Conference proceedings April 6, 1999

[5] Department of Energy's *Center of Excellence for Sustainable Development* http //www sustainable doe gov/buildings/gbintro htm

[6] Barnett, Dianna Lopez and William Browning *A Primer on Sustainable Building* Rocky Mountain Institute, Green Development Services, 1995.

In addition, "value engineering" (cost cutting to stay within budget), as it is currently practiced, creates a substantial barrier to incorporating energy and resource efficient components that are cost effective over the long-term but have higher up front costs By investing in green building practices using life-cycle costing, the City and other developers and building owners could identify new opportunities for long-term savings in the areas of water conservation, materials selection, siting, and solid waste reduction

Growth: In Portland, the impacts of rapid development are noticeably affecting livability and local and regional ecosystem health As noted above, buildings have a tremendous impact on the environment during construction and occupancy Not only are natural resources depleted but land use patterns are altered Highways and neighborhood streets become more congested, undeveloped land is converted to developed land, and public monies to pay for infrastructure are stretched In addition, development that spreads across the landscape makes it more difficult for communities to provide alternative transportation options, thus increasing the number of energy intensive, polluting vehicle miles traveled per capita

All types of buildings are estimated to use one-third of all the energy consumed in the U S, and two-thirds of all electricity As such, they are a major source of the pollution causing urban air quality problems, and the pollutants that cause climate change They account for 49 percent of sulfur dioxide emissions, 25 percent of nitrous oxide emissions, and 10 percent of particulate emissions, all of which damage urban air quality Further, energy use in buildings produces 35 percent of carbon dioxide emissions, the chief pollutant related to climate change [7]

Buildings also impact natural resources A standard wood-framed home consumes over one acre of forest and the waste created during construction averages from 3 to 7 tons [8] At Portland's current rate of homebuilding, this adds up to the equivalent of clear cutting almost 70% of Forest Park annually The majority of new development in the region is being built on "greenfields" or land previously unbuilt on Such practices threaten agricultural lands, fragment the landscape, reduce wildlife habitat, and alters site hydrology Meanwhile, the majority of existing abandoned and degraded sites ("brownfields") within the City – lands most suitable for new development – are much slower to redevelop

Green building addresses regional growth at the site level by insisting on building practices that minimize site disturbance, link to existing transportation and land use infrastructure, reduce resource consumption, increase energy and water efficiency, and reduce, reuse, and recycle building materials It compliments Portland's innovative planning and development strategies related to encouraging infill development, expanding neighborhood centers, incenting brownfield redevelopment, preserving open space, developing innovative stormwater management, and linking transportation to land use planning Green building practices provide exciting and creative solutions to growth management by restoring and enhancing brownfields, increasing vegetation cover and wildlife habitat, and renovating existing buildings to a higher and better use

Habitat Preservation & Restoration: Dramatic regulatory action related to water quality and habitat preservation is on the horizon Willamette River steelhead trout and other species have been recently listed as a threatened species as stipulated by the Endangered Species Act (ESA) In addition, the Environmental Protection Agency (EPA) issued a recommendation to classify Portland's harbor as a Superfund site, potentially broadening regulations related to development even further The ESA listing will most likely impact proposed development within riparian and sensitive watershed areas The City and Metro are currently developing a comprehensive habitat and restoration plan for the region's waterways in response to the ESA listing Currently, changes to the City's *Erosion and Sediment Handbook, Flood Hazard Areas Code, Bank Stabilization Notebook,* and Metro's *Title 3* regulations are being considered as part of the City's response to ESA listings

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[7] Department of Energy's *Center of Excellence for Sustainable Development*
http //www sustainable doe gov/buildings/gbintro htm
[8] Ibid

Green building standards provide a series of "best management practices" to minimize or eliminate runoff, erosion, and streambank restoration. Low water, native vegetation can eliminate erosion and reduce the amount of water and maintenance current standard landscaping requires On-site stormwater retention can treat and slow stormwater runoff Reduced building footprints and pervious paving systems can also help reduce runoff

Health & Productivity: A mounting body of work has linked productivity to building performance A variety of studies show a 6 –15 percent increase in productivity in structures built to maximize daylighting, natural ventilation, and indoor air quality (IAQ) through reduced use of toxic materials (i e , low VOC paints, materials, and laminates) Degradation of heath and reductions in productivity related to worker productivity and sick leave has economic impacts Since a typical employer spends almost 70 times more on salaries as on utilities, a green building can significantly reduce a building's payback ***and*** help make a business more profitable by simply providing a more comfortable working environment [9]

Health concerns related to IAQ have also become a major health concern in home and office construction and operations Asthma has increased nearly 50 percent in the last decade [10] Many building materials can have an adverse effect on indoor air quality Paints, laminates, floor finishes, cabinets, particleboard, and certain structurally engineered building systems off gas and contain carcinogens found in some volatile organic compounds (VOC's) Since, we spend upwards of 80 percent of our time indoors, the environmental quality of building materials and ventilation are key elements to creating healthy homes and workspaces

Emerging Markets: Green building expertise - including builders, architects, engineers, systems and materials manufacturers, energy and environmental consultants, reusable building materials suppliers, and landscape architects - constitutes an important local market sector By promoting and applying green building practices, the City can support and possibly stimulate further sector growth and build demand for innovative and efficient building materials, energy systems, and other green building components The Portland Development Commission (PDC) and Sustainable Portland Commission (SPC)[11] are currently analyzing the local environmental services industry in order to expand market opportunities Many of the technologies and skills related to green building are a key part of the emerging environmental industry sector The *Strategic Industry Study in the Environmental Services Industry* will be published later this summer

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[9] Barnett, Dianna Lopez and William Browning *A Primer on Sustainable Building* Rocky Mountain Institute, Green Development Services, 1995

[10] City of Boulder *Green Points Building Program* website
http //environmentalaffairs ci boulder co us/residential/gp_benefits htm

[11] The Sustainable Portland Commission provides advice to the Portland City Council on issues related to the environment, economy, social equity, and sustainable development It is comprised of 15 citizen volunteers appointed by the Mayor

IV. Public Involvement Overview

At the request of the SPC, the Portland Energy Office - in partnership with the Office of Planning and Development Review- coordinated six community work sessions in April and May 1999 to identify a range of possible strategies to promote resource efficient building practices The work sessions had two goals 1) capture the ideas of local green building experts, and 2) build momentum for a local green building initiative that builds upon the successes of other programs around the country The result is a document reflecting a high level of community interest in and understanding of green building practices

The work sessions drew 165 participants (the list of participants is located in Appendix K) including developers, architects, lenders, trade representatives, business leaders, engineers, builders, consultants, activists, and government officials to answer the following questions

1. What obstacles must be overcome to increase green building practices in Portland?
2. What are the City's potential roles in stimulating/promoting green building practices?

Each work session examined a particular topic area to identify potential green building strategies the City could implement The topic areas focused on where the City could have the most impact commercial building supply-side and consumer-side demand, residential supply-side and consumer-side demand, financing and incentives, regulations, and "greening" city operations The opening session - attended by 145 people - focused on identifying general barriers to green building The barriers were then sorted by topic area and used as the framework for the five subsequent work sessions to develop potential strategies Sessions 2 – 6 began with a review and prioritization of the barriers identified at the opening session Participants then turned to identifying solutions to the barriers

Opening Session: *"Building A Greener Portland"*, April 6, 1999

The opening half-day session featured a green building overview and "brainstorming" roundtable to identify barriers to green buildings within the City

Highlights

- **Erik Sten, *Portland City Commissioner*** Commissioner Sten summarized the City's commitment to green building He urged the group to harness local technology, brainpower, and techniques for to help the City identify strategies to make green building standard building practice in the region
- **Bill Browning, *Rocky Mountain Institute (RMI)*** Mr Browning provided a comprehensive overview of energy and resource efficient building practices As part of RMI's Green Development Services, he has lead green development projects for the Pentagon, White House, Lucas Films GAP, and Ecotrust
- **Ed McNamara, *Prendergast & Associates*** Mr McNamara reviewed his experiences building Buckman Heights, a 144 unit affordable housing project in southeast Portland The project incorporates many creative building practices including on-site stormwater management, reduced impervious area, improved recycling storage, energy efficient construction, natural ventilation and access to transportation alternatives

Session 2: *Cultivating Green Building*: Commercial Building Supply-Side and Consumer-Side Demand - April 20, 1999

This session focused on the barriers to building demand for commercial green building practices After opening remarks, the group - consisting of architects, builders, developers, building trade instructors, lenders, policy analysts, and engineers - broke into four small groups to collaboratively develop solutions Strategies focused on providing education, technical assistance, and marketing to builders, developers, designers, lenders, and consumers Results are located in Appendix B

Session 3: *Cultivating Green Building:* Residential Building Supply-Side and Consumer-Side Demand - April 27, 1999

This session focused on the barriers to building demand for residential green building practices The group - including architects, builders, master carpenters, building trade instructors, developers, banks, community development organizations, and affordable housing providers, and others - broke into small groups At the end of the morning, the groups compared the solutions they had developed The solutions largely focussed on educating builders, developers, designers, lenders, and consumers in order to build supply of and demand for residential green buildings Results are located in Appendix B.

Session 4: *The Green Carrot:* Green Building Incentives and Financing - May 6, 1999

This session focused on options to break down the financial barriers preventing housing (market-rate and affordable) and commercial buildings from incorporating green building practices Participants included developers, Portland Development Commission staff, lender, architects, builders, and others A single work session prioritized the barriers, and developed a series of solutions Results are located in Appendix B

Session 5: *The Green Stick:* Green Building Regulations - May 17, 1999

This session focused on regulations related to zoning and building codes The session included representatives from City of Portland Bureaus (Transportation, Environmental Services, Water, Planning and Planning and Development Review), the Portland Development Commission, State and National code experts, and others Results are located in Appendix B

Session 6: *Walking the Talk,* Greening City Facilities - May 27, 1999

This session focused on greening City facilities The session included representatives from a variety of Bureaus including Environmental Services, Water, Parks, Buildings, General Services, and the Office of Finance Administration Other community leaders interested in green building issues also attended

- Matt Emlen of the Portland Energy Office, and liaison to the Sustainable Portland Commission, discussed "Portland Today," a report detailing the City government's environmental performance
- Janet Bebb, of the Portland Parks Bureau, described her experiences as a project manager for the SW Community Center She highlighted that the Parks Bureau has included elements of a "green building" in its request for proposals, and generally, those that responded were at the top of their practice for innovation and creativity Some of the environmental indicators she was able to incorporate into projects included exceeding the energy conservation standards, day-lighting portions of the building, using energy-efficient motors, specifying recycled content for materials, recycling construction debris, and building commissioning Bebb said multiple priorities, maintenance fears, value engineering, and lack of information present barriers to project managers wanting to incorporate green practices into their buildings The group discussed ways to dissolve these barriers Results are located in Appendix B

Work Session Matrix

Work Session/Building Sector	Residential	Commercial/ Institutional	Government
Work Session 2 *Cultivating Green Building Commercial Building Supply-Side And Consumer-Side Demand*		•	
Work Session 3 *Cultivating Green Building Residential Building Supply-Side And Consumer-Side Demand*	•		
Work Session 4 *The Green Carrot Financing Green Building*	•	•	•
Work Session 5 *The Green Stick Green Building Regulations*	•	•	•
Work Session 6 *Walking the Talk Greening City Facilities*			•

V. Study Recommendations

These recommendations draw upon the 60 strategy options listed in the report (Appendix A) to identify key strategic directions that the City should pursue The *specific* steps and tactics that the City takes, however, should be evaluated through the development of a detailed ***Green Building Action Plan*** that takes into account resources, timing, supplementary activities that are already underway, and City planning considerations

This report's recommendations were prioritized with direction and review by the Sustainable Portland Commission Additional comments were provided by the Green Buildings Steering Committee and workshop participants The following principals were developed by the SPC and guide the recommendations

- The recommendations should provide an agenda of near-term actions that the City can take to rapidly promote the use of green building practices, as well as longer-term actions that will lead to a significant and sustainable shift toward green building practices in new and existing buildings
- The City should take rapid steps to "walk the talk" by stressing near-term actions that demonstrate the City's commitment to green buildings in its own practices and policies The most effective approach to increase public and industry awareness is for the City to lead the way and take swift, visible, and significant strides in incorporating green building concepts and practices in its own operations
- The City should demonstrate its commitment to incorporating a life-cycle and total cost (including external costs) perspective in its policies and actions In doing so, the City should adopt a process that maximizes benefits relative to costs, where costs and benefits are assessed with a broad viewpoint taking future, societal, and environmental impacts into account
- The options implemented by the City should take maximum advantage of existing programs, materials, and approaches already developed by the City and other cities, governments, and organizations
- The City's actions should be guided by the objective of revenue neutrality by *increasing* costs (through higher fees, development charges, etc) associated with activities that cause disproportionate environmental damages and *reducing* costs (through lower fees, charges, etc) associated with activities that cause fewer environmental damages or have positive environmental impacts
- Both internally- and externally-focused activities should be conducted in parallel, however, the City can provide a useful "testbed" for demonstrating and refining some of the tools and mechanisms before they are applied to the external marketplace
- The City should leverage existing momentum in the private sector and take immediate steps to work closely with private sector representatives who are seeking opportunities to advance green building practices The green building workshops conducted by the City Energy Office initiated a public dialog and provided a forum for the exchange of ideas about how to promote green building practices

#1: Adopt City-wide Green Building Policy and Ordinance

Given the critical need for both rapid action and demonstrated leadership by the City, a coherent approach begins with the adoption of a City green building policy statement and ordinance (38, 42) [12] This policy statement will establish the City's long-term commitment to promoting green building policies and practices in Portland and provide the foundation for subsequent actions The ordinance would provide the technical parameters for new City facility construction and remodels The policy and ordinance should reflect the Sustainable City Principles and Natural Step's Four System Conditions and establish a broad, long-range direction for the City's actions related to development

[12] Note that the strategies referred to by bold numbers in parentheses are located in Appendix A

#2: Develop Green Building Development Guidelines and Rating System

Green building design guidelines and a rating system for new construction and remodeling (43, 44) should be developed to translate the policy and ordinance into an operational system They should be applied as soon as practical to City construction and remodeling projects and PDC-funded projects Guidelines and a ratings system will provide a design and construction standard for building projects to assess and measure how "green" a building is, thus providing a metric or tool to measure performance

Once the City successfully pilots its guidelines and rating system, it should be modified as necessary to be applied to commercial and residential construction within the private sector (1, 17) City green building standards would be used as the baseline to educate developers and builders, evaluate incentive parameters, awards programs, and targeted lending programs, and promote market differentiation

The City should build upon and adapt existing rating systems such as the US Green Building Council's (USGBC) LEED program,[13] incorporating measures that reflect Portland's building requirements, existing policies and goals, and environmental conditions It should be a tiered system which establishes a baseline for compliance while rewarding projects which fulfill higher measures or are more creative in their approach to full sustainability They will establish environmental performance and total life-cycle assessment and full-cost accounting as the primary measures of a project's success The City should support both the activities of the Oregon Natural Step Construction Industry Group and the Regional Chapter of the USGBC (LEED) in development of their guideline approaches to reduce duplication of effort and to share common knowledge

#3: Improve City Facilities Operations and Maintenance Practices

The proper performance of green buildings will require that all systems be integrated correctly and work as planned It is recommended that the City require building commissioning for new and remodeled buildings (53) to ensure proper building operations

An integrated tracking system should be designed to monitor the performance of all city facilities energy, water, and waste outputs and operations and maintenance inputs (56) to help prioritize operations and maintenance upgrades (55) To maximize consistency and minimize the need for development work, these tools should be based as closely as possible upon the green building guidelines and assessment tools

#4: Review City Budgeting Analysis Process and Create New Financial Tools

Life-cycle assessment and full cost accounting (e g , long term operation and maintenance costs, measures of effects on worker health and productivity) should be incorporated in design, financing, and value engineering specifications through suitable modifications to the budget analysis process (49) These approaches could help overcome some of the financial obstacles that might be encountered in implementing green building measures that have higher "first costs "

Several innovative options were identified in the Study related to budgeting for or financing green building activities Possible strategies include a set-aside (47) or flexible internal loan fund (48) for green building projects, a green equipment lease program (50), finance bundling relying on multiple finance sources, (51), and a "performance contract" financing program (52) using "shared savings" or some other mechanism to pay back investments through utility bills

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[13] [15] *LEED (Leadership in Energy and Environmental Design) Green Building Rating System* is a consensus-based self certifying rating system for commercial, institutional, and high rise residential facilities developed by the US Green Building Council See the US Green Building Council's website at www usgbc org for details

#5: Create Inter-Bureau 'Green Building Assistance Program'

Several options in the Study (39, 40, 41) identify the need for a comprehensive green building program to provide leadership, technical resources, training and education, and marketing development It would help ensure the City makes timely progress on implementing internal actions and increasing market demand for green building It is recommended that an inter-bureau 'Green Building Assistance Program' to coordinate all green building efforts within the City be developed Progress on developing a policy statement, ordinance, and guidelines will be impeded unless staff are identified and dedicated to the research and development efforts required Resources should be allocated as needed

The program would serve as the framework to provide integrated development services to City staff and private developers and builders It would reduce service fragmentation by pooling existing internal resources related to green building (water conservation, construction recycling, energy conservation, stormwater management) across bureaus to create a comprehensive resource center Program staff could be responsible for developing

- Green Building Vision Policy and Ordinance (38, 42)
- Green Building Development Guidelines and Rating System (17, 43, 44)
- Employee training program (54) related to green building practices (i e , plan review staff, building inspectors, project managers, procurement agents)
- Strategically focused marketing and education campaign (1, 3, 5, 6, 11) (i e awards program, advertising, fact sheets)
- Green Builder Incentives (see below)
- Technical resources (i e , case studies, materials specs , resource guide) (2, 4, 15, 16, 18)
- Industry education/training programs in partnership with trade groups, professional associations, and local colleges and universities (7, 8, 9, 10, 12, 13, 14)
- Citizen green building and zoning code task force (20, 37) to identify and examine zoning, permitting, and fee conflicts, and make recommendations on future changes to the respective building and zoning codes

#6: Develop Green Building Incentives

The City should encourage green building practices with targeted incentives Building fees and charges should reflect the external costs of construction in an equitable way to reward industries that are following exemplary practices In other words, the City should transform the regulatory and fee structure to encourage green building projects

To promote marketplace transformation, the City should concentrate on rewarding environmentally beneficial building and remodeling through financial and regulatory incentives Incentives to consider include

- Expedited processing of building permits (21) for private development projects that meet or exceed City green design standards
- Plan Review Green Buildings Ombudsman/Green Team (22) to expedite the processing of green building applications in Permit Center
- Tiered rate structure for System Development Charges (23) tied to performance measures that reduce external development impacts (i e , stormwater, CO_2 emissions)
- Tax abatement program (30) for structures designed and constructed to City's green building guidelines
- Zoning code incentives For example, a FAR (floor area ratio) bonus for green building practices (33) similar to the current bonuses given for residential use, roof-top gardens, and child-care uses, could be inserted into the code

Leveraging relationships with key market actors to promote the implementation of financial incentives will encourage private sector green building Specifically, the City should work with PDC and private lenders to pilot low-interest mortgage and home equity loan products (26) The City also should work with the private sector, other government agencies, and non-governmental organizations to market energy-efficient and location-efficient mortgages (29)

VI. Report Conclusion

This report and recommendations are the result of many hours of volunteer involvement and commitment by developers, architects, lenders, engineers, and utility and environmental professionals from throughout the community These volunteers and experts, along with some members of City Council and bureau directors, know that now is the time to capture the high level of enthusiasm and momentum that has emerged around promoting building practices that

- Promote resource conservation, including energy efficiency, renewable energy, and water conservation
- Minimizes waste by reducing, reusing, and recycling materials
- Promote economic development
- Reduce pollution
- Protect the environment
- Create a healthy, comfortable, and productive environment
- Reduce operation and maintenance costs
- Address issues such as historical preservation, access to public transportation and community infrastructure
- Benefit future generations

Cultivating resource efficient building practices is a responsible use of public monies and serves the public interest Green building practices will help create environmentally-sound and resource efficient homes, offices, and other buildings It will also provide many concrete answers to the important challenges related to Portland's growth, economic development, air and water quality, the Endangered Species Act, public health, and overall environmental stewardship

We hope that City Council will seriously consider these recommendations and direct the Energy Office and related City bureaus to develop a comprehensive two-year ***Green Building Action Plan*** that balances marketing, training, incentives, and technical resources to best promote healthier and resource efficient building practices in Portland

VII. Appendices

Appendix A. Green Building Strategy Options

Each work session produced a variety of creative strategy options that were organized and edited to fit this format Potential strategies and actions are listed below The unedited list of barriers and strategies identified during the six work sessions are located in Appendix B Over the next few months, these options will be analyzed to develop a two-year action plan to be presented to City Council in December 1999

Over the course of the work sessions, the following barriers kept re-emerging These barriers provided the framework to prioritize strategies Strategy options are organized into the following categories below.

- Consumer and Industry Education
- Incentives
- Regulations
- Greening City Facilities

Common Barriers to Green Buildings: Sorted by Option Strategy Categories

Barriers	Consumer & Industry Education	Incentives	Regulations	Greening City Facilities
Regulatory/Fee Structure Discourages Green Buildings		X	X	
Lack of Industry and Consumer Education	X	X	X	X
Lack Of Central Information Source	X	X	X	X
Need Marketing/Promotion to Create Demand	X	X	X	
Lack of Long-Term View Of Investments (Life-Cycle Cost Analysis)	X	X		X
Perceived Liability and Risk Issues	X	X		X
Lack of Leadership		X	X	X

Consumer and Industry Education Options

The need for education and technical resources was a constant theme sounded throughout the work sessions The need to cultivate green building expertise and consumer demand was identified as a priority area for the City Because the City is already involved in a variety of education and outreach efforts, it is one of several appropriate organizations to provide such resources to the builder and end user By providing a variety of services targeted at different user groups, an education and outreach program will be effective in stimulating consumer demand and supply-side technical expertise

Marketing Options

1. Adopt a uniform **consumer recognition program** for green building practices, materials, appliances, landscaping, etc Use existing programs as a framework (e g , PGE's *Earth Smart* buildings and *Energy Star* rated appliances)
2. Develop and distribute **fact sheets** Topics to include "What is green building?" "The hidden costs of development," "Benefits of building green," "Green building and ESA," "City resources, incentives and financing tools," etc Target building owners, developers, and consumers
3. Create **marketing packets and point-of-sale materials** to be distributed to real estate agents, lenders, insurance providers, and appraisers
4. Develop and distribute **case studies** cost benefit analysis of green building components, productivity (i e , comfort, employee absenteeism) studies based on access to daylight and indoor air quality (IAQ)

5. Develop **homeowner and tenant education materials** distribute through the Bureau of Environmental Service's (BES) recycling program, Bureau of Housing & Community Development (BHCD), Portland Development Commission (PDC), Water Bureau, Metro, utilities, and multifamily and low-income providers
6. **Mass media consumer outreach** develop articles and ads for local papers, trade publications, Tri-Met buses, radio, and television.

Training & Education Options

7. Develop **industry education program** partner with AIA/CSI, BOMA, Associated General Contractors, HBA, Clackamas Community College, PCC, Portland State, and University of Portland
8. Develop **one-day technical trainings** state of the art in green materials, how to do life cycle costing, creating an on-site demolition recycling program, how to apply for an energy efficient mortgage, weighing first costs vs long term saving and benefits, etc
9. Create **trainings targeted at specific industry sectors**: builders, subcontractors, developers, architects, engineers, real estate brokers, appraisers, insurance firms, title companies, and lenders
10. Conduct **focus groups** with real estate brokers, appraisers, insurance firms, title companies, and lenders to help develop training and education priorities

Programming Options

11. Develop a **Green Building Awards Program** collaborate with BEST, PGE Energy Awards, and AIA Architecture & Energy
12. Develop **green "street of dreams"** program Partner with AIA, HBA, real estate brokers, builders and developers to publicize successful projects
13. Construct a **traveling demonstration "green" home** Display at trade shows, festivals, and other building events
14. Sponsor an **annual green building conference** to educate contractors, developers, lenders, real estate industry, architects, engineers, and consumers

Technical Resource Options

15. **Permit Center kiosk**. create and display multi-media information clearinghouse Provide green building guidelines, case studies, checklists, material specs , cost comparisons, City resources, database, incentives, and financing tools

City of Boulder Green Points Building Program

The Boulder *Green Points Building Program* is a mandatory residential green building program that requires a builder or homeowner to include a variety of green building components based on the size of the proposed structure

The Green Points Program has two levels:

- The *Green Points New Home Program* applies to new construction and additions larger than 500 square feet This program requires building permit applicants to earn "points" by selecting optional measures in order to receive a building permit.
- The *Green Points Remodeling Program* is voluntary and applies to remodels and additions less than 500 square feet Homeowners and contractors are encouraged to include as many green options in their remodeling projects as they can

Compliance with each measure must be demonstrated by one of two methods. If compliance is inspected, City Inspection Services staff may conduct actual on-site inspections, or require the submission of appropriate engineering reports or calculations to establish compliance If the measure is indicated as Self-Certified, the applicant will be required to sign the Green Points application, and certify that a measure has been complied with

16. Create a comprehensive **web page** Provide green building guidelines, case studies, checklists, material specs, City resources, database, incentives, cost comparisons, and financing tools Link to related City web sites (City Codes, Zoning Maps, Programs)
17. Adopt and promote a **green building rating system** for commercial and residential development - similar to the Boulder, Austin, or PGE Earth Smart programs
18. Develop a **resource guide** list of qualified architects, engineers, builders, developers, lenders, etc
19. Develop and distribute cost effective residential **stock plans/specifications** that features green construction materials, techniques, and space-efficient layouts

Incentive Options

Cities develop incentives to provide "carrots" to promote policies and programs Incentives were identified as an important piece to quicken the pace of market transformation To stimulate interest in green building and to reduce the burden of first costs, many communities around the country are looking at different process and financial incentives to offer commercial and residential builders

Green Building Tax Credit Legislation Proposed for New York State

The Natural Resource Defense Council (NRDC) has proposed a Green Building Tax Credit in New York State If passed, the legislation would provide tax credits for increasing energy efficiency, improving indoor air quality, and reducing environmental impacts of commercial and residential buildings The purpose of this law is to increase the demand and supply of environmentally preferable building materials, finishes and furnishings

A total of an 8% tax credit of "allowable costs" would go to business owners and tenants as follows

- Base tax credit of 5%
- Additional 1% tax credit for locations in empowerment zones
- Additional 2% tax credit if the base building and all tenant space comply

"Allowable costs" would include capitalized costs of items such as furniture, carpeting, partitions, walls, wall coverings, ceilings, drapes, blinds, lighting, plumbing, electrical wiring, and ventilation as well as many other building costs incurred while meeting the environmental efforts of the law. The New York State Department of Environmental Conservation would set the criteria for the minimum percentages of recycled content for building materials, finishes, and furnishings.

Many of the suggested incentives listed below would require the development of green building rating criteria for residential and commercial projects There are a variety of models in existence In general, most rating systems combine performance standards with prescriptive measures Applicants wanting to qualify for incentives would have to meet a minimum green rating threshold See Regulation Options below for more detail

Process Incentive Options

20. Create a **Taskforce to identify zoning, permitting, and fee conflicts** that currently discourage green building The taskforce should include Blueprint 2000 rules coordinator, local builders, Permitting Center staff, building inspectors, Office of Finance and Administration staff, and Bureau of Planning staff
21. **"Top of the pile" permit processing** Develop green building performance standards into the existing pre-application process that an architect or professional engineer must certify Certified plans get express processing
22. Establish a **Permit Center "Green Team "** Create a green building permit review team with technical and process training to move innovative building applications (new construction and remodels) through permitting process in a streamlined fashion Responsible to train other permitting staff as appropriate

Financial Incentive Options

23. Create a **tiered rate structure for System Development Charges** (SDC). Tie fee structure to a building's environmental performance (i e , stormwater outflow, water inflow, energy consumption, access to alternative transportation, open space provisions, impervious surface area, etc)
24. Institute **performance-based permit pricing** – reduce permit fees for rated green buildings.
25. Integrate green building **design and construction guidelines** into Metro's Transit Oriented Development (TOD) Implementation program and PDC's development contracting and rental housing RFP process Award extra points to applicants based on established green criteria Projects should be evaluated using life cycle analysis
26. Partner with private lenders and PDC to promote/create **low-interest mortgage and home equity loan products** (i e , ShoreBank Pacific-PDC pilot) Applicant must remodel using resource efficient building components Create a mortgage with "improvement fund" to trigger green upgrades
27. Research the feasibility of creating a City sponsored **"Buyers Club"** for residential and commercial purchase of green materials, products, and systems (i e , HVAC, appliances) through state and local contracts
28. Expand funding for existing housing stock improvement programs (i e , PDC/Shorebank loan program, downspout disconnect)
29. Promote and market **energy and location efficient mortgages** (EEM, LEM) and other resource and efficiency-based loan products
30. Develop green building **tax abatement program** Applicants can apply for tax abatement for new construction if building meets green rating criteria
31. Encourage vendors to develop **green equipment lease** program to help developers lower capital costs of construction (i e , HVAC, carpets) Building would need to meet green rating criteria

Regulatory Options

There are two regulatory areas that most impact building practices, zoning and building codes Zoning codes create specific zones and codify specific uses within each zone Each zone has development standards that include height, amount of building coverage, and other factors related to intensity of use The Portland Zoning Code also includes incentives that provide developers floor area "bonuses" if specific facilities and amenities valued by the City are incorporated into new development or redevelopment projects (i e , percent for art, water features, retail, day care, roof top gardens)

Oregon has an integrated building and energy code There are separate code requirements (chapters) for commercial and residential buildings The codes are generally based on national models with Oregon amendments The residential code is based on the CABO (Council of American Building Officials) model The commercial code is largely based on ASHRAE 90 1 requirements

Code development and code change in Oregon is largely consensus-based on an "as needed" basis Code change proposals go through a review process that includes Advisory Board subcommittee review and public hearings, and changes approved by the Board are signed into rule by the head of the Building Codes Division

Blueprint 2000

The City has initiated *Blueprint 2000* -- a process to streamline the City's permitting process. The City is designing processes to track permit information, work in interdisciplinary teams, and provide a single point of contact within the City for development projects. The *Blueprint 2000* project offers several opportunities for promoting green buildings. For example, there is an additional staff person to serve as the rules coordinator that will work to identify and resolve conflicts within existing codes. It could be a single point of contact for each project allowing green building information to be funneled through the appropriate person. There will also be an expanded city-sponsored building resource center.

Codes are, by their nature, a lowest common denominator for building practice - a floor for performance In many areas of the code there are great opportunities for improvement Specific green building opportunities for code improvement include indoor air quality, natural and artificial lighting interaction, selective surfaces in glazing, and the use of innovative new construction methods and materials Builders tend to lead and code adjustment follows Experience has shown that the code can rarely be improved until a majority of building practitioners are comfortable with the changes in practice Green building programs may be of enormous benefit in showing us how to do better

32. Develop a **voluntary or required green building criteria for all new residential and commercial construction** Model after programs in Denver, Boulder, Austin, Scottsdale, Clark County, WA etc
33. Develop a **FAR (floor area ratio) bonus** for green building practices to be inserted in Portland Zoning Code
34. Develop a **deconstruction salvage ordinance** Ordinance would require all demolition projects to recycle wood, metals, fixtures, appliances, and any other salvageable material found on-site Anyone applying for a deconstruction permit with the City must submit a demolition salvage plan application to be returned to BES The demolition application will be issued only if the salvage plan is deemed adequate BES to lead ordinance development
35. Develop an **indoor air quality protocol** for all new construction and remodels over certain square footage or project budget threshold
36. Adopt an ordinance that requires certain **energy and water efficiency upgrades upon the sale of commercial and residential property** (i e , San Francisco, Berkley)
37. Establish a **local green building and zoning code taskforce to examine and make recommendations on future code** adjustments The group would partner with Bureau of Planning, Office of Planning and Development Review, and building industry stakeholders to examine use of innovative, emerging building techniques and technologies [i e , parking space requirements, pervious paving standards, Eco-roof standards, gray water reuse, indoor air quality standards, rainwater catchment, landscaping standards to include Naturescaping and Integrated Pest Management (IPM), and alternative building practices and materials (i e , cob, strawbale, rammed earth)]

Greening City Facility Options

For years, the City has been working to reduce its cumulative impact on the local environment The Sustainable Portland Commission has been tracking the City's environmental impacts and recently issued the beginnings of an environmental management plan for internal operations The report's most sweeping recommendations calls for the integration of sustainability principles into City construction practices The following strategy options address institutionalizing green building practices at all levels of City government Work session participants felt strongly that the City has a responsibility to be a leader and provide examples of *Best Practices* for the rest of the community

Political and Institutional Options

38. Create a City-wide **green building policy statement** (i e , subset of Sustainable City Principles found in Appendix H)
39. Create an **inter-bureau internal practices green building taskforce** to define, facilitate and monitor the City's green building program Adopt The Natural Step principles (see Appendix G)
40. Dedicate **staff resources to implement a Green Building program** by coordinating existing City "green" building programs (Naturescaping, Eco-roofs, downspout disconnect, etc) into an integrated green building program and hire program manager Consolidate marketing, technical assistance, outreach, etc Develop and implement program mission statement, goals, and objectives
41. **Hire additional staff to coordinate City's strategic planning related to sustainable development.** The Program Manager and staff would be responsible for Sustainable Portland Commission activities including such efforts as policy development, City-wide environmental management plan, and creating business partnerships to stimulate emerging markets that balance economic development and environmental stewardship

Code, Regulatory, and Policy Options

42. Adopt a **green building ordinance** for all City facilities, including new construction and remodels Bureau of General Services to lead ordinance development

43. Develop **green building design guidelines for all new construction and remodel projects** Guidelines for all components of design and construction predesign, site design, building design, construction process, and operations and maintenance Minimum standards would include strategies for construction debris reduction, reuse, and recycling, building materials and furnishings, healthy materials, resource-efficient design, and operations/maintenance (see Appendix F for more details)

44. Develop **green building guidelines for all PDC funded projects** Create green building guidelines and ranking criteria for all capital projects including affordable housing, mixed use facilities, etc Award extra points in the RFP ranking process based on specified criteria related to energy and resource efficient building practices

45. Develop a **"green transportation plan" for all City facilities** to increase bicycle and pedestrian access and use of other alternative transportation modes (including buses, MAX, CarSharing, etc)

46. Develop performance-based **green building procurement policies** Currently, the City has no guidelines or policy for specifying resource efficient equipment or building materials An opportunity exists to require high efficiency products as long as the equipment is equal to that of the standard efficiency product and the life cycle costs are equal or better Develop working group within the Bureau of Purchases and Stores, General Services, and Energy Office to develop guidelines and specs

Corvallis Supports Green Building in Comprehensive Plan Policy Update

The City of Corvallis, OR, has issued their first statement of support for green building through two clauses in their recently updated Comprehensive Plan The clauses (7 7 6 and 7.7 7) direct that the city "incorporate, in the construction of City-owned buildings, appropriate 'green builders' construction methods and materials .." and "consider strategies, such as incentives, to encourage the use of 'green builder' construction methods and materials in private construction " Contact Mark Dodson, 541-757-6809.

Budget and Financing Options

47. Develop a **5% set-aside** for green building projects The fund could be accessed to pay for building components with higher front-end costs, but good rate of return and long-term savings Provides project managers flexibility in identifying most resource efficient and cost-effective green building components

48. Develop a **flexible internal loan fund** for green building projects The fund could be accessed to pay for building components with higher front-end costs, but good rate of return and long-term savings

49. Incorporate **life-cycle costing** into building specifications and value-engineering specifications The Office of Finance and Administration (OFA) would develop the budget analysis process

50. Investigate a **green equipment lease** program to help project managers lower capital costs of construction (i e , HVAC, carpets)

51. Encourage **finance bundling** (State Energy Loan Program, tax credits, lease/ purchase, etc , grants)

52. Investigate feasibility of developing a **"performance contracting" financing program** (e g , energy services loan for upgrades - payments out of savings) with BES and Water Bureau The facility would pay back the loan through a charge to the building's water/sewer bills

Design, Construction, Operations, and Maintenance Options

53. Require **building commissioning for all City facilities** Building commissioning ensures mechanical and electronic systems in buildings function after they are built as the mechanical or electrical designer intended

54. Develop an **employee training** program related to green building practices for plan review staff, building inspectors, project managers, conservation specialists, procurement agents, OFA staff, and City engineers and architects

55. Expand **"eco-audit" for City buildings** for ranking operations and maintenance upgrade schedule Use a rating system similar to the *LEED Green Building Rating System*

56. Develop a **facilities tracking system** beyond energy to include water use, recycling, stormwater, etc
57. Develop a **permit staff and building inspector-training program** Current code compliance focuses on life safety - reemphasize importance of green building practices, staff must be educated on new techniques
58. Include **resource and energy conservation training in the annual City Project Manager's training**
59. Distribute **building occupant manual for all City facilities** Annual training for facilities operators

Appendix B. Barriers and Solutions: Work Session Summaries

During the course of five green building work sessions in April and May 1999, 165 people helped identify strategies to increase green building practices in Portland Below, the results of the work sessions are presented These draft options are incorporated into the Green Building Options Study Topic areas below include

- Cultivating Green Building – Commercial Building Supply-Side And Consumer-Side Demand
- Cultivating Green Building – Residential Building Supply-Side And Consumer-Side Demand
- The Green Carrot Financing and Incentives for Green Building
- The Green Stick Green Building Regulations
- Walking the Talk Greening City Facilities

Cultivating Green Building – Commercial Building Supply-Side and Consumer-Side Demand

Barriers

- Regulatory and fee structure discourages green building (i e , wastewater, water, and stormwater charges)
- Buildings are "over" designed by design or code (ex HVAC systems, road standards)
- Material specifications missing
- Project level fragmentation, lack of systems approach
- Risk adverse industry
- Lack of demand
- Smaller market share for green building materials drives up costs
- Green building materials not as readily available as other materials, can't always get performance data on products and materials
- New ideas take time to get approval, time is money
- Cost of green too high
- Increased financial return on investment – discourages green spec construction
- Disconnect between builder and occupant, decision makers are not occupants
- Lack of incentives for builders
- Lack of cost comparisons
- Lack of information on operating cost comparisons
- No easy way to value/measure health impacts
- No regional sustainability resource center
- Lack of central source for technical information on green buildings
- Need for contractor, consumer, and occupant education
- Green might be "weird"
- Green not included in university curriculum
- Local efforts have low visibility
- Need to "touch and feel" what green buildings are
- Low bid process/mentality driven by client and contractor
- Lack of industry-based inspections/quality control
- Green development requires more preplanning and preparation and higher costs
- Design process not integrated, no incentive for A/E, lack of life-cycle analysis
- Industry priorities on keeping first cost low
- How developers are organized small staffs, fragmentation of responsibilities makes it hard for any one person to focus on whole systems of building
- Build-to-sell developers more concerned with lower initial cost than with long-term or ongoing performance
- Green development requires more preplanning and preparation and higher costs
- Lack of belief in health effects of buildings
- Lack of real or perceived choice for an energy source
- Appraisal process and insurance process are conservative If they can't see comparables, then "green building" is worth less
- Systemic nature of construction industry - cause and effect

- Don't have easy-to-understand description of "green" that the owner can understand
- Time line beyond the economic life cycle of most decisions
- Increasingly "liquid" real estate market for commercial buildings (average 5-year payback)
- No single vision or definition of "sustainable"
- Architects more concerned with design and image than sustainability
- Change is scary

Solutions

Barrier – Regulatory and fee structure discourages green building/project level fragmentation – lack of systems approach within City and design community

Solution:

- Use a tiered rate structure for System Development Charges, stormwater fees, etc , set up fee structure so that if a building has environmental benefit, then the dollars to the fees should be less
- Improve and make faster the process for "green" buildings (i e bike parking get approved before surface lot parking)
- Clearly state what is the regulatory/approval process - what do builders and developers have to do, by when, and who has to approve
- Education for city staff – find opportunities to "green" new buildings
- More resources for permit review that include quicker review for green
- In-house staff that is "green trained"
- City should be leader, staff need to be on leading edge in building technologies
- Easy access to information at permit center - how to do sustainable building
- Create flexible codes, lobby state and city to install flexibility in building and zoning codes
- Education of regulatory officials, appraisers, building inspectors to be empowered to support green building
- "Green" buildings are first in queue at permit center (energy efficiency over code, improved stormwater management), "top of the pile processing"
- Incorporate alternative energy supplies - consumers need the City to make connections and assist and promote distributed generation
- Support non-resident code inspection process - inspectors may not have adequate time to complete safety, health AND energy inspections
- Encouraging commissioning of buildings - hire your own business inspector during construction
- City should encourage distributed generation policies at the state level as an element of deregulation issues
- Rate could be reduced for green constructed facilities for water and sewer charges
- Reduce zoning requirements for off-street parking, then tax on parking spaces
- Create stakeholder task force to develop regulation, incentive, and fee changes, joint government and private sector effort, include cross Bureau analysis to determine what current regulations, fees, and incentives are contrary to green building objects Facilitated by non stakeholder/ educate as you go
- Streamline internal City operation – regulations, pre-design and permitting process to facilitate integrated design approach
- Build green building requirements into pre-design application
- Shorten time requirements for green buildings
- Educate plan reviewers
- A long term commitment is needed from the City - -both incentives and regulations (e g incentives that don't sunset, long-term tax credits)
- Earth Smart system must be aligned with city permitting, positive long term incentives must be aligned with Earth Smart

Barrier - Need for Contractor/Consumer/Occupant Education
Solution:

- Develop short easy-to-understand description of the benefits of green to the owner Try to steal from other locations/cities/programs Detail the logic of why to build green Include lots of case studies - use the Architect + Energy program, include the detailed economics, keep it simple
- Set aside space next to the Permit Center with information on green building practices (the Green Room)
- Include information on the Internet
- Include "green" information with initial contact information from utilities
- Include "green" information packets for real estate agents, and banks
- Expand coordination with AIA/CSI, BOMA, Associated General Contractors, etc
- City should tap into existing information resources, City should consolidate all the information resources
- Get Health Departments and medical staff involved
- Gather medical research on the impacts of green building practices for promoting increased productively and decreased absenteeism
- City should develop "occupant knowledge" as a component of the new fire stations (NEEA has pending project - consider partnership)
- Consolidate information - City good candidate for this (maybe METRO, maybe state)
- Build a speaker's bureau - compile resources for the community

Barrier - Appraisal Process - Insurance companies don't recognize the value of sustainable design
Solution:

- Get information to appraisal and insurance community
- Target banks, insurance companies and appraisers for information
- Promote the currently available information
- Develop an "eco-audit" for city buildings, which includes energy, embodied energy, VOC levels, expected building life span, daylighting, etc Use a rating system, similar to LEED program, check with Norm Thompson and The Natural Step
- Develop a handout that addresses productivity - - human, energy, and material
- Find finance partners - City ECO loan, PDC funds, partner with CDCs for large residential and mixed development
- Focus on PDC dollars - loans for sustainable development, like incentives rather and requirements, maybe require PDC-funded projects to go through LEED-type assessment (could be positive reinforcement for existing codes, automatic bronze rating)

Barrier - Disconnect between building/owner/bank/occupant
Solution:

- Somehow make builder responsible for paying O & M costs
- Education on building performance, need case studies
- Bank Process - find a way to get a better rate if healthy/sustainable building
- City consult with financing community - - how does sustainable buildings increase value, lower rates ASK THEM - use Shore Bank to get to mainstream banks
- City can talk to banks from standpoint of health of city - - longer perspective

Barrier - Green development requires more preplanning and preparation, might increase costs
Solution:

- Find easy to understand resources - Many city staff have technical backgrounds and are able to pass information along
- City should lead by example - more design dollars to do it right, construction costs should be less
- Pay for performance - reward design team for successful building, using the money from the energy savings

Barrier - Lack of Central Source for Technical Information on Green Buildings/Lack of Education
Solution:

- Create a Long Term Vision Commitment from the City (i e , ordinance, green building objectives – link to other policies and values
- Create centralized information center
- Market and promote green building benefits
- Education on front-end of the planning process for developers, promote integrated design
- Consolidate current "green" building programs (Naturescaping, Eco-roofs, etc) into integrated green building program
- Shorten time requirements for green buildings
- Education regarding plan review
- A long term commitment is needed from the City - both incentives and regulations
- Institute long term credits for green buildings
- Marketing and promoting the benefits
- Cross Bureau analysis to determine what processes are contrary to green
- Education on the front end of the planning process
- City Council pass overarching green building objectives – subset of Sustainable Portland Principles
- Organize "green team" within plan review- technical and process know-how
- Create commercial sector design guidelines, natural site planning, integrated design, use System Development Charges and TIFF (?) fees to promote green building
- Developers must submit an environmental benefit statement – proactive, not regulatory
- Streamline permitting process
- City internal operations - attempt to limit fragmentation internally
- City promoting integrated design teams at front end
- Build into predesign application
- Create City green program – similar to Austin, Boulder, etc
- Education missing groups including lenders, appraisers, developers, APP, insurers, commercial real estate, economic coalitions, form speakers bureau, create info sheets targeted for different audiences

Barrier. Build to Sell Developers more concerned with lower initial cost
Solution:

- Need to gather worker's compensation, health and safety benefits for new clients
- Need cost comparisons that link life cycle vs up front costs
- Need quantify costs benefits to lenders
- Health and casualty insurers should be included at the front end
- Marketability to increase value of green building, seller must see market benefit of green building to potential buyer (i e get higher rents, lower energy costs, higher productivity, etc)
- Case studies of remodels regarding health, safety, and productivity
- Building owners tracking energy, water pollution to create benchmarks
- City ranking system for new buildings – determine its environmental value

Barrier High Initial First Cost for Green Buildings
Solution:

- Develop prototype green buildings with specifications
- Get funds to architecture, engineering firms from labs and/or US DOE to demonstrate green practices, reduce risk by showing it can be done - - both residential and commercial activities, focus grants on providing green services to Lents, River District, Gateway, and other Overlay zones Would require "in-kind" information transfer
- There is an overall failure to do the "right thing", many ideas for "greening" are low/no cost
- Incentives to main decision makers - - promote with something glamorous, use "real celebrities"
- Remember the value of a "free lunch" - use this as an education component
- Use rate of return calculations to demonstrate value of these components

Barrier. Education/Marketing and Lack of Demand

Solution:

- Have a "green" building competition with home builders and Community Development Corporations
- Highlight case studies and longitudinal studies
- Get a central focus point for consistent, coordinated message and the technical assistance to back it up
- Get to employees - get them to demand it for improved air quality, resource efficiency, etc
- Educate employee unions
- Provide credible information on daylight and indoor air quality
- Regulatory program - commercial rating system
- Education commercial real estate brokers and give them incentives (commercial real estate winners)
- Use rating system to keep Portland/Keep vision of quality of life
- More pressure, success stories and green buildings
- Incorporate into school programs
- Use Pioneer Square - type events to promote, use neighborhood "eco-teams" for commercial development

Barrier. Regulations are in the Way

Solution:

- Dollar for dollar recovery
- Move up in the queue if "green" - will need a rating system
- Preemptive regulations - such as erosion control
- Mandatory at time of sale

Misc. Comments

- Regulations - make change, not just trends
- Purchasing by City is important - the City has a large demand
- Education is most important
- Need case studies to provide it works for all building types
- Longitudinal studies - comfort, employee absenteeism, document benefits, daylighting increasing retail sales
- Green building ombudsperson within City
- Rebates build into fee structure for "greener" practices to both general and subs
- Freightliner, Adidas, Consolidated Freightliner are three major corporate headquarters are being designed, other buildings mentions is MERC, Hall D, Convention Center expansion and the Civic Center, Energy Office should take the lead in educating these building owners
- City "set aside" needed for "green" construction of city points
- Place to find commercial materials for projects over $2 5 million
- Energy code compliance assistance along with stormwater
- Make service available for smaller buildings
- Recycling asphalt
- Contact projects early - tell them what the City wants, in energy etc
- Develop marketing plan and lead with fish issues, add global warming, kids, etc
- Reduced dumping fees from recycling - find ways to share savings
- Glad we are doing this
- Need to give reasons for building green very early in the process
- City projects should "walk the talk" demonstrate/document/communicate
- Lack of cost comparison is a problem, post construction monitoring could be completed by the City
- Caution - don't create a new bureaucracy - - stay in touch with grass roots

36 people attended the work session on commercial green buildings.

Cultivating Green Building – Residential Building Supply-Side and Consumer-Side Demand

Barriers

Education/Technical Assistance/Marketing

- Need for contractor, consumer, and occupant education
- Lack of central source for technical information on green buildings (i e sustainable building resource center)
- No easy way to value/measure health impacts
- Lack of testing and diagnostics for providing performance data
- Local efforts have low visibility
- Lack of consumer demand consumer preferences may not be "green"
- Consumers don't know what to ask for when they want to buy green
- Material specifications missing
- Lack of belief in health effects of buildings
- Need to "touch and feel" what green buildings are
- Lack of cost comparisons first costs, operations, maintenance
- Lack of knowledge about green building, consensus definition
- Brand and package identity for consumers
- Consumer conflicts with green standards and objectives
- Negative stigma attached to green buildings
- Need consensus definition of "green building"

Designer/Developer/Builder Issues

- Green perceived as "weird"
- Risk adverse industry
- "Green" not included in university curriculum
- Low bid process/mentality driven by client and contractor
- Lack of industry-based inspections/quality control
- Green development requires more preplanning and preparation and higher costs
- Design process not integrated, no life cycle analysis
- How stakeholders (developers, A & E, City) are organized small staffs, fragmentation of responsibilities makes it hard for any one person to focus on whole systems of building, lack of systems approach
- Projects often small scale, short in time, and constrained in funding
- Many residential projects undertaken without permits, outside of system
- Industry priorities on keeping first cost low more concerned with lower initial cost than with long-term or ongoing performance
- Code is inflexible

Funding/Dollar Issues

- Regulatory, incentive, and fee structures discourages green building (i e , wastewater, water, and stormwater charges)
- Lack of incentives for builders, developers
- Green building materials not as readily available as other materials, can't always get performance data on products and materials
- Cost of green too high (i e , smaller market share for green building materials drives up costs, longer payback, benefits don't outweigh costs)
- Consumers don't take long-term view of their investment
- Portland is a small "boutique" market - - small number of units built per developer/builder

Solutions

Barrier. Need for education and technical assistance for contractors, consumers, real estate agents, lenders, building officials, and appraisers

Solution·

- Green "rating" system for buildings - similar to the Boulder or Austin or Earth Smart programs Use the developed criteria Link green rating with lower fees, faster processing, a density bonus and a need for tracking the data generated to improve information base on green building performance
- Provide a central source of information on green buildings, based on the web with lots of links Provide information on city projects Information could also highlight community based examples with details on vital statistics of the projects, and how to get involved in the sustainable building network
- Attach educational requirement or training or fee incentives for certain targeted sectors for the city business license
- Incorporate green-design training into the on-going training activities of the existing Bureaus (Planning, Building, BES, and others)
- Have a different permitting path for alternative, green designs
- Develop a City "green advocate" position– to advocate for green design within the City system - that person will have the knowledge and historical information at the local level to overcome barriers
- City should drive this issue to the insurance companies - - apply the information being developed by Livermore labs and target it locally
- "Green-up" the original "street of dreams," use the energy company contacts as a vehicle
- Tenant Education for HAP tenants on green cleaning, using paint from the paint recycling projects
- Fund the ShoreBank Pacific/Sustainable NW pilot at PDC
- City should "talk up" green - - both the personal and environmental aspects
- Continue city awards program
- Reverse "bond" system for green alternatives that really work
- Improve how the alley system works in NE Portland
- "Buyers club" for greener practices for non-profits and others
- Educate appraisers

Barrier Consumer, lender, and appraisers don't take long-term view of investments (life-cycle costs)

Solution

- City should model good behavior - keep good statistics and tie to incentive programs, include community-wide impacts such as street lighting, stormwater, etc
- Emphasize health benefits - advertising and public service ads, focused campaign on good alternatives, partner with paint manufacturers, remember forest practices
- Real estate agent appraiser information and outreach, host a national conference
- City should assist in building networks for important subgroups like lenders and real estate agents
- Organize a sustainable building consortium to finance green projects
- Partner with the Office of Neighborhood Associations and its network, provide small incentives similar to the stormwater disconnection program, use neighborhood associations to raise awareness
- Promote the City's leadership role in revising loan criteria in the secondary market, especially Freddie Mac
- Organize a neighborhood conference - - one day/hands-on
- An important point - - does the City truly know its own costs?
- Evaluate the City housing budget for "green" opportunities – lead by example
- Identify all vehicles for long term message on green buildings including trade associations, METRO mailings, and utility flyers
- Good idea – how about e-mailing City utility bills

Barrier Regulatory, incentive, and fee structure discourage green building
Solution.

- For all zones, evaluate parking requirements for residential building
- Allow exemptions to lot cover for stormwater retention
- Evaluation of the residential code for "green" issues, set policies and evaluate against that policy
- Waive stormwater fees if water is handled on-site
- Waive/reduce fees for reduced off-site impacts
- Reduce fees/allow distributed, self-contained sewerage systems, stormwater collection and treatment systems, etc
- Institute performance-based pricing – reduce permit fees and other fees for green practices
- Institute a "green" tax for environmental poor performers
- Use least-cost planning to approach additional infrastructure needs for stormwater, sewerage systems, and water, pull conservation into the planning process
- City should develop a true cost of every mile traveled by car (air pollution, water pollution, global warming, etc)
- Institute congestion pricing for auto travel
- Put landlord deposits into a special account where the interest could be used for car sharing
- Problem with some green building materials not being UL tested - - not "rated assemblies"
- Develop overall guidelines for "green" residential practices
- Accelerated permitting for "green" buildings, inspection perks also
- Tax gas-powered lawnmowers
- Tax lawn pesticides and fertilizers
- Further evaluate energy use, including appliances within the residential setting

Barrier Industry priorities are in keeping first costs low; less concerned with long –term benefits than initial costs
Solution

- Create developer, lender, insurance industry education program on first costs vs long term saving and benefits
- Model green designs/specifications should be developed for builders - would reduce builder costs
- Apply "common" and cost-effective green features and materials first – push the most common materials to all
- Create certification 3rd party endorsement program
- Factor externalities of current building practices into pricing to bring these costs in line with green building practices (life-cycle analysis)
- Government partnering with building materials, and system suppliers – helping bring new technologies to builder/consumer faster
- "Level playing field" – apply true costs of development
- Education of contractors and sub's to identify and apply cost-effective green measures
- Education of inspectors, inspection quality control for green, current code compliance focused on life safety, need to emphasize green building practices, must be educated on new techniques
- City should be proactive in zoning and building code development, City should advocate flexibility in state building codes (such as gray water, strawbale construction, advanced framing)
- City should be emphasizing more durable housing stock

Barrier Regulatory, incentive and fee structures discourages Green Building
Solution.

- Two tiered code system 1 Prescriptive, 2 Performance Incorporate embodied energy budgeting, and life-cycle analysis
- Code officials and permitting staff education
- Hire a green ombudsperson in permit review – a green building project facilitator
- Green buildings should go to the "top of the pile" for processing, speedy city service
- Fees adjusted to promote green building - - not discourage
- Fee reductions for green measures (green tax concept)
- Establish a green permit review team - - it would have the authority to be flexible with current regulations and codes, work with builders, contractors, and inspectors to move projects through

Barrier: Need for consumer, design industry, contractor, occupant education and lack of knowledge of green building or consensus definition

Solution:

- Create consumer recognition program - - a "salmon" seal of approval, and overall "green building" stamp, an easy-to-read building label for green building, materials, appliances, etc , work with existing programs (such as "green seal" and energy star)
- Work in partnership with other education programs, government's role is a consumer representative
- Work with and promote existing programs such as Earth Smart, EarthWise and other green building programs
- City should encourage partnerships, education, promotion, outreach, advocacy
- Define a mission statement for education/outreach effort, possibly "promote and facilitate green building"
- City should provide an information clearinghouse/technical assistance center, partner with OSU, US Green Building Council, Clackamas Community College and others
- Interagency coordination a problem within the City, create a city-wide Green Building program and fold existing and new programs (Naturescaping, Ecoroofs, downspout disconnect etc) – all under one roof
- Aggressive industry and consumer information dispersal, articles in papers, periodicals, etc
- Hold special events, trainings, home shows, conferences, green "street of dreams" etc
- Create a comprehensive web page, program highlights, promotional materials, building specs, calendar of events (PGE has good start here), links
- Construct a demonstration "green" home – a traveling exhibit
- Signage and information at green city facilities - - opportunity for on-site education
- Focus on both new construction and rehab, correct the misperception that green building can only be accomplished in new construction
- Green building multi-media kiosk at new Permitting Center

Barrier Lack of consumer demand, consumer preferences are not green

Solution

- City as a consumer advocate, documents performance, 3rd party certifier of "green"
- Help build consensus - - inform the public (i e What is healthy?)
- Promote examples, guidelines of green alternatives - - counter builder/consumer misconceptions of green buildings
- Provide/promote incentives, rebates, green mortgages (2% stretch on mortgage ratios for energy mortgages), or location efficient mortgages
- Market and educate on the hidden costs of development, green buildings will reduce those costs, examples include true costs of automobile parking, pricing impacts on resource consumption (water use drops 30% when tenants pay water costs individually)
- Point of sale advertising materials for developers
- Real estate brokerage education

Barrier: Need for contractor, consumer, and occupant education (and other stakeholders)

Solution.

- City sponsors a Green Fair - ongoing event like Street of Dreams - target consumers
- Recruit volunteers to educate children and parents via neighborhood events - target parents and children
- Occupant education resources for end-users when they buy green products, what it is, how they maintain it, etc
- City create "information office" or coordinate volunteers to provide service
- Incorporate into state public school curriculum benchmark tests
- Presentations to neighborhood groups (like BES Stormwater programs)
- Use water/sewer bill for education/outreach
- Contractor education through the Construction Contractor Board, City should influence state boards - lobby at state level, City initiate program for voluntary certification in green building
- City develop an eco-path for green buildings; focus on education/fees and time for permitting
- Displays at permit center - education for builders/architects
- Mass media consumer education like Tri-Met uses, movie ads, billboards, etc
- Build a demonstration facility and operate it over time (1-3 years), use state-of-art technology, build with cutaways to view systems

- Green tour - publicize successful projects, have public view green buildings, similar to the Solar Energy Association of Oregon home tour, include eco-roofs
- Build Green Street of Dreams
- Utilize web with information on current technology, use City web site, include cutaways
- Need to create demand to get builders moving, talk to EarthWise Builders (contact Kathleen Baughman 503/288-9338), they tried to educate builders
- City influence curriculum at community colleges including Chemeketa and Clackamas along with U of O and others, building code classes, guest lectures, create curriculum using real life situation as teaching tool Involve them in a master plan process

Barrier: Lack of central source for technical information green building
Solution:

- Use Lents project as a focus for green building technical resources Develop a resource center in Lents, Support with master plan incentives, A place for builders to come (like PGE energy resource)
- Need city staff or others with solid technical expertise (call upon City/PGE/Northwest Natural/NEEA, etc)
- Provide central source of information - centralize on web page
- Take resources on road - home show/garden show/meet the public outside of center
- A facility for technical information needs lots of promotion/ads
- Develop a list of architects/designers qualified for "green", such as Green Guild or Austin Green Building Program, might rank those included
- Links to other cities involved in green buildings computer, personnel exchange, joint ventures
- Bring in speakers like Bill Browning and others
- Partner with other groups so city doesn't do alone like Guild/Builders Association

Barrier - How stakeholders (developers, A & E, City) are organized; small staff, fragmentation of responsibilities makes it hard for any one person to focus on whole systems of building, lack of systems approach
Solution

- Permit process is fragmented, Each Bureau has its own self-intent
- Set up a green building process that fast tracks, example City of Boulder green "points" system - - if a building exceeds minimum then go to top of pile speed, Staff with a green building person that pulls all together
- Need council driven plan to empower green staff to bring bureaus together and produce solutions
- Inspectors should be trained on green practices, need consistency
- Contractor certification for self-inspection, i e Salem Pilot
- City role Shouldn't be the quality inspector just code
- Designer could be quality assurance role between contractor and client
- Program for preference in inspections based on past compliance success (does it with mechanical inspection now)
- Sustainable overlay (similar to historical overlay)
- Work at state level – advocate changes to building codes for more green solutions

Barrier - Industry priority on 1" cost Consumers don't take long term view . Low bid mentality
Solution

- City provides fee incentives for green building
- Information to consumers – awareness, Educate about long term thinking to avoid 1" cost mentality, find some way to demonstrate that the builder went through the process in looking at options for long term sustainability
- When doing mechanical and insulation Require builder to demonstrate performance and calculate annual heat/cool cost and provide that information to consumer, City's role to require long term analysis (another was worried about taking away consumer desire)
- Focus on financiers - credit for long term performance for life cycle, energy use, etc
- Product ratings for energy
- City should be more open to design/build – under a design/build model contractor and designer work closer together

Barrier. Lack of Incentives
Solution:

- Long term incentives
- Fast track , reduce fees, tax breaks
- Bonus in zoning code, unit density, floor area ration, assessment fees (stormwater)
- Identify who benefits from incentives
- Speed up process
- Create consumer demand
- Lower sewer charges - long term - for demonstrated reductions
- FYI Natural Step meets twice per month at SERA (John Echlin, Alan Scott)
- Water bill incentives for landscaping, outdoor use
- Coordinate/list the available incentives, tax credits
- Eco tax - surcharge for non-green practices

Misc. Comments

- A lot of discussion and topics aren't regulated by the City (i e , side yards)
- How can the City bring solutions to single family development, side lots, innovative zoning
- Tying green solutions to Endangered fish run in Willamette, including salmon
- Also emphasize connections beyond building shell - whole ecosystem big picture-MACRO
- Hope that we don't add more regulation - limit choice
- City role as resource not regulator, influence change
- Can't regulate change, need to educate, take long term view
- Education is 1st step, discussions good

34 people attended the work session on residential green buildings

The Green Carrot: Financing Green Building

Barriers

- Lack of lender education
- Lack of community education/technical assistance
- Correlation between healthy/pleasant buildings and productivity
- Mortgages not written to reflect reduced operating costs and other green benefits
- Long term qualities and benefits not reflected in building's sale price
- Liability and risk issues – limited track record for green building
- Lack of access to financing for alternative building methods
- Lack of financing for incremental costs for green components
- Sustainability benefits exceed traditional financing terms
- Financial incentives for green missing
- Lack of cost comparisons
- Advantages of green not reflected in appraisals
- Lack of performance guidelines for appraisal
- City's fees don't always provide right incentives
- New ideas take time to get approval, time is money
- Financing for first time developers (who might possibly be more green) difficult to obtain
- Disconnect between developer/owner/occupant – different needs, agendas
- Lack of info/especially when leased
- Skepticism of utility industry (government)
- Design team must be lean – green development demands increase coordination, time, and $
- Building considered liquid asset-not long term investment
- Lack of precedence – banks very conservative
- Lack of specifications and details/lack of budget to modify
- Least possible first cost for builder, developer

Solutions

Barrier. Lack of cost and benefit comparisons

Solution

- Create city resource center case studies, comparisons, material specs Internet based
- Stimulate green market include green in specs, focus on design process (i e Navy specifications for sustainable practices)
- Apply life cycle cost analysis to projects
- Create education program for appraisers, insurance firms, title companies – benefits of building green how to quantify value
- Include Portland Energy Office in pre-application meeting for new development projects
- Clear City Council direction needed for PDC to act
- Document the "Green techniques/practices that are cost effective
- Lender education – move lenders to look beyond numbers to occupant costs (productivity, insurance rates) and occupancy rates (i e greater desirability of occupying green building)
- Facilitate focus groups, task force to educate different financing sectors real estate brokers, lenders, title companies

Barrier: Least possible first cost for builder, developer

Solution:

- Identify and apply low cost solutions (water based adhesives, low VOC paints, passive design)
- "Work numbers to middle"-reduce costs of green and add necessary equity for projects to be approved
- Use life cycle analysis when considering green components – high cost green items become more "affordable"
- Partner w/ materials, products manufacturers to lower prices (i e leasing contracts, bulk purchasing underwrite green products trade show)

- City-run "Buyers Club" for green building products through state and local contracts to reduce costs of green materials, products
- Educate contractors, real estate brokers to educate market to look beyond first costs
- Promote State and local strategies that consider externalities (green taxes)
- City incentives for green building (fee waivers, low interest loans)
- Lenders provide lower financing rates for green building
- Tax abatements for new construction program-if meet standards- similar to other PDC program
- Link to Oregon Housing and Community Development Services Dept 's Green Building initiative (green affordable building projects increased points in applicable process, life cycle, decreased interest rate)
- Expand funding for existing housing stock improvement (i e , downspout disconnect, other credits)

Barrier: Mortgages not written to reflect reduced operating costs and other green benefits
Solution:

- Promote, expand energy efficiency mortgage, Home Energy Rating System (HERS), Create rating system for "green" building - PDC has important role
- City requires "green" upgrades upon sale (See San Francisco, Berkley policies)
- Create mortgage with "improvement fund" to trigger upgrades (i e , PDC package)
- Fee waivers if built "green" - similar to "Smart Manufactured Homes"
- Broaden mass-buying power create marketing campaign around comfort/health/good durability – not energy efficiency, get data to prove benefits
- Facilitate focus groups, task force to educate different financing sectors real estate brokers, lenders, title companies
- Create smaller-start-up banks-sustainable consortium of banks
- Link to Oregon Housing and Community Development Services Dept 's Green Building initiative (green affordable building projects increased points in applicable process, life cycle, decreased interest rate)

Barrier. Correlation between healthy/pleasant buildings and productivity
Solution:

- City demonstration projects/gather metrics/promote results
- City as a catalyst for information-marketing
- Objective rating system (visual and diagnostic) for building rating
- Get cost benefit information to occupant/leasee - info already exists Go through developers, brokers, appraisers, etc
- Create City indoor air quality protocol-apply to new and existing buildings
- Increase demand from occupants (and their employees) by publicizing those companies who have offices in "green" buildings-give them kudos for taking care of their workers

Barrier Liability and risk issues – limited track record for green building
Solution·

- Demonstrate projects/get data/publicize
- Post occupancy data and publicize-share broadly-target appraisers/bankers
- City incentives result in faster application/lower fees Link incentives with follow-up enforcement and monitoring (might use rebate for fees/performance)
- Self certification for all qualified "Green Builders"
- City underwriting for specific piece of project that might be "risky"
- Make green building an overall element of City/community vision
- Partner to provide information through PDC to Bankers
- Facilitate focus groups with lenders, bankers, use Council to gather major lenders
- Create Green Development fund modeled on Metro's TOD Implementation Fund (portion of subsidized funding for additional "green" costs)
- Tax abatements for new construction program-if meet standards- similar to other PDC program

Barrier: Disconnect between developer/owner/occupant

Solution:

- Building occupant manual-city develop requirement for development (US Green Building Council model, utility programs could be helpful-case studies could be included)
- Use commissioning system-incorporate into utility incentives
- Encourage (through points on the "green application" or rate structure) lower capital cost of construction by leasing building components (HVAC, carpets) Mechanical equipment = 40% of commercial new construction If cost of construction, is less than smaller banks can finance

Misc. Comments

- Top leadership needed PDC needs Council direction in order to act
- Remember transportation compressed work week/telecommute, keep people happy
- Regulations can work as financial incentive, Must be phased, thoughtful
- Consumers, Real Estate, Appraiser, Lenders It's all linked!
- Overall media strategy- sell advantages of green, find exciting "green" designs to get consumers interested
- Provide increased architect/engineer fees for green buildings e g RMI's program

35 people attended the work session on financing green buildings

The Green Stick Green Building Regulations

Barriers

- Fear of new technologies and ideas- risks associated with new practices
- City's fees and regulations don't always provide right incentives
- Code officials have single focus, not systems approach (Fire Marshall, Building Inspector, etc)
- Performance standards for products, materials, etc missing or inadequate
- City codes and regulations conflict with other city codes/provide wrong incentives
- Many builders just want a checklist of what they need to do, and green building is hard to specify
- Green approaches often require variances, and the City does not assist green building projects in obtaining variance
- Codes are inflexible, limit innovation
- Difficult to change building code - set at national and state level
- Existing codes are not properly/completely enforced
- Permitting process lengthy, inflexible, code officials not educated on latest technologies
- Inspection process focuses on health and safety, lack of tools to evaluate green building performance
- Public approval process segmented and long - several phases - pre-application, design review, permitting involves about 13 Depts
- The energy code is prescriptive rather than performance-based
- Codes are often out-of-date, behind technological and policy curve
- When developers meet with the City for pre-application conferences, staff doesn't have the power to be flexible with their interpretations of permit requirements
- Code and regulatory conflict (including ADA/Seismic upgrade standards)
- Inspector interpretations of same standards (between planning/enforce in same city - between different cities)
- Lack of public/industry support for "greener" code
- Lack of designer education
- Local expertise missing on energy cost-effectiveness
- Political risk - regional cooperation lacking

Solutions

Barrier: Lack of public/industry support for greener code

Solution:

- City sponsored pilot projects to demonstrate "green" projects
- Build awareness of toxins in buildings
- Continue and expand *Best* Awards – have category that is specific for builders, expand awards programs as education tools and motivator
- Continue/expand AIA involvement in state and national code setting process
- Continue/expand AIA education of architects on green building issues
- City needs to link other environmental interests into green building ideas and network (stormwater benefits, ambient air quality benefits, etc)
- Expand the idea that health and safety standards should include green buildings
- Improved "green" representation by League of Oregon Cities for advocating "green" at the state level in reviewing building codes
- Provide City incentives for green practices – provide "top of the pile" processing for permits For this to work, the City would need to develop "green building" performance standards (use a holistic approach), for compliance, require the architect or professional engineer to certify with their stamp that the building complies with "green" standards - - transfers the work/liability to the architect and engineer, not City staff (similar to the implementation of the California energy code) (use City of Austin example for setting performance standards)
- Important to link green actions to City Council "will" for this to happen
- Using the "green building" performance standards, develop a green building "sticker" – an "eco-label", California energy code, Austin model, self certify

- City could rewrite stock plans/specifications to include known/proven "green solutions", this could be available on a web-site, link web site to other non-government organizations focused on these same issues, the current historical preservation overlay process might be a good model to follow
- Remodeling - streamline inspection process if remodeler attends specific training related to green building practices
- Portland leader at national and state level for building codes – don't reinvent the wheel, borrow ideas that have worked from others

Barrier: Fear of new technologies and ideas- risks associated with new practices

Solution.

- Case study feedback
- City should "walk the talk"
- City should push code to reduce designer risk
- Include products in city green building performance standards
- Tap into EPA Energy Star and Northwest Energy Efficiency Alliance networks for new technologies and performance information
- Track City operations and maintenance costs when new technologies are used, provide that information widely
- Continue to promote and expand education on conservation tips for homeowners and residences
- City develop "big" picture – City should be able to explain how individual actions add up around the City to major changes
- City should have a team of experts - - the City Green Team - - that group would help developers be innovative in applying new/good green ideas into the existing flexibility in the code - - the Green Team would be able to help developers find and use the performance data that is available to use the flexibility in the code - - it might even assist on rating and other testing issues
- Facilitate growth of new ideas - let the "floor" of the building code grow up
- More should be done to reduce toxins, green buildings is not just about energy conservation, this can include providing information on toxic reduction which should broaden the appeal for green buildings, also – track the on-going effort in Sweden to provide a detailed analysis of all common building materials. Portland could partner with others including the US Green Building Council (soon to be housed in Portland) to continue this effort
- Need a better way to "rate" recycled/reused components from existing buildings, how can you load rate a 4 x 6 old-growth timber removed in deconstruction?

Barrier: City codes and regulations conflict with other city codes/provide wrong incentives

Solution:

- Develop a feedback loop
- Examples where improvements should be incorporated developed (see below)
- City leadership important
- Use blueprint 2000 rules coordinator, involve community to identify conflicts
- Develop and implement a common set of goals for city, use the existing bureaus and the strategic planning efforts and community planning efforts to ' see green"

Misc. Comments

Potential green strategies to add/adjust in codes

- Parking space requirements
- Revise paving standards to asphalt that allows water to percolate through
- Eco-roofs
- Grey water use
- Garden space
- Indoor air quality standards
- Water catchment
- Zoning - density goals (transit oriented development-review on a set cycle)

- Green incentives in code for green
- Street landscaping
- Integrated Pest Management
- Local restrictions on jet skis or lawn blowers
- Tax parking spaces to pay for transit
- Cap number of auto trips that can be generated by any use
- Examine the standards for parking structures - - our most "stout" structures are for parking and don't likely have other uses - - we are designing buildings for humans to live in for 30 years and buildings for cars to live in for 100 years
- Focus on activities that are easy, save money, model plans, resources, and create demand
- Health issues should be stressed - cancer avoidance is a priority for many people in making decisions

Additional Thoughts

- City needs to consider "raising floor" - regulations necessary
- Focus on reuse of existing homes, space demands
- Think about Cradle-to-grave aspects of building decision making
- Construction methods – need to evaluate the impact of construction on environment
- Need to be sensitive to different neighborhood needs, education at all levels needed
- Resource availability – for information to be useful to those most able to make changes it must be "lean and mean"
- Reduce extraction of all materials
- Resource center being planned in the permitting center important - use it to expand the city's role in research and development
- Link to health issues
- Improve energy requirements and compliance rates for existing remodel projects
- Involve neighboring cities/counties get on board
- Remember go beyond code!
- Difficulty of meeting the energy code - - remember you must move the entire industry nationally to get changes
- Education creates demand
- Pilot projects/city-sponsored-track results partnership
- Open to new ideas-The Natural Step training city (all aspects, sewers purchased, eco teams)
- City leadership-council
- Steal from ideas that have worked for others
- Enforce existing codes, don't use a complaint-driven compliance strategy
- Building location/site location—need to incorporate erosion prevention and control

34 people attended the work session on regulating green buildings

Walking the Talk: Greening City Facilities

Barriers

Political and Institutional

- Lack of common City "vision"/definition on green building (lack of political will and knowledge Council and Bureau direction/leadership)
- City employee education
- Difficult to integrate discipline/programs across bureaus
- Lack of long term memory at City - leadership continually changing, need to "institutionalize" green constituency
- Every Bureau has different mission "silo" structure of city's bureaus-"fiefdoms"
- Different bureaus are responsible for construction and maintenance-difficult to create consistent standards
- No dedicated time for "greening" up activities - Limit on city employee's "extra time"
- Lack of employee empowerment

Codes, Regulations, and Policies

- Conflicting existing city policies, standards, codes (i e "skinny" streets vs fire equipment needs)
- Compartmentalized permit, code, regulation responsibilities and knowledge-difficult for integrated design approach
- City infrastructure construction and maintenance based on "old" assumptions (i e irrigation done with portable water, wastewater treatment provided centrally, streets designed wide, buildings over engineered)
- Conflicting local, state, and federal codes, regulations-limits innovation
- Same code can be applied differently

Budget and Financing

- Accounting doesn't factor true costs over time projects - not analyzed using life-cycle cost accounting to analysis trade-offs
- Two year budget cycle limits creativity
- Tight capital budgets -- green building (water, stormwater, energy) competes with other needs
- Value engineering process green building components are vulnerable to cuts at the end of planning and design phase
- Lack of innovative partnerships with outside entities to help finance projects and features (i e utility performance contracts)

Design, Construction, Operations, and Maintenance

- Multiple important priorities (i e ADA, Seismic, programming, % for arts)
- No established design goals and standards, lack of specific language to include in requests for proposals, product specifications and other communication with vendors
- Design process not integrated, no incentives for A/E team Lack of partnerships to integrate green components (% for arts, stormwater management, etc)
- Green development requires more preplanning team approach
- Lack of standards for green materials/procurement policies, can't always get performance data on products and materials
- Lack of Information/Lack of Sharing/Lack of Resources
- No "green" operations and maintenance budget for improvements and training
- Maintenance staff involvement in early design and implementation stages – educational, knowledge disconnect

Solutions

Barrier Accounting doesn't factor true costs over time projects - not analyzed using life-cycle cost accounting to analysis trade-offs

Solution:

- Incorporate into design standards
- Develop an internal loan fund or set aside for "greener" than code
- Set aside for higher front-end costs with good payback
- Convince voters to approve higher budgets for construction projects
- Better information needed on green costs
- Need accurate "green" comparisons-tie to life-cycle cost accounting
- Include operation costs in building specifications and value-engineering specifications
- Lease/purchase options (use tax credits)
- Bundle a financing mechanism for the City that will encourage these projects, Ideas can include State energy loan program, tax credits, lease/ purchase, etc - - Important to be mindful of debt implications
- Utility-operated Bureaus (Water/BES) could use "utility-type" financing options - Energy services loan for upgrades - pay out of savings
- Incorporate productivity factors into analysis- Human resources factors
- Apply a more comprehensive model for life-cycle analysis (see NW Green Building Action Plan), needs to incorporate productivity issues, stormwater quality, possible carbon credits, air quality credits, etc
- Incorporate personnel costs
- Track productivity of new "green" building permit center (talk with Risk Management on this issue)
- Partner with Insurance firms to identify opportunities
- Build on experiences of others (Boston & Boulder)
- Quantify "fish" issues - might use a variety of models
- Bundle diverse projects for capital across bureaus and programs into a single request for voters
- Tie "green" to project specifications
- Develop flyer on the basics - educate city staff on life-cycle accounting, Need for on-going education - - start small
- Examine how savings accrue to bureaus - give a portion of the savings to the "mission" of the Bureau
- Remember that most City employees can make purchasing decisions at a certain level - - ensure the information is targeted at two audiences both general information for all employees and information to improve performance of high-profile green "champions" within the City
- Share experiences of green "champions"
- Need to institutionalize green practices

Barrier: Lack of Council and bureau-head leadership, knowledge & will/lack of common City green building vision & definition

Solution

- Grass roots education needed-study circles/self-guided issues-neighborhood-based efforts, eco-teams
- Bundle with Endangered Species Act (ESA), environmental issues, sustainability
- Incorporate into education CIM (Certificate of Initial Mastery) tests
- Recognize the community recognition of this issue, "green" practices are the mandate (i e , Council elections, Ballot Measure 66, other survey information)
- Consider if "fish" is the metric for organizing around this issue
- "Paint" the bandwagon so leaders and the community understand how congruent "green" is with what they want in their community
- Be action directed
- City should partner with private sector to learn and demonstrate (i e , The Natural Step principles), Create a local Mayor's Council on Sustainability with leadership from both major corporations and the City (see Racine and Chattanooga as examples)
- Leadership needs to set clear standards
- Remember "leaders" all through city
- Need official city "position" for green

- Broad involvement in design, including maintenance staff in positive way
- Employee training key, integrate work to personal life, see TNS sessions on training the trainer, focus on mid/lower levels of organization first
- Need mission/vision/value for green-common long-term objectives
- Communicate Sustainable Portland Commission (SPC) principles throughout City
- Adopt The Natural Step (TNS) as basis for City decisions
- Remember disconnect between "value" and actions – think about why people buy and drive Sports Utility Vehicles
- Use Peer group review type process to learn if green practices are incorporated and if successful (similar to the effort on minority and woman-owned businesses)
- Clear support from top (instant access) can be done at Bureau level
- Include "green" and energy conservation training in the annual City Project Manager's training
- Resources for individual purchasing decisions such as copy paper or paint - - items less than $5,000 in price, need tools (might use the City intranet system)

Misc. Comments

- Develop case studies on buildings and purchases
- Trade ideas electronically
- Celebrate success-get good press, reward good actions
- For each City building, include a plaque or other high profile education piece on the green components of the building and include the green items that were not done and why
- Top priority - - have a 5% set aside for "green" – project managers could use it to go beyond the code
- Clear bureau guidelines for all levels of employees, know how to act
- Celebrate affordable housing and green/sustainable/affordable housing fit, inform Federal government of work being done here on these two important issues
- Find effective metrics and measure
- Boost Green Team authority, TNS Training
- Portland Energy Office should be an independent agency
- Set City BMPs for each resource area
- Set specific targets for performance
- TNS training for City employees
- US Green Building Council membership
- No more studies
- Emphasize education, get good press and build demand

27 people attended the work session on greening City facilities

Appendix C. Existing City Programs Related to Building Practices

Energy Use

A. Citywide Goal

The goal of the City of **Portland Energy Policy**, adopted in April 1990 is to promote a sustainable energy future by increasing energy efficiency in all sectors of the city by 10 percent by the year 2000 This policy was amended in 1993 with the adoption of the Carbon Dioxide Reduction Strategy, which sets a goal of reducing CO_2 emissions related to fossil fuel use 20% below 1990 levels by 2010

B. Regulations the City Enforces or Must Meet State Building Code

- **Oregon's Building Code** for residential and commercial construction mandates energy-efficient building practices and minimum equipment efficiencies These statewide codes, which were updated in 1990 (residential) and 1995 (commercial), establish Oregon as one of the leading states in energy-efficiency construction requirements Portland's Bureau of Buildings enforces these state codes during the plan approval and building permit processes
- **Federal Energy Product Standards**· The federal Energy Policy Act of 1992 outlines minimum efficiencies for new electric motors, HVAC equipment, lighting fixtures, lamps and other energy-using products Many inefficient products used in the commercial sector and to a lesser degree the residential sector, have been phased out and are no longer for sale in the U S New or replacement products must meet the efficiency standards

C Voluntary Programs the City Promotes Externally

- **Businesses for an Environmentally Sustainable Tomorrow (BEST)** BEST is a free service offered by the City of Portland to help private businesses identify innovative and profitable ways to conserve natural resources and prevent pollution The goal is to help businesses be more competitive by adopting practices that are cleaner, cheaper, faster and more efficient The Water Bureau, Bureau of Environmental Services and Energy Office offer technical advice on water and energy efficiency; transportation and telework, and reduction of solid waste, waste water and toxic pollutants In partnership with other organizations in the community, an annual awards breakfast is held each April to recognize companies who excel in sustainable practices
- **Rebuild America**· This partnership program is funded by the US Department of Energy and managed locally by the Energy Office It offers an extensive, easy-to-use package of energy-efficiency services for commercial, institutional and multifamily customers in the Portland metropolitan area It promotes the efficient use of all fuels and other natural resources by building on existing city, state and utility rebates, tax credits and financing programs
- **Climate Wise.** Climate Wise is a voluntary effort promoted by the Energy Office to encourage industrial businesses to increase energy efficiency, reduce greenhouse gases and prevent pollution Businesses that sign on as Climate Wise businesses develop action plans to meet their goals and gain recognition for their success Twenty-five Portland area businesses have signed Climate Wise pledges and eight have completed their action plans

D. Internal Building Practices

City Energy Challenge In 1991, the Energy Office initiated the City Energy Challenge with a goal of reducing the City's energy bill by 10 percent by the year 2000 Portland has eight city bureaus and divisions that manage facilities and collectively pay 830 separate electricity, natural gas and transportation fuel accounts After six years, the savings from this program have climbed to $1 3 million annually Savings continue to grow as bureaus embrace the benefits of energy efficiency The revised goal is to reach $1 5 million in annual savings, representing 17 percent of Portland's $9 million annual bill for electricity, natural gas and transportation fuels.

City Energy Challenge activities are funded by assessing bureaus 1% of their energy costs, with a maximum of $15,000 per bureau Capital investments for energy projects are in addition to this amount Most projects completed have simple paybacks ranging from four to six years with a return on investment of 15 to 25 percent In addition to dollar savings, City Energy Challenge brings other benefits, such as reduced facility maintenance costs, improved safety, healthier air, quality lighting and improved worker productivity and comfort

Solid Waste, Recycling and Purchasing

A. Citywide Goal

Portland's adopted goal is a 54 percent recycling rate in the year 2000 Bureau of Environmental Services (BES) is currently developing a plan to achieve this target

B. Regulations the City Enforces or Must Meet

- **State Purchasing Code** Under Oregon law (ORS 279 570), public agencies must give preference to materials and supplies made from recycled materials if the product is readily available, meets applicable standards, can be substituted for a comparable non-recycled product, and the recycled product costs do not exceed the costs of non-recycled products by more than five percent The statute further requires all public agencies establish purchasing practices that assure, to the maximum extent economically feasible, the purchase of materials that can be recycled or reused
- **City Code** Chapter 5 32 160 provides that the City of Portland use recycled paper when practical and provides for a 5 percent price preference for recycled paper on all paper products Also, in 1988, City Council, by Resolution 34498, directed that the City purchase retread tires, recycled motor oil, compost and bark dust

C. Voluntary Programs the City Promotes Externally

Pollution Prevention Program The Pollution Prevention Program helps the business community develop innovative ways to reduce pollutant contributions to water, air and other media Results are achieved through on-site visits to evaluate opportunities for pollution reduction, including waste reduction The program also fosters prevention programs within City government and has provided pollution prevention training to City personnel

D. Internal Building Practices

- **Construction and Demolition Recycling** Recycling Plan Forms are also required for construction and demolition projects valued at $50,000 or more Currently, the Bureau of Buildings provides BES with a weekly list of permits issued, and BES sends a Recycling Plan Form to the general contractor for each project The form is to be returned to BES within two weeks The content of forms submitted for City projects was not reviewed as part of this study
- **Purchasing Policies** The Bureau of Purchases is in the process of updating the purchasing manual that individual bureaus use when buying products and services As part of the update, they are incorporating the new state requirements for purchasing products with recycling content The updated manual should be complete by December 1999

Water Use

A. Citywide Goal

The Regional Water Supply Plan sets a conservation target to reduce average peak season demand by 8 1 % or 19 3 million gallons per day by the year 2020 The conservation target ramps up to about 18% of peak season demand by the year 2050 This target is specific to new regional water conservation programs Currently, regional water providers are defining individual water providers' responsibility to help meet the regional target

B. Regulations the City Enforces or Must Meet

Federal Energy Policy Act: The federal Energy Policy Act of 1992 also includes efficiency standards for plumbing fixtures, which includes showerheads, faucet aerators and toilets Inefficient plumbing fixtures cannot be sold in the United States and new or replacement products must meet the efficiency standards Since 1993, all new City construction has included water-efficient fixtures

C. Voluntary Programs the City Promotes Externally

- **Business, Industry, and Government (BIG) Program:** The BIG program was established to help business, industrial and government customers reduce water use The program helps these customers with conservation and, frequently, cost-saving management of water use Seven of the 15 largest commercial customers participate in the Bureau's programs for increased conservation and efficiency During a five year period ending in 1996, top BIG customers reduced consumption by approximately 20% - a half billion gallons per year The Metro Washington Park Zoo's modifications to exhibits have cut water use by 15%, or 20 million gallons per year
- **Outdoor Water Audit Pilot:** Targeting residential high water users, the Water Bureau has conducted nearly 400 irrigation system water audits The program offers a review of the efficiency of the irrigation system and may involve installing new controls to improve efficiency The bureau will analyze the results of the pilot program to determine the cost-effectiveness of expanding it
- **Landscape Seminars:** In partnership with the Columbia Willamette Water Conservation Coalition, the Water Bureau offers up to four group landscape seminars to residents that address efficient irrigation, plant selection and soil preparation
- **Water Conservation Kit Program.** From 1992 to 1994, the Water Bureau and regional water providers partnered with local energy utilities to install water-saving devices in Portland area homes The Water Bureau contributed toilet water displacement bags, faucet aerators and leak detection tablets These kits are still available to customers, if requested More than 100,000 kits have been installed in Portland area homes
- **WashWise:** The Portland Water Bureau joined with the Northwest Energy Efficiency Alliance (NEEA) to educate and promote resource-efficient washing machines that use 40 percent less water than standard machines The NEEA program is consistent with the Department of Energy and the Environmental Protection Agency's national Energy Star program in hopes of transforming the market for resource-efficient washers

D. What the City Is Doing Now Internally

- The City does not currently maintain a comprehensive report on internal water use City agencies are billed separately for water use, and in some instances, billing is done through a journal entry process, so usage monitoring is not as easy as it is for the average homeowner The Bureau's new **Customer Information System (CIS)** will be installed by 1999 The new system will be able to generate customized reports that make it easy to track and analyze City water use by user-designated criteria City facilities do have meters, and in the Portland Building submeters have been installed to monitor specific functions
- The Water Bureau will conduct a **leak detection program** starting next year Based on a previous program and the experience of other water districts, this is estimated to result in a 5-10% overall water savings Reservoir #5 on Mt Tabor is under renovation, and leakage will be reduced by several million gallons per year

Water Quality

A. Citywide Goal

The city's goal for water quality is to have healthy urban streams and healthy Willamette and Columbia Rivers and to comply with the Safe Drinking Water Act, which involves protection programs for both the Bull Run surface water supply and the Columbia South Shore groundwater supply.

B. Regulations the City Enforces or Must Meet

- **Clean Water Act—National Pollution Discharge Elimination System (NPDES):** To comply with the federal Clean Water Act, the City must develop and implement a plan to prevent stormwater from carrying pollution to local waterways The NPDES permit requires annual reporting to demonstrate compliance with the stormwater management plan and progress in mitigating stormwater pollution
- **Endangered Species Act.** In 1998 the National Marine Fisheries Service (NMFS) listed steelhead trout and other species of salmon as threatened species in the lower Columbia River basin, including both the lower Willamette and Bull Run watersheds This listing occurred under the Endangered Species Act (ESA) The City, led by the Bureau of Environmental Services, is in the process of developing its response to the listing, which will require the City to review its actions that impact the fish
- **Combined Sewer Overflows:** The City is presently subject to an order regarding combined sewer overflows (CSO), which dump raw sewage into the Willamette River and Columbia Slough during times of heavy stormwater runoff The order requires major construction as well as changes in practices The CSO program will cost approximately $1 billion Most of these measures are directly related to capital improvements in the collection and treatment of wastewater as well as the removal of stormwater from the system when feasible
- **Industrial Source Control Division.** The City issues and manages industrial wastewater discharge permits to ensure protection of the sewer system Any activity that discharges non-domestic wastewater into the sewer system is required to have a permit ISCD staff work with businesses and industries involved in improper disposal of wastewater (unpermitted and non-domestic sources) to the city's sewerage system Cases are resolved using education, technical assistance and enforcement
- **Coordinated Site Analysis (CSA):** The CSA program is designed to provide senior staff, project managers and planners at the City with advanced information about property under consideration for acquisition, development or disposal It addresses the issues for all sites under consideration for development, about the risk of environmental liability and protection for worker/citizen health and the environment The CSA program investigates and reports on the levels and extent of contamination/hazardous wastes and environmental sensitivity (such as wetland delineation) at the proposed development
- **Commercial Building Plan Review:** BES staff evaluates, then approves or denies applications for commercial building permits The program manager assures that all proposed new construction and redevelopment is consistent with local, state and federal water quality regulations

C. Voluntary Programs the City Promotes Externally

- **Clean River Works** Clean River Works is a BES outreach and involvement campaign that encourages citizens to learn about how their actions can impact water quality and how the rates they pay are an investment in clean rivers The campaign also informs the public, highlighting opportunities for participation in bureau-sponsored activities In addition, "Clean River Tips" posters have been provided to the community, along with interpretive signs on the Willamette River describing water quality challenges and how citizens can be involved "Clean River Tips" provided by the Bureau include alternatives to toxic substances for cleaners and other household products
- **Pollution Prevention Program** The Pollution Prevention Program helps the business community develop innovative ways to reduce pollutant contributions to water, air and other media Results are achieved through on-site visits to evaluate opportunities for pollution reduction The Pollution Prevention Program often partners with Department of Environmental Quality's Environmental Assistance Program to provide technical assistance to businesses and government The program also fosters prevention programs within city government and has provided pollution prevention training to City personnel
- **Downspout Disconnect Program:** BES is asking homeowners in targeted areas to let their rooftop runoff soak into the ground rather than drain to the city's combined sewer system This is a relatively simple way to decrease the volume of stormwater in the city's sewers The bureau offers guidance and reimburses $53 to residents for each disconnected downspout, or provides the service to households through a neighborhood or community association work crew free of charge The City has targeted 50,000 homes with the goal of removing up to 50 percent of the residential roof water from city sewers, thereby saving millions of dollars in

combined sewer overflow (CSO) costs The work completed as of spring 1998 has helped remove approximately 61 million gallons of roof water from sewers each year

- **Naturescaping for Clean Rivers:** In specific areas, such as the Columbia Slough, the Bureau of Environmental Services actively works the community to promote land stewardship that will protect water quality Activities include restoration of stream banks and preservation of wetlands In partnership with the East Multnomah Soil and Water Conservation District, BES offers free workshops to the public on Naturescaping—landscaping that incorporates native plants and trees into relatively natural settings

D. What the City Is Doing Now Internally

- **ESA Response:** In response to the listing of steelhead as a threatened species, the Bureau of Environmental Services is leading a City-wide effort to review City activities, projects and policies for their impact on fish and habitat It will cover a broad range of City activities, including downtown development projects, transportation projects, and zoning policies An inter-bureau team, coordinated by BES, will guide the City's management of this issue As the City develops its ESA strategy, all bureaus will need to become increasingly sensitive to any activities that affect water quality
- **Industrial Source Control:** The Bureau of Environmental Services' Industrial Source Control Division has worked with several bureaus to reduce water pollution from City facilities Approximately .25 FTE is devoted to these internal projects There are many remaining opportunities where the City could reduce its water quality impacts by developing best management practices plans for specific facilities

Transportation

A. Citywide Goals

City transportation goals include the following

- **Central City Traffic Management Plan (CCTMP)** The CCTMP was adopted by ordinance 169535 in December 1995 It amended the city zoning code to encourage growth and housing in the central city, increase alternative transportation and reduce auto use
- **Parking Regulations:** The CCTMP parking policy, reflected in the zoning code, manages parking through parking ratios, limits on surface parking and other parking management strategies
- **Bicycle Master Plan** Adopted in 1995, the 20 year plan calls for an increase the share of bicycle travel to 10 percent, reduce bicycle-motor vehicle crashes by 20 percent and make the bicycle an integral part of daily life in Portland

B. Regulations the City Enforces or Must Meet

- **Central City Traffic Management Plan—Parking Policy** This policy, which is reflected in the zoning code, manages parking through parking ratios, limits on surface parking and other parking management strategies
- **City Code on Bicycle Parking** The City requires developers to include both long- and short-term bicycle parking at all new multifamily, commercial and industrial buildings The requirements for the number of short- and long-term bicycle parking spaces vary depending on the use and net square footage of the building Existing buildings outside of downtown and the Lloyd Center are required to meet the bicycle parking code when they do renovations valued at over $100,000 Buildings downtown and in the Lloyd Center district are asked to add parking on a voluntary basis, although the city code does allow a floor-area bonus for developments in the Central City Planning District that provide bicycle showers, lockers and long-term parking
- **Oregon's Employee Commute Options Rule (ECO-Rule):** City facilities with more than 50 employees are subject to Oregon's Employee Commute Options Rule (ECO-Rule), which requires work sites to develop a plan to reduce employee drive-alone commute trips by 10 percent

C. Voluntary Programs the City Promotes Externally

City Bicycle Program: This program works to make bicycling a more attractive transportation choice To accomplish this, the Bicycle Program works on planning, implementing and maintaining a comprehensive network of bikeways, providing bike parking, and educating people about the benefits of bicycling as a means of transportation As of January 1998, the city had 185 miles of bikeways and an additional 55 miles funded, but not yet built

D. What the City Is Doing Now Internally

Trip Reduction Incentive Program (TRIP): Portland's Bureau of Traffic Management (BTM) established the Trip Reduction Incentive Program (TRIP) for the 1994-96 biennium in an effort to reduce auto-related air pollution, and to meet the goals set forth in the Clean Air Act and the state Transportation Planning Rule BTM initiated a two-year pilot program that offered non-represented City employees a $20-per-month incentive to commute by transit or carpool After the first year of the pilot program, 40 percent of the City's non-represented employees either commuted by carpool or transit Program promotion and on-site management was accomplished with support from 35 transportation coordinators, one in each of the City's participating offices or bureaus

Toxic Substances

A. Citywide Goal

The City of Portland does not currently have established citywide goals or policies for reducing the use of toxic substances such as paints, solvents, cleaning materials and pesticides Nonetheless, the City is actively engaged in protecting the public and the environment from toxic substances, and the City has goals for improving water quality, which can be affected by toxic substances

B. Regulations The City Enforces or Must Meet

- **Toxics Use Reduction Act** In 1989, the State of Oregon enacted the Toxics Use Reduction and Hazardous Waste Reduction Act (ORS 465 003 through 465 037), requiring both industry and governmental agencies to review operations that use toxic substances and generate hazardous waste and to develop and implement plans to reduce the use of such materials An annual progress report must be completed and sent to DEQ
- **Clean Water Act—National Pollution Discharge Elimination System (NPDES):** Federal requirements restrict the discharge of hazardous or toxic substances to the city's sewer system This protects worker health and safety as well as the function of the collection and treatment systems The statutes protecting both the sanitary and storm sewers are regulated and enforced by the Bureau of Environmental Services, Industrial Source Control Division
- **City Code Chapter 17.34 030 (a)(4) and (a)(5).** City Code prohibits hazardous or toxic materials from being disposed into the sanitary sewer or the separated storm sewer The code addresses toxic substances, which alone or by interaction with other wastes, cause health and safety problems or hazards or interference with the functions of the sanitary sewer system It also prohibits discharge of hazardous or toxic substances that would ultimately reach rivers or streams Similar provisions regarding the stormwater system are in City Code Chapter 17 39 030 B, which also prohibits discharge of "toxic chemicals in toxic concentrations" and discharges that cause "visible discoloration" to receiving waters

C. Voluntary Programs the City Promotes Externally

- **Brownfields:** Brownfields are used lands where expansion or redevelopment is complicated by real or perceived environmental contamination The Portland Brownfields Initiative, managed by the Office of Transportation, increases public awareness of brownfields and improves public access to information regarding properties in Portland The city was also recently selected as a brownfields "showcase community" by the Environmental

Protection Agency, providing access to federal resources in the restoration, development and management of brownfields.

- **Clean River Works:** Clean River Works is a BES outreach and involvement campaign that encourages citizens to learn about how their actions can impact water quality and how the rates they pay are an investment in clean rivers Using radio, television and direct mail, the campaign informs the public and highlights opportunities for participation in bureau-sponsored activities "Clean River Tips" provided by the Bureau include alternatives to toxic substances for cleaners and other household products
- **Naturescaping for Clean Rivers:** In partnership with the East Multnomah Soil and Water Conservation District, BES offers free workshops to the public on Naturescaping - landscaping that incorporates native plants and trees into relatively natural settings Native plants need little or no fertilizer or pesticides
- **Pollution Prevention Program:** The Pollution Prevention Program helps the business community develop innovative ways to reduce pollutant contributions to water, air and other media. Results are achieved through on-site visits to evaluate opportunities for pollution reduction The program also fosters prevention programs within city government and has provided pollution prevention training to City personnel

D. What the City is Doing Now Internally

- **Pesticides** In 1988, City Council passed a resolution that directs Portland Parks and Recreation to "adopt and begin implementation of a grounds maintenance policy embodying the principles of Integrated Pest Management," an approach that minimizes negative impacts on the environment and human health When considering pest control strategies, staff must consider prevention first and chemical products last The Parks Bureau has responsibility for the vast majority of grounds maintenance within the City In addition to their own properties, Parks performs grounds maintenance for a number properties managed by BES, Maintenance, Office of Transportation, and General Services
- **Brownfields** The City does not maintain a complete listing of brownfields or potential brownfields that are presently owned by the City However, the Brownfield Initiative of the Office of Transportation will develop better strategies for the City to manage any brownfield properties it may own
- **Other Uses of Toxic Substances:**
  1. Paints The Water Bureau is using more environmentally friendly paints They have also switched to tanks that do not require painting, and are using hydroblasting rather than sand blasting whenever possible Painters with Parks and Recreation have switched to paints that don't require thinner
  2. Solvents The Fire Bureau switched from a parts cleaner containing hydrofluoric acid to a significantly less caustic cleaner
  3. Foam used to fight fires The Fire Bureau adopted guidelines to reduce use of foam for training purposes

Vegetation

A. Citywide Goals

Citywide goals for enhancing green spaces, tree canopy, streamside vegetation and other scenic resources are included in the following

- **Urban Forestry Management Plan** The Urban Forestry Management Plan establishes goals for the comprehensive and multi-objective management of Portland's urban forest The plan is based on 14 ecological principles that balance community needs with the needs of the natural system Recommended actions are identified in eight key areas. One common element is the need to coordinate the many activities among the various agencies and groups that manage the urban forest.
- **Carbon Dioxide Reduction Strategy:** Adopted in 1993, the CO_2 Reduction Strategy calls for extensive urban area tree planting, expanding the maintenance of existing trees, and planting an additional 400,000 street trees

B. Regulations the City Enforces or Must Meet

- **Statewide Land Use Goals:** Statewide goals direct local governments to conserve open spaces and protect natural and scenic resources, maintain and improve the quality of air, water, land resources of the state, and protect, conserve, and maintain the lands along the Willamette River
- **Portland City Code- Street Tree and Other Public Tree Regulations, Chapter 20.40** Chapter 20 40 provides for the management, conservation, and enhancement of existing trees in parks and public areas owned by the City of Portland and in public rights of way Portland's **Tree Cutting Ordinance** (168486) is also included in Chapter 20 40 This ordinance requires a permit to cut or remove all trees over 12 inches in diameter on developable properties in the city of Portland prior to the issuance of a building permit
- **Landscape Requirements for Parking and Loading Areas, Chapter 33 266**· Landscaping requirements to provide one tree for every 200 square feet of landscaping and one tree for every four parking stalls
- **Landscaping and Screening Requirements, Chapter 33.248.** Requires re-establishment of vegetation for aesthetic health and urban wildlife, promotes retention of existing vegetation and native plants and mitigates for loss of natural resource values, establishes standards to be met in various areas of the city and regulates the types and placement of plants
- **Environmental Zones, Chapter 33 430** Established two environmental overlay zones, covering approximately 15,825 acres Environmental overlay zones are regulatory tools to protect significant natural resources within the city The "Environmental Protection Zone" (8,085 acres designated) prohibits conflicting uses and fully protects resources, and the "Environmental Conservation Zone" (7,740 acres designated) balances allowing environmentally sensitive development with resource protection More than half of the area in environmental zones is publicly owned Environmental zones are located in the Columbia Corridor, Balch Creek Watershed, Johnson Creek Basin, Northwest Hills, Southwest Hills, East Buttes and Terraces, Fanno Creek and Skyline West
- **Greenway Zones, Chapter 33 440** Greenway Zones, regulates and protects lands along Portland's rivers Landscaping is required to reestablish vegetative cover in the required setbacks One tree per 20 feet of river frontage and one shrub per two feet of river frontage Native plants are required
- **Plan Districts, Chapters 33 515, 33.535, 33.570, 33 575** Plan districts provide additional area-specific restrictions on tree and other vegetation removal They also contain additional density restrictions, impervious surface limitations, and erosion control requirements

C. Voluntary Programs the City Promotes Externally

- **Naturescaping for Clean Rivers** The Bureau of Environmental Services helps to sponsor half-day "Naturescaping for Clean Rivers" workshops These classes educate residents about native species and alternatives to pesticides
- **Urban Parks Program** This program is exploring new ways for citizens to get involved in not only building their own greenspaces, but maintaining them as well The Program has successfully worked with citizens to make improvements to Alberta Park and Whitaker Ponds and to design and build Two Plum Garden Park in Northeast Portland
- **Public Education and Involvement Plan** Adopted by the Urban Forestry Commission in February 1998, this plan is currently being implemented in the following ways
  - Education of developers, planners, engineers and architects on "Building with Trees "
  - Distribution of Urban Forestry related brochures and materials
  - Partnerships with other Environmental Education Programs
  - Commenting on Community Plans to incorporate urban forestry information and project ideas

D. What the City is Doing Now Internally

- **Planting Trees and Vegetation:** Several Bureaus, and several divisions of Parks and Recreation, have responsibility for meeting vegetation goals Urban Forestry plays a coordinating role in seeing that the City implements its Urban Forestry Management Plan
- **Urban Forestry Division of Parks and Recreation.** The division manages public trees and other vegetation, coordinates planning, planting, inspection and maintenance of street trees with other bureaus and provides forestry services at City-owned facilities through inter-agency agreements Urban Forestry, Green City Data and Portland State University have begun an inventory of street trees
- **Bureau of Transportation (PDOT):** As part of corridor improvements projects, PDOT plants approximately 2,000 street trees per year They work with the Parks Horticulture Division to design, install, and maintain landscaping for street area projects incorporates vegetation into urban streetscapes
- **Bureau of Environmental Services (BES)·** BES is increasingly using vegetation to meet its water quality goals BES annually reports the feet of streambank restored through planting native vegetation
- **New Construction:** There is no formal process that encourages new City facilities to preserve or enhance vegetation beyond code requirements, and there is no inventory of trees and vegetation removed or planted as part of development projects

Appendix D: Existing Zoning Code Incentives for Development

33.120.265 Amenity Bonuses for Multi-family Dwellings

A Purpose and Description

Special amenity bonuses for increased density are intended to improve the livability of multi-dwelling developments for their residents and to promote family oriented multi-dwelling developments The amenity bonuses are designed to allow additional dwelling units in a manner that is still consistent with the purposes of the multi-dwelling zones

The bonuses are applicable to a range of development sizes However, they are more practical or workable for larger projects Not all bonus options will be applicable for all situations The amenity options are designed to provide incentives, while leaving the specific choices to the developer Some options involve providing additional features, such as children's play areas. Others require improved materials, such as additional sound insulation

The amount of the bonus for each option is a result of balancing several factors These include

- The likelihood that the amenity will be provided without the use of incentives,
- The potential cost to the developer, and
- The importance of the amenity

B Regulations

1 Qualifying types of development

The amenity bonus provisions are applicable to all housing types in the R3, R2, and R1 zones

2 Computation of the bonus

The percentages of all of the bonus options included in the project are added together The total is then applied to the allowed number of units to determine the additional units allowed Fractions of additional units earned are not counted

3 Maximum bonus

The maximum density increase allowed for a development is 50 percent Increases over 50 percent are prohibited

4 Compliance with the standards

The bonus amenity standards must be met in full to receive the bonus, exceptions are prohibited In addition, adjustments to the development standards of the base zone, overlay zone, or plan district are prohibited if the project is to receive any density bonuses It is the responsibility of the applicant to document that all of the amenity bonus requirements are met Documentation is required prior to issuance of building permits for the bonus units

5 Base zone site development standards

The additional units must comply with all applicable site development standards Any development feature provided to comply with the requirements of the base zone, such as the required outdoor area requirement, may not be counted towards the calculation of bonus density

6 Covenants

The applicant must sign a covenant that ensures that the amenities provided to receive any bonus density will continue to be provided for the life of the project The covenant must comply with the standards in 33 700 060, Covenants with the City

C. The amenity bonus options

1 Outdoor recreation facilities

Outdoor recreational facilities may include a tennis or basketball court, ball field, swimming pool, horseshoe pit, gazebo, permanent picnic tables, and similar items The density bonus is 2 percent for each 1/2 of 1 percent of the overall project development cost spent on outdoor recreation facilities There is a maximum of 10 percent density increase allowed for this bonus

2 Children's play areas
The density bonus for this amenity is 5 percent A qualifying children's play area must comply with all of the following standards

a) Size and layout Each children's play area must be at least 1,000 square feet and clearly delineated Each must be of such shape to allow a square 25 feet on a side to fit in the area At least 400 square feet of the area must be in grass Children's play areas must be separated from any other outdoor recreational facilities
b) Play equipment Each children's play area must include a play structure at least 100 square feet in area, a swing structure with at least 4 swings, and at least one of the following a slide, permanent sand box, permanent wading pool, or other children's play equipment commonly found in a public park Equipment must be of adequate materials to match the expected use Proposed equipment must be approved by the Parks Bureau
c) Fencing Each children's play area must be fenced along any perimeter which is within 10 feet of a street, alley, property line, or parking area

3 Three bedroom units
A bonus of 5 percent is allowed if 10 percent of the development's units have at least 3 bedrooms A bonus of 10 percent is allowed if 20 percent or more of the development's unit have at least 3 bedrooms If between 10 percent and 20 percent of the units have at least 3 bedrooms, then the bonus is prorated

4 Storage areas
The density bonus for this amenity is 5 percent The bonus is allowed if all units are provided with interior storage and additional storage for large items, as indicated below

a) Interior storage
   I Interior storage areas must comply with all of the following minimum dimensions
   II Kitchens - 20 square feet of drawers and 50 square feet of shelf space Shelves must have at least 12 inches of vertical clearance
   III Bedroom closets - 16 square feet in floor area, and one in each bedroom
   IV Linen closet - 10 square feet of shelving, and may be located in a hallway or bathroom
   V Entry closet - 10 square feet of floor area
   VI. Storage for large items
b) Storage areas must be fully enclosed, be dry, and have locks if they are not located in the dwelling They must be at least 50 square feet in floor area, and at least 7 feet high They must be located so as to be easily accessible for large items, such as barbecues, bicycles, and sports equipment

5 Sound insulation
The density bonus for this amenity is 10 percent To qualify for this bonus, the interior noise levels of multi-dwelling structures be reduced in 3 ways The reductions address noise from adjacent dwellings and from outdoors, especially from busy streets

a) The sound insulation of all party walls, walls between corridors and units, and in floor-ceiling assemblies must comply with a Sound Transmission Class (STC) of 55 (50 if field-tested) STC standards are stated in Chapter 35 of the Uniform Building Code
b) The STC rating on all entrance doors assemblies from interior corridors must be at least 30, as documented by acoustic laboratory tests of the doors
c) The STC rating on all windows, skylights, and exterior doors, must be at least 35, as documented by acoustic laboratory tests

6 Crime prevention
The density bonus for this amenity is 10 percent The bonus is allowed if all units have security features that comply with items 1 through 6 of the Residential Security Recommendations of the Portland Police Bureau In addition, exterior lights which comply with the lighting standards of the Crime Prevention Division of the Portland Police Bureau must be provided Development plans must be certified by the Crime Prevention Division of the Portland Police Bureau as complying with these provisions

7 Energy-efficient buildings
The density bonus for this amenity is 5 percent The bonus is allowed if all of the dwelling units comply with the Model Conservation Standards of the Northwest Power Planning Council The development plans must be certified by a licensed engineer or local electrical utility as complying with the standards

8 Solar water heating
The density bonus for this amenity is 5 percent The bonus is allowed if solar-heated water is provided to all units Systems may be active or passive Systems must qualify for the Oregon State solar energy tax credit or be rated by the Solar Rating and Certification Corporation (SRRC) Applicants must provide documentation that the provisions are met

9 Larger required outdoor areas
The density bonus for this amenity is 5 percent To qualify for this amenity, ground level required outdoor areas must be twice the area required by 33.120 240, above Upper level outdoor required areas must be 1-1/2 times the area required by 33 120 240 In both cases, the areas must be clearly delineated and allow for privacy from other outdoor areas.

33.445.310 Historic Preservation Incentives

A Incentives allowed without a historic preservation incentive review The incentives in this Subsection are permitted when they meet the requirements of sections 33 445 320, Eligibility for Historic Preservation Incentives, and section 33 445 330, Requirements For All Historic Preservation Incentives, and the regulations of this subsection The incentives are

1 Transfer of density and floor area ratio (FAR)
Transfer of density from a landmark to another location is allowed in Multi-Dwelling, Commercial, and Employment zones In Multi-Dwelling zones, the transfer is regulated by Subsection 120 205 E, Transfer of Density In Commercial zones the transfer of FAR is regulated by Subsection 33 130 205 C, Transfer of FAR for Landmarks In Employment zones the transfer of FAR is regulated by Subsection 33 140 205 C, Transfer FAR for Landmarks

2 Additional density in Single-Dwelling zones
Landmarks in Single-Dwelling zones may be used as multi-dwelling structures, up to a maximum of one dwelling unit for each 1,000 square feet of site area No additional off-street parking is required, but the existing number of off-street parking spaces must be retained The landmark may be expanded and the new floor area used for additional dwelling units if the expansion is approved through a historic design review procedure

3 Additional density in Multi-Dwelling zones
Landmarks located in multi-dwelling zones may be used as multi-dwelling structures, with no maximum density All of the existing floor area of the landmark building may be used for dwelling units and accessory use No additional off-street parking is required, but the existing number of off-street parking spaces must be retained The landmark may be expanded and the new floor area used for additional dwelling units if the expansion is approved through a historic design review procedure

4 Daycare in residential zones
Daycare is an allowed use in landmarks in residential zones

B Incentives allowed with a historic preservation incentive review. The incentives in this Subsection are permitted when they meet the requirements of Section 33 445 320, Eligibility for Historic Preservation Incentives, the standards of Section 33 445.330, Requirements for All Historic Preservation Incentives, and are approved through a historic preservation incentive review The incentives are

1 Nonresidential uses in the RX zone
In the RX, zone use of 100 percent of the floor area of a landmark may be approved Use of this incentive on sites which front on the Park Blocks frontages shown on Map 120-1 is prohibited Uses that may be approved are Retail Sales And Service, Office, Major Event Entertainment, and Manufacturing And Production The regulations of this paragraph supersede the regulations of Paragraph 33 120 100 B 3, Retail Sales And Service and Office Uses in the RX zone

2 Conditional Uses in Historic Landmarks
In R, C, and E zones, applications for conditional uses in a Landmark are processed through a Type II procedure

33.510.210 Floor Area and Height Bonus Options

A Purpose
Floor area and height bonus options are offered as incentives to encourage facilities and amenities which implement the Central City Plan

B General regulations
1 The bonus options are only allowed in situations where stated Only new developments are eligible for the bonuses unless specifically stated otherwise Exceptions to the requirements and the amount of bonus floor area or height earned are prohibited

2 Projects may use more than one bonus option unless specifically stated otherwise Bonuses may be done in conjunction with allowed transfers of floor area

3 The maximum floor area increase that may be earned through the bonus options must be within the limits for overall floor area increases stated in 33 510 200 C

4 Buildings using bonus floor area must not exceed the maximum height limits shown on Map 510-3 unless eligible for bonus height

5 In residential bonus target areas, as shown on Map 510-4 , the residential bonus option must be used before any other bonus A bonus floor area ratio of at least 1 5 to 1 from the residential bonus option must be earned before the project qualifies for other bonus options

C Bonus floor area options
Additional development potential in the form of floor area is earned for a project when the project includes any of the specified features listed below The bonus floor area amounts are additions to the maximum floor area ratios shown on Map 510-2

1 Residential bonus option
   a) In the CX and EX zones, projects providing housing receive bonus floor area New development and alterations to existing development are eligible for this bonus For each square foot of floor area developed and committed as housing, a bonus of 1 square foot of additional floor area is earned, up to an additional floor area ratio of 3 to 1 Projects in the required residential opportunity areas are eligible for this bonus
   b) The additional floor area may be used entirely for housing or partially for nonresidential uses Projects which include housing built under building permits issued prior to July 1, 1998 may commit up to 2/3 of the bonus floor area to nonresidential uses Projects built under building permits issued after July 1, 1998 may commit up to 1/2 of their bonus floor area to nonresidential uses
   c) Residential portions of mixed-use projects using this bonus must be completed and receive an occupancy permit in advance or at the same time as an occupancy permit for any nonresidential portion of the project The property owner must execute a covenant with the City ensuring continuation and maintenance of the housing by the property owner The covenant must comply with the requirements of 33 700 060

2 Day care bonus option
In the CX, EX, and RX zones, projects providing day care facilities for children receive bonus floor area For each square foot of area developed and committed to exclusive use as a day care facility, a bonus of three square feet of additional floor area is earned To qualify for this bonus, the day care facility must meet all of the following requirements

a) The day care facility must be used for the purpose of day care for the life of the building The facility must be open during normal business hours at least five days each week and fifty weeks each calendar year
b) The day care facility must be maintained and kept in a good state of repair throughout the life of the building
c) The property owner must execute a covenant with the City ensuring continuation and maintenance of the day care facility by the property owner The covenant must comply with the requirements of 33 700 060

3 Retail use bonus option
In the retail use bonus target area, shown on Map 510-4, projects providing retail uses receive bonus floor area To qualify for this bonus option, floor area equal to at least 1/2 of the site area must be committed to retail space For each square foot of retail space over this amount, one additional square foot of floor area is earned The property owner must execute a covenant with the City attached to the deed of the site ensuring continuation and maintenance of the qualifying retail spaces by the property owner The covenant must comply with the requirements of 33 700 060

4 Rooftop gardens option
In CX, EX, and RX zones, developments with rooftop gardens receive bonus floor area For each square foot of rooftop garden area, a bonus of one square foot of additional floor area is earned To qualify for this bonus option, rooftop gardens must meet all of the following requirements

a) The rooftop garden must cover at least 50 percent of the roof area of the building and at least 30 percent of the garden area must contain plants
b) The property owner must execute a covenant with the City ensuring continuation and maintenance of the rooftop garden by the property owner The covenant must comply with the requirements of 33 700 060

5 "Theaters on Broadway" bonus option
In the Broadway Theater bonus target area, projects providing theaters receive bonus floor area For each square foot of floor area developed as theater, a bonus of 2 square feet of additional floor area is earned Existing and new theaters qualify for this bonus The Broadway Theater target area is shown on Map 510-4 To qualify for this bonus, a theater must meet all the following requirements

a) The theater facilities must provide seating for at least 150 people
b) The theater space must be used for the life of the building and at least 200 performances must be given each calendar year Live theater performances and film exhibitions meet this requirement
c) The theater facilities must be maintained and kept in a good state of repair throughout the life of the building
d) The property owner must execute a covenant with the City ensuring compliance with these standards by the property owner The covenant must comply with the requirements of 33 700 060

6 "Percent for Art" bonus option
In all zones, new development or alterations to existing development which commit funds to public art receive bonus floor area Projects which commit 1 percent of their threshold value to public art earn additional floor area equal to the size of the site Projects committing more than 1 percent to public art earn additional floor area equal to 0 1 of the site area for each additional 0 1 percent of the project's threshold value up to a maximum total floor area increase of 2 times the site area For new development, threshold value is the sum of all construction costs shown on all building permits associated with the project, including site preparation Where some or all of the bonus floor area is being transferred, this includes costs for both the lot transferring the bonus and the site receiving the transfer of floor area For alterations to existing development, the threshold value is the sum of all construction costs as defined above plus the value of existing improvements to the property, as listed in the County Assessor's records Where some or all of the bonus floor area is being transferred, this includes costs and values for both the lot

transferring the bonus and the site receiving the transfer of floor area To qualify for this bonus, the public art must meet the following requirements

a) At least 25 percent of the project's public art funds must be placed in a Central City Public Art Trust fund, maintained by the Metropolitan Arts Commission The developer may place all of the public art funds in the trust fund The Central City Public Art Trust Fund is used to purchase and install public art only in the Central City plan district
b) The process and budget for selecting the artist and for selecting and installing the specific works of art to be included in the project must be approved by the Metropolitan Arts Commission The Metropolitan Arts Commission maintains and publishes guidelines and procedures for review, selection, installation, and payment for works of art included in a project
c) Works of art must be approved by the Metropolitan Arts Commission
d) Works of art must be placed on the outside of the building or at a location clearly visible and freely accessible to the public from the sidewalk during daylight hours The location of each work of art will be approved by the Metropolitan Arts Commission The Design Commission will recommend appropriate locations prior to the Arts Commission approval
e) The public art may not also be used to satisfy other requirements of City, State, or Federal law
f) The property owner must execute a covenant with the City ensuring installation, preservation, maintenance, and replacement if necessary of the public art The covenant must comply with the requirements of 33 700 060

7 Water features or public fountains bonus option

In CX, EX, and RX zones, projects which provide water features or public fountains as part of the development receive bonus floor area For each 0 1 percent of their threshold value that a project commits to development of water features or public fountains, an additional floor area equal to 0 1 of the site area is earned, up to a maximum of 0 5 of the site area For new development, threshold value is the sum of all construction costs shown on all building permits associated with the project, including site preparation Where some or all of the bonus floor area is being transferred, this includes costs for both the lot transferring the bonus and the site receiving the transfer of floor area For alterations to existing development, the threshold value is the sum of all construction costs as defined above plus the value of existing improvements to the property, as listed in the County Assessor's records Where some or all of the bonus floor area is being transferred, this includes costs and values for both the lot transferring the bonus and the site receiving the transfer of floor area To qualify for this bonus, the water feature or public fountain must meet all of the following requirements

a) The water feature or public fountain must be located outdoors on the site or abut the site in a right-of-way, unless another site is approved by the Design Commission It must be visible and accessible by the public from the sidewalks that provide access to the project
b) The water feature or fountain must be designed to use water efficiently with a low water make-up rate A method of keeping the water clean must be provided
c) The design and location of the water feature or public fountain must be approved as part of the design review of the total project
d) Water features and public fountains may not be counted to meet both this bonus option and the "Percent for Art" bonus option at the same time
e) The property owner must execute a covenant with the City ensuring the preservation, maintenance, and continued operation of the water feature or public fountain by the property owner The covenant must comply with the requirements of 33 700 060

8 Locker room bonus option

To encourage bicycling, projects in the CX and EX zones that provide locker room facilities and extra long-term bicycle parking receive bonus floor area For each square foot of area developed and committed to locker room facilities, a bonus of 40 square feet of additional floor area is earned To qualify for the bonus, the following must be met

a) The locker room facility must include showers, a dressing area, and lockers,
b) All tenants of the building must be able to use the locker room facility, and
c) At least 110 percent more than the required long-term bicycle parking for the site must be provided and must meet the standards of 33 266 220 B, Long-term Bicycle Parking

D General bonus heights

Bonus height is also earned at certain locations in addition to the bonus floor area achieved through the bonus options Bonus height is in addition to the maximum heights of Map 510-3 Qualifying areas, shown on Map 510-3, are located such that increased height will not violate established view corridors, the preservation of the character of historical districts, the protection of public open spaces from shadow, and the preservation of the City's visual focus on important buildings (such as the Union Station Clock Tower) The height bonus allowed is based on the FAR bonus options of Subsection C above In areas qualifying for a height bonus, the amount of bonus height awarded is based on the following schedule

1 For achieving a bonus floor area ratio of at least 1 to 1, but less than 2 to 1, a height bonus of 15 feet is earned
2 For achieving a bonus floor area ratio of at least 2 to 1, but less than 3 to 1, a height bonus of 30 feet is earned
3 For achieving a bonus floor area ratio of 3 to 1, a height bonus of 45 feet is earned
4 Locker room bonus option To encourage bicycling, projects in the CX and EX zones that provide locker room facilities and extra long-term bicycle parking receive bonus floor area For each square foot of area developed and committed to locker room facilities, a bonus of 40 square feet of additional floor area is earned To qualify for the bonus, the following must be met

a) The locker room facility must include showers, a dressing area, and lockers All tenants of the building must be able to use the locker room facility, and At least 110 percent more than the required long-term bicycle parking for the site must be provided and must meet the standards of 33 266 220 B, Long-term Bicycle Parking

E Bonus height option for housing

In the bonus height areas, building heights may be allowed to be greater than shown on the map if the bonus height is exclusively to accommodate housing The maximum height bonus that may be allowed is 75 feet Projects may not use both the bonus height options of this subsection and Subsection D above The approval of the bonus height is made as part of the design review of the project The bonus height will be approved if it is found to be necessary for the development of the maximum amount of floor area devoted to housing and if the increased height will not violate an established view corridor If the site is within 500 feet of an R zone, it must also be found that the proposed building will not cast shadows which have significant negative impacts on dwelling units in R zoned lands If the site is shown on Map 510-3 as eligible for the Open Space (OS) performance standard, it must also be found to meet the performance standards of Subsection 33 510 205 D If the site is on a block adjacent to the Yamhill or Skidmore Fountain/Old Town Historic Districts, it must also be found to meet the performance standards of Subsection 33 510 205 E

Appendix E: Current City of Portland Green Building Practices

Facilities

- **Water Pollution Control Lab** BES's new lab, which opened in 1997 in St John's, is an award winning example of landscape planning and environmentally effective use of plant materials Located at the Willamette River, the landscaping at the Pollution Control Lab features reduced turf and native plants, minimizing requirements for intensive watering and use of chemicals Additionally, a water quality pond, including wetland plants, filters runoff from impervious surfaces before discharge to the river The site is being monitored for effectiveness of the strategy and may provide models for use at other City facilities and by the public
- **City Hall** Early in the planning process, energy efficiency and sustainable building practices were integrated into this historic renovation As a result, City Hall uses an estimated 24 percent less electricity and natural gas, saving $15,000 each year A sampling of the energy-efficiency features includes energy efficient lighting that accommodates the historic character, extra insulation, energy-saving windows and two atrium skylights
- **Multnomah Arts Center.** This multi-use Parks Bureau facility houses a senior center, art gallery, community school, social services, Parks and Recreation programs and a neighborhood coalition office The 1920s facility had leaking steam pipes and a boiler that was likely to be condemned by state inspectors In 1992, the Energy Office worked with Parks and General Services staff to replace the heating system with a water loop heat pump— offering both heating and cooling—and retrofit the building's fluorescent lighting The proposed project cost exceeded the budget by $115,000 The solution, brokered by the Energy Office, used Oregon's Small Scale Energy Loan as supplemental funding, paid over a period of 15 years The new efficient HVAC system performs far better than users had previously experienced Net annual energy savings is 30 percent, with dollar savings exceeding $12,400 each year
- **Fuel Cell Power Plant·** A by-product of treating municipal wastewater in Portland is digester gas, or methane—the same gas sold by utility companies as natural gas A portion of this gas is used on site at the Columbia Boulevard Wastewater Treatment Plant to heat the building or in the treatment process, and some is sold to a neighboring business About 40 percent of the gas is surplus and burned before release into the atmosphere In 1995, the City undertook a Methane Utilization Study that identified 15 options for use of the surplus gas The alternative selected by facility managers was to install a 200-kilowatt hydrogen fuel cell that uses about 20 percent of the surplus gas to generate electricity, while producing no pollution The fuel cell, which will be installed by December 1998, will produce 1 5 million kilowatt-hours per year of clean, odorless and noise-free renewable power The power will be used on site and displace the need for the facility's backup generator The $1-million project is costing the City about $500,000, with remaining funding provided through grants and tax credits It will generate electricity valued at $102,000 per year Ultimately, the City has enough digester gas at the treatment plant for ten 200-kW fuel cells, which would provide 40 percent of the facility's electrical needs
- **Oil/Water Separators and Vehicle Washing at Fire Bureau Facilities** At its training center in Northeast Portland, the Fire Bureau has installed oil/water separators to capture the runoff from training activities, such as fire suppression foam When these materials are used on the impervious surfaces at the training center, the drainage is directed through the oil-water separator and then to the sanitary system, protecting the Columbia Slough from harmful pollutants
- **Columbia Boulevard Wastewater Treatment Plant** The wastewater treatment plant on Columbia Boulevard occupies 60 acres of land, 15 of which require watering An ultraviolet treatment system was recently added to the plant, allowing a portion of the treated effluent to be used to irrigate adjacent grounds This conserves water, reducing the burden on aquifers (the previous water source for irrigation) It also reduces the amount of treated wastewater discharged to the waterway, allowing the wastewater to be reused in a manner beneficial to the facility In addition to using treated wastewater for irrigation, the water is also used for washdown activities and for make-up water to the pond at the plant

Programs and Practices

- **Building Cleaning Practices**· The power washing of buildings produces a mixture of water and pollutants (soaps and other cleaning additives, paint and debris), which, if not captured, drains to the stormwater system and ultimately to rivers and streams The Bureau of General Services has modified its contracts for cleaning City buildings, requiring that the runoff from cleaning be captured and held for batch discharge to the sanitary system If no additives are used, the runoff must be directed through "bio bags" (fabric bags containing wood chips), which are placed around the storm drains to filter out sediments
- **SoilTrader** The Bureau of Environmental Services began this program in 1997 after a group of employees gathered to talk about several large upcoming bureau projects and the amount of excavated materials they would produce Excavated soil and gravel was being transported to, and disposed of, at landfills Most of the material could be used in other construction projects The result was SoilTrader, a website clearinghouse of information for construction projects in the greater Portland area The purpose of SoilTrader is to provide a resource for construction companies or agencies that have a need for soil or gravel, or have soil or gravel available as a result of excavation
- **Recycling of Concrete/Asphalt Aggregate.** The City generates cement concrete and asphalt concrete aggregate as a result of excavation at City job sites Aggregate materials are highly usable in the construction industry and have also increased in cost The City collects waste aggregate, breaks the larger pieces and screens out the fines The material is loaded into a crusher with the resulting product of 1-1/2 inch aggregate The fines may be used as back fill or as a cover material In 1997, this program avoided $250,000 in disposal costs and saved $174,000 by reusing 20,000 cubic yards of rock that otherwise would have been purchased The start-up and capital costs for this program were $315,000
- **Eastmoreland Golf Course** This Parks Bureau golf course goes well beyond the basic recycling program In addition to recycling office paper, newspaper, cardboard, aluminum and steel, they have contracts for recycling batteries, used motor oil, filters and solvents Eastmoreland uses a mulching mower and chip/land apply all pruning on site They recycle their washing water on site, and they have approached their waste hauler about installing recycling cans next to a few tees to pilot on-course public recycling

Appendix F. Building Green Design Process and Construction Guidelines

The following guidelines include two elements

- **Integrated Building Design** actions and opportunities from predesign through operations and maintenance
- **Green Building Guidelines**· specific opportunities in building design and construction practices

Integrated Building Design

Predesign

First step in building process - Develop project framework 1) establish green design goals, 2) define the process to achieve these goals, and 3) develop clear understanding of expected results

Actions

- Create Environmental Design Guidelines determine measurable project objectives to test site and building design and construction practices against (i e , building will be 20% more efficient than code, no VOC paints)
- Create Building Program statement of owner's or clients expectations for the building
- Create Program Budget institute life-cycle analysis for green design and construction measures
- Design Team Selection utilize whole-building integrated design approach, develop Statement of Work (SOW) and RFQ guidelines
- Develop Project Schedule
- Regulations prepare and review list of laws, codes, and standards relevant to project
- Site Selection evaluate site selection based on green criteria

Sustainable Site Design

Sustainable site planning integrates design and construction strategies to minimize environmental site impacts, reduce construction costs, maximize energy and resource conservation, improve operational efficiencies, and promote alternative transportation by providing good access to transit, pedestrian, and bike systems

Actions

- Site Analysis and Assessment - perform site analysis and assessment to determine site characteristics that influence building design and minimize ecological impacts Greenfield projects (new, unbuilt sites) should have a site assessment that includes descriptions of habitat as well as information on hydrology, geology, vegetation, soils, etc Brownfield projects (previously built sites) should have full disclosure and survey of existing materials and infrastructure Any hazardous materials will require special treatment
- Site Development and Layout - including infrastructure and building and site requirements (land features, building and site orientation and shape, landscaping and use of natural resources, water quality and conservation, public amenities, and construction methods)
- Site Materials and Equipment - selection of site materials to weigh toxicity in manufacture and use, energy consumption in extraction, manufacture, transport, and in the case of plant materials - invasiveness, water consumption, and disease susceptibility

Building Design

Sustainable building design uses an integrated approach - treating the building as a complete system with building siting, form, envelop, systems, and contents simultaneously interacting together and fitting their setting in nature (see Green Building Guidelines below)

Opportunities

- Passive Solar Design - daylighting, building envelope, renewable energy
- On-Site Renewable Energy Production - PV, passive hot-water, fuel cell, natural cooling, wind
- Building Systems and Indoor Environmental Quality - HVAC, electrical, and plumbing systems, indoor air quality, acoustics, and building commissioning
- Green Materials and Specifications – Develop procurement policies for environmentally preferable products whenever cost-effective and to the extent practicable (products that have a lesser or reduced effect on human health and the environment when compared with competing products that serve the same purpose)

Actions

- Conduct Environmental Impacts Assessment –adhere to Environmental Design Guidelines developed in predesign by analyzing each building component using life cycle analysis

Construction Process

Environmental construction guidelines will markedly reduce site disturbance, the quantity of waste sent to landfills, and use the use of natural resources during construction **(see Green Building Guidelines below)**

Actions

- Create Site Staging and Protection Plan (protect soil, air, and water quality)
- Create Construction & Demolition Site Recycling Plan
- Create Construction Related Indoor Air Quality and Health Plan
- Maximize Resource Efficiency During Construction - efficient use of materials, energy, and water resources

Operations and Maintenance

Building operations and maintenance (O & M) significantly impact a building owner's costs Green building processes should enhance environmental quality and the performance of building operations Building O & M should maintain proper building temperature and humidity, promote the ventilation, dilution, and removal of airborne contaminants, and provide appropriate lighting and acoustics O & M policy and practices should promote resource efficiency by tenants and building occupants

Actions

- Have the building commissioned - it should take into account all systems in the building not just the mechanical and electrical Provide training for facility manager and operation and maintenance personnel for all key equipment
- Create Maintenance Plan - standards of care or building, training to operate special equipment, established policies for preventative maintenance, cleaning, and repair of mechanical systems
- Monitor Indoor Air Quality, Thermal Comfort, Light Quality, and Acoustics
- Energy Efficiency - make adjustments to reduce monthly energy, water, and maintenance costs (HVAC, lighting, plug loads, plumbing)
- Resource Efficiency - create integrated waste management program to reduce solid waste and water conservation program (indoor and outdoor)
- Housekeeping and Custodial Practices - create green management principles and practices (reduce use of toxins, clean mechanical systems, floors and carpets, create integrated pet management program, etc
- Train occupants and equipment operators - Initially, have a brief orientation session for all building occupants Keep occupants updated on the buildings' operation and changes through E-mail, memos, or meetings

Green Building Guidelines

A. Construction Debris Reduction, Reuse, and Recycling

1 Strive to Reduce, Reuse, or Recycle all of the materials in your project If it doesn't fall into one of those three categories, Redesign!

2 Follow City of Portland Policy for Construction & Demolition Site Recycling

3 Consider the ease of both assembly and disassembly in your design Materials may be rendered non-recyclable if they do not come apart easily

4 Include a specification section addressing Construction Waste and Demolition Separate waste materials from construction process for recycling Wood waste, scrap metal, gypsum board, and other materials are collected by local recyclers **[Metro headquarters, Rose Garden Arena, Belmont Dairy]**

B Building Materials and Furnishings

1 Establish how long the building is expected to last 25 years? 50 years? 150 years?

2 Apply a Life Cycle Assessment to the products that you specify Consider the Embodied Energy and Global Warming contribution in your materials choices Calculate a total for the building as the project progresses

3 Select durable and locally produced materials to reduce replacement and transportation costs and support the local economy
4 Establish criteria for materials selection early in the job. Review with the entire design team and the owner [ex Environmental Building News Product Catalog rates over 100 green building materials]
5 As systems are added and designed, check them against the criteria for materials selection
6 Specify recycled content concrete and masonry for structural elements such as the foundation, parking lot, walkways, or retaining walls The options available include recycled aggregate from Portland Sand and Gravel, "The Wall" made from recycled rubble, or recycled content asphalt from KF Jacobson or Lakeside Industries
7 Specify recycled content framing materials The options available include steel wall studs [ex Pioneer Framing], composite wood beams [ex GNI Joists from Louisiana Pacific] for roofing, and composite wood trusses [ex Silent Floor I-Joists from Trus Joist MacMillan] for flooring
8 Specify recycled content materials for roofing, drywall, and trim The options available include recycled aluminum [ex Classic Products] or wood and cement composite [ex American CemWood Products] roof shakes, particleboard from recycled wood waste for door and window trim, and drywall products with recycled gypsum [ex Domtar Gypsum] or recycled cellulose [ex L-P FiberBond] content
9 Use salvaged wood or wood from a certified sustainable forest Avoid lumber products produced from old-growth timber where acceptable alternatives exist Especially avoid tropical hardwoods that aren't from certified sustainable forests Minimize the use of pressure-treated lumber
10 Consider recycled content finish materials such as carpets [ex Image Carpet], carpet pads [ex DURA Cushion], and floor tiles [ex Stoneware Tile Co]

C. "Healthy" Materials -- No Toxic or Harmful Contents

1 Establish Indoor Air Quality (IAQ) Criteria early in the project Do this with the entire project team present
2 Reduce or eliminate all volatile organic compounds (VOC's) on the job Avoid using materials, furnishings and appliances that hinder indoor air quality [ex IpoCork cork, Nairn natural linoleum flooring]
3 Minimize the use of organic solvent-based floor finishes, paints, stains, and adhesives that also are sources of VOC's [ex Glidden Spread 2000]
4 Where available, specify materials that are relatively unchanged from their natural state These contribute less to indoor air pollution and usually are less energy-intensive and polluting to produce
5 Layout workspaces so that indoor plants, other natural vegetation, and water can be included Plants have been shown to have a major positive benefit on indoor air quality Water sounds can enhance acoustics
6 Specify finishes that require little or no maintenance and eliminate additional finishes to reduce the overall use of materials, glues and sealant

D Resource-Efficient Design and Operation - Energy

- Specify the most efficient products and controls for the buildings' heating, cooling and ventilation system, the lighting system, and other mechanical and electrical systems [**PGT headquarters**]
- Consider innovative energy-saving design options such as waste heat recovery from the laboratory ventilation system, light pipes and larger HVAC ducts to reduce static pressure, and more [**Mill End Store, Portland City Hall, Norm Thompson headquarters**]
- Budget for full commissioning of building equipment to ensure performance at peak efficiency [**Gabrielle Park Community Center, Mark Hatfield Federal Courthouse**]

ORIENTATION, SHAPE, SIZE, AND LAYOUT

1 Orient buildings on an east-west axis to maximize solar heat gain during the winter, minimize heat gain during the summer, and make optimal use of natural daylighting Always calculate shading devices for each direction of the building
2 Lay out spaces that not only meet the occupant's requirements but interweave the times of day with the relative activities
3 Minimize ratio of surface to volume

4 Climates range in all combinations from Cold to Hot and Dry to Humid The shape of the building should respond to the specific local climate
5 Design each fenestration according to its orientation

MECHANICAL SYSTEMS
1 Use fresh air ventilation
2 Avoid oversizing mechanical equipment Carefully estimate heating and cooling loads Do not use "rules of thumb" over hard data
3 Decisions regarding mechanical systems should be made concurrently with the architectural design
4 Aim for overall system efficiency of 0 6 kW/ton or better
5 Establish criteria for building performance compared to a baseline "code approved" building
6 If your project calls for a "tight" building envelope, take special care in the amount of fresh air and air filtration provided Coordinate with the mechanical system and natural ventilation strategies

COOLING
1 Reduce cooling loads with passive ventilation and natural cooling techniques
2 Consider heat sources from lights, people, and machinery
3 Expand comfort envelope- Use fans, dehumidifiers, clothing, and furniture design
4 Design for the reduced load with small efficient air conditioners New evaporative cooler designs will work even in our wet Northwest climate
5 Use controls for optimal performance

HEATING
1 Minimize heat loss through the building envelope Insulation gives the best return on the dollar
2 Maximize seasonal solar heat gain
3 Make up additional heat with an efficient furnace, boiler, heat pump, or wood stove that provides an Energy Efficiency Ratio of 75% or better
4 If the system is designed for you, check the calculations for double margins of safety
5 Programmable thermostats can save up to 16% on your home energy bills or you can save the same by just remembering to turn down your thermostat each night
6 In commercial buildings, use an energy management system (EMS) to operate heating, cooling and lighting

LIGHTING
1 Reduce power loads for lighting with efficient fixtures
2 Conserve energy by integrating daylighting strategies
3 Use a systems approach to design lighting to meet the requirements of the inhabitants and the function of the space
4 Use compact fluorescent lamps for most if not all of the ambient lighting in residential buildings
5 In commercial buildings use T-8 Tubular fluorescence for ambient lighting
6 Dimmable electronic ballasts are more efficient and quieter than their old counterparts
7 High intensity discharge (HID) lamps are most efficient in certain task lighting applications (however they produce high levels of heat)
8 Lighting controls that are integrated with the other systems in the building will conserve even more energy Motion sensors and timers should be used appropriately

E Resource-Efficient Design and Operation - Water
1 Specify and install the most water-efficient toilets, faucets, and water-using fixtures and controls for their optimal use [**Double Tree hotels**]
2 Specify minimum water for use in cooling equipment such as air compressors
3 Consider ozone or other alternative for water treatment in any boilers or cooling towers This will reduce the amount of water needed for "blowdown" make up

F. Resource-Efficient Design and Operation -- Wastewater

1 Include on-site stormwater collection for uses such as irrigation [**Buckman Heights & Pearl Court Apartments**]
2 Maximize gray water recycling for irrigation
3 Consider on-site wastewater treatment waterless urinals, composting toilets, solar aquatic treatment, etc

G. Resource-Efficient Design and Operation -- Landscaping

1. Design water-efficient, low-maintenance landscaping using native vegetation and perennial ground cover [See "**Portland Plant List**" from the Planning Bureau, **Naturescaping for Clean Rivers** Program] Avoid the use of pesticides and other chemicals to maintain landscaping
2. Design stormwater catchment system for irrigation [**Buckman Heights & Pearl Court Apartments**]
3. Protect vegetation (trees, scrubs, groundcover) and soil during site work
4. Select and locate deciduous trees so they can serve as seasonal shading devices for the south and west sides of the building [**Emerald PUD** building in Eugene]
5. If an irrigation system is installed be sure it has the capability to override operation when there is already enough moisture in the soil [**Gateway Fred Meyer**]
6. Use non-toxic strategies to control weeds and insect pests [**Riverside Golf Course**]

H. Resource-Efficient Design and Operation -- Solid Waste Reduction/Recycling

1 Provide space -- convenient and logically located -- for recycling primary wastes generated such as paper, cardboard, metals, glass, or plastic [**Buckman Heights Apartments**]
2 Work with vendors to reduce packaging waste on the products they supply [**Kaiser-Permanente**]
3 Re-use grass clippings, leaves, or tree/shrub trimmings from landscape maintenance [**Kaiser-Permanente**]

Appendix G. Sustainable Development Definitions

Sustainable development, ecological design, and green buildings these terms are synonymous with better integrating the built and natural environments There are a variety of emerging definitions and set of "principles" related to the topic area Below are listed a few of the more popular definitions to help the reader get a better perspective of the breadth and complexity of green building

"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 Brundland Commission - 1987)

".. the achievement of a dignified, peaceful, and equitable existence a growing economy that provides equitable opportunities for satisfying livelihoods and a safe, healthy, high quality of life for current and future generations protect the environment, its natural resource base, and the functions and viability of natural systems on which all life depends " (The President's Council on Sustainable Design - 1996)

"Doing more with less, in many cases by substituting information and intelligence in solving problems rather that additional material or energy resources " (John E Young and Aaron Sachs in The Next Efficiency Revolution Creating a Sustainable Materials Economy - 1994)

" sustainable design is not a new building style Instead, it represents a revolution in how we think about, design, construct, and operate buildings The primary goal of sustainable design is to lessen the harm poorly designed buildings cause by using the best of ancient building approaches in logical combination with the best of new technological advances " (Dianna Lopez Barnett and William D Browning in A Primer on Sustainable Building, Rocky Mountain Institute - 1995)

The Hannover Principles Design for Sustainability (William McDonough Architects - 1992)

1 Insist on rights of humanity and nature to co-exist in a healthy, supportive, diverse and sustainable condition
2 Recognize interdependence The elements of human design interact with and depend upon the natural world, with broad and diverse implications at every scale Expand design considerations to recognize even distant effects
3 Respect relationships between spirit and matter Consider all aspects of human settlement including community, dwelling, industry and trade in terms of existing and evolving connections between spiritual and material consciousness
4 Accept responsibility for the consequences of design decisions upon human well-being, the viability of natural systems and their right to coexist
5 Create safe objects of long term value Do not burden future generations with requirements for maintenance or vigilant administration of potential danger due to the careless creation of products, processes or standards
6 Eliminate the concept of waste Evaluate and optimize the full life-cycle of products and processes to approach the state of natural systems, in which there is no waste
7 Rely on natural energy flows Human designs should, like the living world, derive their creative forces from perpetual solar income Incorporate this energy efficiently and safely for responsible use
8 Understand the limitations of design No human creation lasts forever and design does not solve all problems Those who create and plan should practice humility in the face of nature Treat nature as a model and mentor, not as an inconvenience to be evaded or controlled
9 Seek constant improvement by sharing of knowledge Encourage direct and open communication between colleagues, patrons, manufacturers and users to link long term sustainable considerations with ethical responsibility, and re-establish the integral relationship between natural processes and human activity.

The Natural Step System Conditions for Sustainability

1 Substances from the Earth's crust must not systematically increase in the biosphere This means fossil fuels, metals and other minerals must not be extracted at a faster rate than their redeposit and reintegration into the Earth's crust
2 Substances produced by society must not systematically increase in nature This means substances must not be produced faster than they can be broken down and reintegrated into natural cycles

3 The physical basis for the productivity and diversity of nature must not be systematically deteriorated This means the productive surfaces of nature must not be diminished in quality or quantity, and we must not harvest more from nature than can be recreated or renewed.

4 There needs to be fair and efficient use of resources with respect to meeting human needs This means that basic human needs must be met with the most resource efficient methods possible, including equitable resource distribution

Appendix H: Sustainable City Principles

Adopted by Portland City Council November 18, 1994

Goal City of Portland will promote a sustainable future that meets today's needs without compromising the ability of future generations to meet their needs, and accepts its responsibility to

- Support a stable, diverse and equitable economy
- Protect the quality of the air, water, land and other natural resources
- Conserve native vegetation, fish, wildlife habitat and other ecosystems
- Minimize human impacts on local and worldwide ecosystems

City elected officials and staff will

1 Encourage and develop connections between environmental quality and economic vitality Promote development that reduces adverse effects on ecology and the natural resource capital base and supports employment opportunities for our citizens

2 Include cumulative and long-term impacts in decision making and work to protect the natural beauty and diversity of Portland for future generations

3 Ensure commitment to equity so environmental impacts and the costs of protecting the environment do not unfairly burden any one geographic or socioeconomic sector of the City

4 Ensure environmental quality and understand environmental linkages when decisions are made and regarding growth management, land use, transportation, energy, water, affordable housing, indoor and outdoor air quality and economic development

5 Use resources efficiently and reduce demand for natural resources, like energy, land, and water, rather than expanding supply

6 Prevent additional pollution through planned, proactive measures rather than only corrective action Enlist the community to focus on solutions rather than symptoms

7 Act locally to reduce adverse global impacts of rapid growth population and consumption, such as ozone depletion and global warming, and support and implement innovative programs that maintain and promote Portland's leadership as a sustainable city

8 Purchase products based on long term environmental and operating costs and find ways to include environmental and social costs in short term prices Purchase products that are durable, reusable, made of recycled materials, and non-toxic

9 Educate citizens and businesses about Portland's Sustainable City Principles and take advantage of community resources Facilitate citizen participation in City policy decisions and encourage everyone to take responsibility for their actions that otherwise adversely impact the environment

10 Report annually on the health and quality of Portland's environment and economy

Appendix I. Current Green Building Incentives from Around the U.S.

Source Barnett, Rick, David Foster and Bob Repine Green Building Initiative Program Option Report *Oregon Housing and Community Services Department January 1999*

Subsidy and Incentive Programs

1. Since 1997, the Texas Veterans Land Board (TVLB) has offered reduced rate mortgages to vets who build to the program's green standards As green building programs have evolved from energy programs (e g Austin, TX, PGE Earth Smart), this "green mortgage" is a step beyond the increasingly popular energy efficient mortgage Declaring the homes to be "better, cheaper, and easier on the earth", the TVLB considers the dwelling and the loan recipient to be a "better risk" Reduced life cycle cost leads to increased cash, which, in turn reduces the possibility of default In less than two years, they have qualified around 500 homes, most of which received a full point reduction Call Raul Gonzales, 512-463-5366

2. The New Jersey Department of Community Affairs has just launched their Sustainable Development/Affordable Housing Pilot Program According to Jane Kenny (DCA Commissioner), their goal is "to produce up to 100 affordable housing units that incorporate principles of sound land use planning, consistent with the State Plan, impose minimal impact on the environment, conserve natural resources and enhance the health and well being of the residents Eventually, we anticipate that some of the strategies will be incorporated into our affordable housing funding programs" For the Pilot Program, successful applicants will receive subsidy through DCA's Balanced Housing Program, as well as through the local utility's energy conservation program Applicants will be evaluated on the thoroughness and creativity with which the design team approaches the task" Contact Peggy Huchet, 609-633-6284

3. The Minnesota Office of Environmental Assistance, a non-regulatory agency, has funded a variety of green building projects These include a workshop for government officials and building industry professionals, a rating system for public buildings in Hennepin County, a deconstruction project, and the development of a plastic lumber product Funding has come from a program that provides financial assistance to a broad range of environmental projects Contact Suzanne Savanick, 651-215-0250

4. Alameda County, CA, has provided funding for green construction since April 1997 Entitled the "Resourceful Building Demonstration Project," green features have been added to several commercial jobs, including the $29 million Hayward City Hall Administered through their public works department, they are currently subsidizing the greening of three affordable residential units in Emeryville, CA Education and information is also a part of this program Contact Wendy Sommer, 510-614-1699

5. The Illinois Department of Commerce and Community Affairs has recently expanded their "Energy Efficient Affordable Housing Program" by sponsoring a green, affordable rehab project Through direct subsidy to a non-profit housing developer they hope to demonstrate the combination of energy efficiency with the use of "environmentally friendly" building materials The objective is ' to develop housing that is affordable, energy efficient, healthy and good for the environment, that can serve as a model for other affordable housing developers " Contact Paul Knight, 708-386-0345

6. The State of Colorado has demonstrated their support for sustainability by funding a comprehensive green building program since early 1997. This funding provides considerable assistance to the Denver Metro Home Builder Association's "Green Built" Program Their contract calls for a substantial public relations effort, builder training, and a home rating system Administered through the Governor's Office of Energy Conservation, this "market-driven" program is scheduled for expansion throughout the state Contact Ed Lewis, 303-620-4292

Information, Research, and Education Programs

1. In addition to facilitating the greening of a major, new state building (the R E Johnson Building, Austin, TX), the Texas State Energy Conservation Office has demonstrated a strong commitment to education One example is their "Texas Sustainable Building Professional Training Seminars " Through numerous seminars in 1997 and 1998, a broad range of green philosophy and technique has been presented Additional educational activities are planned for 1999 Contact Jane Pulaski, 512-463-1796

2. Organized in 1993, the Green Building Alliance (Pittsburgh, PA) has been developing a broad base of support for their effort to facilitate "the cost effective and integrated use of environmentally responsible and technologically appropriate site and building design, construction, and operation practices to create more livable places for all persons now and in the future " Through significant private funding and other support, the GBA sponsors various educational events, produces a monthly bulletin, and provides assistance to interested building industry professionals Current plans include commercial projects (e g convention center), public housing, and deconstruction Contact Rebecca Flora, 412-431-0709

3. The Virginia Housing and the Environment Network provides "information for environmentally friendly, resource-efficient buildings in sustainable communities " Since 1997, this statewide, non-profit group has conducted a variety of educational events, including workshops and presentations They plan to continue this type of work in 1999, and also have a conference, entitled "Virginia's Sustainable Future Solutions for Community, Business, and Environment " Contact Annette Osso, 703-486-2966

4. Often in conjunction with other green building efforts in Seattle, WA, the Business and Industry Recycling Venture offers free technical assistance to the construction industry A project of the Greater Seattle Chamber of Commerce and the Seattle Public Utilities, BIRV "can help you design to prevent waste, reduce, reuse, and recycle waste on the job site, and select and use resource-efficient building materials " BIRV's program is a component of the City's Built Smart program, and the new Seattle Sustainable Building Action Plan Contact Elizabeth Daniel, 206-289-7304

5. In Dade County (FL), sustainable construction efforts are coordinated through the Dade Green Coalition This broad-based group includes local government staff and administrators, representatives from local utilities, public schools, various builder association and other building industry professionals, Chamber of Commerce, University of Miami, Florida Department of Community Affairs, and the Governor's Commission for a Sustainable South Florida Their mission is "to increase the sustainability of Dade County by incorporating land planning, design, building products and operations that will reduce resource consumption and maintain healthy urban environments and productive agriculture while protecting the natural system for future generations " They promote a "major change in the way we develop and build " In 1997, they held the First South Florida Sustainable Building Conference, and in 1998, they developed green guidelines for residential and commercial construction Contact Doug Yoder, 305-372-6789

6. Recognizing the waste reducing character of green building, The Iowa Department of Natural Resources, Waste Management Division, subsidized the construction of a green demonstration project in the City of Bettendorf The Family Museum of Arts and Science emphasized the use of durable, recycled-content or sustainably grown materials The project included an educational pamphlet, describing the use of green materials Another funded project involves a home in Cedar Rapids Contact Jeff Geerts, 515-281-8176

7. Maryland's Department of Natural Resources is just starting a green program that will focus on three areas energy and water conservation, use of sustainable materials, and low impact development To date, they have been involved in educational and promotional activities including a mobile exhibit and a website Contact Mark Bundy, 410-260-7810

8. Habitat for Humanity has introduced an expanded effort to implement their Environmental Initiative, through the creation of the Green Team The purpose of this group "is to help Habitat affiliates build the kind of homes that families could hand over to their children's grandchildren " Their mission is to create a network of individuals who will educate Habitat affiliates worldwide in sustainable building practices They have developed educational materials and a newsletter, and actively seek new team members to bring sustainability to more locations Contact Graham Davis, 719-963-0148

9. In a process that started four years ago, The North Carolina Department of Commerce (Energy Division) has sponsored a variety of educational activities Known as "the Green Building Initiative," most of this project was implemented through the North Carolina Recycling Association Their work included a publication (*The Professional's Green Building Guide*), a survey, workshops, a resource directory and database, and the Southeastern Green Building Conference No new projects are currently funded Contact Kermit Smith, 919-733-1910

10. Arizona Public Service Co has highlighted their educational effort in Phoenix, AZ, through their Environmental Showcase Home This demonstration project "contains over 150 technologies, strategies, concepts and materials – far more than a single dwelling would include " Program publications include a "Resource Guide," listing the materials, suppliers and consultants associated with the demonstration house With their partners in the Arizona Environmental Strategic Alliance, they are promoting a new way of living and building homes in Arizona Contact APS, 602-250-2100

11. A team of South Florida realtors has launched an effort to educate clients on the advantage of a green home Promoting benefits such as energy savings, higher indoor air quality, and other features, these real estate professionals are generating a positive response in the marketplace, and from their peers In partnership with the Florida Energy Extension Service (352-392-7260), a course entitled "Sell Green and Profit" was conducted at numerous locations last summer Contact Alison Taylor, 305-279-9426

Green Building Ordinances and Administrative Programs

1. The Northwest Regional Sustainable Building Action Plan has been a yearlong effort to identify barriers to sustainable building, and assess practical strategies to overcome the barriers The plan will be directed toward new construction and major renovation projects in Washington, Oregon and British Columbia Partners in this project include the City of Seattle, U S Department of Energy, Continental Savings Band, Northwest Energy Efficiency Alliance and the Portland Energy Office The plan is about to be released Contact Peter Hurley, 206-684-3782

2. The State of Nebraska will be moving toward sustainability through Governor E Benjamin Nelson's Executive Orders 98-1 (renewables) and 98-6 (efficiency) The orders are intended to encourage the use of renewable energy and greater energy efficiency, particularly for state facilities Contact Jerry Loos, 402-471-1999

3. The City of San Francisco has recently passed two resource-efficient City facilities ordinances They establish a pilot program to promote resource efficiency in construction of selected city-owned facilities and city leaseholds Contact Tom Ammiano, City of San Francisco

4. The City of Austin, TX, has promoted green building through a City Resolution adopted February 24, 1994 This act formalized the City's position and their support for the already-existing Austin Green Building Program Contact Public Information Office, 512-499-2220, or publications, 512-499-7827

5. The City of Corvallis, OR, has issued their first statement of support for green building through two clauses in their recently updated Comprehensive Plan The clauses (7 7 6 and 7.7 7) direct that the city "incorporate, in the construction of City-owned buildings, appropriate 'green builders' construction methods and materials " and "consider strategies, such as incentives, to encourage the use of 'green builder' construction methods and materials in private construction " Contact Mark Dodson, 541-757-6809

Green Building Programs

1. To promote sustainable construction for projects not involving a contractor from the Denver Metro HBA's "Built Green" program, the City of Boulder launched their Green Points Program in March 1997 Boulder is unique for two reasons the program has a component for remodeling (including small projects) as well as new construction, and it is required and monitored through their Building Inspection Services This is in contrast to the typical voluntary, "market-driven" rating program Contact Mike Weil, 303-441-4191

2. The Austin, TX Green Building Program is the oldest program of its kind Administered through the Planning, Environmental and Conservation Services Department, Austin has programs targeted at four market sectors residential (adopted 1991), commercial (adopted 1995), multifamily (reformed 1999), and municipal (adopted 1993) Water, energy, materials, and solid waste are considered in the scoring of building features The highest rating (81-100 points) is called a "four star" building Contact Marc Richmond-Powers, 512-499-3029

3. The City of Scottsdale, AZ has recently initiated their "Sustainable Building in the Sonoran Desert" Program Through their Environmental Management Office, projects are monitored and scored for the use of green measures (about 150 measures are available) A project is certified as "green" when they acquire 44-50 points, depending on the sub-categories involved This is a "yes/no" system, in contrast to a "multi-star" program like Austin a house is either green, or not. Contact Anthony Floyd, 602-941-6992

4. Seattle, WA operates a voluntary rating program called "Built Smart", currently available only for multifamily projects In addition to a green certification for a building that meets the program standards, several green features are eligible for a rebate to the builder For example, $0 55-0 65 per square foot is paid for meeting insulation requirements Technical assistance is available to facilitate builder acceptance and compliance Contact Wayne Knipple, 206-684-4286

5. Portland (OR) General Electric's Earth Smart program operated for several years before terminating early in 1998 Under new ownership (Enron), a revised and improved version of the Earth Smart program is expected soon In its original form, homes were rated in four categories healthier building, environmental, resource efficiency, and energy No materials for the new program were available for this report Contact Alan Jaklich, 503-464-7713

6. The National Association of Home Builders, supported by the U S Environmental Protection Agency, has worked for over a year to develop a set of nationally-applicable "Green Building Guidelines " Results of program testing in Atlanta, GA, should also be available soon No materials for the new program were available for this report Contact Peter Yost, 301-249-4000 x 542.

Appendix J. Green Building Options Study Steering Committee Members

Susan Anderson, Portland Energy Office
Rob Bennett, Portland Energy Office
Rosemarie Cordello, Sustainable Communities Northwest
John Haines, ShoreBank Pacific
Jim Harris, Portland Office of Planning & Development Review
Thor Hinckley, Commissioner Dan Saltzman's Office
Jeff Joslin, Portland Office of Planning & Development Review
Allen Lee, X-Energy Consulting, Inc
Michael O'Brien, Northwest Energy Efficiency Alliance
Kent Snyder, Snyder & Associates
Alan Scott, SERA Architects
Rick Williams, Melvin Mark Companies
Jerry Yudelson, Glumac International

Appendix K. Opening Session and Work Session Participants: Spring 1999

Michael Abbate, GreenWorks, P C
Greg Acker, Gregory Acker Architect
Debbie Allen, River City Resource Group
Jennifer Allen, Environmental Science & Public Policy
Josh Alper, APEC International Sustainable Development Foundation
Susan Anderson, Portland Energy Office
Trell Anderson, Portland Bureau of Housing and Community Development
Baruti Artharee, Portland Development Commission
Hank Ashforth, Ashforth Pacific
Hal Bahls, Heery International
Thia Bankey, Cynthia Bankey, Architect
Linda Barnes, Robertson, Merryman, Barnes Architects
James G Barrett, East Multnomah Soil & Water Conservation District
Lee Barrett, Portland Bureau of Environmental Services
Kathleen Baughman, Gretchen Vadnais, Landscape Architect
Janet Bebb, Portland Parks Bureau
Ken Beck, Portland Development Commission
Rob Bennett, Portland Energy Office
Bob Boileau, Fletcher Farr Ayotte
Mark Boyko, Portland Water Bureau
Eric Bressman, Fletcher Farr Ayotte
Bill Browning, Rocky Mountain Institute
Rick Browning, Browning/Shono Architects
Sheryl Bunn, Portland Energy Office
Paul Burnet, Oregon Department of Environmental Quality
Laurel Butman, Portland Office of Finance & Administration
Duke Castle, The Castle Group
Cliff Chappell, COC & Associates, Inc
Amy Chomowicz, Portland Bureau of Environmental Services
Curtis Clark, Clark's Energy Services Corp
Brianna Conrow, Host Development
Rosemarie Cordello, Sustainable Communities Northwest
Logan Cravens, ZGF Partnership
Scott Crosby, William Wilson Architects
Ken Dixon, LRS Architects
Bruce Dobbs, NW Natural

Jim Dufala, 4Creative Education
Diane Dulken
Christopher Dymond, Oregon Office of Energy
John Echlin, SERA Architects PC
Diane Eidenberg, Renewable Northwest Project
David Elkins, Ashforth Pacific
Matt Emlen, Portland Energy Office
Jane Emrick
Shane Endicott, The Rebuilding Center
Paul Falsetto, Fletcher Farr Ayotte
David Foster, OHCSD
Kelly Garner, Association of Oregon Community Development Organizations
Janet Gillaspie, Environmental Strategies
Nathan Good, Portland General Electric
Jeff Graves, William Wilson Architects PC
Connie Grenz, The Collins Companies
John Haines, ShoreBank Pacific
Roslyn Hamilton, Oregon Ecobuilding Network
Robert Hanson, Robert Michael Hanson, A I A
Jim Harris, Portland Office of Planning & Development Review
Bill Hawley, Environmental Learning Center / Clackamas Comm College
Erroyl Hawley, Integrated Urban Habitats
Kevin Hays, Sustainable Environments, I S C
Stan Hedeen, Neil Kelly
Gary Heikkinen, Portland General Energy Services Inc
Michele Helou, Church & Merrill Architects
Nancy Hendrickson, Portland Bureau of Environmental Services
Shelley Hershberger, Sustainable Northwest
David Heslam, Otis Construction / NW EcoBuilding Guild
Cathy Higgins, Oregon Municipal Energy & Conservation Agency (OMECA)
Thor Hinckley, Commissioner Dan Saltzman's Office
Eric Hoffman, Fletcher Farr Ayotte
Marty Houston, Fletcher Farr Ayotte
Bryce Jacobson, Metro-Regional Environmental Management
Juliann Jensen, IDC Architects
Lee Jimerson, The Collins Companies
Elizabeth Johnson-Kuhn, Portland Energy Office
Amy Joslin, Multnomah County Facilities
Jeff Joslin, Portland Office of Planning & Development Review
Kami Kalevor, Portland Development Commission
Alisa Kane, The Rebuilding Center
Craig Kelley, Artisan Remodeling
Wendy Kirkpatrick
Andy Kraus, Fletcher Farr Ayotte
Kevin Kraus, REACH Community Development Corp
Clem Laufenberg, Laufenberg & Company
Tom Laugle, Environmental Learning Center
Allen Lee, X-Energy Consulting, Inc
Celeste Lewis, John Hasenberg & Associates
Terri Liberator, Portland Water Bureau
Tom Liptan, Portland Bureau of Environmental Services
Connie Lively, Portland Development Commission
John Manson, Housing Authority of Portland
Susan Marcus, The Steffey Group

Ed Mays, Endura Wood Products
Linda McDonnell, Daily Journal of Commerce
Jill McMillan, The Environmental Remodeler
Ed McNamara, Prendergast & Associates
Ulrike Mengelberg, Washington State University
Lisa Miles
Amy Miller, Portland Development Commission
Todd Miller, Contractor
Jennifer Minner, Portland Bureau of Urban Services
Chris Morehead
Bob Naito
Curt Nichols, Portland Energy Office
Eunice Noell-Waggoner, Center of Design for an Aging Society
John Nordby, New Tech Services
Margaret Nover, Portland Bureau of Environmental Services
Michael O'Brien, Northwest Energy Efficiency Alliance
Paul Oler, New Tech Electric
Jolinda Osborne
Bronwyn Owen, Portland Bureau of Urban Services
Dorothy Payton, Dorothy A Payton/Atelier
Lis Perlman, Lunatec Design
John Perry
Janice Peterson, Portland General Electric
Jean Pratt, Columbia Design Group
Jerry Pratt, The Environmental Remodeler
Lieve Priano, Dept of Environmental Quality
Jim Primdahl, Rexall Development
Richard Ragland, Portland Bureau of General Services
Judi Ranton, Portland Water Bureau
Tim Raphael, Celilo Group
Hazel Reeves, CH2MHill
Devan Reiff, Portland Development Commission
Karen Richmond, Neil Kelly Designers / Remodelers
Eric Ridenour, Church & Merrill Architects, P C
Kelly Ross, Home Builders Association of Metro Portland
Michael Royce, MaGrath Energy Corp
Rick Safko, Indoor Ecology Associates / OR Ecobuilding Network
Dan Saltzman, Portland City Commissioner
Duane Sanger
Scott Saskill, Clark-Kjos Architects
Bob Schroeder, Portland Development Commission
John Schrotzberger
Brett Schulz, Fletcher Farr Ayotte
Paul Schwer, PAE Consulting Engineers
Jan Scilipoti, Czopek & Erdenberger
Alan Scott, SERA Architects
Tracey Simpson, Fletcher Farr Ayotte
Maggie Skenderian, Portland Bureau of Environmental Services
Cecil Smith, Cecil Smith Construction
Kent Snyder, Snyder & Associates
Trig Soleim, PacifiCorp
Sandra Sonksen, Greensleeves
Mike Speck, Portland Fire Bureau
Arsinoe Spiliotopoulus, Housing Authority of Portland

Erik Sten, Portland City Commissioner
Charlie Stephens, Oregon Office of Energy
Markus Stoffel, Environmental Building Supplies/ Earthwise Builders
Mark Story, Raphael House
Bob Stuart, Construction Ed 101
Von Summers, NW Natural, 7th Floor
Jai Sung
David Sweet, Portland Bureau of Buildings
Debra Taevs, Endura Wood Products
John Tess
David Tooze, Portland Energy Office
Sue Van Brocklin, Cole & Weber
Paul Van Orden, Portland Bureau of Buildings
Bettina Von Hagen, Ecotrust
Scott Weigel, Ashforth Pacific
Oliver Wilken
James Wise, Eco Integrations, Inc
Jessica Yang, Portland Energy Office
Jerry Yudelson, Glumac International
Fredrick Zal, WPH Architecture P C

Resolution No. **35817**

Accept the Sustainable Portland Commission's (SPC) Green Building Options Study and direct the City of Portland Energy Office to coordinate the development of an inter-bureau two-year ***Green Building Action Plan*** based on the Study's recommendations (Resolution)

WHEREAS, the City Council supports the SPC's obligation to encourage City bureaus and agencies to adopt approaches that support sustainability as reflected in the *Sustainable City Principles* and *The Natural Step* system conditions, and

WHEREAS, the City Council recognizes that green building complements existing policies related to development and natural resource conservation, including the 1990 Energy Policy, CO_2 Reduction Strategy, Comprehensive Plan, and Metro 2040 Framework Plan, and

WHEREAS, the City of Portland recognizes and accepts its responsibility to implement and promote building practices that protect the quality of the air, water, and other natural resources, reduce construction practices that impact native fish, vegetation, wildlife habitat and other ecosystems, and minimizes human impact on local and worldwide ecosystems, and

WHEREAS, the Energy Office, Office of Planning and Development Review, Bureaus of Environmental Services, Housing and Community Development, Water, and General Services, Portland Development Commission; and related bureaus will develop an interbureau working group to develop a comprehensive ***Green Building Action Plan*** based on the recommend actions contained within the Green Building Options Study, and

WHEREAS, the City bureaus should take a leadership role by identifying actions that demonstrate the City's commitment to green buildings in its own building practices and policies, and

WHEREAS, the City Council and City bureaus support the coordinated and efficient delivery of innovative and cost effective green building technical and outreach services that promote energy and water conservation; on-site energy production, the use of healthy building materials, reduced stormwater runoff and erosion, construction site deconstruction, reuse, recycling practices, and minimal site disturbance; and

WHEREAS, the City Council and City bureaus should be guided by the objective of revenue neutrality by *increasing* costs associated with building practices that cause disproportionate environmental damages and *reducing* costs associated with building practices that cause fewer environmental damages or have positive environmental impacts; and

WHEREAS, City Council and City bureaus should incorporate life-cycle and total cost (including external costs) accounting in the design, construction, operation, and maintenance of all city-owned and financed buildings; and

WHEREAS, the City should take maximum advantage of existing Green Building programs and approaches already developed by other cities, governments, and organizations, and

WHEREAS, City Council and City bureaus support sustainable economic development by encouraging the expansion of the environmental services and products sector, that includes green building practices

NOW THEREFORE, BE IT RESOLVED, that the Portland City Council directs the Energy Office to lead the efforts of the Office of Planning and Development Review; Bureaus of Environmental Services, Housing and Community Development, Water, and General Services; Portland Development Commission, and related bureaus to report back on December 1, 1999 the scope and details of ***the Green Building Action Plan.***

FURTHER RESOLVED that the ***Green Building Action Plan*** will include workplan, timelines, and budget implications related to developing a City-wide green building policy and ordinance, creating green building development guidelines and rating system, improving City facilities operations and maintenance activities; creating an inter-Bureau 'Sustainable Development Assistance Program,' developing a 'Green Building Incentive Program' and reviewing the City budgeting analysis process for construction projects and creating new financial tools

COMMISSIONER DAN SALTZMAN
September 1, 1999
S Anderson/rb

Passed by the Council SEP 01 1999

Gary Blackmer
Auditor of the City of Portland
BY Nancy Jean Deputy

1221
Agenda No

RESOLUTION NO. 35817

Title

Accept the Sustainable Portland Commission's Green Building Options Study and direct the City of Portland Energy Office to coordinate the development of an inter-bureau two-year ***Green Building Action Plan*** based on the Study's recommendations (Resolution)

INTRODUCED BY	DATE FILED AUG 27 1999
COMMISSIONER DAN SALTZMAN	Gary Blackmer Auditor of the City of Portland
NOTED BY COMMISSIONER	
Affairs	By Cary Kershner Deputy
Finance and Administration	For Meeting of _____
Safety	**ACTION TAKEN:**
Utilities	
Works	
BUREAU APPROVAL	
Bureau Energy Office	
Prepared by S Anderson/rb Date 8/26/99	
Budget Impact Review ___ Completed _xx__ Not Required	
Bureau Head Susan Anderson	Susan Anderson

AGENDA		FOUR-FIFTHS AGENDA	COMMISSIONERS VOTED AS FOLLOWS		
				YEAS	NAYS
Consent	Regular XX	Francesconi	Francesconi		
NOTED BY		Hales	Hales	✓	
City Attorney		Saltzman	Saltzman	✓	
City Auditor		Sten	Sten	✓	
City Engineer		Katz	Katz	✓	