Portland Development Commission

A Green Building Primer and the Business Case for Constructing LEED Certified Buildings

The development market is changing and green construction is going mainstream in many cities across the U.S. as more developers and consumers learn about the financial and environmental benefits of developing more sustainable buildings. This document is a resource for developers seeking more information on constructing a building certified by the U.S. Green Building Council's rating system, Leadership in Energy and Environmental Design (LEED). Developers who stay current with the industry's evolving green standards and market demand have a competitive advantage, especially when the market cools.

Eco-friendly, sustainable and green are terms often used to describe real estate with environmentally friendly architecture that can reduce energy and water use and improve the quality of life of its inhabitants. The greening of a building can come from a number of design techniques including building orientation, passive solar, recycled rainwater, rooftop gardens, geothermal cooling systems, natural ventilation, passive or active solar, tankless water heaters, double-paned windows, reclaimed wood, Energy Star appliances, low-flow toilets and low-water-use landscaping.

The U.S. Green Building Council estimates the green building industry is worth about $12 billion in 2007. Though sustainable construction is one of the fastest-growing segments of the commercial building industry, only six to eight percent of buildings going up are actually *green*, so most projects are missing out on the benefits of sustainable construction. Buildings that meet green standards realize significant energy costs savings, a benefit that is likely to become more attractive as the cost of non-renewable energy sources continues to rise.

The leading designation for green buildings is LEED, which promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.

There are many ways to make a building green without making costly investments. Effective green design includes orienting buildings and open spaces to take advantage of natural daylight, which creates no additional expense but reduces energy bills. Daylighting also reduces dependence on electric lighting, thus lowering the building's heating load. Natural ventilation shafts for cool air circulation and roof overhangs for shading are other simple techniques that reduce the need for air conditioning and lower expenses.

This document contains the following sections:

A. The Business Case for Green Buildings
B. Reducing the Green Premium
C. LEED: Getting Started
D. PDC's Green Building Requirements
E. The Benefits of LEED
F. Case Studies
G. Incentives and Tax Credits

Forbes.com

"In 2006, more than $10 billion in commercial construction starts registered their intent to pursue LEED certification, or about 5% of the $200 billion commercial real estate industry."

Feb. 8, 2007

A. THE BUSINESS CASE FOR GREEN BUILDINGS

Leaders in the financial, mortgage, insurance and real estate sectors are increasingly recognizing the market advantages of building and owning high performing buildings.

> ***Barron's*** financial journal predicts,
>
> *The marketplace shift to green is gathering force. Massive obsolescence [of inefficient buildings] is looming. Profits are there for the taking.*
>
> *As the market shift gathers even greater momentum in coming years, standard buildings will become the real-estate industry's version of the buggy whip.*
>
> Dec. 2006

The sale of three of the Brewery Blocks in Portland, Oregon, developed by Gerding Edlen Development between 2000 and 2005, are one example of the rising market demand for sustainable buildings. The purchase by JPMorgan Chase & Co. in July 2007, broke the record for the per square-foot profit on commercial space. The two LEED Gold and one LEED Silver buildings brought the original investors a *profit of 43 percent*. Chris Graham, vice president of acquisitions for JPMorgan, said in a statement that the Brewery Blocks was attractive for many reasons including, *"The environmental sustainability of the project is certainly an added value."*[1]

Green buildings have lower operating expenses because of greater energy efficiency and lower water demand that reduces municipal water and stormwater fees. Buildings that are highly energy efficient are also eligible for significant cash incentives and tax credits.

Commercial building insurance is another sector in which the value of high performance buildings is starting to be recognized. In August 2006, California-based Firemen's Fund Insurance Company announced that because of higher quality construction and reduced risk, it is offering discounted premiums and rate credits to owners of commercial green buildings that are *certified*.

B. REDUCING THE GREEN PREMIUM

Each construction project offers a unique package, so the *green premium*—the additional hard and soft costs associated with greening the building—also differs. The additional first costs for building a LEED certified building depend on several factors:

- How early and how well green goals are integrated into project design and construction
- The degree of the development team's sustainable construction experience
- The amount of funding incentives and tax credits available

> **Andy Frichtl**, Interface principal regarding the Oregon Health Sciences University's LEED Platinum building, the Center for Health and Healing,
>
> *"We're delivering champagne on a beer budget. The key to achieving more with less is integrated design. It's a different approach that means working closely and early in the process with the architect, developer, owner, and builder. Integrated design allows us to engineer individual features to serve multiple purposes, saving money and allowing for innovative solutions."*
>
> *Design and Architecture*, Jan. 13, 2006

Integrating green goals very early in the design stage is the most important step in reducing the green construction premium. In 2004, a study by the Federal Energy Management Program found that implementing sustainable design features in the earliest design stages of commercial buildings reduced green building costs by

about two percent,[2] while the majority of the construction premiums were then in the two to four percent range. Since that report was written, the relative cost of building green has fallen.

- The Turner Construction Company's 2005 Green Building Market Barometer study found that the average cost premium for a basic LEED certification is only 0.8 percent, which is quickly recovered by the building owner through lower operating costs.[3]
- The payback for high performance green features averages less than two years.[4]

> **"Exelon**, one of the largest electric utilities in the U.S., recently renovated its headquarters in downtown Chicago to become LEED Platinum certified. The renovations resulted in Exelon *reducing electricity consumption by more than 43%* and water consumption by 30% compared to its previous space."
>
> "Investing Green", Forbes.com, Sept. 27, 2007

Outdated perceptions within the construction industry on the *cost of green*, has slowed the industry's adoption of green building practices. A September 2007 survey of 1,400 members of the construction industry by the World Business Council on Sustainable Development reported that key players in real estate and construction *overstate the extra costs of green buildings by some 300 percent*, "creating a barrier to more energy efficiency in the building sector." Another key factor identified in the study was a lack of "personal commitment by building professionals" as 5to whether protecting the environment was important to them as individuals.

A 2006 study of 221 buildings of five building types compared conventional buildings with LEED certified buildings and found, *"There is no significant difference in the average cost of green buildings as compared to non-green buildings."*[5]

C. LEED: GETTING STARTED

The basic steps below outline one approach a developer could follow to initiate the LEED process.

a. Go to the U.S. Green Building Council's web site and spend time examining their resources to better understand the background and context of LEED. Contact PDC, the Office of Sustainable Development or a local green building consultant to receive additional information and technical guidance on green construction. http://www.usgbc.org
b. Analyze the LEED *checklist* of certification requirements from the U.S. Green Building Council's (USGBC) website. The following link provides the checklist for LEED NC (New Construction). http://www.usgbc.org/ShowFile.aspx?DocumentID=2245
c. Place key participants on your development team who have green building expertise.
d. Plan early to convene a pre-design *eco-charrette*—an intensive, facilitated meeting of the owner/developer, general contractor, architect, designer, lighting subcontractor, mechanical, electrical and plumbing subcontractors, landscape architect and others—to create a shared understanding of project goals and foster a collaborative approach to finding creating, low-cost solutions to earning the LEED points your project has targeted.
e. Examine all available tax credits and incentives for the energy efficiency or renewable energy features in your building. Calculate these savings and include them in your budget calculations.
f. *Before* registering your project with the USGBC, apply for Energy Trust of Oregon grants and funding (see Section G.)

g. *Before* registering your project with the USGBC, apply for Oregon's Business Energy Tax Credits (BETC). http://www.usgbc.org/DisplayPage.aspx?CMSPageID=65&

h. Identify other incentive programs that will help fund your sustainability goals.

D. PDC's GREEN BUILDING REQUIREMENTS

The Portland Development Commission requires development projects meeting the criteria shown to the right to achieve green certifications that vary according to the project type. This information is detailed in the table below.

PDC Green Building Policy Threshold Criteria

Requirements apply when PDC's funding is:

- ≥ $300,000;
- ≥ 10% of the total project cost; and
- Project size is ≥ 10,000 ft^2

NEW CONSTRUCTION (NC)	
Development Type	Green Building Standard Required
Commercial / Mixed Use	LEED NC Silver Certification
Residential < 5 stories	Earth Advantage Green Certification
= 5 stories	Earth Advantage Green or LEED NC Silver based on the configuration of the building
> 5 stories	LEED NC Silver Certification
≥ 51% Rental Units are ≤ 60% MFI	Greening Portland's Affordable Housing Certification
City-owned Buildings	- LEED NC Gold Certification - Eco-roof or Energy Star approved roofing materials - Bureau of General Services operations and maintenance guidelines
REHABILITATION	
Development Type	Green Building Requirement
Commercial / Mixed Use - Full	LEED NC Silver Certification
Partial-building Tenant Improvements	LEED CI (Commercial Interiors) Silver and/or G-Rated Tenant Improvement Guide Certification
Residential < 5 stories	Earth Advantage Green Certification
= 5 stories	Earth Advantage Green or LEED NC Silver based on the configuration of the building
> 5 stories	LEED NC Silver Certification
≥ 51% Rental Units are ≤ 60% MFI	Greening Portland's Affordable Housing Certification
City-owned Buildings	LEED CI (Commercial Interiors) Silver and/or G-Rated Tenant Improvement Guide Certification

E. THE BENEFITS OF LEED

LEED promotes design and construction practices that increase profitability and reduce negative environmental impacts. Sustainable design and development can protect the public's health and the environment by improving indoor air quality and tenant comfort and conserving energy and natural resources.

High performing buildings reduce operating costs, can enhance building marketability and increase occupant productivity, while sustainable site development and human-scaled design contribute to a more livable community. LEED is a market transformation tool based on voluntary, consensus standards. Since LEED uses established energy and environmental metrics that are third-party verified, it has been the most successful rating system at driving markets for green materials, technologies and high performing buildings, while also gaining the attention of the financing sector.

Certification Requirements for LEED™ NC Projects	
Certified	26–32 points
Silver	33–38 points
Gold	39–51 points
Platinum	52–69 points

Reducing Costs

- The basic rule of thumb is: the earlier green building features are incorporated into the design process, the lower the costs of development.[6]
- Maintenance is reduced because green building components are more durable.
- Green features can extend the building's life; eco-roofs not only save energy but can extend the roof life.
- Incorporating salvaged materials from existing buildings saves on time and the cost of virgin materials.
- Designing to minimize construction waste reduces labor, materials and disposal costs.

Capturing Market Share

- As energy costs rise, the demand for energy efficient buildings will also continue rising.[7]
- The McGraw-hill *2006 Smart Market Report* predicts that green residential construction will comprise 10% of the market by 2010[8]
- Given the shrinking demand of the domestic housing market, green buildings offer a lucrative niche and marketing tool.

School in Mt. Angel, OR
Photograph courtesy of Green Building Services

> We don't always make more money selling green real estate in the Portland market, but we consistently find that we sell green buildings faster and in a greater volume than conventional buildings.
>
> Patrick Clark, Realty Trust

Cost Savings

Sustainable design approaches, such as the use of daylighting and low-energy lighting reduces the need for electric lighting. A north-south building orientation and passive solar heating and natural ventilation can drastically reduce the size and expense of the HVAC system.

At a school in Mt. Angel, because of high insulation and thermal mass, space layout, "halo" natural lighting, no space cooling and minimal mechanical system, the building performs at 60% more efficient than ASHRAE 90.1.

According to one study on building commissioning—a LEED requirement in which mechanical systems are tested to determine if they perform according to design specifications—commissioning can reduce building maintenance costs by 15-30 percent. In another study of 44 LEED buildings, researchers found that developers enjoyed a *30 percent reduction in expensive call-backs* in buildings that were commissioned, which saves a developer time and money, and also boosts his reputation and potentially, his market advantage.[9]

- PNC Financial Services Group has constructed 27 of its planned 117 LEED-rated bank branches on the East Coast. Each cost *$100,000 less to build than a standard bank branch,* uses 40 to 50 percent less energy, and was ready to go in 45 fewer days.[10]
- A 2003 detailed review of 60 LEED rated buildings (of all types) found that green buildings are, on average, 25-30 percent more energy efficient than conventional buildings.[11]
- Green buildings typically use one-quarter less water than conventional buildings, reducing water and sewer fees.[12]
- Lower utility costs help attract and retain new tenants.[13]
- Rents in some markets have been increased for existing tenants after they saw the decrease in utility costs.

Forbes.Com

"Green building is a growing trend, in part because companies have realized they *can actually save money* by making a few environmentally friendly upgrades. Adobe Systems, for example, says it has spent $650,000 since 2001 to upgrade two San Jose buildings, and saved $728,000 as a result."

Feb. 2007

Decrease Insurance and Liability Costs

- The Firemen's Insurance Fund offers a 5 percent discount for property insurance on commercial buildings *certified* by LEED or Green Globes, due to the reduction in risk.[14]
- The Fireman's Fund Green-Gard coverage pays for the cost to rebuild and replace a building with green alternatives whether previously green or not, in the event of a total or partial loss[15] Included features are:
    - Non-toxic, low-odor paints and carpeting
    - Energy-Star® rated electrical systems
    - Interior lighting systems that meet LEED or Green Globe requirements
    - Water efficient interior plumbing
    - Energy-Star qualified roof and insulation materials

Staff Productivity and Retention

- A one percent increase in worker productivity can pay for businesses' green feature investments.
- A 10 percent increase in productivity can pay for the building.[16]
- Studies by Carnegie Mellon University have shown productivity increases in green building of up to 18 percent.[17]
- Absenteeism typically falls in green office buildings.[18]
- When PNC Financial Services Group moved into a silver-certified building in Pittsburgh, employee turnover dropped 50 percent below the average turnover in a standard PNC facility.[19]

E. CASE STUDIES

New Construction: Medical Facility
LEED Platinum

OHSU's Center for Health and Healing is a sterling example of a very high performing building developed for a low green premium. Gerding Edlen Development (GED) calculated the hard and soft green costs for this LEED Platinum building on Portland's South Waterfront. After deducting tax credits and other financial incentives, the green premium for this state of the art building was a mere 1.13 percent of the total project cost. The facility's return on investment will be just over one year, after which the energy savings are projected to be $600,000 annually. According to Dennis Wilde, a GED principal, *"Achieving LEED certification depends more on creativity and determination than it does on funding."*

Project	**OHSU Center for Health and Healing**
Developer	Gerding Edlen
Client	OHSU
Architects	GBD Architects
Contractor	Hoffman Construction
Size	16 stories – medical space, labs, retail, 412,000 square feet 3 levels underground parking
Project Value	$150 million
Completed	Late summer 2006
Green Features	Recycled more than 90% of construction waste On-site micro-turbine plant provides 30% of buildings electrical demand and nearly all of its hot water needs Chilled beams replaced air conditioning 100% wastewater treated on-site
Green Premiums	Soft costs estimation: $235,000 Energy efficiency estimation: $975,299 Solar PV and Thermal: $886,000 Green Roofs @ $9/SF: $180,000 Bioreactor: $950,000
Financial Incentives	BETC: $801,000 BETC Solar: $173,000 Energy Trust: $214,000 Other: Solar $189,000, Turbines $100,000, Bioreactor $50,000
Total Green Costs	$3,226,299
Total Green Savings	$1,527,000
Net Green Costs	$1,699,299
% Green Premium	1.13%

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

Rehabilitation: Commercial/Retail
LEED EB Gold

Project	**200 Market Place, Portland, Oregon**
Owner	Russell Development Company
Commissioning Agent	BEA Consulting Engineers

Property Manager	Cushman and Wakefield
Size	19 stories, 400,000 SF office and retail
Certified	2006, an upgrade and performance improvement project
Green Features	Installed the first gas-fired micro-turbine generator
Benefits	*49% energy savings compared to ASHRAE 90.1-1999* Water efficient fixtures and toilets with a 67% ROI Achieved 31.63% Water Use Reduction beyond EPAct 2005

New Construction: Regional Warehouse
LEED Gold

Honda's Northwest Regional Facility demonstrates a strong commitment to energy efficiency. Honda used environmentally sensitive engineering, low energy input materials, recycled products and renewable energy resources wherever possible. One of the striking elements of the design is the system for the collection of rainwater from the roof for reuse in site irrigation and toilet flushing.

Project	**American Honda Northwest Regional Facility, Gresham, Oregon**
Owner/Developer	**Honda**
Architect	**Group MacKenzie of Portland**
Contractor	**Opus Northwest**
Occupancy	**75 employees**
Size	**Office and common area: 18,000 square feet** **Training center: 26,000 square feet, warehouse: 135,000 square feet** **Warehouse mezzanine: 33,000 square feet**
Completed	**2001**
Project Value	**$18 million**
Rating	**First mixed-use commercial facility in the USA to achieve LEED Gold**
Green Features	**Work spaces use natural light.** **Careful monitoring of electrical lighting and heating use has *reduced energy consumption by 51%***
Benefits	**$36,354 annual savings in electricity and natural gas**

Source: http://www.trane.com/commercial/library/AmericanHonda.pdf

Mixed-Use: Apartments/Retail
LEED Gold

The Louisa features four separate green roofs that manage 28 percent of the site's stormwater. Completed in 2005, the project was designed to earn LEED Silver certification but energy-efficiency gains from construction methods and a strict non-toxic cleaning policy helped the building achieve additional credits that bumped it up to 39 points — just enough to earn a Gold certification.

Project	**Louisa Apartments, Portland OR**
Owner	JP Morgan Chase & Co.
Developer	Gerding Edlen Development
Architect	GBD Architects
Contractor	Hoffman Construction
Occupancy	242 units; 16 stories
Size	285,000 total SF
Completed	2005
Project Value	$33,805,000
Rating	LEED Gold, the first LEED Gold apartments in Northwest Portland
Green Features	Balconies serve as shading devices; energy efficient windows, bamboo flooring Cumulative energy savings of over 40% - eliminates 1.3 million pounds per year of carbon dioxide emissions 2.4 million kWh electrical savings/year 5.3 million BTWs natural gas savings/year 1.65 million gallons water savings/year
Incentives	$408,000 Oregon Tax Credit – LEED Gold

Mixed-use: Senior Affordable Housing/Retail
On track for LEED Silver

Project	**The Watershed at Hillsdale Town Center, Portland OR**
Owner	Bertha Senior Housing Partnership
Developer	Housing Development Center and Community Partners for Affordable Housing
Architect	William Wilson Architects
Contractor	Walsh Construction
Occupancy	Mixed-Use: 51 affordable senior housing units 8 units for formerly homeless veterans 3300 SF commercial space on ground floor
Size	.7 acre triangular site

	2,000 SF Community Center 3,300 SF ground floor, corner commercial space .5 parking spaces per residential unit One-bedroom apartments about 625 SF each
Completion expected	November 2007
Project Value	$11.5 million
Green Features	Brownfield Equity: rental apartments seniors at 30% and 50% median income Heat recovery ventilation system (HRV) will recapture heat from units to preheat incoming air Cascading water gardens manage storm-water on-site 15,000 gallon rainwater harvesting system Low and non-VOC paints and finishes Grants from OSD and Enterprise helped offset the green building costs

Historic Building/Major Renovation
LEED Gold

The Gerding Theater was transformed from the derelict Portland Armory into a Platinum LEED theater—the nation's first for a performing arts center. It is also the first building on the National Register of Historic Places to achieve Platinum LEED certification. Since its opening in October 2006, the theater's alternatives to traditional heating, ventilation and air conditioning have reduced energy use by 77 percent and resulted in energy bills that are nearly 30 percent lower than buildings of comparable size and program.

Project	**Gerding Theater at the Armory, Portland OR**
Owner/Developer	Portland Historic Rehabilitation Fund
Architect	GBD Architects
Contractors	Glumac, KPFF Consulting Engineers and Hoffman Construction Key sustainable features provided by Murase & Associates and Second Story Interactive Studios
Occupancy	200 audience spaces
Size	55,000 SF
Completed	Built in 1891; Renovation completed Oct. 2006
Project Value	$36 million
Awards	First building on the National Register of Historic Places to achieve Platinum status Leveraged New Markets Tax Credits, Historic Tax Credits and Energy Tax Credits
Incentives	$31,778 in Energy Trust's LEED-NC New Buildings program $141,757 from Oregon's DOE BETC program

Source: http://www.aiatopten.org/hpb/overview.cfm?ProjectID=833; http://www.portlandonline.com/shared/cfm/image.cfm?id=133170

G. INCENTIVES AND TAX CREDITS

> *"Given all the funding incentives, especially with BETC credits and Energy Trust incentives, green pays for itself. It's a no-brainer."*
>
> Dennis Wilde
> Principal, Gerding Edlen Development

1) Local Funding Specific to Portland

Portland Development Commission Programs

Sustainable Business Assistance Program offers grants up to $7,000 Eco-Charrette Incentives

- PDC offers, on a case by case basis, supplemental funding for eco-charrettes
- Green Communities (Enterprise) offers up to $5,000 to fund charrettes for affordable housing projects

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Office of Sustainable Development Green Investment Fund

- Competitive grant program that supports innovative green building projects in Portland.
- In the current round of funding, a total of $425,000 is available and the maximum grant amount for any project is $225,000
- Industrial, residential, commercial, and mixed-use
- Public and private organizations are eligible and may apply.

See: http://www.portlandonline.com/osd/index.cfm?c=42134

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2) State Level Funding:

Energy Trust of Oregon:

Technical assistance and cash incentives for upgrades and new commercial and residential:

- New Building Efficiency Program
  - Up to $200,000 per project for LEED NC
  - Up to $40,000 per project for commissioning costs
  - Up to $50,000 per project for purchasing and installing energy efficient equipment
  - Up to $200,000 per project for energy reductions beyond code
  - Participant manual: www.energytrust.org/newbuildingefficiency
- Building Efficiency Program
- Production Efficiency Program
- Multifamily Home Energy Savings Program
- Solar Electric Program
- Solar Water Heating Program
- Open Solicitations

See: http://www.energytrust.org/

Contact:
Anna Johnson (Energy Trust grant representative)
503.577.9206
anna.johnson@saic.com

Energy Trust of Oregon with Energy Star:

- Energy Trust provides financial incentives to builders who build an ENERGY STAR® qualified home through the ENERGY STAR New Homes program

See: http://www.energytrust.org/residential/es/nh/incentives.html

Oregon Department of Energy:

- Sustainable Building Tax Credit
- Small Scale Energy Loan Program (SELP)
- Business Energy Tax Credit (BETC)
    - Tax credit is 35 percent of the eligible project costs
    - Can take credit over five years
    - Can carry unused credit forward up to eight years
    - Eligibility: commercial, industrial, multi-family residential

See: http://www.oregon.gov/ENERGY/CONS/BUS/BETC.shtml

3) Federal Funding:

EPA Brownfield Funding

- Brownfield assessment
- Revolving Loan Fund
- Cleanup Grants

See: http://www.epa.gov/brownfields/pilot.htm

Brownfields Tax Incentives

Under the Brownfields Tax Incentive, environmental cleanup costs are fully deductible in the year incurred, rather than over five years.

See: http://www.epa.gov/brownfields/bftaxinc.htm

HUD's Brownfield Economic Development Initiative (BEDI)

- Competitive grant
- Requires city approval
- Cap of $1 million per award
- Eligible Projects:
    - Land write-downs
    - Site remediation costs
    - Funding reserves
    - Over-Collateralizing the Section 108 Loan
    - Direct Enhancement of the Security of the Section 108 Loan
    - Financing to For-Profit Businesses at a Below market Interest Rate

See: http://www.hud.gov/offices/cpd/economicdevelopment/programs/bedi/index.cfm

Energy Policy Act 2005 Tax Incentives

- Credit for business installation of qualified fuel cells, stationary micro-turbine power plants, and solar equipment
- Business credit of energy-efficient new homes
- Energy-efficient commercial building deduction

See: http://www.energy.gov/taxbreaks.htm

Federal Solar Energy Tax Credit:

- Business Solar Tax Credit and Fuel Cell Tax Credit
- Extends a 30-percent business credit, established in the Energy Policy Act of 2005, for the purchase of fuel cell power plants, solar energy property, and fiber-optic property used to illuminate the inside of a structure[20]

See: http://www.irs.gov/publications/p553/ch02.html#d0e225

Federal Energy Efficient Tax Credit through Energy Star:

Homebuilders:

- A credit of $2000 available to home builders whose homes (site-built and manufactured) are projected to reduce the heating and cooling energy by 50% compared to homes that meets the 2003 International Energy Conservation Code
- A $1000 credit is available to manufactured home producers for models that save 30% or that qualify for the federal Energy Star Homes program

Commercial:

- A tax deduction of up to $1.80 per square foot is available to owners or designers of new or existing commercial buildings that reduce energy use by below ASHRAE 90.1-2001

See: http://www.energystar.gov/index.cfm?c=Products.pr_tax_credits#s6

Top Sites for Further Information:

Office of Sustainable Development Green Building Resources:
http://www.portlandonline.com/osd/index.cfm?a=110877&c=41758

Regional Chapter of US Green Building Council (Cascadia):
http://www.cascadiagbc.org/resources

Regional Resources from Cascadia Chapter (including consultants, guilds, etc.):
http://www.cascadiagbc.org/resources/cascadia-region-resource-links

Northwest EcoBuilding Guild:
http://www.ecobuilding.org/

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[1] Rivera Dylan, Brewery Blocks sell at premium, The *Oregonian*, July 24, 2007.
[2] "The Business Case for Sustainable Design in Federal Facilities: Resource Document." Federal Energy Management Program, 2003, http://www1.eere.energy.gov/femp/pdfs/bcsddoc.pdf.
[3] Ibid. Lockwood.
[4] Minnesota Pollution Control Agency, "Top 6 Benefits of High Performance Buildings." Available: http://proteus.pca.state.mn.us/oea/publications/highperformance-brochure.
[5] Langdon, David, "Cost of Green Revisited: Reexamining the Feasibility and Cost Impact of Sustainable Design in the Light of Increased Market Adoption," July 2007, www.wbcsd.org.
[6] Kats, Gregory H. "Green Building Costs and Financial Benefits,"http://www.cap-e.com/ewebeditpro/items/O59F3481.pdf.
[7] "Commercial Lease Properties: Finding the Benefit of Energy Efficient Lighting."
[8] Lockwood, Charles. "As Green as the Grass Outside." *Barron's* 12/25/06
[9] *The Costs and Benefits of High-Performance Buildings: Lessons Learned*, Pamela Lippe and Earth Day New York, jan. 2005.
[10] Lockwood, Charles, "As Green as the Grass Outside," *Barron's*, 12/25.06.
[11] Kats. Ibid.
[12] "Making the Case for Green Building," *Building Green*, 14, Number 5, 2005.
[13] "Commercial Lease Properties: Finding the Benefit of Energy Efficient Lighting." http://www.aboutlightingcontrols.org/education/papers/commlease.sht
[14] "Fireman's Fund Introduces Green Building Coverage." http://www.insurancejournal.com/news/national/2006/10/16/73335.htm
[15] http://www.firemansfund.com/servlet/dcms?c=business&rkey=437
[16] "Going Green in Ways Big and Small." http://www.accessmylibrary.com/coms2/summary_0286-30113847_ITM
[17] "Making the Case for Green Building," *Environmental Building News*. April 2005, http://ecoconsulting.net/www/46%20reasons%20to%20be%20green.pdf
[18] "Lessons Learned." Page 12.
[19] Lockwood, Ibid.
[20] Solar Energy Industries Association. http://www.seia.org/solarnews.php?id=128