the future is **green**

Global warming has pushed to the forefront as a real and critical environmental issue, and human activities that produce greenhouse gases are fueling the fire. The proof can be easily derived from the annual global temperature increases over the past decades; increased changes in weather patterns causing drought, flooding, and violent storms; and the rapid melting of our polar ice caps and mountain glaciers. If nothing is done to reverse the impacts we continue to cause, what is at stake is our ability to be sustained by our own planet earth. It is about time that we have begun to look at how we can live more harmoniously with the natural environment that we are so dependent upon.

The Monterey Loft/Chief Seattle Club Renovation is one small piece of Seattle's urban landscape among others that is trying to make a difference and set an example of ways we can reduce our consumption of energy and other critical natural resources. The rehabilitation of this historic Seattle structure through the implementation of "green" design strategies was a main driving force in the final outcome and how the building is maintained and used today.

To provide a context for these concerns and opportunities, the timeline spanning these panels shows milestones in environmental awareness over the past 120 years...from the creation of chemical compounds which contributed to atmospheric ozone depletion to international governmental action addressing their results, as well as key events which spurred the environmentalism movement into action.

Significant dates in Seattle's history are shown beneath, with this building's own development pictured. Above these dates, a climbing red zone shows the growth of world population, reminding us that as more people occupy the planet the remaining resources need to be more carefully and wisely used...and re-used.

World population approximately 1.4 billion

Environmental milestones

Seattle milestones

1890

- Yosemite National Park Bill established Yosemite and Sequoia National Parks in California
- the Sierra Club founded by John Muir
- the first transcontinental train arrives in Seattle
- Washington becomes the 42nd State
- the Great Seattle Fire leaves more than 25 blocks of downtown Seattle in smoldering ruins but no confirmed deaths

Seattle population 42,837

- the steamship Portland docks in Seattle loaded with gold, sparking the Klondike Gold Rush, and business generated by supplying prospectors swells the population and income of the city

1900

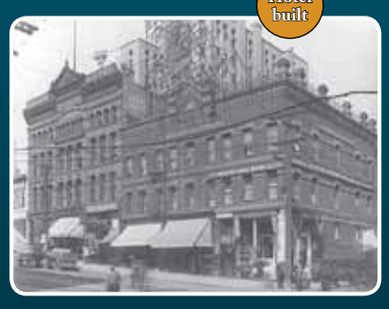
- US President Theodore Roosevelt creates first National Bird Preserve (the beginning of the Wildlife Refuge system), on Pelican Island, Florida
- The term "smog" is coined by Henry Antoine des Voeux in a London meeting to express concern over air pollution
- Pike Place Market opens
- world's first gasoline service station opens at Holgate Street and Western Avenue

Seattle's population 80,671

1910

- Washington State grants women the right to vote

Seattle's population 237,194



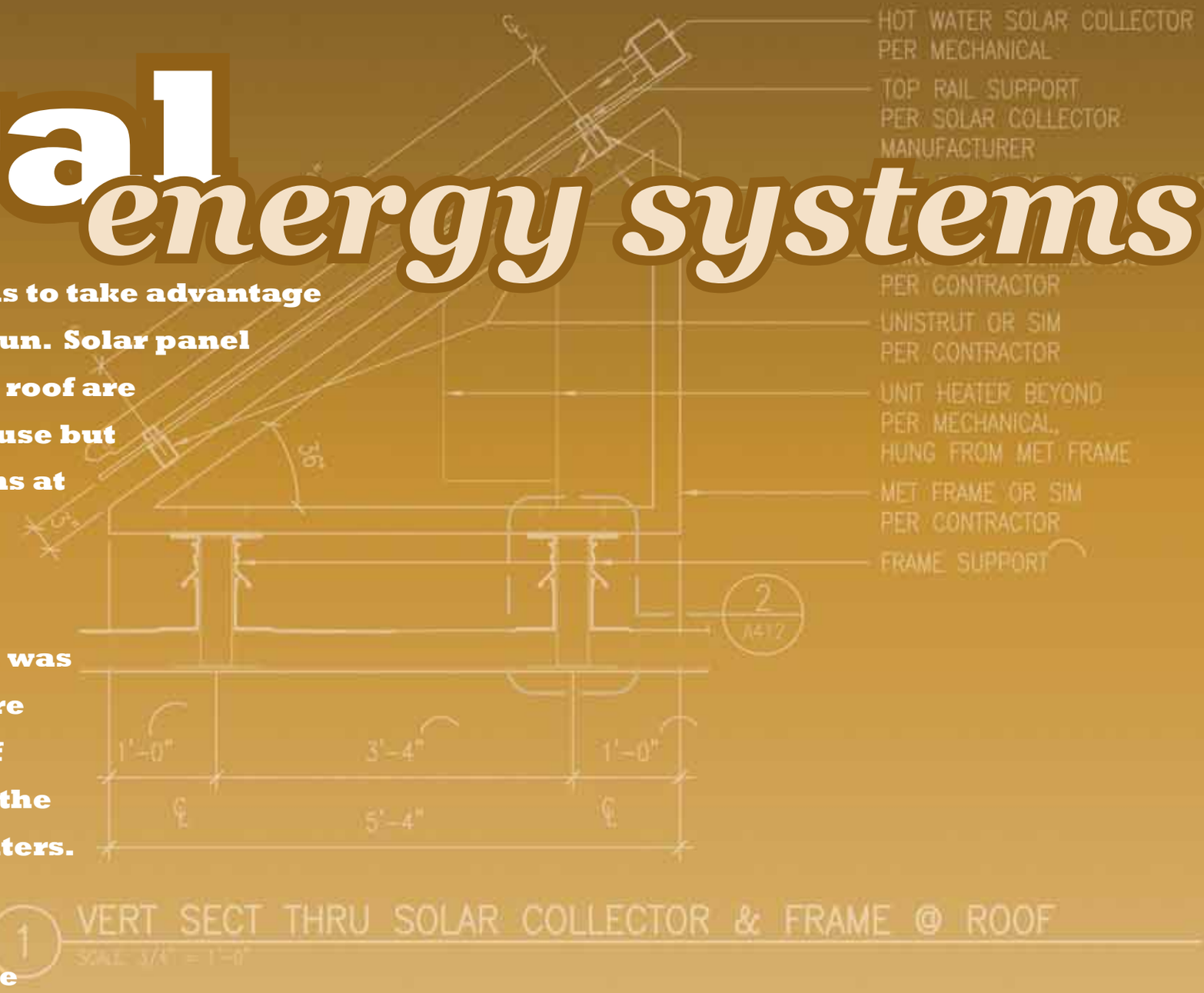
rendering by Anita Lehmann; photograph courtesy of Museum of History & Industry Photograph Collection

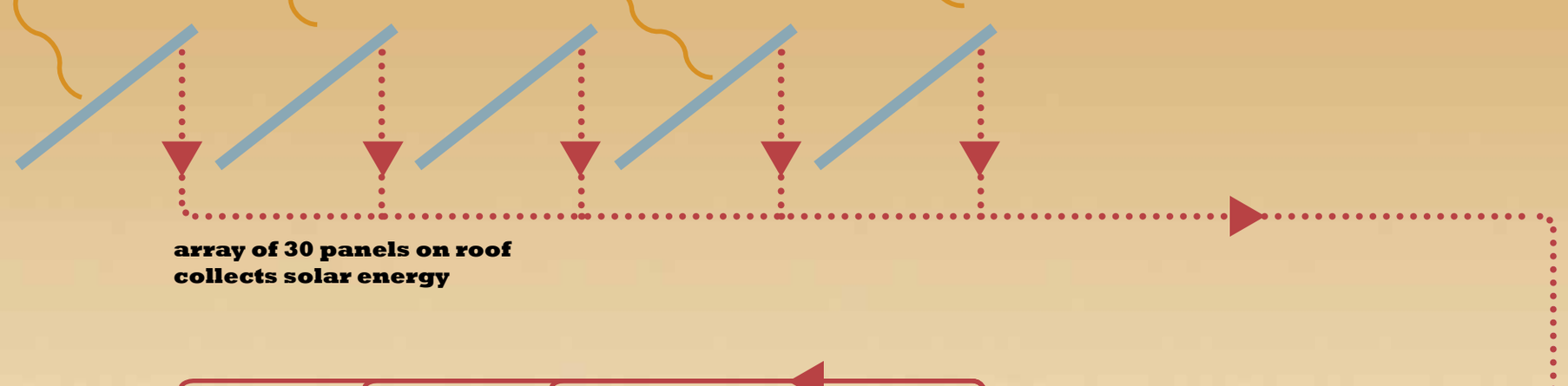
natural *energy systems*

One primary focus of this renovation was to take advantage of the abundant and free energy of the sun. Solar panel arrays installed on top of the penthouse roof are able to not only heat water for personal use but also to further power the heating systems at both the residential levels and the Chief Seattle Club.

In addition, a hot water recovery system was installed at the basement level to capture heat from hot shower drains in the Chief Seattle Club, preheating water entering the building before it reaches the water heaters.

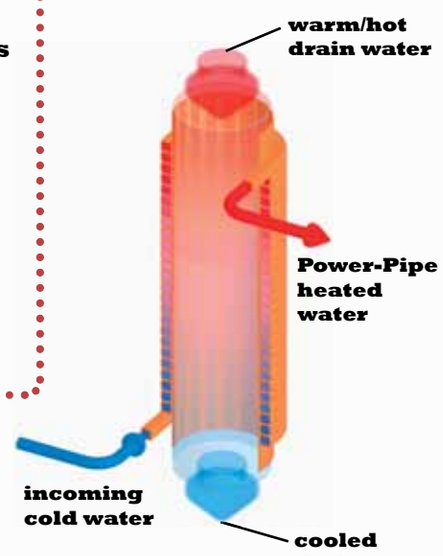
Both of these systems reduce the amount of energy that would typically be needed to drive these systems and reduce the amount of carbon dioxide output that contributes to global warming.





solar hot water heating panel arrays

Power-Pipe™ Drainwater Heat Recovery System



Port of Seattle established

the Leschi, the first automobile ferry, makes its first trip across Lake Washington

Boeing Airplane established

Scientific American reports alcohol-gasoline anti-knock blend is "universally" expected to be the fuel of the future

the National Park Service is created by the U.S. Congress

1920

Seattle's population 315,312

General Motors and Standard Oil spokesmen, in Public Health Service hearings, claim that there are no alternatives to leaded gasoline as an anti-knock additive

Thomas Edison flips a switch in West Orange, New Jersey, and turns on Seattle's new electric street-lighting system

the Swann Chemical Company develops polychlorinated biphenyls (PCBs) for transformer coolant use

Thomas Midgley develops chlorofluorocarbons (CFCs) as a non-toxic refrigerant

Second Avenue Extension results in new façades for the Hotel

1930

Seattle's population 365,583

World population 2 billion

Exceptional precipitation absence in northern hemisphere exacerbated by human activities causes the Dust Bowl drought of the US plains and the Eastern European Ukrano-External Carpathian

The Denny Regrade, begun in 1898 to level Denny Hill and surrounding area, is completed

the Aurora Bridge, the first major highway bridge built in Seattle, is dedicated

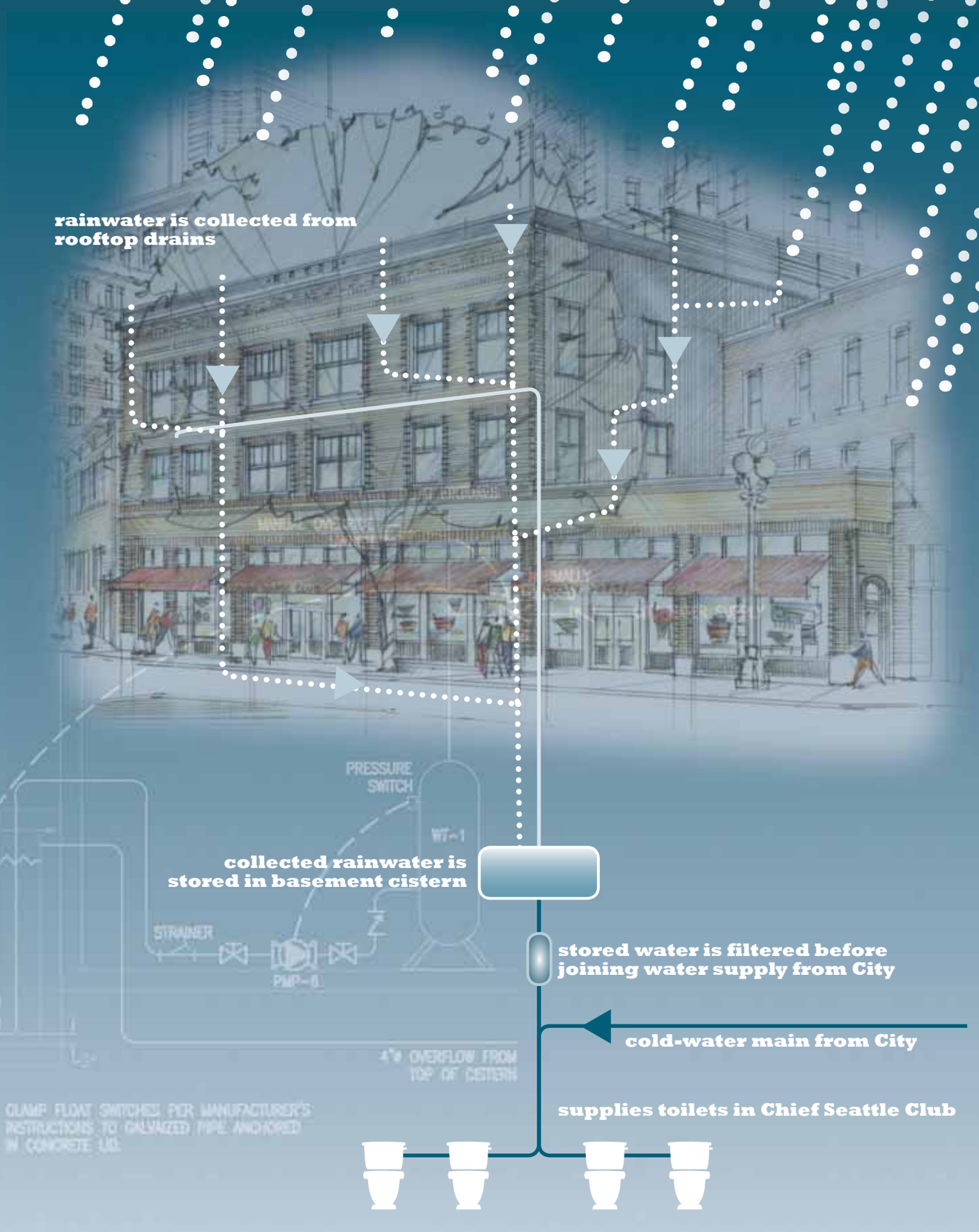
Washington Park Arboretum is established

photograph at right courtesy of University of Washington Libraries Collections, James Patrick Lee; Power-Pipe illustration courtesy of RewnewABILITY Energy Inc., © 2004

water conservation

Another natural resource that this facility utilizes is the water that falls from the sky. A significant impact of global warming will be a reduction in annual mountain snowpack that we locally rely upon in the Puget Sound region to feed our reservoirs for human use.

By storing what is captured from the roof in a cistern at the basement level, rainwater is used for toilets in the Chief Seattle Club and the water supply lines at each roof deck. Using this water, which would otherwise be channeled into our sewer lines, helps to reduce our consumption of this natural resource and to ensure that there will be enough clean water for Seattle's ever-increasing population.



The U.S. Environmental Protection Agency's "Energy-Star™" program was introduced in 1992 as a voluntary, market-based partnership to reduce greenhouse gas emissions through energy efficiency. Products which earn this designation meet strict specifications set by the government.

Energy-Star™ appliances installed in the Monterey Lofts include Whirlpool refrigerators which use 40% less energy than conventional models sold in 2001 and dishwashers which use much less water than conventional models and at least 41% less energy than the federal minimum standard for energy consumption.

The Chief Seattle Club is equipped with water-saving plumbing systems such as shower limiter valves and low-maintenance sensor-operated toilets.

SHOWEROFF® is a durable, piston-actuated metering shower valve providing a full shower flow for approximately 45 seconds which can be repeated indefinitely.

1940

- Soil Conservation and Domestic Allotment Act (U.S.)
- Exceptional precipitation absence in northern hemisphere exacerbated by human activities causes the Dust Bowl drought of the US Plains and the Eastern European Ukrano-External Carpathian
- Ivar Haglund opens a fish-and-chips stand at Pier 54
- The insecticidal properties of DDT discovered by Paul Hermann Müller, who was awarded the 1948 Nobel Prize in Physiology and Medicine for his effort
- the Lake Washington Floating Bridge opens, connecting Seattle with Mercer Island and the Eastside
- first use of atomic weapons during war in bombings of Hiroshima and Nagasaki
- Japanese Americans are ordered to evacuate Seattle. More than 12,000 U.S. citizens of Japanese ancestry from King County were held in inland "relocation centers" during World War II
- World Conservation Union or International Union for Conservation of Nature and Natural Resources (IUCN), dedicated to natural resource conservation, founded

Seattle's population 368,302

1950

- Seattle-Tacoma International Airport opens
- environmental organization The Nature Conservancy is founded in the United States
- First Seafair celebration held
- Alaskan Way Viaduct completed
- Dick's Drive-In opens in Wallingford
- the first nuclear power plant to generate electricity for a power grid started operations at Obninsk in the Soviet Union
- the Great Smog: polluted fog in London kills around 4,000
- Watershed Protection and Flood Prevention Act (U.S.)
- Clean Air Act (U.K.)
- Fish and Wildlife Act (U.S.)
- Minamata disease, caused by severe mercury poisoning, first identified in Japan
- the International Geophysical Year
- Mauna Loa Observatory initiates monitoring of atmospheric Carbon Dioxide (CO_2) levels; the time series eventually became the main reference on global atmospheric change
- Metro established to manage sewers and water cleanup
- A Boeing 707, the first successful passenger jet, takes its first flight

Seattle's population 467,591

rendering by Anita Lehmann; ENERGY STAR text and symbol from the U.S. Environmental Protection Agency website (www.epa.gov); plumbing and appliance photographs from Sloan Valve Company and Whirlpool

recycle *and* re-use

In addition to the natural resources being passively utilized, the Monterey Lofts and Chief Seattle Club renovation makes use of a variety of outside-sourced recycled materials as well as re-using and recycling elements of the building itself.

One positive result of increasing environmental awareness is an ever-expanding market both of and for recycled building elements, which in turn encourages innovation. An example in use here is cotton insulation—made from recycled blue jeans—which is being used at the residential levels in place of standard fiberglass insulation. The residential units' bathroom tile is 50% reclaimed, unfired, raw waste material; the carpet contains a minimum of 50% recycled nylon content. Renewable resources are present as well, such as in the bamboo flooring used in all residential units.

In addition, the building itself is being recycled, too—the entire brick envelope has been preserved, existing floor plates have been reused, and interior design elements such as the base trim and door molding have been salvaged and reused at the entry gallery and public hallways. 160 tons of construction debris was also taken from the site and diverted to be re-used on other projects or recycled.

Most of the materials used in this renovation are supplied locally, within a 150-mile radius, thus reducing the amount of fuel spent in equipping the project.

World population | 3 billion

1960

- World Wildlife Fund (WWF) founded in Switzerland
- Rachel Carson's book *Silent Spring* published, launching the environmentalism movement
- Clean Air Act (U.S.)
- Endangered Species Preservation Act (U.S.)
- National Wildlife Refuge System Act (U.S.)
- Century 21 World's Fair
- the Evergreen Point Floating Bridge opens
- Interstate 5 is completed from Tacoma to Everett
- Seattle's new professional basketball team, the Supersonics, plays its first game
- voters approve $40 million of "Forward Thrust" bonds to build the Kingdome, the Aquarium, youth centers, and highways; a $385 million mass-transit proposal is rejected

1970

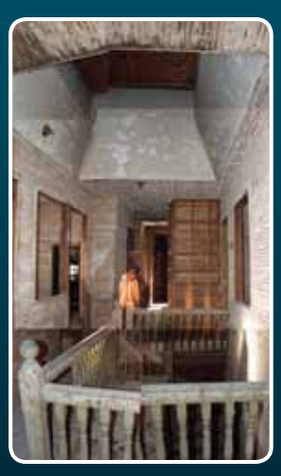
- millions of people gather in the United States for the first Earth Day
- National Environmental Policy Act (NEPA) (U.S)
- Wild and Scenic Rivers Act (U.S.)
- National Trails System Act (U.S.)
- Resource Recovery Act (U.S.)
- U.S. Environmental Protection Agency established
- Clean Air Act Extension (U.S.)
- Greenpeace founded in Vancouver, Canada
- Pioneer Square designated city's first historic district
- Starbucks opens its first café at Pike Place Market
- Chlorofluorocarbons are first hypothesized to cause ozone depletion
- Expo '74, the first world's fair with an environmental theme, is held in Spokane, Washington
- Ocean Dumping Act (U.S.)
- Control of Pollution Act (U.K.)
- Federal Water Pollution Control Act (U.S.)
- Endangered Species Act (U.S.)
- DDT banned in the U.S.
- Metro is expanded to include mass transit
- Micro-Soft is founded by Bill Gates and Paul Allen
- Seattle Seahawks play their first regular-season game
- voters save Pike Place Market, thwarting an eight-year effort to replace it with offices, hotels, and parking garages
- Seattle Mariners play their first game
- Seattle City Light launches energy conservation programs
- Festival '71 (the forerunner of Bumbershoot)

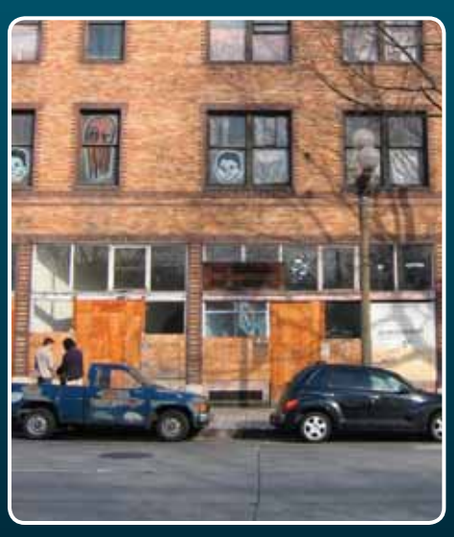
1980

- Three Mile Island, worst nuclear power accident in US history
- Clean Water Act (U.S.)
- Energy Policy and Conservation Act (U.S.) bans production of PCBs
- Mount St. Helens erupts explosively
- Seattle Water Department launches water conservation programs
- Seattle's Redhook Ale starts the microbrew craze

Seattle's population
557,087

Seattle's population
530,831



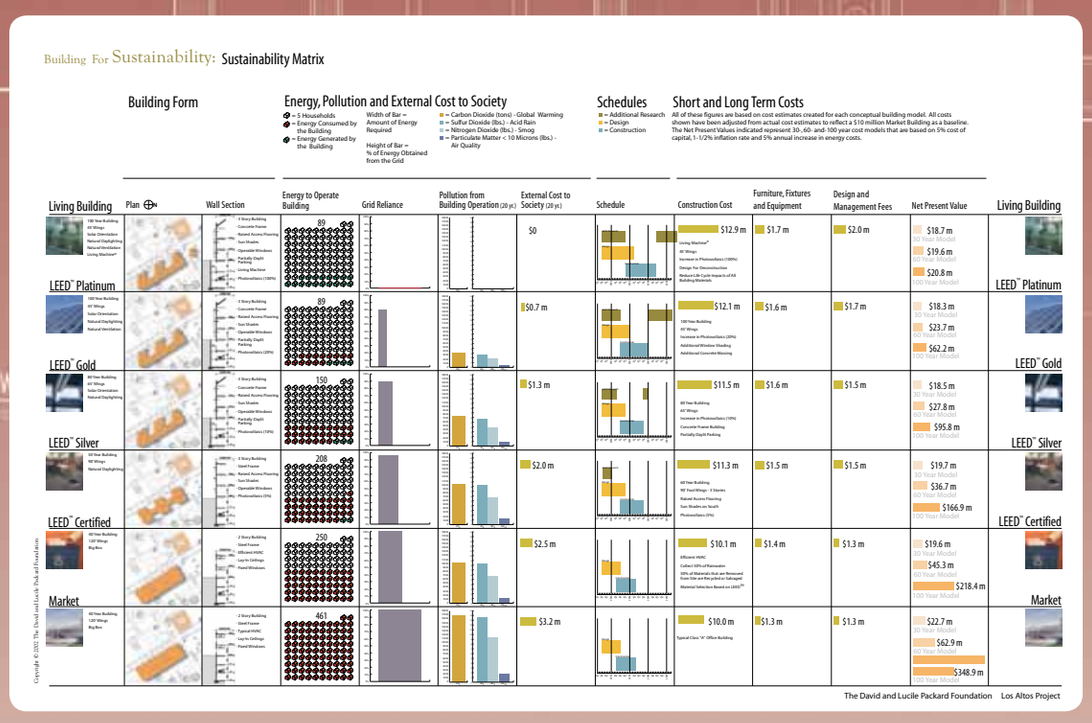


Seattle's population
493,846

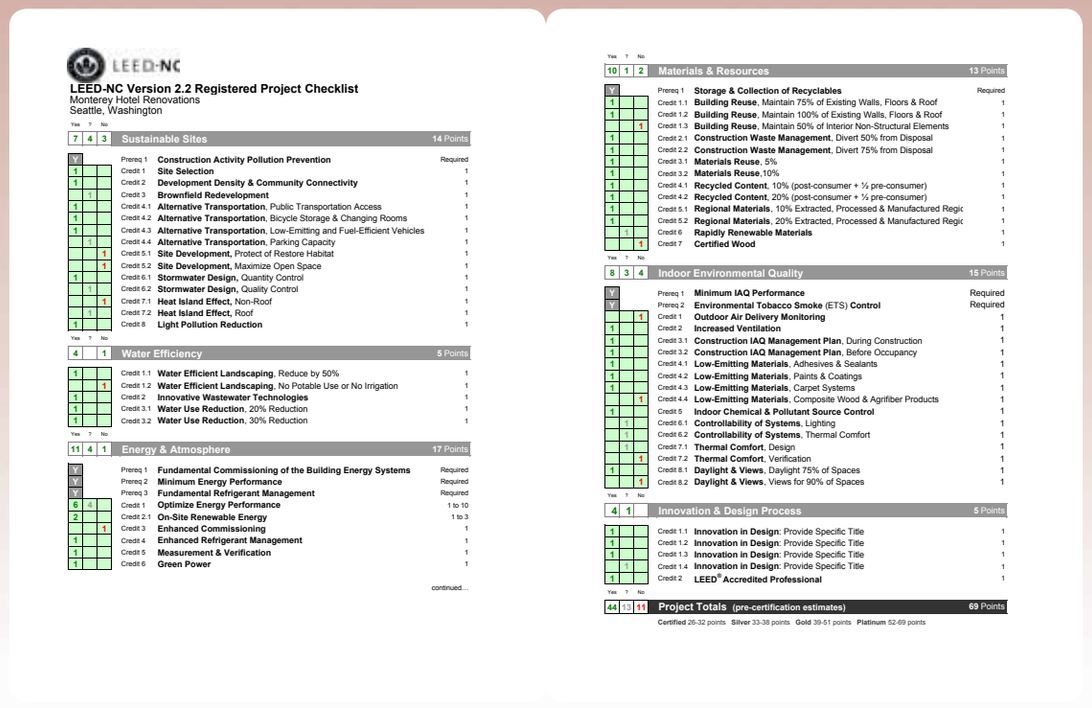
recycling symbol by Gary Anderson

environmental design

The elements of this building's renovation featured here weren't merely coincidental; the restoration was designed to fulfill many goals of the U.S. Green Building Council's LEED® certification program, earning a Gold rating upon completion.



The Leadership in Energy and Environmental Design (LEED) Green Building Rating System™, first established by the USGBC in 1994, provides building owners and architects with a way to plan and measure the environmental impact their building will have, not just in its life but also in its creation. Its standards are publicly reviewed by the USGBC's 5,500-strong membership of organizations, an open and transparent process which is regularly renewed to reflect new advances in "green" building techniques and scientific analysis of human impact on the environment.



LEED-NC

LEED-NC Version 2.2 Registered Project Checklist
Monterey Hotel Renovations
Seattle, Washington

Yes	?	No			
7	4	3	**Sustainable Sites**	**14** Points	
Y			Prereq 1	**Construction Activity Pollution Prevention**	Required
1			Credit 1	**Site Selection**	1
1			Credit 2	**Development Density & Community Connectivity**	1
	1		Credit 3	**Brownfield Redevelopment**	1
1			Credit 4.1	**Alternative Transportation**, Public Transportation Access	1
1			Credit 4.2	**Alternative Transportation**, Bicycle Storage & Changing Rooms	1
1			Credit 4.3	**Alternative Transportation**, Low-Emitting and Fuel-Efficient Vehicles	1
	1		Credit 4.4	**Alternative Transportation**, Parking Capacity	1
		1	Credit 5.1	**Site Development,** Protect of Restore Habitat	1
		1	Credit 5.2	**Site Development,** Maximize Open Space	1
1			Credit 6.1	**Stormwater Design,** Quantity Control	1
	1		Credit 6.2	**Stormwater Design,** Quality Control	1
		1	Credit 7.1	**Heat Island Effect,** Non-Roof	1
	1		Credit 7.2	**Heat Island Effect,** Roof	1
1			Credit 8	**Light Pollution Reduction**	1
Yes	?	No			
4		1	**Water Efficiency**	**5** Points	
1			Credit 1.1	**Water Efficient Landscaping**, Reduce by 50%	1
		1	Credit 1.2	**Water Efficient Landscaping**, No Potable Use or No Irrigation	1
1			Credit 2	**Innovative Wastewater Technologies**	1
1			Credit 3.1	**Water Use Reduction**, 20% Reduction	1
1			Credit 3.2	**Water Use Reduction**, 30% Reduction	1
Yes	?	No			
11	4	1	**Energy & Atmosphere**	**17** Points	
Y			Prereq 1	**Fundamental Commissioning of the Building Energy Systems**	Required
Y			Prereq 2	**Minimum Energy Performance**	Required
Y			Prereq 3	**Fundamental Refrigerant Management**	Required
6	4		Credit 1	**Optimize Energy Performance**	1 to 10
2			Credit 2.1	**On-Site Renewable Energy**	1 to 3
		1	Credit 3	**Enhanced Commissioning**	1
1			Credit 4	**Enhanced Refrigerant Management**	1
1			Credit 5	**Measurement & Verification**	1
1			Credit 6	**Green Power**	1

continued...

Yes	?	No			
10	1	2	**Materials & Resources**	**13** Points	
Y			Prereq 1	**Storage & Collection of Recyclables**	Required
1			Credit 1.1	**Building Reuse**, Maintain 75% of Existing Walls, Floors & Roof	1
1			Credit 1.2	**Building Reuse**, Maintain 100% of Existing Walls, Floors & Roof	1
		1	Credit 1.3	**Building Reuse**, Maintain 50% of Interior Non-Structural Elements	1
1			Credit 2.1	**Construction Waste Management**, Divert 50% from Disposal	1
1			Credit 2.2	**Construction Waste Management**, Divert 75% from Disposal	1
1			Credit 3.1	**Materials Reuse**, 5%	1
1			Credit 3.2	**Materials Reuse**,10%	1
1			Credit 4.1	**Recycled Content**, 10% (post-consumer + ½ pre-consumer)	1
1			Credit 4.2	**Recycled Content**, 20% (post-consumer + ½ pre-consumer)	1
1			Credit 5.1	**Regional Materials**, 10% Extracted, Processed & Manufactured Regic	1
1			Credit 5.2	**Regional Materials**, 20% Extracted, Processed & Manufactured Regic	1
	1		Credit 6	**Rapidly Renewable Materials**	1
		1	Credit 7	**Certified Wood**	1
Yes	?	No			
8	3	4	**Indoor Environmental Quality**	**15** Points	
Y			Prereq 1	**Minimum IAQ Performance**	Required
Y			Prereq 2	**Environmental Tobacco Smoke** (ETS) **Control**	Required
		1	Credit 1	**Outdoor Air Delivery Monitoring**	1
1			Credit 2	**Increased Ventilation**	1
1			Credit 3.1	**Construction IAQ Management Plan**, During Construction	1
1			Credit 3.2	**Construction IAQ Management Plan**, Before Occupancy	1
1			Credit 4.1	**Low-Emitting Materials**, Adhesives & Sealants	1
1			Credit 4.2	**Low-Emitting Materials**, Paints & Coatings	1
1			Credit 4.3	**Low-Emitting Materials**, Carpet Systems	1
		1	Credit 4.4	**Low-Emitting Materials**, Composite Wood & Agrifiber Products	1
1			Credit 5	**Indoor Chemical & Pollutant Source Control**	1
	1		Credit 6.1	**Controllability of Systems**, Lighting	1
	1		Credit 6.2	**Controllability of Systems**, Thermal Comfort	1
	1		Credit 7.1	**Thermal Comfort**, Design	1
		1	Credit 7.2	**Thermal Comfort**, Verification	1
1			Credit 8.1	**Daylight & Views**, Daylight 75% of Spaces	1
		1	Credit 8.2	**Daylight & Views**, Views for 90% of Spaces	1
Yes	?	No			
4	1		**Innovation & Design Process**	**5** Points	
1			Credit 1.1	**Innovation in Design**: Provide Specific Title	1
1			Credit 1.2	**Innovation in Design**: Provide Specific Title	1
1			Credit 1.3	**Innovation in Design**: Provide Specific Title	1
1			Credit 1.4	**Innovation in Design**: Provide Specific Title	1
1			Credit 2	**LEED® Accredited Professional**	1
Yes	?	No			
44	13	11	**Project Totals** (pre-certification estimates)	**69** Points	

Certified 26-32 points **Silver** 33-38 points **Gold** 39-51 points **Platinum** 52-69 points

Projects earning LEED certification demonstrate performance in five areas of environmental health:

- **sustainable site development**
- **water savings**
- **energy efficiency**
- **materials selection**
- **indoor environmental quality**

Elements of these addressed or included in the project's design and construction was documented, with each step counting for a single credit toward a possible score of 69 points.

World population 5 billion

World population 6 billion

1990

- world's worst nuclear power accident occurs at a plant in Chernobyl', Ukraine
- Montreal Protocol on Substances that Deplete the Ozone Layer limits CFC production worldwide
- Intergovernmental Panel on Climate Change (IPCC) established by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) to assess the "risk of human-induced climate change"
- Ocean Dumping Ban Act (U.S.)
- Exxon Valdez creates largest oil spill in U.S. history
- IPCC first assessment report is completed and serves as the basis of the United Nations Framework Convention on Climate Change (UNFCCC)
- National Environmental Education Act
- the 76-story Columbia Center (Bank of America Tower) is completed, becoming Seattle's tallest building
- the Metro bus tunnel is completed under downtown Seattle
- the Interstate 90 floating bridge sinks in a storm
- City adopts "Buy Recycled" ordinance
- City adopts Environmental Action Agenda with sustainability as one of 11 guiding principles
- Metro merges with King County
- model conservation home created by City as a demonstration
- City adopts "Toward a Sustainable Seattle," a Comprehensive Plan for Growth Management
- The first genetically modified food crop (a rot-resistant tomato) released to the market
- The Kyōto Protocol, an amendment to the UNFCCC, is negotiated in Kyōto, Japan; countries that ratify this protocol commit to reduce their emissions of carbon dioxide and five other greenhouse gases
- U.S. Senate unanimously passes the Byrd-Hagel Resolution, which states that the United States should not be a signatory to any protocol that did not include binding targets and timetables for developing as well as industrialized nations
- Sound Transit is approved by voters and begins the planning and operation of commuter rail trains and express bus service; a light-rail line from SeaTac to the University District is also planned

Seattle's population 516,259

photograph courtesy of Jones & Jones Architects and Landscape Architects, Ltd.

2000

- U.S. President Bush rejects the Kyōto Protocol
- Safeco Field, new home of the Mariners, opens
- City adopts sustainable building policy for City owned facilities
- first City LEED project completed (Justice Center)
- Experience Music Project, Paul Allen's homage to rock 'n' roll music, opens
- the Kingdome is imploded to make way for the new football stadium
- European Heat Wave results in the premature deaths of at least 35,000 people
- Indian Ocean earthquake causes large tsunamis, killing nearly a quarter of a million people
- Kyōto Protocol enters into force
- Hurricanes Katrina, Rita, and Wilma cause widespread destruction and environmental harm to coastal communities in the US Gulf Coast region
- former U.S. vice president Al Gore releases "An Inconvenient Truth," a documentary describing global warming
- Seattle is #1 in the U.S. for LEED™ projects and LEED-accredited professionals
- Boeing moves its corporate headquarters to Chicago
- 6.8 magnitude earthquake shakes Puget Sound, damaging the Monterey Hotel
- same day the Kyōto Protocol goes into effect for 141 nations across the globe, Seattle Mayor Greg Nickels issues the Kyōto Challenge to mayors across the U.S.

Seattle's population 563,374