Sellen

ZGF
ZIMMER GUNSUL FRASCA ARCHITECTS LLP

Bill & Melinda Gates Foundation Campus
Sellen, LEED Platinum

5. Overall Sustainable Design Strategy

The 1063 Block Replacement project has the potential to pivot the State to a new type of building and a new level of sustainability performance. In an era of constrained revenue, conservation of resources and dollars is the new revenue stream. Through high-efficiency building systems, third-party LEED certification, measurement and verification during operations, and investing in "Made in Washington" products and technology, this project will be a blueprint for not only an optimized building but also one that delivers on the full definition of sustainability.

Russell Investments Office Headquarters, Sellen (LEED Gold)

A New Standard of Green

The proposed 1063 Block Replacement design establishes a new standard for State buildings through a set of interrelated strategies and high-performing achievements, including:

- Exceptional whole building performance of 30.1 kBTU/sf/yr and an Energy Star score of 99.
- Local occupant control for heating and cooling; access to operable windows and daylight to improve satisfaction and reduce energy use.
- A building design that empowers occupants, increases comfort and supports health and well-being.
- A new connection between this building, the Capitol Campus and the community.
- Investment in Washington businesses, workers and technology.
- Continuous collection and regular communication of thermal comfort, energy and water performance data to tenants, operators and the owner to optimize the building's operations and inform the design of future buildings.
- Reduction of potable water through efficient fixtures, high-efficiency irrigation and the use of native or adapted plants.
- Local and regional materials sourcing.
- A reconfigurable building that can support changing tenant needs in the future.
- Selection of material and building systems that reduce embodied and operational emissions.
- Optional betterments for renewable energy generation and treatment of stormwater with rain gardens.

Our occupant-enabled HVAC design allows individuals to regulate their local temperature without needing to open their windows, resulting in higher thermal satisfaction without excess energy use.

- A reduction of the first cost premiums of high-efficiency mechanical and lighting systems through utility conservation grants.
- Waste diversion during demolition, construction and operations.

Achieving Maximum Occupant Satisfaction

As we have detailed in the mechanical and architectural design narratives, our proposed energy use intensity of 30.1 kBTU/sf/yr is achieved through performance lighting systems and mechanical systems such as ground-source heat exchangers, hydronic distribution, heat recovery chillers, and high-efficiency in-zone heating and cooling units.

Energy performance can be driven even lower by occupants who have the ability to optimize their environment through passive strategies such as operable windows, which can further improve energy performance when outside conditions are favorable. Our occupant-enabled HVAC design allows individuals to regulate their local temperature without needing to open their windows. Enabling occupant control of their thermal environment, much like occupants have control of their lights, results in higher thermal satisfaction without excess energy use.

Beyond mechanical systems, the fundamental design decisions and the spatial organization of the building foster increased occupant comfort and a more satisfying working environment. The floor plate is thinner than a conventional office building, allowing more people access to daylight and passive cooling via operable windows. Carefully tuned shading scrims and shades on the east and west façades block harsh sun while providing views that connect occupants with the city, Puget Sound and surrounding mountains. The angle of the shades is designed to allow summer breezes from the north while sheltering the building envelope from colder winter winds.

To reduce absenteeism and health issues that can stem from poor indoor environmental quality, a dedicated outside air system supplies ventilation air to all the spaces; occupants always receive 100 percent fresh air — not air that is mixed with recirculated air. Operable windows at the office areas offer additional outside air if desired and are a source of free cooling in temperate months. To maintain excellent air quality at the building interior, all materials and finishes comply with all of the LEED Low-Emitting Materials IEQ credits (IEQc4.1 through 4.4), all entrances have walk-off mats to reduce tracking in exterior pollutants, and all custodial rooms are under negative pressure.

In addition to ample fresh air, access to natural daylighting is equally important for a quality indoor environment and sense of well-being. Through the perimeter windows and from the atrium skylight, natural daylight reaches most of the office areas and forms a needed connection with the exterior. The connection and affinity to nature, biophilia, is a powerful and positive determinant of occupant well-being. The building design offers several biophilic connections to nature, from the visual extension of the Olmsted Lawn into the new south facing front porch, to the fourth floor green roof that offers a striking view north to Puget Sound.

Resource Conservation

Key to realizing exceptional energy and water conservation in this building — and future State buildings — is closing the loop between data collection, analysis, communication and action. Through extensive sub-metering — use of performance dashboards to gauge progress and in-person occupant engagement during the execution of the five-year measurement and verification program — this building will provide a source of data back to tenants, operators and the owner on how to best optimize performance. We look forward to collaborating with the tenants and operators and ongoing lunch-and-learn presentations where we will share performance data and next steps to reach our collective goals. Through our experience at Federal Center South, we understand how important extensive sub-metering and a robust measurement and verification program is to provide critical analytical data that identifies performance deviations and, most importantly, corrective actions so the project reaches the EUI target.

The design will exceed a 35 percent reduction in potable water conservation through high-efficiency water closets, urinals and metered faucets at lavatories. Irrigation water usage will exceed a 50 percent usage reduction compared to a conventional baseline through high-efficiency drip irrigation systems paired with a large percentage of native and adapted vegetation. Along the sidewalks, plants will also serve to improve the stormwater quality by routing surface water through rain gardens. The City of Olympia, as a recipient of the EPA Greening America's Capitals grant, is studying how to implement green infrastructure along Capitol

A flexible, durable and context-sensitive building is also a sustainable one. Your new facility will be a welcoming gateway embodying the connection between these offices and the greater community and state it serves.

Added Value: Green Screen Lobby Kiosk

As one of our betterments, we have proposed a "green screen" lobby kiosk. This provides building occupants and visitors with the opportunity to learn about the building's sustainability features and understand its real-time utility usage, we have included a "green screen" kiosk in the design to be placed in the building's lobby. The green kiosk features building resource information including electricity, gas and water consumption. By distributing their energy use to building occupants, we have found this tool helps encourage occupants to save energy. On past projects, we've found it even spurs friendly competition between floors or tenant groups.

Way. We welcome the opportunity to incorporate this building's stormwater strategies into a larger future city-wide green infrastructure effort to improve water quality and the overall health of Puget Sound.

Material Reuse and Waste Diversion

Although construction of the 1063 Block Replacement will necessitate the demolition of the existing building and garage on the site, the demolished concrete and asphalt will be crushed and completely reused as materials in new construction. To minimize transportation emissions, we are studying the logistical and scheduling implications of crushing these materials on site for reuse in your building.

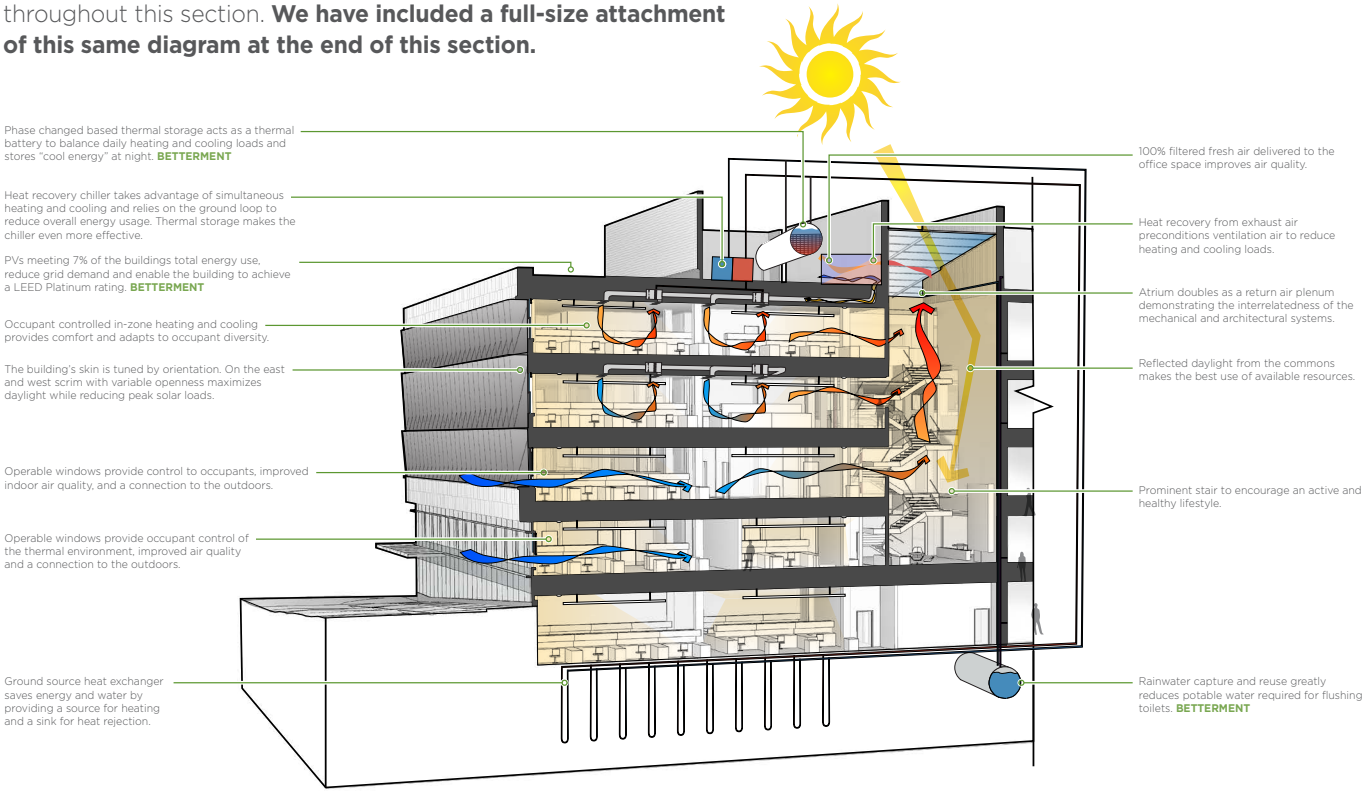
During construction, we will exceed a 75 percent waste diversion rate through on-site source separation of valuable recyclable materials and by leveraging our relationships with trusted haulers and recycling facilities who have a documented history of high recycling rate. Sellen's commitment to construction waste diversion is exemplified by our recycling rate of 95.3% for all Sellen projects. Finally, waste diversion efforts will extend into the operational phase with a tenant education program and dedicated collection and storage areas for recyclables.

Flexibility is Sustainability

A flexible, durable and context-sensitive building is also a sustainable one. To extend the life of this new building and avoid the impacts of another cycle of rebuilding, this building is adaptable to the future needs of either a single tenant or multi-tenant configuration. The central core and the tenant circulation that rings the atrium allows for future subdivision of space or use of the entire floor by a single agency. Similarly, the HVAC system is adaptable to various layouts, and we have provided block-outs in the post-tensioned concrete floors to accommodate future additional stairs between floors of a larger department, if needed. The choice of interior materials, such as stone or polished architectural concrete — simple, durable and attractive — will extend the service life while wearing well over many years of use.

1063 BLOCK REPLACEMENT HIGH-PERFORMANCE SYSTEMS

Below we have illustrated many of the features described throughout this section. **We have included a full-size attachment of this same diagram at the end of this section.**



As our design responds to both the campus and downtown context, the facility will be able to maintain an architectural and urban appeal as Olympia changes over the next century. With a large sheltered front porch, the transparency between the historic campus and the interior spaces, and the building's focal location at the edge of the business district, your new facility will be a welcoming gateway embodying the connection between these offices and the greater community and state it serves.

Made in Washington

As a State office building, this project will be a reflection of Washington materials, businesses, workers and technology. Finished materials, such as the entry terrazzo, will feature Washington stone and the Forest Stewardship Council (FSC) certified wood doors will be sourced from Washington forests. Beyond tactile surfaces, the post-tensioned concrete structure is sourced from Washington quarries and manufactured at nearby concrete plants instead of relying on steel shipped from across the county or abroad.

We intend to procure the recycled metal rebar from a Puget Sound steel recycler and fabricate it at a Puget Sound manufacturer. **Atop the building, we are proposing an optional photovoltaic array betterment that is manufactured completely in Washington by Itek**. It's fitting that this made in Washington high-efficiency panel is the very strategy, if pursued, that will push this project's sustainability performance to **LEED Platinum**.

Beyond the environmental benefits of our state's products, materials and technologies, Made in Washington is also about investing in the people, products and businesses of our state. We estimate that for every dollar invested in this project, it will reinvest more than 75 cents back to Washington companies and workers through material and labor costs. We intend to source materials from Washington as much as possible and will track the percent of total construction costs dollars that support Washington businesses and workers.

In addition to the financial reinvestment in the state we feel that the project can be pivotal in advancing Washington-based industries, such as the ready-mix concrete suppliers, to the forefront of sustainability. We will maximize the use of supplemental cementitious materials (SCM), such as slag, to reduce the amount of cement necessary and lower the greenhouse gas (GHG) emissions associated with cement production while meeting the project's structural, schedule and cost needs.

As an optional betterment, we propose quantifying the reduced impacts of the lower cement mixes through completing a rigorous life-cycle analysis and a third-party reviewed Environmental Product Declaration (EPD). EPDs are essential for pursuing some of the new LEED version 4 Material and Resources credits. Currently, building product EPDs are relatively rare and there are no concrete EPDs for Washington-based concrete manufacturers. Through this project, a new EPD would position a Washington-based concrete manufacturer in a leadership role, readying them for the new generation of LEED v4 in the future while reducing embodied GHG emissions from materials.

LEED Strategy and Approach

Our base bid proposal is a LEED Gold building certified under the USGBC's LEED for New Building, version 2009 rating system. The base bid estimates the attainment of 75 points and provides a significant buffer of 15 points above the minimum 60 point score needed to satisfy the RFP's LEED Gold requirement. Please refer to

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Added Value: Generator Air Quality Permitting

Our team has recent experience with the air quality permitting process for emergency generators in Olympia. We understand the process and evolving requirements of the Department of Ecology and the Olympic Region Clean Air Agency (ORCAA). To be good neighbors and expedite the permit process, we have included the generator with EPA Tier 3 emissions certification, and a Diesel Oxidation Catalyst to reduce emissions even more.

Case Study: Closing the Cost Gap with Incentives

To close the first cost delta between the conventional and higher performing systems at Federal Center South, our team aggressively pursued all available incentives with Seattle City Light (SCL). Through a series of collaborative meetings with SCL, the design-build team identified 10 eligible energy conservation measures (ECMs), and we priced, modeled, installed and commissioned these systems resulting in a $128,881 conservation grant plus an additional grant of $24,399 for energy modeling related to the ECMs. In total, the team's incentives pursuit saved the owner more than $150,000 in the first cost of these higher performing building systems.

the following LEED scorecard for more information on the pursued credits.

To achieve sustainability performance and fulfill the LEED requirements efficiently, we approached our team's credit pursuit in the following order:

- Credits required in the RFP (i.e. energy performance thresholds, alternative vehicle charging station)
- Credits achieved by virtue of location (i.e. public transportation)
- Credits that offer long-term cost savings and environmental benefits over the building's life time (i.e. additional energy or water performance)
- Credits that align with additional Regional Priority points for Olympia (i.e. site selection)
- Credits that support Made in Washington industries (i.e. certified wood, regional materials)
- Innovation credits borrowed from LEED version 4 (i.e. integrated process, environmental product declarations)
- Innovation credits that are currently pilot credits (i.e. reconcile projected and actual energy use, green training for contractor and trades)
- Finally, as an optional betterment, the On-site Renewable Energy Generation (EAc2) credit providing 7 percent of the building's energy needs. We estimate that including this credit will achieve a Platinum rating with a four-point buffer (84 points).

Although this project is using the LEED-NC 2009 version, we have intentionally incorporated more advanced LEED version 4 credits and pilot credits into our project in an effort to advance sustainability knowledge of the designer, contractors and suppliers. Our collaborative team for the 1063 Block Replacement is the same team that delivered the Federal Center South project, and we are able to implement the efficiencies and lessons learned from that project into the 1063 Block Replacement. As part of Sellen's typical construction best management practices, our dedicated sustainability training and consulting group, Sellen Sustainability, will provide jobsite sustainability training and management of the LEED certification process.

Greenhouse Gas Reduction Strategies

Although greenhouse gas emissions from Olympia's electric fuel mix is below the national average, power generation from coal and natural gas still represent 45 percent of fuel mix for Olympia per EPA calculations. At 38 percent lower than the reference ASHRAE 90.1-2007 baseline, this building's energy performance provides a meaningful reduction in operational greenhouse gas emissions compared to the State's existing building portfolio. This reduction, combined with local sourcing of materials and lower cement concrete mixes, supports the agency's requirement to meet the Greenhouse Gas Emissions law (RCW 70.235.050) to reduce emissions to 15 percent lower than 2005 levels by July. 2020.

Cost Reduction Strategies

To bridge the first cost delta between conventional solutions and performance and high-performance systems, we investigated state and federal incentives as well as potential utility grants from Puget Sound Energy (PSE), the electricity and natural gas utility, and LOTT, the potable and reclaimed water purveyor. While not mentioning this project specifically, we understand that PSE typically offers grants for whole building custom approach with incentives up to $1.80/ square foot (of conditioned space) for buildings that perform 30 percent better than the Washington State Energy Code. Outside the conditioned envelope, we intend to pursue a set of component-based prescriptive grants that help reimburse the cost difference between a conventional product and a high-performing product, such as a metal halide exterior lighting fixture and an LED fixture. For plumbing fixtures, LOTT offers a per fixture rebate that we intend to apply to this project.

LEED 2009 for New Construction and Major Renovations

Project Checklist

Block 1063 Replacement, Base Bid Option (see Betterments for Platinum Option)

February 20, 2014.

Sustainable Sites — Possible Points: 26

Y	?	N			
19	5	2			
Y			Prereq 1	Construction Activity Pollution Prevention	
1			Credit 1	Site Selection	1
5			Credit 2	Development Density and Community Connectivity	5
1			Credit 3	Brownfield Redevelopment	1
6			Credit 4.1	Alternative Transportation—Public Transportation Access	6
1			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
3			Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
2			Credit 4.4	Alternative Transportation—Parking Capacity	2
	1		Credit 5.1	Site Development—Protect or 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

Water Efficiency — Possible Points: 10

Y	?	N			
5		5			
Y			Prereq 1	Water Use Reduction—20% Reduction	
2		2	Credit 1	Water Efficient Landscaping	2 to 4
		2	Credit 2	Innovative Wastewater Technologies	2
3		1	Credit 3	Water Use Reduction	2 to 4

Energy and Atmosphere — Possible Points: 35

Y	?	N			
23	5	7			
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
14	1	4	Credit 1	Optimize Energy Performance	1 to 19
	4	3	Credit 2	On-Site Renewable Energy	1 to 7
2			Credit 3	Enhanced Commissioning	2
2			Credit 4	Enhanced Refrigerant Management	2
3			Credit 5	Measurement and Verification	3
2			Credit 6	Green Power	2

Materials and Resources — Possible Points: 14

Y	?	N			
7	1	6			
Y			Prereq 1	Storage and Collection of Recyclables	
		3	Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
		1	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
2			Credit 2	Construction Waste Management	1 to 2
	1	1	Credit 3	Materials Reuse	1 to 2

Materials and Resources, Continued

Y	?	N			
2			Credit 4	Recycled Content	1 to 2
2			Credit 5	Regional Materials	1 to 2
		1	Credit 6	Rapidly Renewable Materials	1
1			Credit 7	Certified Wood	1

Indoor Environmental Quality — Possible Points: 15

Y	?	N			
13	2				
Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
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 and Sealants	1
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
1			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
1			Credit 5	Indoor Chemical and 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 and Views—Daylight	1
	1		Credit 8.2	Daylight and Views—Views	1

Innovation and Design Process — Possible Points: 6

Y	?	N			
6					
1			Credit 1.1	Innovation in Design: v4 IPc1 Integrative Process	1
1			Credit 1.2	Innovation in Design: v4 WEc3 Cooling Tower Water Use	1
1			Credit 1.3	Innovation in Design: v4 WEc4 Water Metering	1
1			Credit 1.4	Innovation in Design: v4 EAc3 Advanced Energy Metering	1
1			Credit 1.5	Pilot Credit EApc27 Reconcile Projected v. Actual Energy Use	1
1			Credit 2	LEED Accredited Professional	1

Regional Priority Credits — Possible Points: 4

Y	?	N			
2	1	1			
1			Credit 1.1	Regional Priority: Site Selection SSc1	1
1			Credit 1.2	Regional Priority: Certified Wood MRc7	1
	1		Credit 1.3	Regional Priority: On-site Renewable Energy, 7% EAc2	1
		1	Credit 1.4	Regional Priority: Stormwater Design, Quantity	1

Total — Possible Points: 110

Y	?	N			
75	14	21			

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

1063 Block Replacement High-Performance Systems

Phase changed based thermal storage acts as a thermal battery to balance daily heating and cooling loads and stores "cool energy" at night. **BETTERMENT**

Heat recovery chiller takes advantage of simultaneous heating and cooling and relies on the ground loop to reduce overall energy usage. Thermal storage makes the chiller even more effective.

PVs meeting 7% of the buildings total energy use, reduce grid demand and enable the building to achieve a LEED Platinum rating. **BETTERMENT**

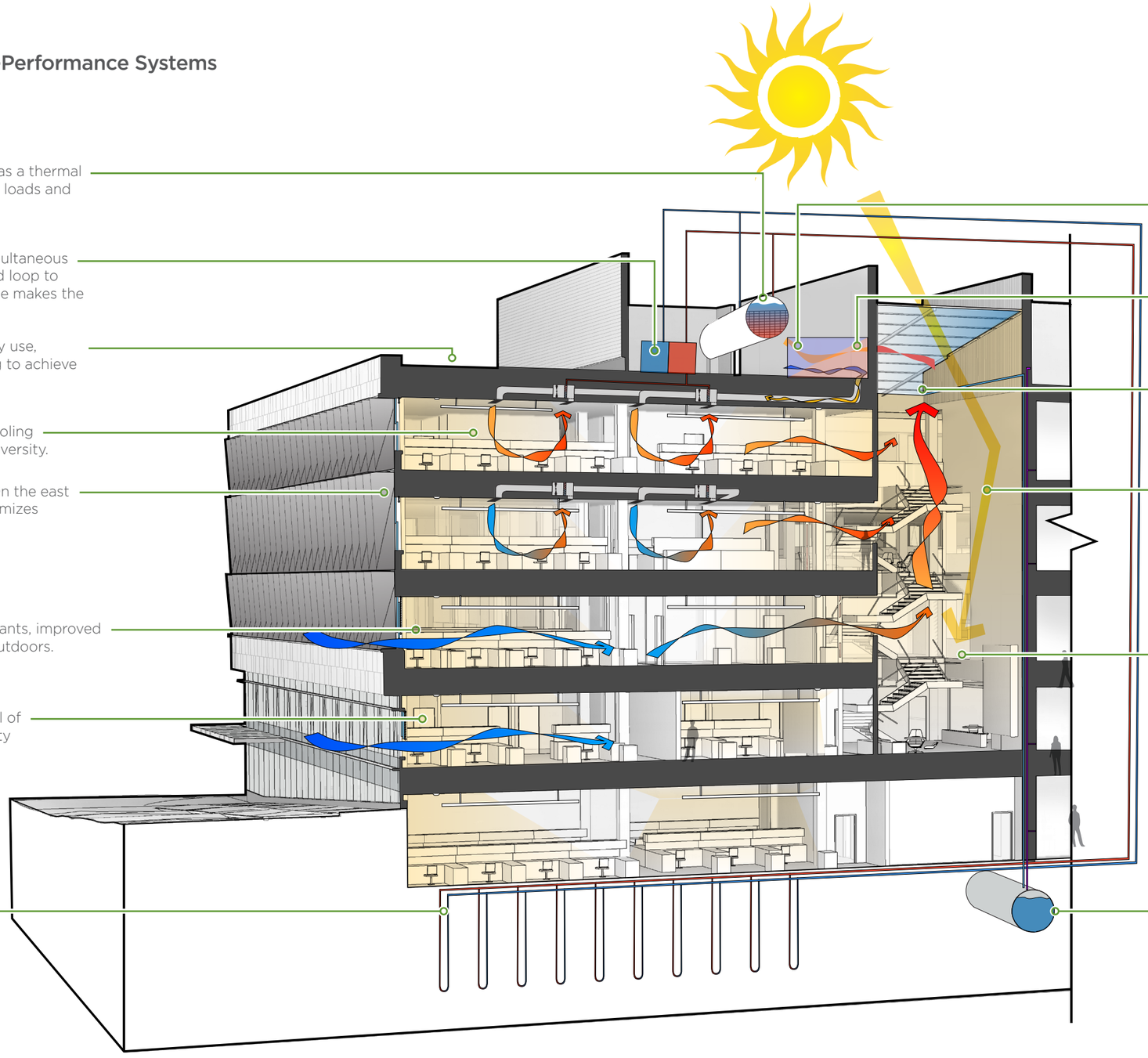
Occupant controlled in-zone heating and cooling provides comfort and adapts to occupant diversity.

The building's skin is tuned by orientation. On the east and west scrim with variable openness maximizes daylight while reducing peak solar loads.

Operable windows provide control to occupants, improved indoor air quality, and a connection to the outdoors.

Operable windows provide occupant control of the thermal environment, improved air quality and a connection to the outdoors.

Ground source heat exchanger saves energy and water by providing a source for heating and a sink for heat rejection.



100% filtered fresh air delivered to the office space improves air quality.

Heat recovery from exhaust air preconditions ventilation air to reduce heating and cooling loads.

Atrium doubles as a return air plenum demonstrating the interrelatedness of the mechanical and architectural systems.

Reflected daylight from the commons makes the best use of available resources.

Prominent stair to encourage an active and healthy lifestyle.

Rainwater capture and reuse greatly reduces potable water required for flushing toilets. **BETTERMENT**