

Center for the Built Environment

LIVABLE BUILDINGS AWARD

December 4, 2024



We Exist to Build Great Things.®

TABLE OF CONTENTS

Livable Buildings Award Submission

Project Narrative	3
Project Images	7
Energy and Carbon Data	10
Project Team	12
Project Cost	12
Additional Information	13
Submittal Format	16

*Use the menu button
to return to the table of
contents from any page
in the document.*

CHANNELING THE POWER OF ‘AND’

DPR Construction built its new Washington, D.C. regional office to be a high-performance building—one that maximizes sustainability, employee wellbeing, AND creates a workplace for the 21st century.

PROGRAM

When DPR outgrew its existing Washington, D.C. area office, it created an opportunity to renovate a 20,000-square-foot space in Reston, Virginia, which had been vacant for over seven years. DPR set lofty goals for its new office space, linked together by the idea that the team really could achieve it all. This is where AND kicked in: The team knew they wanted to achieve Net Zero Energy (NZE) certification and a bevy of other items that, if not handled creatively, could conflict with one another.

GOALS

Articulating DPR’s culture and supporting productive, enjoyable work had to balance with cost effectiveness, functionality and other factors. The team [defined the four goals](#) that were established for the new office:



WORKPLACE OF THE FUTURE

Create a 21st-century workplace that invigorates and encourages the staff



SUSTAINABILITY

Incorporate strategies that contribute to the health and well-being of the environment and the staff



DATA-DRIVEN DECISIONS

Make decisions based on cost-analysis, payback studies and team expertise



LIVING LABORATORY

Build a living lab where technologies, products and systems could be showcased for customers, designers and the community.



Serving as both “owner” and builder allowed DPR the opportunity see things from the customer perspective and take on the complexities involved in making hard decisions to achieve those goals. The design, led by SmithGroup, focused on fostering collaboration through a variety of activity zones and an inviting atmosphere. The layout promoted community with areas like a large kitchen, lounge, and workout room, naturally encouraging social interactions and teamwork.

The office incorporated advanced technology and flexible design, featuring the Herman Miller Living Office system and digital tools for enhanced interactions. This approach earned DPR a Leesman+ accreditation, ranking it in the top 4% of workplaces globally, with a notable 16-point increase in their Leesman Index (Lmi), reflecting high levels of employee engagement and satisfaction.

For sustainability, DPR opted for the renovation of a 20,000-sq.-ft. vacant space rather than constructing a new, significantly reducing embodied carbon. The design prioritized air quality, utilizing materials that minimized VOCs, along with natural lighting enhancements through Solatubes. Wellness-oriented features like a workout room, healthy snack options, and access to bicycles promoted healthier lifestyle choices among employees.

DPR’s new office embodies a forward-thinking approach that harmonizes design with sustainable practices and employee wellness, setting a benchmark for future workplace environments.

Space that gives a healthy “nudge”

DPR’s Reston office is aligned with emerging thinking that promoting healthy office lifestyles is best achieved by subtle features that “nudge” employees toward healthy decisions. This idea is explored in depth in Rex Miller’s *The Healthy Workplace Nudge*, a book that also includes examples of DPR’s approach.



Those nudges take the form of things like the ease of finding healthy snack options, outdoor spaces that encourage walking, and a variety of workspaces that provide flexibility for individual work styles. Emphasizing these features over other options means healthy decisions are easier decisions.

While all these features helped DPR achieve a variety of third-party certifications, the upshot is bringing a more human touch to the workplace that can organically foster healthy living alongside productivity.

29% increase

Based on the employee survey conducted using the Leesman Index, employee engagement increased 29% from the baseline scores observed in the previous DPR office.



INNOVATIVE BEYOND CERTIFICATION

The challenging decisions faced at the DPR Reston office are not uncommon, but the way they were handled—without compromising energy and healthy building goals—is unique. “There were many tough decisions we made that flew in the face of traditional approaches. In the end, they not only allowed us to achieve all our goals, but also provide a model for customers about how a similar approach can work for their goals,” said Chris Gorthy, project executive for DPR.

Through whiteboarding, conversations and detailed analysis of anticipated return on investment, alignment was reached around what was truly important.

KEY PRINCIPLES FOR OPEN-MINDEDNESS:

- **Balancing indoor air quality (IAQ) with energy efficiency needs.** The team opted to preserve the use of 100% outside air even though it meant increasing energy generation needs to achieve NZE. This was the result of the full design and construction team collaborating from project conception. They created a basis of design that aligned with owner project requirements (OPR). As part of that, systems were analyzed on a variety of cost and outcome measures and the best option for IAQ informed how to approach energy offsets.
- **Preserving employee comfort without compromising NZE goals.** “We went all in on productivity and employee comfort,” Gorthy said. “Having a comfortable temperature range in the office is worth a small extra expenditure on energy generation.” This was first outlined in the OPR: “Thermal comfort conditions should be consistent, and highly adjustable per space use, and create an environment that supports occupant comfort.” This served as a guidepost for all partner planning throughout the process.
- **Breaking free of traditional commercial real estate metrics.** Open spaces and non-traditional work areas offer flexibility for future staffing needs while also doubling as program spaces and informal meeting areas. “People could look at our circulation space as wasted space and that we’re paying too much for space that isn’t occupied by workstations,” Gorthy said. “We believe it’s what makes the space successful.” Research trips to see other spaces, including to Herman Miller’s Michigan facilities helped inform this approach.
- **Relying on data, not assumptions.** While there are trends in workplace design, the team opted to focus on feedback from employees on what they wanted in their new space as well as what sorts of features they wouldn’t use. The team surveyed employees directly and analyzed the results to fit the program to employee feedback, instead of assuming that workplace design trends automatically applied.



SUCCESSSES

Knowing the mechanical system would generate a lot of interest as a showcase, DPR installed it behind a glass window wall. Color-coded piping helps visitors more easily understand the functionality of the four-pipe system. DPR went ahead with another concept to further the idea of the mechanical system as a laboratory with the introduction of radiant sails in a few of the meeting rooms. The ceiling-hung system transforms the centuries-old technology of radiant heating and cooling into a modern architectural element, providing alternative thermal comfort to occupants.

FINISHES

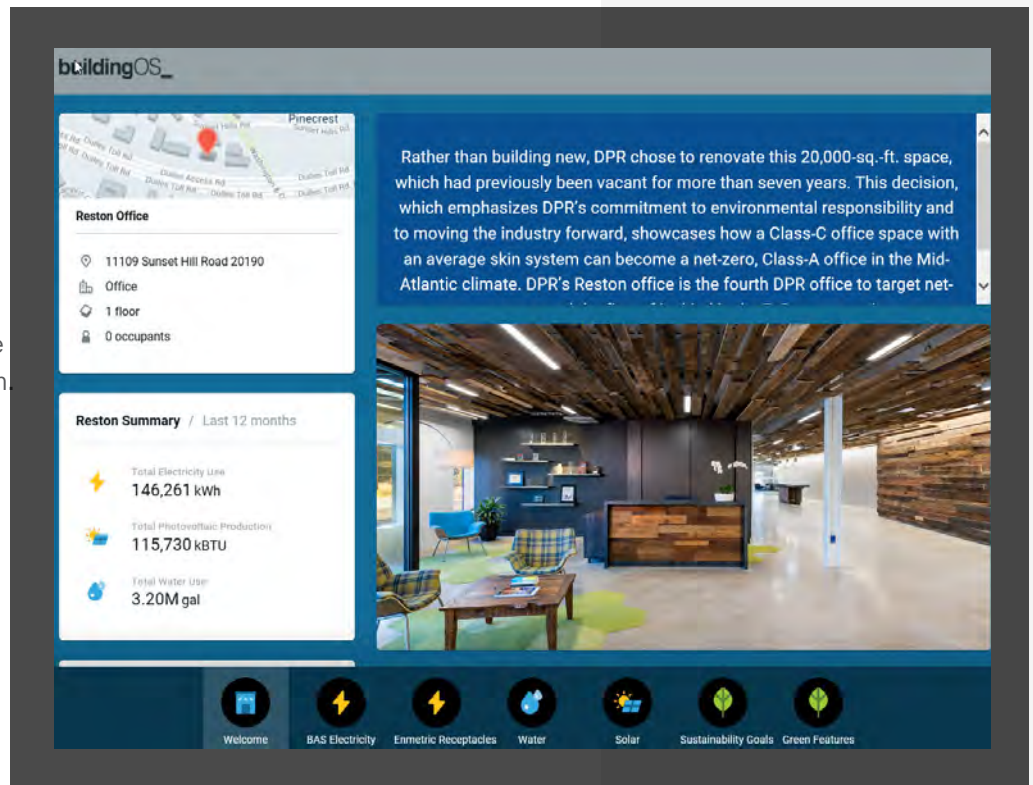
From ceiling to floor, learning opportunities were leveraged. At floor level, four different concrete finish options were installed throughout the common areas to showcase and educate owners on the different options available and how they wear over time.

DPR wanted to utilize a multitude of finish types to show customers how they look and work and all meet LEED material credit requirements. Many are Cradle to Cradle Certified™ including carpet, wall covering, tile and window shades. The most notable architectural element throughout the space is reclaimed wood taken from barns in Connecticut and the eastern shore of Maryland, all installed by DPR's self-perform carpenters. This sustainable finish, used in the entryway of the space and above the wine bar, connects the office with the history of the Mid-Atlantic region.

REAL-TIME FEEDBACK

As in all of the newer DPR offices, the office utilizes a project dashboard display that provides real-time information related to energy and water consumption as well as energy produced by the photovoltaic array.

Build a living laboratory where technologies, products and systems could be showcased for customers, designers and the community.



The Lucid Dashboard display shows real-time information on water and energy usage/generation.

PROJECT IMAGES



A look at the space prior to renovation: DPR chose a space which had been vacant for more than seven years.



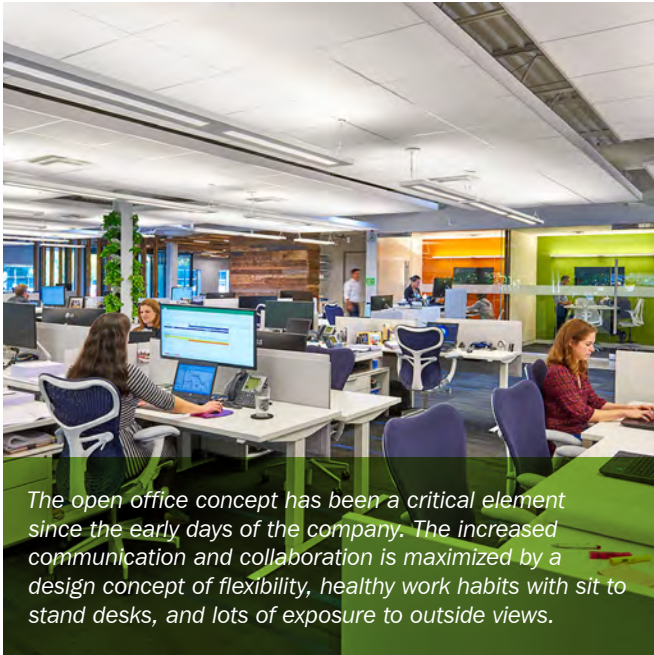
One reason for the building selection was the flat roof which would allow for PV panels. Ultimately, DPR installed a 141 kW rooftop PV system.



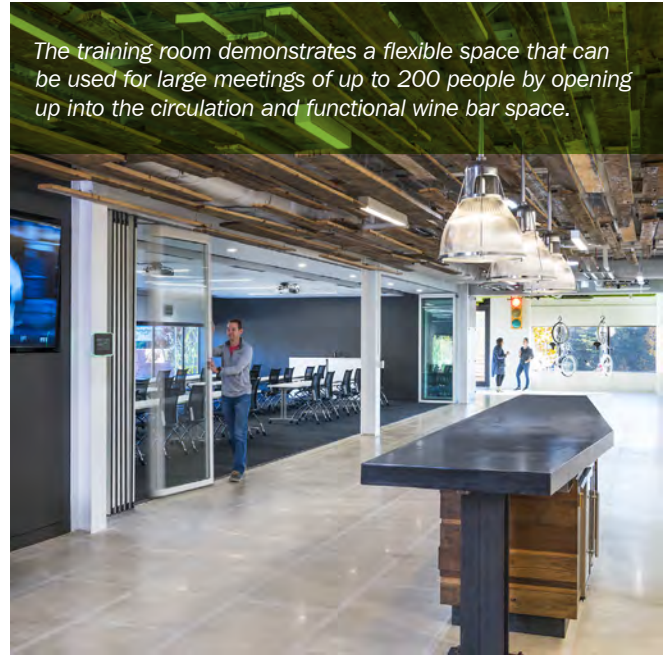
Strategically installed Solatubes bring natural light into the space.



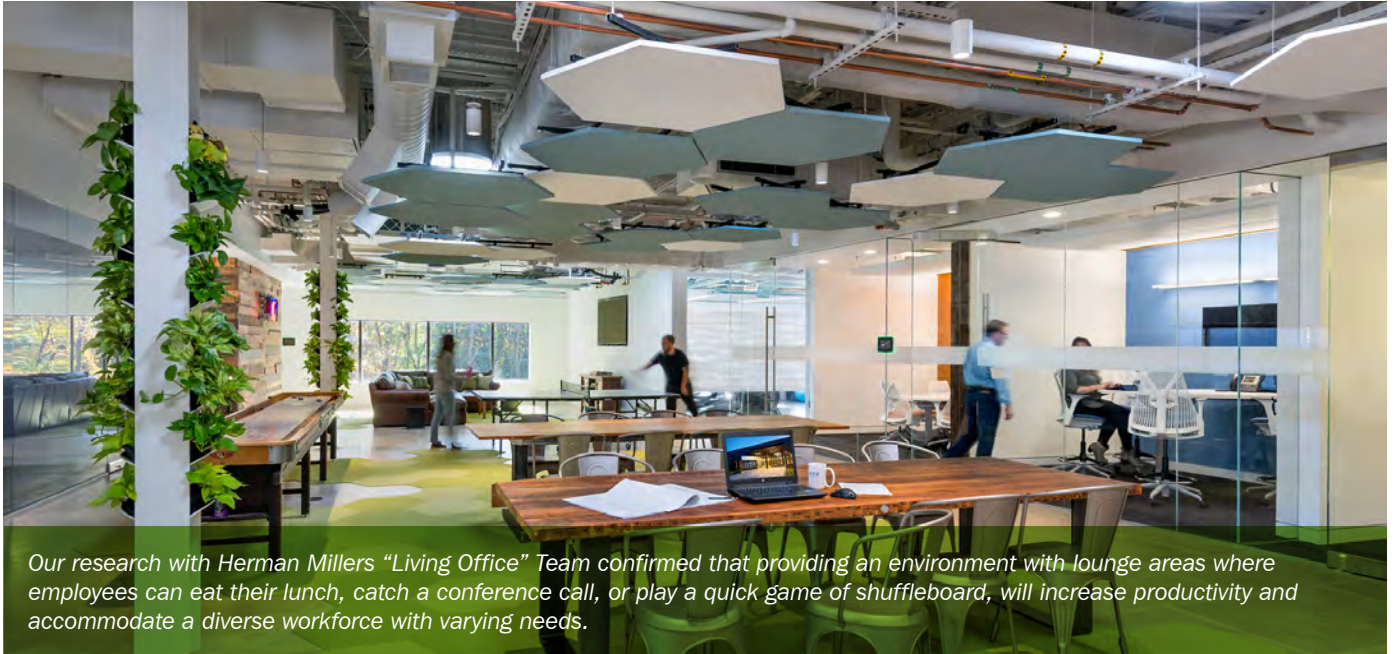
Exterior entry.



The open office concept has been a critical element since the early days of the company. The increased communication and collaboration is maximized by a design concept of flexibility, healthy work habits with sit to stand desks, and lots of exposure to outside views.



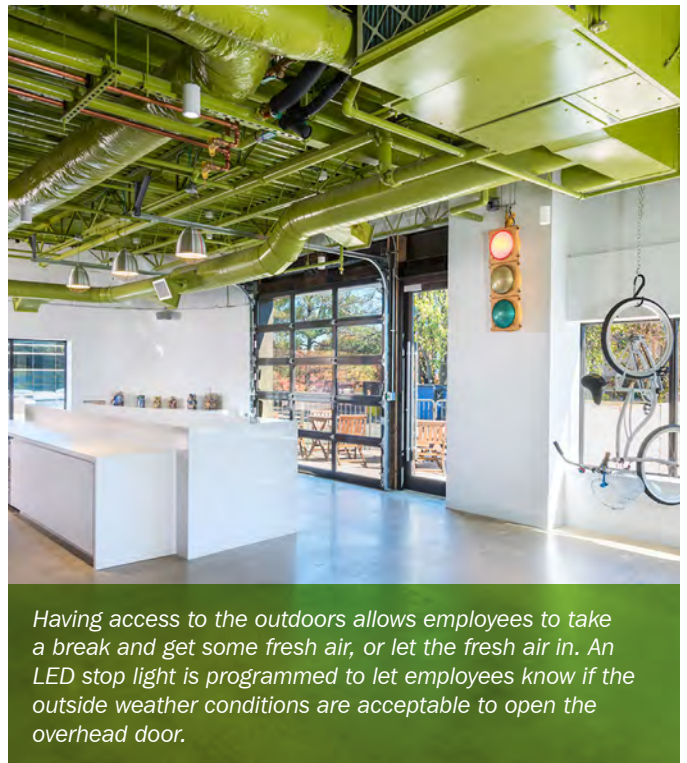
The training room demonstrates a flexible space that can be used for large meetings of up to 200 people by opening up into the circulation and functional wine bar space.



Our research with Herman Millers “Living Office” Team confirmed that providing an environment with lounge areas where employees can eat their lunch, catch a conference call, or play a quick game of shuffleboard, will increase productivity and accommodate a diverse workforce with varying needs.



DPR provides a window into a color-coded mechanical room to serve as an educational tool for employees and visitors.

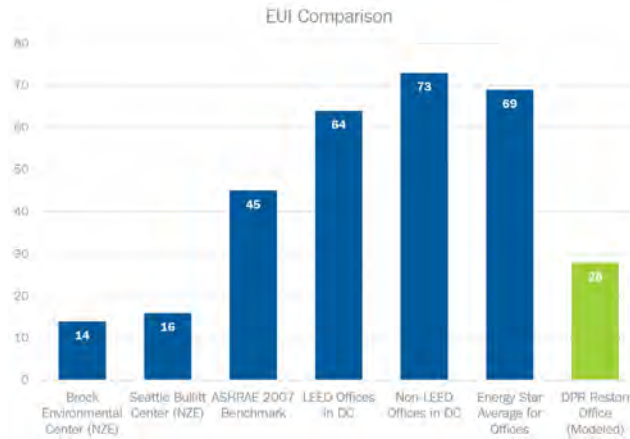


Having access to the outdoors allows employees to take a break and get some fresh air, or let the fresh air in. An LED stop light is programmed to let employees know if the outside weather conditions are acceptable to open the overhead door.

ENERGY AND CARBON DATA

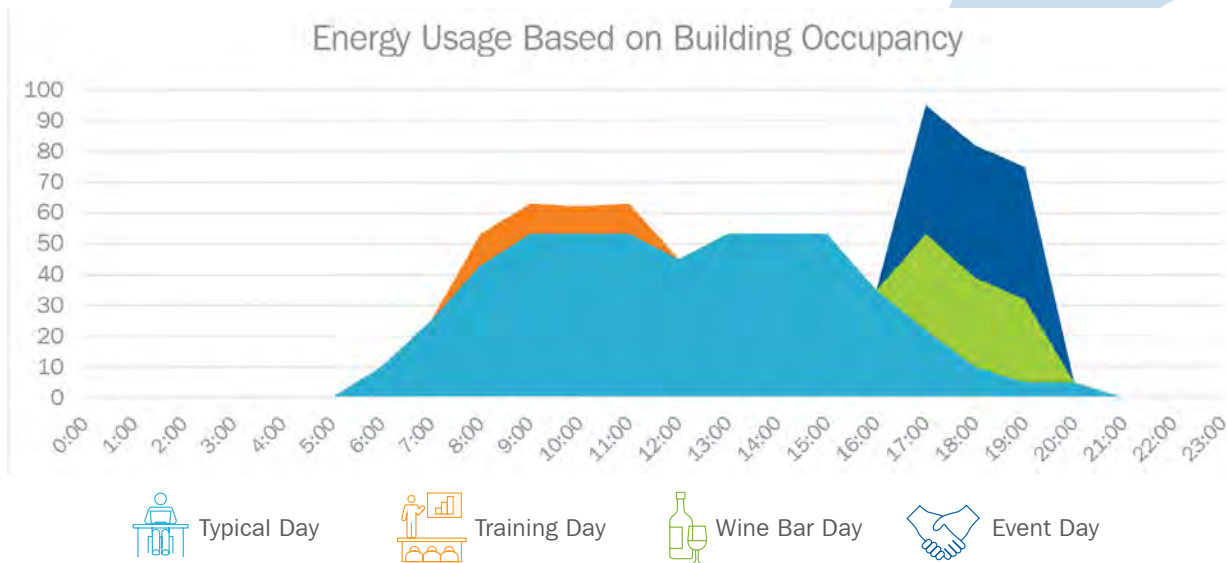
SELECTING THE RIGHT SYSTEMS

The team utilized an energy model to evaluate mechanical and electrical systems before selection. For the mechanical system, the team selected a dedicated outdoor air system (DOAS) system with heat recovery chiller. The electrical strategies focused on lighting, to compliment the Solatubes, as well as receptacle controls to reduce the amount of phantom load generated by equipment. While reducing the Energy Usage Intensity (EUI) was a primary driver in the system selection, and critical for achieving net zero energy, the systems also had to provide a comfortable working environment for occupants (maintaining a small temperature band between 70-75 degrees Fahrenheit) and be cost effective and allow for flexibility given the multitude of different spaces and levels of usage throughout the space. To accomplish these goals, it was imperative that DPR accurately predict the energy usage over the course of a year. The team was able to utilize plug load data from the three other DPR net zero energy offices to gain an understanding of the typical EUI. They also analyzed the various building uses (i.e. typical work days, event days, training days, etc.) to make realistic assumptions on energy use.



Using plug load data from three other NZE offices helped predict EUI.

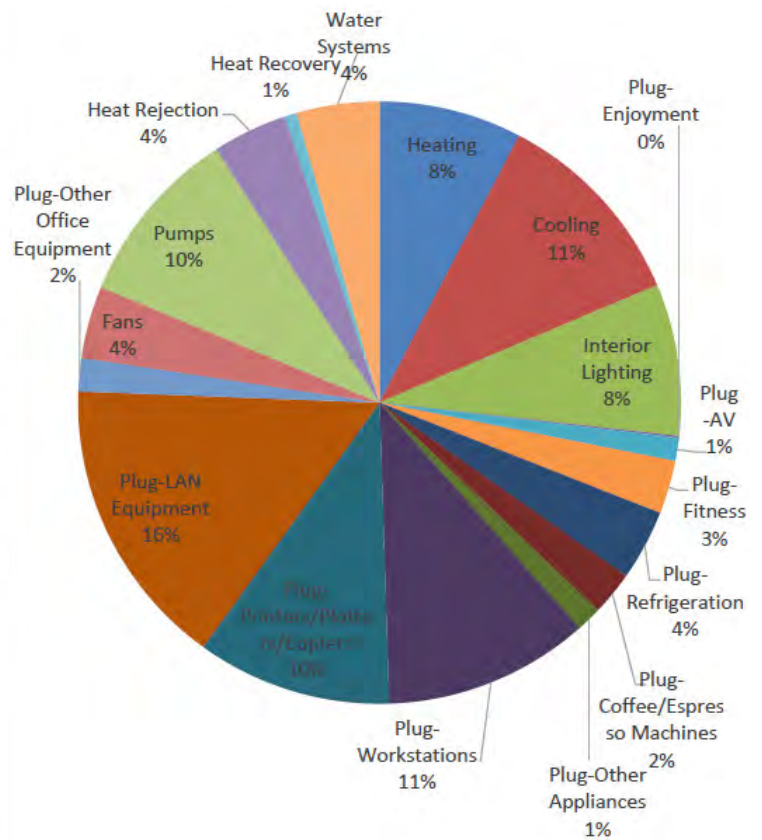
Below: DPR analyzed the different types of days, activities and number of occupants that would be in the space to make realistic assumptions about energy usage.



TRUSTING THE DATA

DPR utilized the data on all the various systems in the office from Heating and Cooling to the energy that the coffee maker uses. From that analysis, we were able to make the best decisions for what needed to be sacrificed and what could be compromised. Simple areas of improvement were the phantom loads for plug loads that needed to be minimized without impacting the refrigerator and freezer. The same went for scrutinizing when the HVAC system needed to be on or off or somewhere in the middle. The team evaluated, debated, and concluded on what was needed to meet the goals without sacrificing occupant comfort.

Annual Energy Use (kBtu/yr)	
End Use	Proposed Design
Heating	42,200
Cooling	60,321
Interior Lighting	44,846
Plug-Enjoyment	557
Plug-AV	6,829
Plug-Fitness	15,721
Plug-Refrigeration	20,880
Plug-Coffee/Esspresso Machines	12,907
Plug-Other Appliances	7,430
Plug-Workstations	60,688
Plug-Printers/Plotters/Copiers	57,570
Plug-LAN Equipment	86,137
Plug-Other Office Equipment	9,848
Fans	21,318
Pumps	53,087
Heat Rejection	22,051
Heat Recovery	3,618
Water Systems	24,378
Total	550,386
Net Energy Use (kW-hrs)	161,302
Equiv PV Modules (Qty)	372
Equiv PV kW Rating (kW)	128
EUI (kBtu/sf/yr)	27.9



PROJECT TEAM

PENZANCE
BUILDING OWNER

LUCID
BUILDING DASHBOARD

DPR CONSTRUCTION
CONTRACTOR & TENANT

SUSTAINABLE BUILDING PARTNERS
CXA

SMITHGROUPJJR
ARCHITECT/ELECTRICAL ENGINEER

POWERSECURE SOLAR
PV ARRAY

SOUTHLAND INDUSTRIES
DESIGN-BUILD MECHANICAL/PLUMBING

GUTIERREZ STUDIOS
ORNAMENTAL METALS

MC DEAN
DESIGN-ASSIST ELECTRICAL AND FIRE ALARM

THE JOYCE AGENCY / SLOAN
PLUMBING FIXTURES

HONEYWELL
CONTROLS

OLD WOOD DELAWARE
RECLAIMED WOOD

GOODMANS
FURNITURE DESIGN

WATTSTOPPER BY LEGRAND
LIGHTING & PLUG LOAD CONTROL

HERMAN MILLER
FURNITURE

PROJECT COST

TOTAL CONSTRUCTION: \$6,000,000



ADDITIONAL INFORMATION

LEED ID+C SCORECARD

1000068096, Reston, Virginia



DPR Reston Office 11109 Sunset Hills Dr

LEED ID+C: Commercial Interiors (v4)

PLATINUM, AWARDED AUG 2018



WATER EFFICIENCY

AWARDED: 6 / 12

Prereq	Indoor water use reduction	0 / 0
Credit	Indoor water use reduction	6 / 12



ENERGY & ATMOSPHERE

AWARDED: 37 / 63

Prereq	Fundamental commissioning and verification	0 / 0
Prereq	Minimum energy performance	0 / 0
Prereq	Fundamental refrigerant Mgmt	0 / 0
Prereq	Minimum Energy Performance (2024 Update)	0 / 0
Credit	Enhanced commissioning	4 / 5
Credit	Advanced energy metering	2 / 2
Credit	Renewable energy production	3 / 3
Credit	Enhanced refrigerant Mgmt	1 / 1
Credit	Green power and carbon offsets	2 / 2
Credit	Optimize Energy Performance (2024 Update)	0 / 25
Credit	Optimize energy performance	25 / 25



MATERIAL & RESOURCES

AWARDED: 6 / 13

Prereq	Storage and collection of recyclables	0 / 0
Prereq	Construction and demolition waste Mgmt planning	0 / 0
Credit	Long-term commitment	1 / 1
Credit	Interiors life-cycle impact reduction	1 / 4
Credit	Building product disclosure and optimization - environmental product d...	1 / 2
Credit	Building product disclosure and optimization - sourcing of raw materia...	0 / 2
Credit	Building product disclosure and optimization - material ingredients	1 / 2
Credit	Construction and demolition waste Mgmt	2 / 2



INDOOR ENVIRONMENTAL QUALITY

AWARDED: 9 / 17

Prereq	Minimum IAQ performance	0 / 0
Prereq	Environmental tobacco smoke control	0 / 0
Credit	Enhanced IAQ strategies	2 / 2
Credit	Low-emitting materials	2 / 3
Credit	Construction IAQ Mgmt plan	1 / 1
Credit	IAQ assessment	1 / 2
Credit	Thermal comfort	0 / 1
Credit	Interior lighting	1 / 2
Credit	Daylight	1 / 3
Credit	Quality views	1 / 1
Credit	Acoustic performance	0 / 2



INNOVATION

AWARDED: 6 / 6

Credit	Innovation	5 / 5
Credit	LEED Accredited Professional	1 / 1



REGIONAL PRIORITY CREDITS

AWARDED: 3 / 4

Credit	Optimize energy performance	1 / 1
Credit	Surrounding density and diverse uses	0 / 1
Credit	Access to quality transit	0 / 1
Credit	Bicycle facilities	1 / 1
Credit	Reduced parking footprint	1 / 1
Credit	Indoor water use reduction	0 / 1



LOCATION & TRANSPORTATION

AWARDED: 11 / 20

Credit	LEED for neighborhood development location	0 / 18
Credit	Surrounding density and diverse uses	5 / 8
Credit	Access to quality transit	3 / 7
Credit	Bicycle facilities	1 / 1
Credit	Reduced parking footprint	2 / 2



INTEGRATIVE PROCESS CREDITS

AWARDED: 2 / 2

Credit	Integrative process	2 / 2
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TOTAL 80 / 110

40-49 Points
CERTIFIED

50-59 Points
SILVER

60-79 Points
GOLD

80+ Points
PLATINUM



WELL SCORECARD

WELL Health Safety Rating			
Y	?	N	
2	0	3	Cleaning and Sanitization Procedures
1			SC1 Support Handwashing
		1	SC2 Reduce Surface Contact
1			SC3 Improve Cleaning Practices
		1	SC4 Select Preferred Cleaning Products
		1	SC5 Reduce Respiratory Particle Exposure
4	0	2	Emergency Preparedness Programs
1			SE1 Develop Emergency Preparedness Plan
		1	SE2 Create Business Continuity Plan
1			SE3 Plan for Healthy Re-Entry
1			SE4 Promote Emergency Resources
1			SE5 Bolster Emergency Resilience
		1	SE6 Establish Health Entry Requirements
5	0	0	Health Service Resources
1			SH1 Provide Sick Leave
1			SH2 Provide Health Benefits
1			SH3 Support Mental Health Recovery
1			SH4 Promote Vaccines
1			SH5 Promote a Smoke-Free Environment
2	0	3	Air and Water Quality Management
		1	SA1 Assess Ventilation
		1	SA2 Assess and Maintain Air Treatment Systems
1			SA3 Develop Legionella Management Plan
		1	SA4 Monitor Air and Water Quality
1			SA5 Manage Mold and Moisture
1	0	1	Stakeholder Engagement and Communication
1			SS1 Promote Health and Well-Being
		1	SS2 Share Food Inspection Information
1	0	5	Innovation
1			SI1 Innovation I - WELL AP
		1	SI2 Innovation II
		1	SI3 Innovation III
		1	SI4 Innovation IV
		1	SI5 Innovation V
		1	SI6 Gateways to Health-Safety
15	0	14	TOTALS
Minimum: 15 out of 29 Features			



MEETING DPR'S GOALS

Not surprisingly, it takes commitment, passion, planning and collaboration, all facets of the DPR Point of View, which focuses on Respect for the Individual and Changing the World. Project Manager Chris Gorthy shared, “A key difference on this project from our other offices and something we could replicate for projects we build for customers, is that we set up a dedicated ownership team to make decisions and keep attacking and driving things forward. That’s another example of the power of AND on this project; we had a project team who was dedicated AND passionate.”

A CLOSER LOOK

Office Feature



Office Feature			
LEED Platinum certified through the USGBC and targeting NZE certification through ILFI	•	•	•
24 Solatubes, installed by DPR Self-Perform crews, bringing daylight to interior spaces	•	•	•
Use of Clear-Vu temporary lighting during construction, a reusable system that uses less energy		•	•
White reflective finishes and RavenWindow® to lessen daylighting requirements and limit glare	•	•	•
Energy usage reduced 58.5% from a typical office (19.72 kWh/sf/yr to 8.18 kWh/sf/yr)	•	•	•
100% LED light fixtures		•	
Blue power outlets to identify “switched” outlet locations	•	•	•
3-D as-built model for ease of maintenance post-construction	•		•
Incorporating many WELL Building Certification requirements	•	•	•
432 SunPower’s® Helix™ photovoltaic panels, producing 179.9 MWh per year	•	•	•
Solar hot water panels to assist in hot water production		•	•
Sloan prefab AER-DEC® lavatory in restrooms where occupants soap, wash and dry hands in one spot	•	•	•
Enmetric plug load monitoring at all workstations to reduce plug loads, even during working hours	•	•	•
All finishes/textiles used in the space are Cradle-to-Cradle certified		•	
Four different concrete finishes throughout to showcase exposed concrete options for customers		•	•
Reclaimed wood from factories in surrounding areas, installed by DPR Self-Perform crews		•	
Ten different conference room configurations and furniture options for more productive meetings	•		•
Diverse open office furniture options including sit-to-stand desks and trapezoidal stations	•		•
Reduction of equipment noise through noise dissipating acoustics	•		
Stop light for overhead door, determines when opening will impact HVAC system energy usage		•	•
Communal areas with sofas, ping-pong table and shuffleboard table foster “creative thought”	•		
0.8 miles from Wiehle-Reston East Metro station and 200 yards from the W&OD Trail		•	
Quiet rooms including a library, wellness room and phone booth to promote “deep thought”	•		

Office of the Future Sustainability Living Laboratory

SUBMITTAL FORMAT

It is permissible for CBE to share the survey scorecard summary for the building to the awards jury.





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