Freeman French Freeman

Sustainability Action Plan

June 2020

AIA 2030 Commitment

About Freeman French Freeman

Freeman French Freeman is Vermont's leading architecture firm, with an eighty-year legacy of innovative and enduring design. Our team strives to create architecture that serves our clients' needs today, tomorrow, and long into the future.

For over eight decades, clients have turned to Freeman French Freeman to deliver innovative solutions to their most pressing problems. One area of expertise we are known for is the critical importance of building enclosure systems.

New England's challenging climate demands an effective interface between interior and exterior environments. A well designed building envelope reduces energy use, improves longevity of buildings, and creates a more comfortable and productive space for occupants. Our approach to design is collaborative and we regularly partner with building science experts to deliver a successful project.

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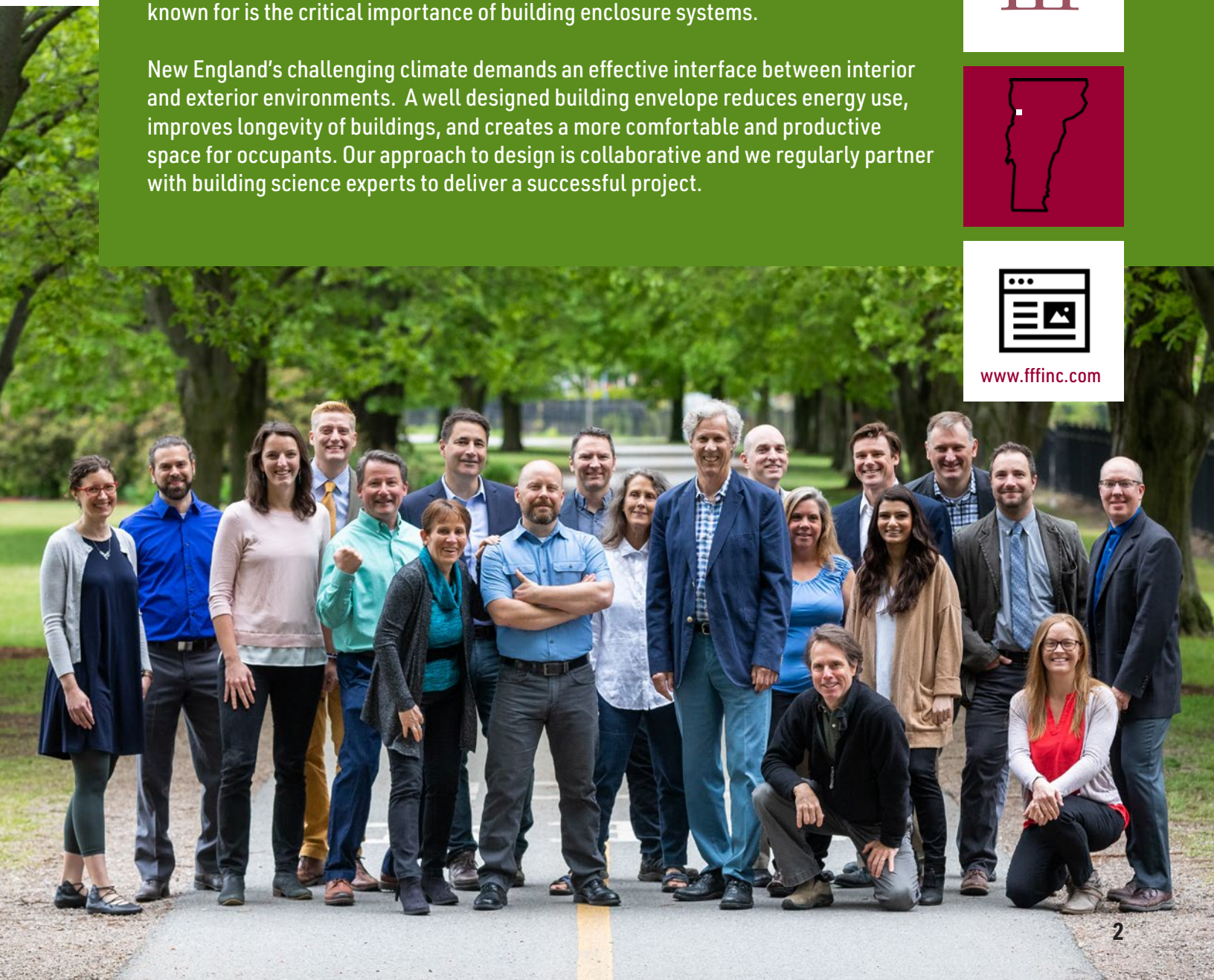


Contents

Vision 2030: FFF Commitment

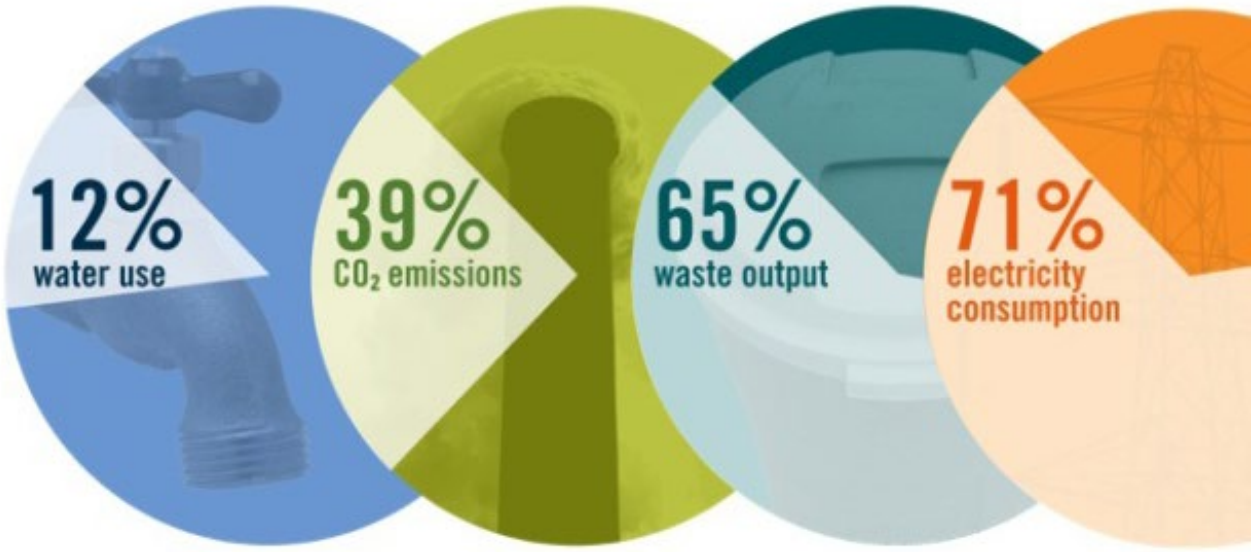
The 2030 Commitment charge is simple: All new buildings, developments, and major renovations shall be carbon-neutral by 2030.

We embrace the built environment's role in fighting climate change and building a healthy ecosystem. Freeman French Freeman has long embraced innovative design strategies to push our buildings to meet evolving standards of energy efficiency. By 2030, we vow to go beyond net zero energy and into carbon neutrality with our building designs.

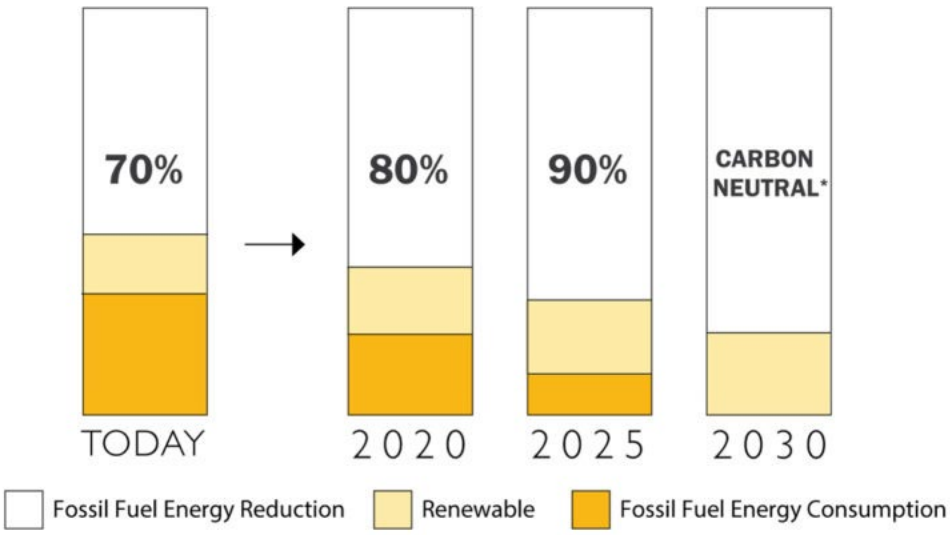
01

U.S. Building Impacts

published by the United States Green Building Council



The 2030 Challenge



The 2030 Challenge

Using no fossil fuel GHG-emitting energy to operate.

01 Vision 2030

2020 Goals - Starting Today

Calculate Projected Energy Use Intensity (pEUI) on all new buildings and major renovations. Establish EUI targets and baseline on all new buildings and major renovations, using the Zero Tool.

Provide a path for owner to achieve 80% reduction from baseline on EUI. This 2030 Challenge target will require a balance of tight envelope detailing, efficient systems, and renewable energy on site.

Gather research of embodied carbon, Global Warming Potential (GWP), and Ozone Depletion Potential (ODP) of standard building materials. Develop standard details that begin to lower assembly embodied carbon, GWP, and ODP.

Encourage use of products with Environmental Product Declarations (EPDs). Use tool such as SM Transparency Catalog.

As part of the 2030 commitment, begin inputting project data annually into the Design Data Exchange (DDx) for all major active projects. Perform quarterly upload of information on new projects to 2030 Challenge DDx and report at quarterly office-wide meetings.

Coordinate with interested building owners to track actual energy performance through Energy Star Portfolio Manager.

01 Vision 2030

2025 Goals - 5 Years

Calculate pEUI on all FFF projects that involve building envelopes. Calculate Lighting Power Density (LPD) on all interior-only projects. Incorporate energy modeling throughout the design process to make informed design decisions that affect EUI and carbon.

Following 2030 Challenge targets, provide a path for owner to achieve 90% Reduction from Baseline on EUI.

Work with clients to eliminate use of Red List products from all projects, and specify products with EPDs.

Calculate embodied carbon of whole building design on all FFF projects using LCA tool such as EC3, Cove.tool, or other.

Gather EUI data post occupancy on all built projects. Write this expectation into proposals + contracts.

Quantify and publish energy use for FFF company operations, including commuting and travel, as part of annual report to employees.

01 Vision 2030

2030 Goals - 10 Years

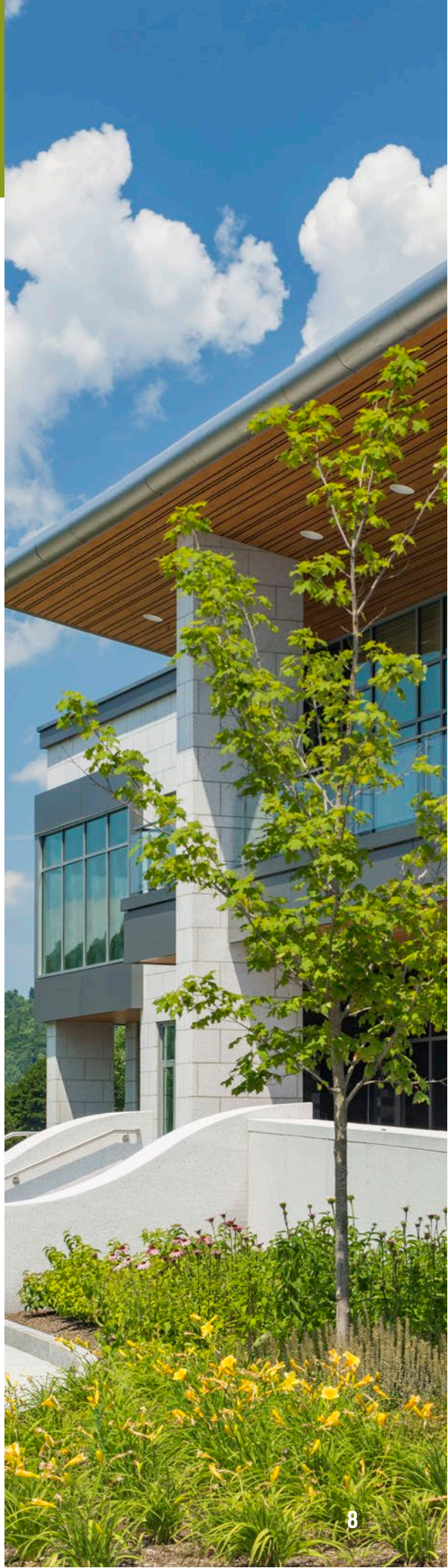
Provide a path for owner to achieve 100% Reduction from Baseline on EUI. This reflects the 2030 Commitment net zero energy goal.

Expand FFF services to assist clients in reducing their operational energy and carbon use in areas such as transportation, building maintenance, etc.

All projects are designed to use no fossil fuels to operate.

Reduce embodied carbon in our building 50% from baseline.

Publish energy performance on all designed projects as part of firm marketing materials.



02

Projects: The Work We Do

Our firm's goals for improving energy performance and moving towards net-zero are reinforced by the Vermont Commercial Building Energy Standards (Vermont CBES), one of the nation's most stringent energy efficiency codes. The code is based on the IECC, but goes well beyond the baseline requirements of the reference codes. The stated goal of the CBES is to adopt a net-zero-energy code by 2029. FFF actively participates in the code development process, providing comments supporting the net-zero goals and advocating for enhanced enforcement of the energy code.

Our Clients Come First.

It is our responsibility as architects to educate our clients on the benefits of sustainable design. We acknowledge and accept our role in leading clients to make informed decisions on their building's performance and embodied carbon. We model these behaviors in our approach to projects, as well as in improvements to our own building.

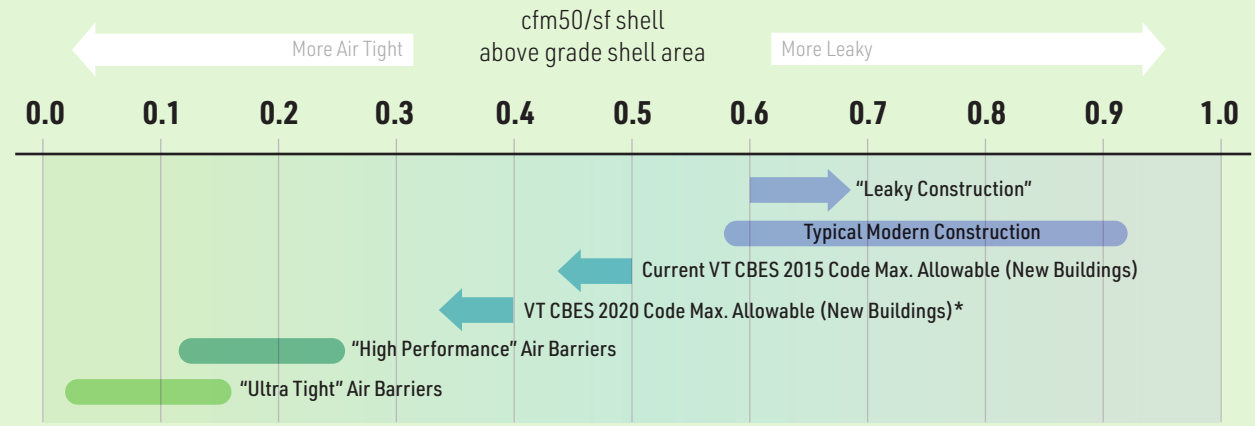
02 Projects: The Work We Do

BY THE NUMBERS | June 2020

17 completed LEED projects*

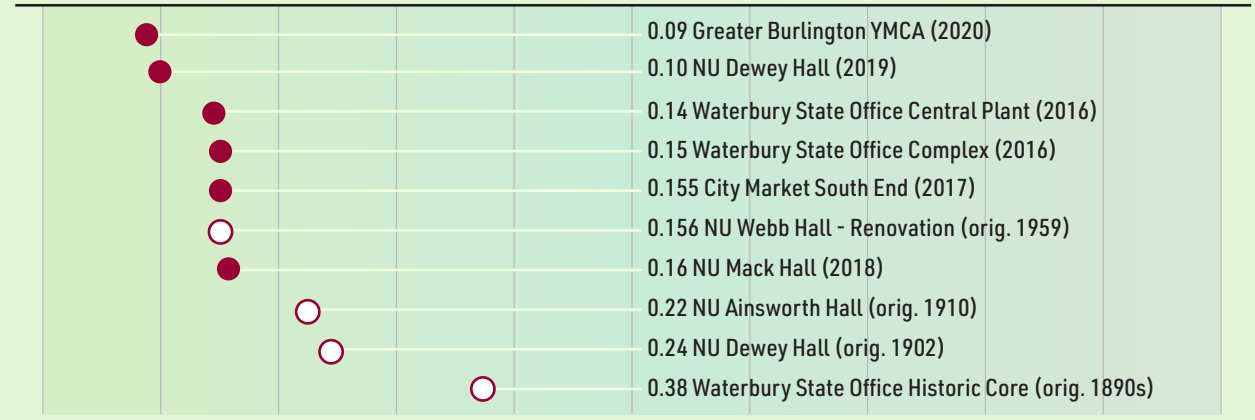
*halftone are pending USGBC approval

Blower Door Test Results on Recent Projects



*tests to be 6-sided, cfm75

FFF RESULTS



KEY
- New Building
- Renovation

02 Projects: The Work We Do

PROJECTED EUI ON RECENT MAJOR PROJECTS | June 2020

YEAR	PROJECT NAME	PROJECT TYPE	P.EUI*	BASELINE**	REDUCTION %	LEED
2021 (design)	67 Cherry Street	Renovation - Office	36.8	116	68 %	Gold (pending)
2021 (design)	South Burlington Rec Center	Recreation - Fitness	48.1	65	26%	
2019	UVM STEM	University + Laboratory	187.8	444	57 %	Gold (pending)
2019	Norwich U. Mack Hall	University	57.5	166	65 %	
2017	City Market South End	Supermarket	139.2	363	61 %	
2017	UVM Rescue	Fire Station	34.8	83	58 %	Platinum (pending)
2017	Norwich U. Ainsworth	Renovation - University	37.6	166	77 %	
2016	Norwich U. Dalrymple	Dormitory	93.3	166	43%	Gold
2015	WSOC Central Plant	Utility Station	43.4	66	34 %	Gold
2015	WSOC Offices	Office (57% Historic)	39.1	120	67 %	Platinum
2013	NEFCU Shelburne Rd.	Bank Branch	85.5	114	25 %	Silver
2013	Saint Michaels College	Dormitory	25.7	166	84 %	
2012	Community Health Center Burlington	Urgent Care / Clinic	38.1	104	63 %	Certified

* from energy model, kBTU/sf
** baseline EUI taken from ZERO Tool by Project Type and Labs21

02 Projects: The Work We Do

Planning & Pre-design

CURRENT PRACTICE

Advocate for an integrative process involving a broader design and construction team earlier in the process, when we have the best opportunity to optimize the balance between project cost, operational cost, and sustainability goals.

Educate clients on sustainability goals such as a tight envelope, right sized systems, LEED or other certifications, low operating energy use, etc.

For major and interested projects, we perform an "eco-charrette" with the full design team as early as possible in the design. This includes a representative from the applicable energy efficiency utility, and contractor and commissioning agents when possible.

GOAL

Establish an EUI target for all projects within the first month of project award.

Establish a path to targeted energy reduction or Net Zero for all projects within the first month of project award.

Expand eco-charrettes and energy modeling to all new construction and major renovation projects, and evaluate on-site renewables for all projects.

Design

CURRENT PRACTICE

Detailing standards for envelope performance, and internal QC reviews ensure envelopes are properly detailed.

Collaborate with Commissioning Agents and MEP engineers to establish efficiencies for major building systems (HVAC, Lighting, elevators) and, for major projects, integration of on-site renewable energy.

Educate our clients on the benefits of using LEED or other sustainability measurement devices.

GOAL

Provide the owner with calculated on-site energy production required to achieve net-zero. Require Environmental Product Declarations (EPDs) and/or Health Product Declarations (HPDs) on submittals.

Work with utilities and organizations to maximize energy improvement incentives.

Buildings are designed to receive renewable energy.

02 Projects: The Work We Do

Construction

CURRENT PRACTICE

Collaborate with the construction team, recognizing their expertise and the importance of working together for the success of the project.

Encourage the construction of mockups of exterior assemblies that cover as many building envelope details as possible. For larger projects, we use standalone mockups; for smaller projects we use "first instance" installations. We then test mockups for performance.

Using independent subcontractors, we perform envelope and systems commissioning on major projects.

GOAL

Meet with the construction manager and subcontractors to review details prior to mockup construction and incorporate agreed upon changes into the documents.

Construct mockups for all projects that include exterior envelope scope.

Perform independent commissioning of envelope and building systems on all projects.

Require an Operations and Maintenance (O+M) manual for envelope and enclosure systems.

Post-Occupancy

CURRENT PRACTICE

Review facility performance on large projects with owners after one year of occupancy.

GOAL

Check in with clients at 1-year post occupancy to ensure building systems are performing as planned.

Reconcile actual performance with energy models.

Obtain actual EUI data after 18 months.

Obtain renewable energy generation data from on-site systems.

03

Office: How We Work

As in all professions, staying abreast of technological and standards innovation is critical in Architecture. FFF has long believed in the value of staff education, and signing the 2030 Commitment strengthens our firm's focus on encouraging lifelong learning.

FFF was one of the first members of the Burlington 2030 District, and is committed to reducing our own operational footprint to align with the district's goals. Those include 50% reduction in energy use, 50% reduction in transportation footprint, and 50% reduction in water use by 2030. FFF's offices are located in downtown Burlington, Vermont in a historic home, circa 1864.

03 Office: How We Work

Staff Education & Professional Development

CURRENT PRACTICE

Staff are encouraged to earn professional licensure and LEED credentials. Testing is reimbursed by FFF upon passing the exams, and FFF pays for maintaining licenses and credentials.

Lunch & Learns are typically limited to AIA Health, Safety, and Welfare (HSW) credits.

Each employee has an annual stipend for professional learning. Individuals who attend conferences are encouraged to share what they learned with the firm.

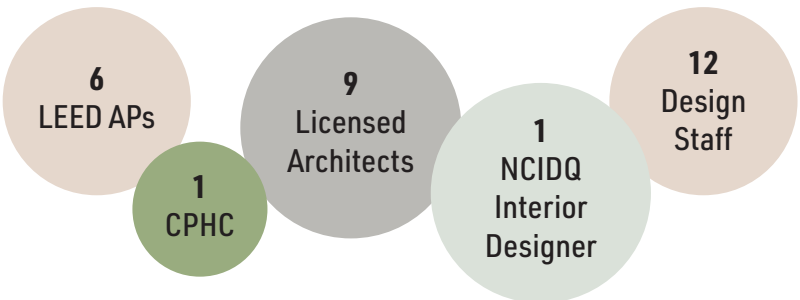
GOALS

Seek out learning opportunities that focus on innovative products and construction methods that will assist us in designing net zero buildings.

Send one staff member per year to a major national or international Green Building conference (emphasis will be on sending interested staff who have not yet attended).

All design staff will hold at least one sustainable design accreditation (such as LEED AP, WELL AP, CPHC, etc.)

BY THE NUMBERS | June 2020



LEED AP
Leadership in Energy and Environmental Design, Accredited Professional

CPHC
Certified Passive House Consultant

NCIDQ
National Council for Interior Design Qualification

WELL AP
WELL Building Standard Accredited Professional

03 Office: How We Work

Office Operations

CURRENT PRACTICE

In the past 15 years we have installed a high efficiency boiler, added heating zones and setback thermostats, installed an energy recovery ventilation system, upgraded to low flow plumbing fixtures, upgraded or replaced all lighting to LED and high efficiency fluorescents, and replaced dated window A/Cs with energy star models.

GOALS

Prioritize waste prevention (reduce packaging, copying, and promote recycling and composting).

Improve Indoor Air Quality (incorporate more plants and operable windows, ERV).

Cut Transportation carbon emissions (incentivize biking and walking, install Electric Vehicle charging station, develop new policy for remote work). Encourage biking and running by providing employee shower access, whether through building upgrade or partner with local business to allow shared shower use.

Find incentives and financing to allow energy conservation projects (on-site audits of energy use, insulating and air sealing basement and attic, replacing historic windows throughout building, installing rooftop solar).

Develop written policy to disallow single use plastic at the office, including vendors and lunch & learns.

Glossary

CBES Commercial Building Energy Standards is Vermont's energy code for new buildings and major renovations. The code defines minimum insulation values and provides performance targets, among other green building requirements.

DDx The Design Data Exchange is a component of the 2030 Commitment, providing an online database of projected EUI on projects. Minimum annual data upload recommended.

EPD Environmental Product Declarations are independently verified and registered documents communicating transparent and comparable information about the life-cycle and environmental impact of building products.

ESPM Energy Star Portfolio Manager is a website that allows tracking and assessment of energy and water consumption across a building portfolio.

EUI Energy Use Intensity is the energy use per square foot of a building. It is calculated in kBTU/sf. Baselines differ for different building types. The 2030 Challenge uses EUI to measure energy reduction from baseline for buildings.

GWP Global Warming Potential refers to a product's total contribution to global warming resulting from emissions. Calculated relative to one unit of carbon dioxide, which is assigned a value of 1.

HPD Health Product Declarations are independently verified and registered documents communicating information about a building product's contents and environmental health hazards.

LCA Life Cycle Assessment is a technique for assessing the environmental impact of a building or product over its entire life cycle, including resource extraction, processing, construction, operation, and disposal.

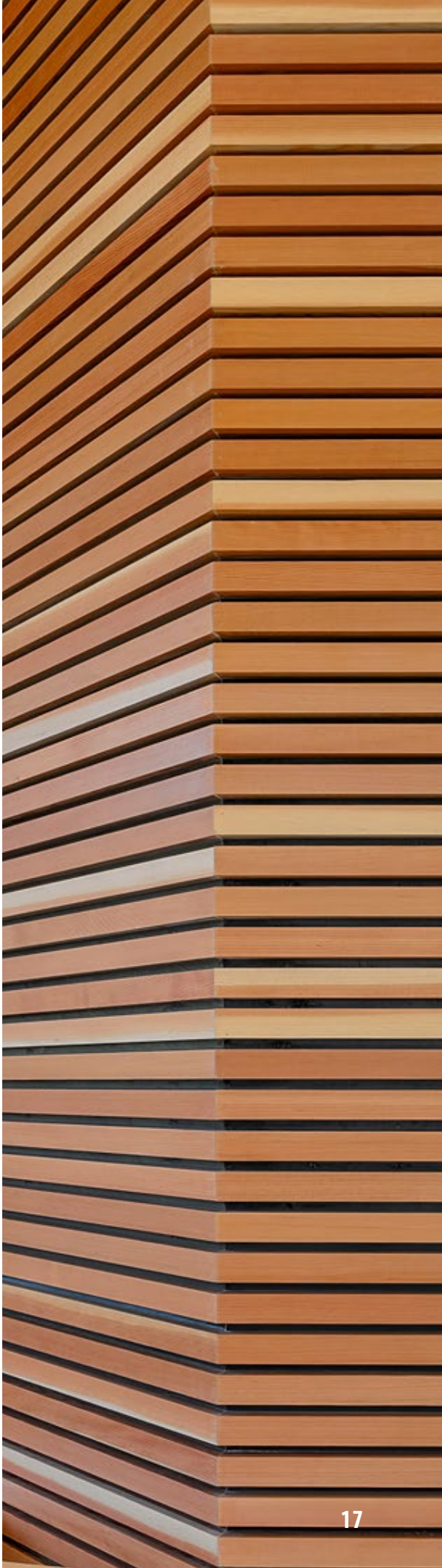
LPD Lighting Power Density is calculated in watts per square foot. The 2030 Challenge uses this measure for interiors-only projects to track energy improvement from baseline.

NZE Net Zero Energy refers to a building or project that produces as much renewable energy as it consumes on an annual basis.

ODP Ozone Depletion Potential is the relative amount of ozone layer loss due to the given checmical make-up of a material. Calculated relative to one unit of CFC-11, which is assigned a value of 1.

pEUI Predicted or Projected EUI refers to the anticipated energy consumption of a building based on energy modeling.

Red List The materials red list is a compilation of chemicals and materials that are designated as harmful-to-humans and living creatures. It is compiled by the International Living Future Institute, and represents materials that should be phased out of production.



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