



# Sustainability Action Plan

February 2023

CENTERBROOK





## Executive Summary

With this document, Centerbrook Architects and Planners is laying out a framework for reaching our ambitious sustainability goals in the next decade: net zero buildings across our portfolio, significant reductions in embodied carbon, and a focus on making every building we design filled with healthy air, natural light, and connections to nature. To achieve these goals, we are integrating sustainability checkpoints into our Quality Assurance process and standardizing our goal-setting and reporting mechanisms. Our firm is proud to help lead the way toward a low-carbon, ecologically grounded architecture of the future.



# Who We Are

Centerbrook is a community of creative problem solvers working together to advance place making and the craft of building. We believe that sustainability begins with buildings that are designed to respond to their specific environments, with details that endear themselves to their users and thus endure over time. From our first forays into solar-heated houses in the 1970s to net zero-ready projects today, Centerbrook continues to redefine what designing and living sustainably means as building technologies and our expertise advance.

Our sustainability story has some unique aspects that differentiate us from other architecture practices:

- Our bucolic natural setting and intimate connection with hydrological and ecological systems in our Connecticut River Valley factory home, which we have stewarded for half a century, with features like our hydropower microturbine, pond source cooling loops, a migratory fish ladder, and a sedum green roof.
- Our love for nature and strong attachment to the outdoors. Our staff are gardeners, outdoor adventurers, nature poets, and mushroom foragers.
- Our 50-year span of experience with passive and alternative systems.
- Our attention to ornament, whimsy, and detail that can connect a building to nature.
- Our desire to make sustainability playful, experiential, fun, and centered on the human experience rather than just technology and efficiency.
- Our embrace of lifelong learning, both in our design work and in our office culture.



*Focusing exclusively on delivering a “sustainable” building is missing the point: true sustainability is a fundamental part of making good architecture, and our participation in the AIA 2030 Commitment and Materials Pledge goes hand-in-hand with our commitment to high-quality design that delights and nurtures the human spirit.*

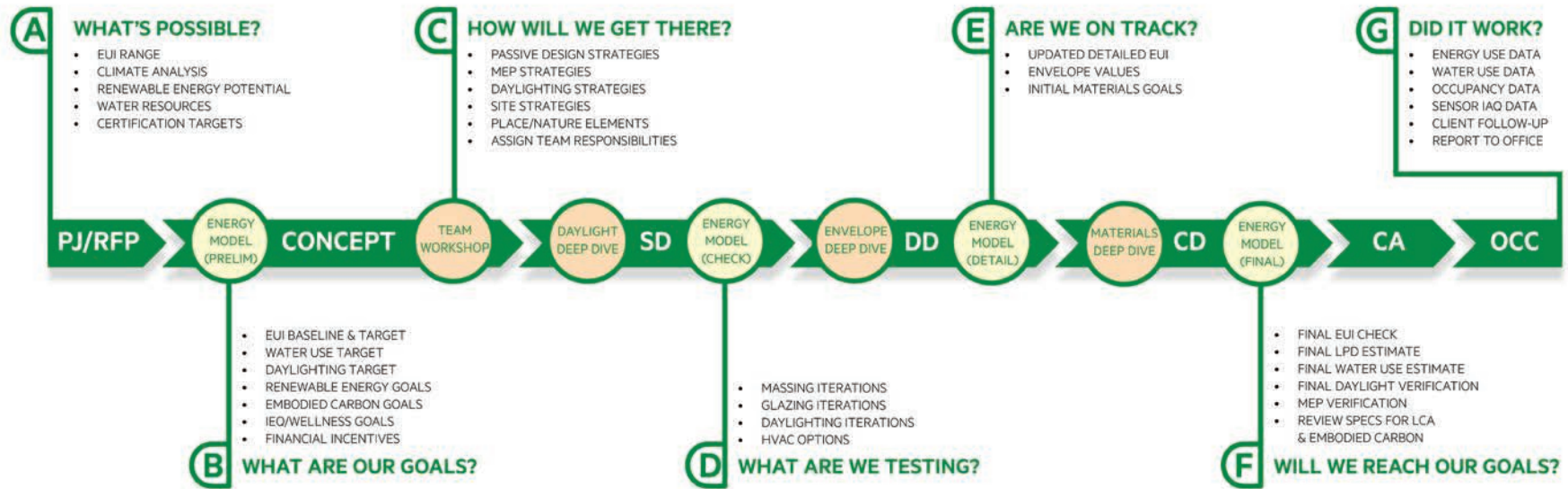
# Our Workflow

Centerbrook already has a rigorous, standardized process to create technical documentation of the highest quality. Since 2019, we have integrated sustainability metrics into this process using in-house software and the ecoChecklist, a document that helps teams organize and catalog their sustainability investigations. With this Action Plan, we will embed this workflow office-wide to ensure that all projects achieve our 2030 Commitment goals.

We commit to these actions for **every** project, as part of our basic scope of services. Progress will be verified at each phase as part of our standard Quality Assurance Checklist.

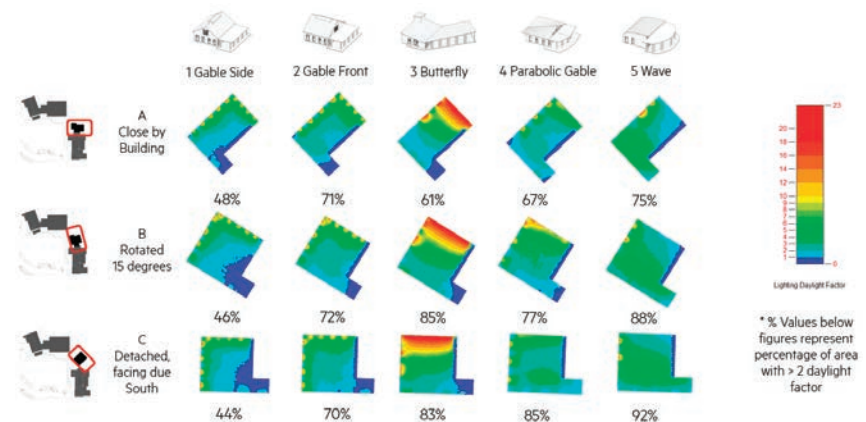
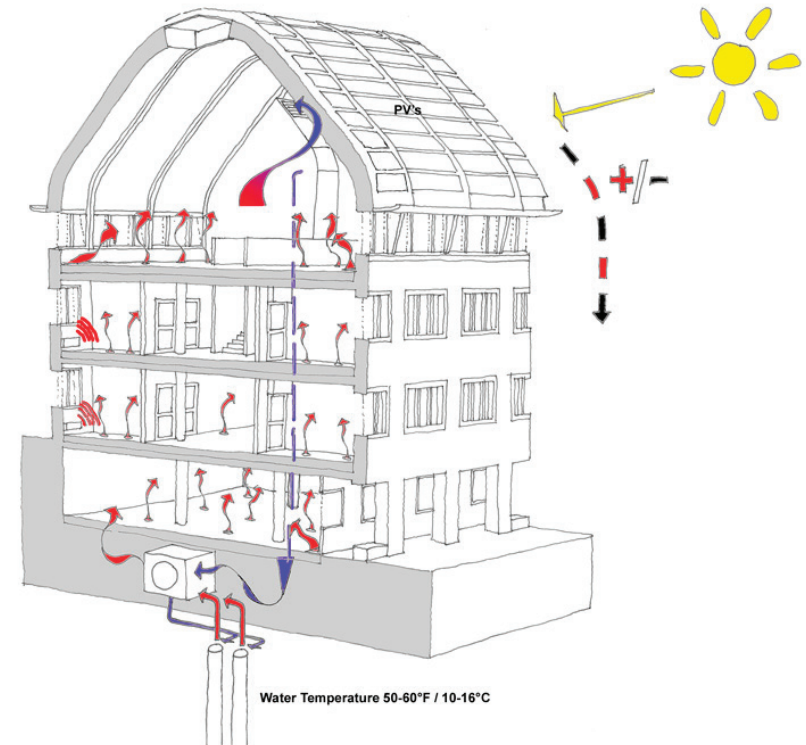


## Centerbrook's Sustainability ecoChecklist



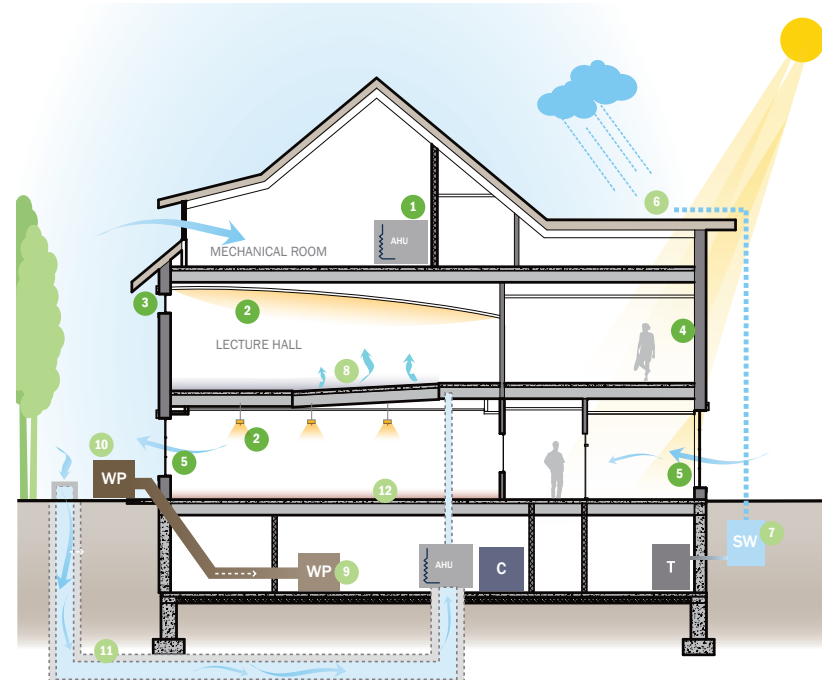
# Conceptual

1. Research, and develop simple graphic images of basic **climate, site, and massing** strategies, including wind, thermal comfort, orientation, solar access, and rainwater management (see ecoChecklist Tab A for guidance)
2. Identify a **baseline and target EUI** for the project (see ecoChecklist Tab B)
3. Set **targets for relevant sustainability metrics** and a preliminary list of strategies from checklist – possibly through client ecoWorkshop (see ecoChecklist Tab B)
  - If appropriate, incorporate into Owner’s Project Requirements document
4. Run a **simple box energy model**, checking against code requirements, and report results to DDX (see ecoChecklist Tab C)  
(can be done by consultant if in scope or part of utility incentive)
5. Run an **early carbon model** with EPIC or CARE to understand project carbon scenarios.
6. Identify **utility incentives** and guide client toward enrollment as soon as possible.
7. Actively encourage all owners to undergo commissioning (systems/envelope).
8. Have a **sustainability check-in** with QA/Sustainability Coordinator



## Schematic

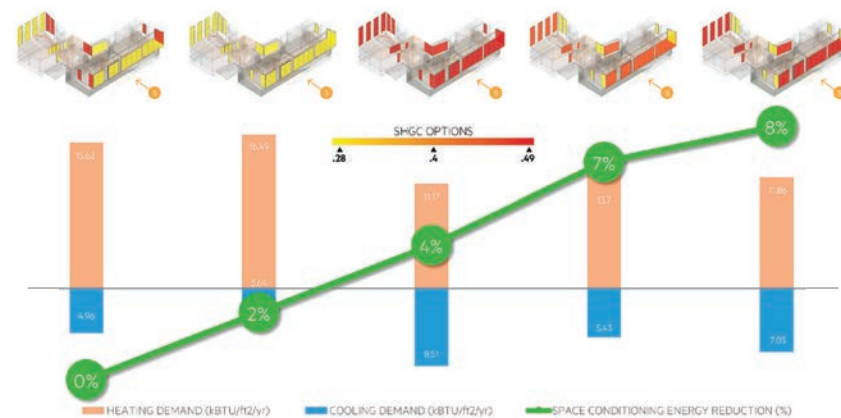
1. If Conceptual is not done, include list above here.
2. Run **energy model** of revised design and report results to DDX (can be done by consultant if in scope or part of utility incentive)
3. If applicable, **model daylighting** to optimize design
4. Confirm enrollment in utility incentives
5. Verify **specs** against office sustainable materials guidelines
6. If appropriate, summarize sustainable design strategies and metrics in finalized Owner's Project Requirements document



- 3 CLERESTORY DAYLIGHT
- 4 SUSTAINABLE MATERIALS WITH RECYCLED CONTENT
- 5 NATURAL VENTILATION
- 8 DISPLACEMENT VENTILATION
- 11 EARTH DUCT
- 12 RADIANT HEAT FLOORING

## Design Development

1. Run **energy model** of revised design and report results to DDX (can be done by consultant if in scope or part of utility incentive)
  - Test varying scales of insulation, glass, and systems to optimize energy performance
2. Vet assembly hygrothermal performance and thermal bridges using office spreadsheet, THERM, and/or WUFI
3. Update/Develop simple **graphic images** of updated site and building strategies
4. Verify **specs** against office sustainable materials guidance
5. Have a **sustainability check-in** with QA/Sustainability Coordinator



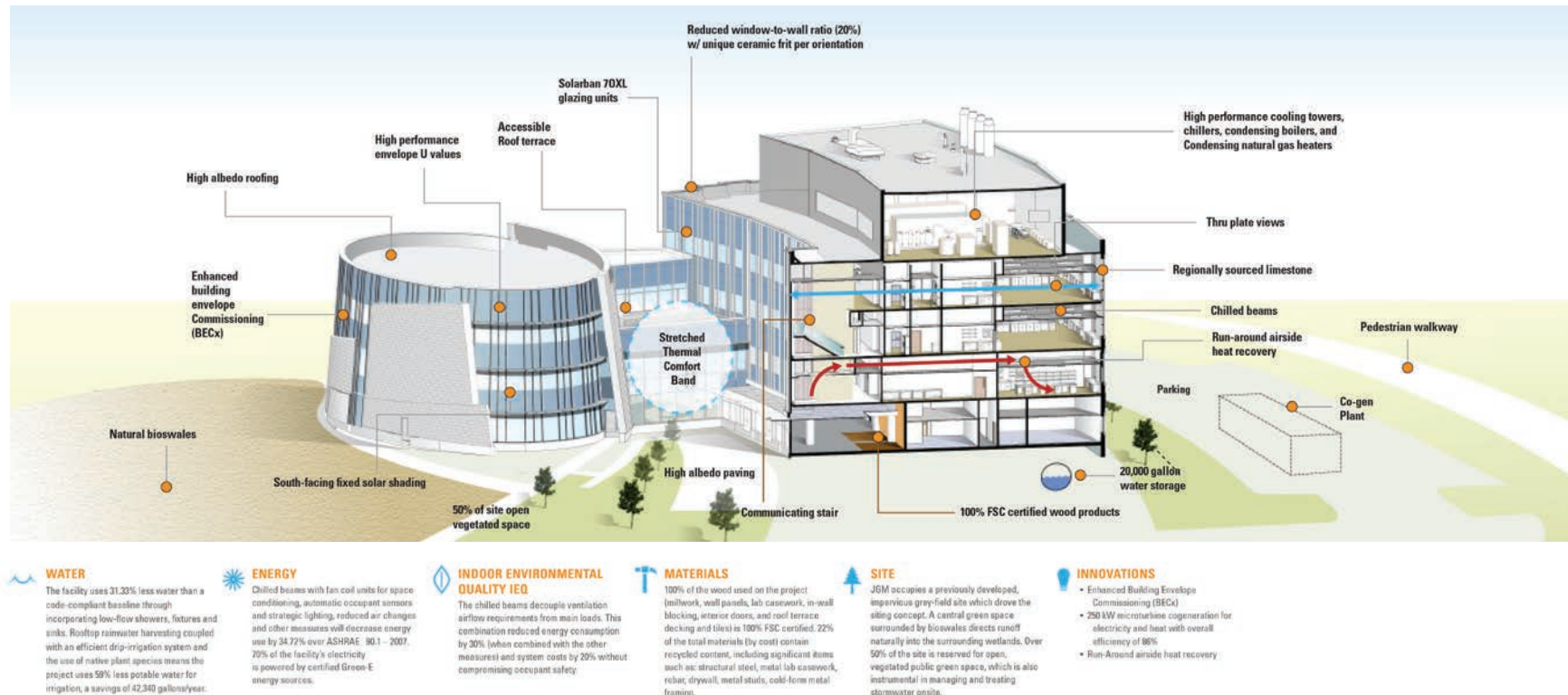


## Construction Documents

1. Run **energy model** of revised design and report results to DDX (can be done by consultant if in scope or part of utility incentive)
2. Update/Develop simple **graphic images** of basic site and building strategies
3. Verify **specs** against office sustainable materials guidance
  - Confirm compliance with initial material sourcing/health goals set in SD
4. Finalize incomplete/updated analysis from previous phases (see above)
5. Have a **sustainability check-in** with QA/Sustainability Coordinator

## Construction Administration

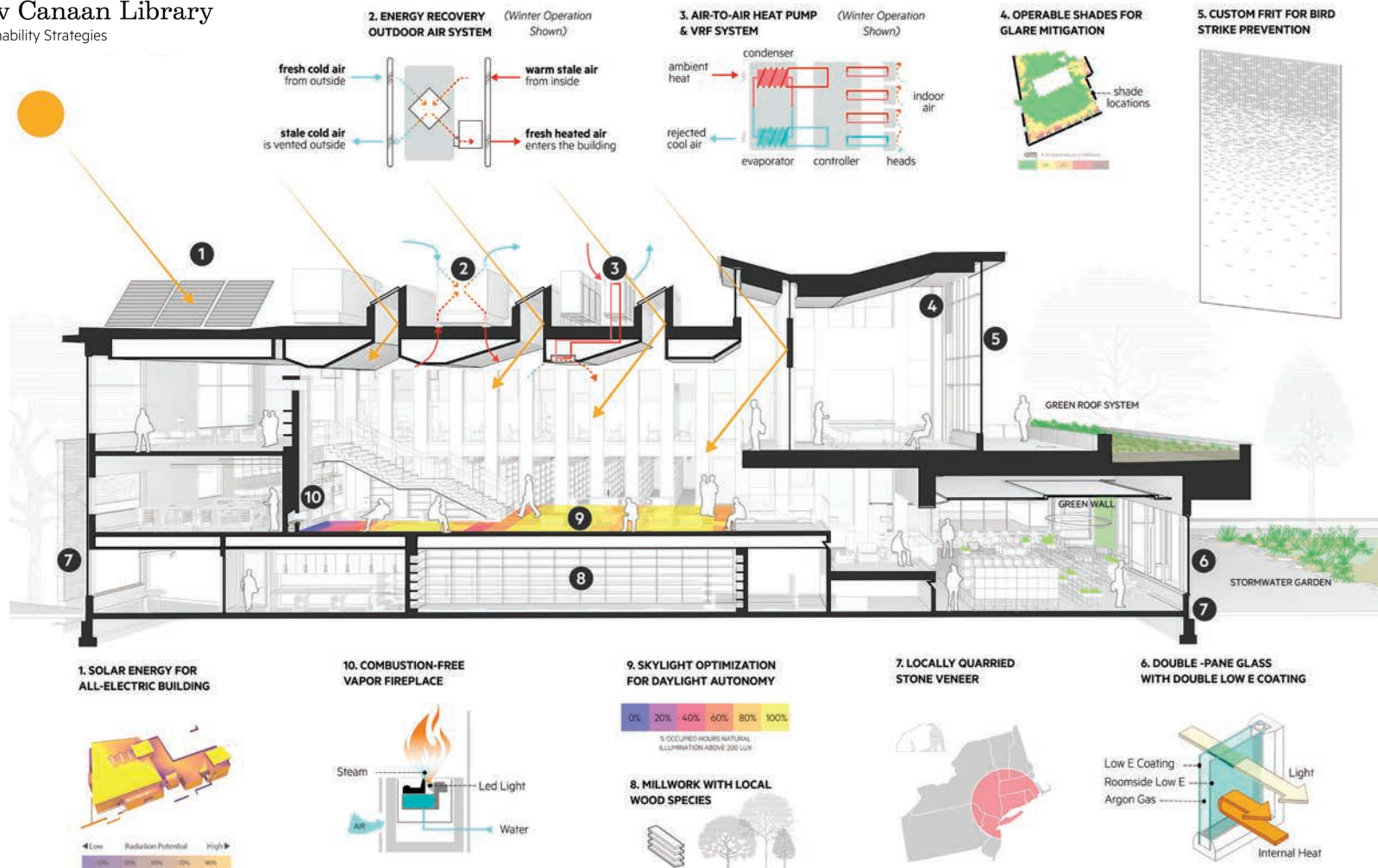
1. If implemented, ensure commissioning and testing are done according to contract documents.
2. During submittal process, verify compliance with goals and targets set above and in Owner's Project Requirements document.



# Close Out

1. Catalog sustainable strategies used (with graphics) and upload narrative and relevant tags to OpenAsset (in-house digital asset management system)
2. For all projects, develop sustainability drawings together with other publicity drawings.
3. Update any major building information changes since last model estimate and update in DDX if needed.

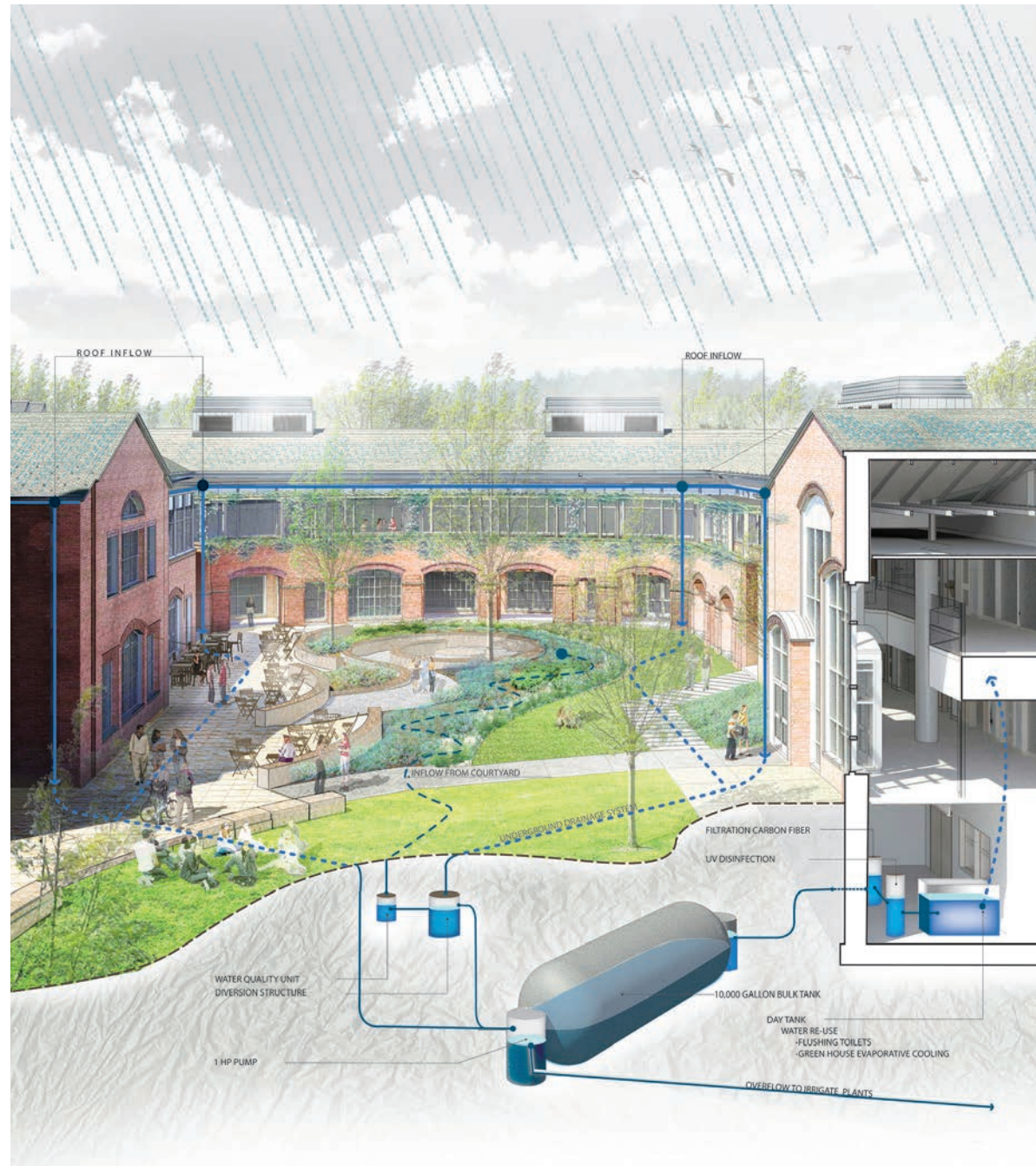
## New Canaan Library Sustainability Strategies



# Post-Occupancy

1. Reach out to every client for operational energy and water usage data as part of a one-year check-in. Make our intention to collect data clear to them; incorporate wording of this requirement into OA agreement as a default.

Review status of each project's sustainability progress as part of Friday Morning Meeting report and weekly QA email.





INSTALLATION OF CENTERBROOK'S  
POND-SOURCE GEOTHERMAL SYSTEM.

# Our Sustainability Goals

## Operational Energy

- Our current firmwide EUI reduction (2021) is 57.6% from baseline.
- **As 2030 Challenge participants, we set the expectation of our projects' energy reductions at: 80% now, 90% by 2025, and 100% by 2030.** If projects cannot meet this target, Project Managers need to explain what precluded achievement.
- Take advantage of all available utility modeling and efficiency rebates on every eligible project
- Install building-level meters and post-occupancy sensors in select projects

## Water Use

- Meet or exceed the LEED 20% reduction from EPAAct values in every project. (work with MEP consultant to specify the lowest-flow fixtures available)
- Encourage building-level metering in projects

## Embodied Material Impacts

- Carbon
  - In 2023, we aim to focus on reducing embodied carbon and integrating carbon awareness into the workflow through the use of EPIC, BEAM, CARE, and TallyCAT software.
  - 2023: Perform an LCA including embodied carbon on a minimum of five projects, with the goal of benchmarking project carbon intensity.
  - In line with goals set by BNIM and other industry leaders, we aim for an embodied carbon reduction of 65% by 2030. We will refine this goal as benchmarking improves.
- Encourage alternatives to steel and concrete such as mass timber and other bio-based, carbon sequestering materials.

## Health and Environmental Impact

- Use default specs guided by our internal material selection document, which prioritizes human health and environmental impacts.
- Actively discourage the use of materials with known risks from the Red List and Perkins+Will Precautionary List, unless absolutely necessary. This includes all vinyl products.
- Require all new materials in the Products Library to come with Mindful Materials labels or be vetted in our sustainability documentation.

## Wellness & Biophilia

- Draft a Biophilia / Wellness Narrative for each Project
- Set measurable IAQ goals and track them in built projects
- Integrate principles and patterns of Biophilic Design
- Aim to add a special connection to nature in every project

## Workflow Tools

In 2023, we commit to developing these tools for our workflow:

- An OPR template that incorporates concrete sustainability targets
- An energy code summary sheet template for different project types
- A better set of sustainable case study projects in a format we can use to inspire clients
- An updated EcoChecklist that is more specifically integrated with the QA process
- An updated workflow and template for collecting post-occupancy data
- A firmwide database of best/better/never materials to specify in our projects that meet our health and environmental criteria
- A corresponding update to our database of render and default BIM materials
- A standardization of Revit materials all families to make them more easily readable by TallyCAT









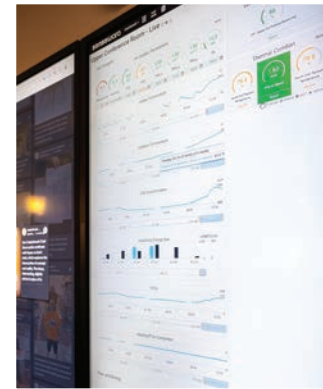


# Our Campus Footprint

Our focus on place-based stewardship was born in our own unique home base — a water-powered complex with 300+ years of history. We carefully maintain it and test new ideas and technologies as we strive to become carbon-neutral. In the next decade, we plan to launch the next generation of experiments here in our campus, making our office an example of innovation for our staff, clients, and the broader community.

## Campus as Lab

- Undertake in-house experiments that can inform our design work and make tangible improvements in air quality, energy performance, and employee health, happiness, and productivity.
- Continue using the Upper Conference Room as our experimental base to test out envelope and system upgrades and quantify their actual energy use impact on a case-by-case basis, with the eventual goal of air tightening and insulating our whole building for better performance.



# Energy Efficiency

**Goal: Reduce our Campus Energy Usage by 50% by 2030.**

To get there:

- Track and visibly/publicly report our energy usage
- Replace thermostats with smart devices that can shut off on nights and weekends.
- Contract an outside firm to do a building envelope and efficiency assessment
- Implement reminders/timers to turn lights and monitors off; add automatic timers or sensors on light switches that don't already have them
- Adopt a policy to encourage the purchase of energy-efficient equipment





## Transportation Emissions

***Goal: cut our transportation emissions by ¼ from 2020 levels.***

To get there:

- Survey employees and quantify/display our transport energy usage
- Work with the local utility to add high-voltage electric car charging stations that fit Centerbrook's unique aesthetic

Incentivize carpooling, walking, biking through:

- Preferred carpool parking spot in front of office
- Shoreline East passes: discounted or free
- Bike and Walk to Work Days

## Products Purchasing

***Goal: Survey office products we buy to make sure we're using the healthiest, most sustainable options available.***

- Verify the health and environmental characteristics of our cleaners
- Buy higher recycled content paper, implement double-sided printing as default
- Buy unbleached postconsumer recycled paper towels
- Encourage healthy drawing implements (discourage permanent markers and whiteout)
- Encourage electronic drawing sets and submissions whenever possible
- Create a traveling workshop supply kit that reflects our sustainability values to clients and participants (low odor markers, recycled paper, etc)



## Water Use

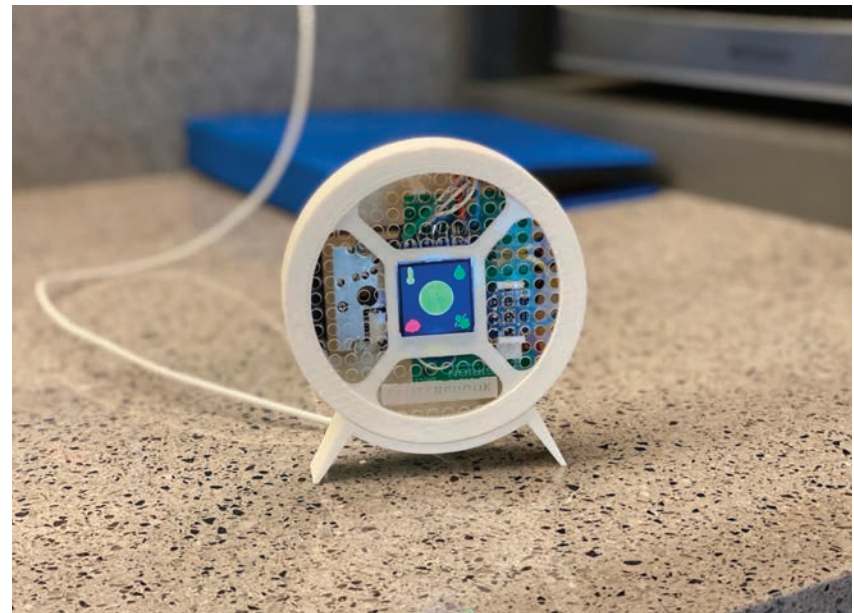
- Install and share water meters so we are aware of our own usage
- When renovating bathrooms, install ultra-low-flow (or composting) toilets; waterless urinals for the Blue Loo

## Waste

- Eliminate all single-use dishware
- Make sketchbooks from used single-sided prints
- Ask caterers to avoid plastic when making group orders
- Eliminate all plastic bottled water from lunch in favor of glasses
- Revive food waste composting
- Develop coherent recycling and composting guidelines, including collection of hazardous wastes (batteries, CFLs)
- Replace single-use batteries in office devices with rechargeable versions

## Indoor Air Quality

- Perform an IAQ assessment (VOCs, CO2, etc: see WELL Standard testing protocol) and consider WELL certification for our office.
- Investigate and implement winter humidification strategies



## Biophilia / Nature Connection

- Incorporate more living plants into interior spaces
- Create signage, flyers, ornament, etc about the plants and animals around us and feature it prominently in the office, capitalizing on the fish ladder project.





# Our Relationships with Clients and Consultants

A majority of Centerbrook's work comes from repeat clients, and our firm prides itself on its long-standing relationships with institutions and consultants. Getting to a carbon-neutral portfolio requires us to push them to come along for the ride.



## Post-Occupancy Evaluation and Data

- Gather and report performance data as part of every client agreement going forward.
- Use a post-occupancy data device to track actual indoor metrics when a client is willing to participate.
- Build Sustainability into Consultant Contracts
- Set expectations for our MEP Engineers, Structural engineers, etc model and consider green options and run energy models on every project.

## Minimum Design Goals

- Aggressively pursue the energy and water reductions from baseline outlined above regardless of client design goals and always start with an assumption of compliance on every project.

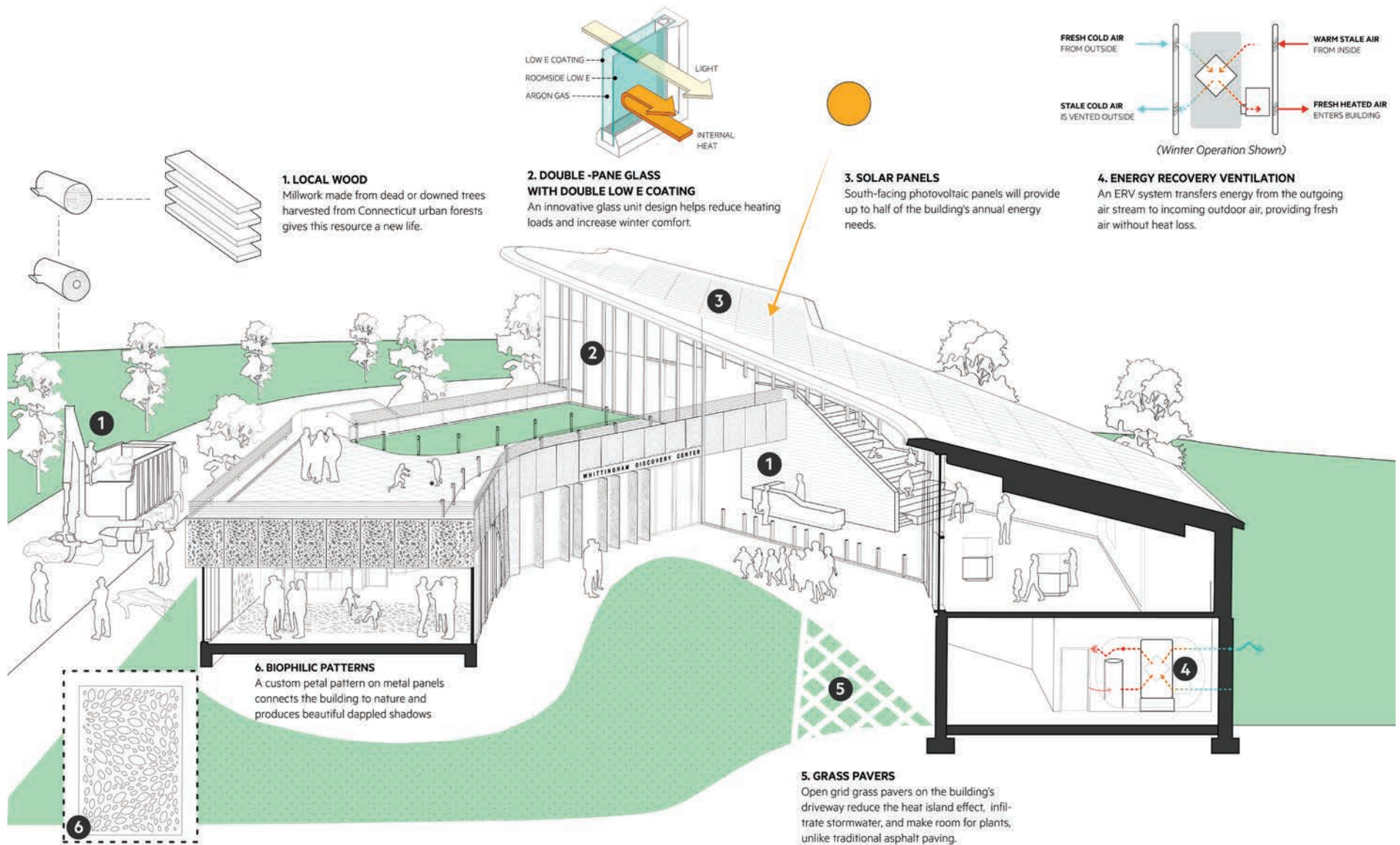
## Rating Systems

- Pursue projects that strive for Net Zero, Living Building Challenge, Passive House, and other standards beyond LEED.
- Strive to pursue more projects with **an IPD / Design Build model** to allow for integrated sustainability goals and incentives



# Mill River Whittingham Discovery Center

## Sustainability Strategies



# Our Internal Staff Knowledge / Expertise

Many of our staff have prepared independently for certifications like LEED and Passive House; we commit as a firm to making this knowledge easier to access in-house by curating courses and workshops for employees and gathering our experience and knowledge into a green building database.

## Catalog and Share Green Experience

- Organize presentations and exhibits of lessons learned from implementing sustainable strategies by including key sustainability features as part of OpenAsset project definitions
- Maintain (within OpenAsset) a database of different green technologies and which projects used them (and where details on these can be found). Ex: geothermal, solar water, passive house level envelope, etc
- Make all sustainability guidance documents easily accessible in a central location



## Software Integration

- Host training and seminars to teach staff key sustainability tools
- Build the use of software and web tools into the design process through inclusion in QA checklists.

## Courses

- Create regularly occurring lunchtime courses on embodied carbon, passive house, wood construction, and other relevant topics
- Survey staff annually to assess the efficacy of sustainability learning and interest in specific topics and programming



## Staff Certification

*Goal: have at least two staff members accredited in each of the major green building certifications. Those individuals will be “area experts” for projects pursuing certification and will be expected to give educational presentations/seminars to the office.*

- Encourage **LEED**, **LBC**, **Passive House**, and **WELL certification** by funding exams and credential maintenance. Staff can apply for accreditation by writing a letter of interest to the Principals and committing to writing blog posts and giving presentations.



## Educational Experiences

- Fund strategic staff participation in sustainability conferences, with the goal of sharing their findings with the office



# Employee Health & Wellness

We recognize that we're all better off when our employees are physically and mentally healthy. We commit to:

- Provide more nutritious snacks to encourage mindful eating
- Continuously elicit feedback on our remote work policy to make sure it provides staff the flexibility to balance their commitments
- Organize regular social, sports, and recreational events
- Improve daylighting in the office
- Encourage use of the yoga/meditation studio for healthy breaks
- Create alternative work spaces outside of our desks
- Accommodate maternity and religious needs with dedicated spaces
- Implement a mentorship and mental health check in program



# Our Advocacy within the Industry and Community

Another important way to make a difference is to look beyond our own firm and projects. We commit to being a stronger advocate in the construction industry.

- Aim to give at least two presentations each year that highlight our sustainable design achievements and qualifications (trade shows, lectures, etc)
- Aim to have several staff involved in COTE and other groups advocating green design at the professional and legislative level. Encourage staff by celebrating their service in visible ways within the office.
- Create sustainability slide decks for presenting educational content at schools and universities
- Expand our website's sustainability section to highlight our full range of analysis and sustainable design services
- Do a better job of telling our story of 50 years of experimenting with green architecture
- Day of Service and Pro Bono Hours to encourage staff community involvement; Have a wall or intranet page highlighting staff community service
- Advocate for contractors and craftspeople who uphold sustainable construction standards.







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