

# NRDC Design & Construction Protocols



## Fall 2019

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## Table of Contents

<b>CONTEXT AND SCOPE</b>	<b>2</b>
<b>HOW TO USE THE PROTOCOLS</b>	<b>3</b>
<b>CATEGORY 1: ENERGY AND GREENHOUSE GAS EMISSIONS</b>	<b>6</b>
Objective 1: Design for zero-emissions	6
Objective 2: Implement energy efficiency best practices	7
Objective 3: Minimize Travel	8
Objective 4: Provide trainings and on-going maintenance	8
<b>CATEGORY 2: WATER</b>	<b>10</b>
Objective 1: Understand water use	10
Objective 2: Implement water efficiency best practices to reduce indoor water use	10
Objective 3: Install water reuse systems as applicable and reduce potable water use	11
<b>CATEGORY 3: RESOURCE MANAGEMENT</b>	<b>12</b>
Objective 1: Develop and implement a Construction Waste Management Plan (CWMP)	12
Objective 2: Incorporate reused products, building materials, and services that minimize waste	12
Objective 3: Incorporate features that will maximize diversion rates and support NRDC's zero waste strategies	12
<b>CATEGORY 4: MATERIALS AND PROCUREMENT</b>	<b>14</b>
Objective 1: Ensure product manufacturers meet NRDC's requirements	14
Objective 2: Ensure material ingredients meet NRDC's requirements	15
<b>CATEGORY 5: HEALTH AND PRODUCTIVITY</b>	<b>18</b>
Objective 1: Design for optimal indoor air quality	18
Objective 2: Design for thermal comfort	18
Objective 3: Optimize acoustical performance	18
Objective 4: Incorporate biophilia and optimal lighting design	19
Objective 5: Incorporate active design features	19
<b>CATEGORY 6: ENGAGEMENT AND EDUCATION</b>	<b>21</b>
Objective 1: Engage and train NRDC staff	21
Objective 2: Collaborate to strengthen the mission of NRDC	22
Objective 3: Maximize connectivity between occupants and community	22
Objective 4: Create community and inspire	22
<b>APPENDICES</b>	<b>23</b>
APPENDIX A: SUPPLEMENTAL DOCUMENTS	23
APPENDIX B: REFERENCES	24

## CONTEXT AND SCOPE

The NRDC Design & Construction Protocols is to be used by designers, architects, engineers, general contractors, and other project team members as a means to guide the sustainable design and construction process.

The Protocols have been produced under the guidance of NRDC's Sustainable Operations Plan and in alignment with other supplemental documents, including NRDC's Procurement Policy, Zero Waste Directive, and Furniture Specifications Guidelines. This document is to be used during the design and construction processes to ensure NRDC's five operational Visions and Approaches are executed within NRDC's built environment. The Visions, as stated in NRDC's Sustainable Operations Plan, are:

**Vision 1:** Eliminate Greenhouse Gas Emissions

**Vision 2:** Increase Water Efficiency

**Vision 3:** Achieve Zero Waste

**Vision 4:** Design for Healthy Buildings and People

**Vision 5:** Increase Education and Engagement

The Design & Construction Protocols are organized into the following categories. Each category contains further delineation of guidelines and requirements.

**Category 1:** Energy and Greenhouse Gas Emissions

**Category 2:** Water

**Category 3:** Resource Management

**Category 4:** Materials and Procurement

**Category 5:** Health and Productivity

**Category 6:** Engagement and Education

The Protocols will be applicable to all of NRDC's major renovation and construction projects. They will be essential to reducing NRDC's environmental impact and providing a healthy and productive work environment across the institution.

Aligning with Vision 5, Increase Education and Engagement, from NRDC's Sustainable Operations Plan, the following content has been produced through a collaborative effort between NRDC programs and departments. Involved parties include scientists, policy managers, advocates, and professionals within NRDC's Facilities department, Healthy People Thriving Communities program, and Climate & Clean Energy program.

## HOW TO USE THE PROTOCOLS

### Administration:

Each project will be assigned a **Project Administrator** who will oversee the execution of the Protocols. The Project Administrator will be an NRDC team member who will be responsible for:

1. Distribution of this document to all involved parties.
2. Facilitation of the Sustainability Project Kick-off Meeting with the project team to review requirements and expectations of NRDC's standards for design and construction within the Scope of Work.
3. Review of the Protocols with all parties, and assignment of the appropriate party/parties to oversee each category (see table below).
4. Delivery of appropriate deadlines for document completion and narratives (outlined on page 7) required for each category.
5. Narratives:
  - a. Establish communication channel and means by which narratives will be submitted.
  - b. Collection and review of narrative responses.
  - c. Providing feedback and recommendations to responses.
6. Approval of final narratives and sharing with the project team.
7. Status documentation of all requirements in a supplemental checklist.

The following table will be completed and distributed by the Project Administrator:

Project Name: \_\_\_\_\_

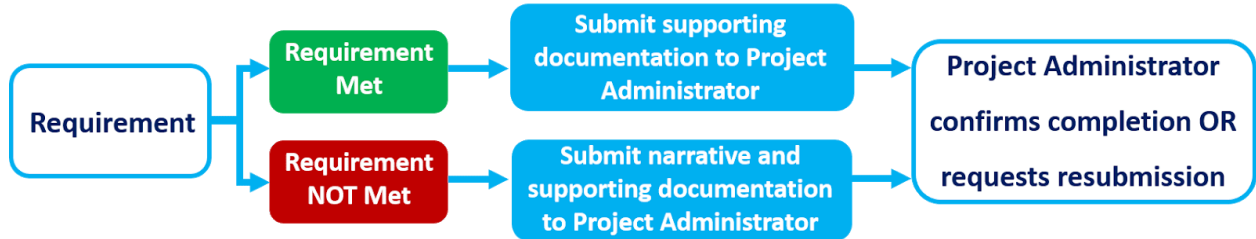
Project Administrator: \_\_\_\_\_

**TABLE OF RESPONSIBILITIES**

<b>Category</b>	<b>Responsible Party</b>	<b>Project Phase for Completion (To be reviewed with Project Administrator)</b>
1		
2		
3		
4		
5		
6*	NRDC Facilities Team	Parallel to and post-construction

*\* Category 6 is fixed: it will always hold the NRDC Facilities Team as the Responsible Party and occur parallel to and post-construction.*

The Protocols progress as follows:



### Documentation and Accountability:

All Responsible Parties are accountable for the completion of their assigned category:

1. Compliance with a requirement
  - a. Submit documentation for a fulfilled requirement to the Project Administrator. The Project Administrator will confirm completion.
2. Compliance through narrative submission
  - a. For a requirement that cannot be fully met, submit a narrative to the Project Administrator for review. Narratives can be provided on a rolling basis.
  - b. Act on feedback
    - i. If a narrative is questioned or denied, revise and resubmit for approval
    - ii. Once a narrative is approved, the requirement is marked as complete

**Narratives:**

NRDC understands that not all projects are the same and there are specific requirements that may not be applicable or achievable for a variety of reasons. The narrative process allows the Responsible Party to explain lack of adherence to a requirement or explain an alternative compliance approach used.

For each requirement listed that is not achievable or if an equal alternative approach is used, a narrative and supporting documentation must be submitted to the Project Administrator.

A narrative must include clear evidence to explain reasoning. The following list of items warrant these exceptions, but are not limited to:

1. Cost prohibitive (elaborate on the soft and hard costs)
2. Current market availability
3. Landlord approvals
4. Unavailable technology or resources
5. Restrictions from the respective city or other ordinances/jurisdictions
6. Not applicable based on the geographical location or site
7. Life Cycle Costing
8. Occupant health and wellness supersede the environmentally-focused goal
9. Product does not have [x] certification - *or* -  
Product has [x] certification which supersedes others listed
10. Requirement is not included in Scope of Work

As noted under “Administration” on page 3, at the onset of each project the Project Administrator will establish the means through which narratives are submitted and resulting communication occurs.

**Additional Comments:**

This document addresses renovations within NRDC’s existing locations and does not address site selection. If and when NRDC moves, site selection criteria (those that reduce the impact on land, encourage density, and offer public transit options to occupants) will be addressed.

The Project Team should follow green building certifications relevant to the project, if applicable, in addition to the requirements in the Protocols. All material ingredients, systems, or services that are required by code will be approved.

In addition to the Protocols, the project will adhere to other related documents including but not limited to the following, as coordinated with the Project Administrator:

- NRDC Procurement Policy
- NRDC Furniture Specification Guidelines
- NRDC Zero Waste Directive
- NRDC Sustainable Operations Plan

## CATEGORY 1: ENERGY AND GREENHOUSE GAS EMISSIONS

### Overview

This category aligns with Vision 1 from the NRDC's Sustainable Operations Plan V3: Eliminate Greenhouse Gas Emissions

The objectives in this category include:

Objective 1: Design for zero-emissions

Objective 2: Implement energy efficiency best practices

Objective 3: Incorporate design features to minimize travel

Objective 4: Provide trainings and ongoing maintenance

### Objective 1: Design for zero-emissions

- Evaluate current energy consumption and emissions profile
  - Breakdown energy use by energy source (such as electricity, gas, and oil) and identify systems that use the most energy.
  - Determine the hourly load profile for each energy source, to help identify the most appropriate renewable energy sources, demand management, and energy storage solutions that can provide the largest emissions reductions for the project's budget.
  - Create an emission intensity baseline
    - Identify proximity to achieving zero-emissions
  - Determine the local hourly marginal emissions profile projected over the next 20 years that is applicable for the project. Work with program staff as needed.
- Use existing energy information to inform project design
  - Prioritize emissions reduction strategies for the systems identified that produce the most emissions
  - Share existing energy use findings and EUI baseline report with the project team
- Perform energy modeling to simulate energy performance
  - Determine if energy modeling is necessary for the project scope
  - The Project Administrator must provide approval to proceed if energy modeling is deemed necessary
- Eliminate on-site fossil fuel use
  - Evaluate potential to convert on-site fossil fuel use to the most efficient systems available at the time of design
- Utilize renewable energy sources
  - Maximize on-site renewable energy with the most efficient technology available
  - Use Zero Code (<https://zero-code.org/>) to assess the renewable energy requirements to offset onsite energy use
  - Review options for on-site and off-site renewable energy with Project Administrator. The Project Administrator must grant approval before proceeding.

## Objective 2: Implement energy efficiency best practices

- Comply with ASHRAE 90.1 2010
- Design for lighting efficiency
  - Light levels and CRI must be compliant with the [IES Lighting Standards](#) and ASHRAE 90.1 2010
  - Include the following lighting design elements where possible:
    - Daylight responsive controls in all regularly occupied day-lit spaces
    - Dimmability programmed to turn on at 50%, if applicable
    - Vacancy sensors programmed with the following auto shut-off time limits (or shortest time per required code):

Space Type	Vacancy Sensor auto-shut off limit (minutes)
Private Office	10
Common Areas	15
Conference Room	7.5
Restrooms	10
Closets	5

- Implement a comprehensive lighting and control system:
  - Discuss details with Project Administrator prior to implementing
  - Include remote access to securely control lights
  - Ability to track and monitor lighting energy use
  - Include set light schedules
- Perform enhanced commissioning of building systems, by a Commissioning Agent other than the MEP
  - Specific requirements for enhanced commissioning are to be provided by the Project Administrator
- Maximize equipment efficiency (*aligned with Category 4: Materials & Procurement*):
  - Purchase 100% [Energy Star](#) and/or Energy label equipment and appliances where Energy Star is applicable
  - Maximize HVAC and water heating efficiencies: adhere to the ASHRAE 50% Advanced Energy Design Guide
- Implement plug load management
  - Install plug load management software that includes automatic shut off
  - Specific software to be discussed and approved with the Project Administrator
- Install an advanced metering system
  - Install new or use existing base building energy and water meters, or submeters, that are capable of the following:



- Can be aggregated to provide total building energy consumption (electricity, natural gas, chilled water, steam, fuel/oil, propane, etc.)
  - Record at intervals of 30 minutes or less, and transmit data to a remote location
  - Electricity meters must record both consumption and demand
  - Water meters must record greywater, irrigation, make-up, and main water
  - Whole-building electricity meters should record the power factor, if applicable
- Meters must have the following integration and sharing capabilities:
  - Integration with the Energy Management Information System (EMIS) and/or Building Automation System (BAS) used on-site
    - Review specific requirements for data sharing and integration with the EMIS and BAS
- Submeter applicable end of uses for project site:
  - Receptacle equipment
  - Interior lighting
  - Space heating
  - Space cooling
  - Fans
  - Pumps
  - Heat rejection
  - Exterior lighting
  - Service water heating

**Objective 3: Minimize Travel**

- Work with all project team members to develop a plan that minimizes the amount of travel to the project site and encourages the use of sustainable transportation methods.<sup>1</sup>
- Design for a variety of space types that incorporate AV equipment with virtual connections
- Design all offices with AV equipment with appropriate acoustics and aesthetics for video conferencing

**Objective 4: Provide trainings and on-going maintenance**

- Conduct trainings on newly installed systems for NRDC Facilities Team and all building operators
  - Trainings for equipment and systems must comply with ASHRAE Guideline 0–2005 to include:
    - Emergency instructions and procedures
    - Operation instructions and procedures
    - Troubleshooting procedures
    - Maintenance and inspection procedures

- Repair procedures
  - Upkeep of the systems manual and associated maintenance documentation logs
  - Create and share, in an easily accessible online platform, training materials and operations and maintenance plans as detailed above
- Create and install simple signage to guide occupant interaction with:
  - Lighting systems
  - Conference room AV equipment
  - Workspace equipment (laptops, outlets, etc)
  - Plug load management

## CATEGORY 2: WATER

### Overview

This category aligns with Vision 2 from the NRDC's Sustainable Operations Plan V3: Increase Water Efficiency

The objectives in this category include:

1. Understand water use
2. Implement water efficiency best practices to reduce indoor water use
3. Install water reuse systems as applicable and reduce potable water use

*Note:*

*If restrooms are considered outside of the project scope and not on the NRDC premises, the Project Administrator will be responsible for sharing these water efficiency strategies and protocols with the landlord and/or property manager. If restrooms are within the scope of the project, the project must follow the objectives.*

#### Objective 1: Understand water use

- Conduct a simple water flow study
  - Calculate baseline water consumption
  - Understand water (potable and non-potable) usage for all applicable systems
- Address regional water issues within the project design
  - Identify regional water issues relevant to the project location and discuss how this is addressed with Project Administrator
- Submeter water loads:
  - By floor/location
  - By type: rainwater, process water, domestic water, recycled water

#### Objective 2: Implement water efficiency best practices to reduce indoor water use

- Maximize efficiency of plumbing fixtures
  - All newly installed toilets, urinals, private lavatory faucets, and showerheads that are eligible must be WaterSense (or equivalent)
  - All plumbing fixtures must be the most water efficient available on the market at the time of design and must not exceed the following flow or flush rates:

Fixtures or Fitting	Maximum flow or Flush Rate
Toilet (water closet)	1.28 gpf (or composting toilets)*
Urinal	.5 gpf (or waterless urinals)*
Public lavatory (restroom) faucet	.4 gpm

Private lavatory faucets	1.5 gpm
Kitchen faucets	1.75 gpm
Showerhead	2.00 gpm

\*For NRDC-owned spaces, the project team must discuss feasibility of this fixture with the Project Administrator

- Maximize water efficiency for process water
  - All appliances must be Energy Star labeled or an equivalent standard
  - Install dual flush toilets
    - Install manual push buttons that are dual flush
    - Include appropriate signage detailing how to use the fixture/flush valve(s)
- If evaluation shows cooling towers cannot be eliminated, the cooling towers must be equipped with:
  - Makeup water meters
  - Conductivity controllers and overflow alarms
  - Efficient drift eliminators that reduce drift to maximum of 0.002% of recirculated water volume for counterflow towers and 0.005% of recirculated water flow for cross-flow towers

**Objective 3: Install water reuse systems as applicable and reduce potable water use**

- Use efficient watering strategies for interior and exterior plantings
  - Eliminate the use of potable water used for landscaping by utilizing xeriscaping techniques and native plants
  - Use water recycled on-site for watering
  - Use water efficient irrigation systems
- Use recycled water strategies:
  - Water reuse systems are to be discussed and approved by the Project Administrator
    - Use greywater for flushing water closets and urinals; cooling towers; washing sidewalks, streets, or buildings; laundry; subsurface or drip landscape irrigation systems; and watering plants
  - Use cisterns to capture rainwater if space is available

## CATEGORY 3: RESOURCE MANAGEMENT

### Overview

This category aligns with Vision 3 from the NRDC's Sustainable Operations Plan V3: Achieve Zero Waste

The objectives in the category include:

1. Develop and implement a Construction Waste Management Plan (CWMP)
2. Incorporate features that will maximize diversion rates and support NRDC's zero waste strategies
3. Incorporate reused products, building materials, and services that minimize waste

### Objective 1: Develop and implement a Construction Waste Management Plan (CWMP)

- A CWMP must be created and implemented that follows the *Division 1 Specification: Construction Waste Management and Disposal*, and other supplemental documents deemed necessary by the Project Administrator

### Objective 2: Incorporate reused products, building materials, and services that minimize waste

- Incorporate salvaged and reused products throughout design and construction
  - Perform a walk through of the existing space at the start of the project to audit what materials might be re-used in the new design
    - Review re-used and salvaged product opportunities with the Project Administrator and incorporate as approved
- Design with product durability and longevity in mind
  - Design for deconstruction
    - Give preference to deconstruction over demolition. (*Note: Deconstruction is the process of strategically disassembling structural elements and other building products to reduce waste generation by promoting reuse and to ensure the proper disposal methods for various building components.*)
    - Engage a deconstruction vendor or subcontractor that specializes in deconstruction
  - Give preference to FF&E that can be reconfigured or adjusted for multiple uses. (i.e. demountable partitions or modular systems)
- Include efficient transportation of materials and delivery
  - Implement a freight consolidation plan for deliveries
  - Comply with guidelines in *Division 1 Specification: Indoor Air Quality Requirements*, and other supplemental documents deemed necessary by the Project Administrator

### Objective 3: Incorporate features that will maximize diversion rates and support NRDC's zero waste strategies

- Identify all possible waste types and quantities that may be generated by different occupants and spaces. (i.e. an office may need a large area devoted to paper recycling, whereas a cafeteria may require more space for plastics, glass, metals, and organics)
- Provide the appropriate amount of right-sized bins for each waste stream:
  - Landfill
  - Paper, metal, plastic, glass recycling
  - Organics/compost

- Alternative recycling streams
- Design appropriate storage areas for waste collection
  - Employ designs that lead occupants to minimize waste production and dispose of items correctly in accordance with the principle of least resistance.
  - Make storage areas fully and easily accessible to building occupants, including visitors, full time occupants, operations staff, and waste haulers
  - For any hazardous waste stream (i.e. batteries, mercury-containing lamps, e-waste), take appropriate measures for safe collection, storage, and disposal
- Provide clear, visible signage for all waste streams and locate immediately adjacent to waste collection site(s)

## CATEGORY 4: MATERIALS AND PROCUREMENT

### Overview

This category aligns with Vision 4 from the NRDC's Sustainable Operations Plan V3: Design for Healthy Buildings and People

The objectives in the category include:

Objective 1: Ensure product manufacturers meet NRDC's requirements

Objective 2: Ensure material ingredients meet NRDC's requirements

#### Notes:

- *Salvaged, reclaimed, secondhand, and/or reused products are generally preferred over new. If new products are to be specified, they must adhere to Objectives 1 and 2 in Category 4: Materials and Procurement. Salvaged, reclaimed, and secondhand products do not have to adhere to the following but should be coordinated with and approved by the Project Administrator prior to specification.*
- *Final approval for the use of products will take into consideration criteria from both Objective 1 and 2*
- *NRDC understands the complexities involved with material and product selection. In many cases the materials and products have both an environmental impact as well as an impact on occupant health. During the selection process, NRDC advises the Project Team to prioritize occupant health followed by environmental impact.*

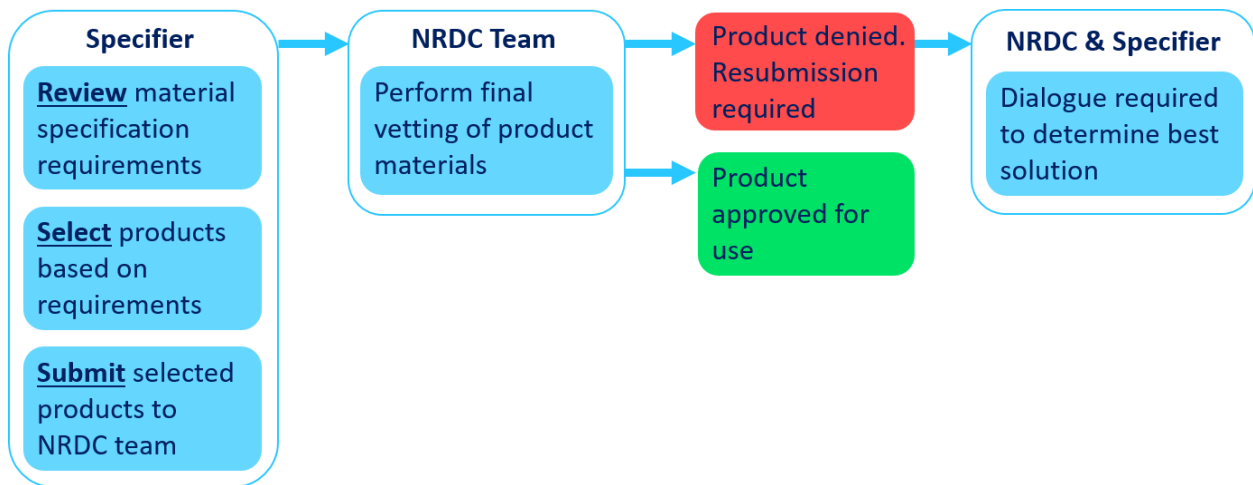
### Objective 1: Ensure product manufacturers meet NRDC's requirements

- Carbon Reduction:
  - Manufacturer is a member of the Carbon Disclosure Project (CDP), demonstrating its commitment to a reduced carbon footprint
  - Manufacturer has a [Zero Carbon certification](#) (from the International Living Future Institute) for its manufacturing plant, storage facility, and/or showroom
  - Manufacturer purchases carbon offsets to minimize its carbon footprint
  - Manufacturer provides information on the product's embodied carbon
  - Embodied carbon should be minimized using as much available information as possible:
    - Calculate the carbon associated with each product using an existing tool, such as EC3
- Responsible Sourcing:
  - Manufacturer publicly reports from where raw materials are extracted
  - Manufacturer has made a commitment to long-term ecologically responsible land use
    - Manufacturers prioritize salvaged and/or reused products
- Waste Reduction:
  - Manufacturer bases manufacturing process off of the [Circular Economy](#) and associated principles
  - Manufacturer has a zero waste (i.e. 90%+ annual waste diversion rate) goal for

- manufacturing and/or distribution facility
- Manufacturer demonstrates a commitment to waste reduction through resource capture and material reuse (i.e. minimizing off-cuts and waste byproducts, favoring modular systems, etc)
- Manufacturer has a take-back program in place. If only a portion of the product can be taken back, the rest of the product must be fully recyclable and responsibly recycled.
- Certifications and Compliance
  - Give preference to third-party verified reports that indicate environmental impacts. Reports may include the following (or international equivalent):
    - GRI
    - OECD Guidelines for Multinational Enterprises
    - UN Global Compact
    - ISO 26000
    - ISO 14001

**Objective 2: Ensure material ingredients meet NRDC’s requirements**

- The following process will be used to determine if products are approved for use:



- The following product categories must follow the above process and be approved by the NRDC Team as directed by the Project Administrator.
  - Core and shell products
  - Finishes
  - HVAC, lighting, and plumbing fixtures
  - (Kitchen) Appliances
  - Technology equipment (including cabling, sensors, and similar. Review specific requirements with Project Administrator.)
  - Furniture\*
    - \* For all ancillary and systems furniture and upholstery, see NRDC’s Furniture Guidelines
- Products **may not contain** any of the following intentionally added ingredients:<sup>2</sup>



- |   |  |
|---|--|
| 1. Alkyphenols  | retardants (HFRs) (greater than 1000 parts per million)  |
| 2. Antimicrobials   |  |
| 3. Asbestos   | 14. Lead   |
| 4. Bisphenols (any and all kinds)                                     | 15. Mercury  |
| 5. Cadmium  | 16. Per- and polyfluoroalkyl substances (PFAS) (greater than 1 parts per million total fluorine) |
| 6. Chlorinated Polyethylene and Chlorosulfonated Polyethylene         | 17. Polychlorinated Biphenyls (PCBs)   |
| 7. Chlorobenzenes   | 18. Phthalates (any and all kinds)   |
| 8. Chlorofluorocarbons (CFCs) and Hydrochlorofluorocarbons (HCFCs)    | 19. Polyvinyl Chloride (PVC)   |
| 9. Chloroprene (neoprene)   | 20. Polyvinylidene Chloride (PVDC)   |
| 10. Chromium VI   | 21. Short Chain Chlorinated Paraffins  |
| 11. Chlorinated Polyvinyl Chloride (CPVC)                             | 22. VOCs in wet applied process  |
| 12. Formaldehyde  | 23. Wood treatments containing creosote, arsenic and pentachlorophenol                           |
| 13. Halogenated, organophosphorus, organonitrogen, or nanoscale flame |  |

- The following requirements apply to **all product categories**:
  - Recycled content
  - A Declare label (preferably with “Red List Free” designation)
  - An entry in [mindfulMaterials](#)
  - An entry in Red2Green with a score of 70+
  - A fully disclosed Healthy Product Declaration (HPD)
  - A fully disclosed Environmental Product Declaration (EPD)
  - GREENGUARD
  - Full transparency into all materials ingredients by CASRN and chemical name, up to 1000 ppm, or an explanation of why it cannot be fully disclosed and a guarantee that the proprietary ingredients meet NRDC’s banned ingredients (listed below)
  - Bio-based materials must meet the Sustainable Agriculture Network’s Sustainable Agriculture Standard

*Give preference to products that are sourced and manufactured within closest regions to the project. Discuss specific geographical requirements with Project Administrator*

- The following requirements apply to the **specified product categories only**:
  - Insulation and Air Sealants
    - The “[Guidance for Specifying Healthier Insulation and Air-Sealing Materials](#)” report should be reviewed and followed, where applicable, for specification of insulation and air sealants.
  - Wood Products
    - Wood products must hold a 100% FSC Certification and must have a chain of custody (and CoC documentation)
    - Composite Wood
      - The following ingredients are not allowed:
        - Creosote

- Arsenic
  - Pentachlorophenol
  - Phenol formaldehyde:
    - Flush wood doors may contain no more than 2%
  - Urea formaldehyde:
    - Allowed in finger joints of structural composite wood only
  - Ultra-Low-Emitting-Formaldehyde (ULEF):
    - Allowed in furniture substrates as designated by CARB Phase II emission thresholds.
- Small Electrical Components (including thermostats, switching devices, electrical relays, fire alarms, sensors, and lighting controls)<sup>3</sup>
  - Ingredients listed below must comply with the maximum concentration values in the *European Union's Restriction of the Use of Certain Hazardous Substances (RoHS) Directive*.
    - Cadmium
    - Hexavalent Chromium
    - Lead
    - Mercury
    - Polybrominated Biphenyls (PBB)
    - Polybrominated Diphenyl Ethers (PBDE)
  - Additional vetting of ingredients in small electrical components is not required

## CATEGORY 5: HEALTH AND PRODUCTIVITY

### Overview

This category aligns with Vision 4 from the NRDC's Sustainable Operations Plan V3: Design for Healthy Buildings and People

The objectives in this section include:

1. Design for optimal indoor air quality
2. Design for thermal comfort
3. Optimize acoustical performance
4. Incorporate biophilia and optimal lighting design
5. Incorporate active design features

### Objective 1: Design for optimal indoor air quality

- Meet NRDC's minimum standards for indoor air quality set forth in the *Division 1 Specification: Indoor Air Quality Requirements*, and refer to other supplemental documents deemed necessary by the Project Administrator.<sup>3</sup>
- Discuss feasibility of RESET Certification with the Project Administrator, including the installation of indoor air quality monitors with data tracking capabilities

### Objective 2: Design for thermal comfort

- Design HVAC systems and building envelope to meet the requirements of ASHRAE Standard 55–2010, Thermal Comfort Conditions for Human Occupancy, or local equivalent.
- Separately control zones with solar exposure and without solar exposure (i.e. interior rooms)
- All occupied spaces must contain thermal zones (with a minimum of 1 thermal zone per 60 sq m)
- Temperature sensors are to be 1m away from exterior walls, windows, doors, and direct sunlight
- Design to maintain humidity between 30% to 50%

### Objective 3: Optimize acoustical performance

- Design for acoustical privacy by incorporating appropriate sound barriers
  - Walls should extend to deck to mitigate sound transfer between rooms. Add additional insulation at the intersection if requested.
  - Mechanical transfer grills should not be placed between regularly occupied rooms
- Maximize the use of sound absorbing materials
  - Give preference to:
    - Carpet
    - Natural materials such as cork and wood
    - Sound reducing ceiling tiles or treatments
    - Sound reducing vertical surfaces
- Minimize and manage background noise level
  - If needed, give preference to passive noise-reduction strategies (i.e. strategic acoustic

panel design) in favor of active, energy-intensive strategies (i.e. traditional sound masking system)

- Label acoustical zones on drawings beginning in the programming phase with the following or similar:
  - Loud zones (i.e. spaces with appliances and amenities)
  - Quiet zones (i.e. spaces for focused work and wellness)
  - Mixed zones (i.e. spaces for collaboration and presentation)

#### **Objective 4: Incorporate biophilia and optimal lighting design**

- Provide access to nature
  - As part of the project kick-off, work with Project Administrator to coordinate a Biophilia Exploration Day with the design team
    - Incorporate biophilic design elements based on the results
  - Maximize access to daylight and quality exterior views
    - Provide a simple daylight simulation during design development phase
    - Maximize daylight exposure for regularly occupied spaces
    - Use transparent partitions or interior glazing to provide daylight to enclosed spaces
- Design lighting to maximize individualization of light levels at workspaces
- Incorporate appropriate lighting details for the space in regard to:
  - Color rendering index (CRI)
  - Color temperature
  - Light levels and spotlights (with approved photometric design)
- Provide glare-control strategies
  - Glare-control strategies should consider both exterior windows and interior glazing
  - All glare-control devices must be operable by the building's occupants. (Automatic devices with user override are acceptable.)
  - Acceptable glare-control devices include interior window blinds, shades, curtains, movable exterior louvers, movable screens, and movable awnings
    - *Notes:*
      - *Systems not acceptable as glare-control devices include fixed exterior overhangs, fixed fins and louvers, dark-colored glazing, and frit and other glazing treatments.)*
      - *Diffused and translucent glazing systems do not require glare-control devices.*

#### **Objective 5: Incorporate active design features**

- Design individual work areas that have the ability to accommodate:
  - Adjustable workstations (i.e. "sit-to-stand")
  - Active workstations (i.e. treadmill desks, bicycle desk, etc)
  - Other equipment or space for equipment as requested
- Incorporate space planning strategies that allow for an active work environment:
  - Design stairs for frequent use:
    - Locate an appealing, visible stair directly on the building's principal paths of

travel, if applicable

- Encourage use of stairs by providing informational or motivational signage at points where users must decide between taking stairs or elevators/ escalators
- Design for spaces or access to spaces that support recreational and transportation-related exercise:
  - Provide secure, sheltered, and accessible bicycle storage, preferably on the ground floor
  - Provide information and signage about facilities, services, and groups related to physical activities
  - Provide shower and locker room facilities to encourage bicycling, walking, and running as forms of commute

## CATEGORY 6: ENGAGEMENT AND EDUCATION

### Overview

This category aligns with Vision 5 from the Sustainable Operations Plan V3: Increase Education and Engagement

*Note:*

*The NRDC Facilities Team will be responsible for facilitating this category with the project team.*

The objectives in this section include:

1. Engage and train NRDC staff
2. Collaborate to strengthen the mission of NRDC
3. Maximize community connectivity
4. Create community and inspire

### Objective 1: Engage and train NRDC staff

- Provide signage throughout the space that highlights key sustainability features
- Offer a tour of the space to staff prior to occupancy. The tour host is open to the Project Team and should be coordinated with Project Administrator.
- Create an education plan and implement post-construction. Coordinate logistics with the Project Administrator. Components of the plan may include but are not limited to: a brochure, building tour, webinar, staff meeting announcements, lunch and learns, etc. Include in the plan the following content:
  - Category 1: Energy and Greenhouse Gas Emissions
    - Overview of energy efficiency strategies implemented on-site
    - Instructions that review:
      - Individual plug load management (if applicable)
      - Lighting controls and systems
      - How to access to energy and water usage tracking system data
      - How to turn off IT equipment and use AV equipment
  - Category 2: Water
    - Overview of water efficiency strategies implemented on-site
    - Instructions that review:
      - Proper use of plumbing fixtures (maintenance, flush valves, etc)
      - Strategies for reducing potable water use
  - Category 3: Resource Management
    - Overview of diversion rates achieved and strategies to achieve diversion
    - Instructions that review proper use of waste streams:
      - Landfill
      - Paper, metal, plastic, glass recycling
      - Organics/compost
      - Alternative waste streams
  - Category 4: Materials and Procurement
    - Overview of:

- NRDC’s Procurement Policy
- Non-toxic and sustainable products used within the project
- Carbon offsets purchased and/or planned for the project
- Category 5: Health and Productivity
  - Overview of:
    - Benefits of healthy indoor air quality and biophilia
    - Results of testing (i.e. indoor air quality, water, thermal comfort, acoustics, etc.)
    - Location of the following to the space:
      - A green space or park
      - A trail network
      - An accessible body of water or public swimming pool
      - A gym, fitness or training center
      - A recreational field
  - Instructions that review how to report problems with or suggestions for improvements related to:
    - Thermal comfort
    - Lighting
    - Additional issues that impact productivity

**Objective 2: Collaborate to strengthen the mission of NRDC**

- Utilize NRDC’s internal expertise for guidance as applicable to the project
  - For example: seek advice from energy team, local policy team, HR, development, communications, etc.

**Objective 3: Maximize connectivity between occupants and community**

- Design community-facing space(s) that can accommodate external meetings and events
- Encourage staff to cite the construction project as a testament to NRDC’s community involvement

**Objective 4: Create community and inspire**

- Work with Project Administration to determine the best way to publicly share the following construction resources:
  - Public-facing contact information for scheduling tours and for project-specific inquiries
  - Case studies referencing sustainability features of the space
    - Update NRDC website(s) to reflect the project and new sustainability features
    - Provide content for external website(s) to feature the project, as directed by the Project Administrator
  - A copy of the “Design & Construction Protocols” and all supplemental documents
  - Building performance metrics:
    - Energy use
    - Water use
    - GHG emissions
    - Others as discussed with the Project Administrator

## APPENDICES

### APPENDIX A: SUPPLEMENTAL DOCUMENTS

All available supplemental documents will be provided by NRDC, including but not limited to:

- NRDC Sustainable Operations Plan
- NRDC Furniture Specification Guidelines
- NRDC Procurement Policy
- NRDC Offset Policy
- NRDC Zero Waste Directive
- Division 1 Specifications
  - Construction Waste Management and Disposal
  - Indoor Air Quality Requirements

Supplemental Documents Organizational Structure:





## APPENDIX B: REFERENCES

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