



OFFICE OF
SUSTAINABILITY

WELCOME!

Sustainable Design Standards



July 18, 2024

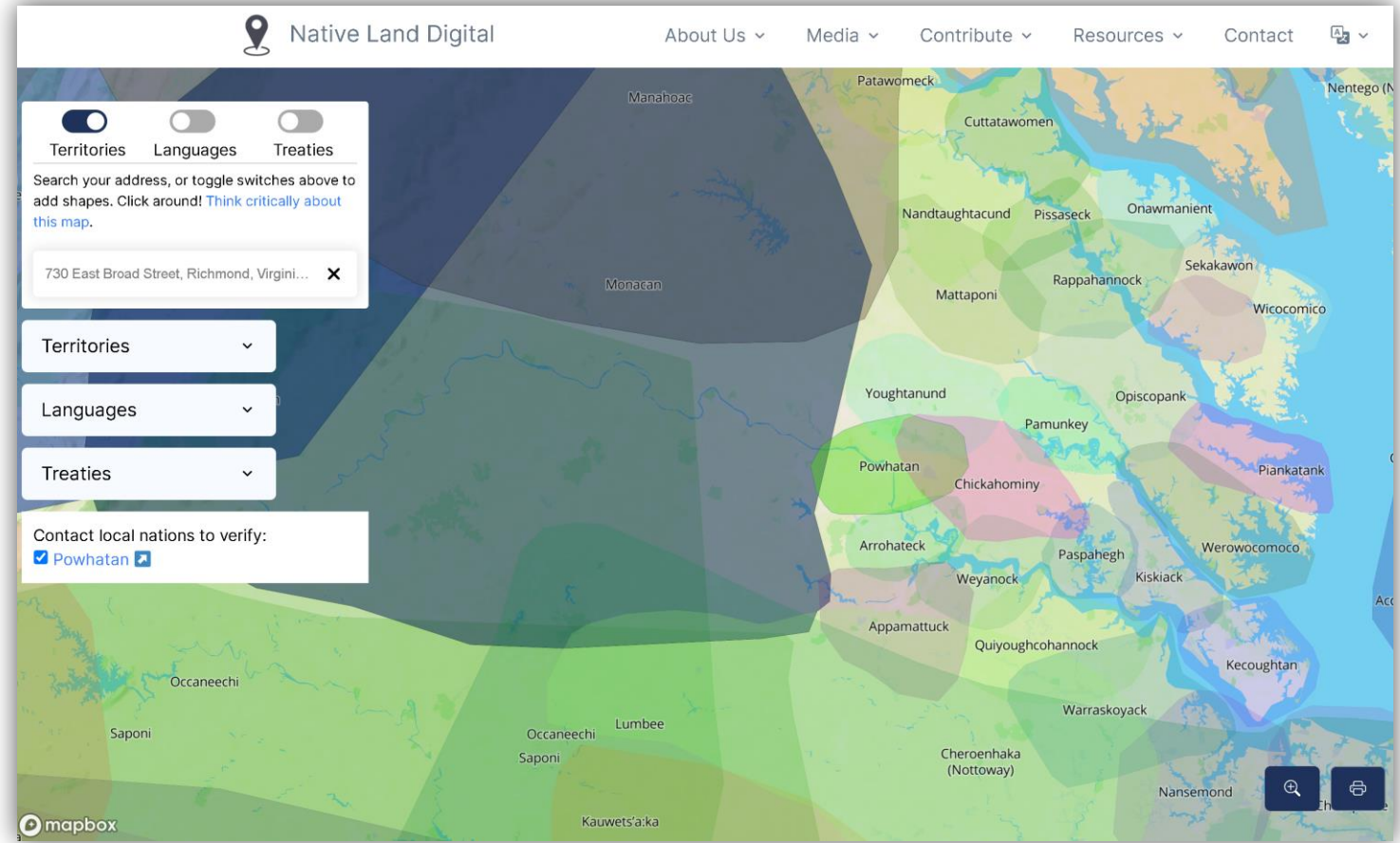


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SUSTAINABILITY

Share in the chat:
Name, pronouns,
and favorite
building in the City

WELCOME!

Sustainable Design Standards



<https://native-land.ca/>

July 18, 2024

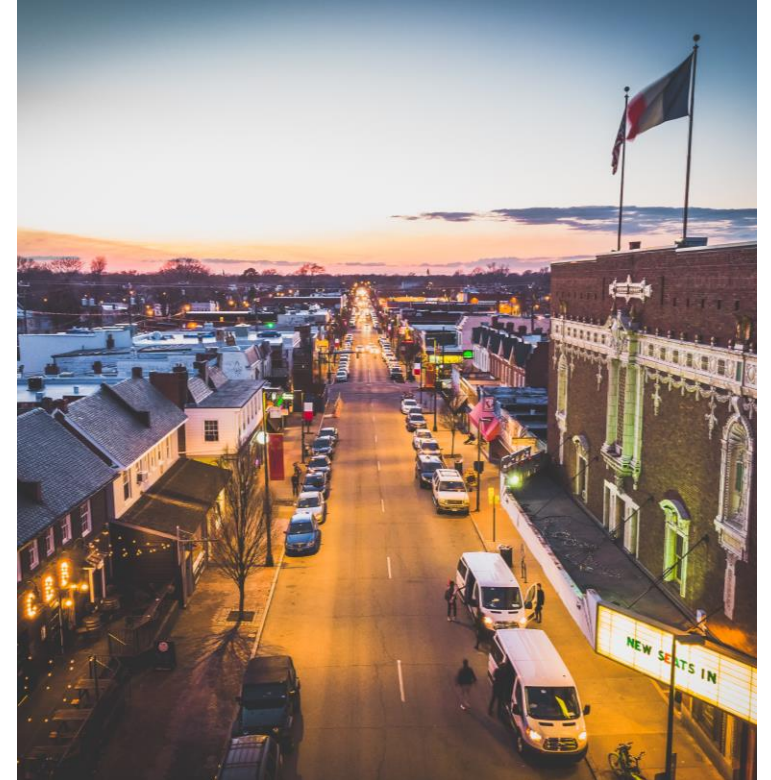
Sustainable Design Standards | Agenda

1. Purpose
2. Background
3. Project Types
4. Process
5. Community Outreach and Community Benefit Requirements
6. Third-Party Certification Requirements
7. Sustainable Design Standards for City of Richmond
8. Discussion

Sustainable Design Standards | Purpose

- Outline the sustainable design criteria required for City projects and projects constructed on City property.
- Developed to support the City's vision for an equitable, sustainable, and beautiful City.
- **To be adopted as City Code.**

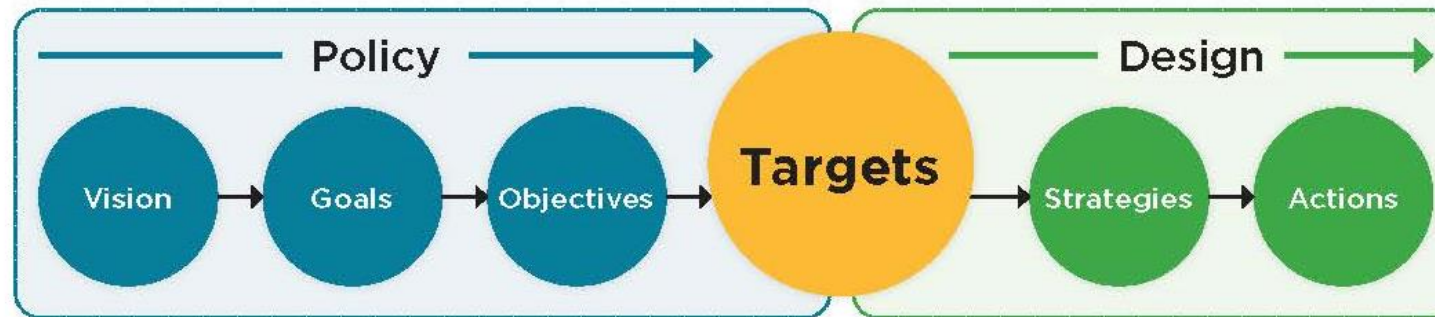
Note: *The SDS are performance standards, not design details or specifications.*



Sustainable Design Standards | Background

Implementation of Richmond 300 and RVAgreen 2050

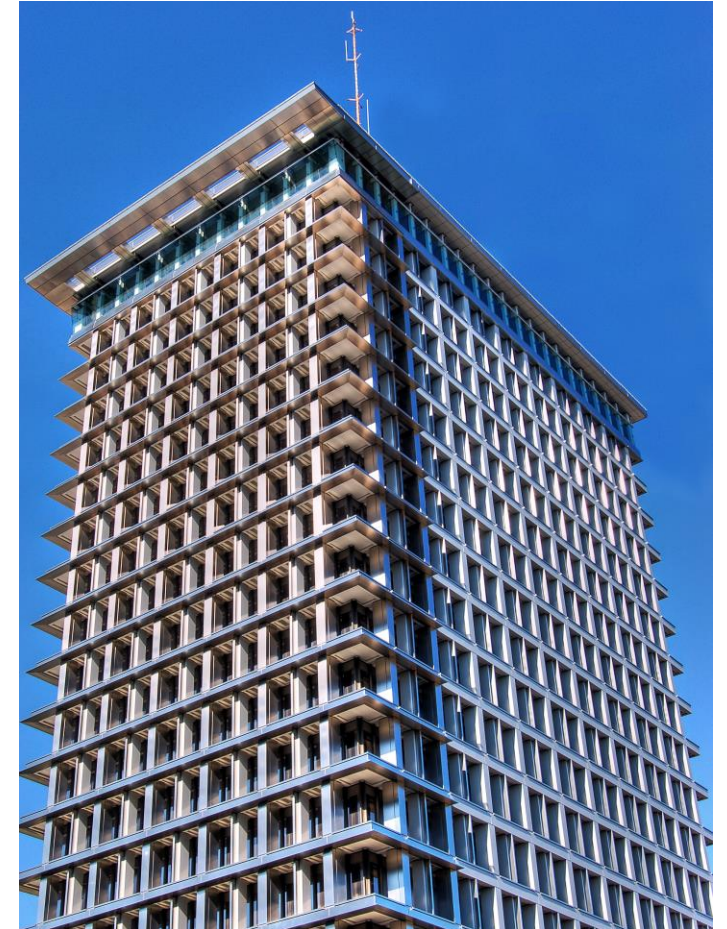
- **Richmond 300** envisions Richmond as a sustainable and resilient city, “adapting to the effects of a changing climate, with a built environment that enhances and protects natural assets...”
- **RVAgreen 2050** commits to a 45% reduction in greenhouse gas emissions by 2030 and net zero emission by 2050.
 - Strategy BE-1.2.iii. Requires green building standards in all new municipal construction to achieve net zero energy and incorporate the infrastructure required to make them solar ready, wired for EV chargers, and compatible for demand response enrollment.



Sustainable Design Standards | Project Types

Vertical Infrastructure Projects (Buildings)

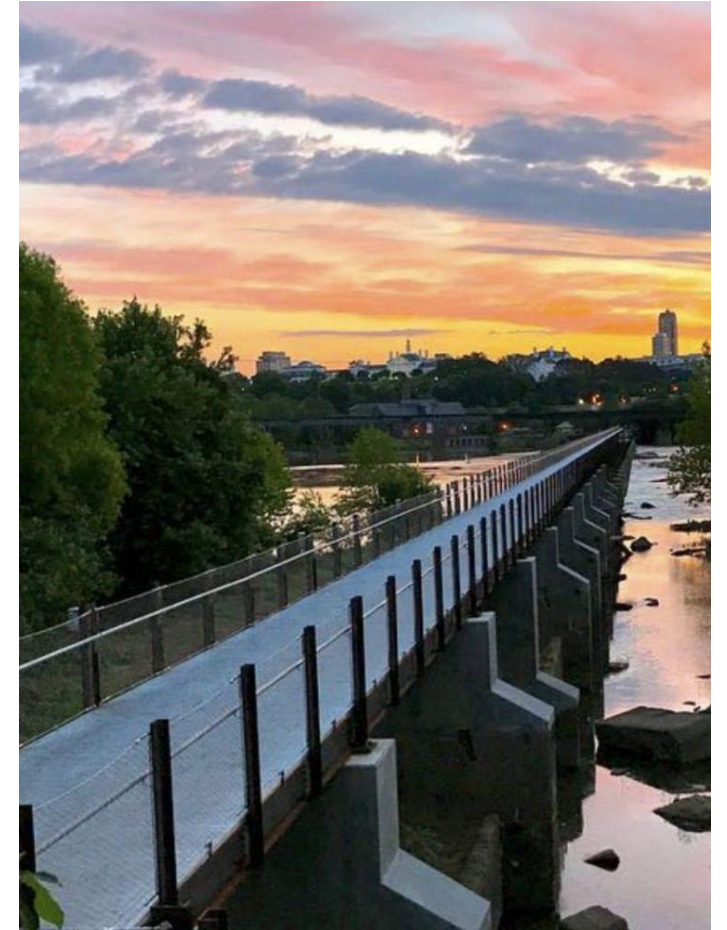
- **New Buildings** over 10,000 SF
- **Major Building Renovations** replacing four or more:
 - Roofs
 - Ceilings
 - Windows
 - Building Envelope
 - Plumbing
 - Site work
 - HVAC
 - Electrical
 - Elevator/Escalator
- **Small Project Renovations** between 10,000 SF - 20,000 SF



Sustainable Design Standards | Project Types

Horizontal Infrastructure Projects

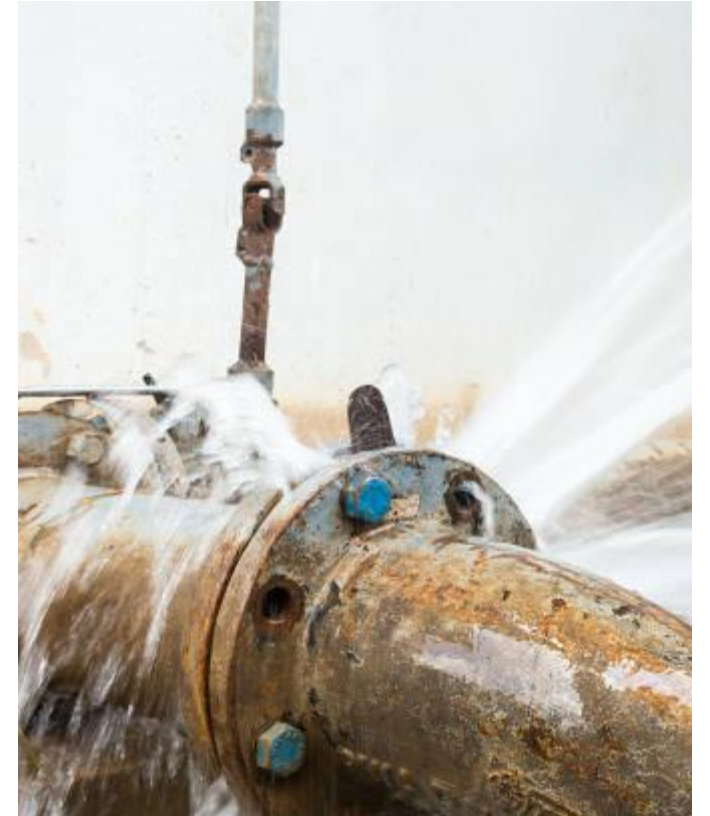
- **Parks & Community Spaces** \$3.5M or more
- **Right-of-way (ROW) projects** \$5M or more
- **“Outside the Fence” projects** less than \$5M to comply with updated Design and Construction Manuals.
- **“Inside the Fence” projects** more than \$50M
(*e.g. wastewater treatment plant*)



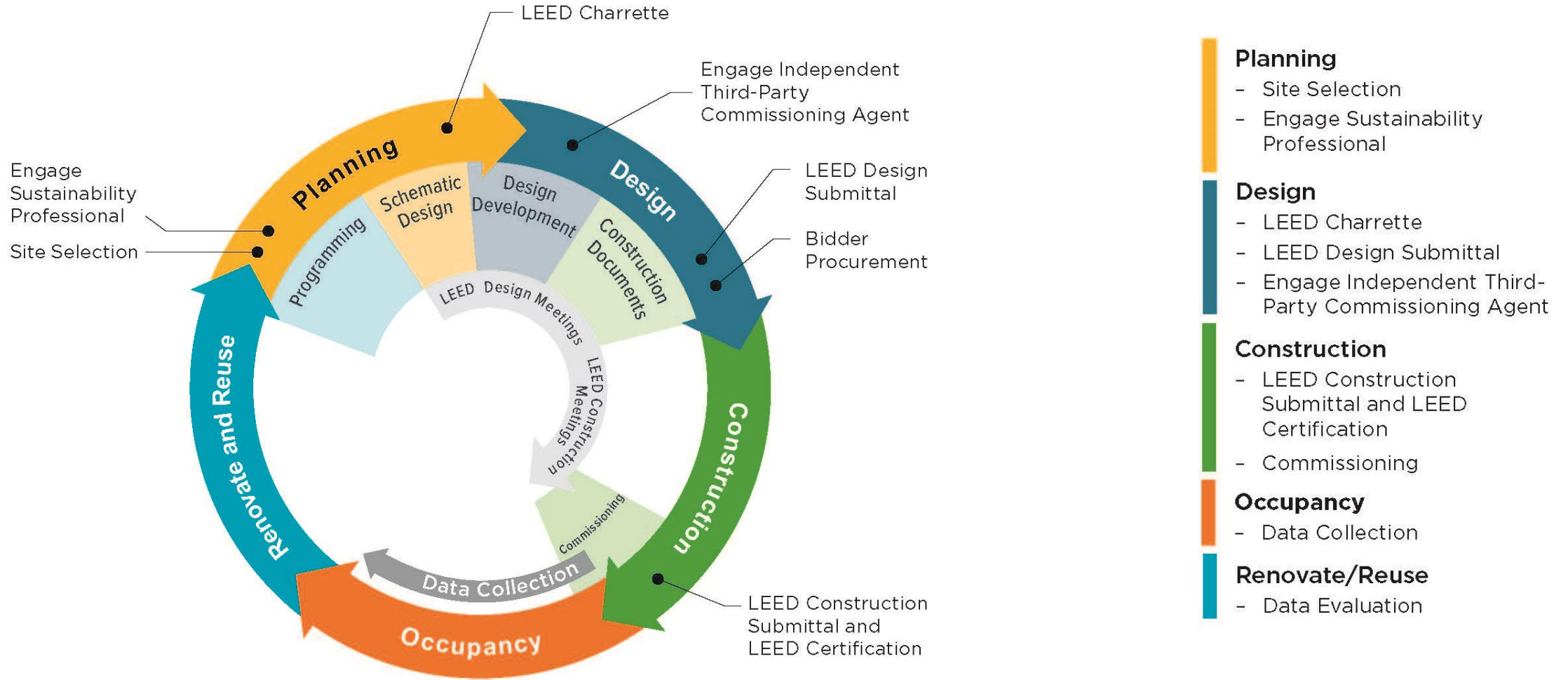
Sustainable Design Standards | Project Types

Projects not required to follow SDS:

- New buildings or renovation projects less than 10,000 SF
- Emergency repairs
- Utility maintenance and repair projects
- Small infrastructure projects with less than 10,000 SF of land disturbance
- Park projects under 0.5 acre in size



Sustainable Design Standards | Process



SDS | Community Outreach Requirements

City of Richmond's Equity Agenda defines equity as “the empowerment of communities that have experienced past injustices by removing barriers to access and opportunity.”

- **Community outreach begins at the onset of a project's conception.**
 - Transparent effort to understand the potential impacts before decisions are made.
 - Site selection process incorporates community visioning and prioritizes sites with maximum positive and limited negative impacts to EJ communities.
 - Operations and maintenance requirements to be considered at forefront of project scoping.

SDS | LEED Credit Requirements

All new building construction 10,000 SF + and major renovation projects shall achieve **USGBC's LEED Silver Rating**:

- **20% of Location and Transportation LEED Credits.**
 - Accessible to local services, public transportation, and in appropriate communities.
- **40% of Water Efficiency LEED Credits.**
 - Reduction in water in exterior and interior applications, e.g. rainwater collection.
- **25% of Energy and Atmosphere LEED Credits.**
 - Leverages energy savings through renewable energy production.

All LEED Prerequisites shall be met as required by the LEED Rating System of the project.

SDS | LEED Credit Requirements, cont'd

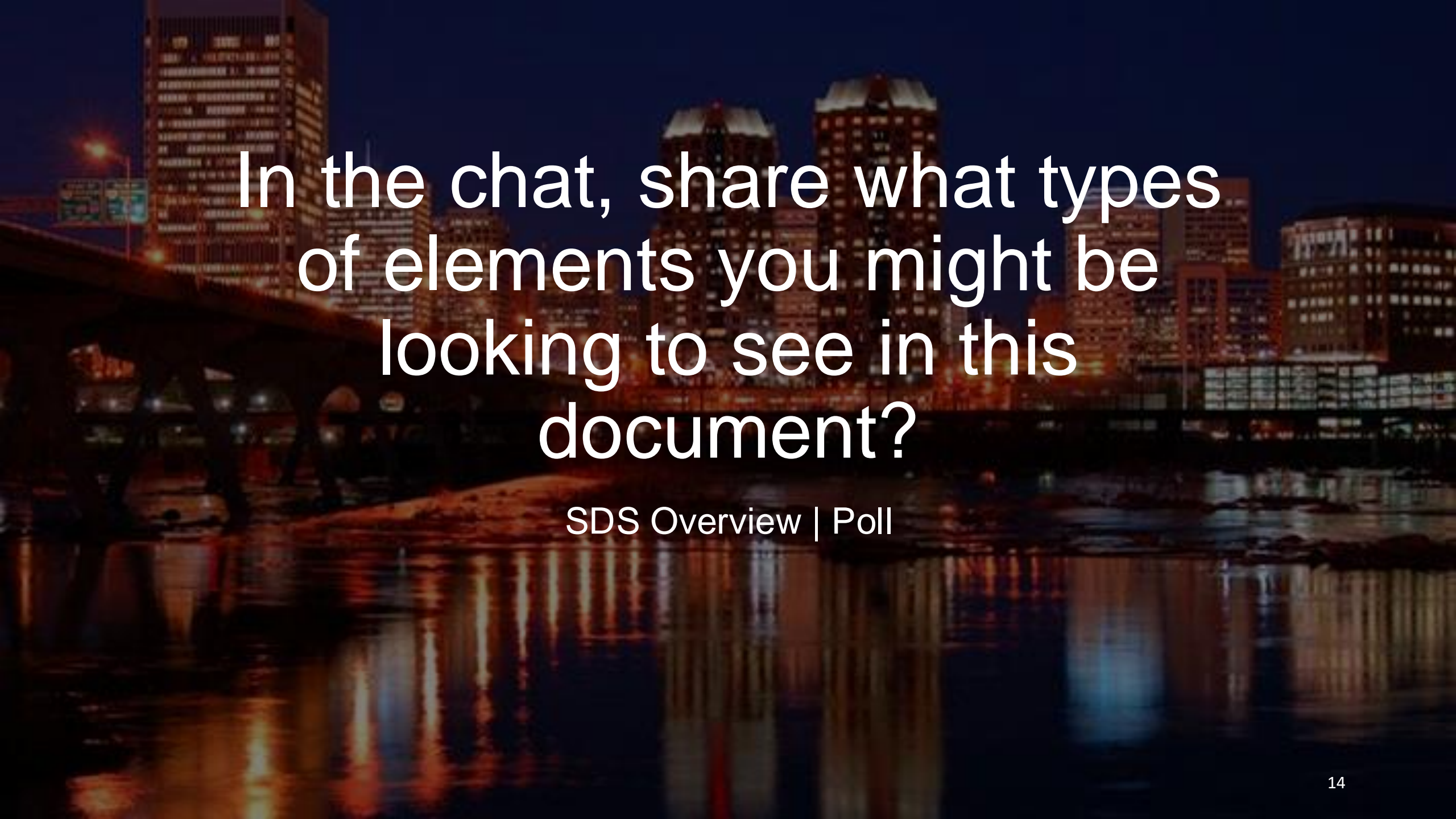
- **Integrative Process.** Communication across all lines of work. Kicked-off with a LEED charrette.
- **EV Charging Stations.** Locate Level 2 charging at primary locations for public use.
- **Site Assessment.** Maximize benefits of site features including existing trees, solar orientation, prevailing winds, water features, etc.
- **Energy and Atmosphere.** Engage an independent third-party commissioning authority. Minimum 10% of total building energy as renewable onsite energy.

SDS | Envision Requirements

The Institute for Sustainable Infrastructure's (ISI) **ENVISION Framework checklist** shall be used for all new horizontal infrastructure projects, **regardless of size.**

ENVISION Certification is required the following horizontal infrastructure projects:

- Parks & Community Spaces more than \$3.5M
- Right-of-way (ROW) projects more than \$5M
- “Inside the Fence” projects more than \$50M
- “Outside the Fence” project alignment with City Design and Specifications Manuals

A nighttime photograph of a city skyline, likely New York City, with numerous skyscrapers illuminated and their lights reflecting on the water in the foreground. The scene is dark, with the city lights providing the primary illumination.

In the chat, share what types
of elements you might be
looking to see in this
document?

SDS Overview | Poll

SDS Overview | Technical Draft Example

Hot Water Recirculation

While waiting for hot water to arrive at a fixture, a significant amount of water can be wasted by the user. A domestic hot water recirculation system that circulates hot water continuously through a closed loop to supply readily available hot water to plumbing fixtures and maintain water temperature minimizes the time it takes for hot water to reach the fixture. By reducing the amount of time it takes for hot water to reach each fixture, the hot water circulation system can conserve water and reduce energy costs.

A pump is used to maintain the required water temperature in the system by recirculating water through the domestic hot water system from the heating water source to the plumbing fixtures and then returning the water to the heating water source.



Requirements:

- Hot water recirculation systems shall be provided as indicated in the *International Energy Conservation Code (IECC)*. Two compliant methods are listed in the code.
 - The first method is not to exceed the maximum allowable length of piping from the fixture to the nearest heated water source per the chart listed in the code.
 - The second allowable method indicates the maximum allowable volume of water in the pipe from the fixture to the source.
- For a public lavatory faucet, no more than 2 ounces is allowed, and for all other plumbing fixtures, no more than 64 ounces is allowed. This volume is potentially the amount of water that will discharge to the drain before hot water arrives.



Recommendation:

- Provide a hot water system compliant with the *International Green Construction Code (IGCC)*. Limit the maximum volume of water in pipes from non-lavatory plumbing fixtures to the recirculation loop to 24 ounces. If the source of hot water is a water heater, the maximum volume is 64 ounces.



SDS Overview | Technical Draft Example

Building Envelope

A proper building envelope enables a facility to resist its environment (e.g., temperature, moisture, humidity, pollutants). Building envelopes are specified by climate zone by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) in *Standard 90.1 - Energy Standard for Buildings Except Low-Rise Residential Buildings* and *Standard 90.2 - Energy-Efficient Design of Low-Rise Residential Buildings*.



Requirement:

- Building envelopes shall exceed minimum performance requirements by the amounts shown in Table 5-2. Requirements are specified by the adopted version of *Standard 90.1* or *Standard 90.2* (depending on applicability).

Table 5-2 // **Minimum Building Envelope Improvements over Code**

	Warehouse	Dwelling	Office/Administrative	All Others
Façade Glazing	20%	15%	5%	5%
Roof	5%	5%	5%	5%
Exterior Walls	5%	10%	15%	5%



SDS Overview | Technical Draft Example

Resilience Planning

Unpredictable emergencies, major weather events, and flash flooding from heavy rainfall can reduce travel options and limit evacuation routes to and from key destinations. Resilience planning adds resilience through variety; treats transportation as the movement of people of all ages and abilities rather than of vehicles; and prioritizes pedestrians, bicycles, and transit over single-occupancy vehicles (SOVs). Redundant and alternative routes and means of transportation can maintain the movement of people and essential services by transit, foot, and all street- and sidewalk-legal wheeled devices.



Requirements:

- Provide street-to-door ingress/egress routes for foot, wheelchair, and bicycle (bicycle/pedestrian) traffic.
- Dedicated vehicle routes shall not interfere with provision of pedestrian safety features.



Recommendations:

- Provide more than one access point for vehicles and bicycle/pedestrian travel.
- Connect walkways to trails system and transit stops.



SDS Overview | Technical Draft Example

Flood Control

Development patterns with highly impervious land cover coupled with larger, more intense rainfall events due to climate change have resulted in more frequent flooding events, even in areas outside of the Federal Emergency Management Agency (FEMA) floodplain. This is common in areas where the storm drain infrastructure is not sufficient to convey flows from more intense, larger rainfall events. New development and redevelopment projects offer an opportunity to provide additional stormwater volume control, which can help mitigate downstream flooding of the City's Municipal Separate Storm Sewer System (MS4) and reduce the volume of water that enters the City's Combined Sewer System.



Requirement:

- All new construction and redevelopment projects are required to capture the first 1.25 inches of runoff from impervious surfaces on-site for reuse or infiltration. The on-site stormwater management shall be provided by green infrastructure to the maximum extent practicable and is required for all new construction and redevelopment projects.



Recommendations:

- Promote rainwater collection and reuse systems. Collected rainwater can be used for irrigation and other non-potable uses like vehicle wash water and flushing toilets.
- In flood-prone areas, evaluate the potential for additional stormwater volume storage on-site to alleviate downstream flooding.
- Evaluate the receiving storm drain and inlet system to determine whether it is functioning properly and adequately sized to accommodate runoff from the planned development project.



SDS Overview | Technical Draft Example

Site Planning and Design

A thriving environment is resilient. Preserving and enhancing natural features, such as the tree canopy, soils, topography, wildlife corridors, and drainageways, aid stormwater management and biodiversity and reduce impacts from heat and drought. Locating structures, utilities, and amenities to best support natural systems and human convenience maximizes community benefits for the site.



Requirements:

- Conduct a pre-design site analysis that includes views.
- Do not remove healthy native Heritage Trees 100 inches in circumference (31.8 inches DBH) or greater.
- Replace on-site or in a City-designated recipient location any healthy trees that are removed with a native tree with an expected mature size of equal or larger canopy spread. Replace at a rate of one tree for every tree less than 10 inches DBH, and two trees for every tree 10 inches DBH or greater.



Recommendations:

- Do not remove healthy native trees above 14 inches DBH. If removed, replace healthy trees with a native tree with an expected mature size of equal or larger canopy spread. Replacement trees may be located on-site or in the public right-of-way in a heat island community.
- Protect healthy, non-invasive trees, including their CRZs.
- Protect existing communities of native vegetation.
- Transplant salvaged native plant material, potentially off-site.
- Plant trees to increase the tree canopy to 60% city-wide and to 30% in all neighborhoods. Prioritize tree planting at project sites in neighborhoods with less tree canopy.



SDS Overview | Technical Draft Example

Wellness

The City of Richmond values the wellness of building occupants and encourages wellness to be considered during the design process.



Requirements:

- Complete a Fitwel certification checklist as part of the design process for interior spaces. This is applicable for all regularly occupied building spaces for new construction projects greater than 20,000 SF.
- Include lactation/wellness rooms with sinks, comfortable seating, dimmable lighting, lockable doors, refrigeration, and electric outlet access.
- Provide daylight in appropriate spaces through direct or indirect lighting from windows and skylights.



Recommendations:

- Include entryway systems (10 feet in length or greater) at main entrances.
- Provide sit-to-stand desks for a variety of desk working positions.
- For projects that have a second story, design stairs that occur before elevator access. Include stimulants in the stairwells such as music, lighting, art, views to engage occupants and encourage stair usage. When appropriate, design open monumental stairs to encourage stair use. Place signage at elevators encouraging the use of stairs.
- Integrate natural vegetation within and on the structure through green living walls, vertical gardens, and green roofs.
- Provide free filtered water.
- Provide noise-reduction glazing next to busy roadways, airports, and noise-generating facilities.
- Provide art by City of Richmond natives or current residents that is integrated within the architecture or defined locations that are designed to showcase changeable pieces.



SDS | Project Timeline



Questions?

THANK YOU!



SDS | Community Benefits Agreement

To align with **RVAgreen 2050**, new City development projects must address community priorities for climate action and resilience.

- **Community Benefits Agreement Tool**

- Outlines the project's contribution to the community and the responsibilities of the developer (the City) to mitigate potential negative impacts.
- Values to uphold through a CBA:
 - Inclusiveness
 - Efficiency
 - Transparency
 - Clarity of Outcomes
 - Coalition-Building