

LEED v4.1 Cities and Communities

Introductory Course



Learning Objectives

- To understand the LEED v4.1 for Cities and Communities rating system framework.
- To learn how the rating system address global goals and challenges.
- To learn best practices and performance standards for cities and communities.
- To be better equipped to support sustainable, safe, resilient and smart cities.



LEED v4.1 CITIES AND COMMUNITIES: PLAN AND DESIGN

Getting started guide for beta participants

April 10, 2020

Session Outline

- Overview of LEED v4.1 for Cities and Communities
- Applicability – City or Community?
- Stages of Certification
- Scorecard
- Uniqueness of LEED for Cities and Communities

LEED for Cities and Communities is the leading global rating system and certification program for evaluating the sustainability and quality of life in a city or community.





USGBC's vision:

Buildings and communities will regenerate and sustain the health and vitality of all life within a generation



LEED for Cities and Communities incorporates
our experiences with global cities and
communities

LEED for Cities and Communities is aligned with global goals



Program Benefits



Adopt holistic
framework for planning
and development



Demonstrate progress
on nationally and
globally recognized
standards



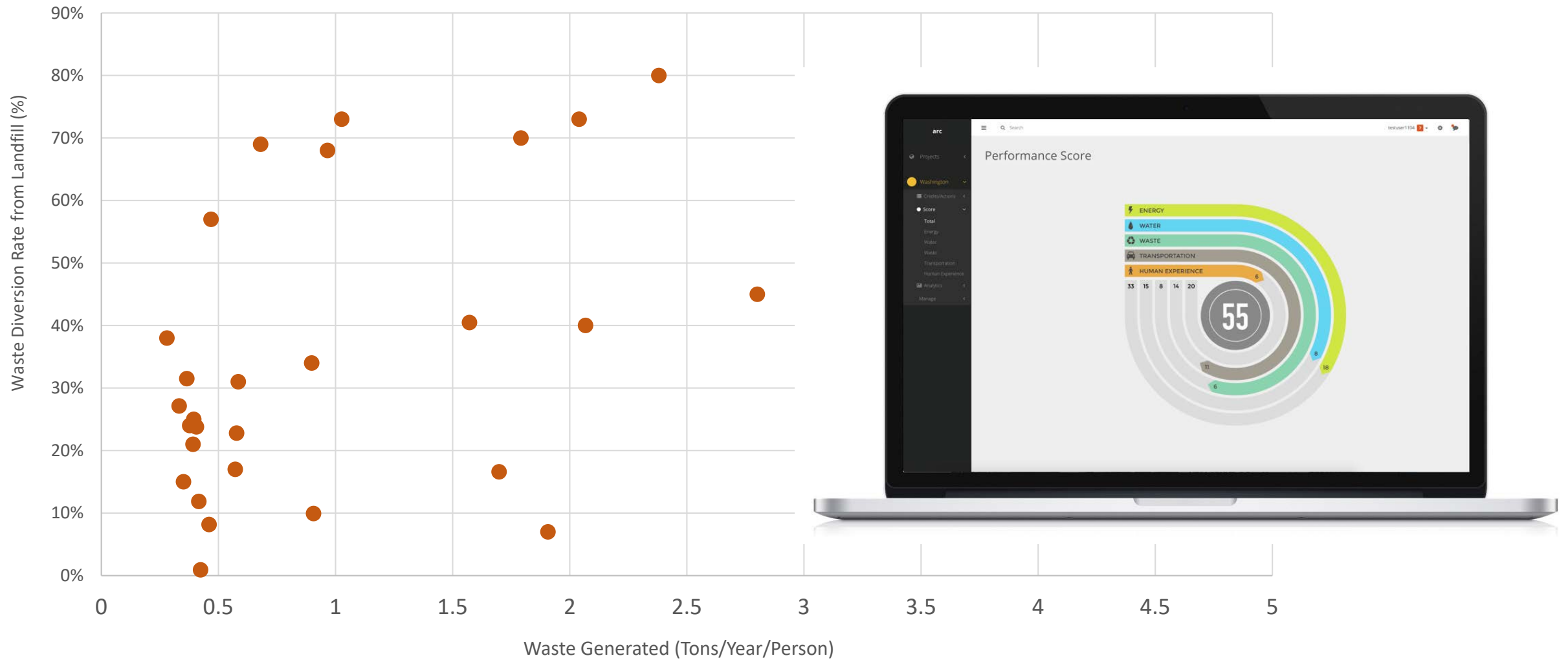
Validate and
communicate
sustainability leadership



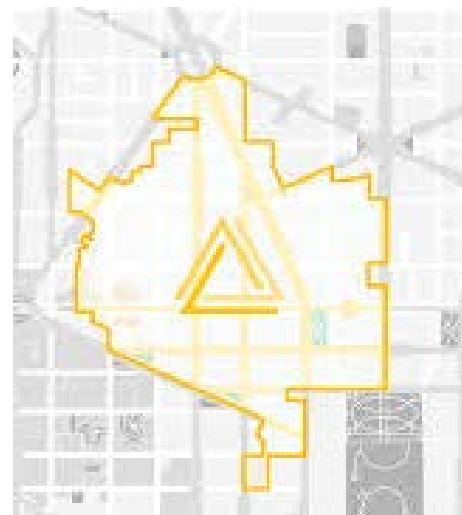
Address triple bottom
line: environment,
equity and economy



Data Driven and Performance Based



Diverse Projects Around the World



Criteria defining Cities and Communities

LEED for Cities

- Primary applicant is the governing body of a city or other local government.

LEED for Communities

- Applies to non-city places such as regions, districts, economic zones, neighborhoods, campuses and military installations.





NEW

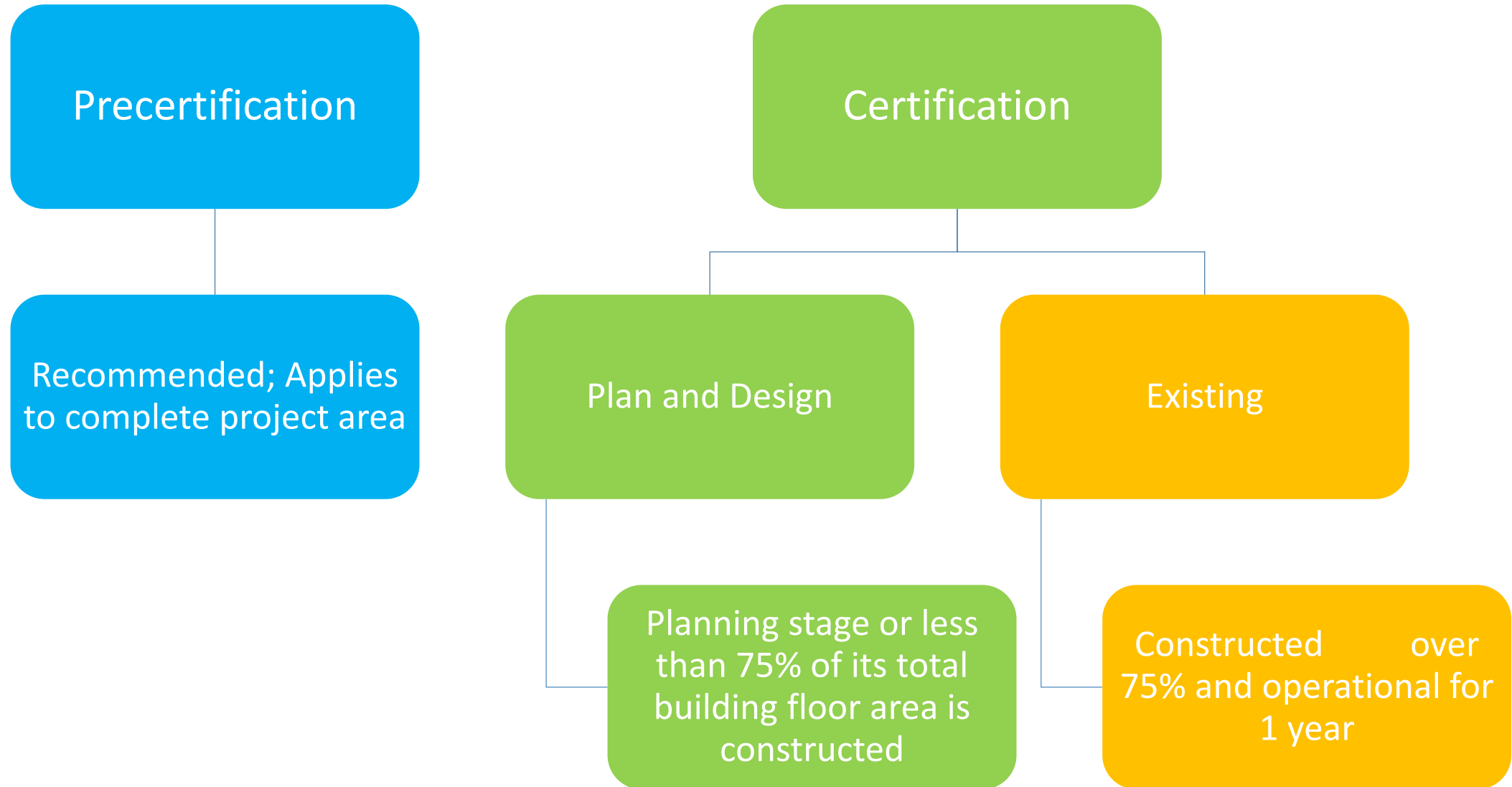


EXISTING

Structured engagement with city or community over their entire lifecycle



Eligibility criteria based on development stage





Integrative Process



Natural Systems & Ecology



Transportation & Land Use



Water Efficiency



Energy & GHG Emissions



Materials & Resources



Quality of Life



Innovation



Regional Priority





LEED for Cities and Communities Plan and Design


INTEGRATIVE PROCESS

		POSSIBLE: 5	POSSIBLE: 5
Prereq	Integrative Planning and Design Process	REQUIRED	REQUIRED
Credit	Green Building Policy and Incentives	5	5


NATURAL SYSTEMS AND ECOLOGY

		POSSIBLE: 13	POSSIBLE: 13
Prereq	Ecosystem Assessment	REQUIRED	REQUIRED
Prereq	Construction Activity Pollution Prevention	REQUIRED	REQUIRED
Prereq	Green Spaces	REQUIRED	REQUIRED
Credit	Natural Resources Conservation and Restoration	5	5
Credit	Light Pollution Reduction	2	2
Credit	Resilience Planning	6	6


TRANSPORTATION AND LAND USE

		POSSIBLE: 18	POSSIBLE: 18
Credit	Compact, Mixed Use and Transit Oriented Development	6	6
Credit	Walkability and Bikeability	4	4
Credit	Access to Quality Transit	2	2
Credit	Alternative Fuel Vehicles	2	2
Credit	Smart Mobility and Transportation Policy	2	2
Credit	High Priority Sites	2	2


WATER EFFICIENCY

		POSSIBLE: 12	POSSIBLE: 12
Prereq	Integrated Water Management	REQUIRED	REQUIRED
Prereq	Water Access and Quality	REQUIRED	REQUIRED
Credit	Stormwater Management	5	5
Credit	Wastewater Management	5	5
Credit	Smart Water Systems	2	2


ENERGY AND GREENHOUSE GAS EMISSIONS

		POSSIBLE: 31	POSSIBLE: 31
Prereq	Power Access, Reliability and Resiliency	REQUIRED	REQUIRED
Prereq	Energy and Greenhouse Gas Emissions Management	15	19
Credit	Energy Efficiency	4	4
Credit	Renewable Energy	6	6


MATERIALS AND RESOURCES

		POSSIBLE: 11	POSSIBLE: 11
Prereq	Construction and Demolition Waste Management	REQUIRED	REQUIRED
Prereq	Solid Waste Management	REQUIRED	REQUIRED
Credit	Organic Waste Treatment	2	2
Credit	Recycling Infrastructure	5	5
Credit	Responsible Sourcing for Infrastructure	2	2
Credit	Smart Waste Management Systems	2	2


QUALITY OF LIFE

		POSSIBLE: 10	POSSIBLE: 10
Prereq	Demographic Assessment	REQUIRED	REQUIRED
Prereq	Social Infrastructure	REQUIRED	REQUIRED
Prereq	Economic Growth	REQUIRED	REQUIRED
Credit	Affordable Housing	2	2
Credit	Public Health	6	6
Credit	Emergency Management and Response	2	2


INNOVATION

		POSSIBLE: 6	POSSIBLE: 6
Credit	Innovation	6	6


REGIONAL PRIORITY

		POSSIBLE: 4	POSSIBLE: 4
Credit	Regional Priority	4	4

TOTAL
110
110

40-49 Points

CERTIFIED

50-59 Points

SILVER

60-79 Points










GOLD

60-79 Points

GOLD



LEED for Cities and Communities Existing

LEED for Cities and Communities: Existing				Cities	Communities
	INTEGRATIVE PROCESS		POSSIBLE: 5	POSSIBLE: 5	
	Credit	Integrated Planning and Leadership	1	1	
	Credit	Green Building Policy and Incentives	4	4	
	NATURAL SYSTEMS AND ECOLOGY		POSSIBLE: 9	POSSIBLE: 9	
	Prereq	Ecosystem Assessment	REQUIRED	REQUIRED	
	Credit	Green Spaces	2	2	
	Credit	Natural Resources Conservation and Restoration	2	2	
	Credit	Light Pollution Reduction	1	1	
	Credit	Resilience Planning	4	4	
		TRANSPORTATION AND LAND USE		POSSIBLE: 15	POSSIBLE: 15
Prereq		Transportation Performance	6	6	
Credit		Compact, Mixed Use and Transit Oriented Development	2	2	
Credit		Access to Quality Transit	1	1	
Credit		Alternative Fuel Vehicles	2	2	
Credit		Smart Mobility and Transportation Policy	2	2	
Credit		High-Priority Site	2	2	
		WATER EFFICIENCY		POSSIBLE: 11	POSSIBLE: 11
	Prereq	Water Access and Quality	REQUIRED	REQUIRED	
	Prereq	Water Performance	6	6	
	Credit	Integrated Water Management	1	1	
	Credit	Stormwater Management	2	2	
	Credit	Smart Water Systems	2	2	
	ENERGY AND GREENHOUSE GAS EMISSIONS		POSSIBLE: 30	POSSIBLE: 30	
	Prereq	Power Access, Reliability and Resiliency	REQUIRED	REQUIRED	
	Prereq	Energy and Greenhouse Gas Emissions Performance	14	18	
	Credit	Energy Efficiency	4	4	
	Credit	Renewable Energy	6	6	
	Credit	Low Carbon Economy	4	-	
	Credit	Grid Harmonization	2	2	
	MATERIALS AND RESOURCES		POSSIBLE: 10	POSSIBLE: 10	
	Prereq	Solid Waste Management	REQUIRED	REQUIRED	
	Prereq	Waste Performance	4	5	
	Credit	Special Waste Streams Management	1	1	
	Credit	Responsible Sourcing for Infrastructure	2	2	
	Credit	Material Recovery	1	-	
	Credit	Smart Waste Management Systems	2	2	
	QUALITY OF LIFE		POSSIBLE: 20	POSSIBLE: 20	
	Prereq	Demographic Assessment	REQUIRED	REQUIRED	
	Prereq	Quality of Life Performance	6	6	
	Credit	Trend Improvements	4	4	
	Credit	Distributional Equity	4	4	
	Credit	Environmental Justice	1	1	
	Credit	Housing and Transportation Affordability	2	2	
	Credit	Civic and Community Engagement	2	2	
	Credit	Civil and Human Rights	1	1	
	INNOVATION		POSSIBLE: 6	POSSIBLE: 6	
	Credit	Innovation	6	6	
	REGIONAL PRIORITY		POSSIBLE: 4	POSSIBLE: 4	
	Credit	Regional Priority	4	4	
TOTAL			110	110	
40-49 Points		50-59	60-79	80+	
		Points	Points	Points	
CERTIFIED		SILVER	GOLD	PLATINUM	

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**SAFE
HEALTHY
INCLUSIVE
SMART
PRODUCTIVE
EFFICIENT
EQUITABLE
SUSTAINABLE
RESPONSIVE
RESILIENT**

1

Safety

A safe city provides security, protects its citizens and plans for natural disasters and other threats.

Examples of safety in LEED for Cities and Communities:

- TRc: Walkability and Bikeability (Plan + Design)
- QLc: Emergency Management and Response (Plan + Design)
- WEc: Stormwater Management (Existing)



TR CREDIT *(LFC P+D)*

WALKABILITY AND BIKEABILITY

INTENT

To ensure accessible, connected and safe walking and cycling infrastructure to improve public health and reduce environmental impacts.

REQUIREMENTS

Design sidewalks, bike lanes and crosswalks in compliance with Americans with Disabilities Act (ADA)

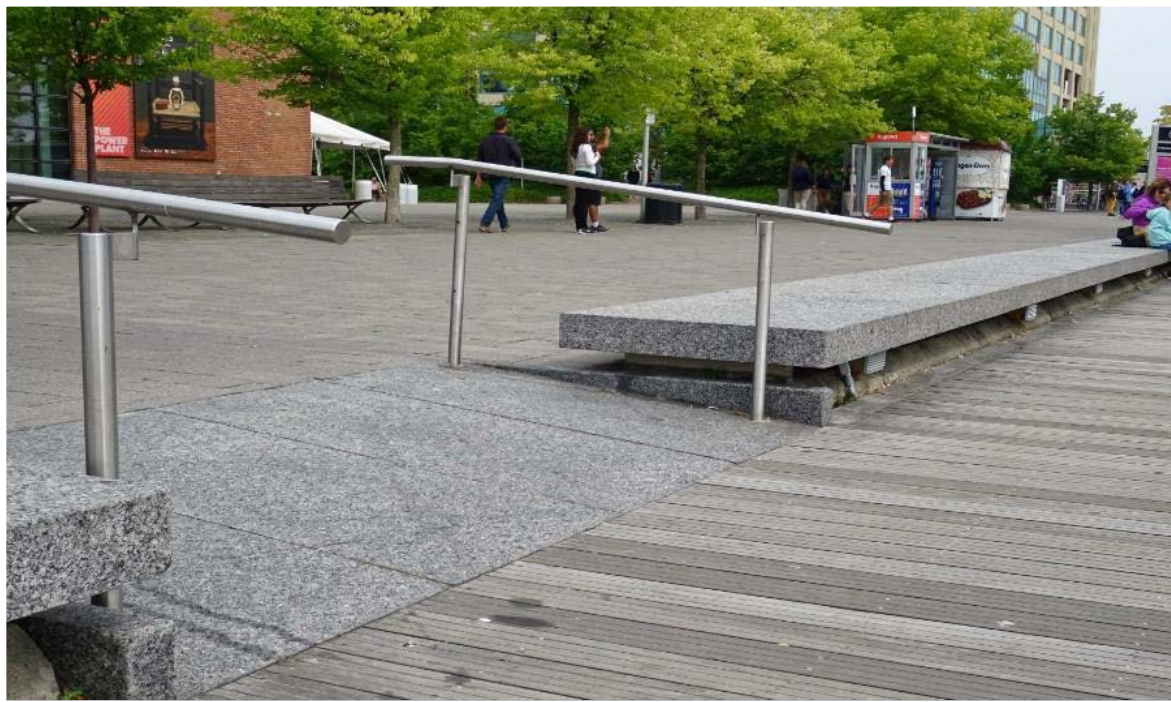
AND

Design streets based on given speed limits or local equivalent.

AND

Achieve at least four of the following:

- Interactive block frontages for retail or mixed use blocks
- Comfortable and shaded walking and bicycling infrastructure
- High connectivity in the circulation network
- Traffic calming measures in the circulation network
- Limit length of urban blocks
- Design complete streets



Primary Arterial A (68m)



ROW	68m
Number of Lanes	3 lanes/ direction, two ways
BRT Lane	None
Median Strip	Required
Bicycle Right of Way	More than 2.0m
Pedestrian Right of Way	More than 3.0m
Storm Drainage and Utility Space	More than 3.6m
* Allowed to install under Bicycle/ Pedestrian way and planting strip	
* Dedicate space for bioswales for drainage water management wherever feasible.	
Green Buffer	20m



QL CREDIT *(LFC P+D)*

EMERGENCY MANAGEMENT AND RESPONSE

INTENT

To create sufficient capacity and capability to respond to emergency incidents and reduce its impact on human life/health.

REQUIREMENTS

Design the emergency management systems such that the emergency response time meets the National Fire Protection Association (NFPA) 1710 and 1720 requirement for each of the following: Fire; Medical; Police; Special circumstances or operations as relevant for the city.

Emergency management systems to be designed to respond to emergencies within the required response time



WE CREDIT *(LFC Existing)* STORMWATER MANAGEMENT

INTENT

To reduce runoff volume, prevent erosion and flooding and and recharge groundwater.

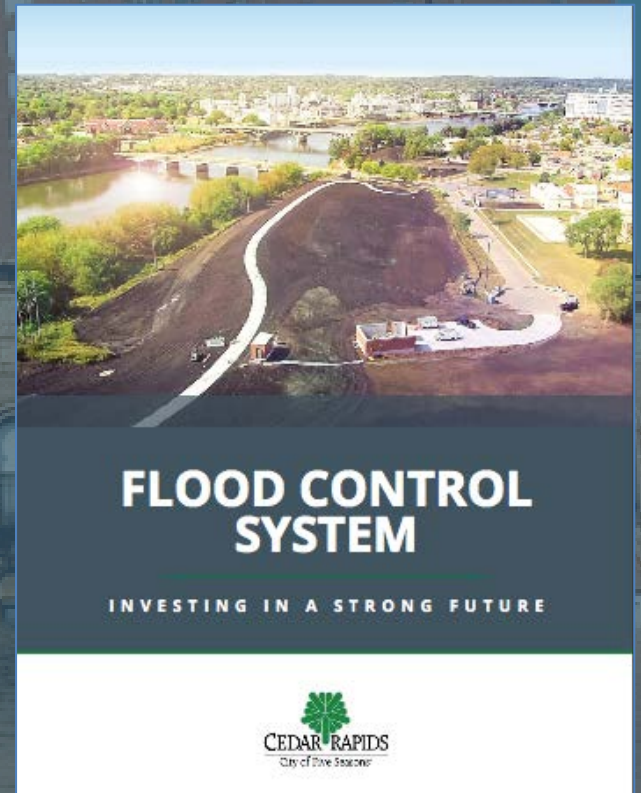
REQUIREMENTS

Option 1: Flooding Incidences

Case 1. No reported flooding incidences in past 5 years

Case 2. Reported flooding incidences in past 5 years

Option 2: Green Stormwater Infrastructure



Demonstrate that 35% of land area has designated green stormwater infrastructure providing bioretention and infiltration services



2

Healthy

The health and well-being of people is fundamental to livability. The social, economic and physical conditions in which people live affect choices regarding behaviors that ultimately affect health outcomes.

Examples of health and well-being in LEED for Cities and Communities:

- NSp: Green Spaces (Plan + Design)
- QLc: Environmental Justice (Existing)
- QLc: Public Health (Plan + Design)



NS PREREQUISITE *(LFC P+D)*

GREEN SPACES

INTENT

To provide accessible green spaces to positively impact physical, mental and psychological health and well-being of the community while also enhancing the environmental quality of the city or community.

REQUIREMENTS

Provide easily
accessible green
space

AND

A minimum of 70% of the dwelling
units must have a green space
within 1/2-mile (800 meters) walk
distance

Accessible green spaces



The background image shows a group of people participating in a protest. In the foreground, a man holds a yellow sign with Hebrew text. To his right, another person holds a sign that says "Amamos Louisiana, pero no el PVC". Further right, a large yellow banner reads "ENVIRONMENTAL JUSTICE NOW". A person on the far right wears a black t-shirt with "GREENPEACE TOXIC PATROL" printed on it. The scene is outdoors with trees and a body of water in the background.

QL CREDIT (*LFC Existing*)

ENVIRONMENTAL JUSTICE

INTENT

To address conditions that may lead to neighborhoods or populations being overburdened by environmental pollutants.

REQUIREMENTS

Identify priority environmental justice conditions

Identify the priority areas with:

- historically overburdened populations
- concentration of environmental pollutants or polluters
- substantial community engagement or complaints
- currently in violation of state environmental regulations



Slums near a landfill - a priority environmental justice condition



QL CREDIT *(LFC P+D)*

PUBLIC HEALTH

INTENT

To promote health and wellness in the city or community.

REQUIREMENTS

Monitor and publically display outdoor air quality

AND

Provide permanent, accessible urban agriculture OR provide regulations that require fresh produce in stores and markets

AND

Provide access to active lifestyle:

- Athletic field or court
- Trail network
- Playground
- All-weather fitness zones
- Co-located adult and child physical activity space

3

Inclusive and Equitable

Inclusive, equitable cities and communities engage all stakeholders regardless of gender, ethnicity, socio-cultural or economic status in local decision making. They also commit to reducing disparities while fostering places that are healthy and vibrant for all.

Example of inclusiveness and equity in LEED for Cities and Communities:

- IPp: Integrative Planning and Design Process (Plan + Design)
- QLc: Demographic Assessment (Existing)



IP PREREQUISITE *(LFC P+D)*

INTEGRATIVE PLANNING AND DESIGN PROCESS

INTENT

To support high-performance, cost-effective outcomes through an early analysis of the interrelationships among city or community systems.

REQUIREMENTS

Develop a comprehensive plan | Assemble an interdisciplinary, cross-departmental team
Identify preliminary rating goals | Develop a strategic roadmap



QL PREREQUISITE (*LFC Existing*) DEMOGRAPHIC ASSESSMENT

INTENT

To describe the population demographics and housing characteristics of the area.

REQUIREMENTS

Provide a comprehensive demographic narrative that includes the population and housing characteristics

Develop a series of maps that provide demographic breakdowns of selected characteristics at the neighborhood or block scale:

- Demographic indicators
- Residential density
- Public accommodations and services

U.S. GREEN BUILDING COUNCIL

4

Smart and Productive

Smart cities and communities use data and technology to create efficiencies, incentivize economic development, and enhance quality of life.

Examples of smart technologies in LEED for Cities and Communities:

- WEc: Smart Water Systems (Plan + Design)
- TRc: Smart Mobility and Transportation Policy (Existing)

WE CREDIT *(LFC P+D)* SMART WATER SYSTEMS

INTENT

To manage water efficiently by tracking consumption, losses, leakages, theft and reduce wastage of water through smart solutions.

REQUIREMENTS

Option 1. Smart water metering

Commit to cover 100% of water connection units with smart water meters

AND/ OR

Option 2. Water supply monitoring and audit

Design water supply system to provide information on water consumption, water losses, theft and wastage.
Provide auditing and monitoring systems.



TR CREDIT *(LFC Existing)*

SMART MOBILITY AND TRANSPORTATION POLICY

INTENT

To promote efficient operation of transport systems, user facilitation, behaviour change and reduced environmental impact through smart technologies and transportation policies.

REQUIREMENTS

Adopt solutions or policies to support a smart and efficient transportation system such as:

- Passenger Information System
- Automated Speed Enforcement
- Radio Frequency Identification
- Real-time Parking Management



5

Efficient and Sustainable

Resource efficient cities and communities use Earth's limited resources in a sustainable manner while minimizing impacts on the environment.

Examples of resource efficiency in LEED for Cities and Communities rating systems:

- ENp: Energy and Greenhouse Gas Emissions Management (Plan + Design)
- ENc: Low Carbon Economy (Existing)
- TRc: Compact, Mixed Use, Transit Oriented Development (Existing)

EN PREREQUISITE (LFC P+D)

ENERGY AND GREENHOUSE GAS EMISSIONS MANAGEMENT

INTENT

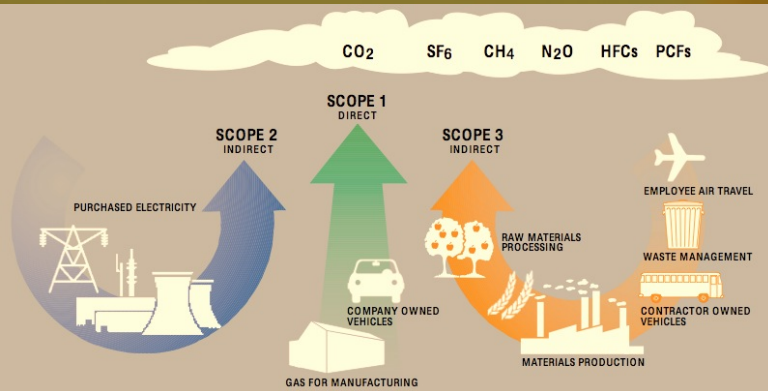
To move towards a zero emissions city and reduce environmental and economic harms associated with excessive energy use.

REQUIREMENTS

Estimate the annual energy consumption and Greenhouse Gas (GHG) emissions for the city for scope 1 and scope 2 GHG emissions. Include following sectors:

- *Buildings – Residential, commercial, institutional and industrial buildings under public and private sector.*
- *Transportation – Public and private transportation.*
- *Street lighting and public area lighting.*
- *Water and wastewater.*
- *Waste management*
- *Any other sector such as energy generation, mining or extraction if it falls within the city boundary.*

Estimate the Greenhouse Gas emissions per capita



Strategies adopted by Surat to meet its energy goals

First LEED certified city in India

Proposed and installed renewable energy generation facilities.



Biogas based power plants -

- 10 MW of MSW based power plants required. 6 MW plant in progress
- 5.4 MWe of Biogas based power plants required, 3.5 MWe are already commissioned and in operation and 1.9 MWe is in pipeline.



Solar PV installation -

30 MW of Solar Power Plants by the end of 2019-20. Out of which 1.39 are commissioned.



Wind mill installation -

55 MW of Wind Power Plants by the end of 2019-20. Out of which 17.7 MW capacity are already commissioned & in operation.



Efficient water supply system –

- Re-engineering of Water Transmission Routes
- Replacement of inefficient pump sets
- Replacement of Zero Velocity Valve , etc

Energy Efficiency measures adopted in water supply and street lighting.



Efficient street lighting system –

- Conversion of conventional fluorescent luminaires in to energy efficient luminaires
- Switching "OFF" Streetlights During Low Traffic Period
- Installation of Energy Conservation Feeder Pillar

EN CREDIT *(LFC Existing)*

LOW CARBON ECONOMY

INTENT

To progress towards a low carbon economy by decoupling economic growth of the city or community from greenhouse gas emissions.

REQUIREMENTS

Report the estimated Greenhouse Gas Intensity

$$\text{GHG Intensity} = \frac{\text{Total GHG of the city}}{\text{Total GDP}}$$

GDP of the city should include the projected increase in GDP of the region due to the economic activities planned in the city.



TR CREDIT *(LFC Existing)*

COMPACT, MIXED USE AND TRANSIT ORIENTED DEVELOPMENT

INTENT

To encourage compact and mixed use development, high level of connectivity and encourage walking, biking and transit use.

REQUIREMENTS

Identify Compact and Complete Centers based on population.

Then, demonstrate that each CCC meets thresholds for:

- Access to transit facilities
- Access to diverse uses



6 Resilient and Responsive

Resilient cities and communities have the ability to absorb, recover and prepare for future shocks (economic, environmental, social & institutional).

Example of responsiveness and resilience in LEED for Cities and Communities:

- NSc: Resilience Planning (Plan + Design)
- ENp: Power Access, Reliability and Resiliency (Existing)

NS CREDIT (LFC P+D) RESILIENCE PLANNING

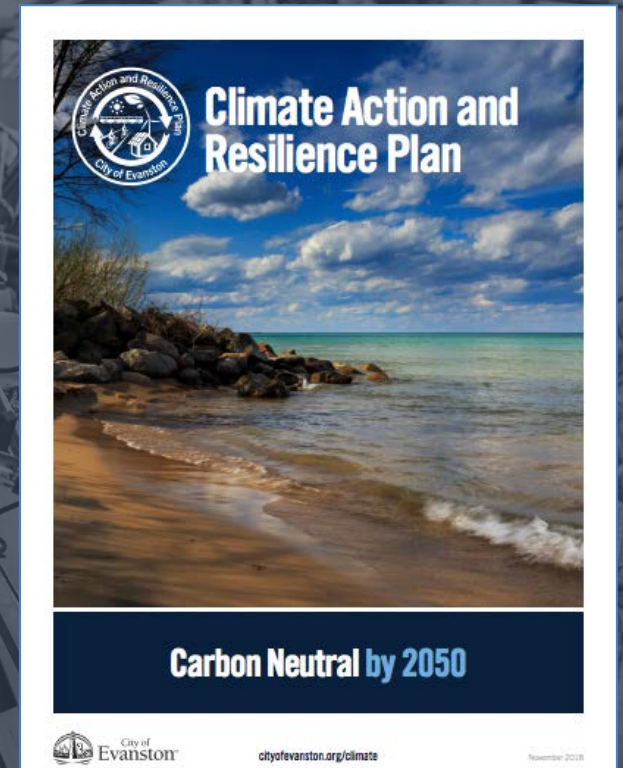
INTENT

To strengthen the resilience of communities to climate change risks, natural and man-made hazards and extreme events.

REQUIREMENTS

Vulnerability and Capacity Assessment | Resilience Plan

- Adaptation and Mitigation Strategies
- Fundamental Emergency Planning and Preparedness
- Early Warning Systems
- Critical Infrastructure
- Policy Intervention
- Meet the requirements of *PEER v2 Rating System*¹⁶, *RR Credit: Damage and Exposure Prevention*



EN PREREQUISITE *(LFC Existing)*

POWER ACCESS, RELIABILITY AND RESILIENCY

INTENT

To provide safe, secured, reliable, resilient and equitable access to power.

REQUIREMENTS

Access

- 100% coverage of households or population by electricity service

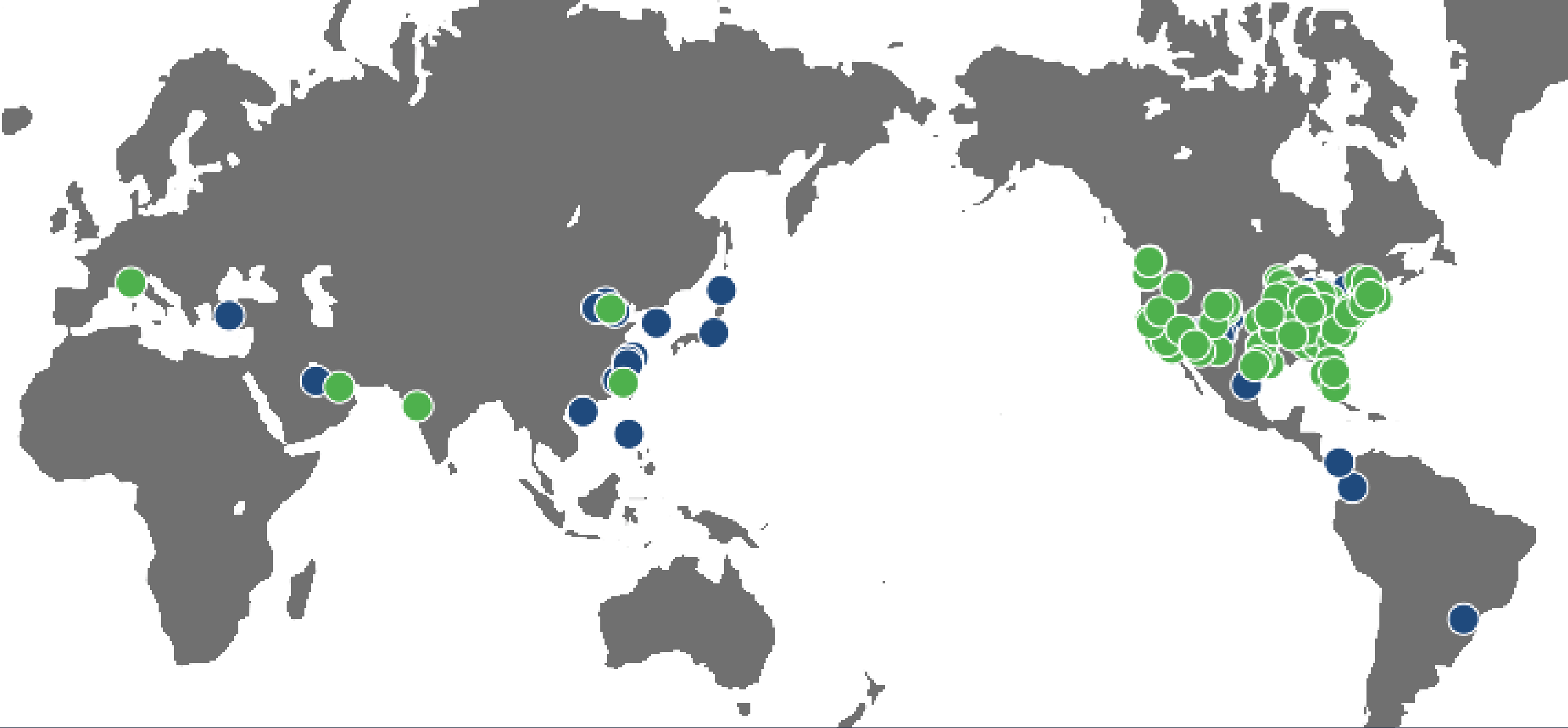
Reliability Performance Monitoring

- Continuous monitoring and recording of interruptions for the complete distribution network

Power Surety and Resiliency

- Identify critical loads or emergency facilities and essential services that require backup power





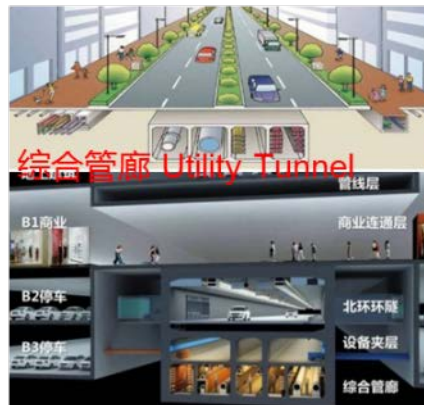
More than 110 cities and communities certified
190+ registered | 15 countries

Beijing Daxing International Airport Area 北京大兴国际机场临空经济区

First Certified LEED v4.1 Cities - Plan and Design Project
全球首个LEED城市规划设计项目



愿景：临空经济区致力于打造一座智慧、生态、宜居城市
The vision is to build a smart, ecological and livable city





City of Orlando, FL | Certified Gold | LEED v4.1 for Cities
November 18, 2019

“Our vision is to become the most environmentally friendly, socially inclusive, and economically vibrant city in the Southeast...one of the most sustainable cities in the U.S.”

*– Mayor Buddy Dyer,
City of Orlando*





LEED v4.1 CITIES AND COMMUNITIES: EXISTING

April 2, 2019

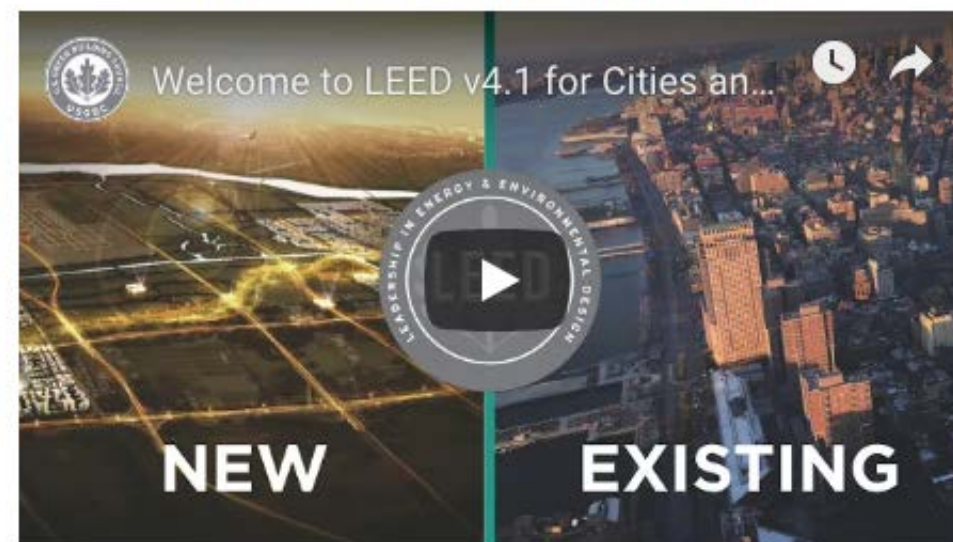
U.S. Green Building Council

LEED v4.1 for Cities and Communities

Download the rating systems and guides and watch
an overview video:

<https://www.usgbc.org/leed-v41>

LEED v4.1 Cities and Communities



Get started with LEED v4.1

Select each rating system below to learn more.



Building Design + Construction



Interior Design + Construction



Operations + Maintenance



Residential



Cities and Communities



Recertification

Process of engagement for cities and communities

Step 1. Register

Register your project and access reporting platforms

Review applicable tools and resources

Step 2. Precertify

Gather data

Submit for precertification

Precertify

Step 3. Certify

Gather data

Submit for certification

Celebrate your recognition

Step 4. Continuously improve

Evaluate results

Prioritize areas for improvement

Share lessons learned

Recertify



Visit us at www.usgbc.org

Email us at cities@usgbc.org

Tools and Resources Page

Education

Tools and Resources for LEED for Cities and Communities



Resources for measuring and improving city and community sustainability and quality of life.

Share on     

www.usgbc.org/resources/tools-and-resources-leed-cities-and-communities