




# ECOCITY AT UBC

PROPOSE A FRAMEWORK TO EVALUATE AND AMEND UBC PLANS AND POLICIES

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August 2019

# UN SUSTAINABLE DEVELOPMENT GOALS (SDGs)

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- UBC plans and policies play an important role in delivering these goals
- It is essential to have a framework to evaluate, monitor and amend them
- **Is SDGs a sufficient framework to evaluate UBC plans and policies?**



# MAP UBC PLANS & STRATEGIES TO SDGs

	UBC Strategic Plan	20-Year Sustainability Strategy	Okanagan Charter	Vancouver Campus Plan	Okanagan Campus Plan	Climate Action Plan (CAP)	Green Building Action Plan	Land Use Plan	Neighbourhood Plans	Transportation Plan	Zero Waste Action Plan	Public Realm Plan	Emergency Response Plan (ERP)	Community Energy and Emissions Plan (CEEP)	Residential Environmental Assessment Plan	Housing Action Plan	Water Action Plan (*)	Stormwater Mgt Plan	Wellbeing Strategic Framework	Inclusion Action Plan	UBC Technical Guidelines	UBC Vancouver Design Guidelines	UBC Okanagan Design Guidelines	Public Art Strategy	Urban Forest Management Plan (*)	Biodiversity Strategic Framework	Framework for Food Action	Bird Friendly Guidelines	LEED Implementation Guide	SUM
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# LIMITATION OF THE SDG FRAMEWORK

- SDGs provide broad but relatively shallow goals
- Innovation, resilience, and management were not addressed by SDGs



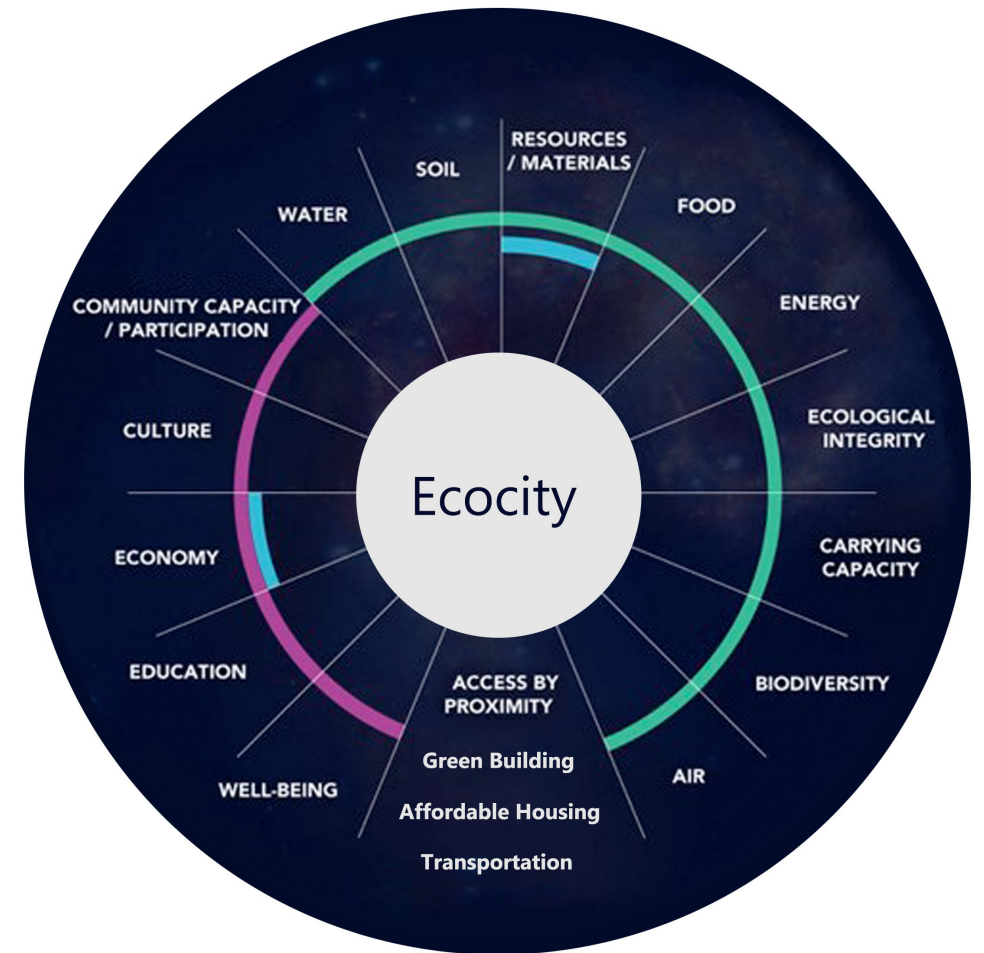
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There is a need to refine the SDGs framework to address the spatial and temporal scales reflected in UBC's plans



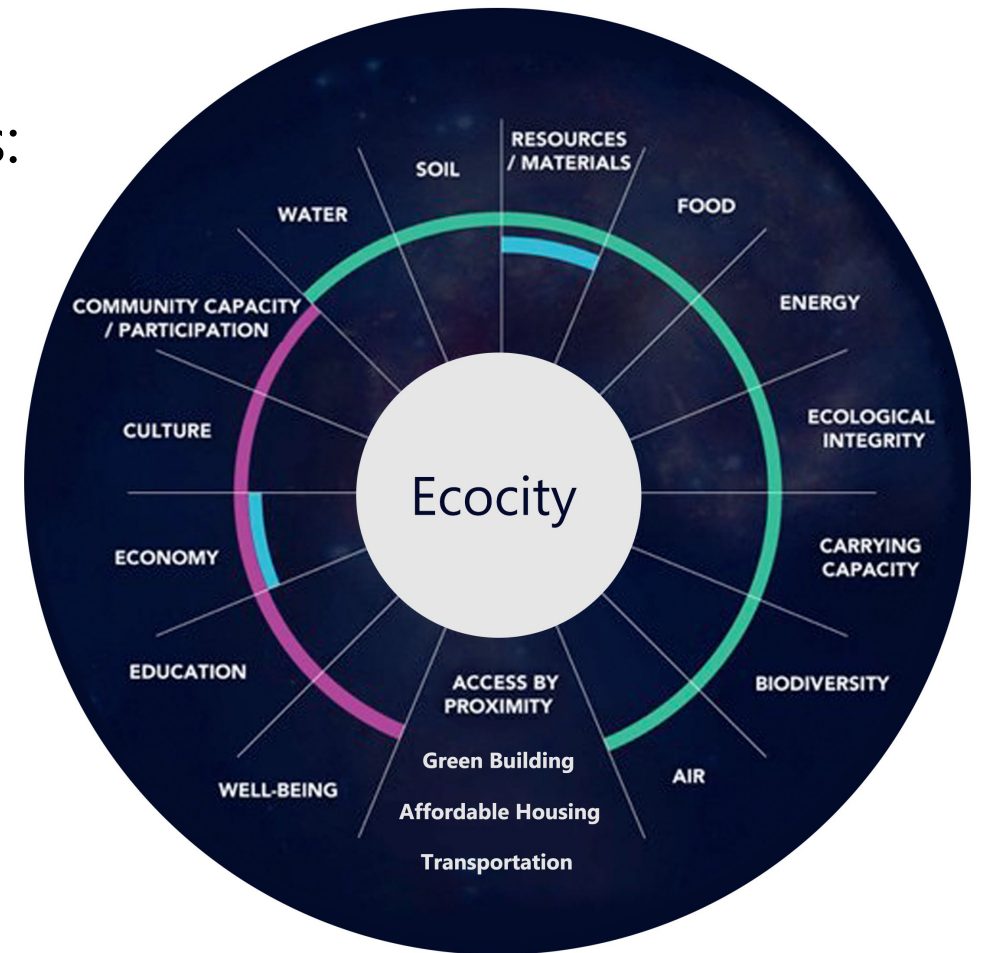
# INTERNATIONAL ECOCITY STANDARDS (IES)



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The IES has 18 standards grouped under 4 pillars:

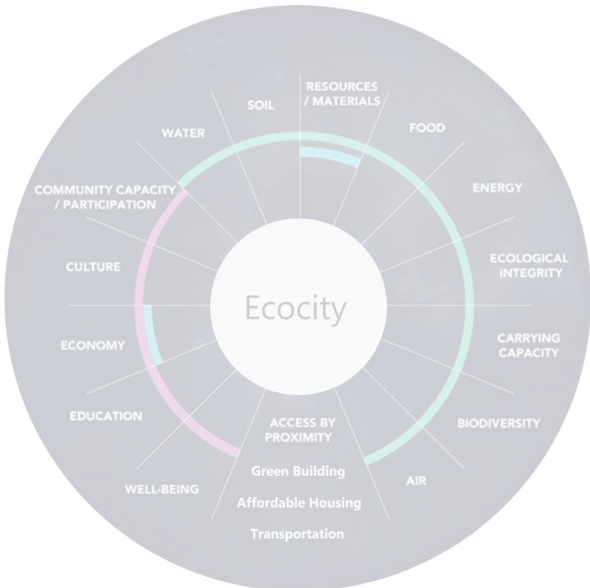
1. **Urban design**
2. **Geo-bio-physical**
3. **Socio-cultural Features**
4. **Ecological Imperatives**







**HOW CAN UBC PLANS AND POLICIES REACH TO SDGs AND CAN EcoCITY STANDARDS HELP US GET THERE?**



## SDGs

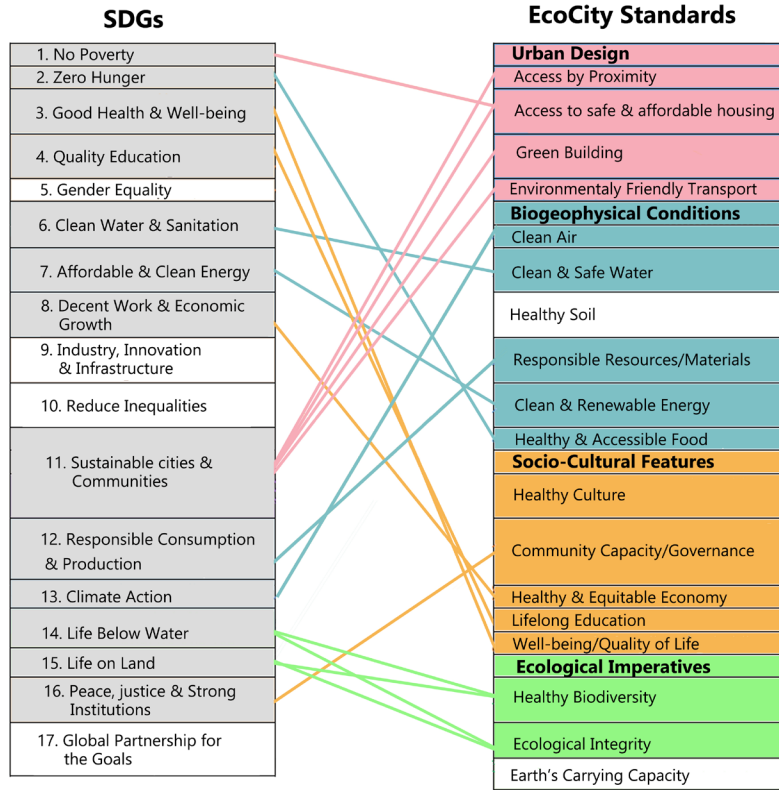
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## EcoCity Standards

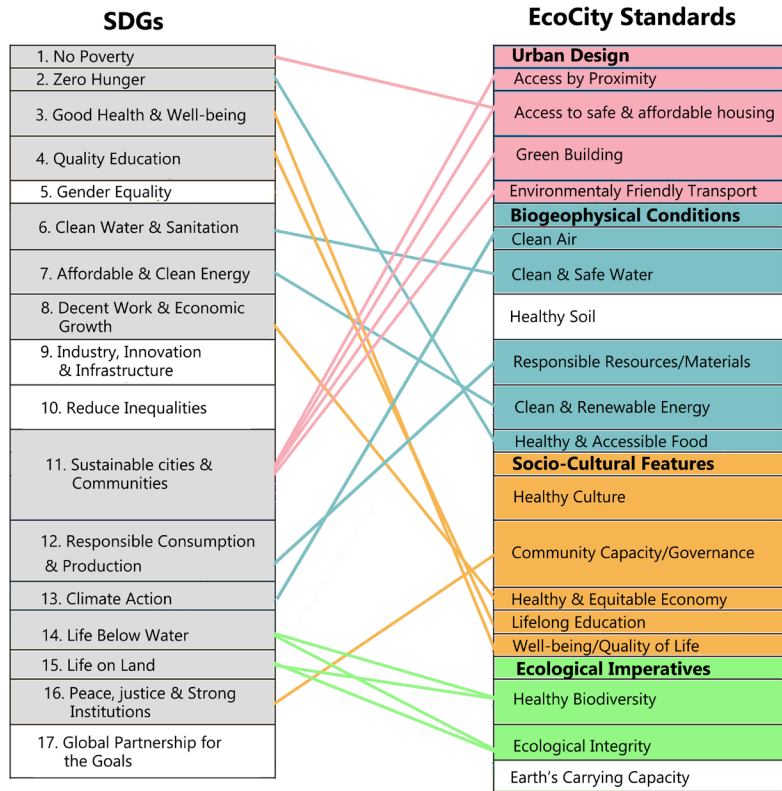
<b>Urban Design</b>
Access by Proximity
Access to safe & affordable housing
Green Building
Environmentally Friendly Transport
<b>Biogeophysical Conditions</b>
Clean Air
Clean & Safe Water
Healthy Soil
Responsible Resources/Materials
Clean & Renewable Energy
Healthy & Accessible Food
<b>Socio-Cultural Features</b>
Healthy Culture
Community Capacity/Governance
Healthy & Equitable Economy
Lifelong Education
Well-being/Quality of Life
<b>Ecological Imperatives</b>
Healthy Biodiversity
Ecological Integrity
Earth's Carrying Capacity

SDG and Ecocity comparison, emerged from [ecocitybuilders.org](http://ecocitybuilders.org)





EcoCity Pillars	SDGs	Ecocity Standards
Urban Design	Sustainable Cities & Communities	Access by Proximity
		Access to safe & affordable housing
		Green Building
		Environmentally Friendly Transport
Bio-Geo-Physical Condition	climate action	Clean Air
	Affordable and clean energy	Clean & Renewable Energy
	Clean water and sanitation	Clean & Safe Water
		Healthy Soil
	Zero hunger	Healthy & Accessible Food
	Responsible consumption and production	Responsible Resources/Materials
Socio-Cultural Features		Healthy Culture
	Peace, justice and strong institutions	Community Capacity/Governance
	No poverty	Healthy & Equitable Economy
	Decent work and economic growth	
	Quality education	Lifelong Education
	Good health and well being	Well-being/Quality of Life
	Gender equality	
Reduced inequalities		
Ecological Imperatives	Life on land	Healthy Biodiversity
	Life below water	
		Ecological Integrity
		Earth's Carrying Capacity
	Industry, innovation and resilient infrastructure	
	Global Partnership for The Goals	



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Ecological Imperatives	Life on land	Healthy Biodiversity
	Life below water	Ecological Integrity
		Earth's Carrying Capacity
	Industry, innovation and resilient infrastructure	
	Global Partnership for The Goals	

# 4 RATING SYSTEMS

1. **LEED** Neighbourhood Development Plan
2. **SITES** v2 Rating System
3. **ENVISION** (ZOFNASS Rating System for Sustainable Infrastructure)
4. **RELI** (Resilience-based rating system)

# LEED Neighbourhood Development Plan

0	0	0	Smart Location & Linkage		28	0	0	0	Green Infrastructure & Buildings		31
Y			Prereq	Smart Location	Required	Y			Prereq	Certified Green Building	Required
Y			Prereq	Imperiled Species and Ecological Communities	Required	Y			Prereq	Minimum Building Energy Performance	Required
Y			Prereq	Wetland and Water Body Conservation	Required	Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Agricultural Land Conservation	Required	Y			Prereq	Construction Activity Pollution Prevention	Required
Y			Prereq	Floodplain Avoidance	Required				Credit	Certified Green Buildings	5
			Credit	Preferred Locations	10				Credit	Optimize Building Energy Performance	2
			Credit	Brownfield Remediation	2				Credit	Indoor Water Use Reduction	1
			Credit	Access to Quality Transit	7				Credit	Outdoor Water Use Reduction	2
			Credit	Bicycle Facilities	2				Credit	Building Reuse	1
			Credit	Housing and Jobs Proximity	3				Credit	Historic Resource Preservation and Adaptive Reuse	2
			Credit	Steep Slope Protection	1				Credit	Minimized Site Disturbance	1
			Credit	Site Design for Habitat or Wetland and Water Body Conservation	1				Credit	Rainwater Management	4
			Credit	Restoration of Habitat or Wetlands and Water Bodies	1				Credit	Heat Island Reduction	1
			Credit	Long-Term Conservation Management of Habitat or Wetlands and Water Bodies	1				Credit	Solar Orientation	1
									Credit	Renewable Energy Production	3
									Credit	District Heating and Cooling	2
									Credit	Infrastructure Energy Efficiency	1
									Credit	Wastewater Management	2
									Credit	Recycled and Reused Infrastructure	1
									Credit	Solid Waste Management	1
									Credit	Light Pollution Reduction	1
0	0	0	Neighborhood Pattern & Design		41	0	0	0	Innovation & Design Process		6
Y			Prereq	Walkable Streets	Required				Credit	Innovation	5
Y			Prereq	Compact Development	Required				Credit	LEED® Accredited Professional	1
Y			Prereq	Connected and Open Community	Required						
			Credit	Walkable Streets	9						
			Credit	Compact Development	6						
			Credit	Mixed-Use Neighborhoods	4						
			Credit	Housing Types and Affordability	7						
			Credit	Reduced Parking Footprint	1						
			Credit	Connected and Open Community	2						
			Credit	Transit Facilities	1						
			Credit	Transportation Demand Management	2						
			Credit	Access to Civic & Public Space	1						
			Credit	Access to Recreation Facilities	1						
			Credit	Visitability and Universal Design	1						
			Credit	Community Outreach and Involvement	2						
			Credit	Local Food Production	1						
			Credit	Tree-Lined and Shaded Streetscapes	2						
			Credit	Neighborhood Schools	1						
0	0	0	PROJECT TOTALS (Certification estimates)			0	0	0			110
Certified: 40-49 points. Silver: 50-59 points. Gold: 60-79 points. Platinum: 80+ points											









# ZOFNASS Rating System for Sustainable Infrastructure

## QUALITY OF LIFE 13 Credits

### 1 PURPOSE

- QL1.1 Improve Community Quality of Life
- QL1.2 Stimulate Sustainable Growth & Development
- QL1.3 Develop Local Skills and Capabilities

### 2 WELLBEING

- QL2.1 Enhance Public Health and Safety
- QL2.2 Minimize Noise and Vibration
- QL2.3 Minimize Light Pollution
- QL2.4 Improve Community Mobility and Access
- QL2.5 Encourage Alternative Modes of Transportation
- QL2.6 Improve Site Accessibility, Safety & Wayfinding

### 3 COMMUNITY

- QL3.1 Preserve Historic and Cultural Resources
- QL3.2 Preserve Views and Local Character
- QL3.3 Enhance Public Space

QL0.0 Innovate or Exceed Credit Requirements

## NATURAL WORLD 15 Credits

### 1 SITING

- NW1.1 Preserve Prime Habitat
- NW1.2 Protect Wetlands and Surface Water
- NW1.3 Preserve Prime Farmland
- NW1.4 Avoid Adverse Geology
- NW1.5 Preserve Floodplain Functions
- NW1.6 Avoid Unsuitable Development on Steep Slopes
- NW1.7 Preserve Greenfields

### 2 LAND+WATER

- NW2.1 Manage Stormwater
- NW2.2 Reduce Pesticides and Fertilizer Impacts
- NW2.3 Prevent Surface and Groundwater Contamination

### 3 BIODIVERSITY

- NW3.1 Preserve Species Biodiversity
- NW3.2 Control Invasive Species
- NW3.3 Restore Disturbed Soils
- NW3.4 Maintain Wetland and Surface Water Functions

NW0.0 Innovate or Exceed Credit Requirements

## LEADERSHIP 10 Credits

### 1 COLLABORATION

- LD1.1 Provide Effective Leadership & Commitment
- LD1.2 Establish a Sustainability Management System
- LD1.3 Foster Collaboration and Teamwork
- LD1.4 Provide for Stakeholder Involvement

### 2 MANAGEMENT

- LD2.1 Pursue By-Product Synergy Opportunities
- LD2.2 Improve Infrastructure Integration

### 3 PLANNING

- LD3.1 Plan for Long-Term Monitoring & Maintenance
- LD3.2 Address Conflicting Regulations and Policies
- LD3.3 Extend Useful Life

LD0.0 Innovate or Exceed Credit Requirements

## CLIMATE AND RISK 8 Credits

### 1 EMISSIONS

- CR1.1 Reduce Greenhouse Gas Emissions
- CR1.2 Reduce Air Pollutant Emissions

### 2 RESILIENCE

- CR2.1 Assess Climate Threat
- CR2.2 Avoid Traps and Vulnerabilities
- CR2.3 Prepare for Long-Term Adaptability
- CR2.4 Prepare for Short-Term Hazards
- CR2.5 Manage Heat Island Effects

CR0.0 Innovate or Exceed Credit Requirements

## RESOURCE ALLOCATION 14 Credits

### 1 MATERIALS

- RA1.1 Reduce Net Embodied Energy
- RA1.2 Support Sustainable Procurement Practices
- RA1.3 Use Recycled Materials
- RA1.4 Use Regional Materials
- RA1.5 Divert Waste from Landfills
- RA1.6 Reduce Excavated Materials Taken Off Site
- RA1.7 Provide for Deconstruction and Recycling

### 2 ENERGY

- RA2.1 Reduce Energy Consumption
- RA2.2 Use Renewable Energy
- RA2.3 Commission and Monitor Energy Systems

### 3 WATER

- RA3.1 Protect Fresh Water Availability
- RA3.2 Reduce Potable Water Consumption
- RA3.3 Monitor Water Systems

RA0.0 Innovate or Exceed Credit Requirements

# RELI

## Resilience-based rating system

PANORAMIC APPROACH		
PA PANORAMIC APPROACH TO PLANNING, DESIGN, MAINTENANCE, & OPERATIONS		
S	C	Req 1 Study: Project Short-Term Hazard Mitigation and Adaptation Needs Including Climate
S	C	Req 2 Integrative Process, Development & Community Stakeholder Involvement
S	C	Poly-Req 3 Commissioning & Long-Term Monitoring / Maintenance
S	C	Poly-Credit 1 Business & Community Case Analysis, Post-Development Evaluation and Reporting
S	C	Credit 2 Establish a Sustainability & Resiliency Management System
S	C	Credit 3 Address Conflicting Regulations & Policies
S	C	Credit 4 Third Party Leadership & Next Generation Certifications and Programs
Credits 5-8 Below Expand the Integrative Process Required by Requisite 2 Above		
S	C	Poly-Credit 5 Study & Design for By-Product & Underutilization Synergies
S	C	Poly-Credit 6 Study & Design for Improved Project Element & Infrastructure Integration
S	C	Poly-Credit 7 Study & Design for Long-Term Adaptability, Diversity & Redundancy
S	C	Poly-Credit 8 Study & Living Design for Advanced Resiliency Using a Diversity of Ecology-Based Perspectives
RISK ADAPTATION & MITIGATION FOR ACUTE EVENTS		
HP HAZARD PREPAREDNESS		
S	C	Req 1 Fundamental Emergency Planning & Preparedness for Common Hazardous Events
S	C	Req 2 Fundamental Access To: First Aid, Emergency Supplies, Water, Food, Communications
S	C	Poly-Credit 1 Enhanced Emergency Planning for Common Hazards & Extreme Events
S	C	Credit 2 Enhanced Access: Emergency Care & Supplies, Water, Food, Communications
S	C	Poly-Credit 3 Additional Emergency Provisions For the Community & for Longer Timeframes
S	C	Credit 4 Community Education: Authentic Dialogues on Ever-Increasing Weather, Safety & Resiliency Risks
HA HAZARD ADAPTATION & MITIGATION		
S	C	Req 1 Sites of Avoidance & Repair: 500-Year Flood Plain, Storm Surge & Sea Rise
S	C	Req 2 Fundamental Emergency Operations: Back-Up Power & Operations
S	C	Req 3 Fundamental Emergency Operations: Thermal Safety During Emergencies
S	C	Req 4 Safer Design for Extreme Weather, Wildfire & Seismic Events
S	C	Poly-Credit 2 Adaptive Design for Extreme Rain, Sea Rise, Storm Surge & Extreme Weather, Events & Hazards
S	C	Poly-Credit 3 Advanced Emergency Operations: Back-Up Power, Operations, Thermal Safety & Operating Water
S	C	Poly-Credit 4 Passive Thermal Safety, Thermal Comfort & Lighting Design Strategies
S	C	Poly-Credit 5 Transit & Transportation System Protection & Continuous Operations
S	C	Poly-Credit 6 Provide Environmental Protection & Remediation for Parks & Preserves
APPLIED CREATIVITY AND CONTEXTURAL FACTORS FOR RESILIENCY		
AC APPLIED CREATIVITY, INNOVATION & EXPLORATION		
S	C	Poly-Credit 1 Applied Creativity in Resiliency & Integrative Design
S	C	Poly-Credit 2 Contextual Factors & Project Responsive Topics
S	C	Poly-Credit 3 Exemplary Performance

COMPREHENSIVE ADAPTATION + MITIGATION FOR A RESILIENT PRESENT + FUTURE		
CV COMMUNITY COHESION, SOCIAL & ECONOMIC VITALITY		
S	C	Poly-Req 1 Improve Community Quality of Life
S	C	Poly-Credit 1 Incorporate Important Community Views and Aspects of Local Landscape
S	C	Poly-Credit 2 Community Connectivity: Walkability, Public Transit, Non-Motorized Transit
S	C	Poly-Credit 3 Community Connectivity: Mixed-Use Commercial, Housing & Public / Community Space
S	C	Poly-Credit 4 Expand Citizen Participation: Public Amenities, Councils, Organizations, Communication
S	C	Poly-Credit 5 Resilient Organizations: Cooperative & B-Corporation(s), Non-Profits & Social Equity Measures
S	C	Poly-Credit 6 Develop or Expand Local Skills, Capabilities & Long-Term Employment & Mix
S	C	Poly-Credit 7 Use Regionally Sourced & Manufactured Materials and Products
S	C	Poly-Credit 8 Stimulate Sustainable Growth and Development
PH PRODUCTIVITY, HEALTH & DIVERSITY		
S	C	Poly-Req 1 Minimum IAQ & Views to the Exterior
S	C	Poly-Req 2 Minimum Protection for Prime Habitat & Floodplain Functions
S	C	Poly-Credit 1 Human PHD: Expanded IAQ, Daylight & Views, Fresh Air
S	C	Poly-Credit 2 Human PHD: Active Design for Buildings, Communities and Urban Environments
S	C	Credit 3 Human PHD: Provide for Social Equity: Interdisciplinary / Intercultural Opportunities
S	C	Poly-Credit 4 Human & Eco PHD: Reduce Pesticides, Prevent Surface & Groundwater Contamination
S	C	Poly-Credit 5 Ecological PHD: Protect Wetlands & Avoid Slopes and Adverse Geology
S	C	Poly-Credit 6 Ecological PHD: Biodiversity, Habitat & Soil
EW ENERGY, WATER & FOOD		
S	C	Poly-Req 1 Minimum Water Efficiency & Resilient Water and Landscapes
S	C	Poly-Req 2 Minimum Energy Efficiency & Atmospheric Impacts
S	C	Poly-Credit 1 Plan For Rainwater Harvesting, Resilient Landscapes & Food Production
S	C	Poly-Credit 2 Plan the Site and Orientation For Sun & Wind Harvesting, Natural Cooling
S	C	Poly-Credit 3 Water-Use Reduction, Near Zero / High-Efficiency Water Flows and Resilient Landscapes
S	C	Poly-Credit 4 Energy Optimization, Near Zero / Carbon Neutral, Net Zero, Net Positive Energy Flows
S	C	Poly-Credit 5 Edible Landscaping, Urban Agriculture & Resilient Food Production
S	C	Poly-Credit 6 Reduced Site Environmental Impacts: Lighting, Heat-Island, Airborne Toxins
MA MATERIALS & ARTIFACTS		
S	C	Poly-Req 1 Minimum Material Effectiveness & Life Cycle Planning
S	C	Credit 1 Safer, Non-Toxic Materials (SMaRT or Equivalent Certified)
S	C	Credit 2 Material & Artifact Effectiveness: Full Life Cycle Design for Durability, Adaptability, Flexibility
S	C	Credit 3 Material & Artifact Effectiveness: Design for Disassembly, Reuse, Recycling & Composting
S	C	Poly-Credit 4 Material Effectiveness: Use Recycled Content Materials, Salvaged Materials & Local Materials
S	C	Credit 5 Use Legally Logged Wood from Ecologically Managed Forests (IFSC Certified)
S	C	Credit 6 Reduce Net Embodied Energy & Carbon, Water and Toxins
S	C	Poly-Credit 7 Divert Waste from Landfills, Reduce Excavated Soils Taken from Site

# **COMPARE AND RECATEGORIZE RATING SYSTEMS**

BASED ON SDGs & ECO-CITY FRAMEWORK



# SDGS + ECOCITY

EcoCity Pillars	SDGs	Ecocity Standards
Urban Design	Sustainable Cities & Communities	Access by Proximity
		Access to safe & affordable housing
		Green Building
		Environmentally Friendly Transport
Bio-Geo-Physical Condition	climate action	Clean Air
	Affordable and clean energy	Clean & Renewable Energy
	Clean water and sanitation	Clean & Safe Water
		Healthy Soil
	Zero hunger	Healthy & Accessible Food
	Responsible consumption and production	Responsible Resources/Materials
Socio-Cultural Features		Healthy Culture
	Peace, justice and strong institutions	Community Capacity/Governance
	No poverty	Healthy & Equitable Economy
	Decent work and economic growth	
	Quality education	Lifelong Education
	Good health and well being	Well-being/Quality of Life
	Gender equality	
	Reduced inequalities	
Ecological Imperatives	Life on land	Healthy Biodiversity
	Life below water	
		Ecological Integrity
::	Industry, innovation and resilient infrastructure	
	Global Partnership for The Goals	

# SDGS + ECOCITY + 4 RATING SYSTEMS

EcoCity Pillars	SDGs	Ecocity Standards	Rating Systems			
			LEED	SITES	ENVISION	RELI
Urban Design	Sustainable Cities & Communities	Access by Proximity	Smart Location & Linkage	Site Context		
		Access to safe & affordable housing	Neighborhood Pattern & Design			
		Green Building	Indoor Environmental Quality	Pre-design Assessment + Planning		
		Environmentally Friendly Transport	Green Buildings			
Bio-Geo-Physical Condition	climate action	Clean Air	Energy and Atmosphere		Resource Allocation	Energy, Water + On-site Food Production
	Affordable and clean energy	Clean & Renewable Energy				
	Clean water and sanitation	Clean & Safe Water	Water			
		Healthy Soil	Soil + Vegetation			
	Zero hunger	Healthy & Accessible Food				
	Responsible consumption and production	Responsible Resources/Materials	Materials and Resources	Materials Selection		Material + Artifacts
Socio-Cultural Features		Healthy Culture			Leadership (Collaboration, Management, Planning)	Community Cohesion, Social+ Economic Vitality
	Peace, justice and strong institutions	Community Capacity/Governance				
	No poverty	Healthy & Equitable Economy				
	Decent work and economic growth	Lifelong Education		Education		
	Quality education	Well-being/Quality of Life		Human Health + Well Being	Quality of Life (Purpose, Well Being, Community)	Productivity, Health + Diversity
	Good health and well being					
	Gender equality					
Reduced inequalities						
Ecological Imperatives	Life on land	Healthy Biodiversity			Natural World (Water, Land, Biodiversity)	
	Life below water					
		Ecological Integrity				
		Earth's Carrying Capacity				
::	Industry, innovation and resilient infrastructure		Green Infrastructure Innovation & Design Process	Innovation or Exemplary performance		Applied Creativity
	Global Partnership for The Goals					
				Performance + Monitoring Operation + Maintenance		Panoramic Approach
					Risk (Resilience)	Hazard preparedness, Adaptation and Mitigation

# SDGS + ECOCITY + 4 RATING SYSTEMS

EcoCity Pillars	SDGs	Ecocity Standards	Rating Systems			
			LEED	SITES	ENVISION	RELI
Urban Design	Sustainable Cities & Communities	Access by Proximity	Smart Location & Linkage	Site Context		
		Access to safe & affordable housing	Neighborhood Pattern & Design			
		Green Building	Indoor Environmental Quality	Pre-design Assessment + Planning		
		Environmentally Friendly Transport	Green Buildings			
Bio-Geo-Physical Condition	climate action	Clean Air	Energy and Atmosphere		Resource Allocation	Energy, Water + On-site Food Production
	Affordable and clean energy	Clean & Renewable Energy				
	Clean water and sanitation	Clean & Safe Water	Water			
		Healthy Soil	Soil + Vegetation			
	Zero hunger	Healthy & Accessible Food				
	Responsible consumption and production	Responsible Resources/Materials	Materials and Resources	Materials Selection		Material + Artifacts
Socio-Cultural Features		Healthy Culture			Leadership (Collaboration, Management, Planning)	Community Cohesion, Social+ Economic Vitality
	Peace, justice and strong institutions	Community Capacity/Governance				
	No poverty	Healthy & Equitable Economy				
	Decent work and economic growth	Lifelong Education		Education		
	Quality education	Well-being/Quality of Life		Human Health + Well Being	Quality of Life (Purpose, Well Being, Community)	Productivity, Health + Diversity
	Good health and well being					
	Gender equality					
Reduced inequalities						
Ecological Imperatives	Life on land	Healthy Biodiversity			Natural World (Water, Land, Biodiversity)	
	Life below water					
		Ecological Integrity				
		Earth's Carrying Capacity				
::	Industry, innovation and resilient infrastructure		Green Infrastructure Innovation & Design Process	Innovation or Exemplary performance		Applied Creativity
	Global Partnership for The Goals					
				Performance + Monitoring Operation + Maintenance		Panoramic Approach
					Risk (Resilience)	Hazard preparedness, Adaptation and Mitigation

# **NEW EVALUATING FRAMEWORK**

# UBC FRAMEWORK

Pillars	Standards					
<b>Urban Design</b> (Sustainable cities and communities)	Access by Proximity	Green Building	Environmentally Friendly Transportation	Resilient Infrastructure	Safe & Affordable Housing	
<b>Bio-Geo-Physical</b> (Resource Allocation)	Clean Air	Clean and Safe Water	Clean and Renewable Energy	Responsible Material/Resources	Healthy and Accessible Food	Healthy Soil
<b>Socio-Cultural</b>	Good Health and well-being	Quality Education	Healthy & Equitable Economy	Community Capacity/Governance	Reduced Inequalities	
<b>Ecological Imperatives</b>	Healthy Biodiversity	Ecological Integrity	Earth's Carrying Capacity			
<b>Panoramic Approach</b>	Sustainable & Resilient Management	Monitoring & Maintenance	Hazard Preparedness, Adaptation & Mitigation			
<b>Applied Creativity</b>	Innovation or Exemplary Performance					



# UBC FRAMEWORK

Pillars	Standards					
<b>Urban Design</b> (Sustainable cities and communities)	Access by Proximity	Green Building	Environmentally Friendly Transportation	Resilient Infrastructure	Safe & Affordable Housing	
<b>Bio-Geo-Physical</b> (Resource Allocation)	Clean Air	Clean and Safe Water	Clean and Renewable Energy	Responsible Material/Resources	Healthy and Accessible Food	Healthy Soil
<b>Socio-Cultural</b>	Good Health and well-being	Quality Education	Healthy & Equitable Economy	Community Capacity/Governance	Reduced Inequalities	
<b>Ecological Imperatives</b>	Healthy Biodiversity	Ecological Integrity	Earth's Carrying Capacity			
<b>Panoramic Approach</b>	Sustainable & Resilient Management	Monitoring & Maintenance	Hazard Preparedness, Adaptation & Mitigation			
<b>Applied Creativity</b>	Innovation or Exemplary Performance					

# UBC FRAMEWORK

Pillars	Standards					
<b>Urban Design</b> (Sustainable cities and communities)	Access by Proximity	Green Building	Environmentally Friendly Transportation	Resilient Infrastructure	Safe & Affordable Housing	
<b>Bio-Geo-Physical</b> (Resource Allocation)	Clean Air	Clean and Safe Water	Clean and Renewable Energy	Responsible Material/Resources	Healthy and Accessible Food	Healthy Soil
<b>Socio-Cultural</b>	Good Health and well-being	Quality Education	Healthy & Equitable Economy	Community Capacity/Governance	Reduced Inequalities	
<b>Ecological Imperatives</b>	Healthy Biodiversity	Ecological Integrity	Earth's Carrying Capacity			
<b>Panoramic Approach</b>	Sustainable & Resilient Management	Monitoring & Maintenance	Hazard Preparedness, Adaptation & Mitigation			
<b>Applied Creativity</b>	Innovation or Exemplary Performance					

# UBC FRAMEWORK

Pillar	Standards	Indicators				
1. Urban Design (Sustainable Cities & communities)	Access by proximity	Housing and Jobs Proximity	Access to daily needs	Access to Civic & Public Space		
	Green Building	Certified Green Building	Optimize Building Energy Performance	Safer Design for Extreme Weather, Wildfire + Seismic Events	Plan the Site and Orientation for Sun + Wind Harvesting, Natural Cooling	Reduced Site Environmental Impacts: Lighting, Heat-Island, Airborne Toxins
	Environmentally friendly transportation	Encourage fuel efficient and multi-modal transportation	Access to Quality Public Transit	Walkable Streets	Bicycle Facilities	Green Vehicles
	Resilient infrastructure	Recycled and Reused Infrastructure	District Heating and Cooling	Safer, Non-Toxic Infrastructure Materials	Improve Infrastructure Integration	Design functional stormwater features as amenities
	Safe & affordable housing	Mixed-Income Diverse Communities	Encourage affordable housing development	Require affordable housing		



# UBC FRAMEWORK

Pillar	Standards	Indicators				
2. Bio-Geo-Physical	Clean air	Reduce Greenhouse Gas Emissions	Protect air quality during construction	Assess Climate Threat	Reduce urban heat island effects	Avoid Traps and Vulnerabilities
	Clean and safe water	Wastewater Management	Reduce Potable Water Consumption	Prevent Surface and Groundwater Contamination	Monitor Water Systems	
	Clean and renewable energy	Reduce Net Embodied Energy	Use Renewable Energy	Use vegetation to minimize building energy use	Reduce outdoor energy consumption	Commission and Monitor Energy Systems
	Responsible material/resource	Use recycled content materials	Support responsible extraction of raw materials	Minimum Material Effectiveness + Life Cycle Planning	Use Local Materials	Reduce Excavated Materials Taken Off Site
	Healthy & Accessible Food	Limit development on farmland	Local Food Production	Resilient Food Production		
	Healthy soil	Restore soils disturbed during construction	Control and retain construction pollutants	Minimize pesticide and fertilizer use	Designate and communicate Vegetation and Soil Protection Zones	

# UBC FRAMEWORK

Pillar	standards	indicators				
3. Socio-Cultural	Good Health & Well-being	Enhance Public Health and Safety	Minimize Noise and Vibration	Support mental restoration	Support physical activity	Universal Design
	Quality Education	Promote sustainability awareness and education	Community Education on ever-increasing Weather, Safety + Resiliency Risks	Communicate and verify sustainable construction practices		
	Healthy and equitable economy	Develop or expand Local Skills and Capabilities				
	Community capacity & governance	Engage users and stakeholders	Support social connections	Enhance Resilient Organizations & Nonprofits	Enhance Public Spaces	
	Reduced Inequalities	Provide for Social Equity Opportunities				
	Healthy culture	Preserve Historic and Cultural Resources	Provide for Interdisciplinary/ Intercultural Opportunities			

# UBC FRAMEWORK

Pillar	Standards	Indicators				
4. Ecological imperatives	Healthy biodiversity	Conserve and use native plants	Control and manage invasive plants	Conserve habitats for threatened and endangered species	Conserve aquatic ecosystems	
	Ecological integrity	Preserve Prime Habitat	Protect Wetlands and Surface Water	Site Design for Habitat or Wetland and Water Body Conservation	Avoid Unsuitable Development On Steep Slopes	Tree-Lined and Shaded Streetscapes
	Earth's Carrying capacity	avoid consuming Greenfields, wetlands and water bodies	Brownfield Remediation	Locate projects within existing developed areas	Redevelop degraded sites	



# UBC FRAMEWORK

Pillar	Standards	Indicators			
5. Panoramic Approach	Sustainability & Resiliency Management	Use an integrative design process	Conduct a pre-design site assessment	Post-Development Evaluation	Study + Design for Long-Term Adaptability, Diversity + Redundancy
	Monitoring & Maintenance	Plan to monitor and report site performance	Plan for sustainable site maintenance	Address Conflicting Regulations + Policies	
	Preparedness, Mitigation, Adaptation	Fundamental Emergency Planning for Common Hazardous Events	Adaptive Design for Extreme Rain, Sea Rise, Storm Surge + Extreme Weather, Events	Prepare for Short-Term Hazards	Prepare for Long-Term Adaptability

Pillar	Standards	Indicators		
6. Applied Creativity	Innovation or Exemplary performance	Applied Creativity in Resiliency & Integrative Design	Applied Creativity in Resilient Economics, Equity, Education	Leadership Metrics and Measures from sources beyond UBC criteria

# CONCLUSION

- UBC framework is a diagnostic tool that helps measure the effectiveness of current UBC policies and plans
- New framework can guide the development of new plans moving forward.



Thank You