Before We Start....

Audience will be muted throughout the session. Closed Captioning is available for this session.

Use the Q & A function to submit your questions. Use the “like” button to upvote questions.

This webinar is being recorded and will be sent to you following the session.

Take the conversation online @UrbanLandInst #WhereTheFutureIsBuilt #CurtisInfrastructure
Thank you for joining us today for this important conversation. Today’s program is eligible for one credit hour from AIA or AICP.

If you wish to receive AIA or AICP credit for participating in today’s program, please be sure to:

- complete the evaluation survey linked in the ‘Chat’
- use your full name in zoom (First Name Last Name)
ULI InfraXchange Spring Series #1 Nature in the City: One Environment Infrastructure to Combine Public Space with Flood-proofing and Utilities

MARCH 30, 2023
Welcome and Introduction

Billy Grayson
Executive Vice President
Centers and Initiatives
ULI Urban Land Institute

Craig Lewis
Principal, Global Practice Lead Planning, Landscape & Urban Design
Callison RTKL
ULI Curtis Infrastructure Initiative
Global Advisory Board Chair

Yvonne Yeung
CEO, SDG Strategies
ULI Toronto Advisory Board
ULI SDRC Product Council Vice Chair
ULI Curtis Infrastructure Fellow
“Every single person in the land use process has the real ability to make a visible difference, and make it matter because they are part of the process. *If they push for the right choices, each one of them has the ability to change the world.*”
Cornerstones of ULI Curtis Infrastructure Initiative
A Global Resource for Transforming Cities into Equitable, Resilient and Thriving Communities

Build Global Partnerships
Conduct Technical Assistance
Grow Knowledge

- Building 15-minute Communities Leadership Guide
- ULI Infrastructure Forum at Spring Meeting in Toronto May 16, 2023 8am
- ULI InfraTAP District & Product Council Coalitions 2023
- ULI InfraXchange Global Spotlights Local Spotlights Mar - Jul 2023
### ULI Infrastructure Exchange Series 2023

Leading with Cutting-Edge Infrastructure Solutions and Co-benefits Creation Decisions at Community Scale

Five sessions over 5 months with an article summary to follow in 2023

<table>
<thead>
<tr>
<th>Month</th>
<th>Infrastructure Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAR</td>
<td>One Environment Infrastructure</td>
<td>deliver parks, green streets, flood protection, environmental restoration, and utilities in one project</td>
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<tr>
<td>APR</td>
<td>One Community Infrastructure</td>
<td>deliver education-social-health-culture-co-work space under one roof</td>
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<tr>
<td>MAY</td>
<td>One Energy Infrastructure</td>
<td>deliver micro-grid/DE, PV, EV, timber and circular waste within one district</td>
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<tr>
<td>JUN</td>
<td>One Mobility Infrastructure</td>
<td>deliver transit, micro-mobility, broadband, and smart city system to provide one trip experience</td>
</tr>
<tr>
<td>JUL</td>
<td>One Vision Infrastructure</td>
<td>deliver a community-scale platform to combine resources, lead multi-teams &amp; engage community</td>
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[Image of green spaces and infrastructure]
Today’s Challenge: Nature in the City
How to Create ‘One Environment Infrastructure’ to Implement...

<table>
<thead>
<tr>
<th>Pollution</th>
<th>Urban Heat</th>
<th>Public Health</th>
<th>Water</th>
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<tbody>
<tr>
<td>Justice40 Initiative</td>
<td>National Integrated Heat Health NIHHIS</td>
<td>Healthy People 2030 Initiative</td>
<td>30x30 Vision to Conserve Nature</td>
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<tr>
<td>to allocate 40% of total investment to disadvantaged communities that are overburden by pollution</td>
<td>to reduce health risks of extreme heat, the greatest weather-related cause of death in the US for the past 30 years</td>
<td>to increase physical activity by built environment approaches, combining transportation with land use and environmental design</td>
<td>to increase environmental restoration and conserve 30% of US &amp; Canada land and water by 2030</td>
</tr>
<tr>
<td>whitehouse.gov</td>
<td>heat.gov</td>
<td>health.gov/healthypeople</td>
<td>whitehouse.gov</td>
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<td>canada.ca/health-canada</td>
<td>canada.ca</td>
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</table>
Today’s Opportunities: Nature in the City
How to Create ‘One Environment Infrastructure’ to Leverage...

**Pollution**
$250M EPA Planning Grants

**Urban Heat**
$70M EPA Mitigate Risks of Urban Heat

**Public Health**
$550M EPA Public Health in Communities

**Water**
$8.3B Bureau of Reclamation water infrastructure projects over 5 years for water conservation/management/restoration projects

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**Climate Pollution Reduction Grants**
CPRG
various deadlines between March to June

**Environmental Justice Government-to-Government Program**
EJG2G
deadline April 10, 2023

**Environmental Justice Thriving Communities Grantmaking Program**
EJ TCGM
deadline May 31, 2023

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epa.gov

grants.gov

grants.gov
Today’s Opportunities: Nature in the City
How to Create ‘One Environment Infrastructure’ to Leverage...

**Mitigation**
$1B DMAF Disaster Mitigation
Government of Canada Adaptation Action Plan GOCAAP
deadline July 19, 2023
infrastructure.gc.ca

**Green**
$5B CIB Green Infrastructure
Canada Infrastructure Bank Priority Sector
ongoing
cib-bic.ca

**Indigenous**
$1B CIB Indigenous Infrastructure
Canada Infrastructure Bank Priority Sector Indigenous Community Infrastructure Initiative ICII
ongoing
cib-bic.ca

**Acceleration**
$500M CIB Project Acceleration
Canada Infrastructure Bank Priority Sector
Accelerate early works Shorten critical paths to construction
ongoing
cib-bic.ca
Global InfraXchange: Nature in the City

Jureong Lakeside Garden, Singapore

Waterloo Greenway, Austin TX

Jelle Therry
Design Director
Henning Larsen
Singapore
speaker

Matthew Kwatinetz
Director, Urban Lab
New York University
USA
moderator

Gullivar Shepard
Partner, Michael Van Valkenburgh Associates Inc
USA
speaker
Nature in the City
ULI Case Study #1
30 March 2023

Gullivar Shepard, Partner
RLA, ASLA, ULI
MVVA – Brooklyn, NY

Waterloo Greenway
Alliance of Infrastructure Reuse and Development

• A coalition around reclaiming underutilized infrastructure and revitalizing public space
• New hybrid forms of public space lead to significant and measurable impacts on their cities
• Led by Public-Private Partnerships
• Economic development through increased tax revenue, tourism and job creation

Bridge Park
WASHINGTON, DC

High Line
NEW YORK, NY

Waterloo Greenway
AUSTIN, TX

Rail Park
PHILADELPHIA, PA

Atlanta Belt Line
ATLANTA, GA
Texas Urbanism and Water Infrastructure

- Semi-arid to arid landscape
- No natural lakes – flows from central Texas empty into the Gulf of Mexico
- Over 200 man-made lakes created by the impounding of this water
- Approximately 10% of all dams in the U.S. are in Texas
- 8 of the 15 fastest growing cities in the U.S. are in Texas (source: Census Bureau)

- 1935 Lower Colorado River Authority (LCRA)
- LCRA operates 6 dams
- Watershed is 16% of Texas land area
Waller Creek: Incrementally Infrastructural

Austin's First City Plan, 1887

Edwin Waller

Austin's Growth, 2020
Waller Creek: Infrastructural Overload

100-year storm floods 28 acres of downtown Austin

This is no longer a landscape...
City of Austin: Bypass Tunnel Infrastructure (2011-2018)

26-ft diameter tunnel
-70 ft below the surface

28 acres of flood plain removed

1.5 miles
Tax Increment Financing (TIF)

- Tax Increment Reinvestment Zone (TIRZ) created to fund the bypass tunnel construction.
- City of Austin and Travis County contribute 100% and 50%, respectively, of their tax increment within the TIRZ district (property tax on the increase in value of real estate property).
- The tunnel project will be funded by the issuance of debt that will be repaid over the duration of this TIF.
- Austin’s growth has exceeded projections and the debt will be paid off faster (real estate entering the market sooner and with more square footage than expected)

Image credit: M2 Development Partners / SOM
**Waterloo Greenway: A Public-Private Partnership**

2011 Competition organized around Technical Advisory Group, in addition to jury
2012 Competition awarded to "Waller Creek and Chain of Parks"
2013 Joint Development Agreement finalized and coordination with Tunnel begins
2014 Planning and Design process begins

*Ensure the creek be a publicly accessible space by managing the narrative*
Phase One: Waterloo Park (2018-2021)

- First and largest of the Chain of Parks (11 acres)
- Unique fusion of stormwater facility, event infrastructure, and park
- Approximately 50% donor participation in funding
- Modeling the new maintenance and operations protocol between WPD, Parks, and the Waterloo Greenway Conservancy
Phase Zero: "Artwork Infrastructure" (2018)
New Relationships to the Creek

- New Development in Former Floodplain
- Creek Trail System Entry Point
- Park Entry/Controlled Venue Entry
- Future Promenade
- Bypass Tunnel Inlet Facility
- Accessible Overlook
- 5,000 Capacity Amphitheater
- Demonstration Creek Reconstruction
A Park That Floats Over the Creek
An Icon That Floats Over the Park
A Program That Provides Revenue and Community Space
A Landscape That Inspires Environmental Stewardship
Places to Lose Oneself...
...in Landscapes not Typically Found in the City
Phase Two: The Confluence (2023-2025)

- Reconstruction of the creek mouth ecology
- 5 bridges and an elevated walkway to sew together fragmented lakefront neighborhoods
- Mobility link between historic downtown and lakefront
- Integrate major utility upgrades
- In the context of 12 million SF of adjacent downtown development
Immersive Experience of Nature
**Constructed Geology**

- **Caliche Block**
  - (quarry waste product)

- **Sediment Ramps**
  - (gravity wall slope retention)

- **Renaturalizing Banks**
  - (engine for nature succession)
Phase Three: Armature for the Waterloo Greenway District (2023 – ?)

• 66 end-of-pipe water quality improvements from downtown
• Dozens of new connections to adjacent ROWs
• 5 miles of pedestrian trails + bikeways
• 4 parks to anchor sub-districts
• 38 acres of new urban canopy
• Armature for parallel infrastructure projects
Building Confidence in Infrastructure Delivery

- Waterloo Greenway
- Project Connect (Blue Line)
- Interstate 35 Cap & Stitch
- Convention Center Expansion

Leading with Landscape
Building Confidence in Green Infrastructure

- The U.S. Army Corps of Engineers is investing $12 million in federal funding in Phase 2 of the project.
- It is the first Environmental Infrastructure project in the State of Texas for the USACE.
- $5.3 million grant from the Urban Forest Tree Fund awarded for the first time to a park project due to the high level of environmental design standards.
Becoming a "One Environment" Infrastructure

- Connect disparate cultural resources
- Consolidate corridors of activity and animation
- Overcome major barriers between communities
Waterloo Greenway Economic Development

- Potential to catalyze over $2 billion in real estate value over 20 years
- Generate $500 million in enhanced value to existing real estate assets
- Catalyze $1.5 billion in incremental real estate development
- Greenway projected to create $400 million in new tax revenues (City of Austin & Travis County)
Waterloo Greenway Economic Development

2007
TIRZ Approved
City Council approves TIRZ No. 17 ordinance to finance Tunnel Project Construction

2008
TIRZ Adopted
Original Agreement adopted (executed between COA and Travis County) for Tunnel Project

2011
TIRZ Amendment #1
TIRZ No. 17 amended for project design and cost estimates for Tunnel Project

2012
Waller Creek Competition
Project awarded to MVVA/TPP Team

2015
Framework Plan Completed

2018
TIRZ Amendment #2
Termination date extended from 2028 to 2041. Surface-level improvements included for first time

2019
Structured Lawn Completed
Tunnel construction completed

2021
Waller Creek Competition
Project awarded to MVVA/TPP Team

2021
Waller Creek Tunnel
Tunnel construction begins

2023
Waterloo Park Completed

2041

$400 million in new tax revenues

Baseline Assessed Value in the TIRZ (2007)

Value of Park Announcement (2010)

Value of Park Construction/Opening (2017)

REAL ESTATE VALUE

TIME

* diagram after HR&A
Waterloo Greenway

Gullivar Shepard, Partner
RLA, ASLA, ULI
MVVA – Brooklyn, NY
ULI InfraXchange #1
Nature in the City
Jurong Lakeside Garden

Jelle Hendrik Therry
Design Director Singapore

March 30th, 2023
Welcome to the Singapore
Jurong Lakeside Garden

Being one of the three national gardens in Singapore, Jurong Lake Gardens is envisioned to be the catalyst of regeneration of the entire Jurong District.
Jurong Lake District
Jurong Lakeside
Taman Jurong before industrialization
Jurong Lakeside Garden
Bring back the freshwater swamp

Rich in biodiversity, the park will have plenty of natural spaces and trails to allow the public to get closer to nature.

Jurong Lake Park Will Be Part Of Island-Wide Green Corridor,
-Channel News Asia 28 April 12
Creating Habitats for Bio-Diversity
Creating Habitats for Bio-Diversity

Safe Wildlife Feeding Zone

Daily fluctuation (200 – 500mm)

Shallow, permanently wet (100mm)

Permanently wet (>100mm)
Jurong Lakeside Garden
Transformation of the existing landscape into new narratives and habitats
Clusia Cove
Different experience

3ha
Singapore’s first closed-loop water playground that utilizes ABC features as part of the recycle process
Uses water from Jurong Lake
Clusia Cove
Cleansing biotope
Forest Ramble
Different experience

2.3ha
Largest nature playgarden in the heartlands

13 different play areas, inclusive play design
Forest Ramble
Different experience

Discover the wildlife as you play!
Forest Ramble Natural Play Area

Fly like a Grey Heron *Ardea cinerea*
Alstonia Island
Different experience

Landscape restauration of the freshwater swamp
Neram Stream
Different experience

Transforming engineered objects into a natural landscape with a rich diversity of habitats
Neram Stream
Neram Stream
Different experience

Transforming the water’s edge into a rich biodiverse landscape accessible to the community.
Creating an intertidal boardwalk
Grassland
Different experience

3.5ha
Intertidal transitional conditions, with bird hides, mounds, lone tree features
In a corner of the garden, stands The Lone Tree.

realising it’s a sculpture formed of twisted steel.

The resident lizard pops out, startling both.

The Tree is a gesture for Jurong Lake Gardens.

A natural heritage lost during industrialisation,
rises again for community and nature.
One Environment Infrastructure: Combine Public Space with Flood-proofing, Biophilia, and Utility Upgrades in One Project

Leadership Framework

Lead – how to leverage co-leadership to lead forward motion
Market – how to leverage shared data to assess needs and stay current with policies/trends
Engage – how to create community champions through engagement
Entitlement – how to co-create community-scale performance metrics
Design – how to develop interdisciplinary design frameworks to bring the best in industries
Finance – how to structure financing partnerships to accelerate delivery, reduce uncertainty and costs
One Environment Infrastructure: Combine Public Space with Flood-proofing, Biophilia, and Utility Upgrades in One Project

Key Leadership Takeways

1. Leading by landscape to build confidence and invite other infrastructure
2. Thinking across boundaries and design with craftsmanship from the outset
3. Sequence to succeed and re-integrate nature through open space and infrastructure
4. Re-engineer infrastructure to create urban value and connect communities
5. Reconstruct nature to increase natural resources and create urban memories
6. No value capture without value creation; center the plan by a ‘green first’ approach
7. Accelerate culture shift by Gen Alpha, inspire the love of nature by play
Local InfraXchange: Equitable Maintenance of ‘Nature in the City’
North Broad Renaissance
TECHNICAL ASSISTANCE PANEL
JUNE 23, 2022
The Issue – What vehicles exist for providing ongoing support for infrastructure maintenance in communities with limited or developing resources?
  - Broad challenge that faces many cities nationwide

Ideal – Communities have adequate financial and institutional support

Reality – When communities lack financial and institutional support they are faced with challenge of improving and maintaining infrastructure with severely limited resources
1. Engage Local Businesses at the Triangle
2. Enhance Marketing and Communications Opportunities
3. Monetize Assets
5. Evaluate, Refine and Realign NBR’s Mission and Strategy
Develop Policy Framework for Resource & Financial Independence

- Create a Business Improvement District
- “Adopt a Highway”
- Community Benefit Agreements
- Individual & Corporate Sponsorship
- Grant Agreements
- Earned Revenue Stream
- Real Estate and Land Leases
- Stormwater Management and Greening
THANK YOU

philadelphia.uli.org