



Metropolitan Water Reclamation District of Greater Chicago

**Welcome to the August
Edition of the 2023 M&R
Seminar Series**

NOTES FOR SEMINAR ATTENDEES

- Remote attendees' audio lines have been muted to minimize background noise. **For attendees in the auditorium, please silence your phones.**
- A question and answer session will follow the presentation.
- For remote attendees, Please use the “**Chat**” feature to ask a question via text to “**Host**”. **For attendees in the auditorium, please raise your hand and wait for the microphone to ask a verbal question.**
- The presentation slides will be posted on the MWRD website after the seminar.
- This seminar has been approved by the ISPE for one PDH and approved by the IEPA for one TCH. Certificates will only be issued to participants who attend the entire presentation.

Şevin Yıldız, Ph.D.

Assistant Professor of City Design
College of Urban Planning and Public Affairs
University of Illinois Chicago



Dr. Şevin Yıldız is an assistant professor in the Urban Planning and Policy Department at the University of Illinois, Chicago. She researches ecological planning and urban design in the context of climate change and global urbanization. She received a bachelor's degree in Architecture from Istanbul Technical University, a master's degree in Architecture from KU Leuven, Belgium, and a doctoral degree from Rutgers University – New Jersey Institute of Technology. She heads the UIC's Master of City Design (MCD) semester-long 'Great Cities Studio' that focuses on conceiving innovative design strategies and systems planning for Chicago's future urban form in the face of changing climate and working on issues of adaptability and infrastructure retrofitting. She also serves on the Chicago Department of Planning's River Ecology Task Force since 2020.

Innovative Climate Planning for Chicago

Strategies for Adaptation and
Ecological Co-Existence

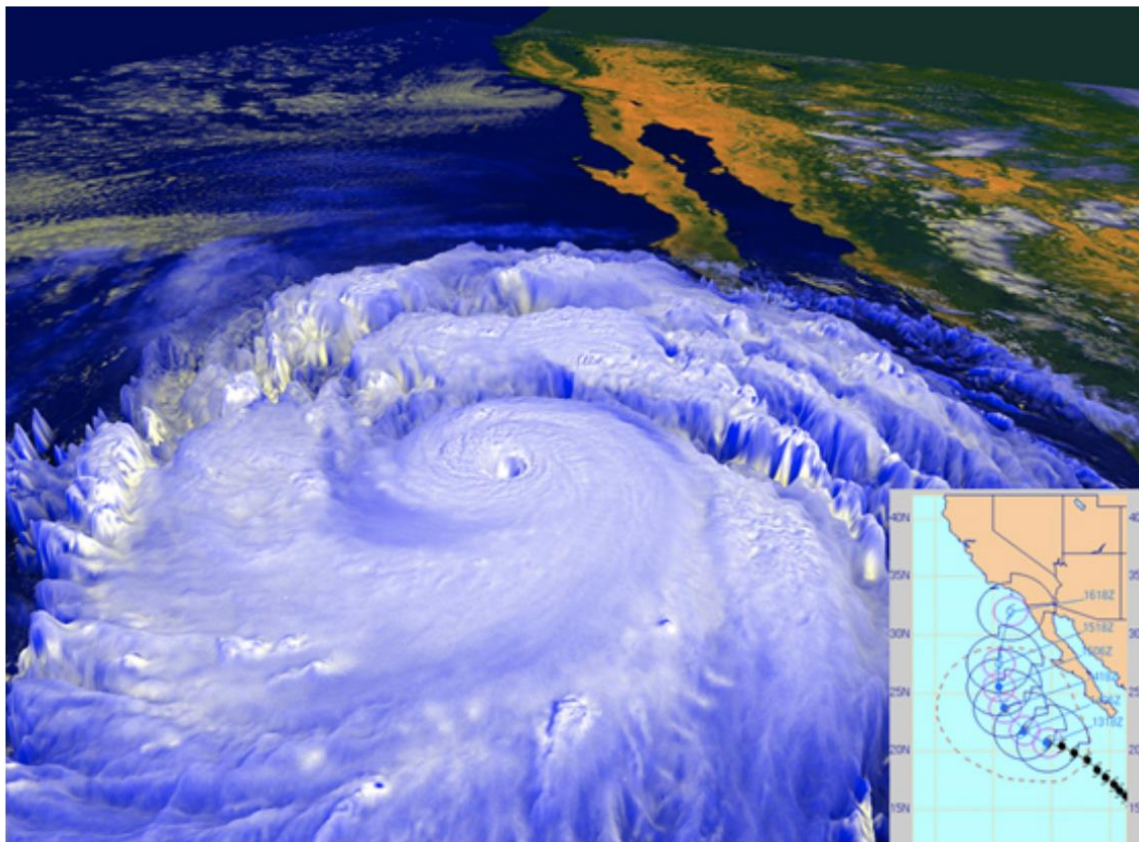
Şevin Yıldız, PhD
Assistant Professor @ Urban Planning and Policy
University of Illinois Chicago

MWRD Lecture Series August 25th, 2023



NEWS | October 16, 2012

Could a hurricane ever strike Southern California?



Explore



“In addition, Southern Californians are flood resistant now because of those storms in 1938-39, which led to all the major rivers here being concreted. So, we're largely immunized against these kinds of catastrophic flooding events now.”⁵

The arrival of the 'Unprecedented'

Tropical Storm Hilary and Southern California



The arrival of the 'Unprecedented'



The arrival of the 'Unprecedenteds'

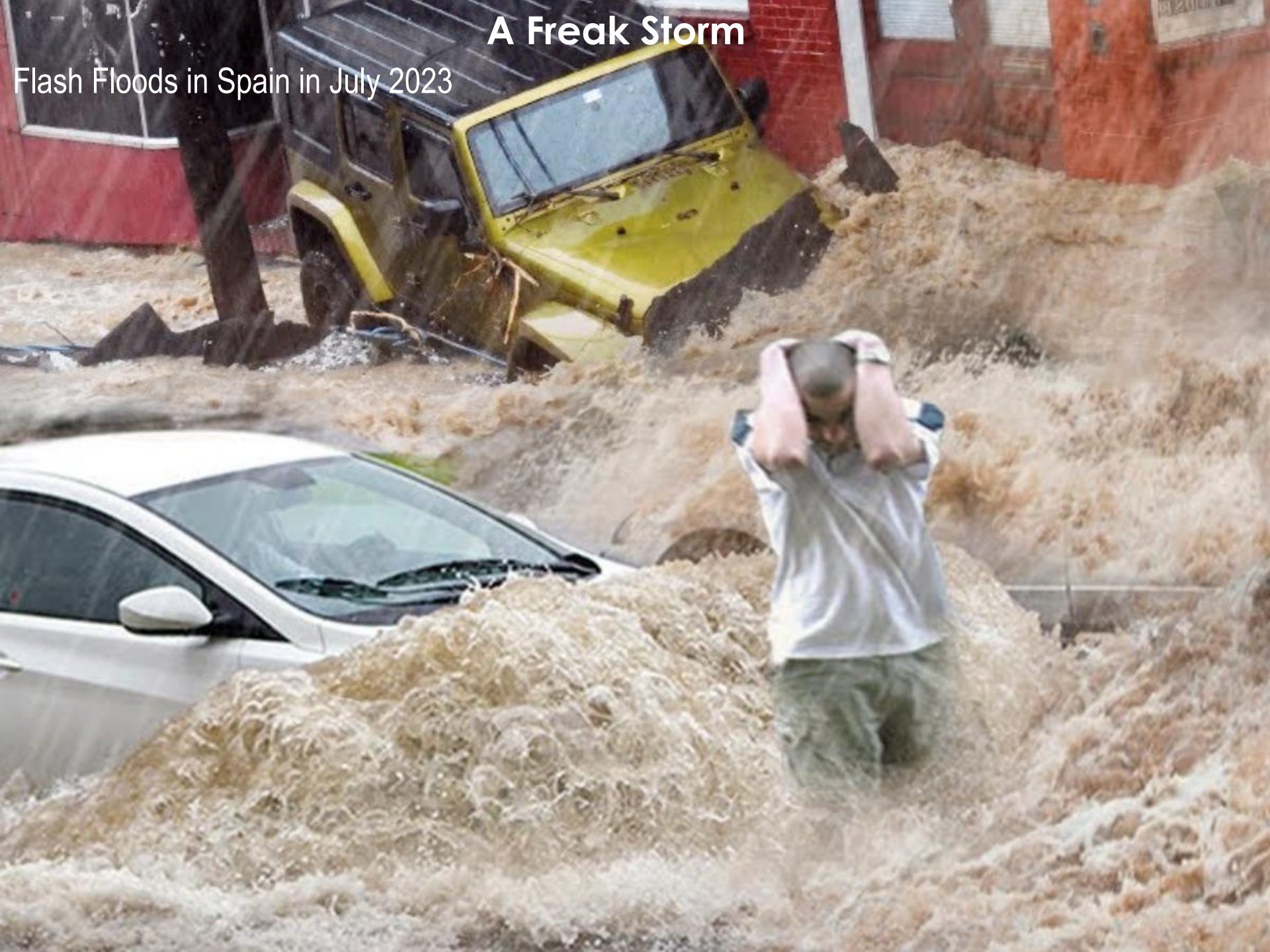
Glacier Lake Outburst in Alaska, August 2023



Image: ABC News

A Freak Storm

Flash Floods in Spain in July 2023



Never Seen This Before

Air pollution in NY and Chicago , June 2023



Image: Getty

Climate change is redrawing the disaster map

From tropical storms to wildfires, climate disasters aren't confined to the places we're used to seeing them.

By [JUSTINE CALMA](#) | August 22, 2023 2:42 pm



Vehicles and housing structures are partially submerged after Tropical Storm Hilary flooded a community of unhoused people on August 21st, 2023, in Cathedral City, California.



Newsletters

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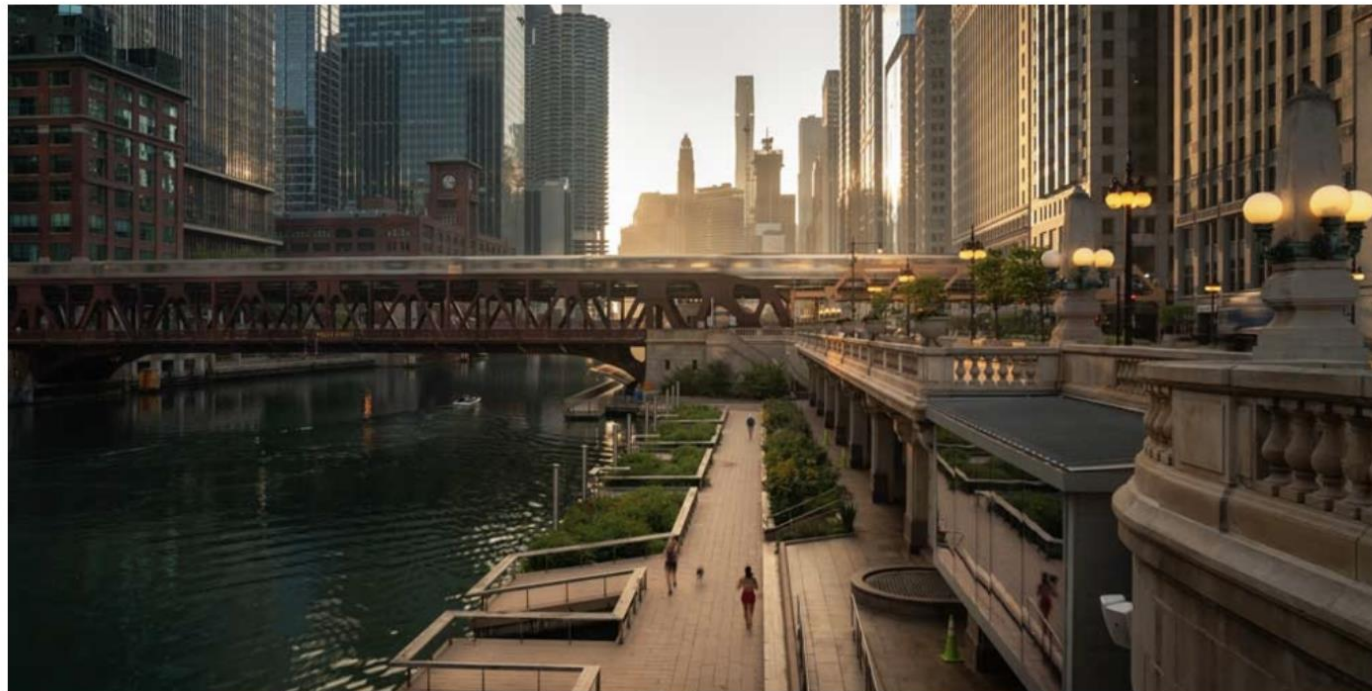
Crain's Forum on climate migrants

Climate change could make Chicago a sweet home for migrants

Once the place people sought to escape because of its weather, the metropolitan area could beckon as a safe harbor from climate change.

By Cassandra West

Reprints Print Share



Credit: Getty Images

The Chicago River

FORUM



From the pension crisis to gun violence, the city and state face a whole host of seemingly intractable problems. Crain's explores these issues in depth with the goal of respectfully and objectively raising the conversation, and in some cases, suggest possible solutions.

[See complete Forum on climate](#)

Chicago could see population growth due to climate change, report claims




Chicago's location along the Great Lakes could make the city a prime candidate for growth as the effects of climate change increase, a recent TIME Magazine article claimed. Photo credit Getty Images

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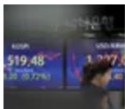




LATEST



Nerve agents, poison and window falls. Over the years, Kremlin foes...



Stock market today: Global shares mixed ahead of a speech by t...

The Irony of the Missing Sense of Urgency

storyful. | Storyful

'Worst Flooding I've Ever Seen': Waves Topping 20 Feet Slam Chicago's Lakefront

11 January 2020

CLIMATE FWD:

Chicago's Big Climate Problem

It's not heat or drought. It's the level of Lake Michigan.

'Unreal' rains flood homes, knock out power and put Chicago on the cusp of wettest May ever

By PATRICK M. O'CONNELL, WILLIAM LEE, MICHAEL HAWTHORNE and KATHERINE ROSENBERG-DOUGLAS
CHICAGO TRIBUNE | MAY 19, 2020 AT 10:59 AM



SCIENCE & NATURE

Lake Michigan's High Water Level Breaks 30-Year Monthly Record

Blair Paddock | February 5, 2020 7:17 pm

SCIENCE & NATURE

New Analysis Shows Large Swaths of Chicago at High Flood Risk

Erica Gunderson | July 6, 2020 6:26 pm

E&E NEWS

ENVIRONMENT

Chicago Takes a Beating as Lake Levels Surge

High water and 12-foot waves are eroding shorelines on Lake Michigan

Flooding in the Chicago area has been so bad in the past decade that only places ravaged by hurricanes sustain more damage

By MICHAEL HAWTHORNE and MORGAN GREENE
CHICAGO TRIBUNE | MAY 10, 2019 AT 9:15 AM



In Chicago, Flooding Overwhelmingly Strikes Communities of Color

New flood maps tell us we aren't doing enough to stop rising waters

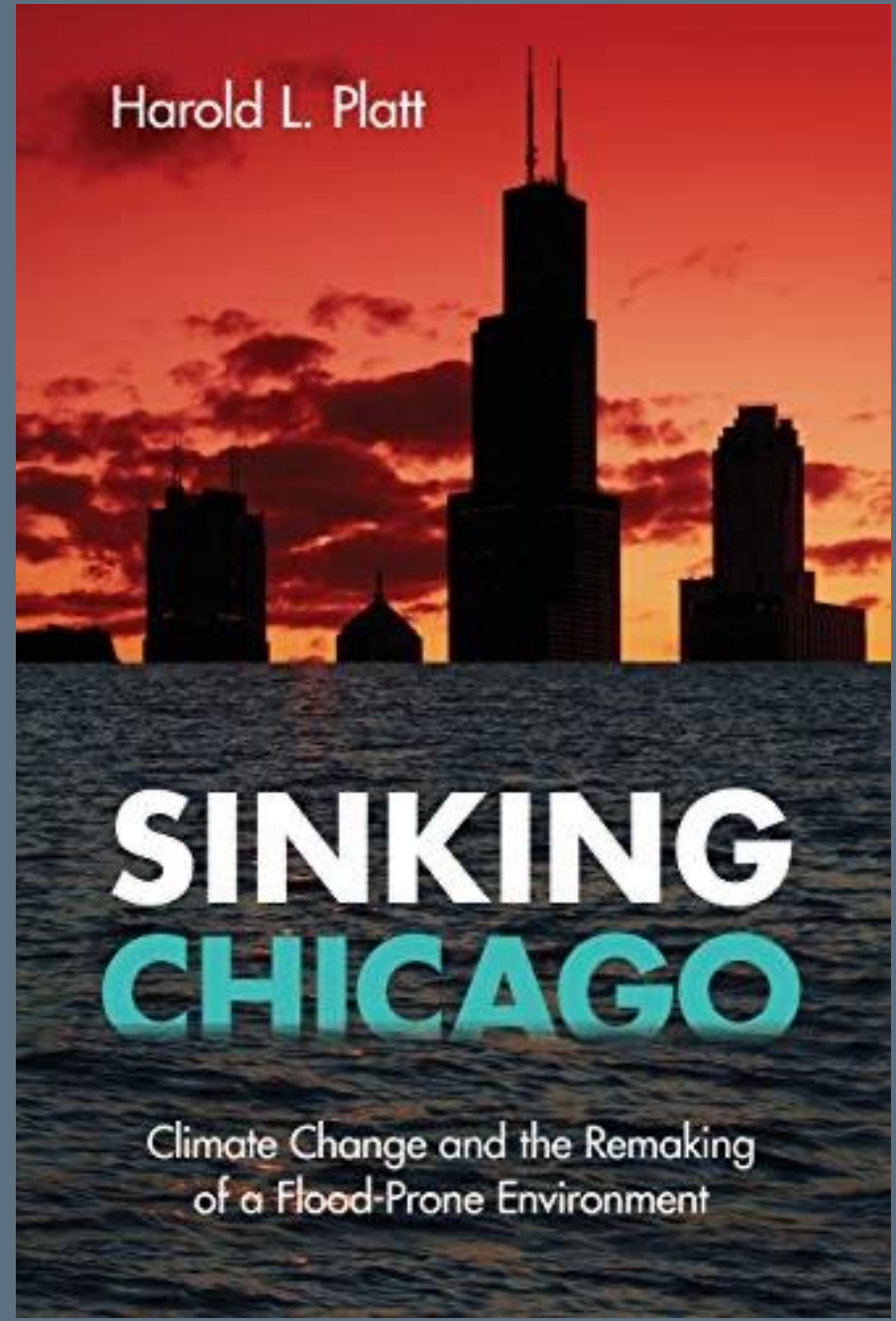
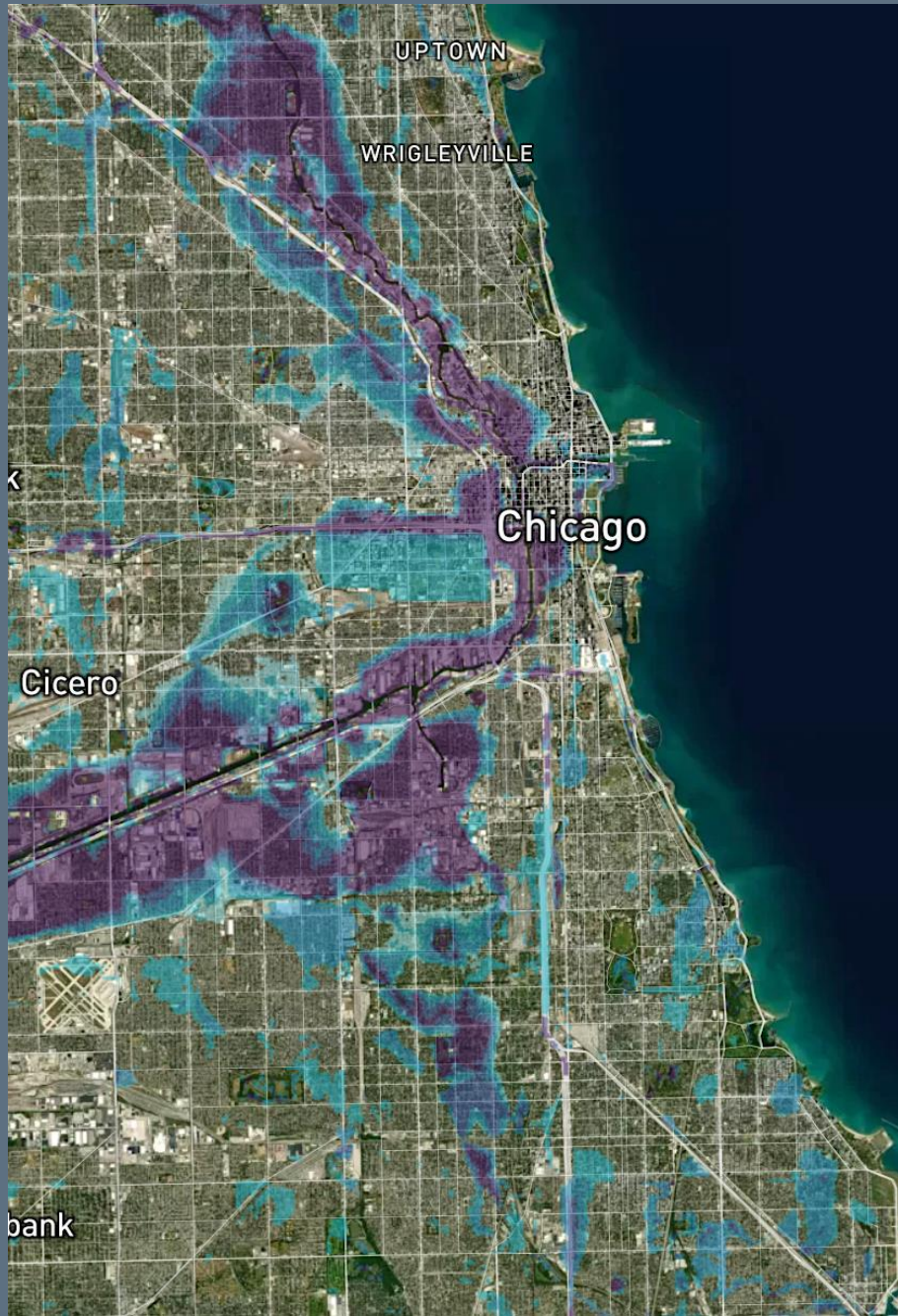
Chicago and the region need to step up fast to reduce flooding and protect inhabitants and businesses.

By CST Editorial Board | Jul 5, 2020, 7:00am CDT

Chicagoans swamp city with flood complaints after spring's record rain

A Sun-Times analysis shows the city received more than 27,000 reports to 311 about flood-related problems in the past two years.

The Irony of the Missing Sense of Urgency

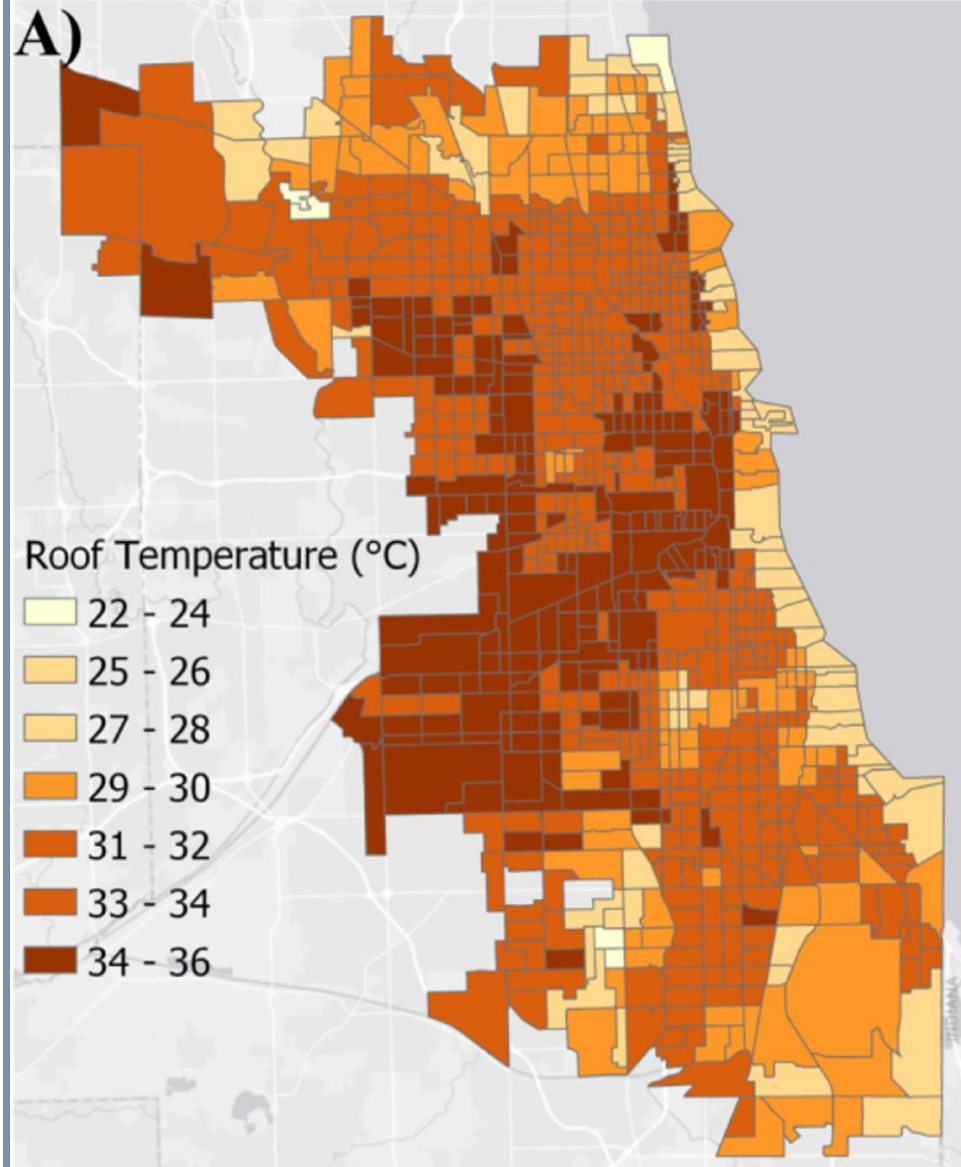
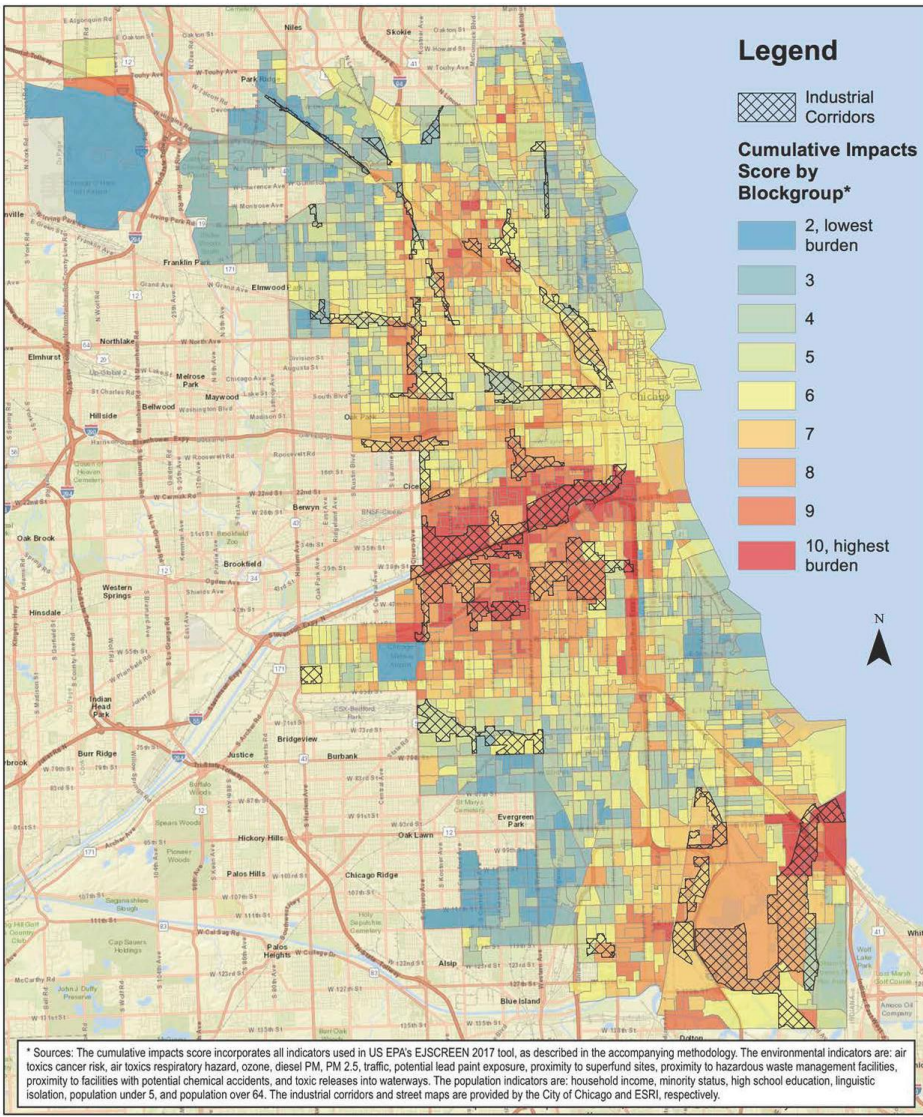


The 'Historic' Visits Chicago



Environmental Burden in Chicago

Cumulative Burden of Environmental Exposures & Population Vulnerability in Chicago



How did urban areas get the resiliency aspect in planning so wrong in the past two centuries?



LA SALLE ST.



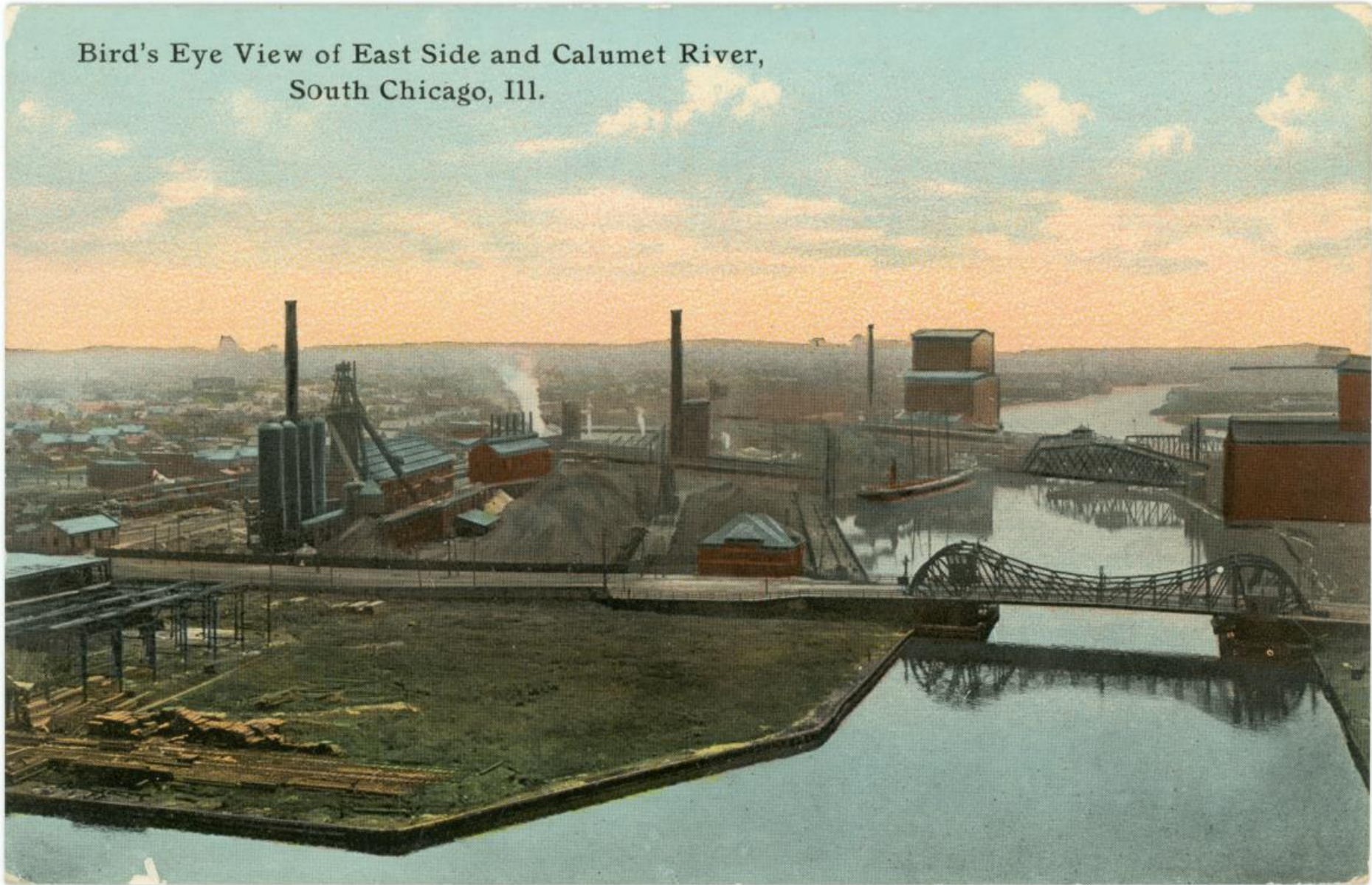
MONROE DRIVE

COLUMBUS

ST.

Nature's Metropolis and the Industrial Natures

Bird's Eye View of East Side and Calumet River,
South Chicago, Ill.



Tokyo Ochanomizu Crossing, 1910

The Ochanomizu Bridge Tokyo, Japan.

(京東) 橋水の茶御



Tokyo Ochanomizu Crossing Today



Tokyo Nihonbashi Bridge Kilometer Zero Junction



Tokyo Nihonbashi Bridge Kilometer Zero Junction



Nature's Unboxing Tendencies through Environmental Catastrophes

Pakistan Floods, 2022



**A New Set of Conditions and
Problems**
Old Sets of Regulations and Toolkits



NATIONAL

Groups fight for recognition of legal rights for natural entities

July 5, 2023 · 5:05 AM ET

Heard on [Morning Edition](#)

By [Juanpablo Ramirez-Franco](#)



3-Minute Listen

+ PLAYLIST



There's a growing movement that calls for granting legal rights to natural entities such as the Mississippi River. *(Story first aired on All Things Considered on July 4, 2023.)*

Rights of Nature is on the Rise

ECONOMY FEATURED

Rights of Nature, Self-Owning Land, and Other Hacks on Western Law

By David Bollier, originally published by David Bollier blog

July 10, 2023



“What we did was borrow the rights of nature language and embed it into the **land easement**, so that a landowner could not just restrict use of the property, but actually recognize rights for ecosystems within that conservation easement,”

Env Lawyer Thomas Linzey

CLIMATE

Montana youth climate ruling could set precedent for future climate litigation

August 23, 2023 · 6:00 AM ET

By [Nathan Rott](#), [Seyma Bayram](#)

Rikki Held, 22, arrives for the United States' first youth climate-change trial at Montana's 1st Judicial District Court in Helena, Mont., on June 12. She was one of 16 young plaintiffs, ages 5 to 22, who sued the state for promoting fossil fuel energy policies that they say violate their constitutional right to a "clean and healthful environment."

William Campbell/Getty Images

Turning up the creativity to turn down the heat

EUROPE BATTLING THE HEAT - With climate change pushing global temperatures ever higher, innovative and sustainable solutions are needed to cool our cities.

FEATURES 14 AUGUST 2023



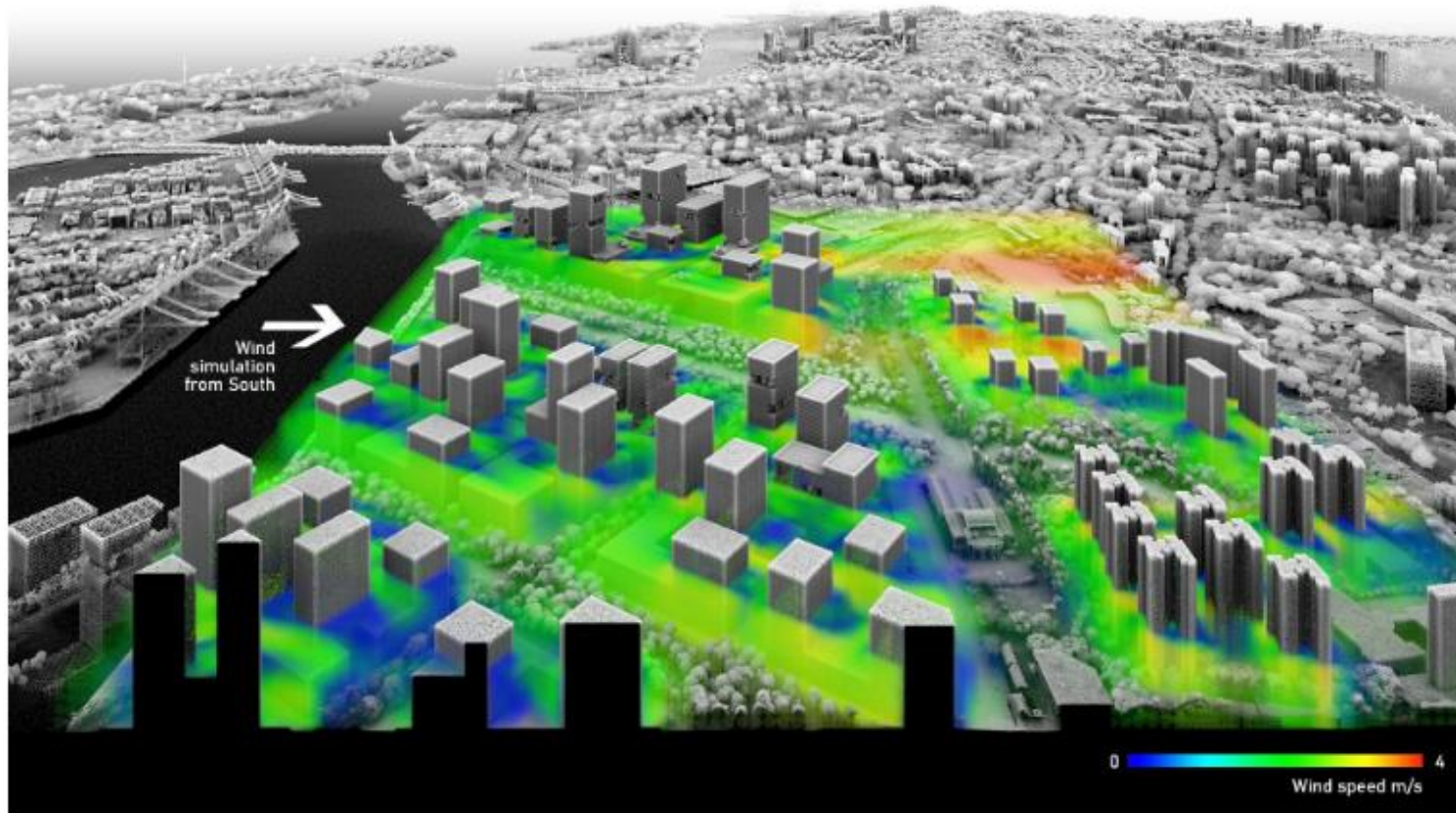
August 15, 2022 · Wind Garden, Climate Change

Wind garden designed to reduce Madrid's sizzling temperatures



Form and Performance in Shaping Urban Landscapes

Dr. Philipp RW Urech | Chair of Prof. Christophe Girot, Landscape Architecture | Future Cities Laboratory



The existing cargo port in Tanjong Pagar will make way for a new expansion of the central business district of Singapore. The Rail Corridor with its terminus station could be integrated into the strategic use of the open spaces to dissipate the urban heat island effect. At street level, the airflow improves thermal comfort. Designs by ETH and SUTD students

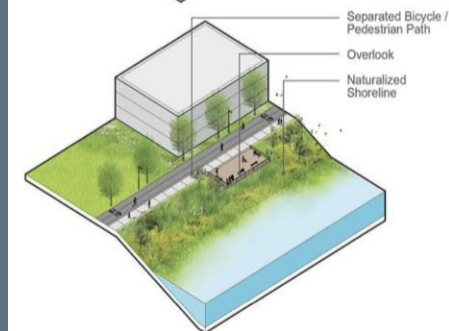
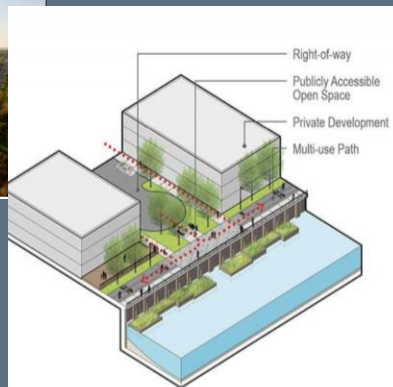


How do we Innovate and Break Down Silos?

- Flexible adaptation
- Risk/Uncertainty admission in design and spatial planning
- Co-existence with natural systems (beyond the sustainability paradigm)
- Possibilities of Repurposing



2022 CAP CHICAGO CLIMATE ACTION PLAN



CHICAGO RIVER DESIGN GUIDELINES

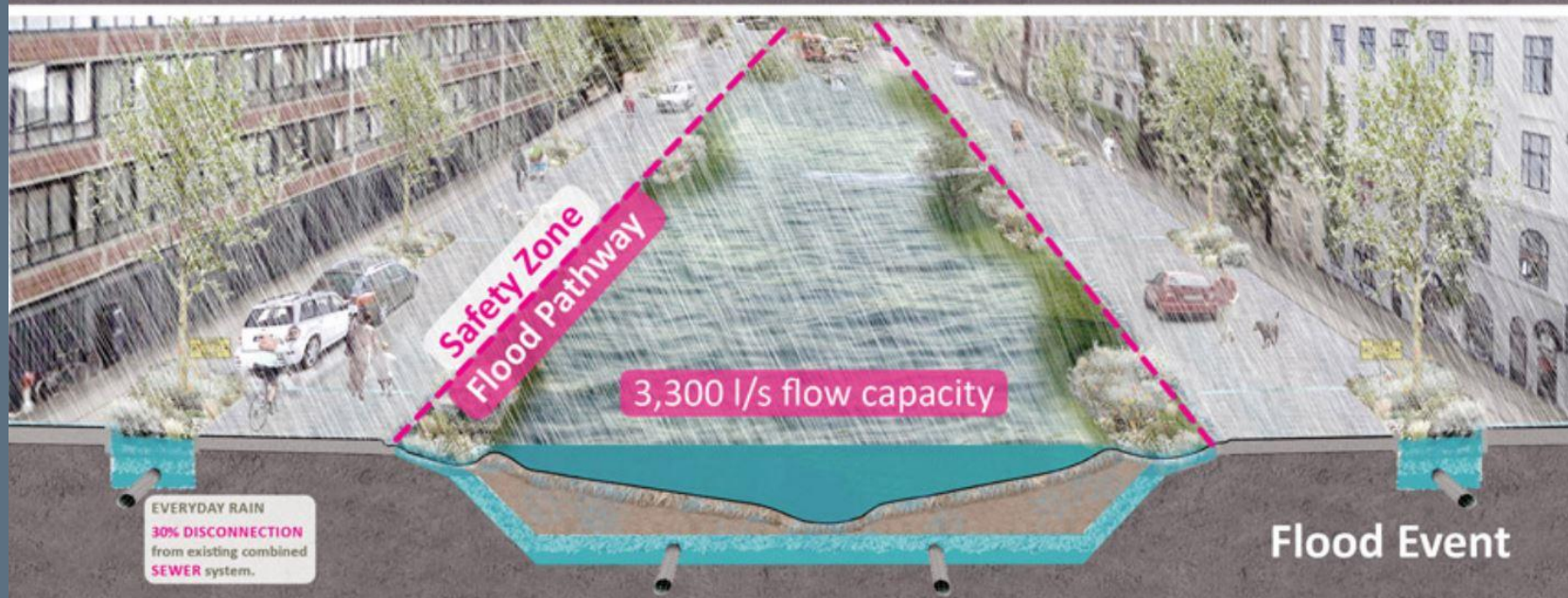
City of Chicago • Department of Planning & Development • January 21, 2019

Chicago River Edge Design Guidelines

Chicago River Edge Design Guidelines

A New Planning Tool is Introduced

Copenhagen Cloudburst Plan



A New Paradigm: A Corridor vs. a System?

Chicago's legacy

Waterways



Image courtesy : Chicago History Museum



Image courtesy : Chicago History Museum



Image courtesy : Chicago History Museum



Image courtesy : University of Illinois

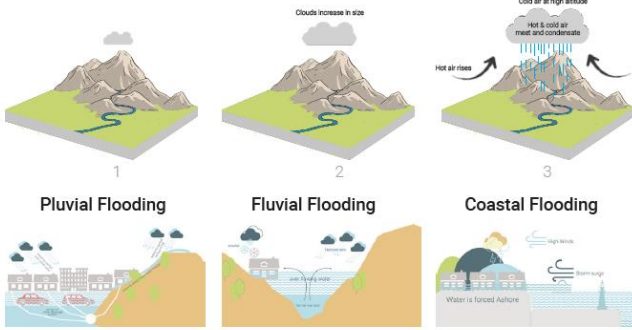
From our design studio work with grad students at UIC CUPPA. 2023

Infrastructural Repurposing Strategies for Downtown Chicago (2021-2022)

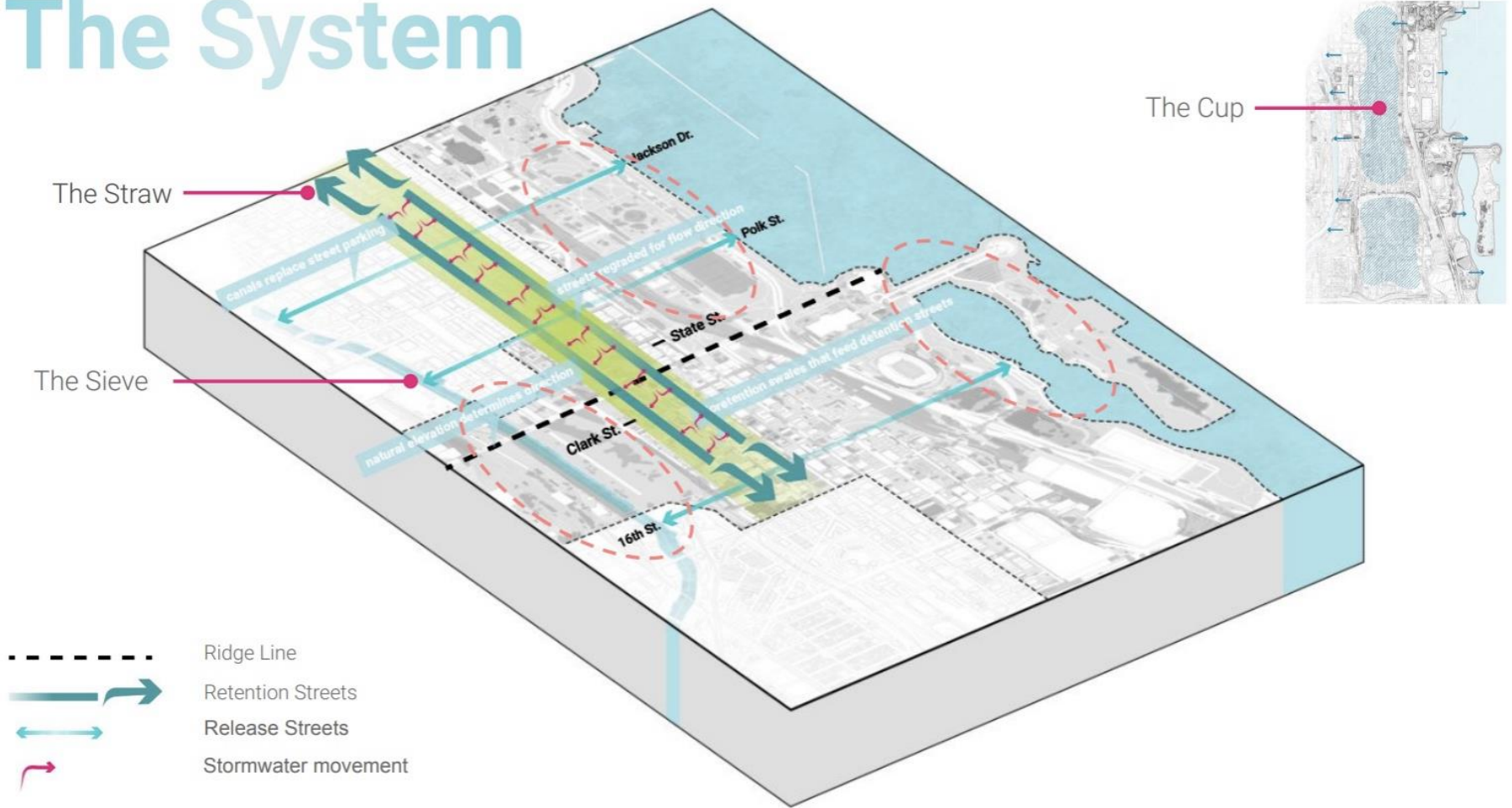
The Cloudburst Studio Team (UIC)

Cloudburst flooding is caused by sudden, substantial rainfall events that can overwhelm stormwater systems and lead to excess water pooling across a city.

Partially due to Chicago's unique location on the precipice of two major environmental systems - the Mississippi River watershed and the Great Lakes basin - adverse and extreme precipitation events are expected to increase in coming years. Acknowledging this now is crucial to address concerns for the years ahead. Cook County's Tunnel and Reservoir Plan (TARP) was commissioned in the 1970's at a time when climate change's impact on weather was not fully understood. Creating additional stormwater capacity through sustainable solutions is critical to contend with coming storms.

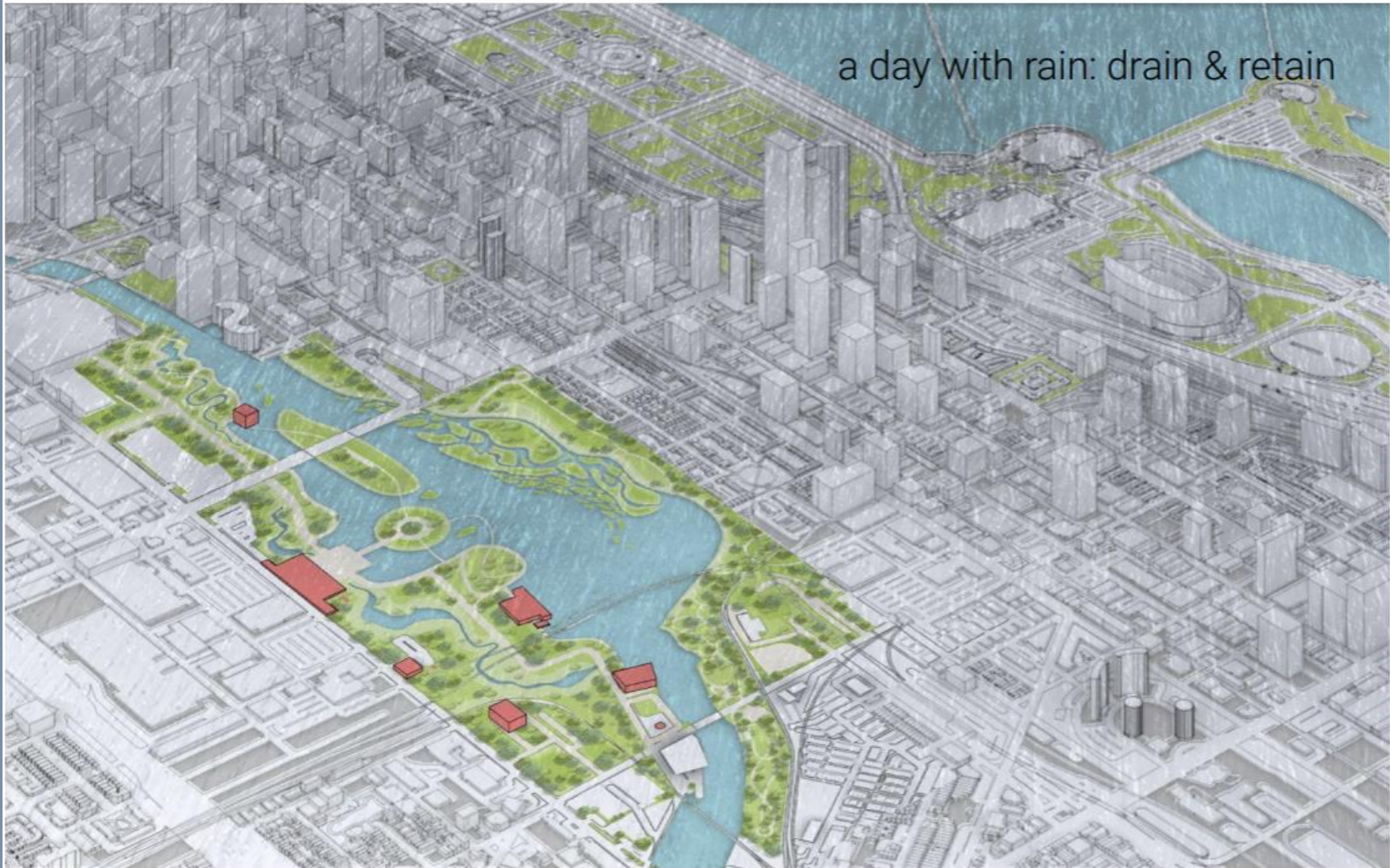


The System



From our design studio work with grad students at UIC CUPPA. 2022

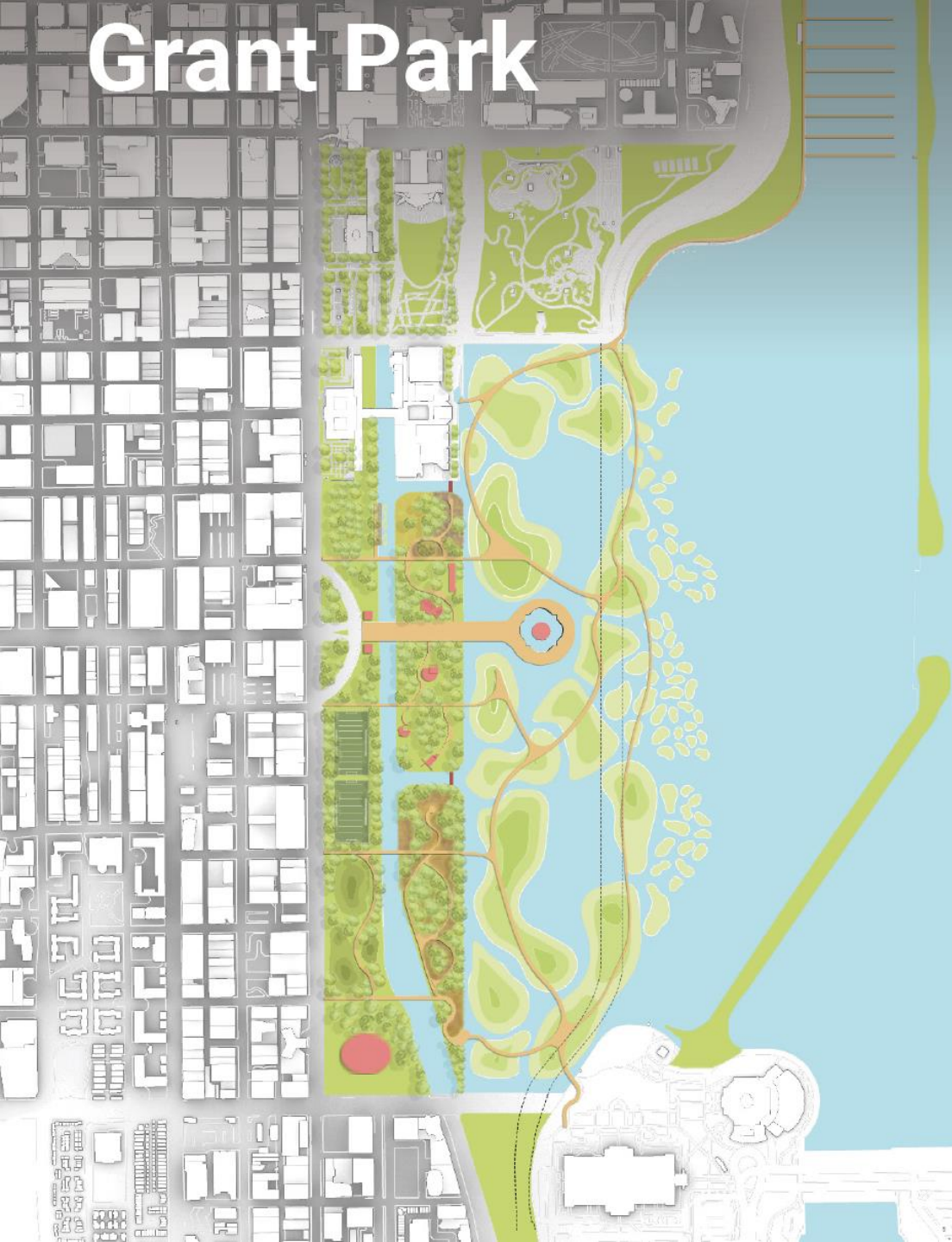
Rail Yards & The 78



From our design studio work with grad students at UIC CUPPA. 2022

Grant Park

Easements and Right of Ways

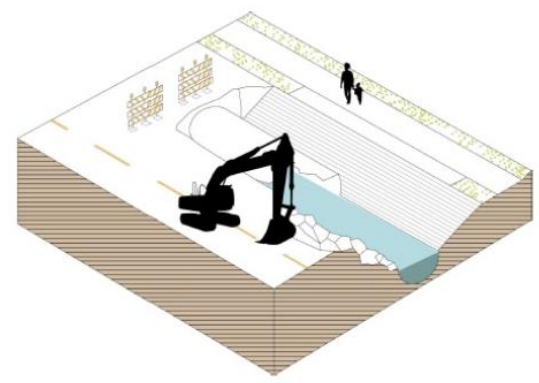


From our design studio work with
grad students at UIC CUPPA.
2022

If we see it as a system, how can we re-link the pieces?

Prototype or Catalyst Design for various contingencies

Toolkit



Repurposed Tunnels



Wildlife Intervention



Reimagining the River

Enabling flow and growth for the future of Chicago.

MCD DIRECTOR

Professor Sanjeev Vidyarthi

INSTRUCTORS

Dr. Sevin Yildiz

Philip Enquist

TEACHING ASSISTANT

Alexandra Pollock

STUDIO MEMBERS

Chuck Klutho

Prayag Bagde

Katanya Raby

Bridget Barnes

Aakash Basantani

Yi Zhou

Rajani Kotaru

Tia Decker

UIC

From our design studio work with grad students at UIC CUPPA. 2022

Our Design and Research work at UIC Urban Planning and Policy is a provocation to reconsider existing systems and to propose retrofits.

The Cloudburst studio of 2022 built a base knowledge of repurposing for flash floods, this studio defined new adaptation strategies for conditions of heat waves, low water levels in the river and the lake and conditions of re-greening.

These require a regional-level planning philosophy that will trickle down to local implementations in the long-term phasing.



Phasing is the Critical Tool for Adaptation

Short-Term(1-5yrs)

Medium-Term (5-10yrs)

Long-Term (inter-generational)

S

Short-Term Low Investment Projects
Can be completed in 1 to 2 years
\$0 to \$1 million (\$)



Start a driftwood art festival using driftwood found along the river's edge (\$)



Create small-scale pavilions for shade and respite (\$)



Set up outdoor science classrooms for hands-on learning (\$)



Set aside areas for campfires where people can spend the night close to the river (\$)



Create new trails connecting Mud Island into the trail network and adapt the monorail bridge as a pedestrian bridge (\$\$)



Use pop-up program of food trucks, music, and events to bring people to river (\$)



Plant trees to create softness and shade at Cobblestone Landing (\$)



Install iconic sculpture at the edge of the Bluff at Monroe to activate spaces and frame views to river (\$)



Connect corridors with gateways (\$)



Plant respite areas with shade (\$)



Build benches and seatwalks (\$)



Play music at pop-up stages (\$)

M

Medium-Term Moderate Investment Projects
Can be completed in 2 to 5 years
\$1 to \$5 million (\$\$)



Form a new trail that connects to the rest of the river trail network (\$\$)



Build a lookout tower at the confluence of the Wolf River Greenway and Greenbelt Park(\$\$)



Create a canopy walk to give people a unique way to view the park, river, and city (\$\$)



Add kayak and canoe launch on western edge of Mud Island (\$\$)



Build small-scale pavilions that frame views and can be used for many purposes (\$\$)



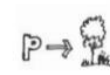
Work to bring the U of M Ecological Resource Center to a new home on Mud Island (\$\$\$)



Build permanent canopy structures to create deck at Mississippi River Park (\$\$)



Bring people to the water by building a bathhouse and deck at Mississippi River Park (\$\$)



Remove the parking garage at Monroe Avenue and convert to a green landscape (\$\$)



Give Riverside Drive a road diet from 4 lanes to 2 (\$\$)



Construct Adventure Park with playground, skate park, and rock wall (\$\$)



Build pavilion at river's edge and anchor the Civil Rights History Trail (\$\$\$)

L

Long-Term Large Investment Projects
Can be completed in 5 or more years
\$5 million and up (\$\$\$)



Build jetties that frame views of bridges, sunsets, and the river (\$\$\$)



Sculpt landforms that collect natural river sediment flows and over time create a native landscape that requires little maintenance (\$\$\$)



Form Harbor Islands that provide a place for kayakers to corral (\$\$\$)



Invite the Memphis Zoo to create a new home on Mud Island a Mississippi River Aquarium (\$\$\$)



Construct new buildings and research labs to form an Eco Hub campus (\$\$\$)



Build iconic cultural amenities on former Monroe Avenue parking garage site (\$\$\$)



Extend the Bluff Walk from Jefferson to Union (\$\$\$)



Develop key corners along Front Street and focus on extending the Beale Street corridor to the river(\$\$\$)



Construct kinetic boardwalk (\$\$\$)



Carve into the bluff to form terraced edges and overlooks (\$\$\$)



Shape the landscape to create gathering hills and picnic areas (\$\$\$)

Image: Studio Gang Memphis River Project

Community Consensus
Public Engagement
Risk planning
Override Planning

Legislative Frameworks
Work Coalitions
Tailored Visions

Socio-ecological
transformation
Co-Existence paradigm

The Missing Link: Rewilding

Rewilding needs to be considered as a serious option

REWILDING OUR CITIES COULD REDUCE IMPACTS OF EXTREME WEATHER, SAYS NEW REPORT

[READ A REWILDING SUCCESS STORY](#)

[SUPPORT OUR CONSERVATION WORK](#)

WRITTEN BY



ZSL →
Zoological Society of
London

22 September 2022

A landmark report by ZSL shows how increased urban rewilding efforts could boost wildlife and buffer city dwellers from the worst impacts of climate change.

"Wildlife species, throughout their interaction with the environment, are the missing link between biodiversity and climate.

This interaction means rewilding can be among the best nature-based climate solutions available to humankind."

Studio Process



Studio Framework

The Spring 2023 Override Studio is a provocation to reconsider existing systems.

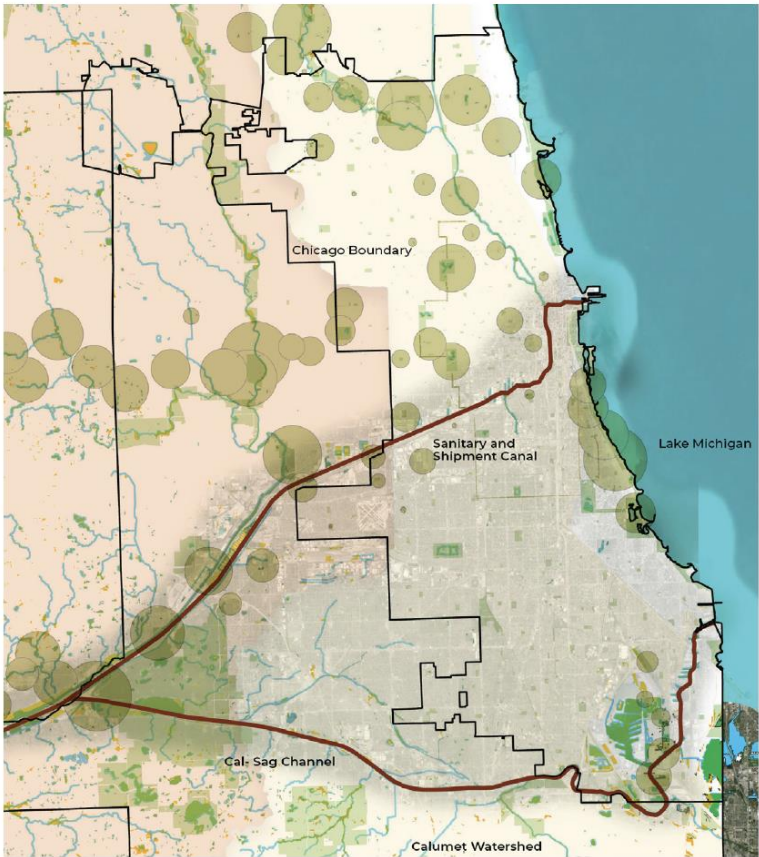
- **Open Space Networks of Chicagoland** A network of different type of reserve zones and programmed parks propose a new version of a nature's Nolli map of built up areas proposing a new string of override zones and gradients. *(Regional Scale)*
- **Green Roof Master Plan** The studio will develop strategies for proactive green roof master planning. Repurposed structures, due to high post-covid vacancies and the typologies of the past open new avenues for rooftop catchment areas and canopy planning. *(City-wide scale)*
- **Cloudburst Streets** Building off last years cloudburst studio, students will activate cloudburst prototypes and integrate street overrides. *(Downtown scale)*
- **Override Conjunctions** Chicagoland is a complex system of underground and above ground. Underground tunnels that are not used, the dense high-rise blocks that stand out as islands, open park spaces and edge typologies such as vast parking garages are accumulated layers of past planning + design practices. The studio aims to map out these relationships to explore new typological arrangements for override conjunctions. Students will identify a series of encounter corridors. *(City-wide scale)*
- **Catalysts** These are structures that will function to reorganize overrides in conjunctions. They can take on the form of a dual-function infrastructure, a highly flexible cluster of built structures, or a time and modality-based land uses. *(Special Zone scale)*



Chicago's New Nature

An Ecological Override Plan

Ecological Overlaps



Green network

Geo-morphology



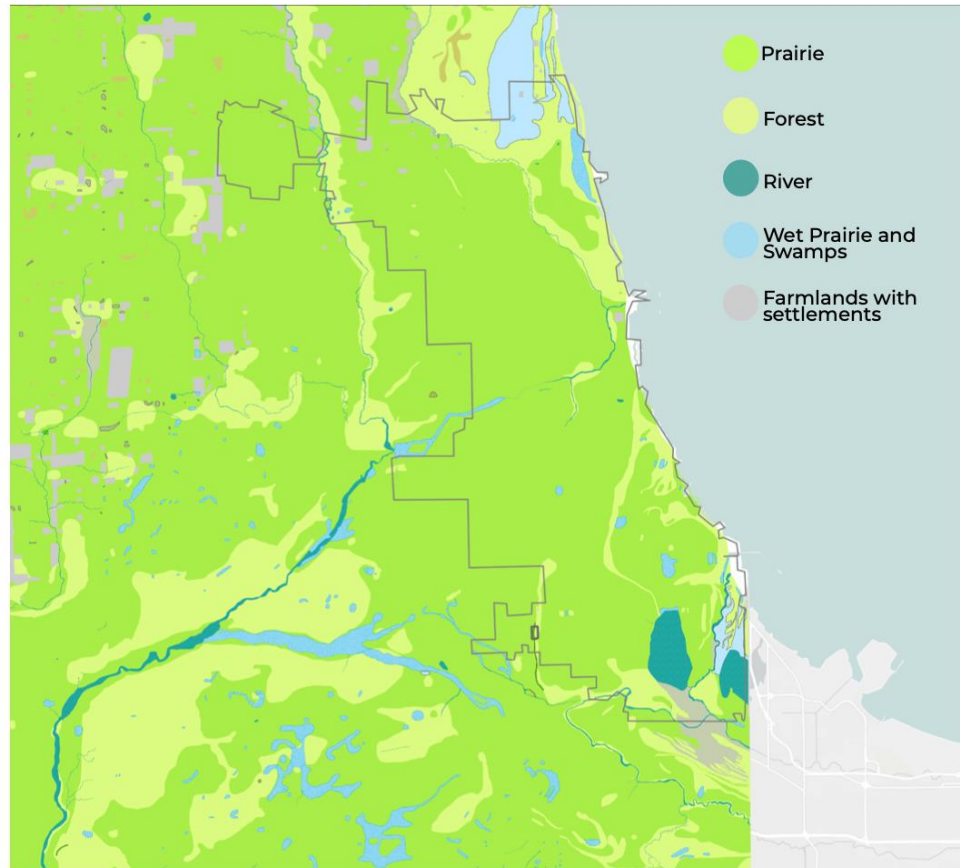
Elevation
1227 ft 1148 ft 984 ft 820 ft 656 ft 492 ft 420 ft

From our design studio work with grad students at UIC CUPPA, 2023

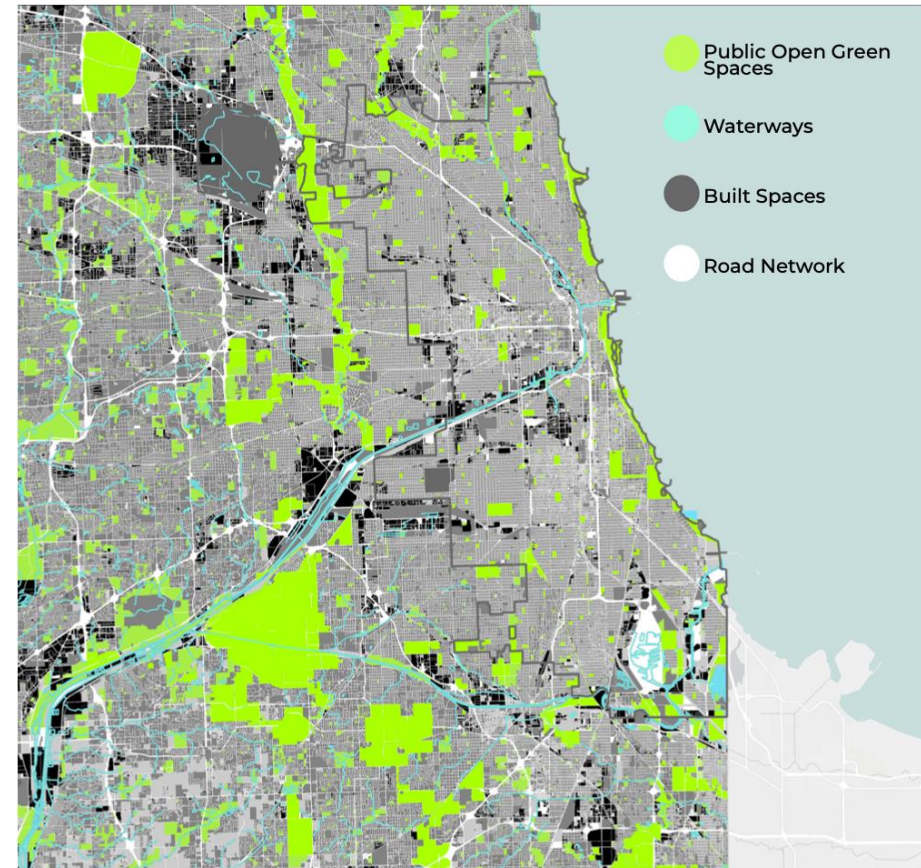
Chicago now

Urban sprawl

1800's Chicago

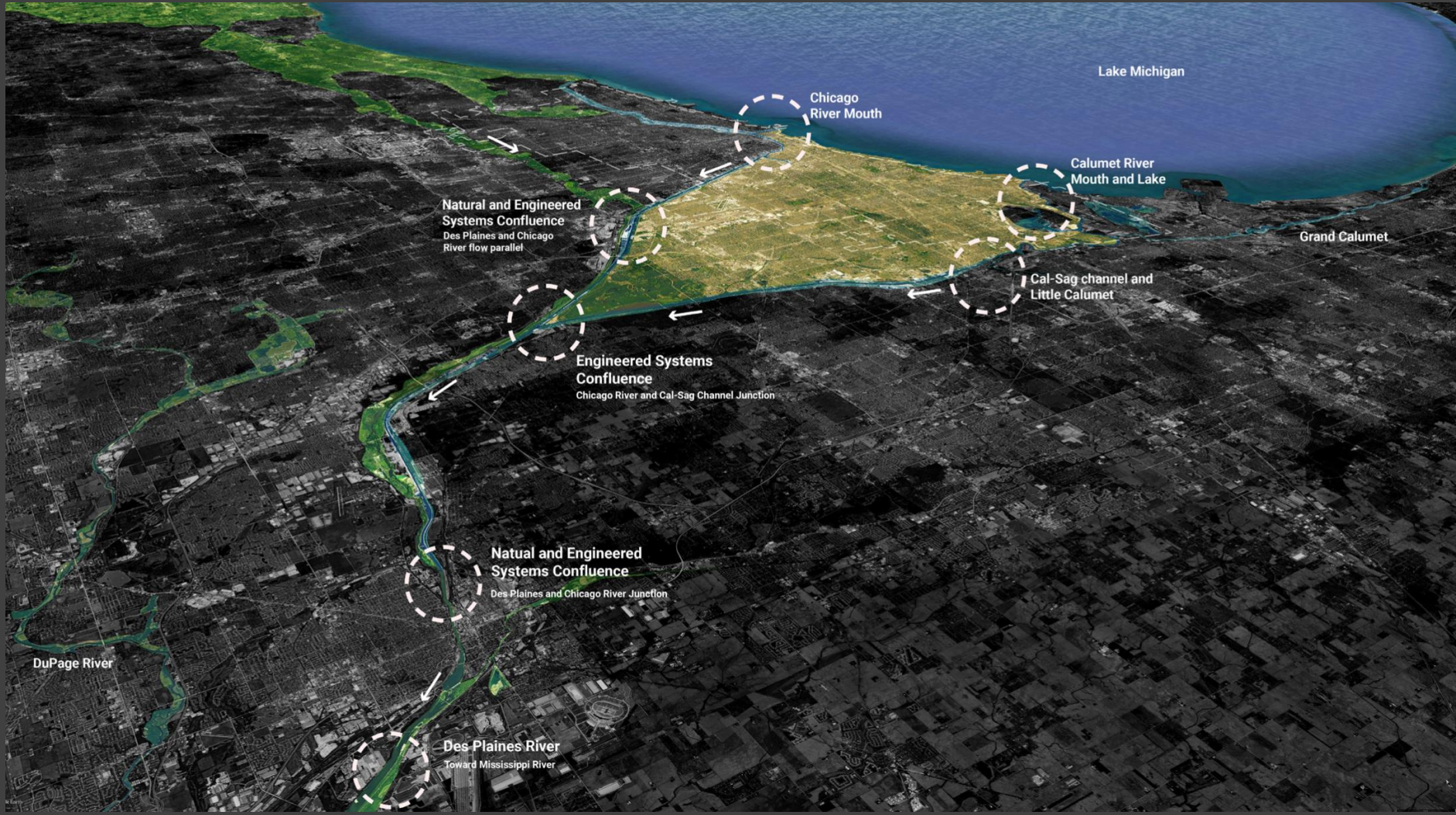


2018 Chicago



From our design studio work with grad students at UIC CUPPA, 2023

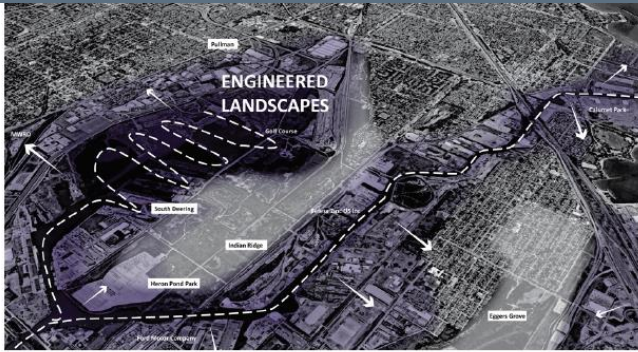
We Defined this Area as “the C”



From our design studio work with grad students at UIC CUPPA, 2023

Engineered Landscapes

Where natural systems have been engineered, resulting in changed functionality.



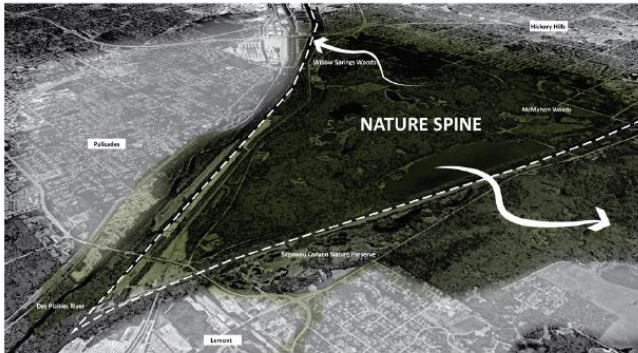
Grid Disruptors

Natural and built systems that disrupt the city grid.



Natural Spine

Protected ecological hotspots that should be retained to connect to other natural areas and integrate into the built environment.



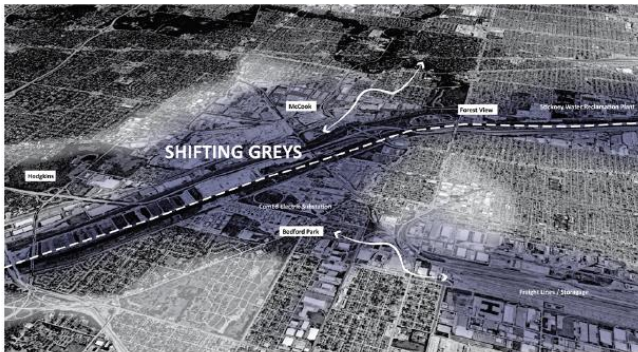
Eco-Remnants

Natural areas that are cut off from their ecological point of origin but retain similar characteristics.



Shifting Greys

Utility and industrial corridors shaping nearby land uses.



Dynamo-scapes

Built and natural systems in proximity to each other which influence one another and trigger a ripple effect.



Working towards a Rotterdam Roof Landscape

Programme for Multifunctional Roofs



 Gemeente Rotterdam

New Tools, New Laws in the City

From fragmented autonomy to
shared long-term goal

Property rights, progressive
taxation, climate land trusts



Rooftop Catalogue

Green Roof Network

Our comprehensive ecological green roof plan prioritizes the identification of suitable areas for green roof installations, such as industrial zones, institutional buildings, and commercial buildings. To ensure maximum coverage, we set targets for the percentage of eligible roofs that should be covered by green roofs while considering their potential benefits, including reducing the urban heat island effect, improving air quality, and managing stormwater runoff.

To encourage the adoption of green roofs, we propose financial incentives for property owners, such as grants or tax incentives. In effect, the green roof plan will contribute significantly to Chicago's sustainable and resilient future.

Proposed Typologies

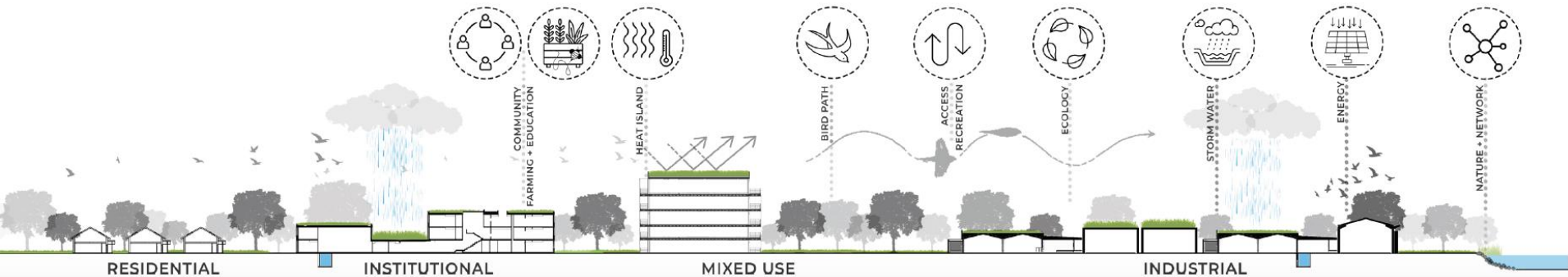


Urban Farming

Recreational

Sponge

Bio-diversity



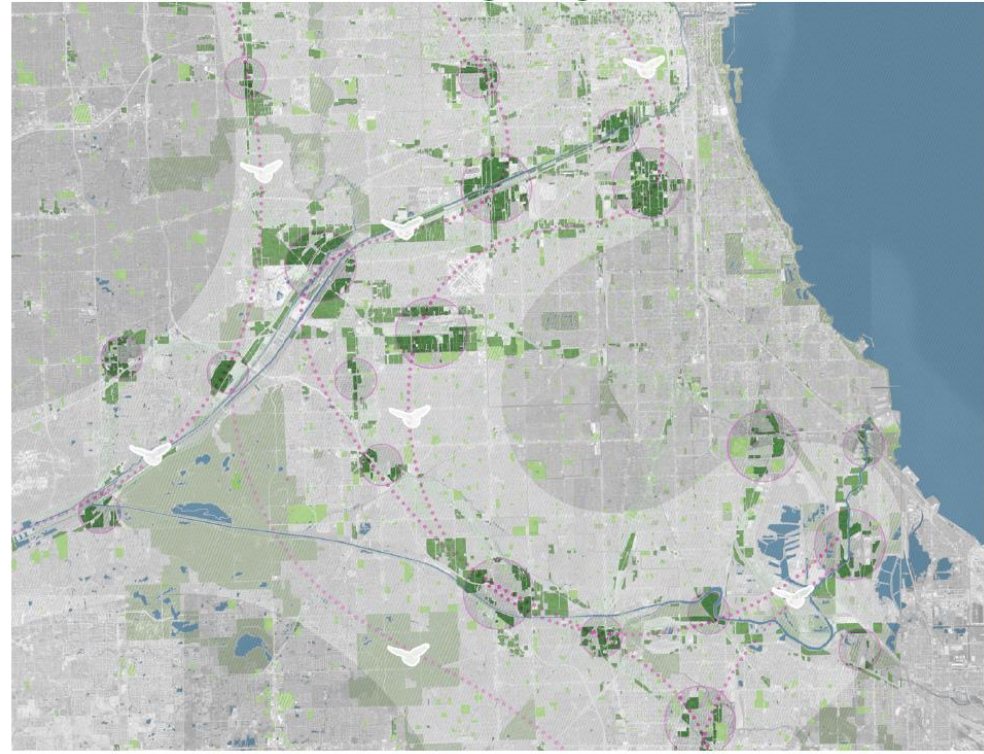
RESIDENTIAL

INSTITUTIONAL

MIXED USE

INDUSTRIAL

The Green Roof Flyway



● Green Roof - Industrial ● Green Roof - Civic ● Existing Green Network ● Existing Blue Network ● Habitat / Rest + Nest ●●● Bird Flight Path

Green Roof Network



**Railway
Recreational
Setback**

**Green Roof
Recreation**

**Green Roof
Farming**

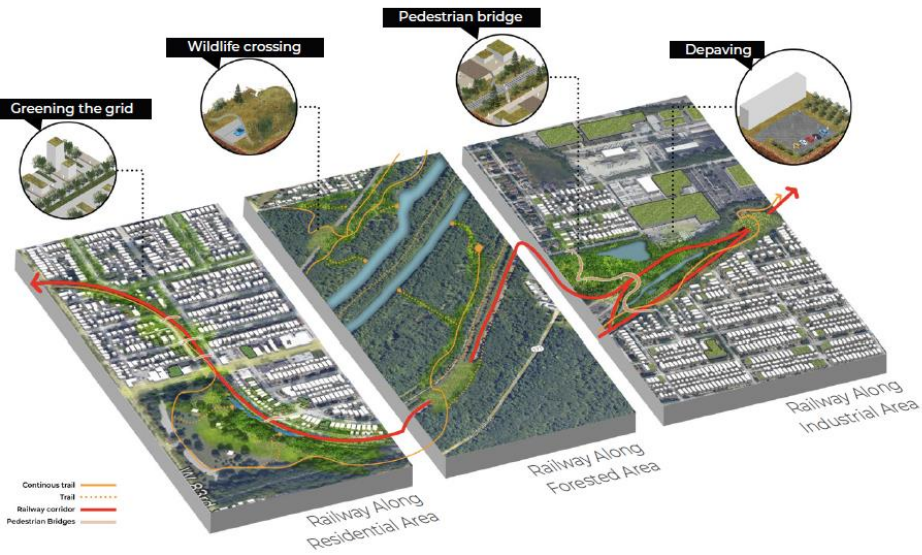
**Climate Zoning
Heat Island Effect**

**Green
Sponge**

Reimagined Infrastructure Connections

A broken network of natural systems scatter the landscape across our study area. Many were manipulated and engineered to facilitate Chicago's industrial legacy. Infrastructure, particularly railways, defined the form of the urban landscape in this region, and today dissect and fragment both open space and neighborhoods. But the interlaced systems of railways and overhead power lines present an opportunity to restitch this area back together.

We propose a reimagination of underutilized space within the right of ways of both these systems, creating a 35 foot wide linear green buffer adjacent to tracks and underneath power lines, that can be rewilded to create corridors of connectivity for wildlife and humans alike.



Existing Conditions

1,805 miles of railroad converge within the study area

4,750 acres of underutilized rail right of way

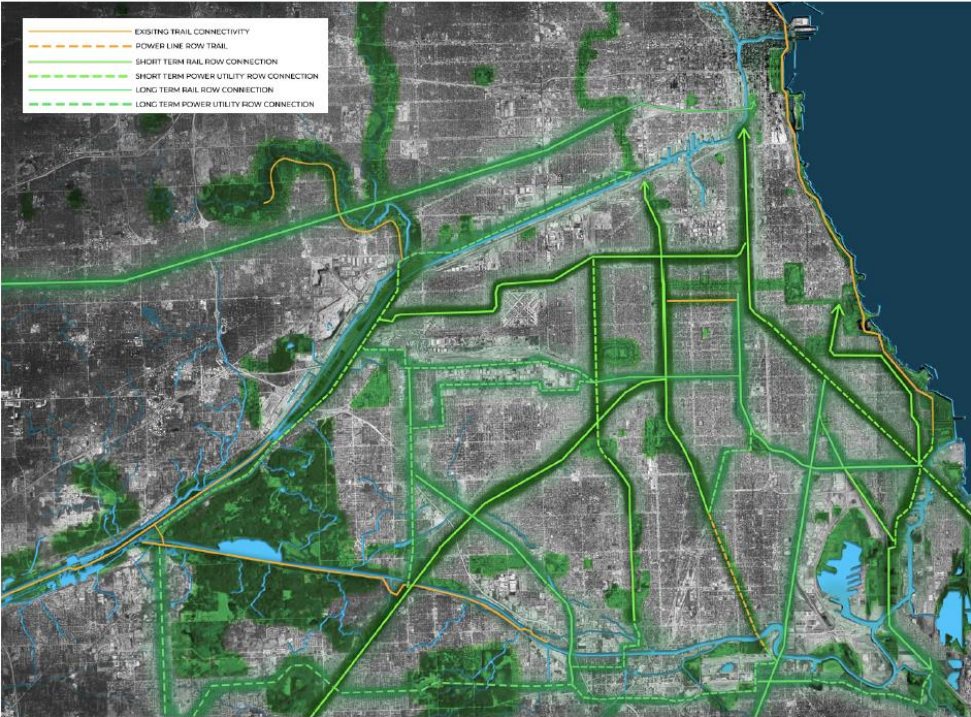
755,540 people live within a quarter mile of railway tracks

1,824 acres of underutilized utility corridor right of way

Proposed Conditions

8836 acres reutilized rail and utility corridor right of ways to create rewilded corridors for wildlife and public realm for humans

Proposed Typologies



Reimagined Infrastructure Connections



Railways Ecological Setback



Magic Train



Greening the Grid



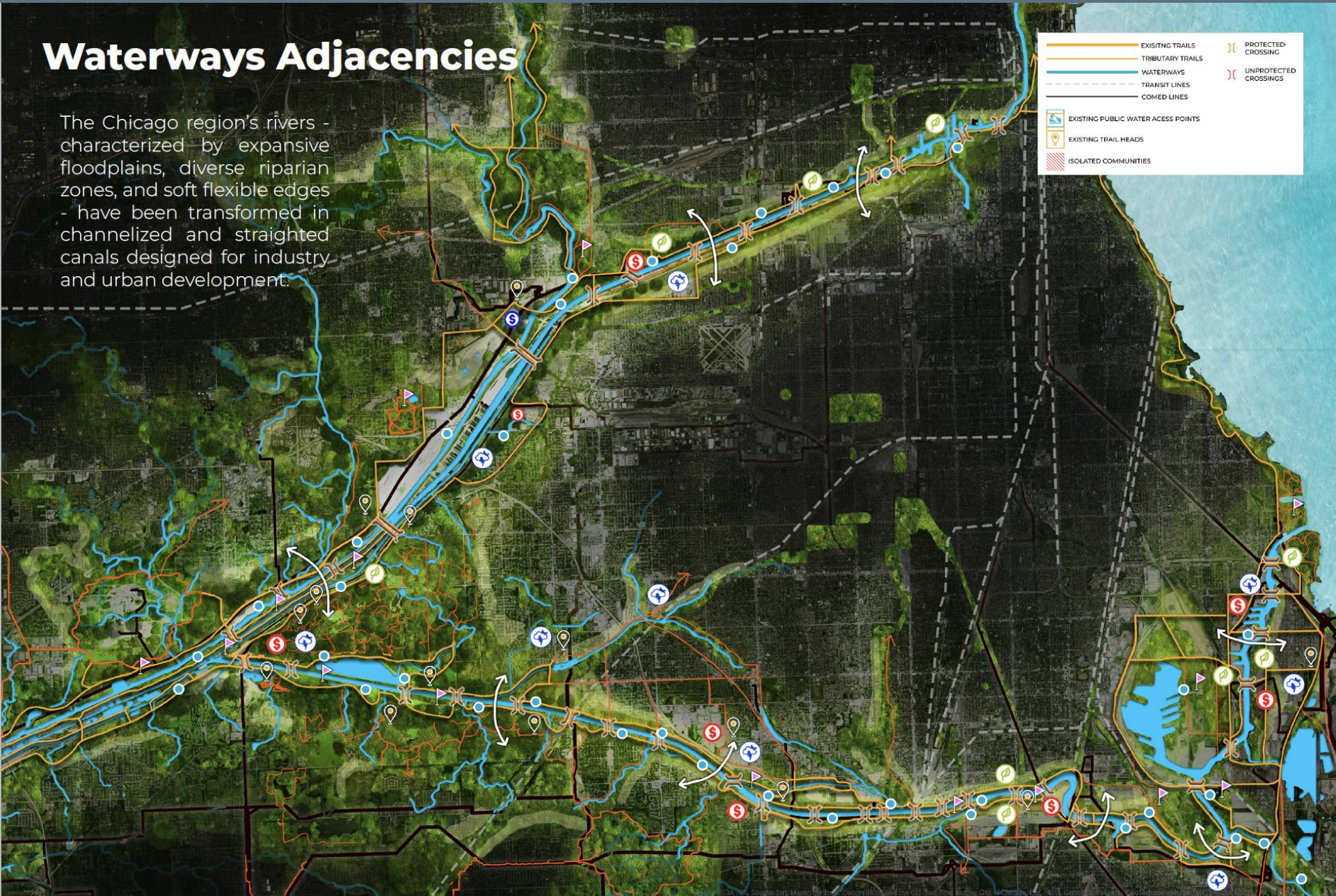
Biodiversity Greenroof



Recreational Greenroof

Waterways Adjacencies

The Chicago region's rivers - characterized by expansive floodplains, diverse riparian zones, and soft flexible edges - have been transformed in channelized and straightened canals designed for industry and urban development.



Prototyping Solutions

Due to the unique placetypes created by the intersecting and overlapping geographies of built and natural systems, the Chicago region is well positioned for innovative and resilient climate adaptation.

This adaptation aims to restitch fragmented ecosystems, create breathing room for vital habitat, and provide natural safe havens for wildlife. These solutions will reconnect isolated communities and allow for access to the vibrant nature that calls the region home.

Solutions come in the form of prototypes that can be applied based on site context, needs, challenges, and opportunities.



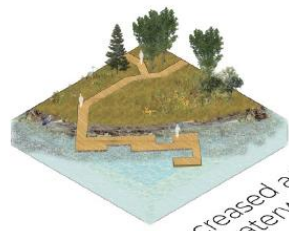
Connect



Repurpose



Wildlife crossing - bridge



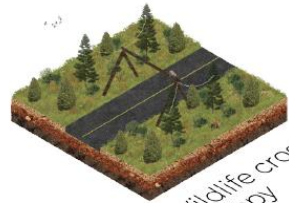
Increased access to waterways



Wildlife crossing - tunnel



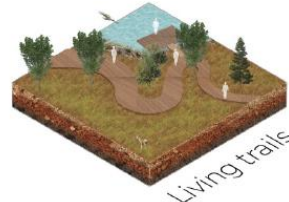
Pedestrian bridge - railway



Wildlife crossing - canopy

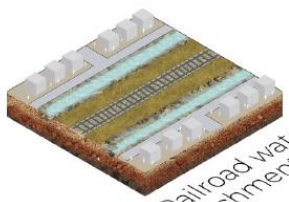


Pedestrian bridge - river

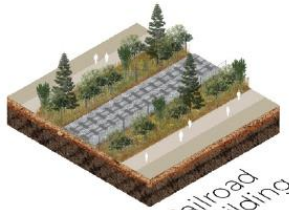


Living trails

Adapt



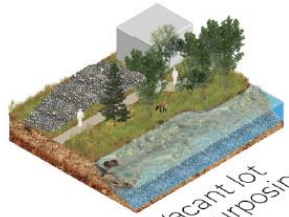
Railroad water catchment



Railroad rewilding



Blue-green industry



Vacant lot repurposing - river



Magic train



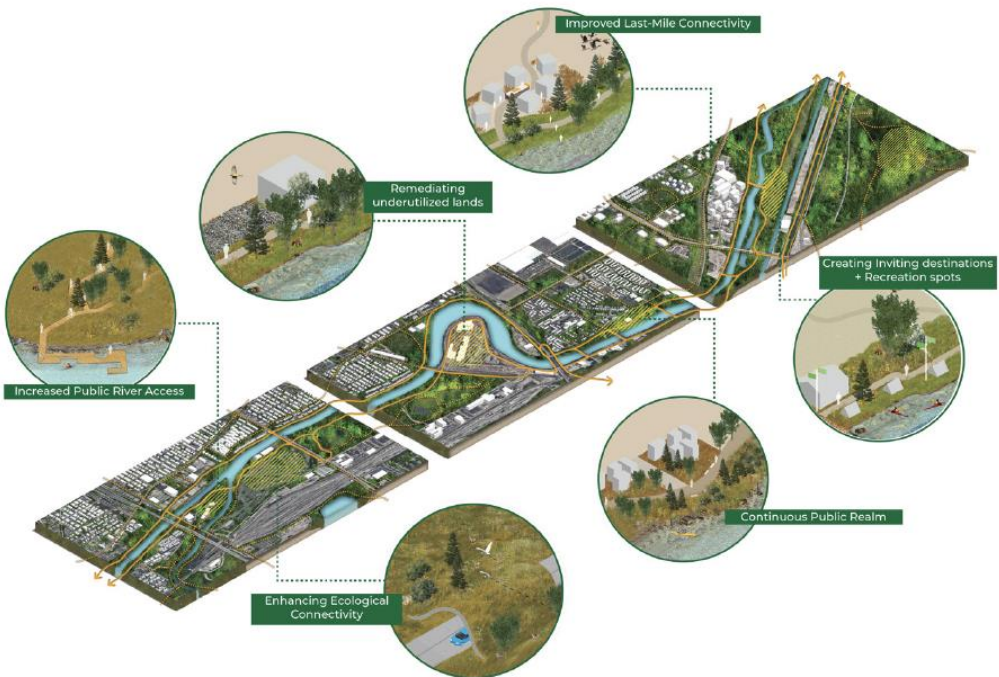
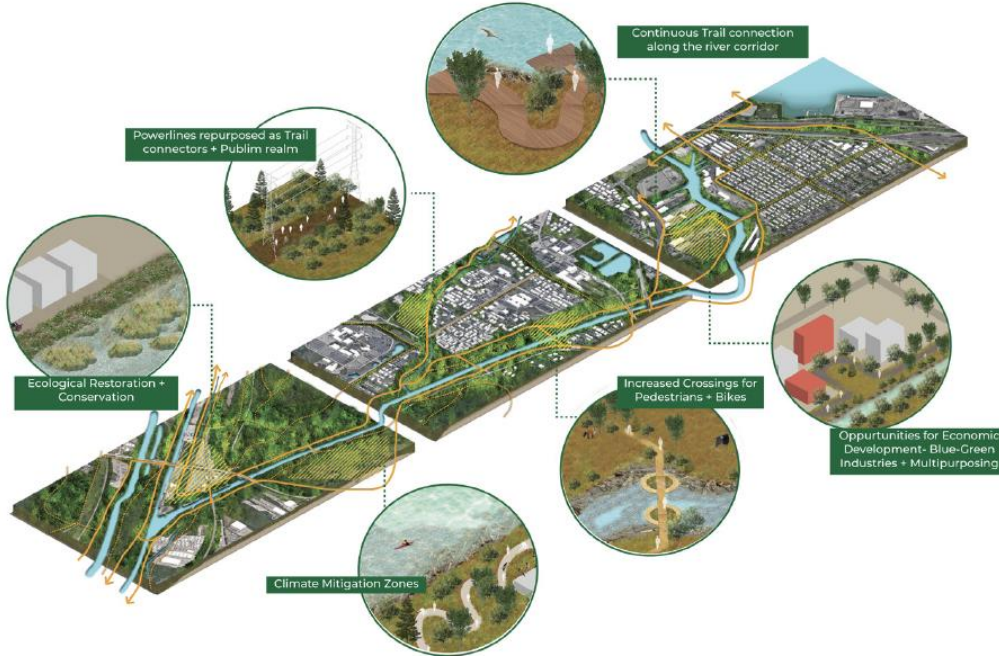
Vacant lot repurposing - community



Eco-recreation area



Climate zoning - urban heat island effect



From our design studio work with grad students at UIC CUPPA, 2023

Policy Overrides

Policy	Short Term	Long Term	Outcomes
Enact Climate Setbacks	Add public access easements	Public buyout of land along waterways as industries phase out. Land is placed in a land bank for community ownership	Natural systems will be restored and ecosystems can flourish independently. Local communities can enjoy access to the river and deepen their understanding and appreciation of nature.
Repurpose Underutilized Land	Create accessible pathways for community control over redevelopment with a focus on environmental programming like phytoremediation, pocket parks, and community gardens	Implement anti-gentrification measures in the form of property tax and demolition freezes along with community land trusts as stewards of public lands	Increased open space, improved stormwater management
Regional green roof network	Develop green roofs on civic buildings and include an ecologist to review and consult on the construction on green roofs in an effort to find best practices.	Offer tax incentives to existing industrial and private businesses who develop green roofs. Require new developments to add a green roof feature.	Reduce the heat island effect, improve air quality and enhance biodiversity

Image courtesy : Terry Evans



1.28 million

people living in the 'C'
impacted by *Chicago's*
New Nature

14,000+ acres

of new green space
across the Green Roof
Network

12,500+ acres

of remediated and
rewilded land

2000 miles

of newly connected
ecological corridors

A vision for a resilient &

vibrant Chicago region

Honoring the legacies of natural abundance & stewardship in our region

The Master of City Design Spring Studio is a multidisciplinary group of 14 Master of City Design and Master of Urban Planning and Policy students. Titled *Override: Rights of Nature and Designing for Climate Adaptation in Chicago*, the Spring 2023 Studio is a provocation to reconsider existing systems and to propose retrofits. The ecological planning and design process included research on the global rights of nature movement, analysis of existing conditions, site visits, visioning, strategizing, and prototyping.

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