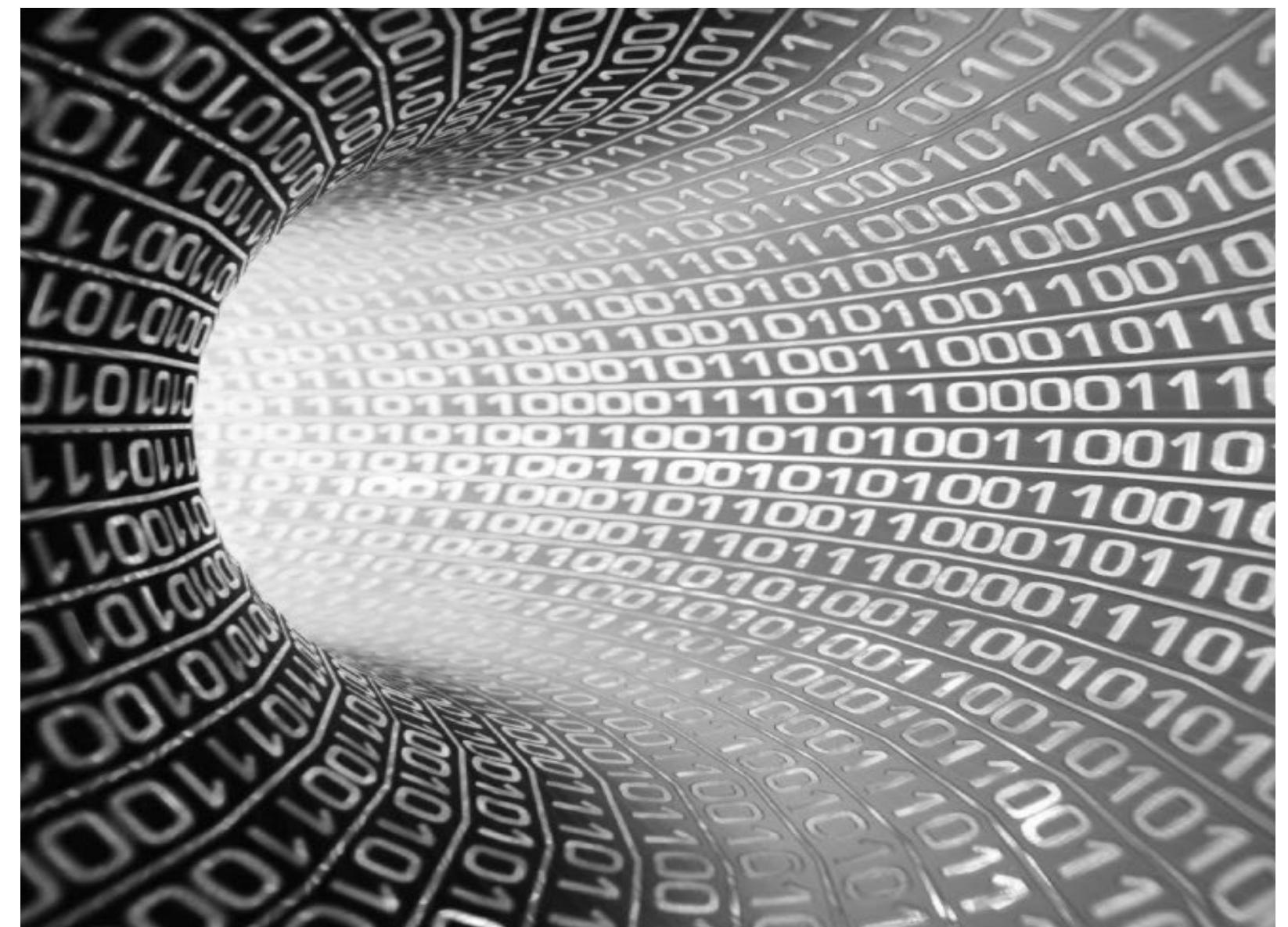


NEW CHAUTAUQUA INSTITUTE IN CHICAGO

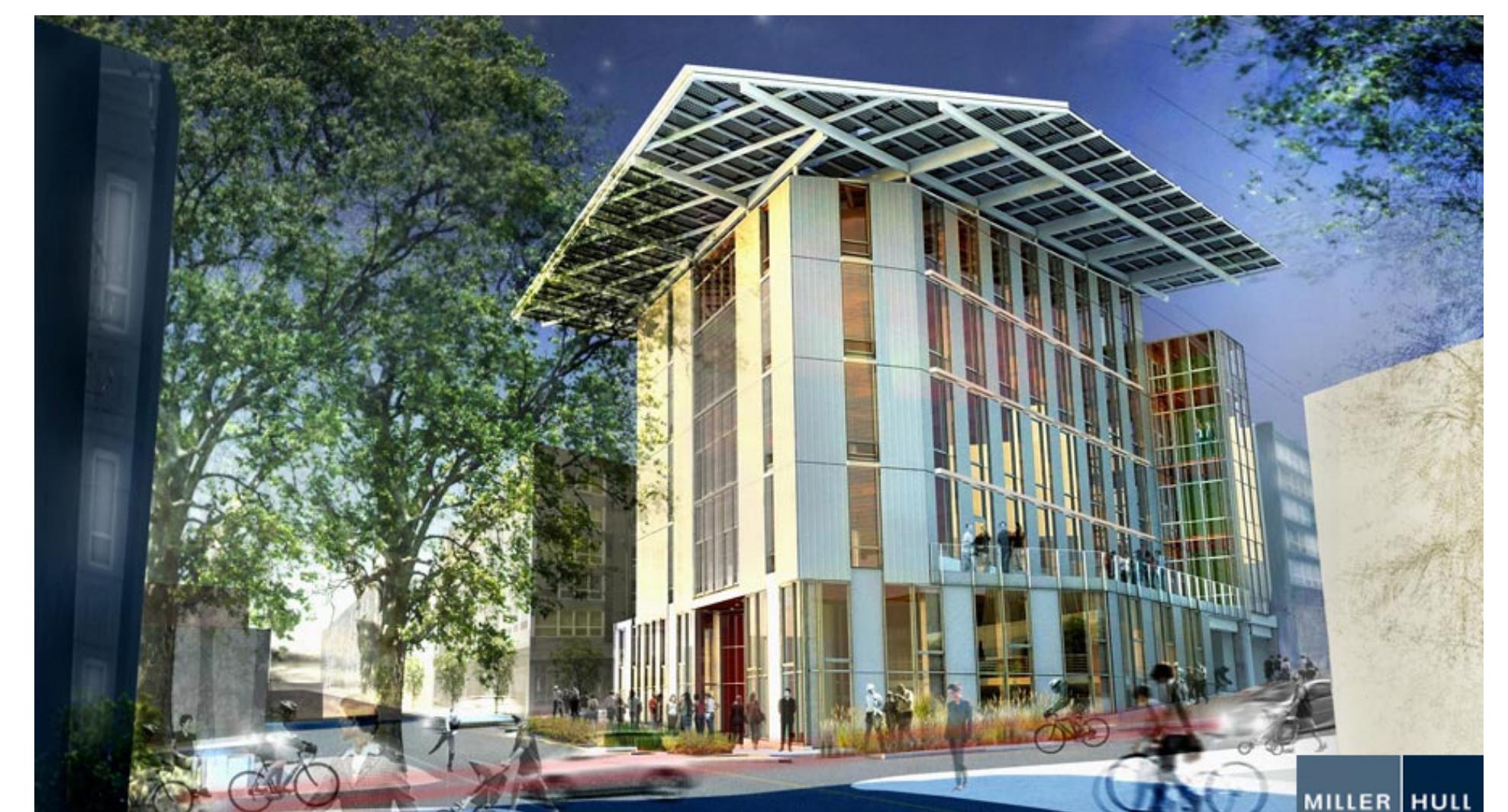
Environmental Design Studio
Shengliang Rong
Yuntian Wan



Chautauqua (in the late 19th and early 20th centuries)
“the most American thing in America”



Internet and Technology
(mid-1990s and from the late 1990s and early 20th centuries)



New Chautauqua (21st century)
Sustainable Development

Concept
New Chautauqua

Livable Communities

This theme addresses diverse factors that together shape quality of life in terms of "livability" – what attracts people to a particular community. The following are the four sections of recommended actions:

- Achieve Greater Livability through Land Use and Planning
- Manager and Conserve Water and Energy Resources
- Expand and Improve Parks and Open Space
- Promote Sustainable Local Food

Human Capital

This theme addresses factors that determine whether our region's economy will thrive due the availability of skilled workers and a climate in which commercial creativity can flourish. This chapter includes two areas of recommended actions:

- Improve Education and Workforce Development
- Support Economic Innovation

Efficient Governance

This theme addresses the need for increased effectiveness of governments in the region and beyond, which is important to meet residents' needs regarding accountability and transparency. The chapter on Efficient Governance includes three sections of recommended actions:

- Reform State and Local Tax Policy
- Improve Access to Information
- Pursue Coordinated Investments

Regional Mobility

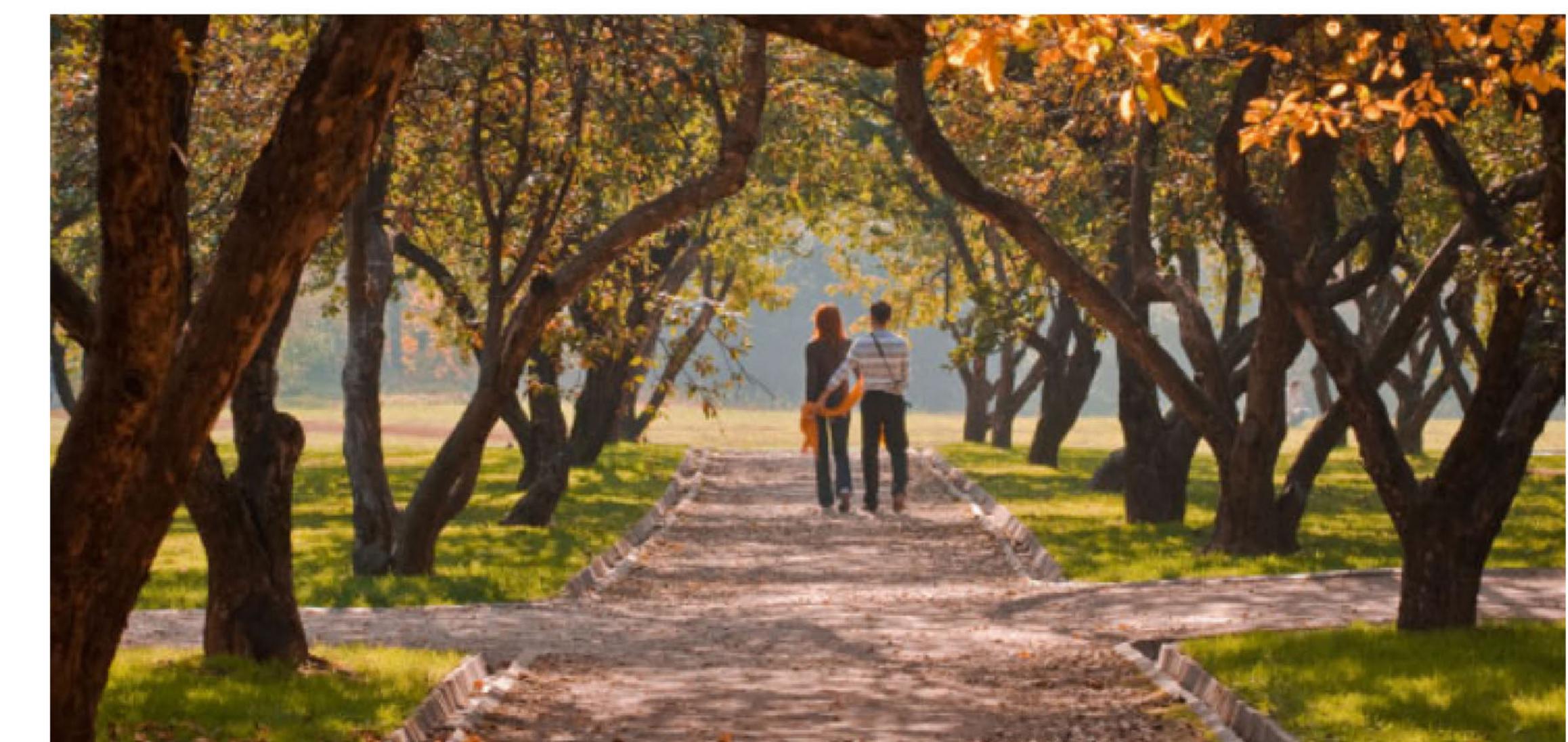
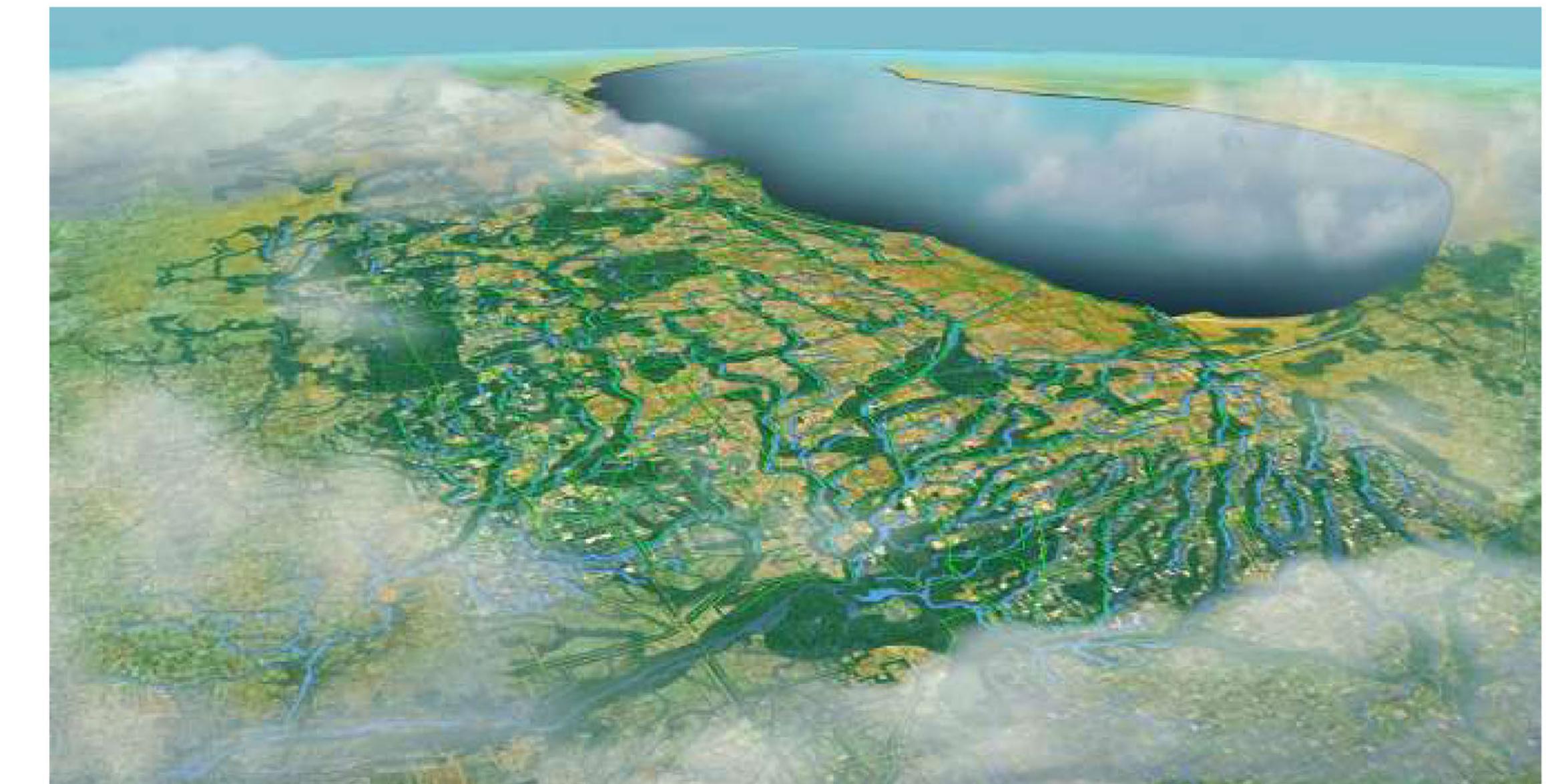
This theme addresses the vitality of our region's transportation system, which is crucial for economic prosperity and overall quality of life. The chapter on Regional Mobility includes the following sections of recommended actions: (This chapter also includes descriptions of major capital projects that have been carefully selected to help achieve the GO TO 2040 Regional Vision.)

- Invest Strategically in Transportation
- Increase Commitment to Public Transit
- Create a More Efficient Freight Network



Chicago Towards 2040:

- +Smart Growth
- +Sustainable Growth
- +Green Chicago



Conservation open space :

250,000 ACRES

TODAY

400,000 ACRES

GO TO 2040

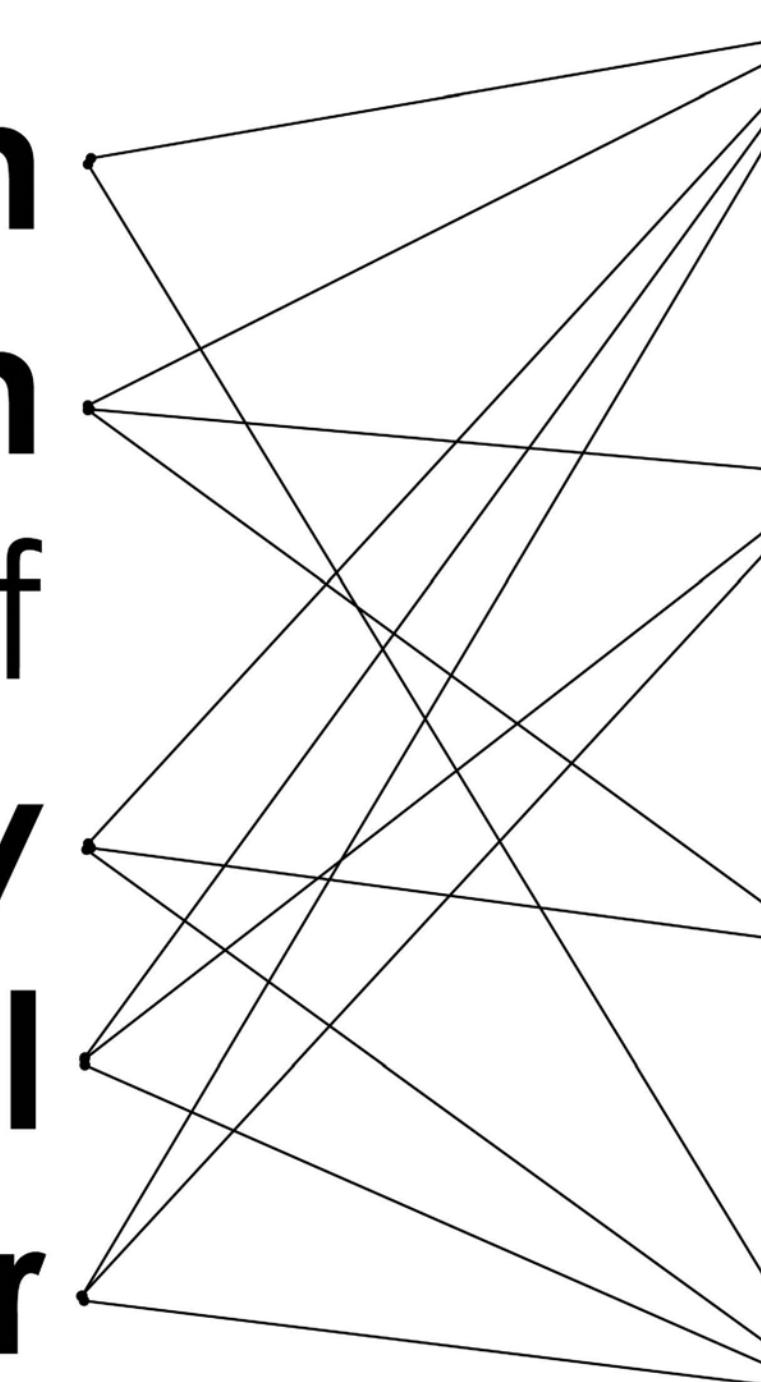
Missions of New Chautauqua

*City towards sustainable
bring knowledge to many places
Urban Habitant*

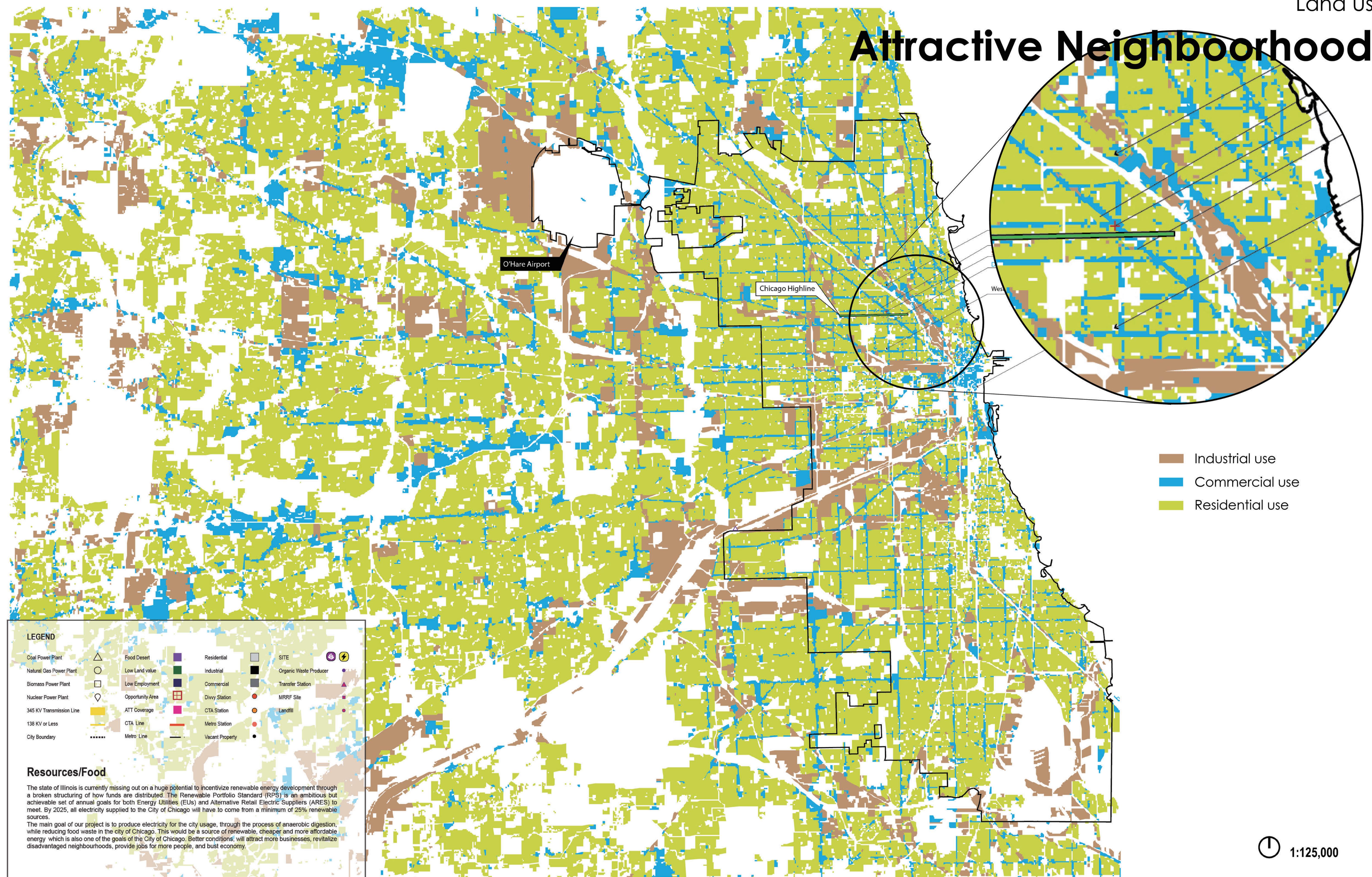
Missions of Chicago

*Sustainable City
attract people in city
repopulate urban area*

- +Outreach
- +Education
- +Mixing typologies of
 - +University
 - +Conference Hotel
 - +Business Incubator



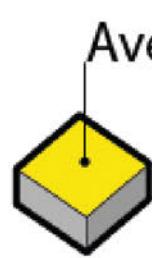
Good Mobility Connectivity
Green Infrastructure
Sustainable Neighbourhood
Attractive Neighbourhood Life



Site Resources

Energy Per Capita+Population Density

West Town
 Logan Square
 Lakeview
 Lincoln Park
 Rogers Park
 West Ridge
 Uptown
 Lincoln Square
 Irving Park
 Austin
 South Shore
 Albany Park
 South Lawndale
 Portage Park
 Humboldt Park
 Chicago Lawn
 Lower West Side
 North Lawndale
 North Center
 Greater Grand Crossing
 Belmont Cragin
 Grand Boulevard
 Bridgeport
 Auburn Gresham
 East Garfield Park
 Avondale
 Edgewater
 Woodlawn
 Englewood
 South Chicago
 Near West Side
 New City
 Chatham
 Hermosa
 West Englewood
 Hyde Park
 Roseland
 Washington Park
 West Garfield Park
 Brighton Park
 Dunning
 Near North Side
 Gage Park
 Jefferson Park
 North Park
 Norwood Park
 West Pullman
 East Side
 Washington Heights
 McKinley Park
 Armour Square
 Oakland
 Kenwood
 Morgan Park
 Douglas
 Forest Glen
 Clearing
 Beverly
 Montclare
 Ashburn
 Garfield Ridge
 Avalon Park
 Mount Greenwood
 West Lawn
 Edison Park
 South Deering
 Hegewisch
 Near South Side
 Calumet Heights
 West Elsdon
 Archer Heights
 Riverdale
 Fuller Park
 Loop
 Burnside
 Pullman



Average Total Natural Gas Consumption Per Capita: 6.8326 THERMS

Legend

Area: Total Natural Gas Consumption Per Capita
 Res=Residential Com=Commercial Ind=Industry

Height: Population Density (Per KM²)

Areas Higher than Average Natural Gas Consumption Per

No. 2 LOGAN SQUARE

Electricity Consumption Per Capita: 0.500THERMS
 Res: 0.23 Com: 0.27 Ind:-
 Population Density: 8793

No. 3 LAKEVIEW

Electricity Consumption Per Capita: 0.5156THERMS
 Res: 0.16 Com: 0.36 Ind:-
 Population Density: 11536

No. 1 WEST TOWN

Electricity Consumption Per Capita: 0.3379THERMS
 Res: 0.17 Com: 0.17 Ind:-
 Population Density: 6878

No. 75 LOOP

Electricity Consumption Per Capita: 38.7414THERMS
 Res: 7.72 Com: 31.02 Ind:-
 Population Density: 7160

No. 76 BURNSIDE

Electricity Consumption Per Capita: 46.2242THERMS
 Res: 10.96 Com: 35.26 Ind:-
 Population Density: 1811

No. 77 PULLMAN

Electricity Consumption Per Capita: 52.6946THERMS
 Res: 5.26 Com: 47.44 Ind:-
 Population Density: 582

Site Resources

Energy Per Capita+Population Density

Sustainable Neighborhood

West Town
 Logan Square
 Lakeview
 Lincoln Park
 Rogers Park
 West Ridge
 Uptown
 Lincoln Square
 Irving Park
 Austin
 South Shore
 Albany Park
 South Lawndale
 Portage Park
 Humboldt Park
 Chicago Lawn
 Lower West Side
 North Lawndale
 North Center
 Greater Grand Crossing
 Belmont Cragin
 Grand Boulevard
 Bridgeport
 Auburn Gresham
 East Garfield Park
 Avondale
 Edgewater
 Woodlawn
 Englewood
 South Chicago
 Near West Side
 New City
 Chatham
 Hermosa
 West Englewood
 Hyde Park
 Roseland
 Washington Park
 West Garfield Park
 Brighton Park
 Dunning
 Near North Side
 Gage Park
 Jefferson Park
 North Park
 Norwood Park
 West Pullman
 East Side
 Wash
 Heights
 McKinley Park
 Armour Square
 Oakland
 Kenwood
 Morgan Park
 Douglas
 Forest Glen
 Clearing
 Beverly
 Montclare
 Ashburn
 Garfield Ridge
 Avalon Park
 Mount Greenwood
 West Lawn
 Edison Park
 South Deering
 Hegewisch
 Near South Side
 Calumet Heights
 West Elsdon
 Archer Heights
 Riverdale
 Fuller Park
 Loop
 Pullman
 Burnside



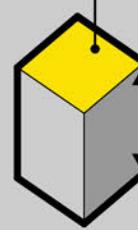
Average Total Electricity Consumption Per Capita: 7.0249 KWH

Legend

Area: Total Electricity Consumption Per Capita
 Res=Residential Com=Commercial Ind=Industry

Height: Population Density (Per KM²)

Areas Higher than Average Electricity Consumption Per Capita



No. 2 LOGAN SQUARE

Electricity Consumption Per Capita: 0.5089KWH
 Res: 0.23 Com: 0.28 Ind: -
 Population Density: 8793

No. 3 LAKE VIEW

Electricity Consumption Per Capita: 0.5161KWH
 Res: 0.15 Com: 0.34 Ind: -
 Population Density: 11536

No. 1 WEST TOWN

Electricity Consumption Per Capita: 0.3451KWH
 Res: 0.17 Com: 0.18 Ind: -
 Population Density: 6878

No. 75 LOOP

Electricity Consumption Per Capita: 41.4255KWH
 Res: 7.72 Com: 33.71 Ind: -
 Population Density: 7160

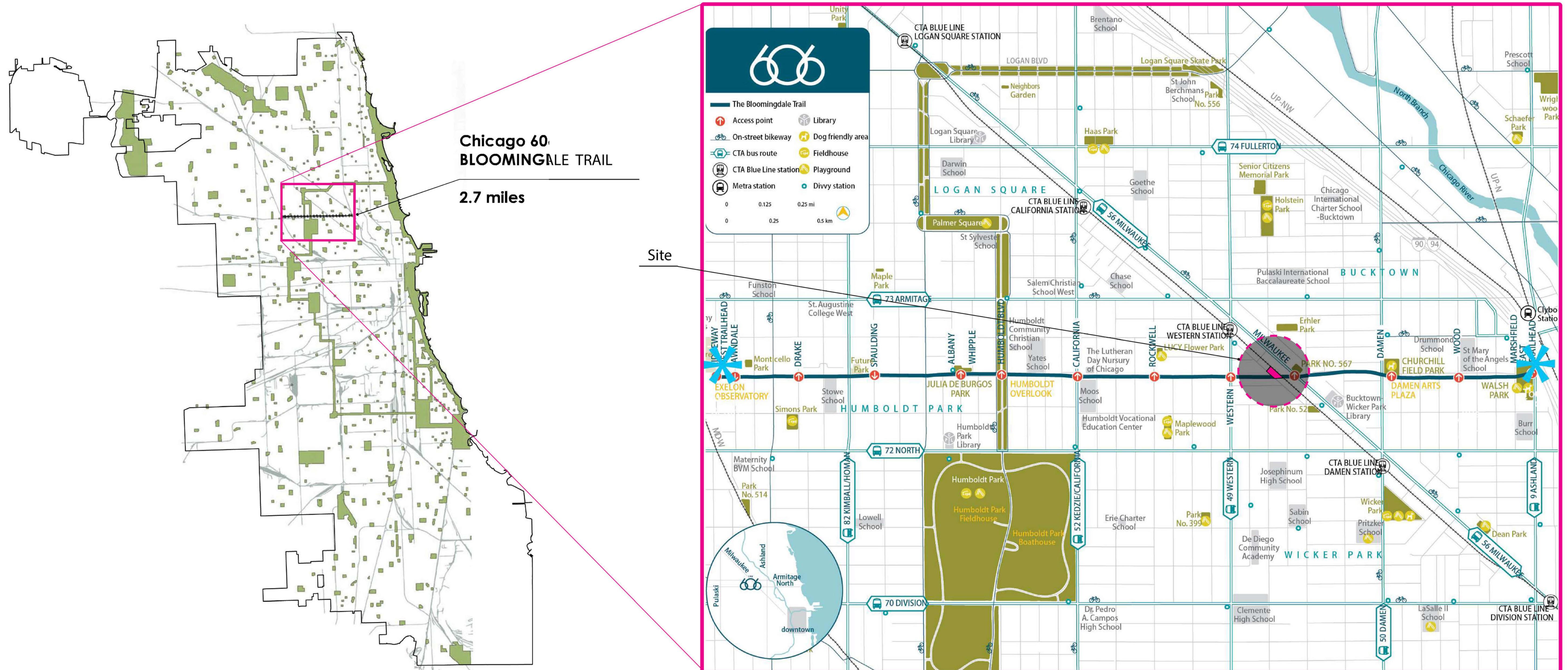
No. 77 BURNSIDE

Electricity Consumption Per Capita: 69.8250KWH
 Res: 11.23 Com: 58.60 Ind: -
 Population Density: 1811

No. 76 PULLMAN

Electricity Consumption Per Capita: 43.0555KWH
 Res: 5.24 Com: 37.80 Ind: -
 Population Density: 582

Attractive Neighbourhood



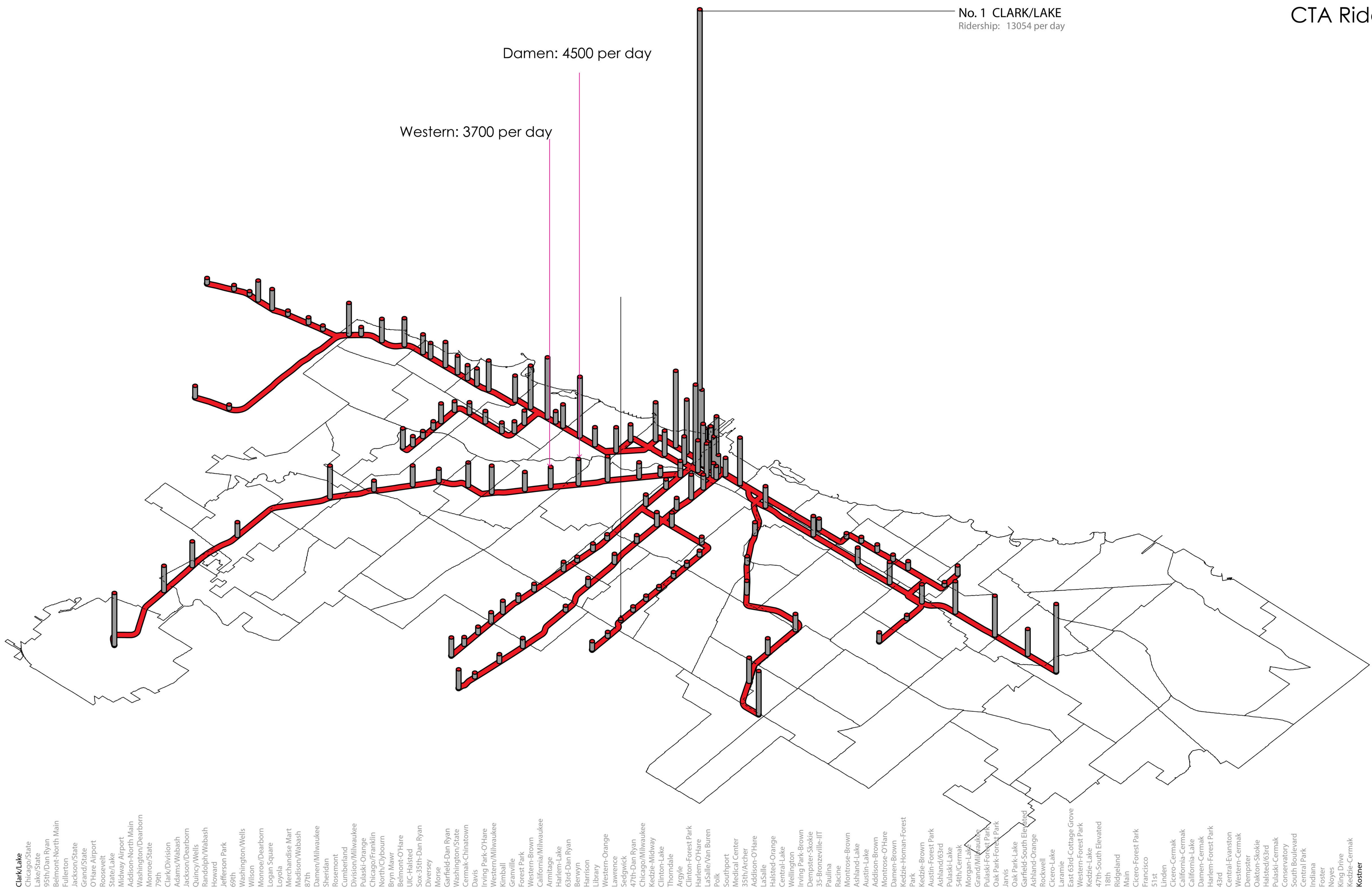
Chicago 606

- A linear park , to fix shortage of public space and bridging the neighborhoods
- Stretching across 4 Chicago neighborhoods,
- Former Bloomingdale Line , acting as a barrier, separating neighbors on opposite sides of the street.
- Transformed into multi-purpose bicycle trail from defunct urban mega-structure
- Called “The 606” in reference to the first three digits of the city’s postal code

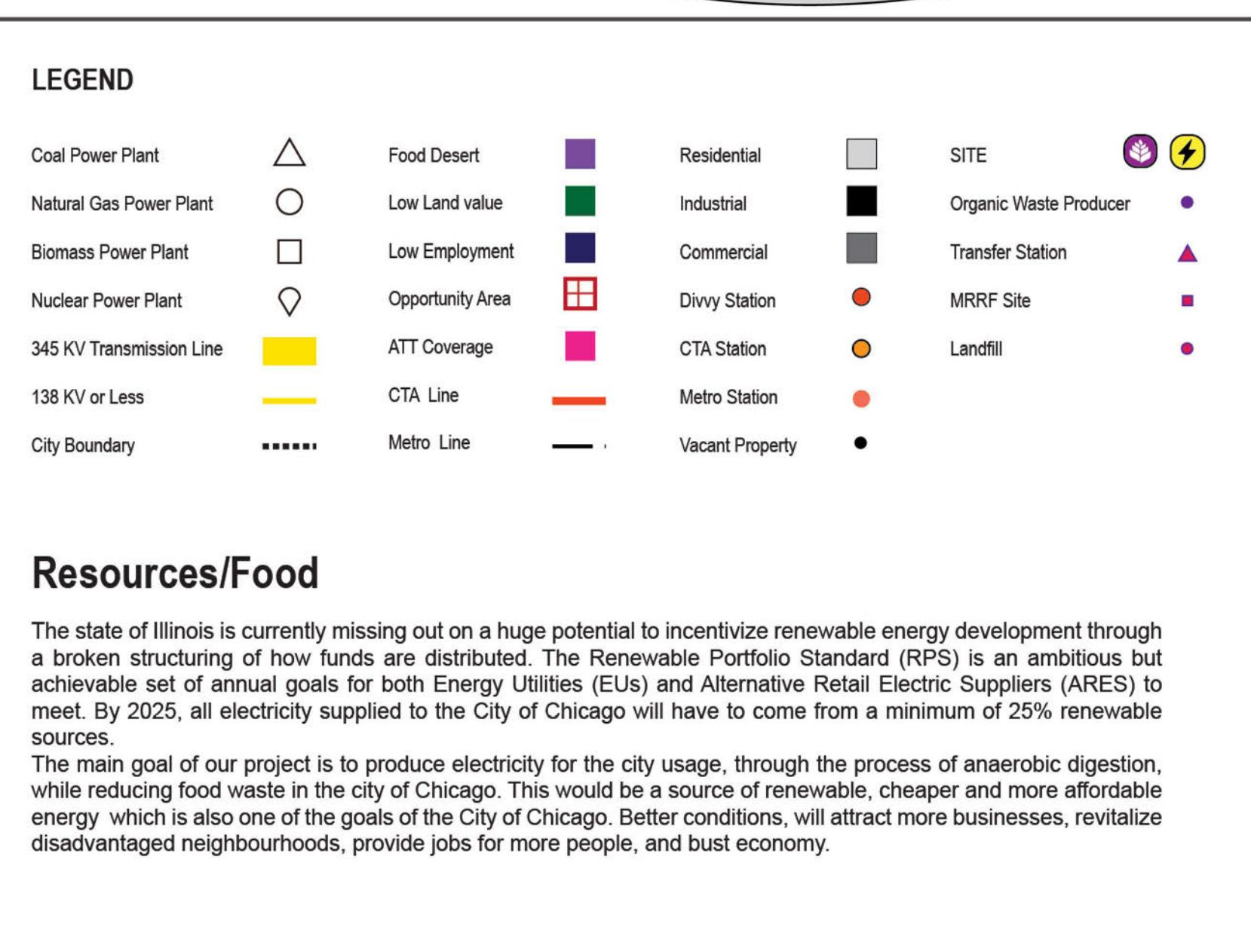
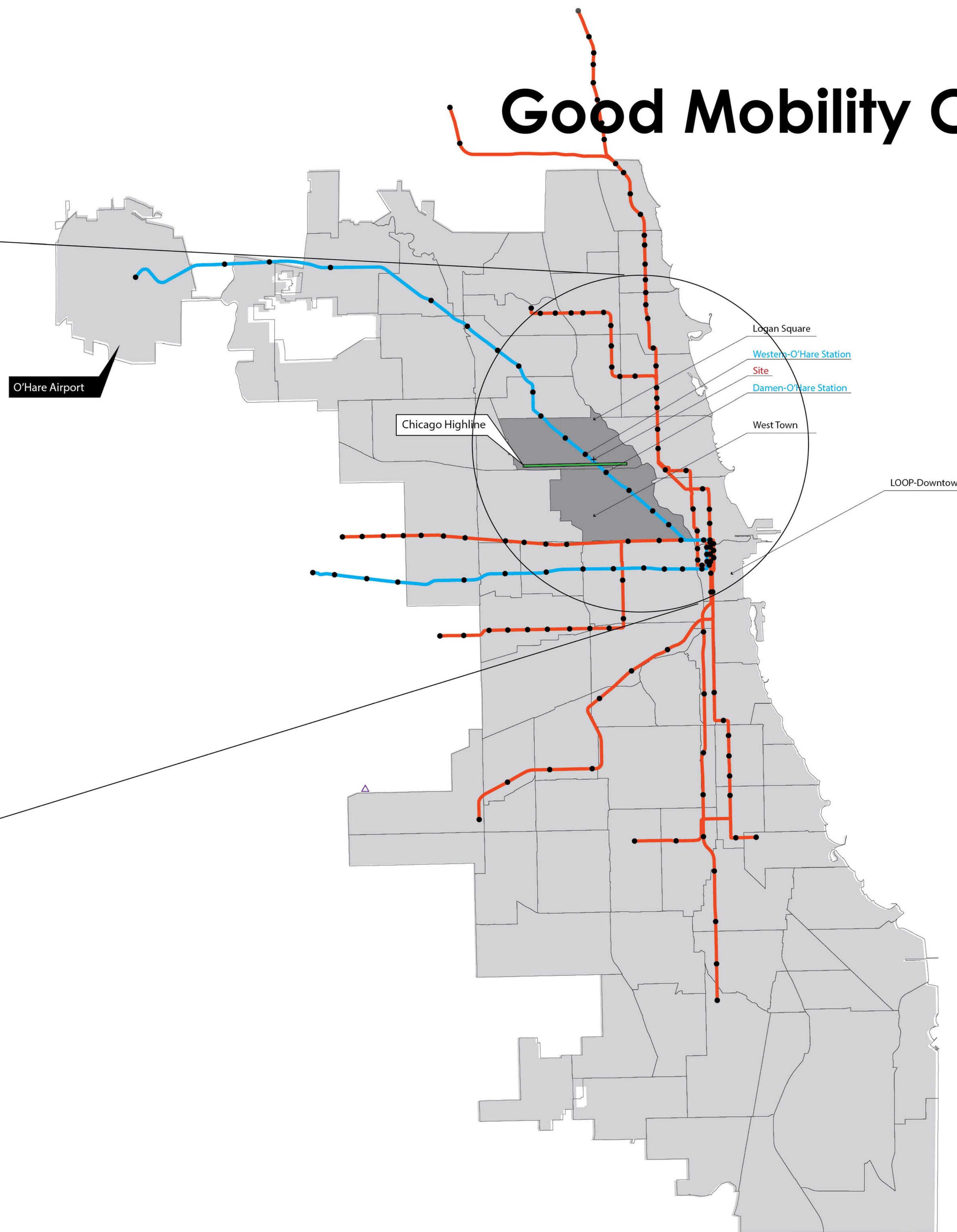
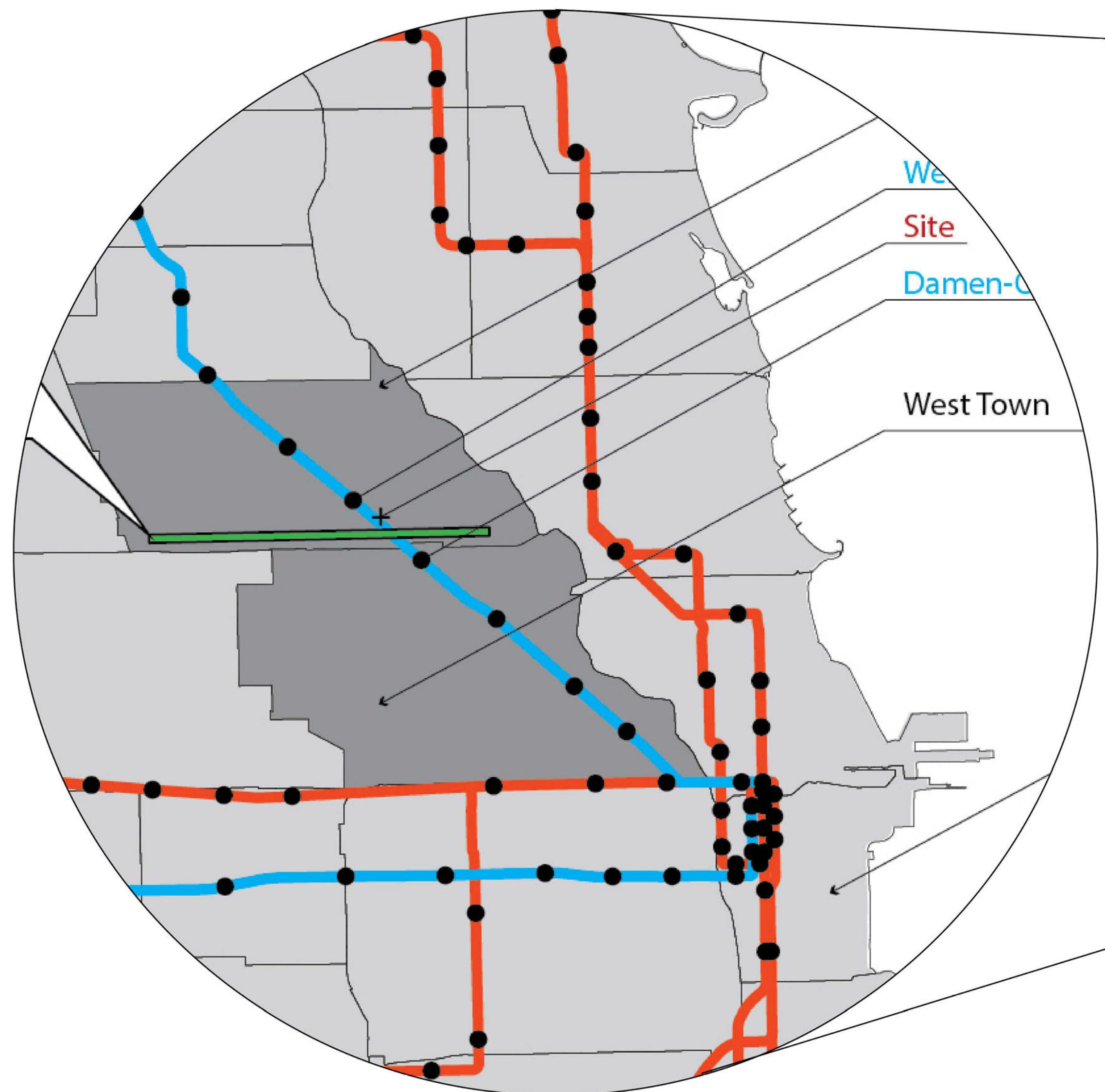
Site

- On the cross of Chicago 606 & Milwaukee Avenue & CTA Blue line
- Milwaukee Avenue is one of the busiest streets for cyclists in Chicago
- 20 minutes from Downtown By CTA & Bike

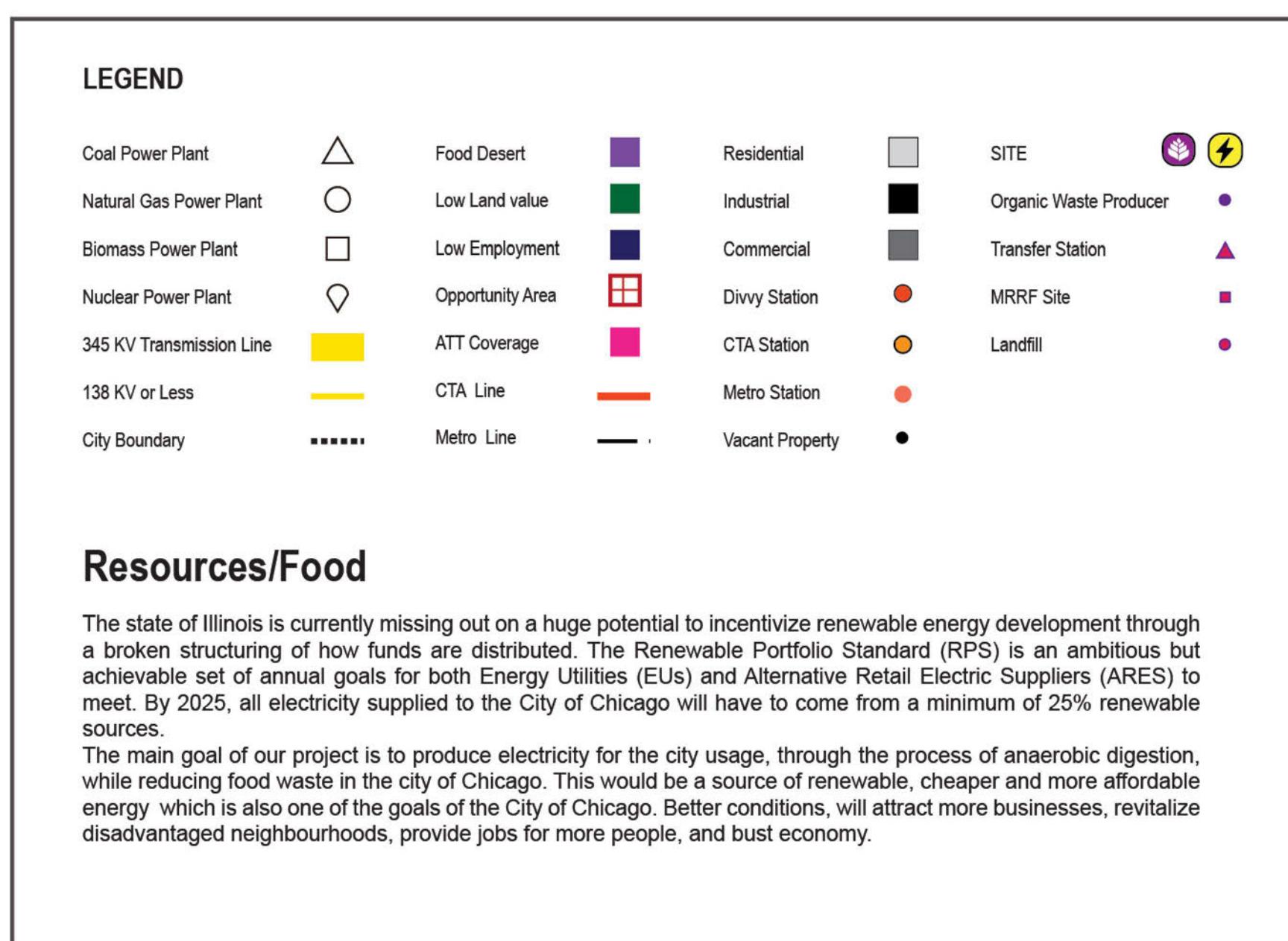
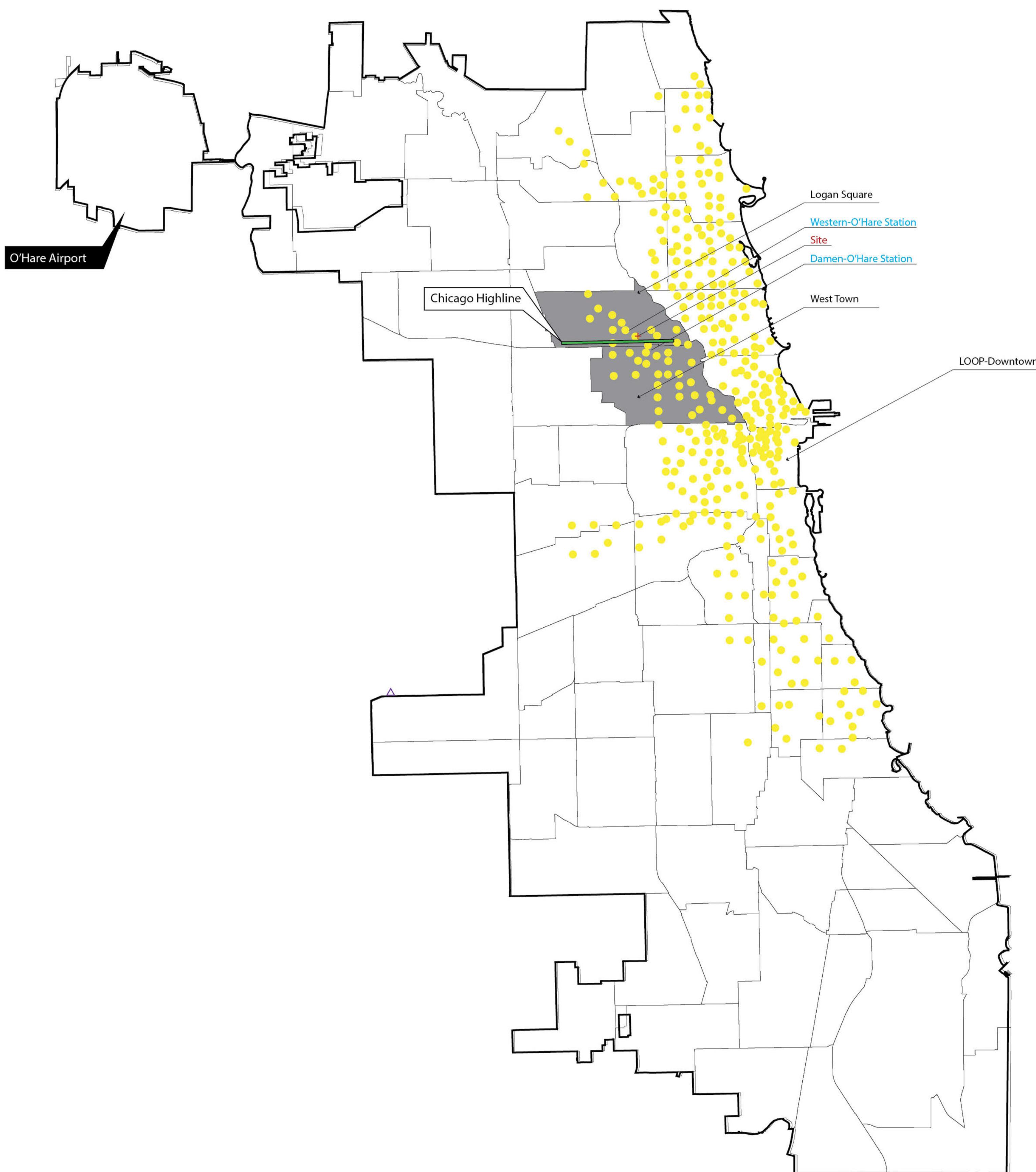
Site Resources
CTA Connection
CTA Ridership



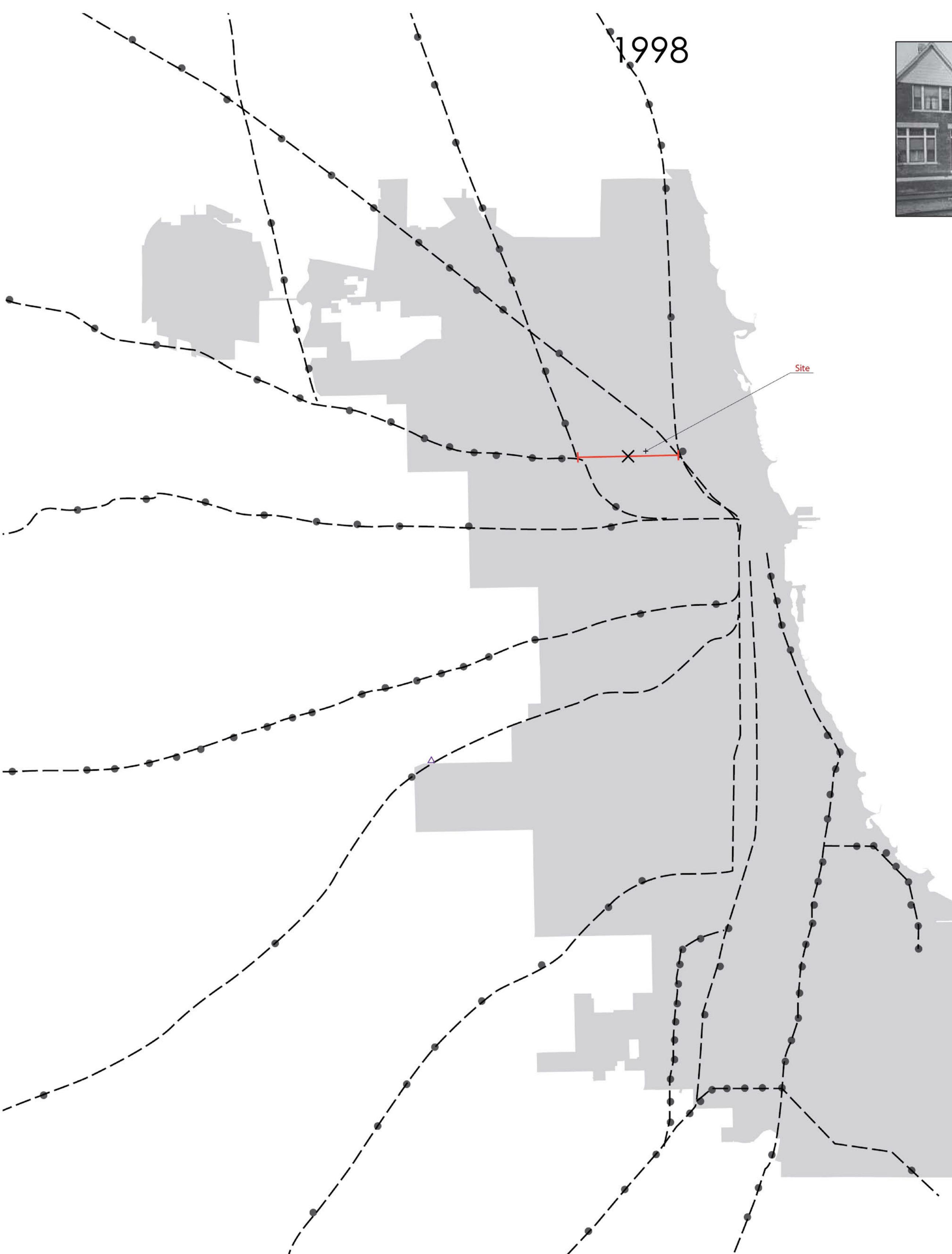
Good Mobility Connectivity



Good Mobility Connectivity

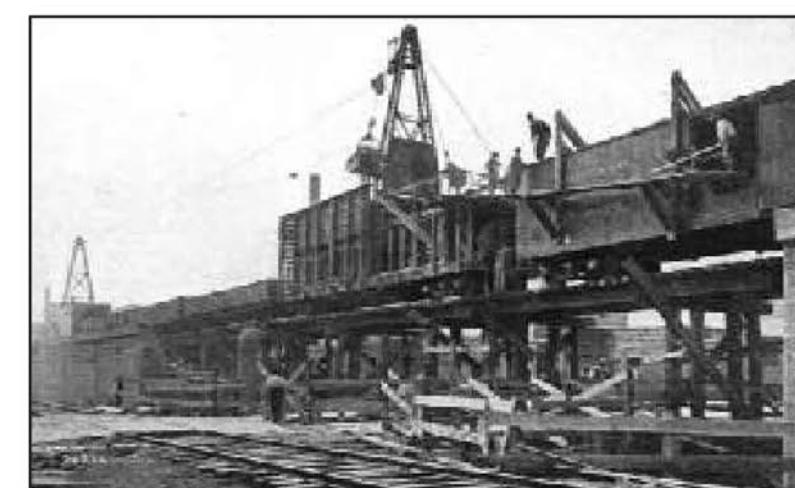


Green Infrastructure



1872

Chicago grants an easement to build railroad tracks in the roadbed of Bloomingdale Avenue.



1910

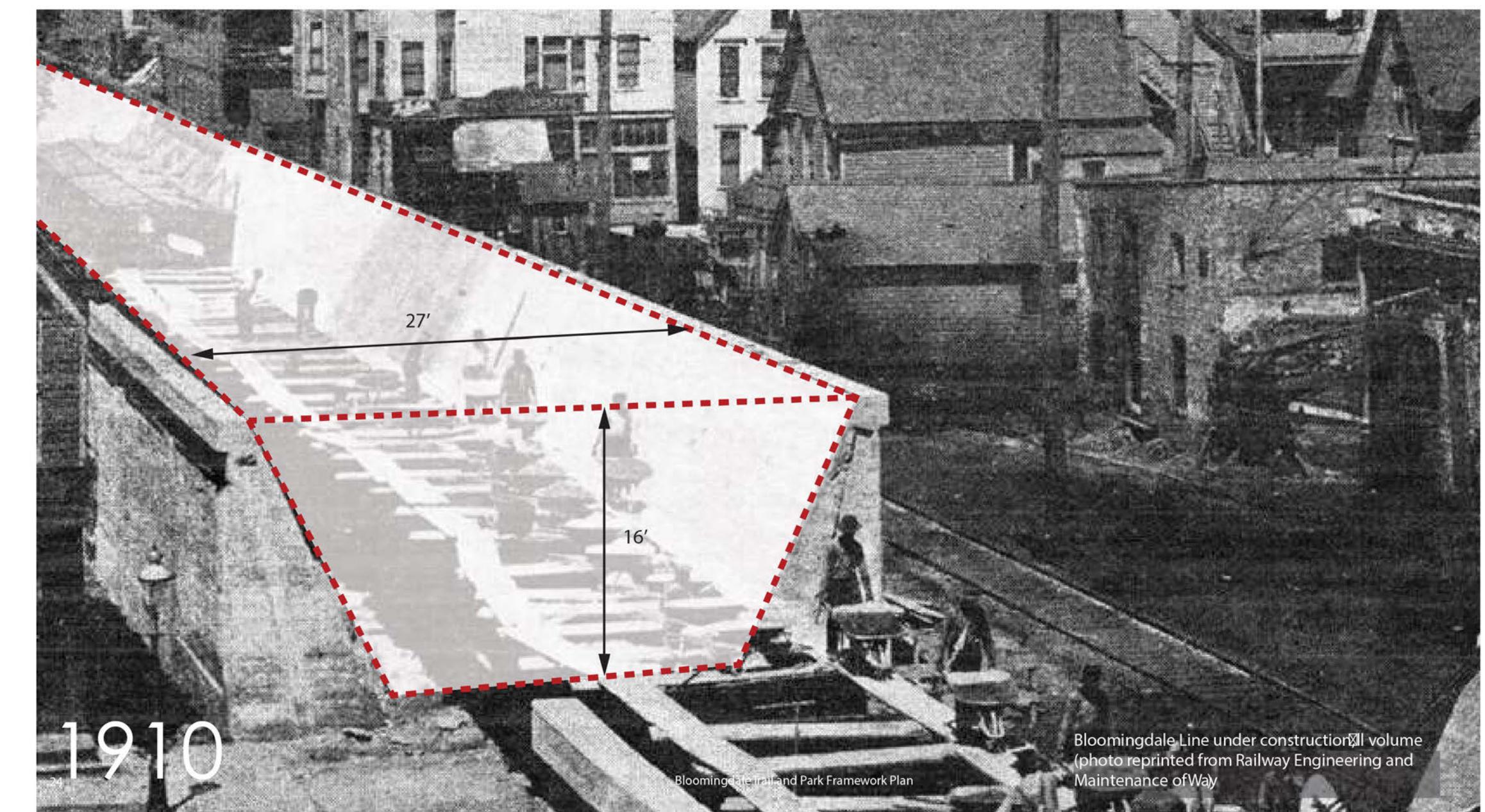
In 1910, Chicago passes an ordinance requiring that the railroad be elevated by 1914 to reduce dangers to the public from at-grade travel.



The Original LINCOLN LOGS
House of real pine for play or for miniature cabins, barns, bridges and villages. Made of interlocking logs $\frac{3}{4}$ " in diameter. Stained brown wash. 79 pieces incl. spikes, chimneys, and axles; green roof building instruction \$1.25 to \$7.00.
LINCOLN LOGS
1750 N. Lawndale Ave., Chicago 47, Ill.

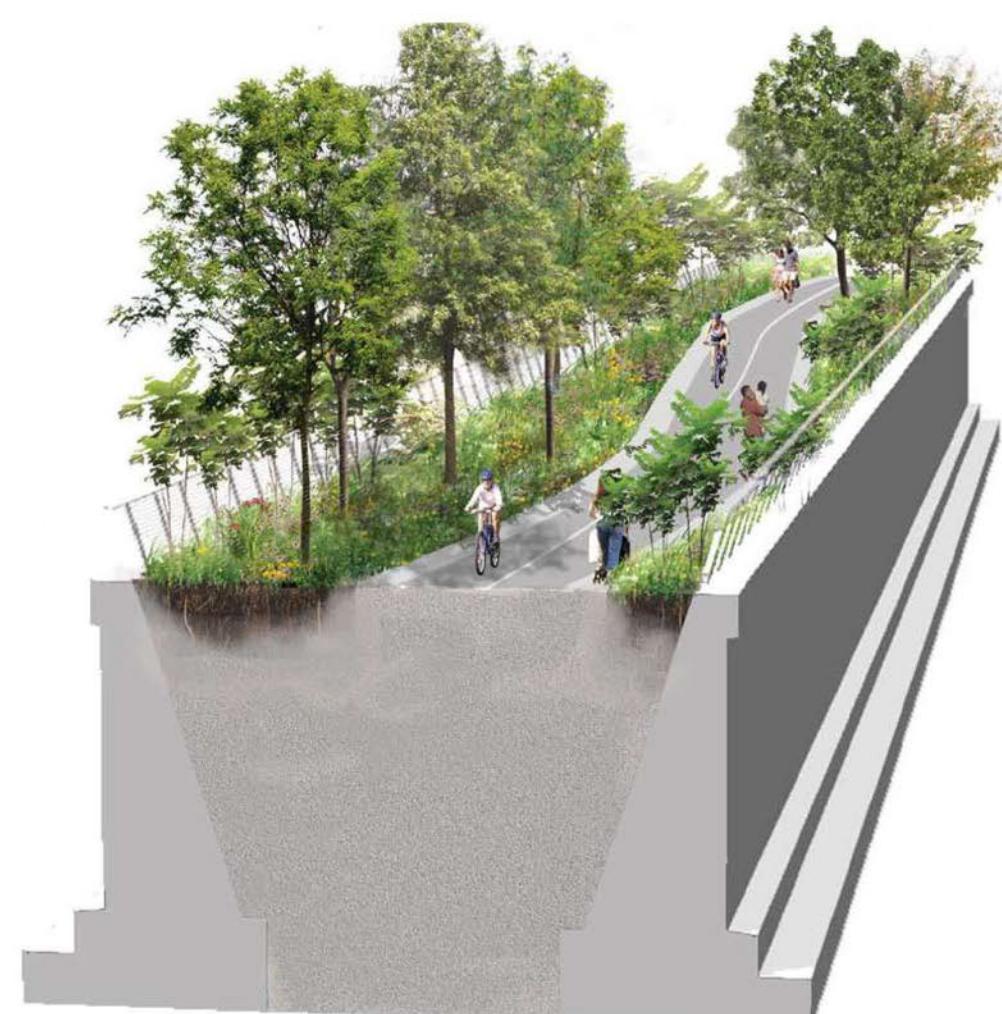
1914

The Bloomingdale Line services a bustling industrial corridor producing well-known items such as Lincoln Logs, Hammond Organs, and Schwinn Bicycles. The tracks are also used sporadically for passenger trains and the occasional circus troupe.

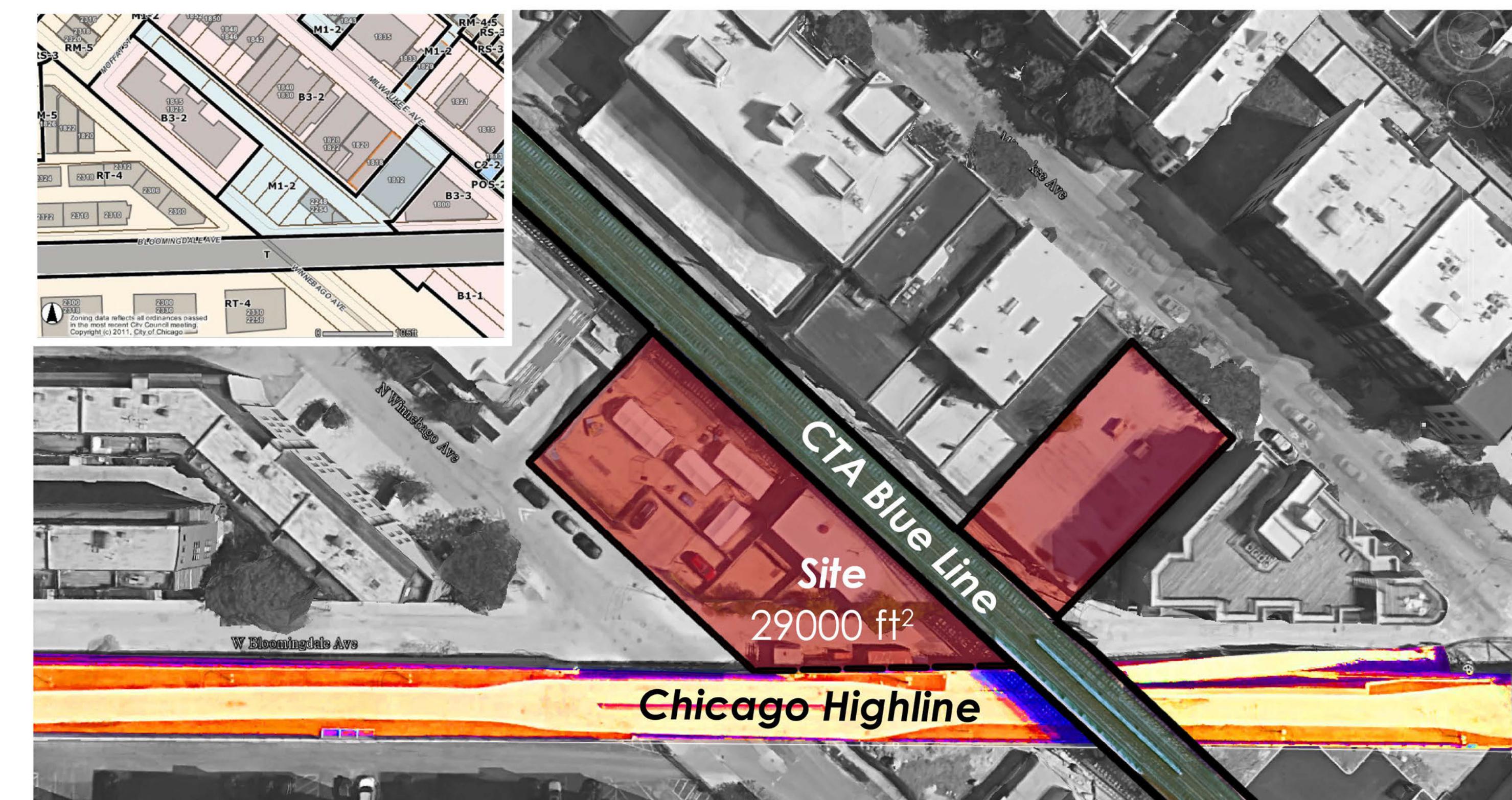
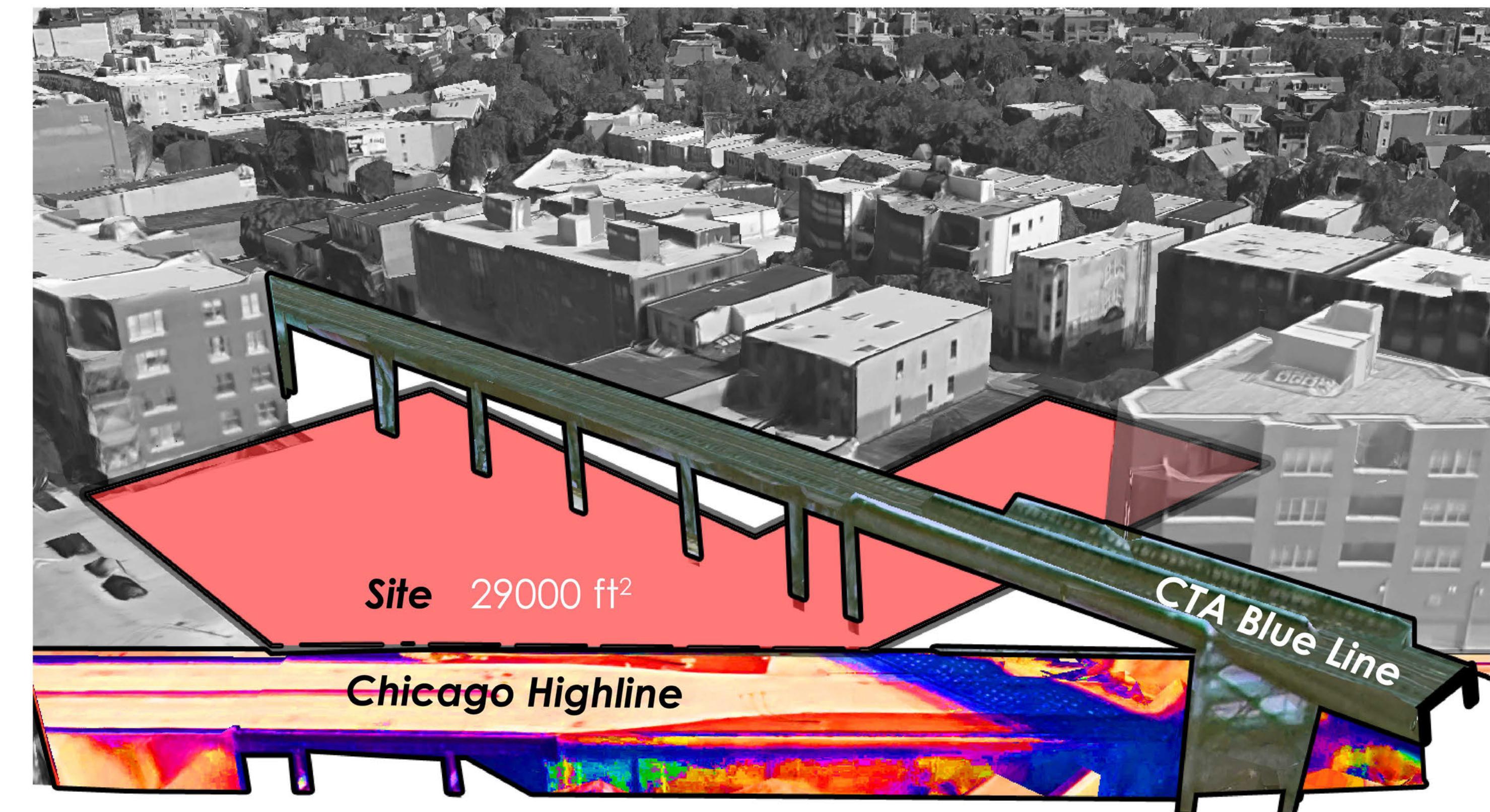


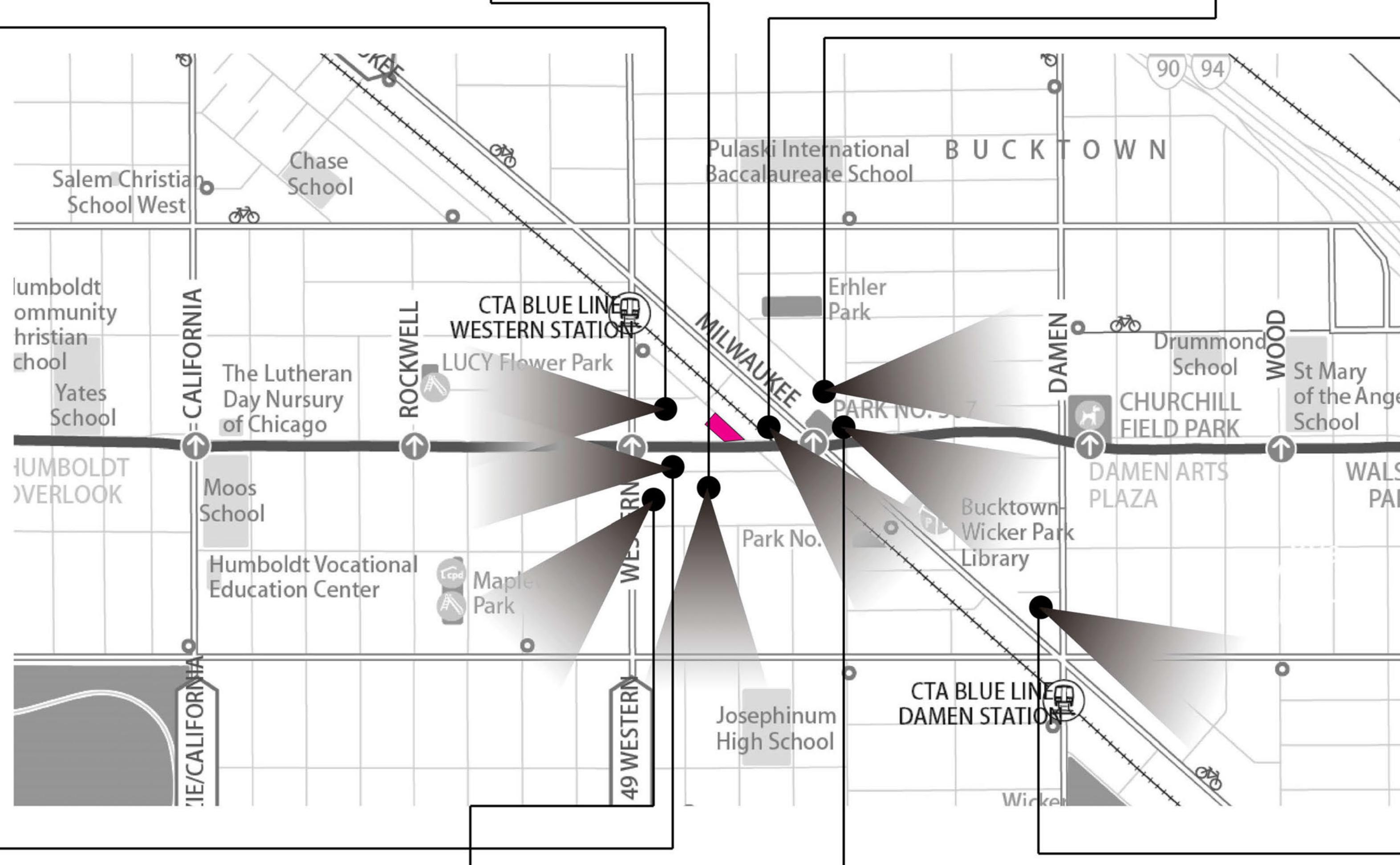
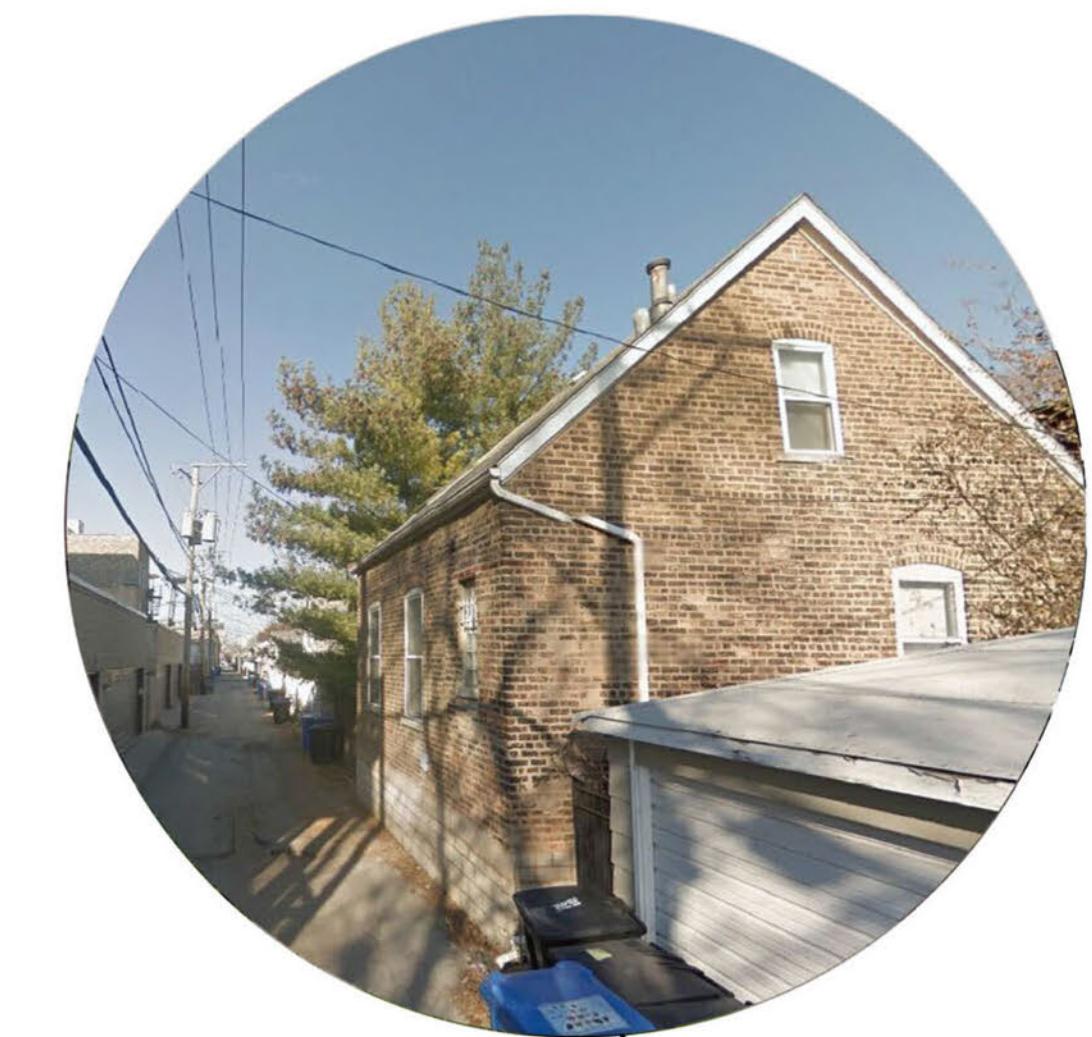
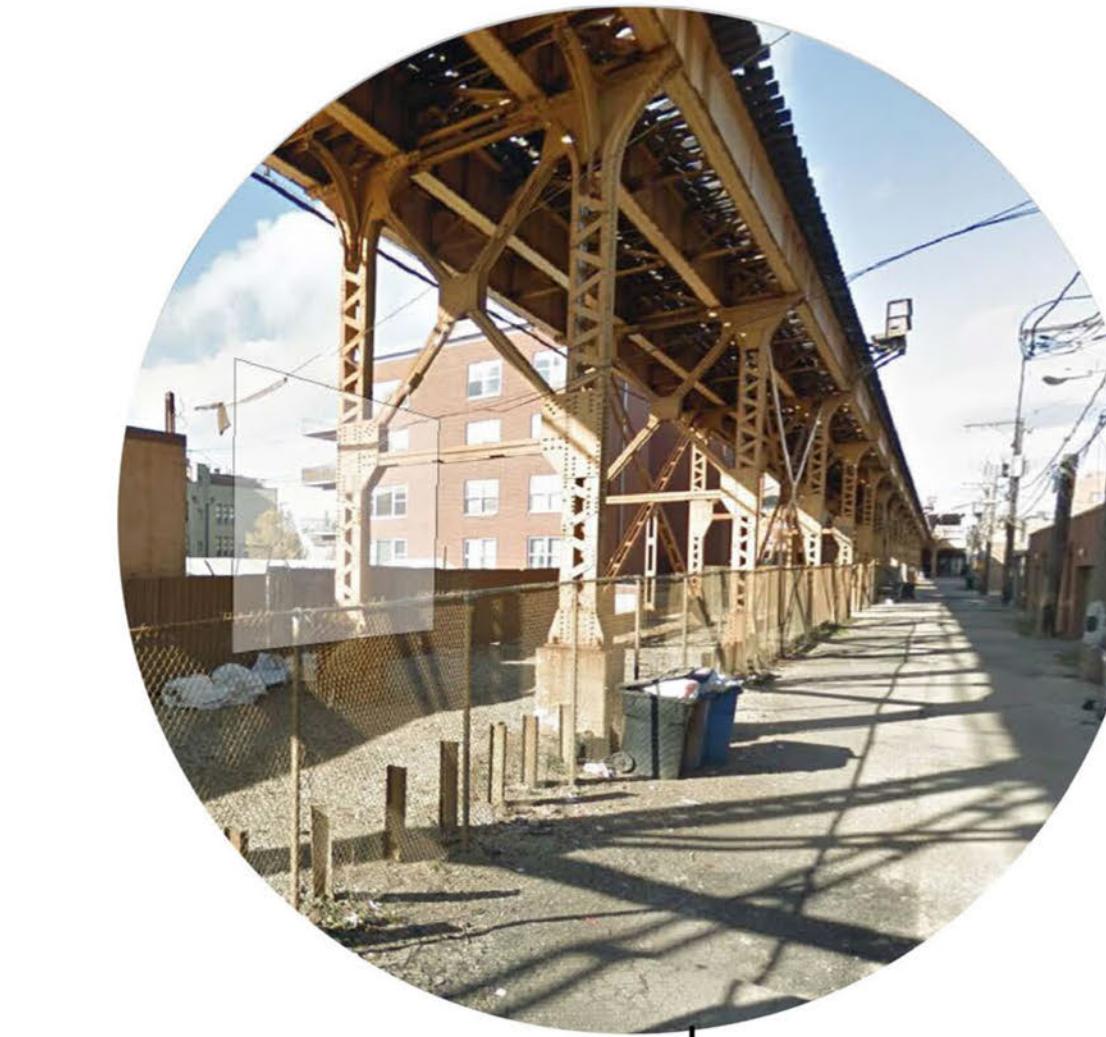
1910

2020

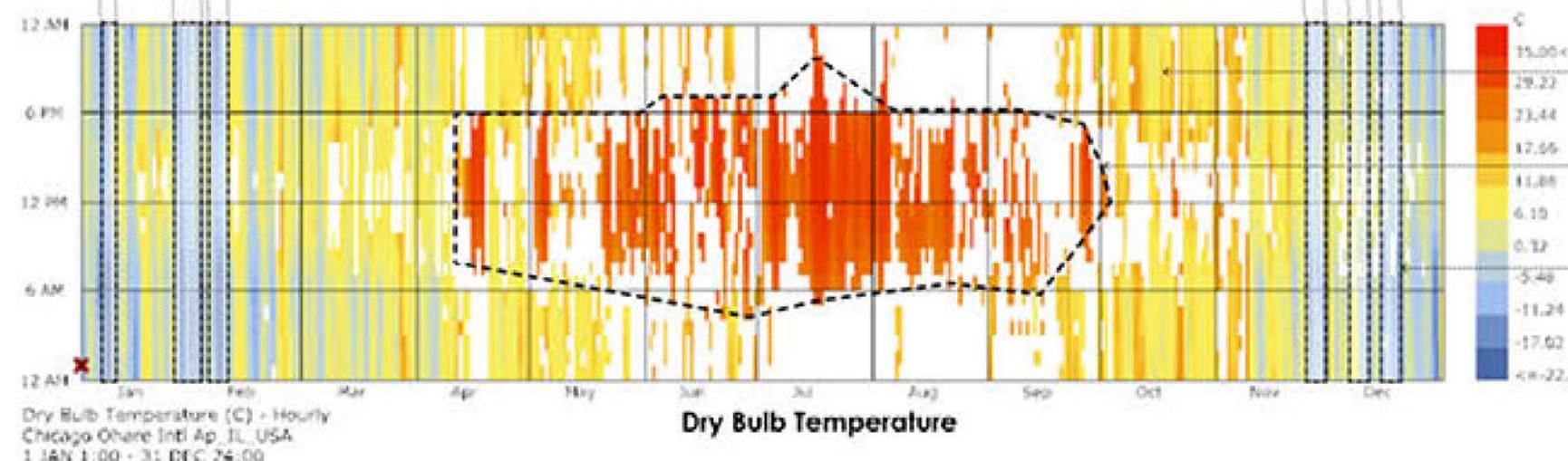
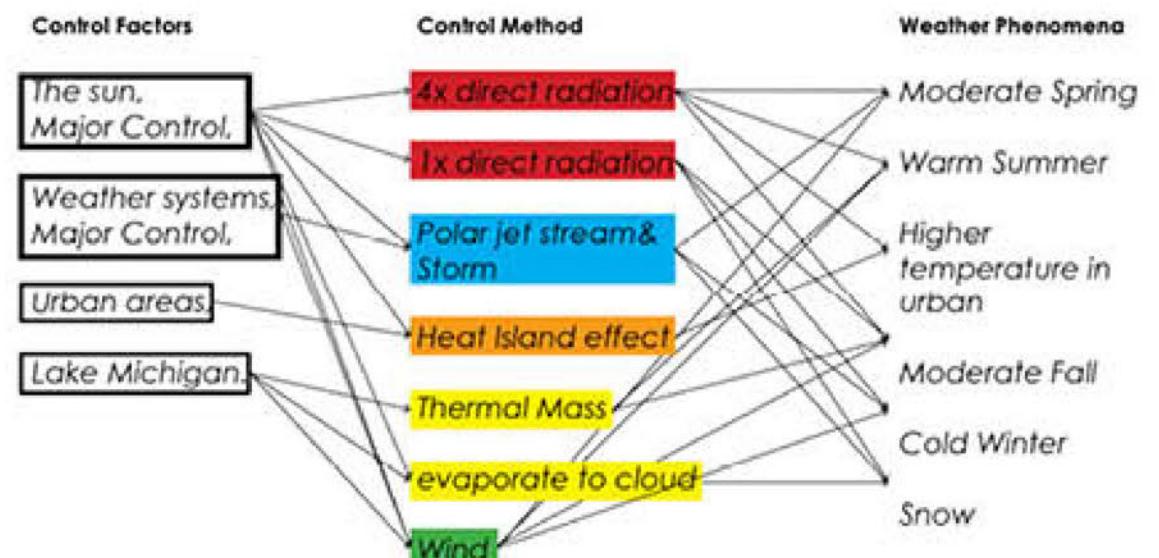
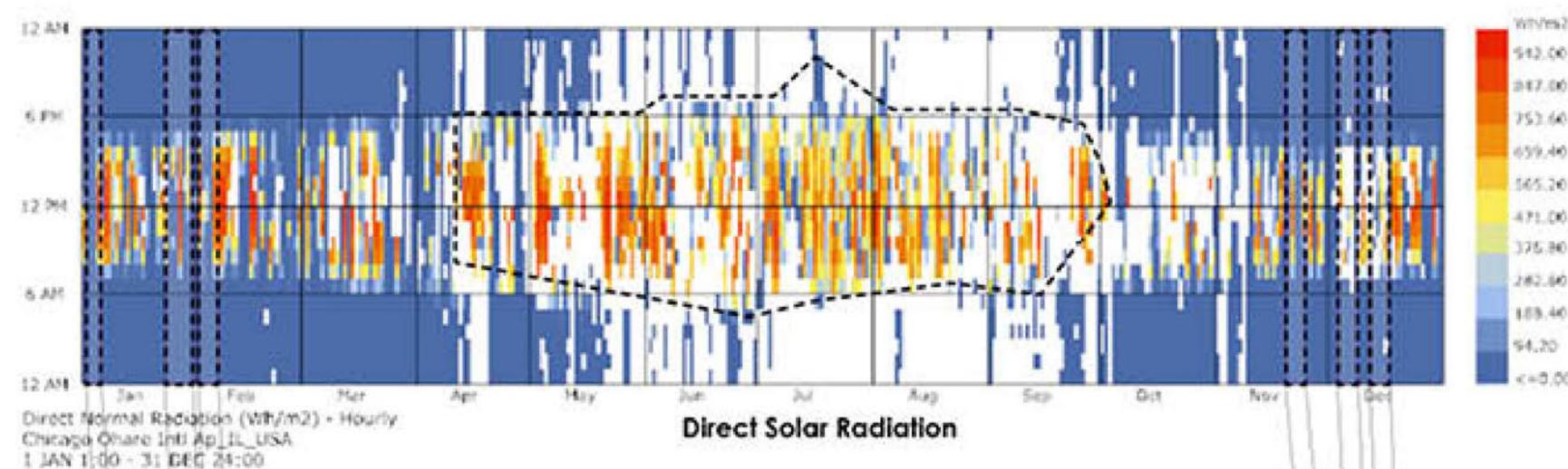


Space Complexity + Multiple Layer

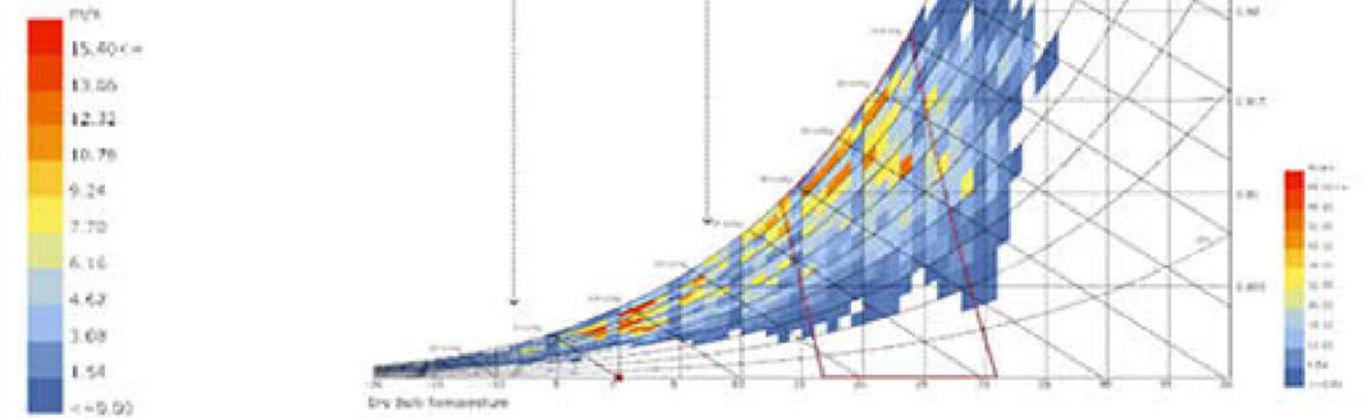
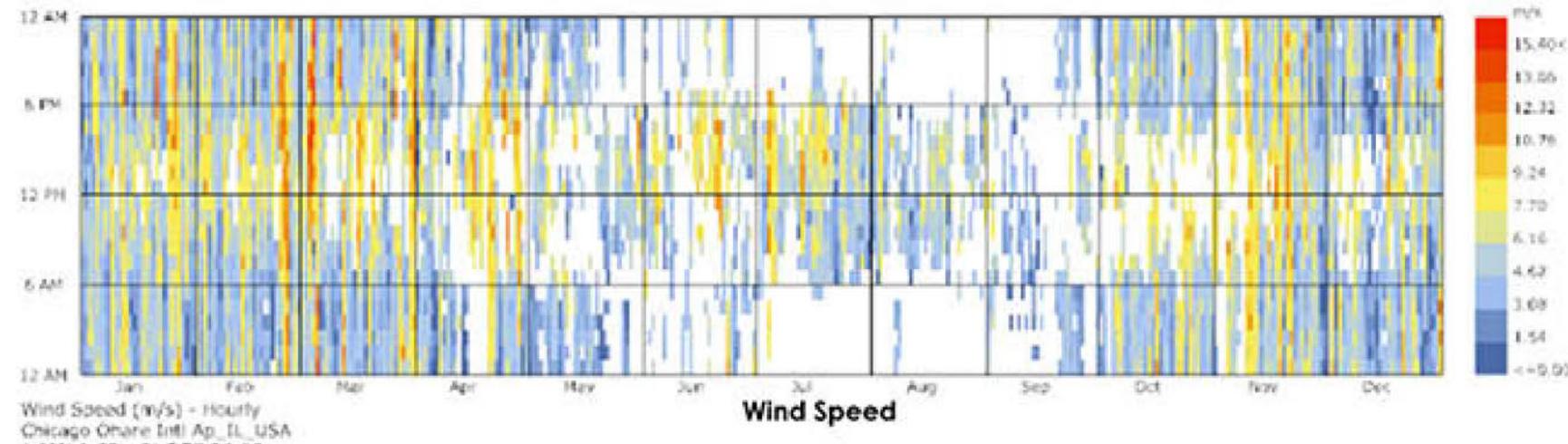




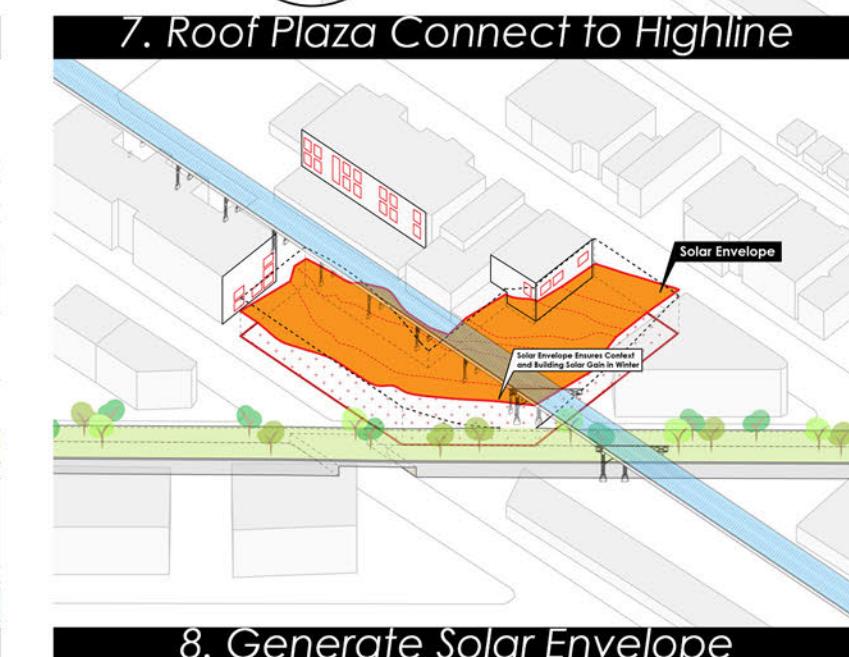
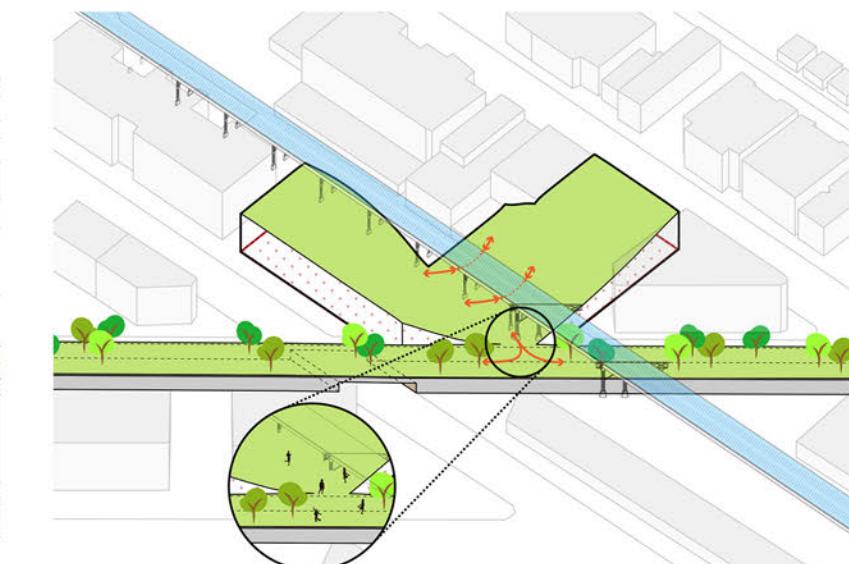
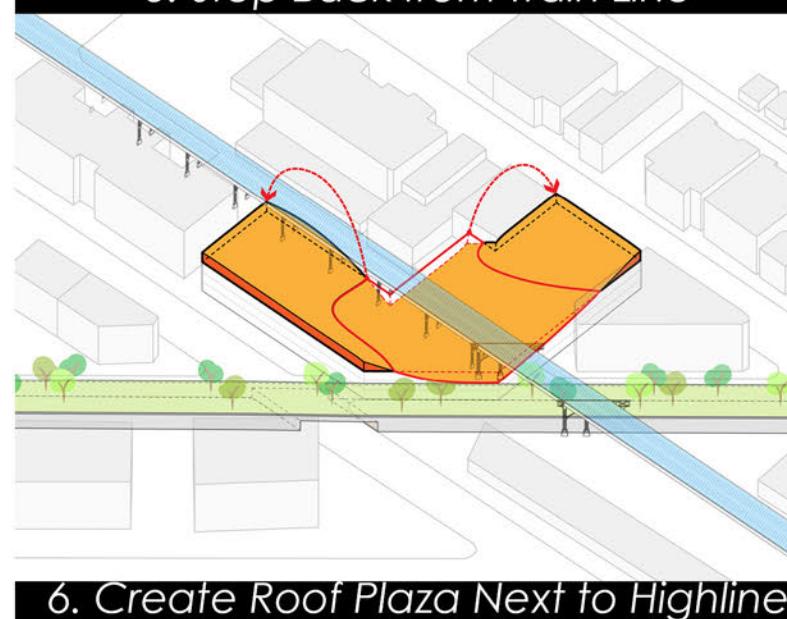
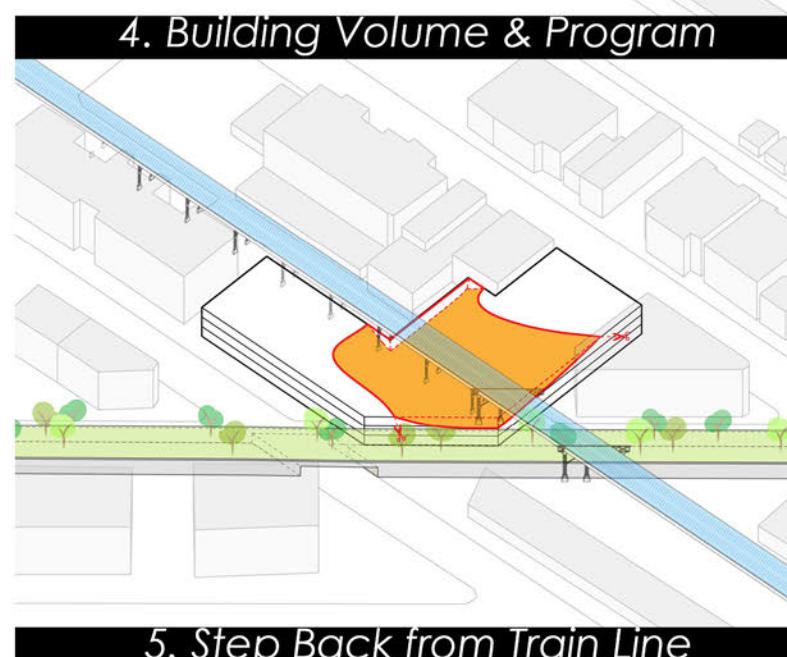
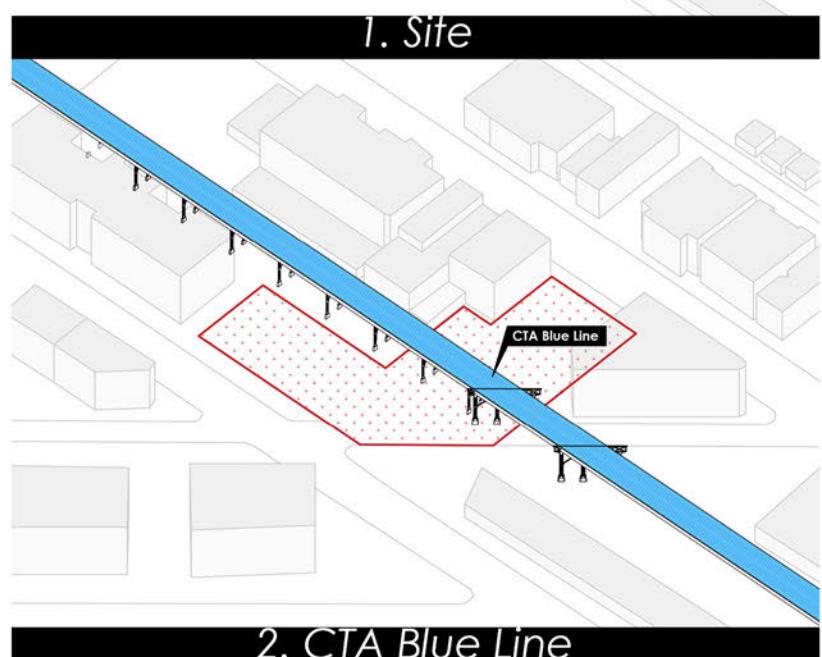
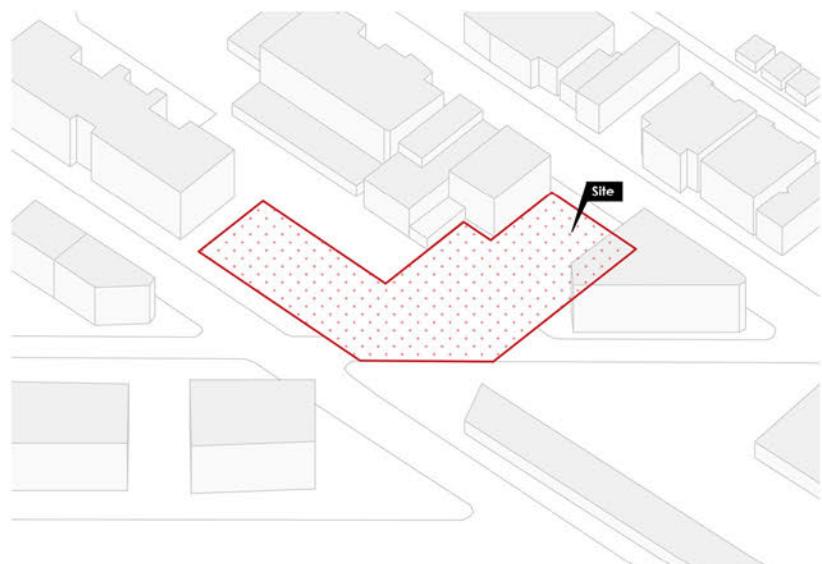
ENVIRONMENTAL PARAMETERS



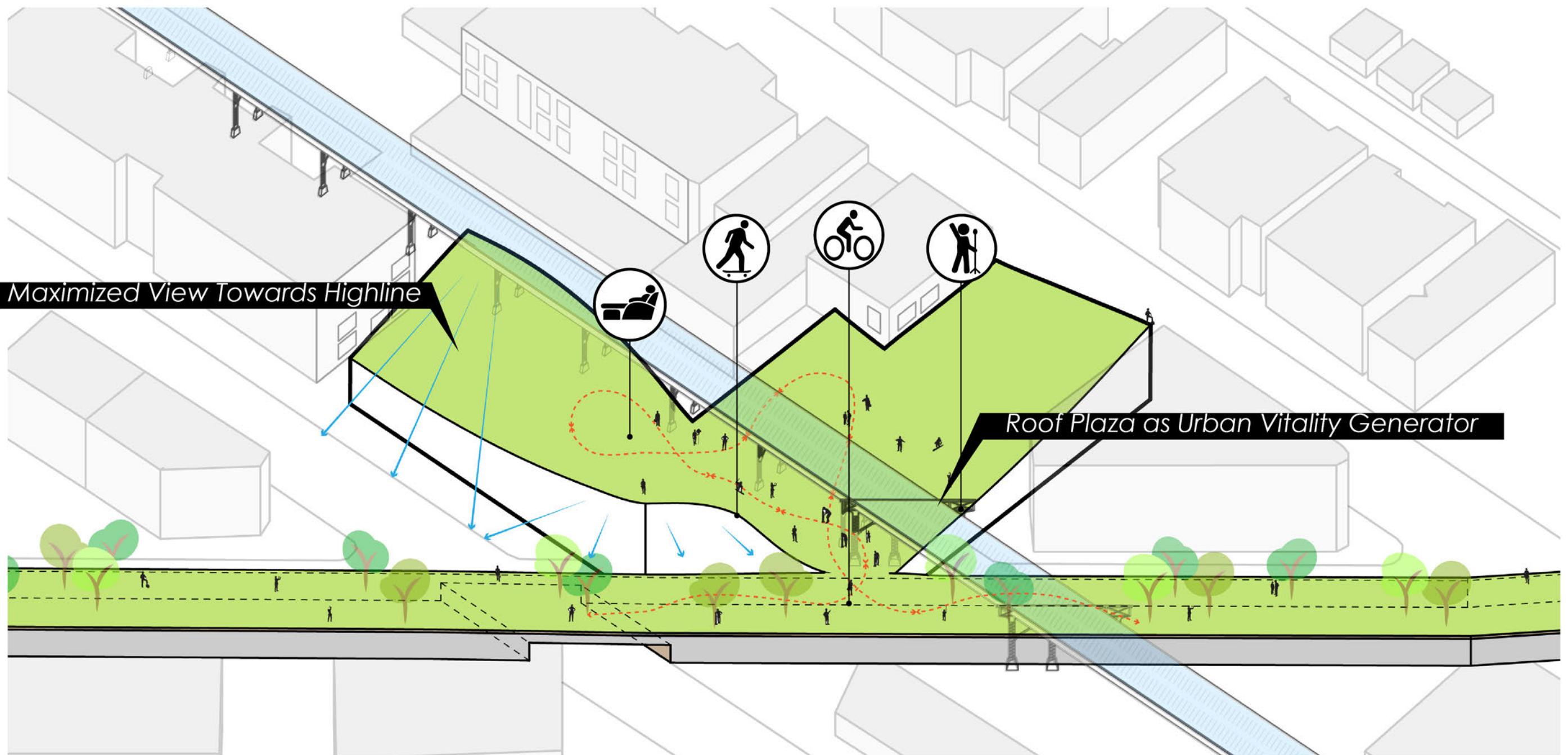
Psychrometric Chart
Chicago O'hare Int'l Ap., IL, USA
1 JAN 1:00 - 31 DEC 24:00

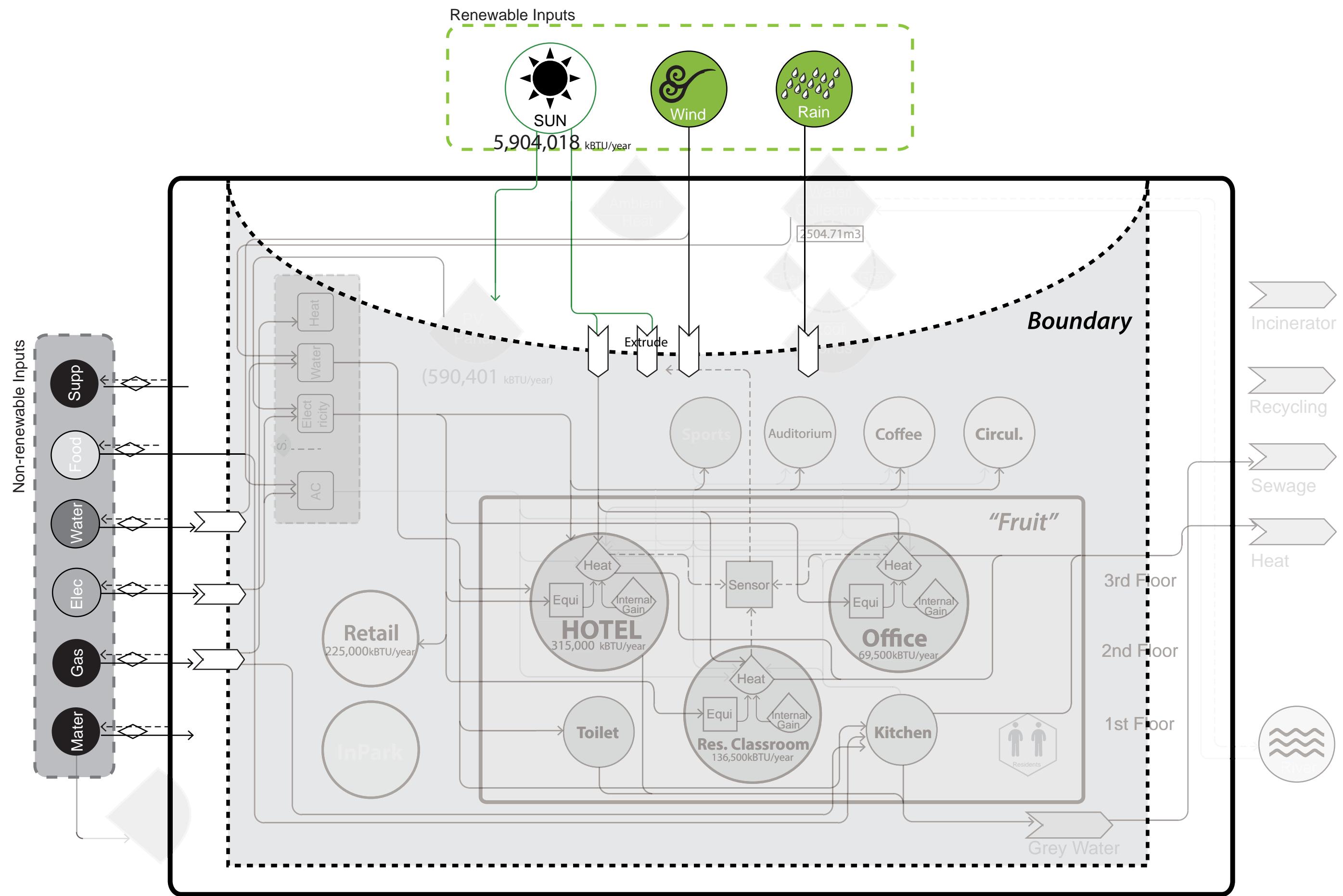


Building Volume Shaped by URBAN FORCES

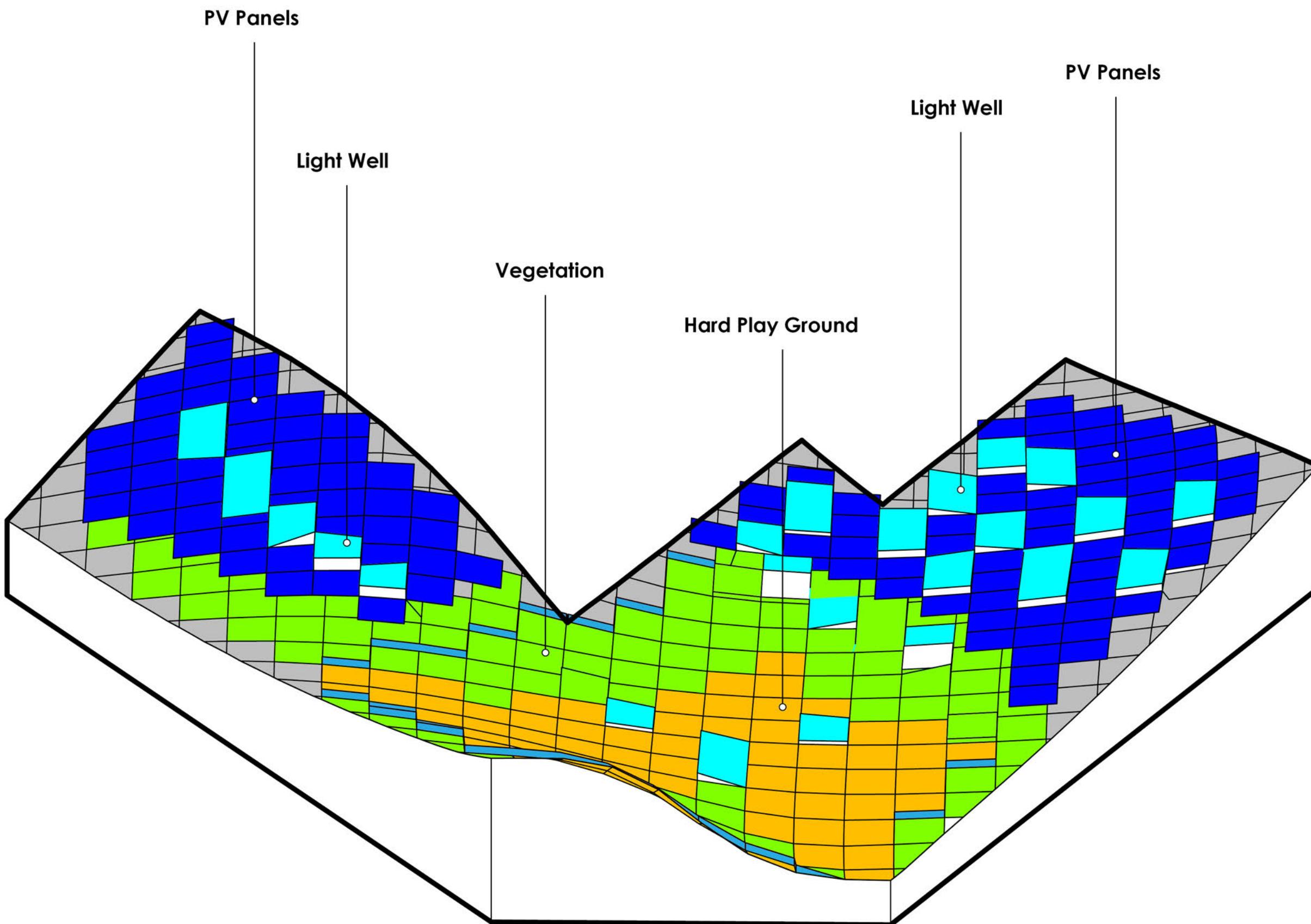


Building Volume Shaped by URBAN FORCES

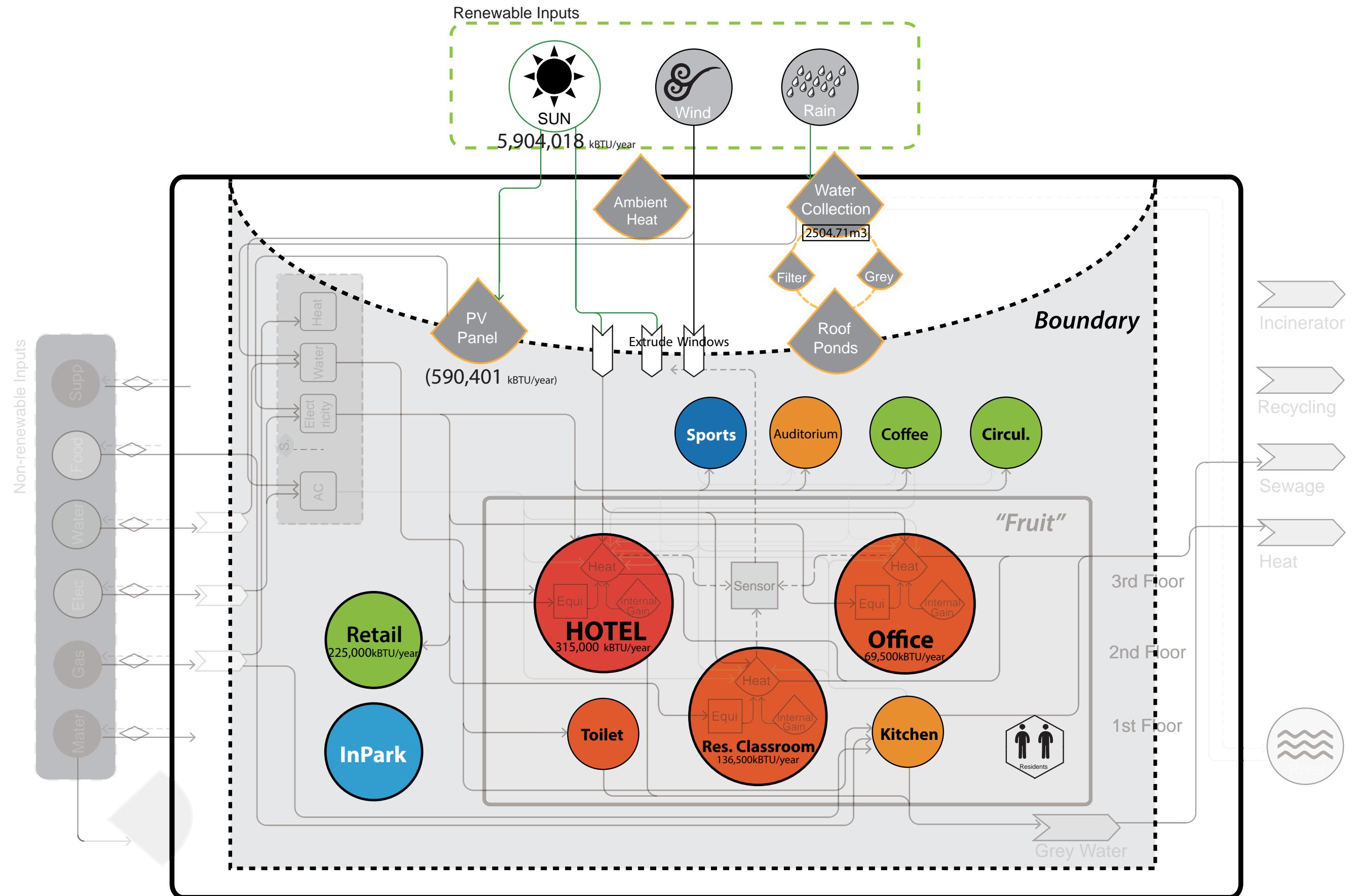




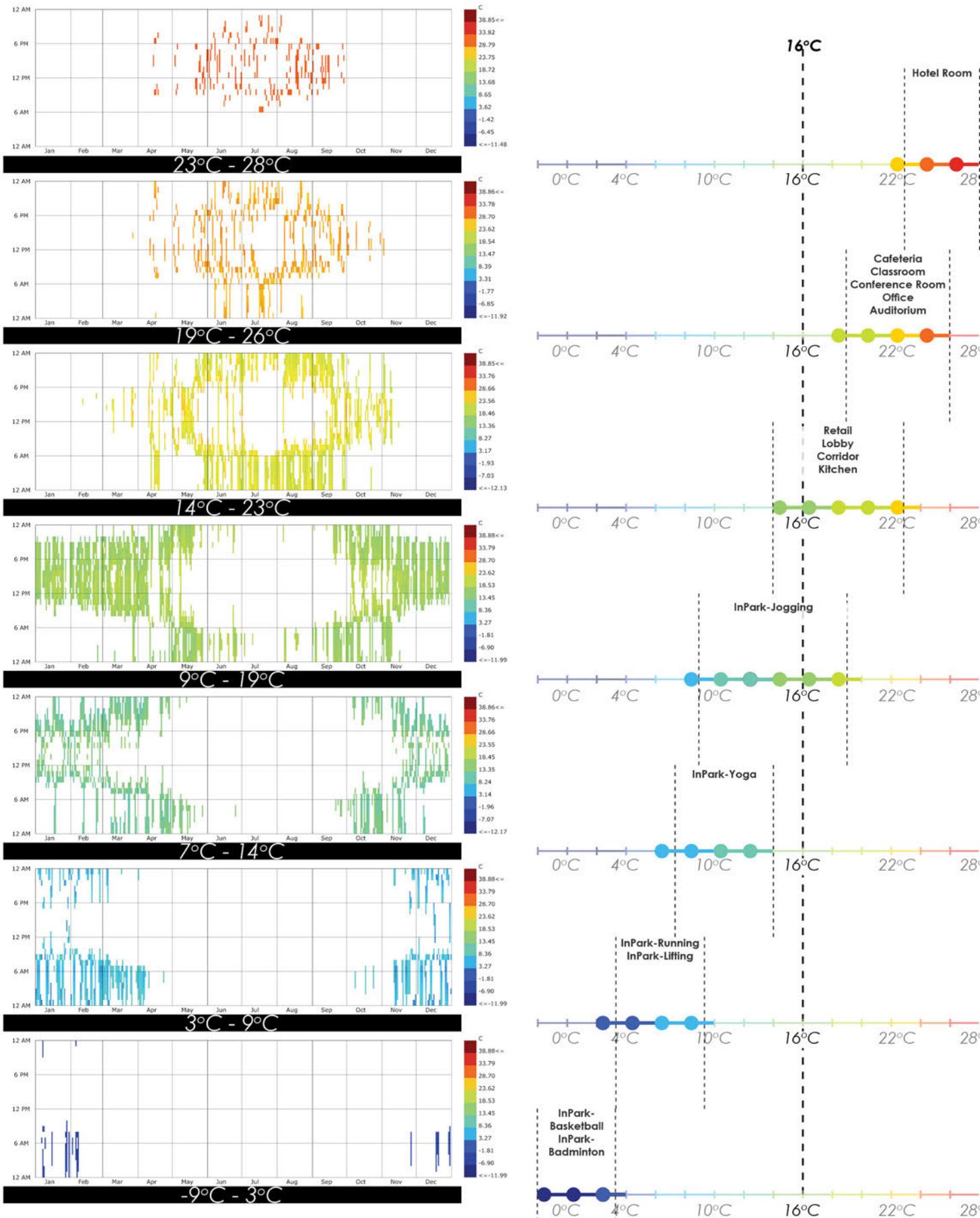
Building Volume Shaped by URBAN FORCES



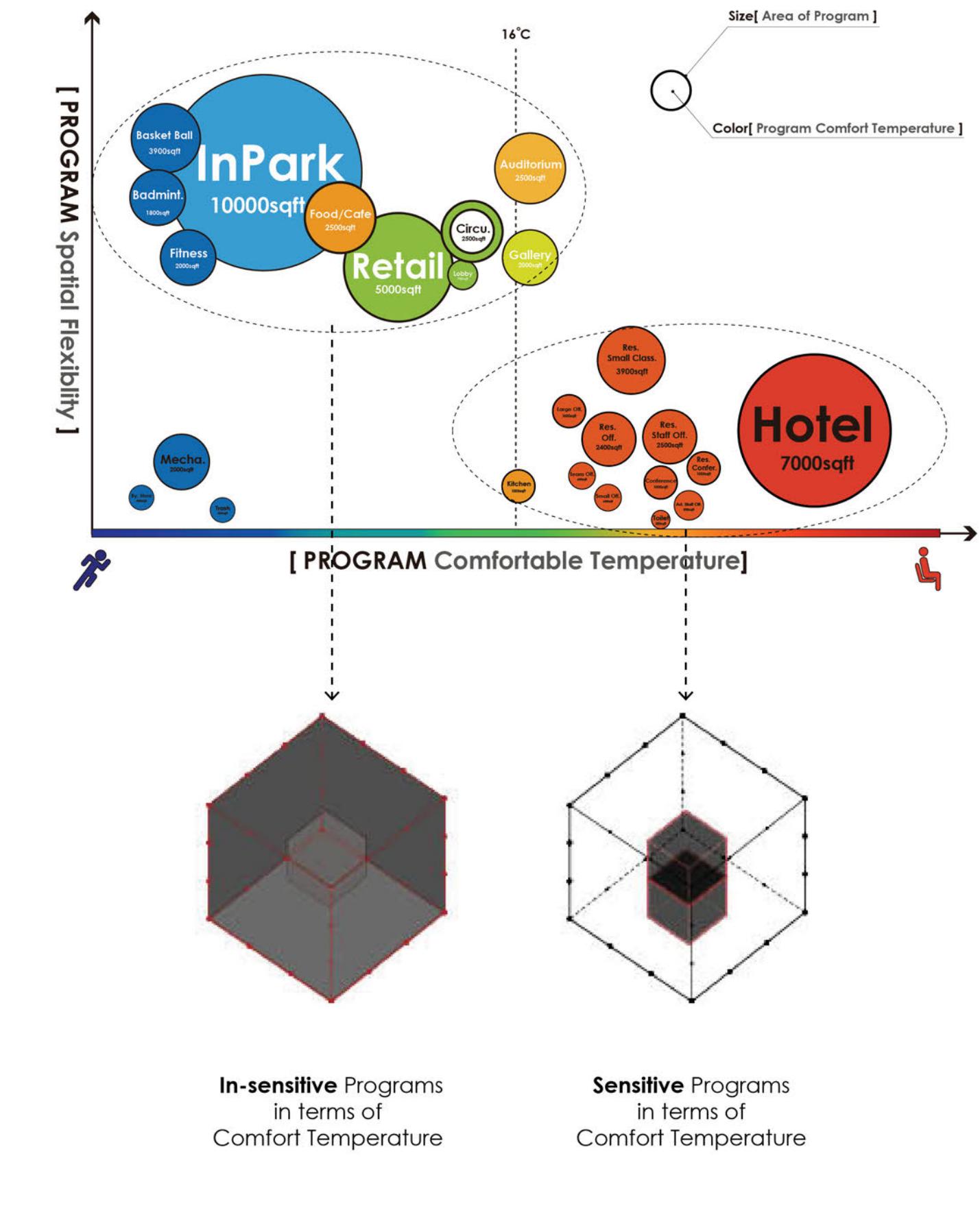




Comfort Temperature Study for Different Program

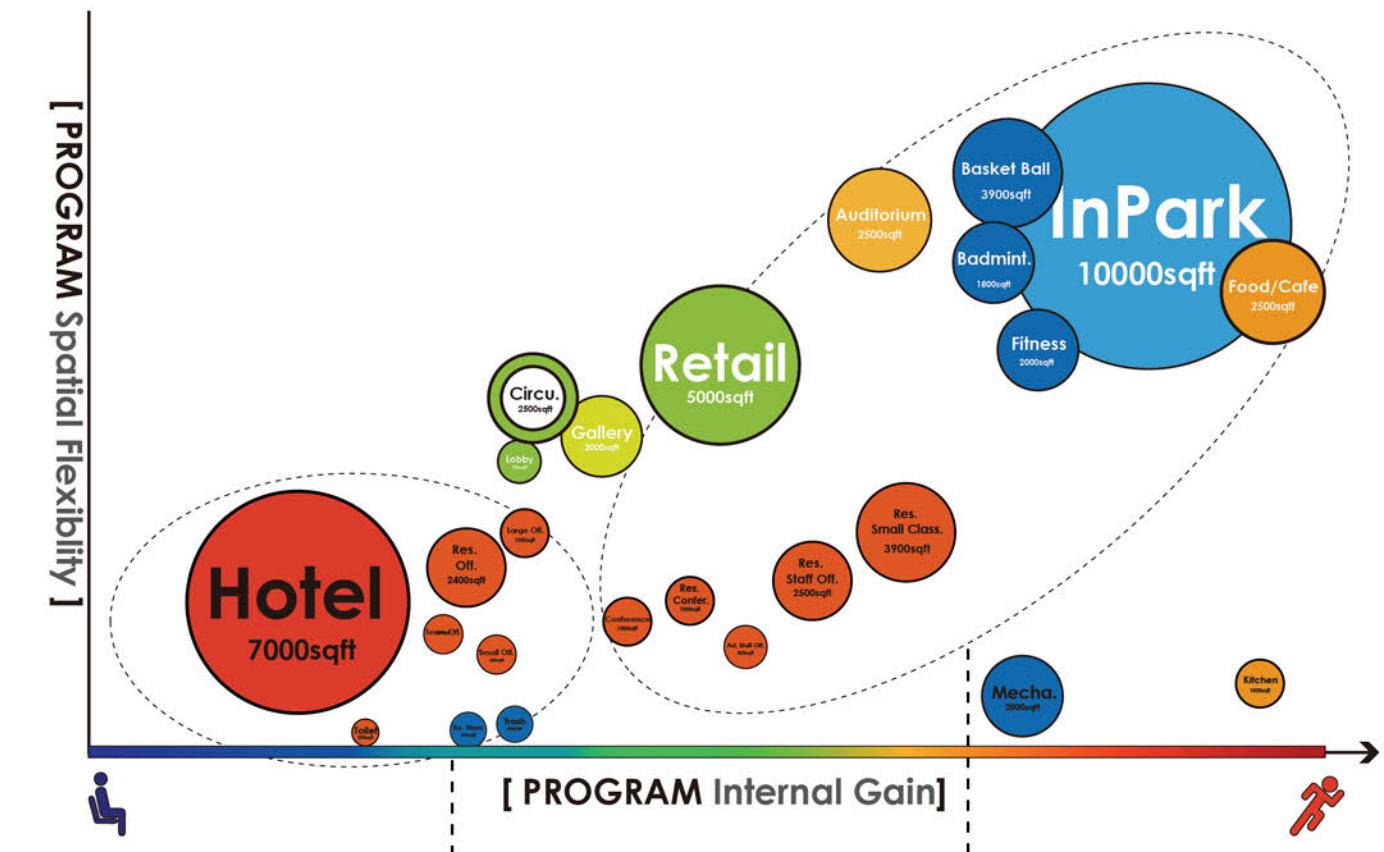
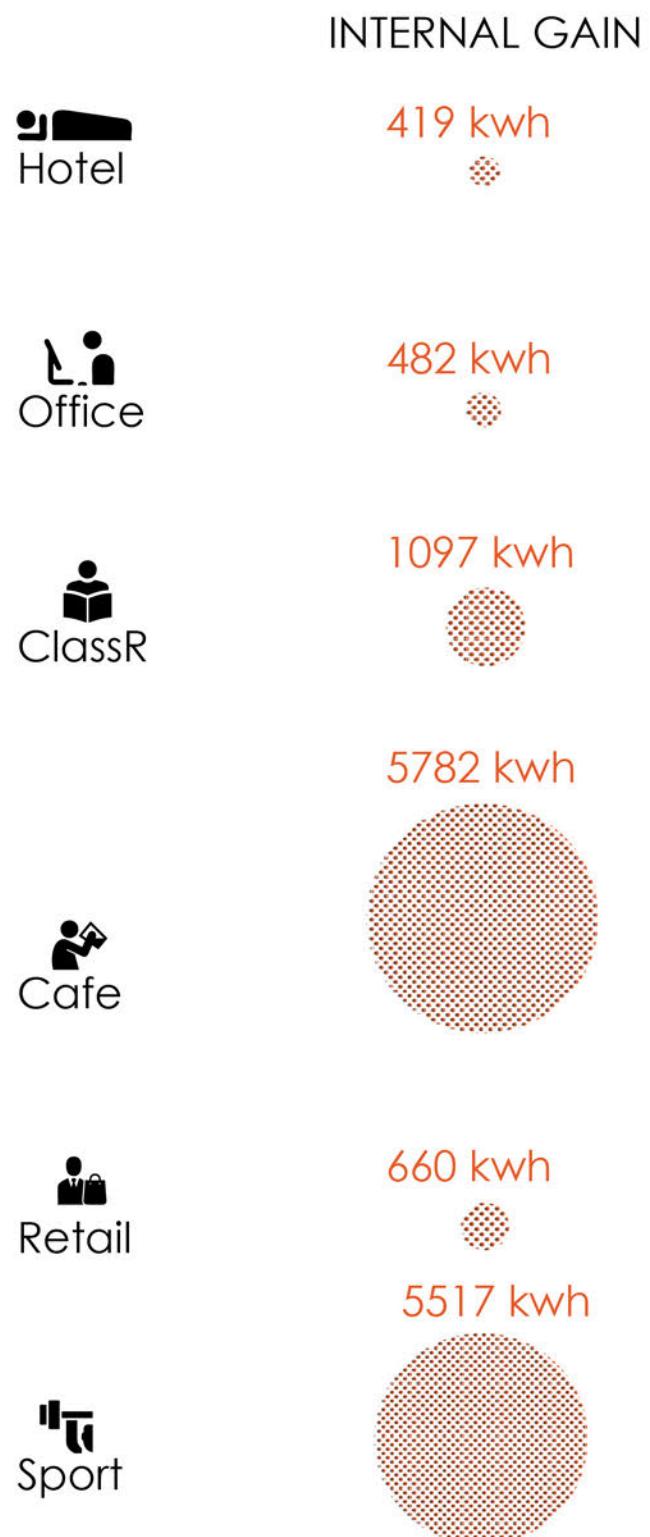


Nature of Programs

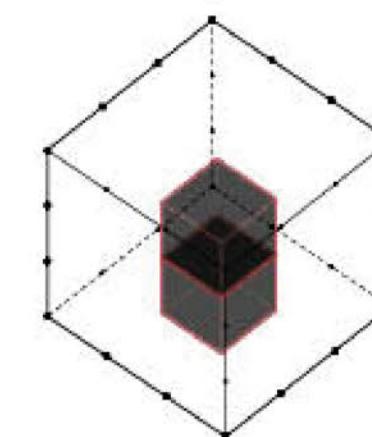


Internal Gain Study for Different Program

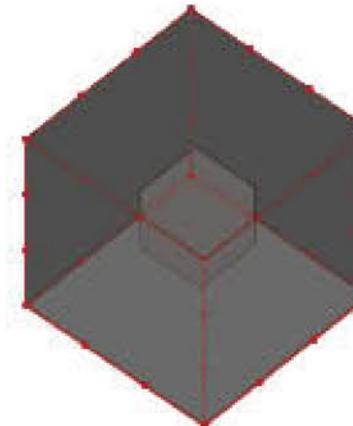
Nature of Programs



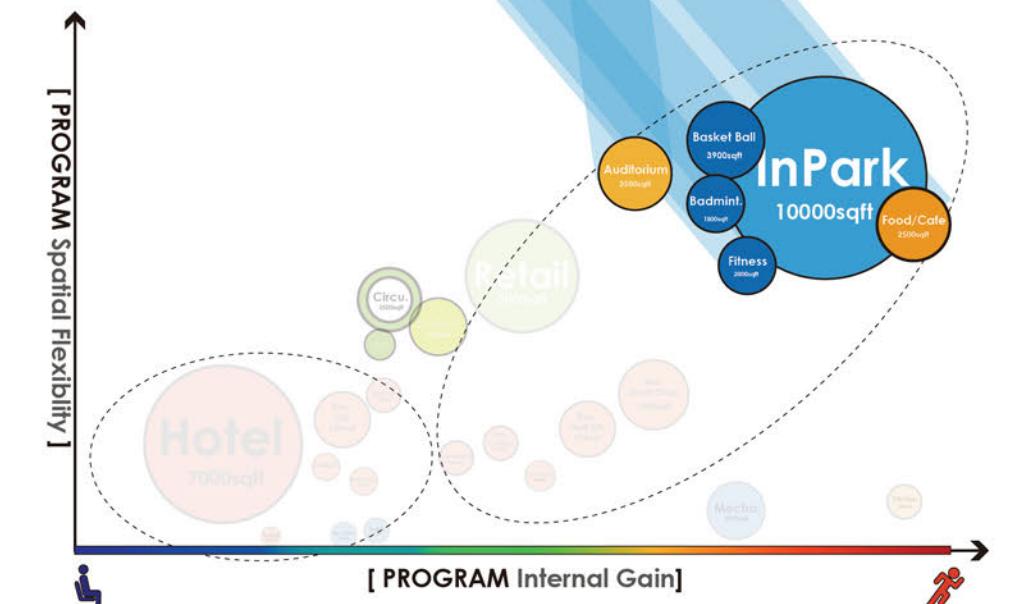
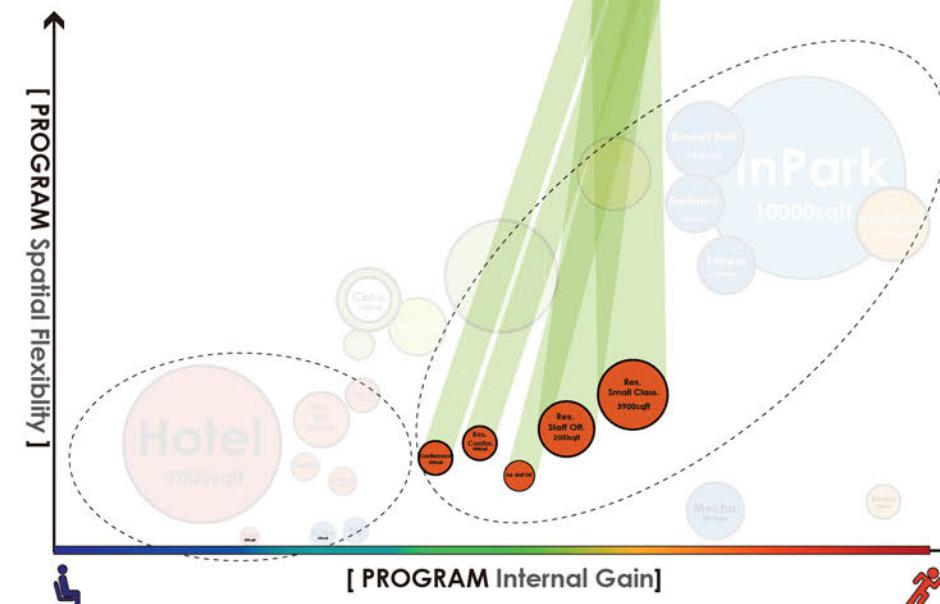
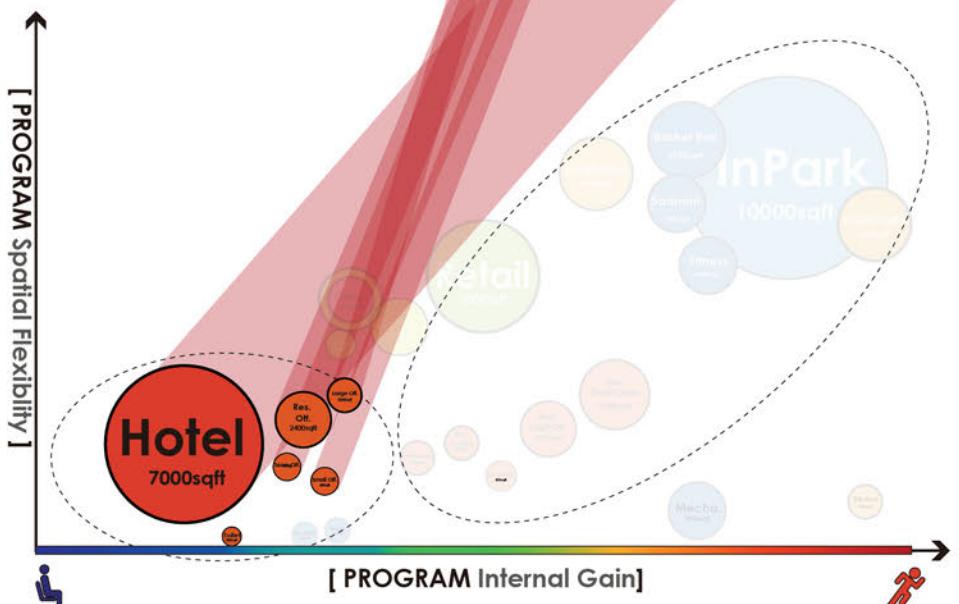
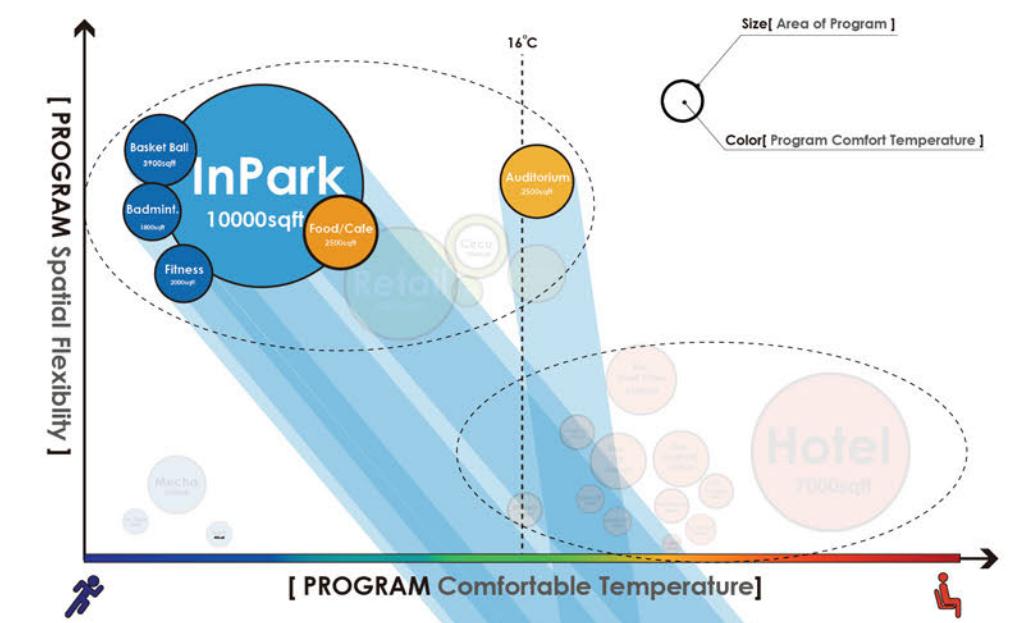
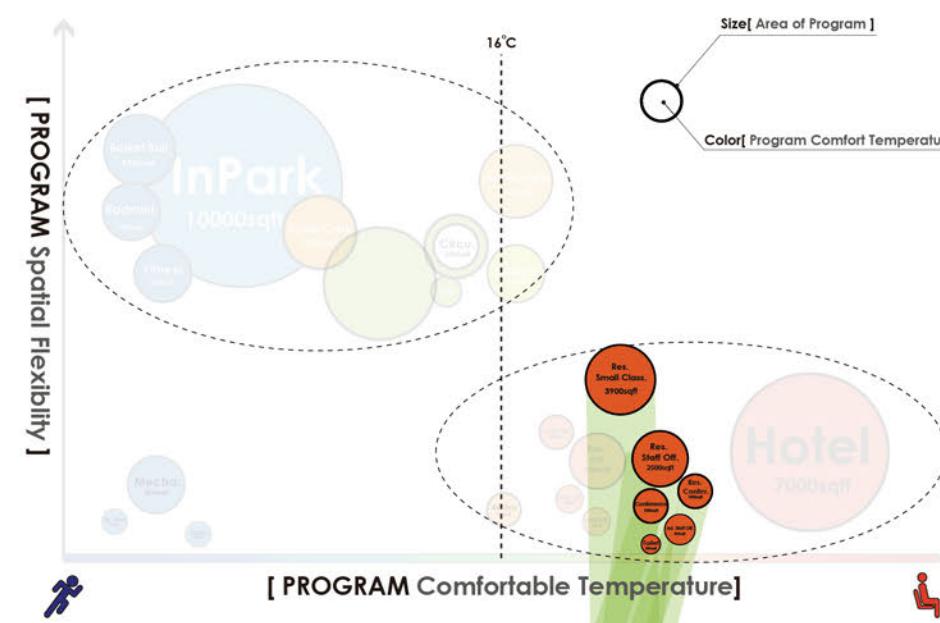
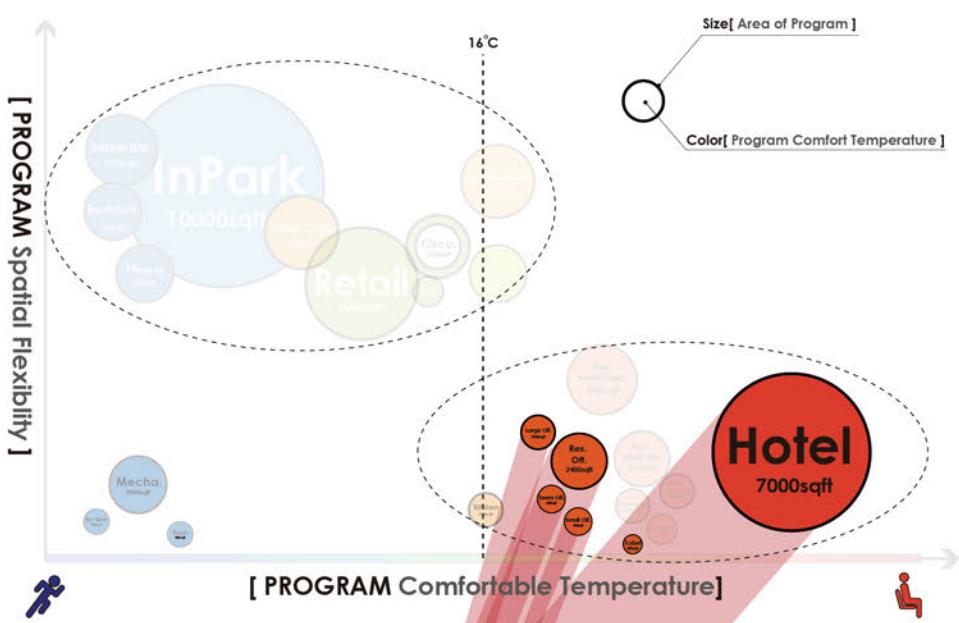
Vulnerable Programs
in terms of
Internal Gain



Invulnerable Programs
in terms of
Internal Gain



Categorizing Programs

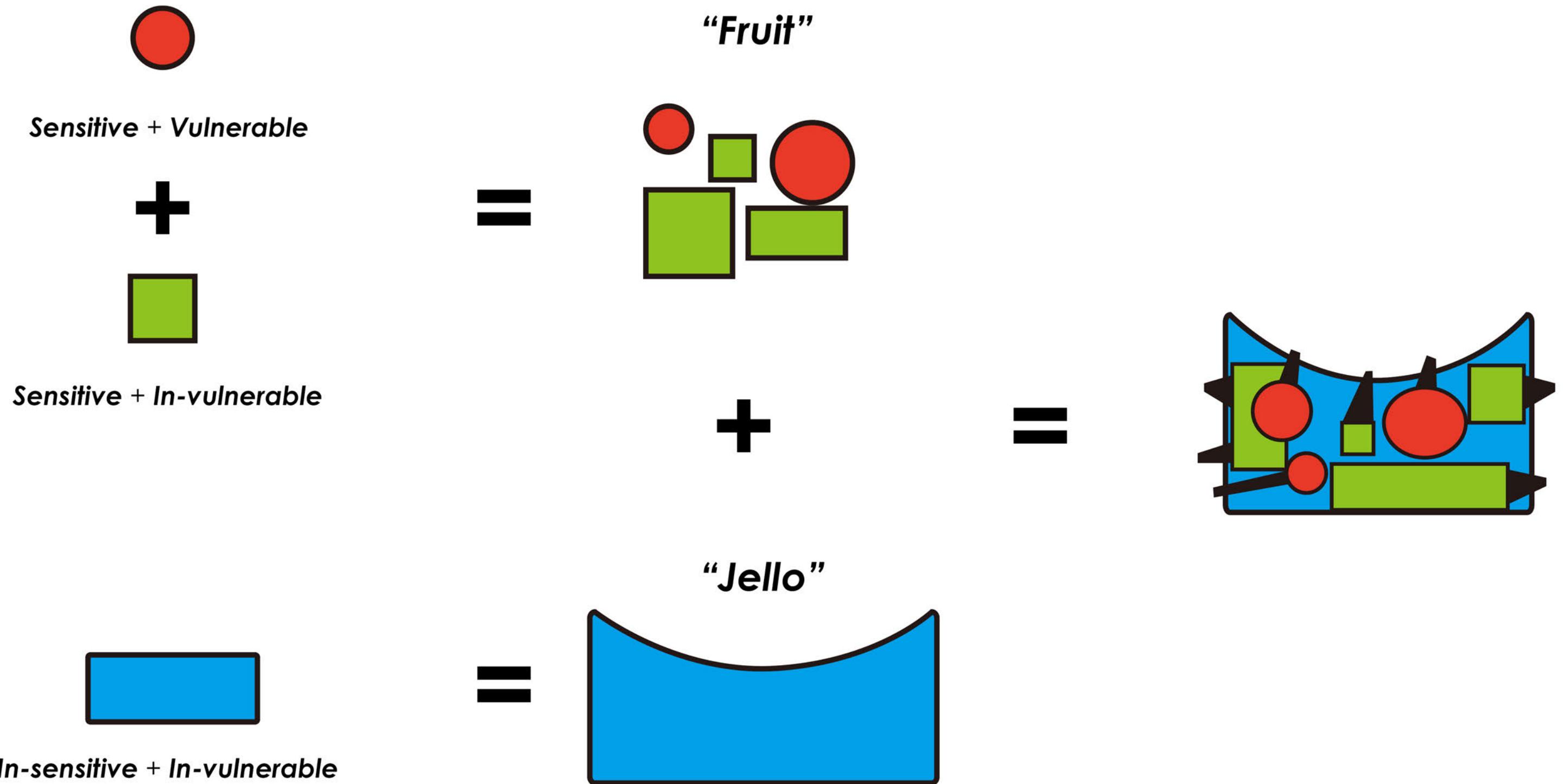


Sensitive + Vulnerable

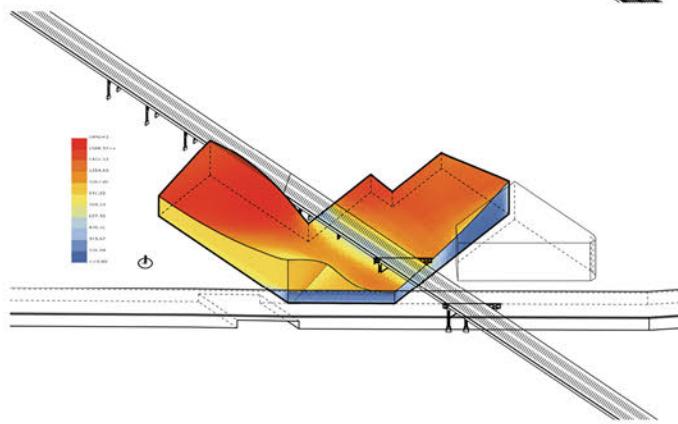
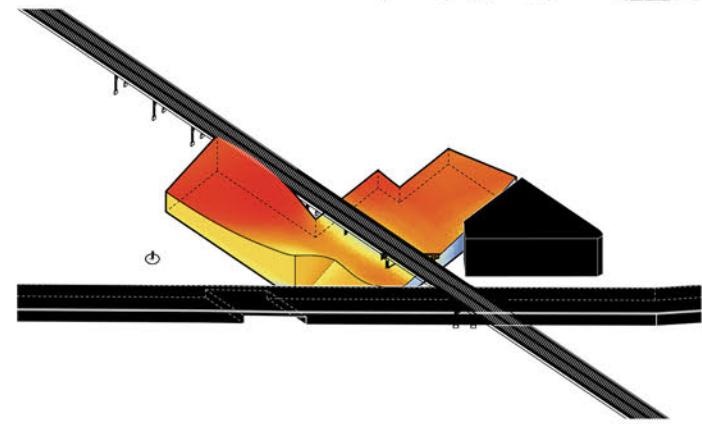
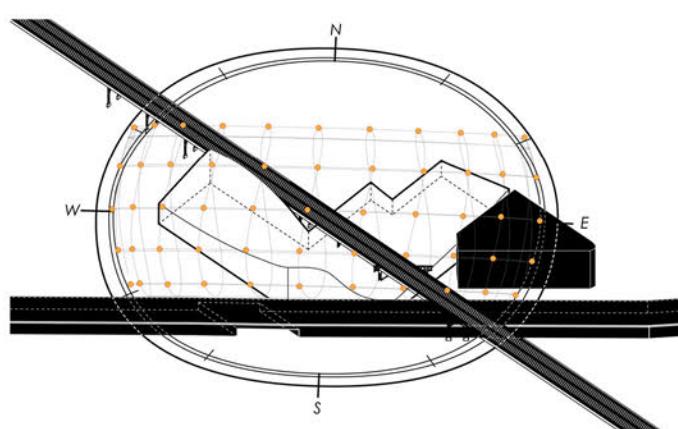
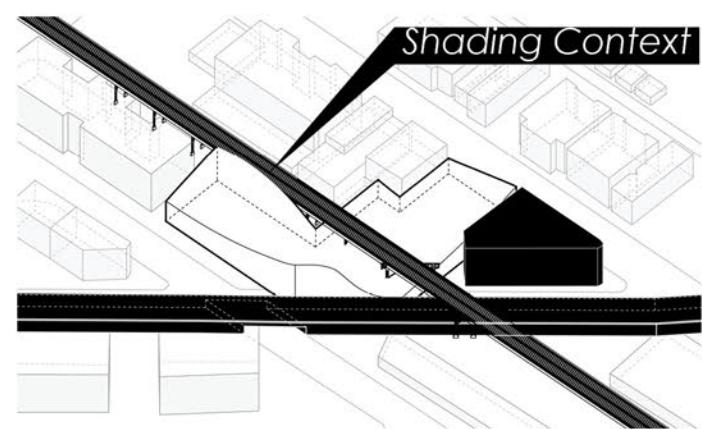
Sensitive + In-vulnerable

In-sensitive + In-vulnerable

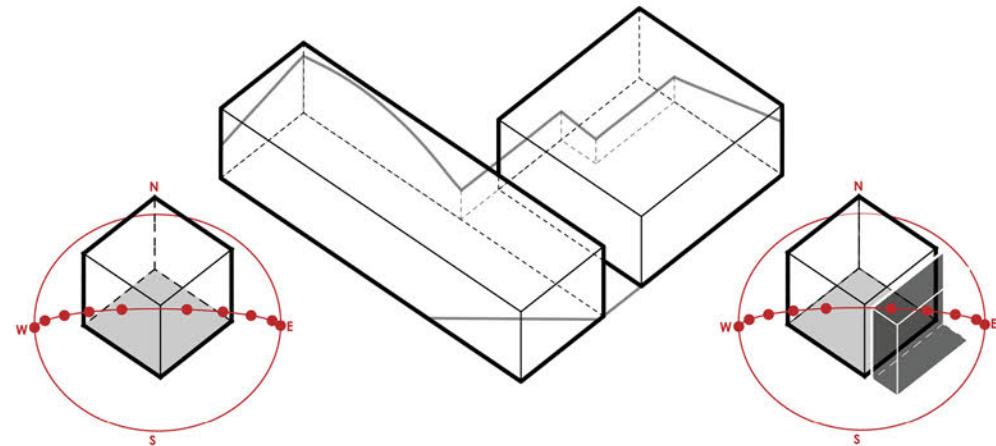
Nature of Programs



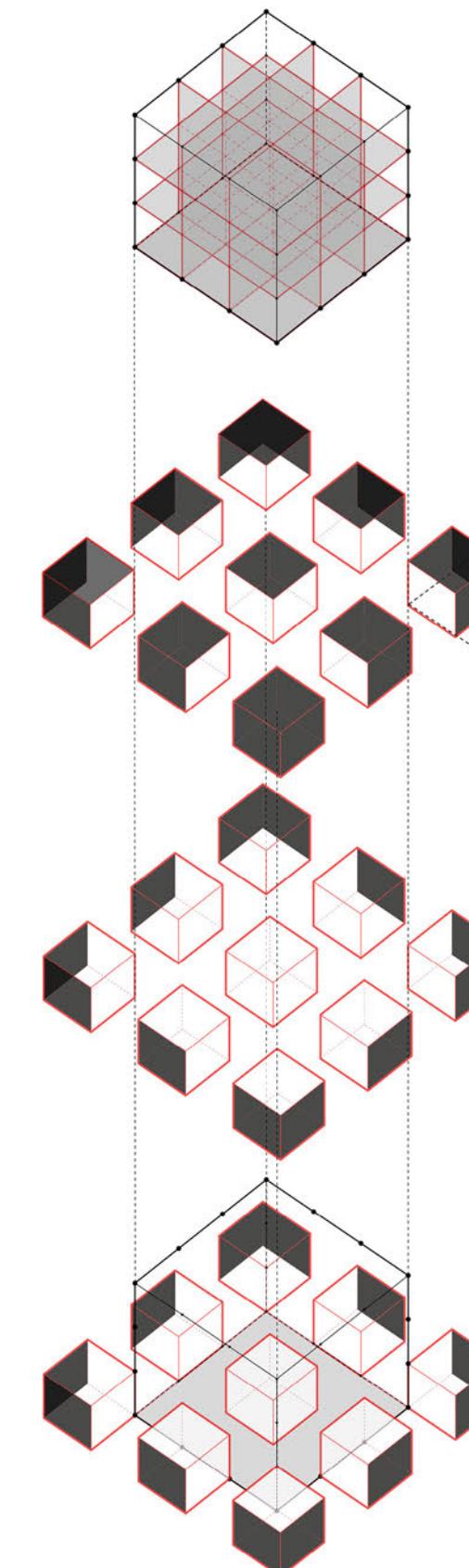
Building Environmental Strategy Shaped by CLIMATE FORCES



1. Annual Solar Radiation Analysis



2. Divide Building Volume Based on Climatic Boundary Condition



3. Subdivide Each Volume into Zones with Different Boundary Condition

Simulation Assumptions

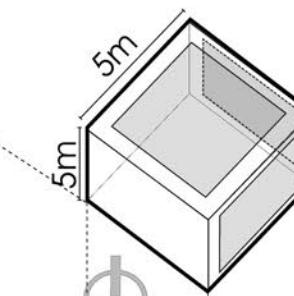
-Surface with
0/0.4/0.6WWR,

Window Assembly
($U=0.634$,
 $SHGC=0.693$,
 $VisT=0.741$)

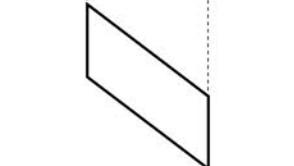
Represent Exterior
Surface of Sub-zone

-Volume Represent
Shading Context

Sub-zone for
East Volume



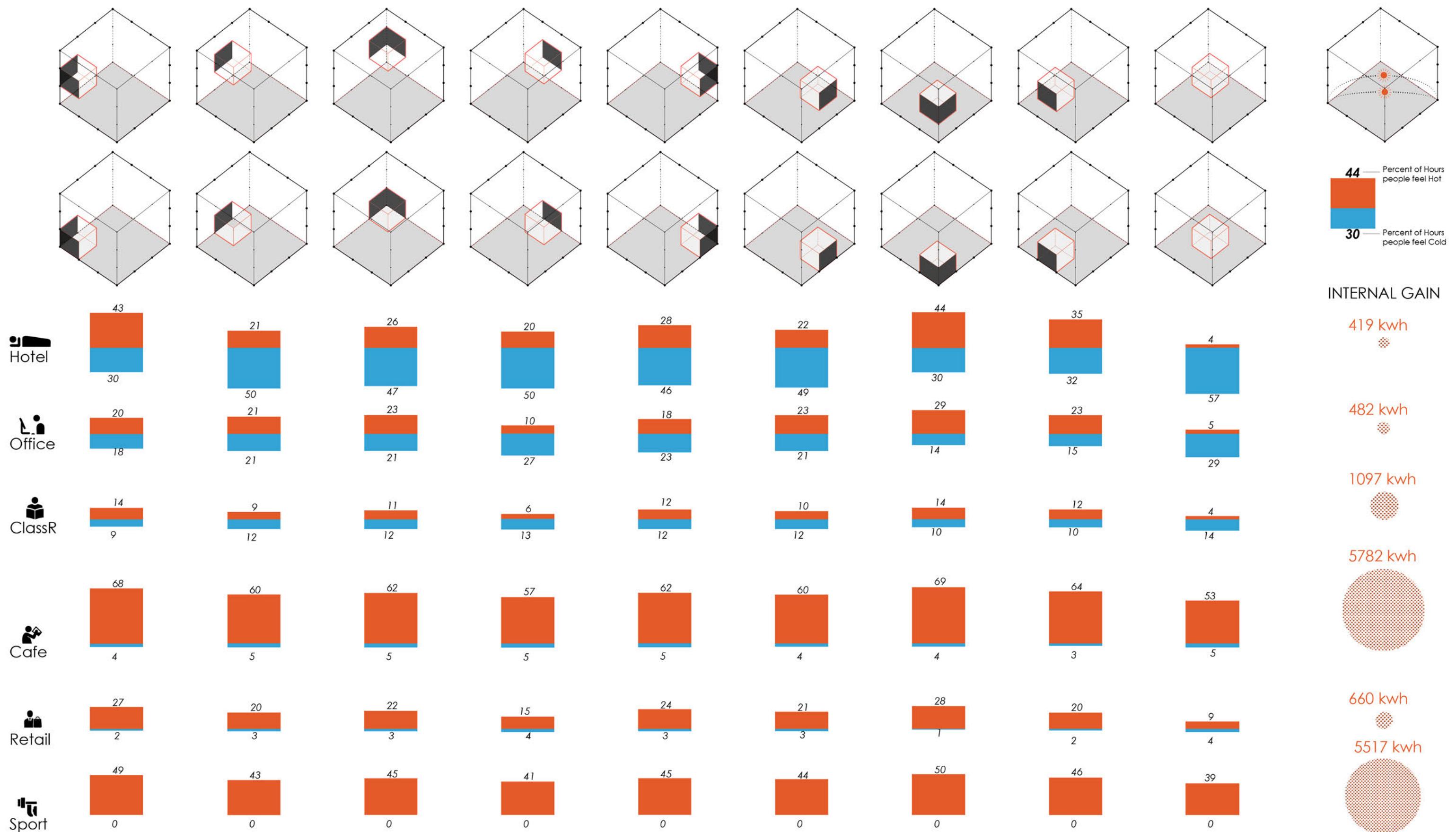
Sub-zone for
West Volume

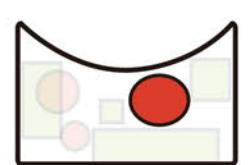


-Adiabatic Surface
Represent Interior
Surface of Sub-zone

Heat Stress Study through All Program

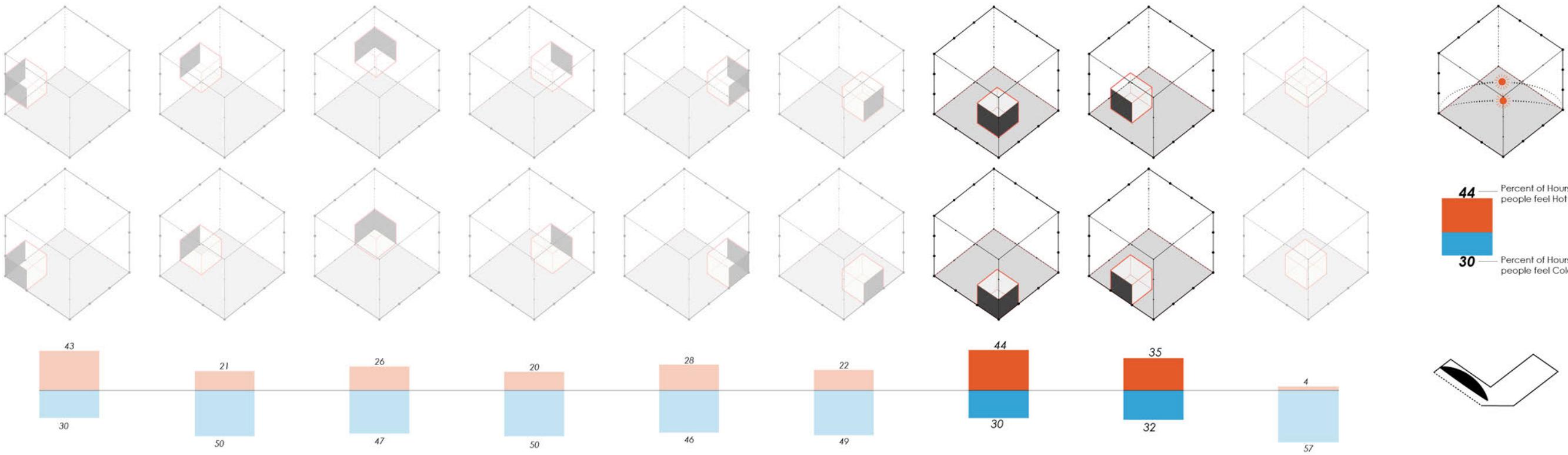
Building Environmental Strategy Shaped by CLIMATE FORCES



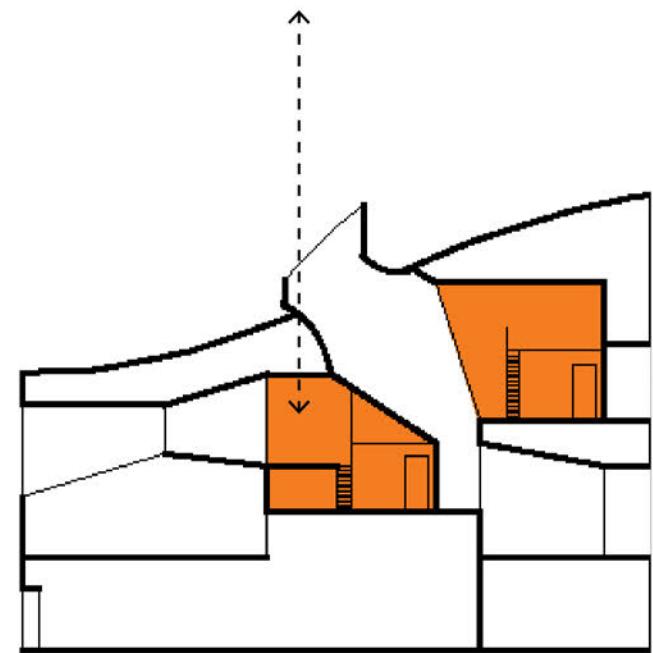
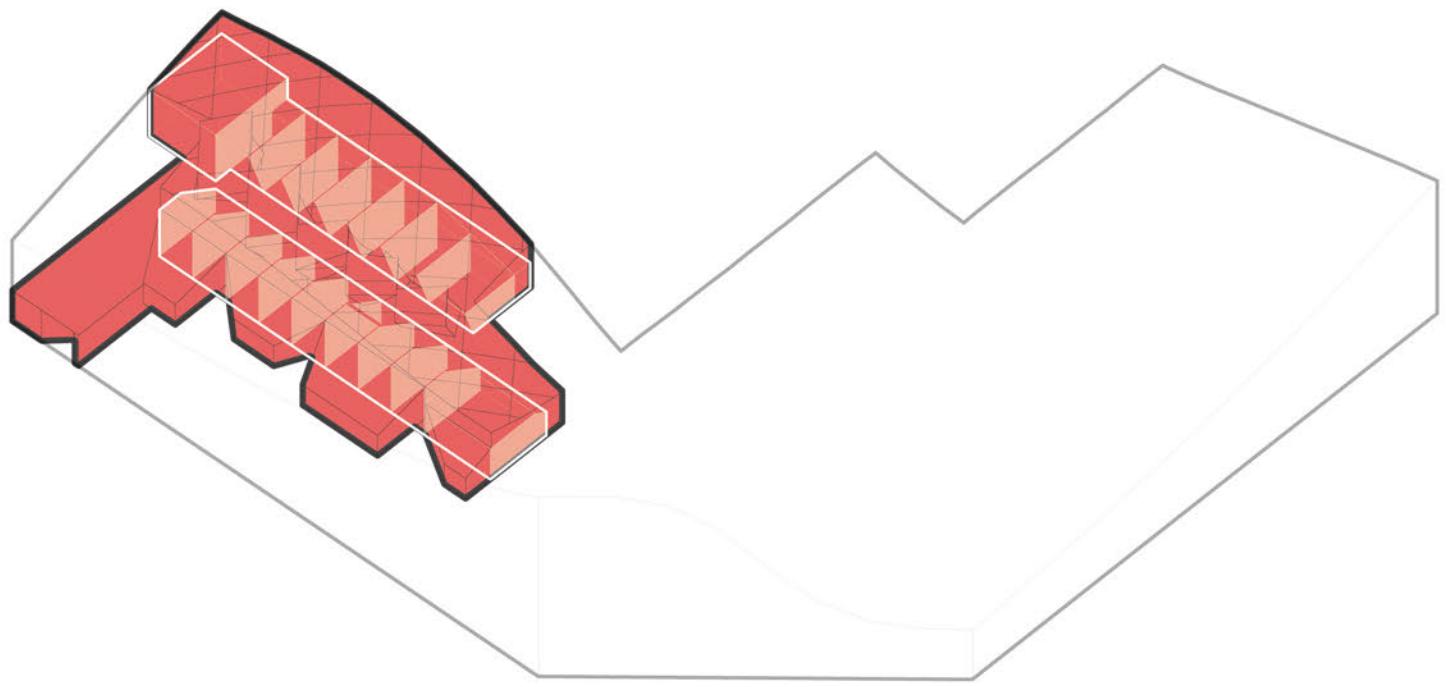


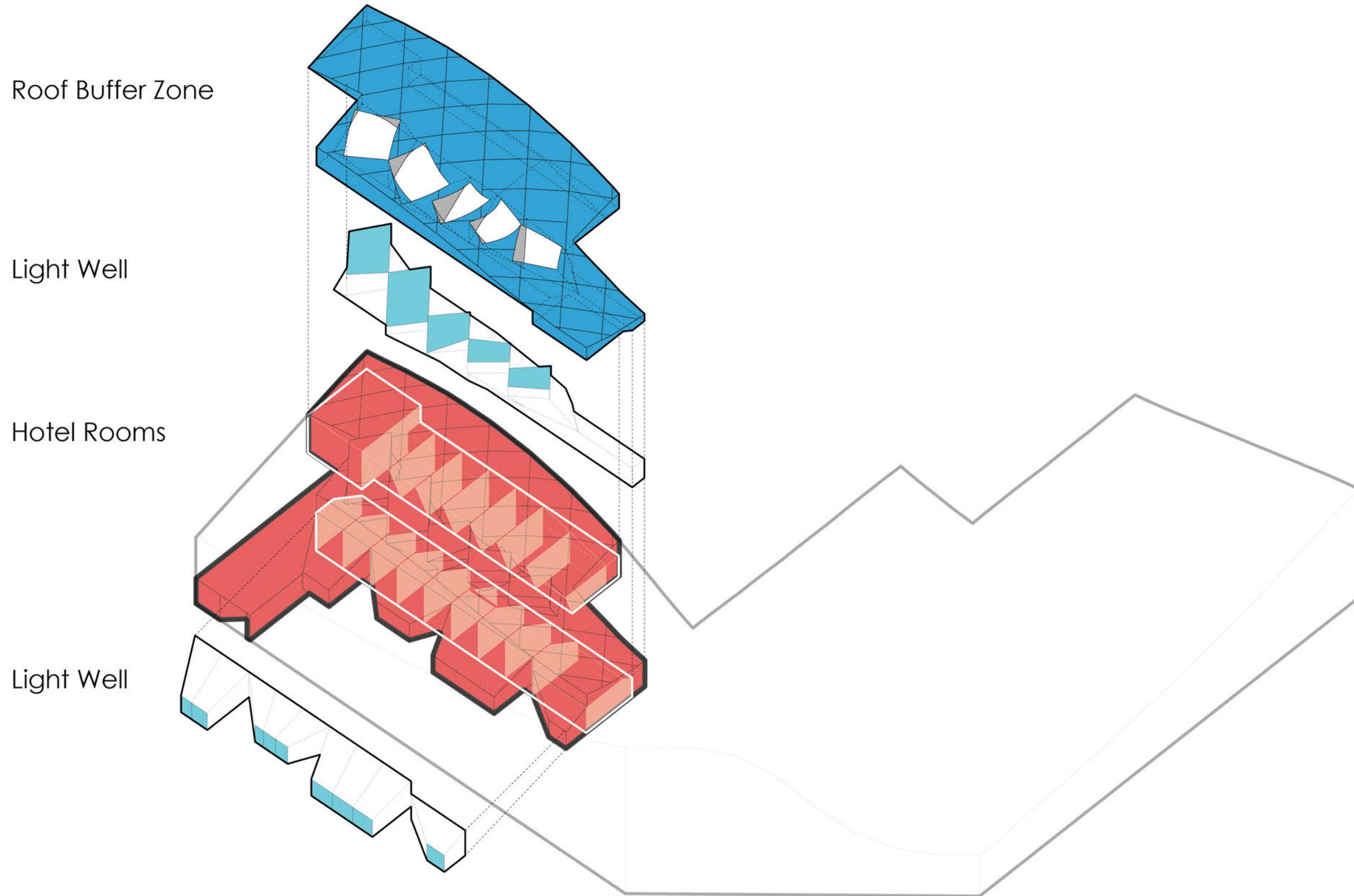
Sensitive

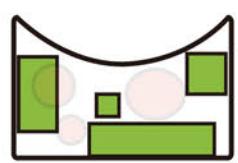
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Vulnerable



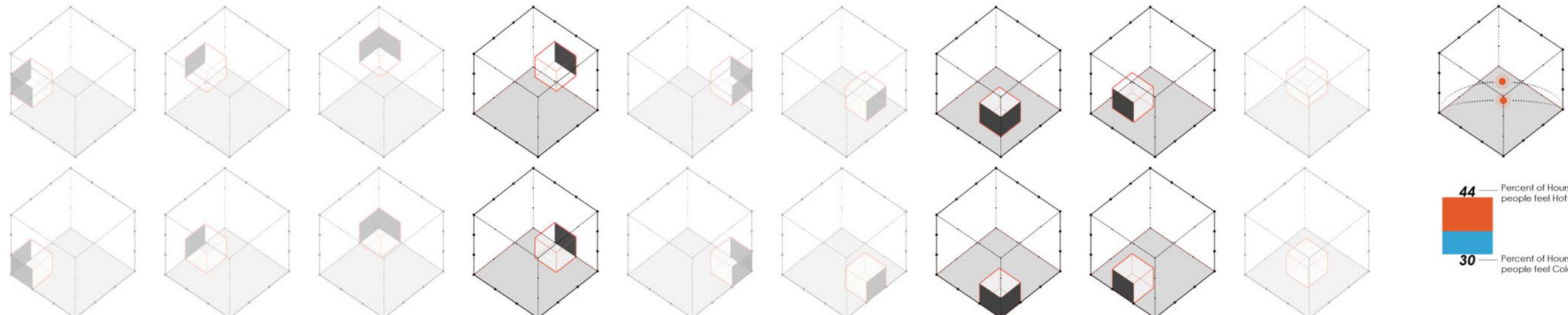
Hotel Room



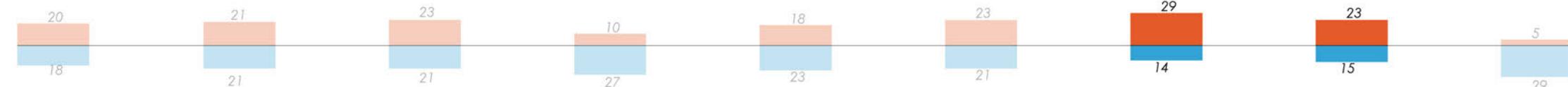




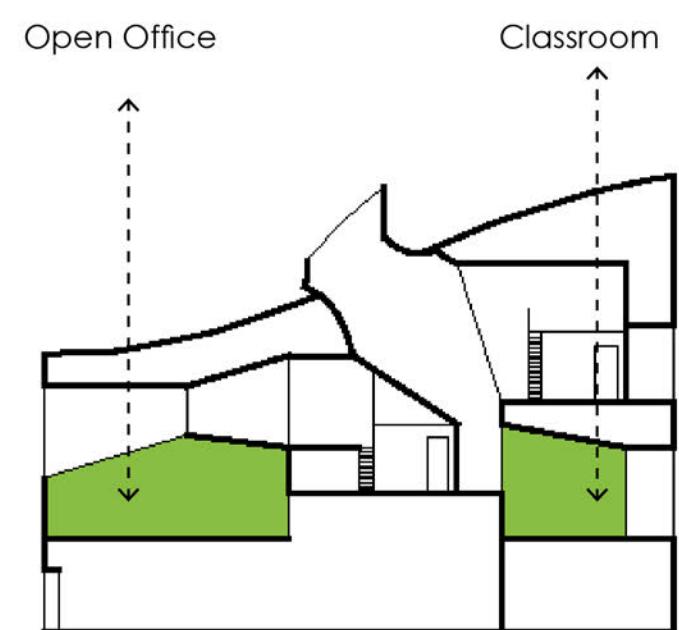
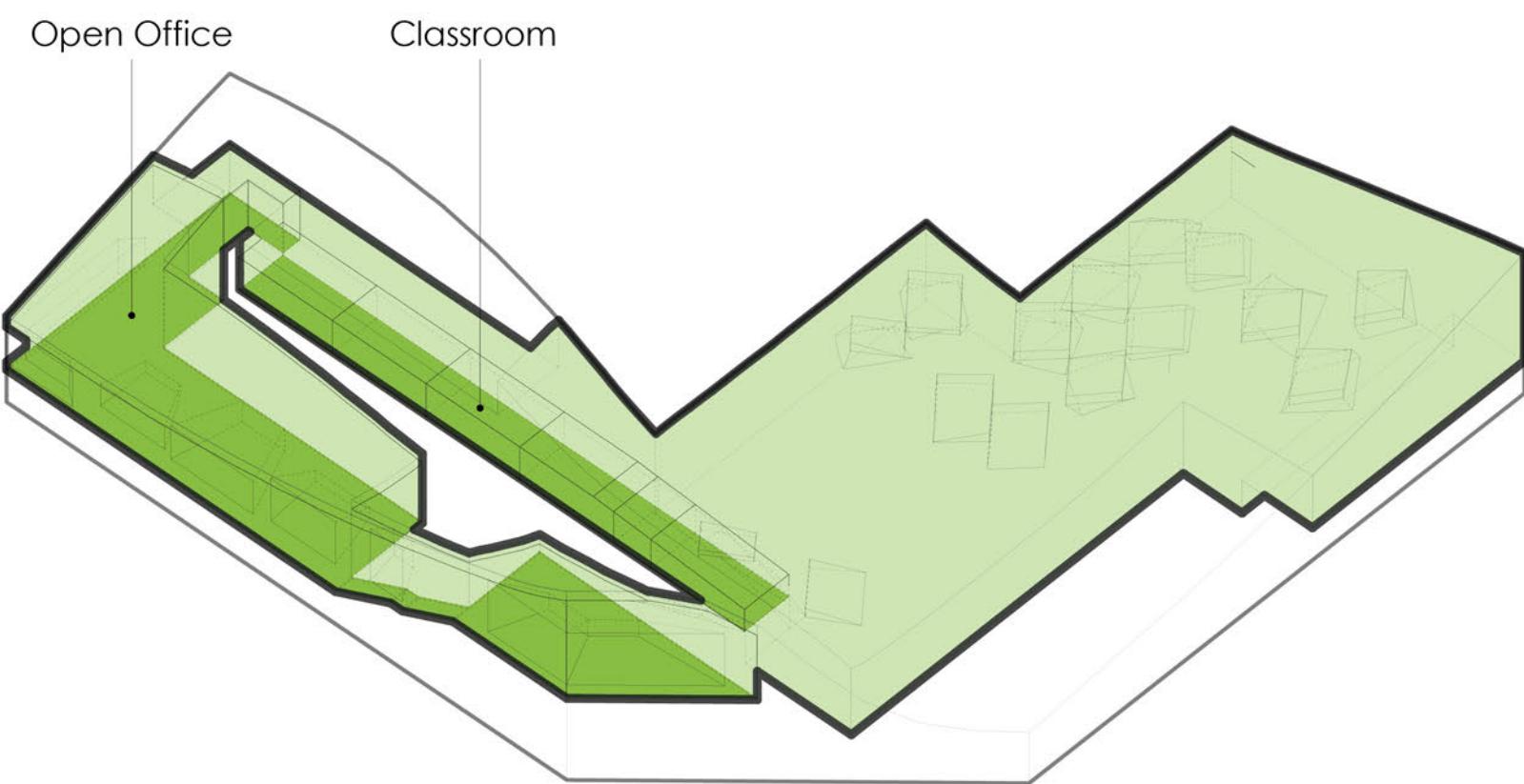
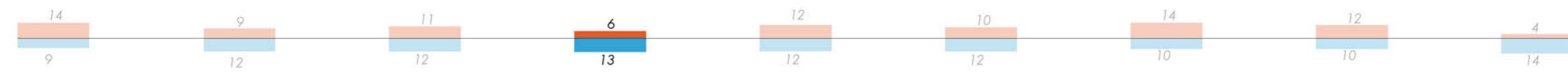
Sensitive
+
In-vulnerable

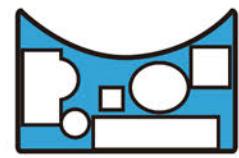


Office

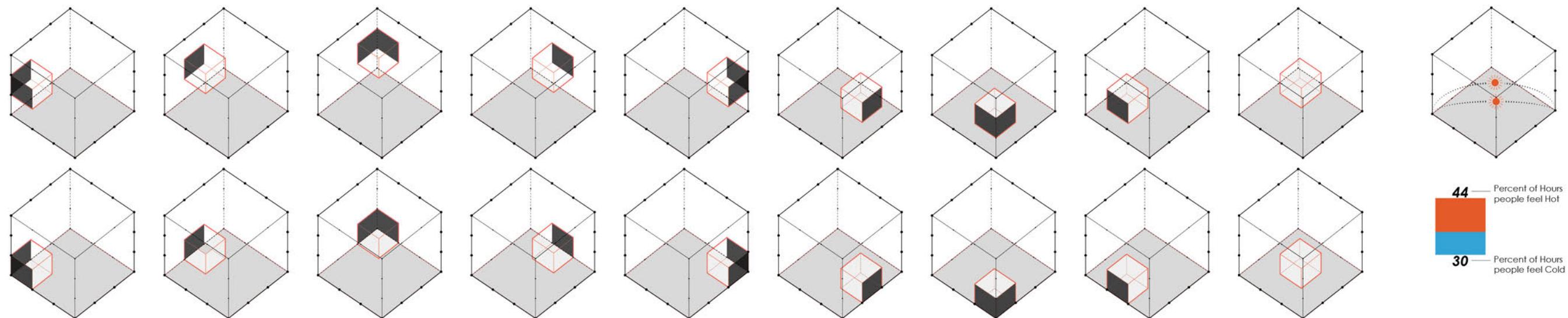


ClassR

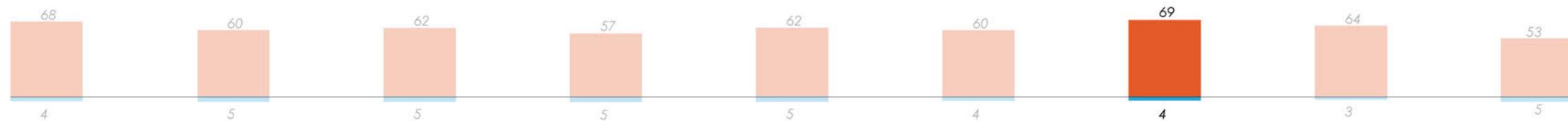




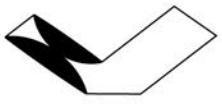
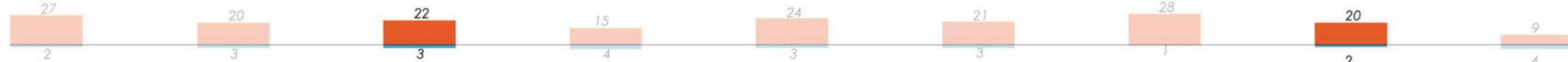
In-sensitive
+
In-vulnerable



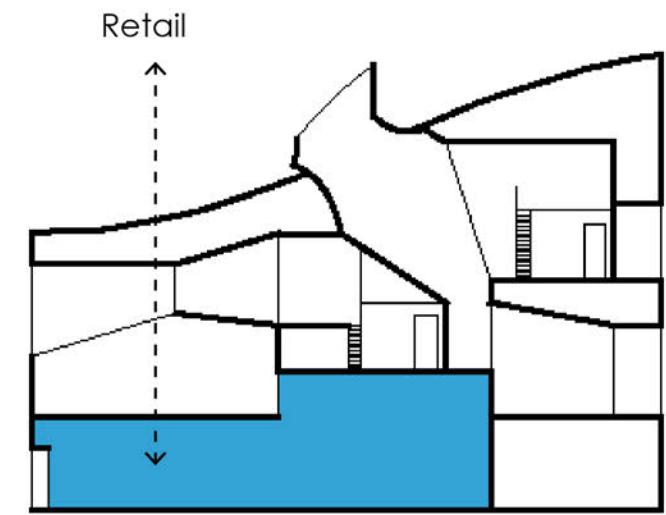
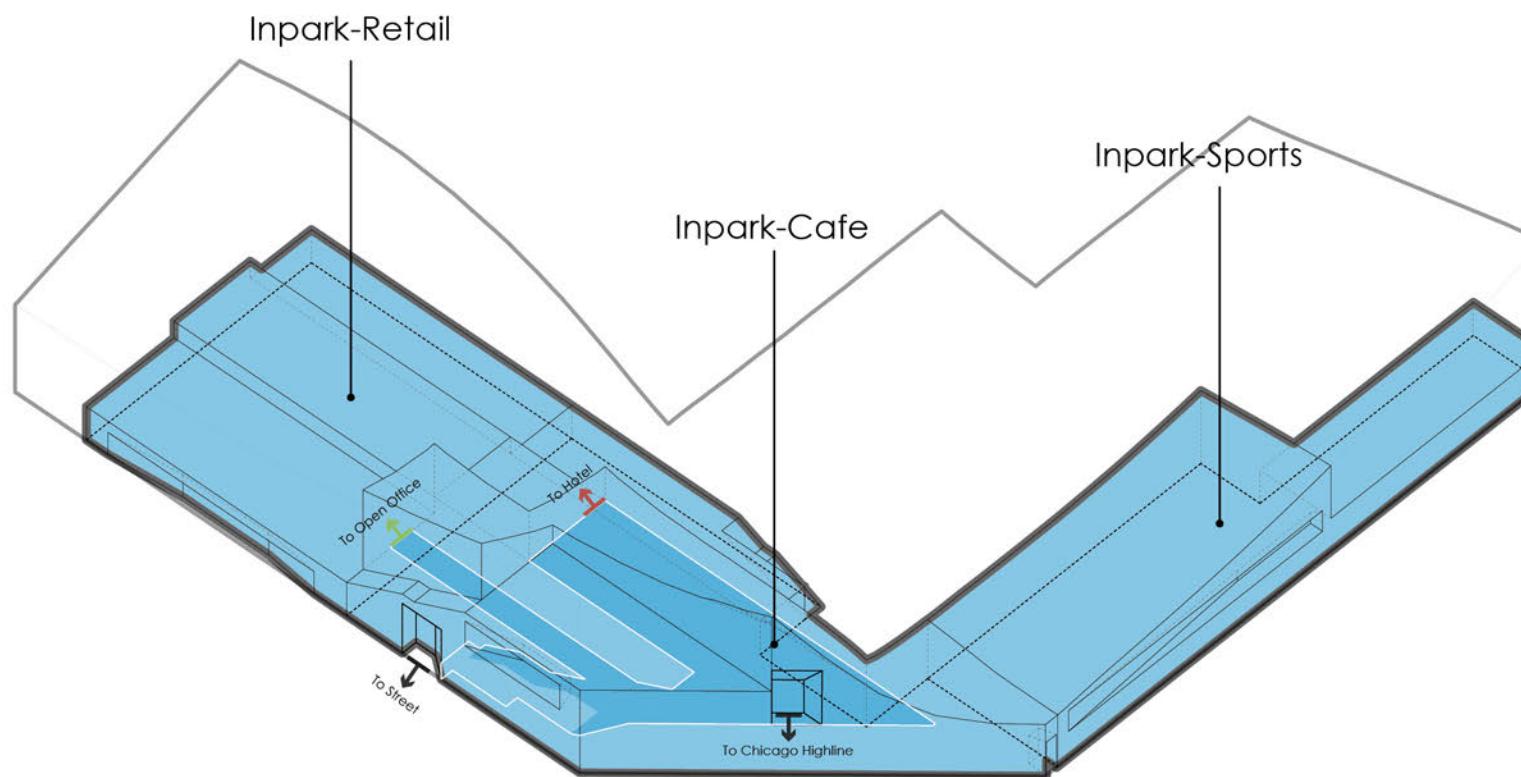
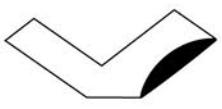
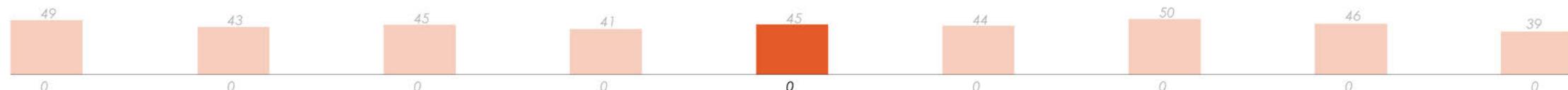
Cafe



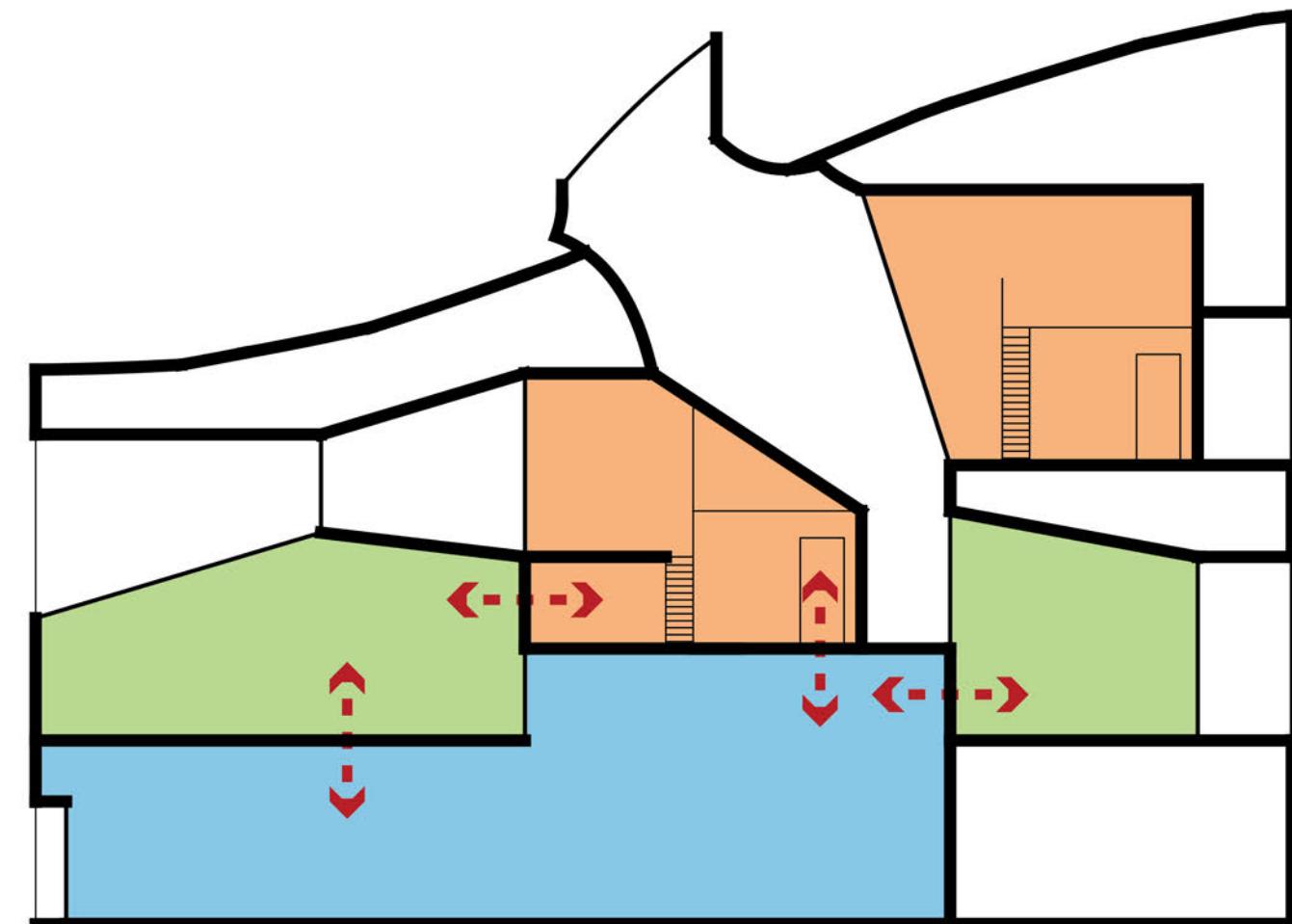
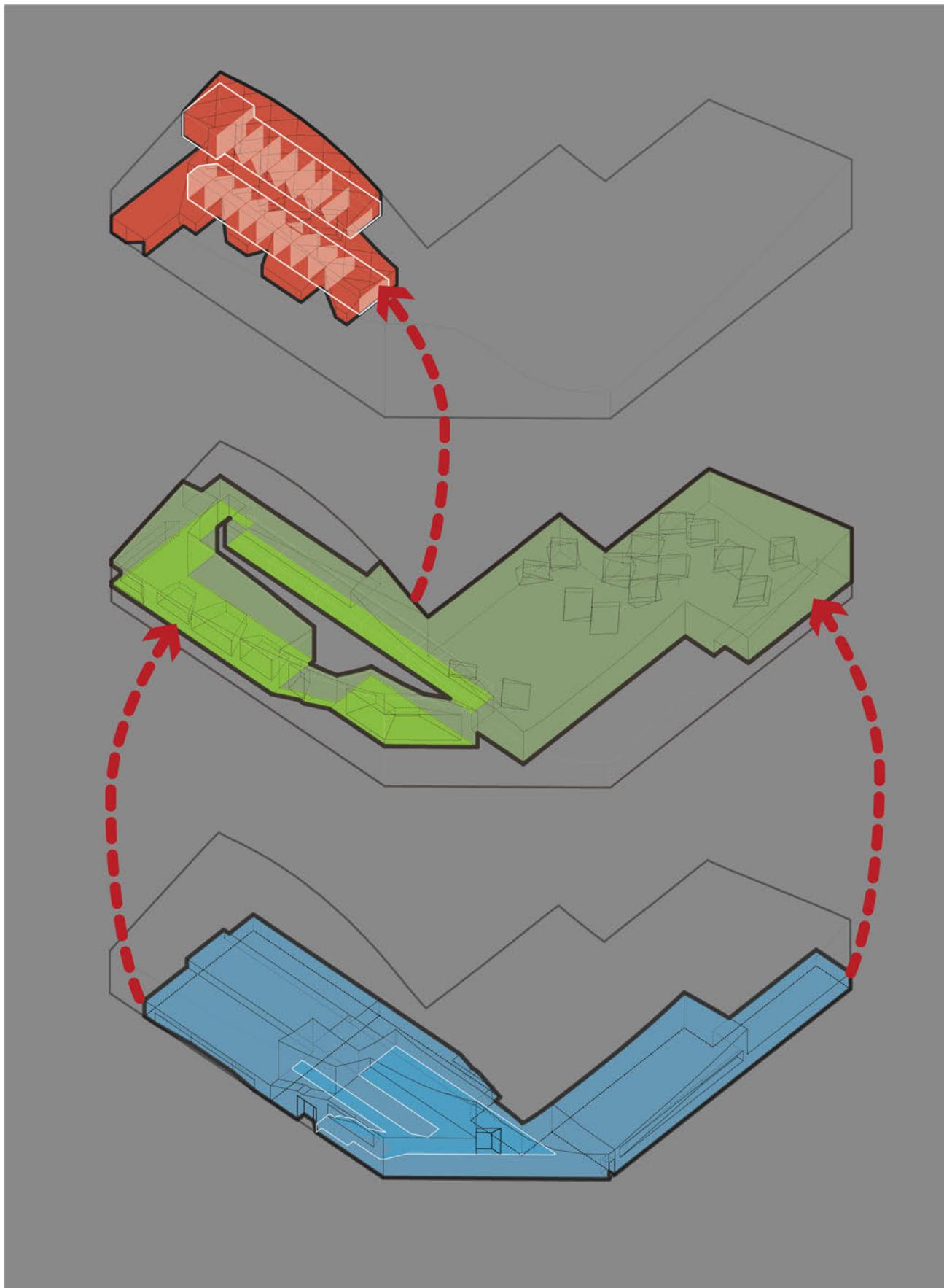
Retail



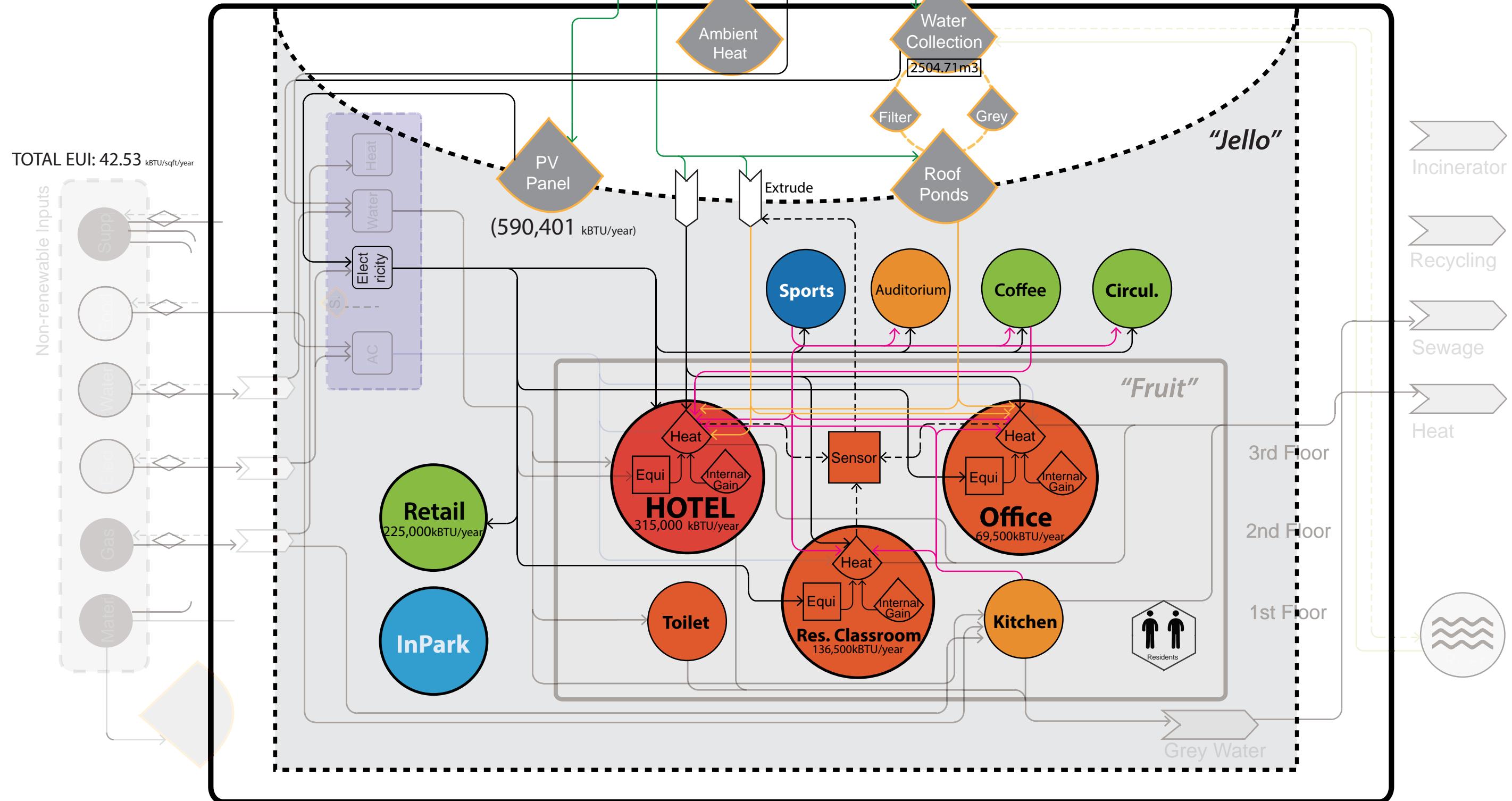
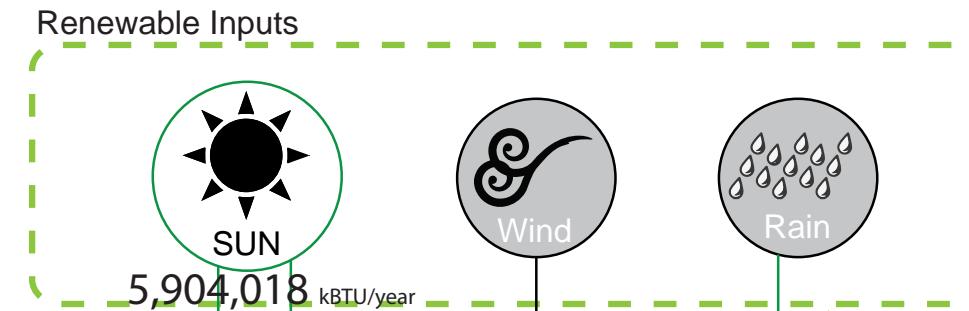
Sport



Heat Sharing Between Programs

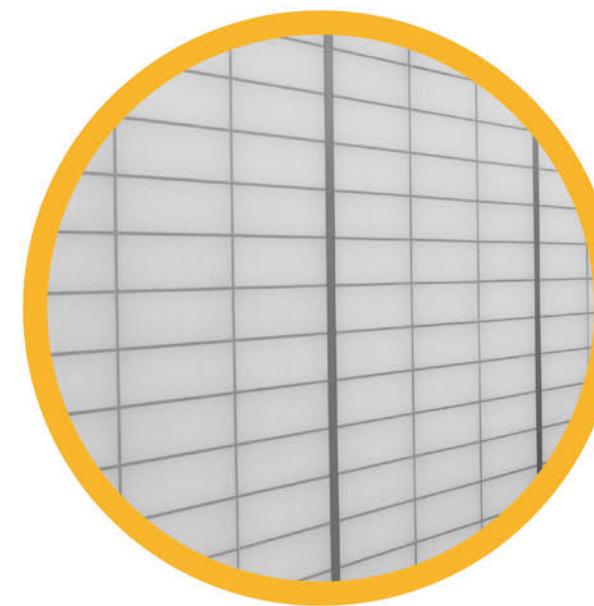


Function	Feul EDI	Area	Total
Retail	40-50 kBtu/sqft/year	5000 sqft	225,000 kBtu/year
Classroom	30-40 kBtu/sqft/year	3900 sqft	136,500 kBtu/year
Hotel	40-50 kBtu/sqft/year	7000 sqft	315,000 kBtu/year
Office	0-10 kBtu/sqft/year	13900 sqft	69,500 kBtu/year

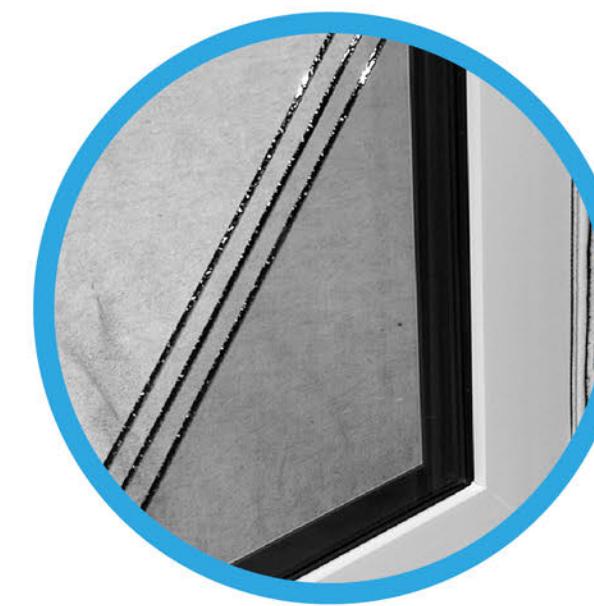




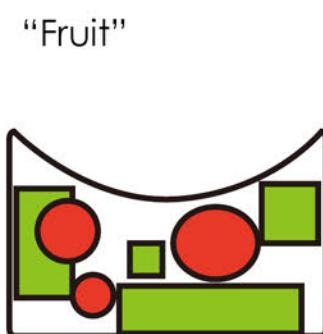
Chicago Brick



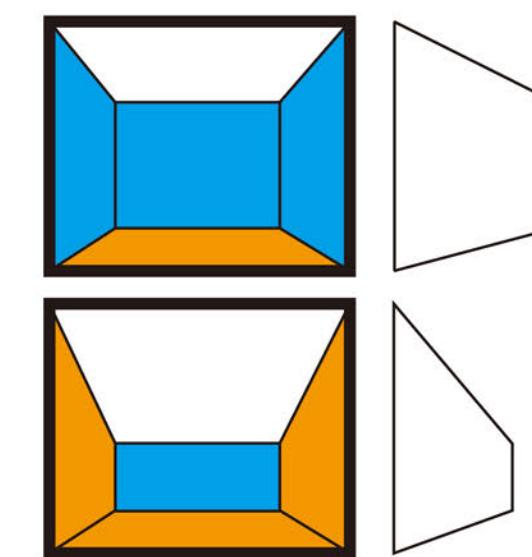
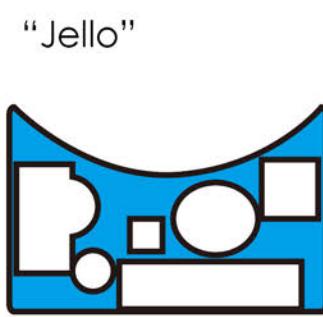
Nanogel Glass



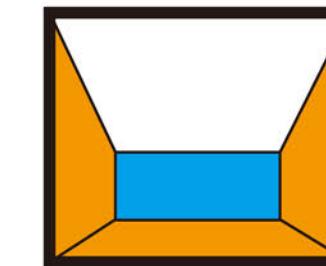
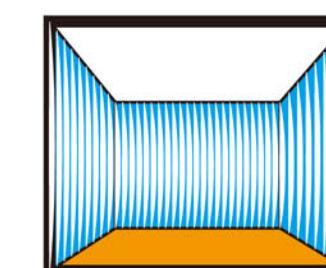
Triple Pane Glass



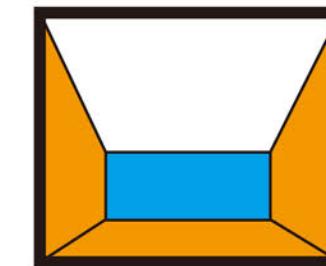
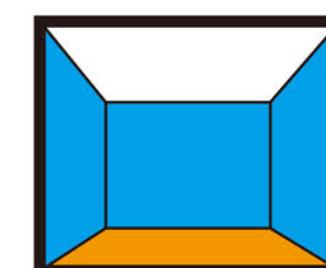
Composition Percentage



Summer

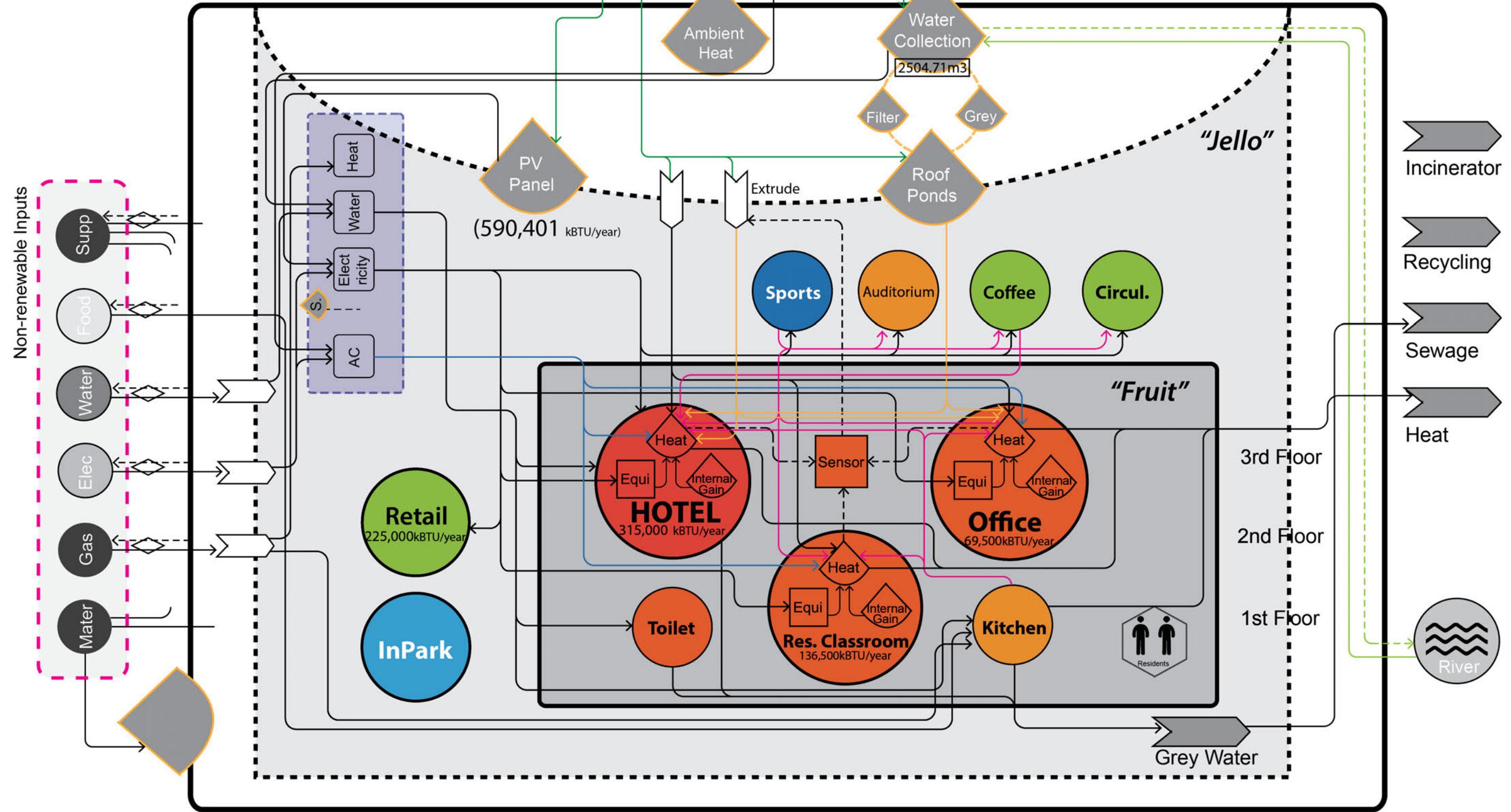
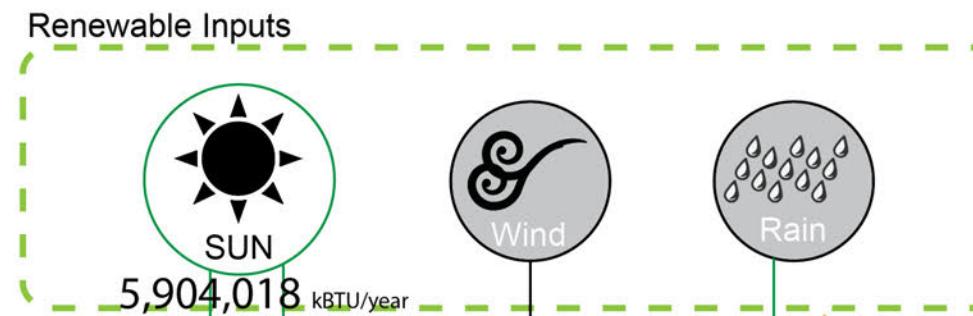


Winter

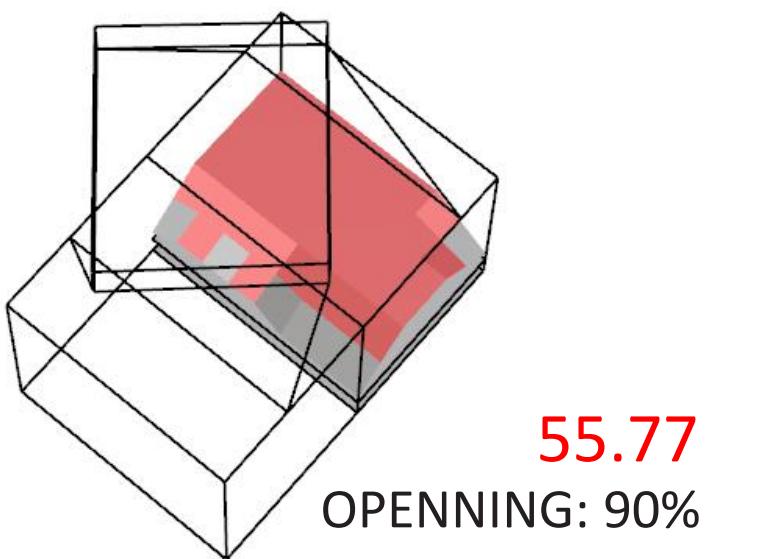
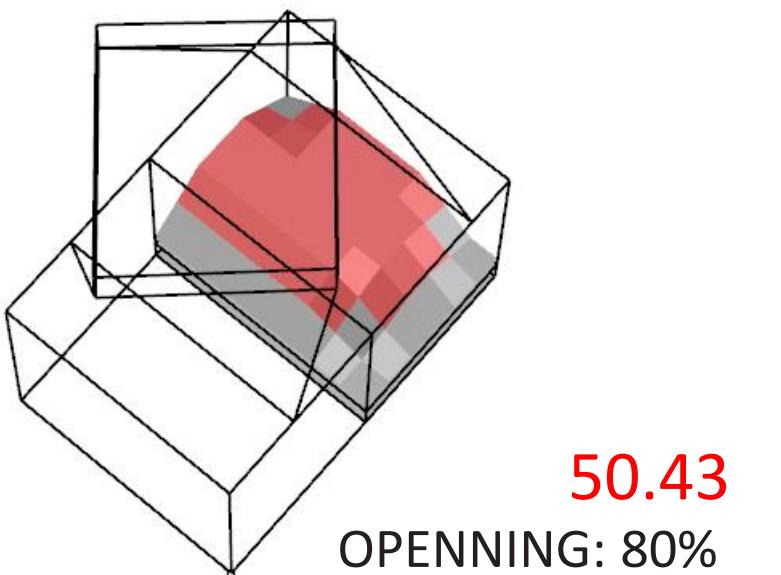
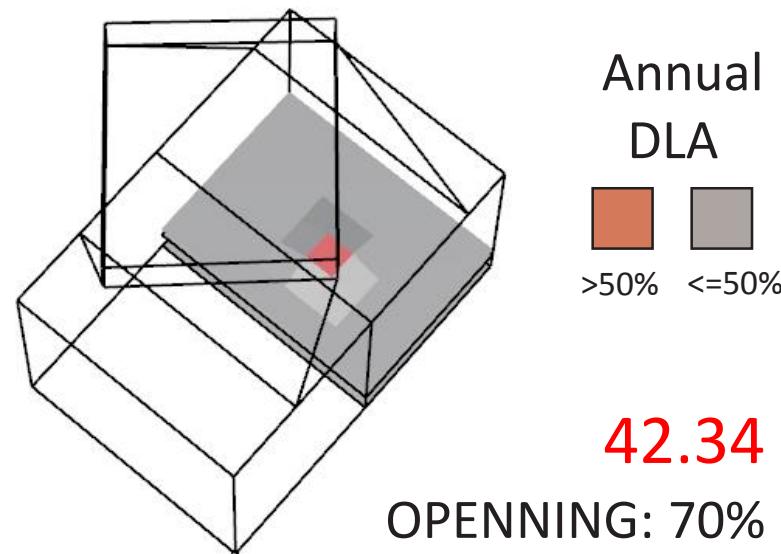




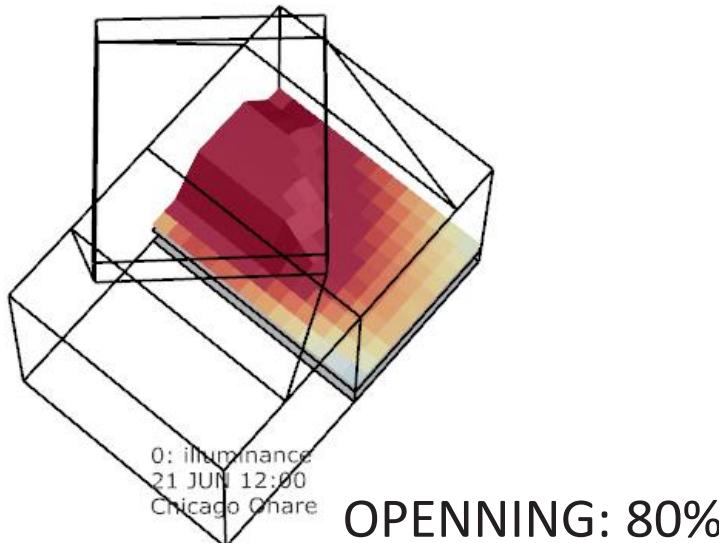
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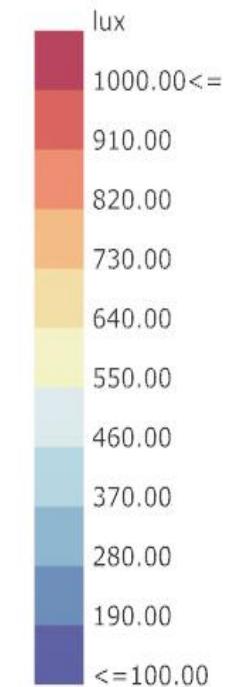
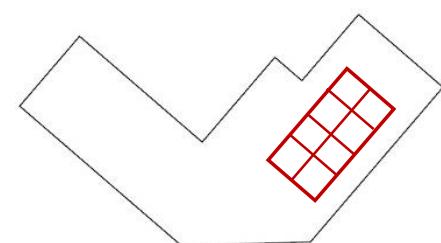
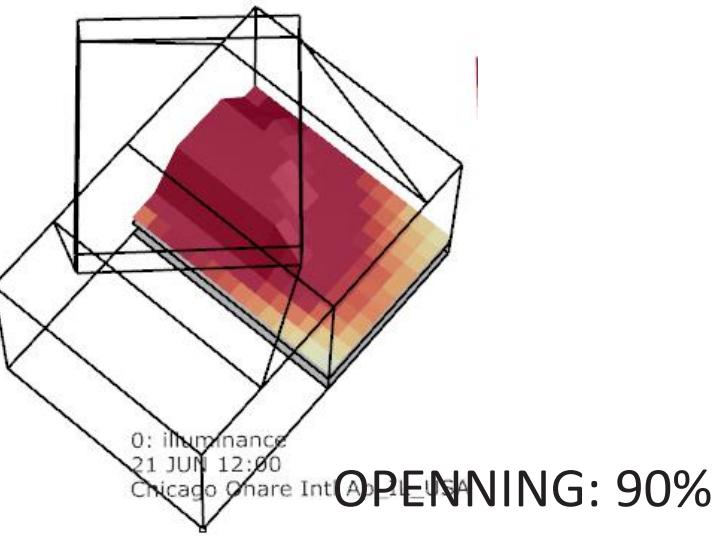
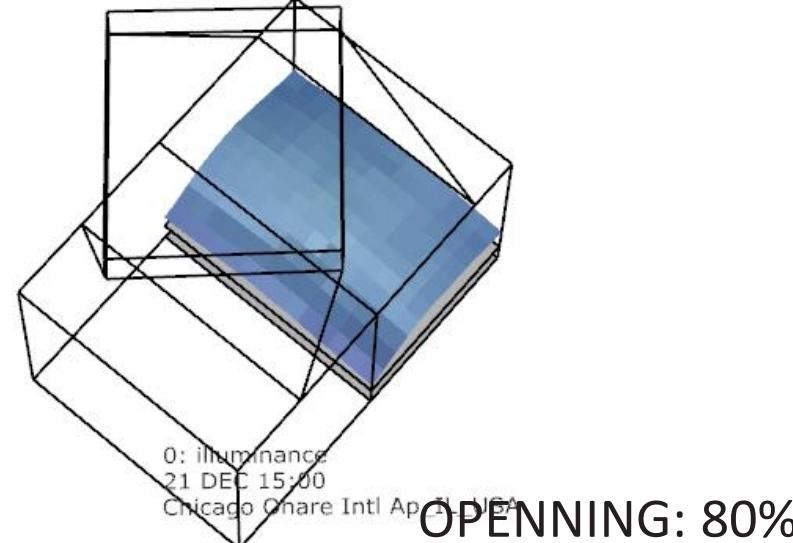
Office Daylight



June 21 12:00
Illuminance

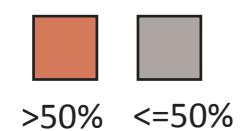
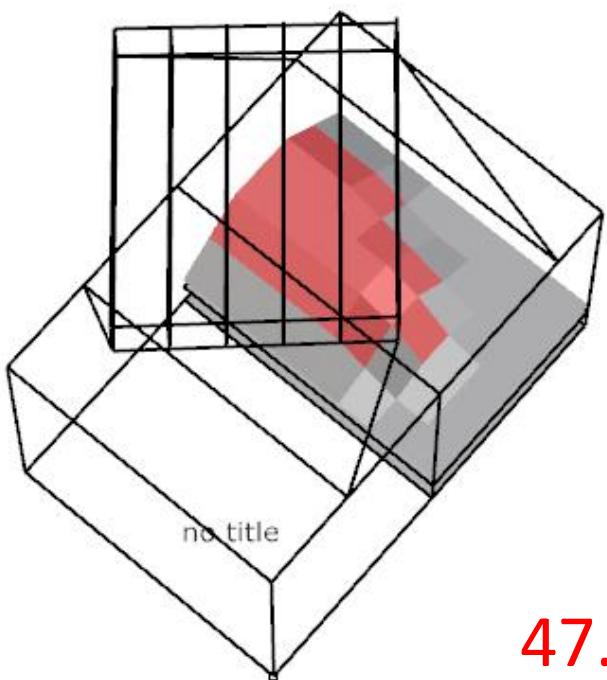


Dec 21 15:00
Illuminance

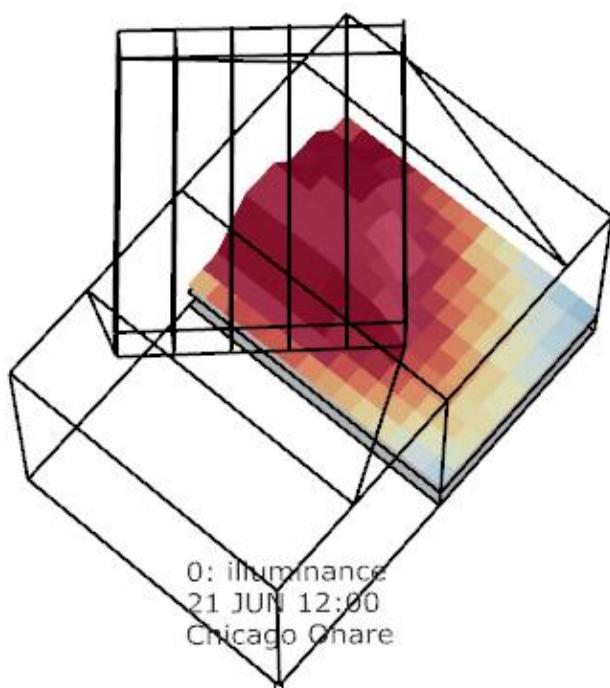


Office Daylight

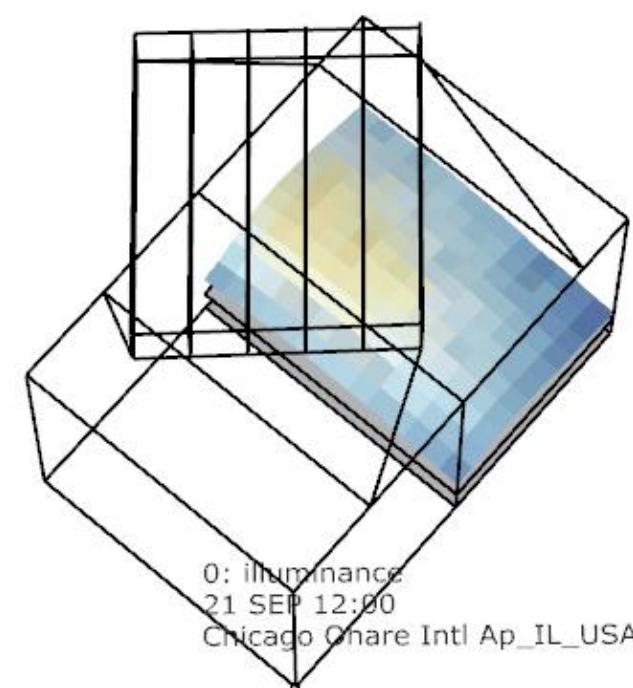
Annual
DLA



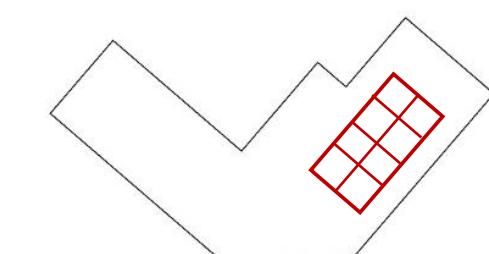
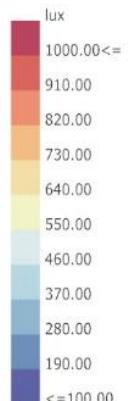
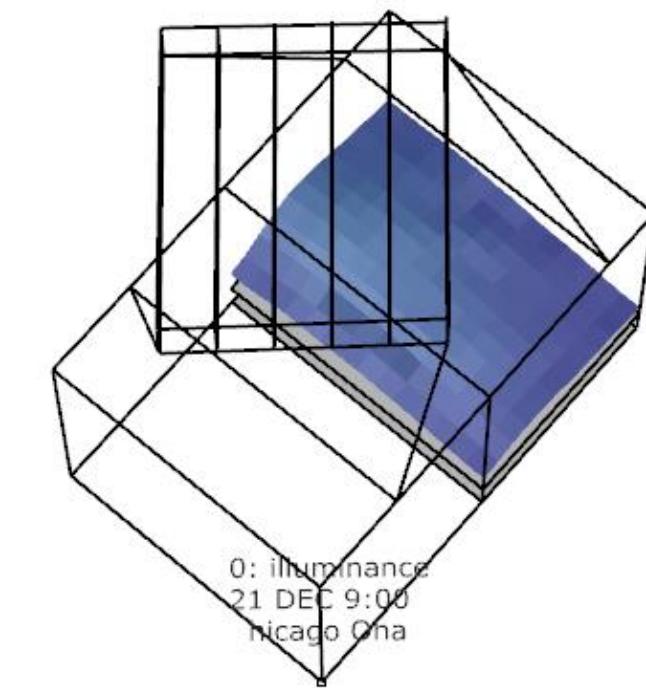
June 21 12:00
Illuminance



Dec 21 15:00
Illuminance

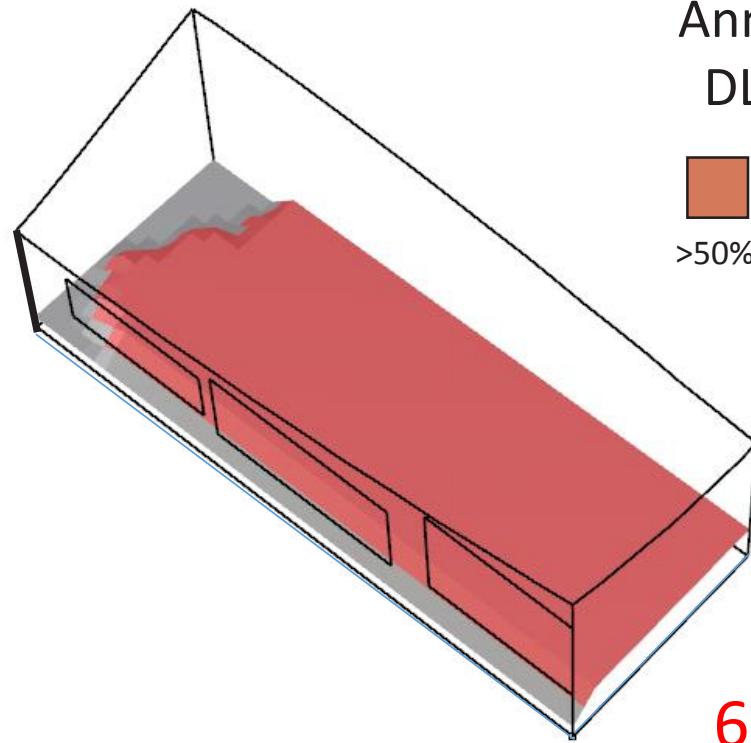
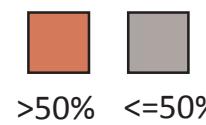


Dec 21 15:00
Illuminance



Office Daylight

Annual
DLA

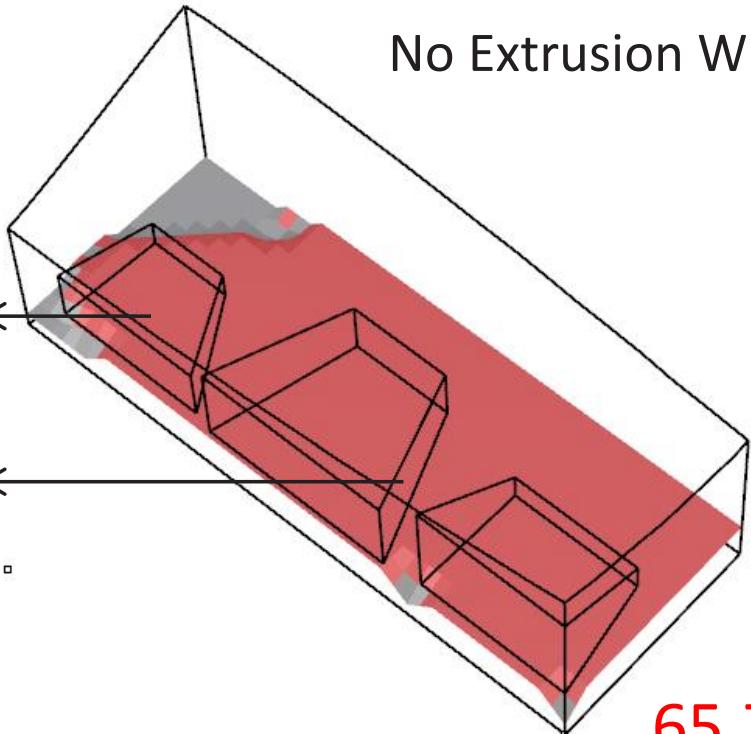


60.69

No Extrusion Window

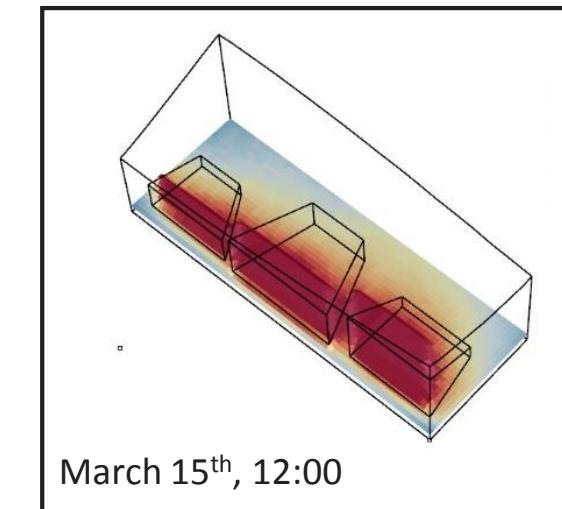
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SHGC: 0.28
VT: 0.20

U_value 0.63
SHGC 0.69
VT0.74

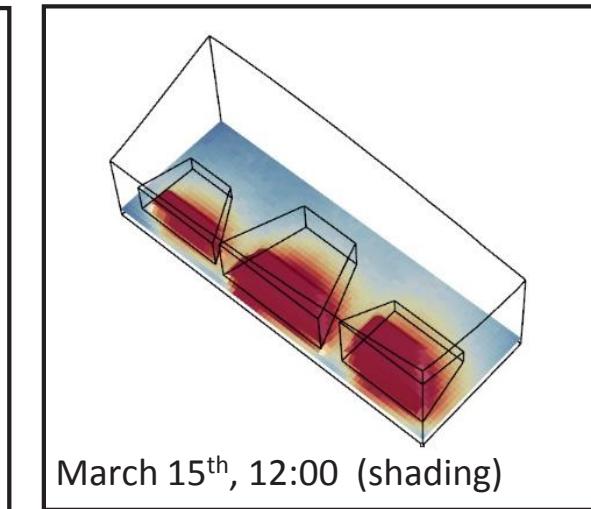


65.76

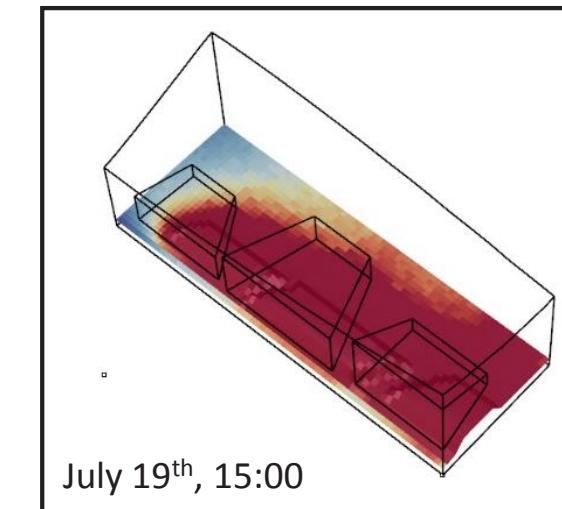
Extrusion Window



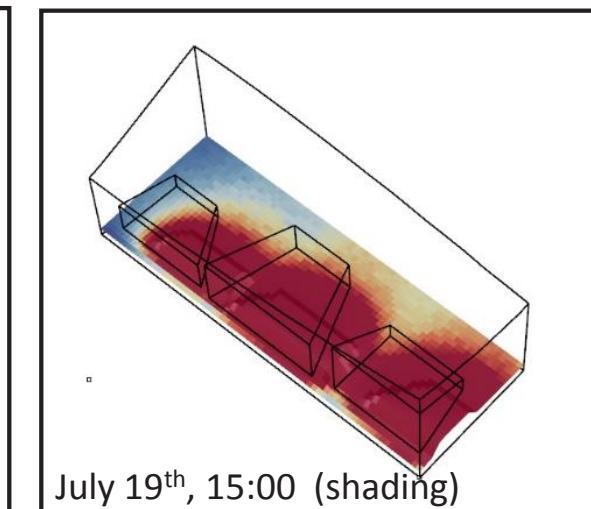
March 15th, 12:00



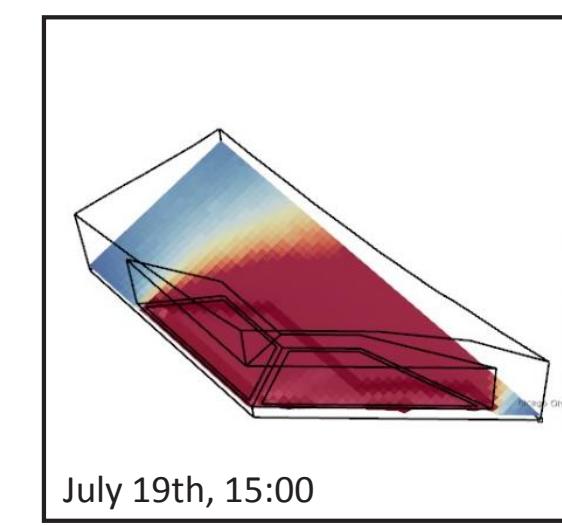
March 15th, 12:00 (shading)



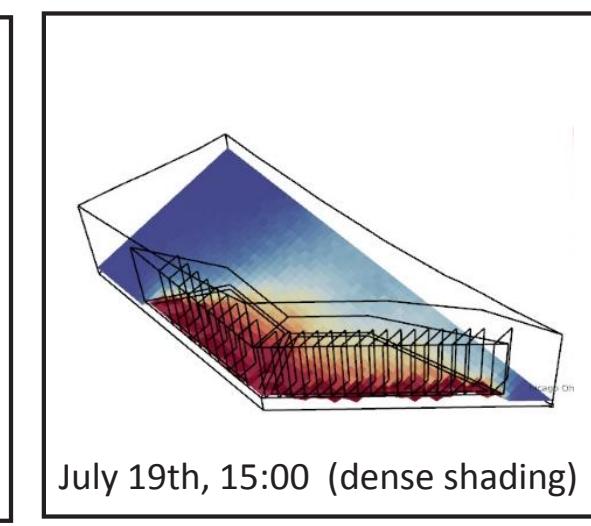
July 19th, 15:00



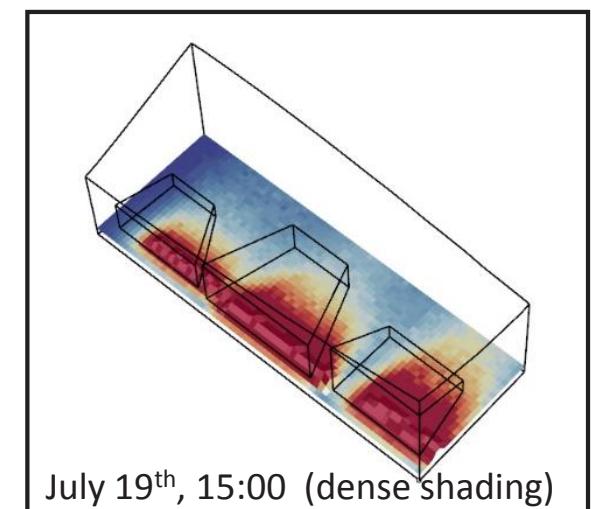
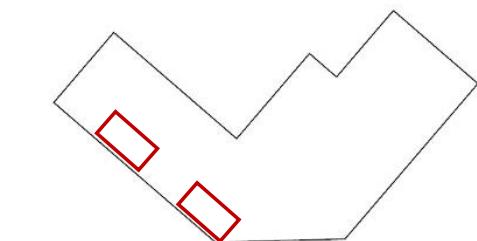
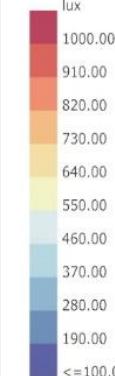
July 19th, 15:00 (shading)



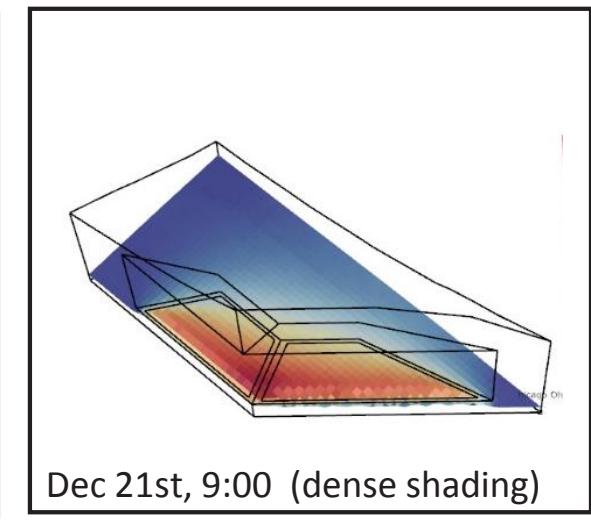
July 19th, 15:00



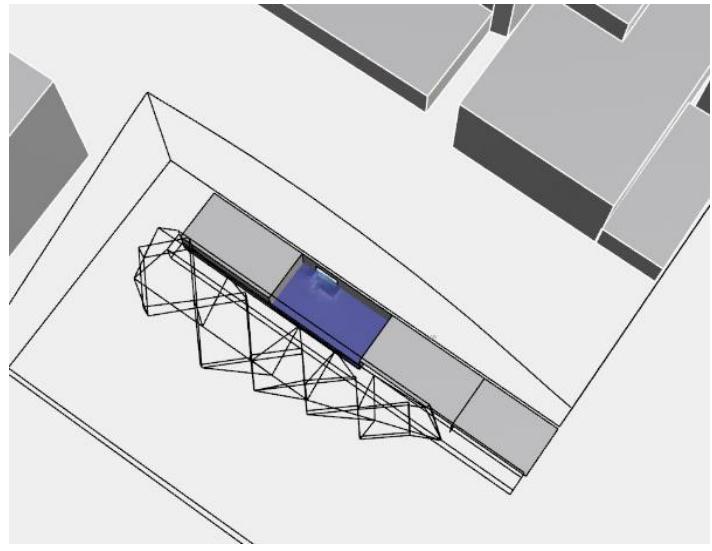
July 19th, 15:00 (dense shading)



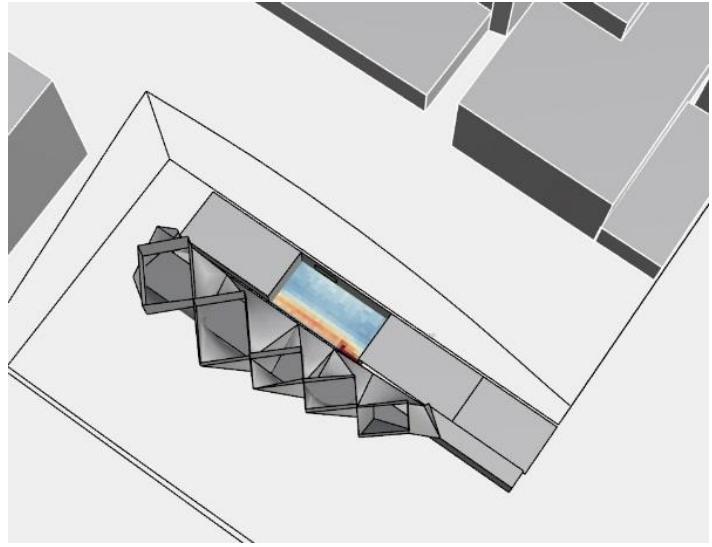
July 19th, 15:00 (dense shading)



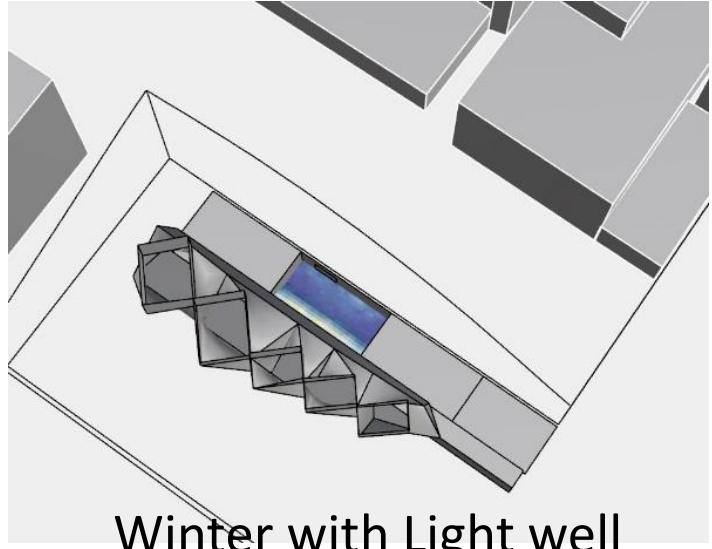
Dec 21st, 9:00 (dense shading)



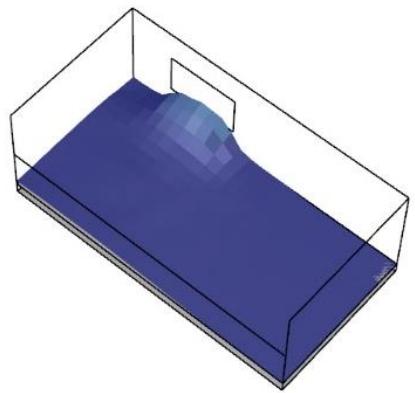
No Light well



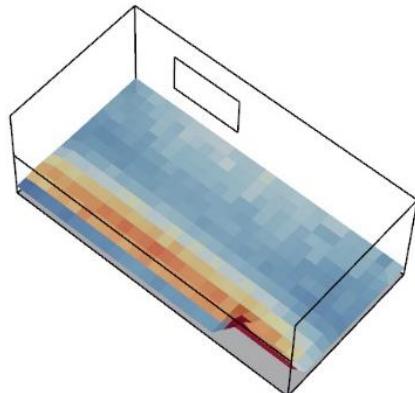
Summer with Light well



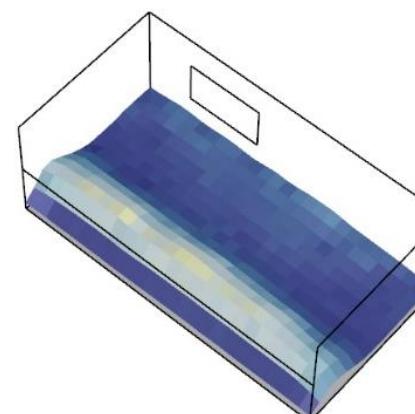
Winter with Light well



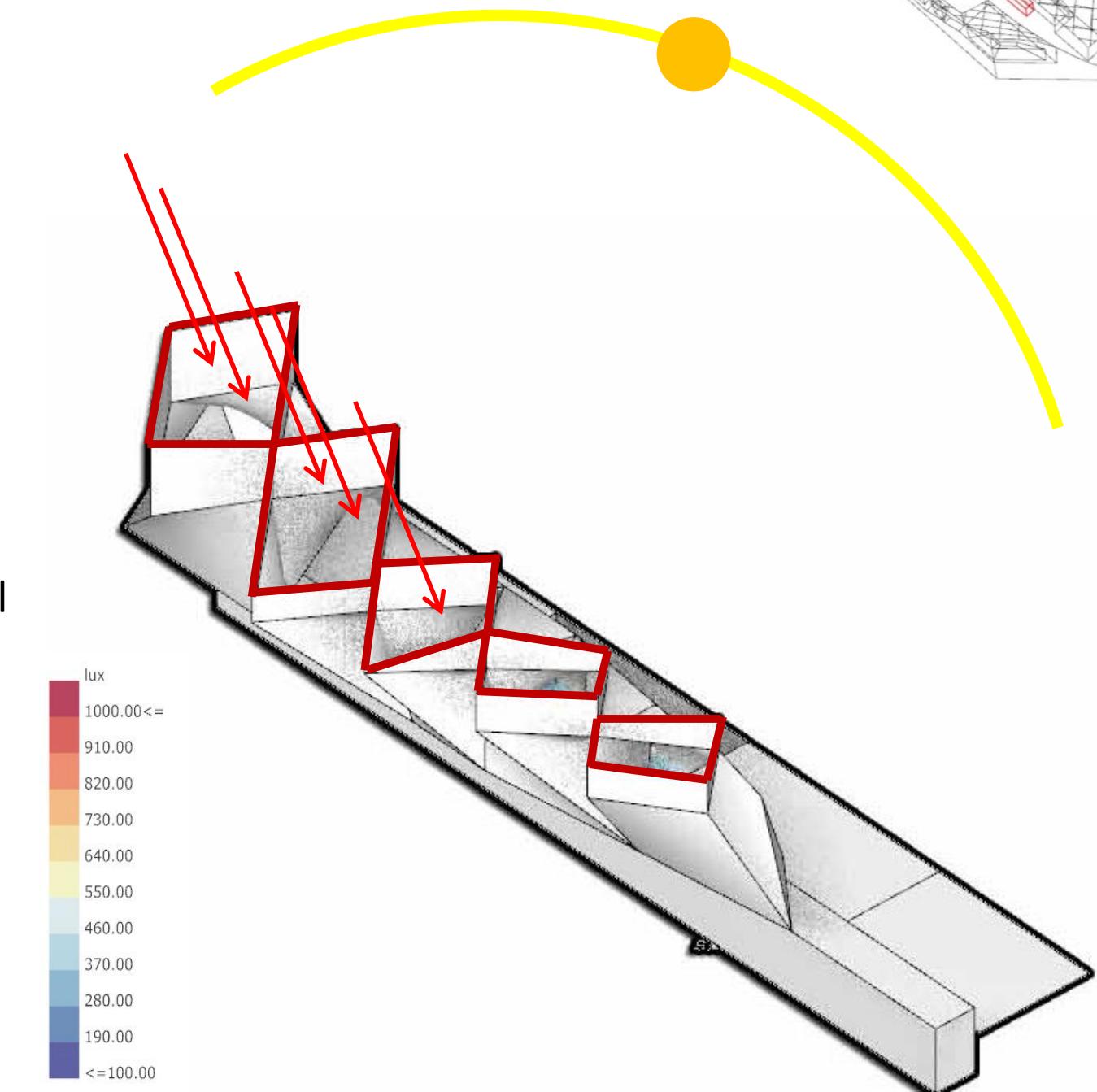
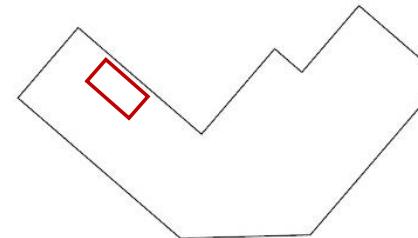
No Light well



Summer with Light well



Winter with Light well



Hotel Daylight

