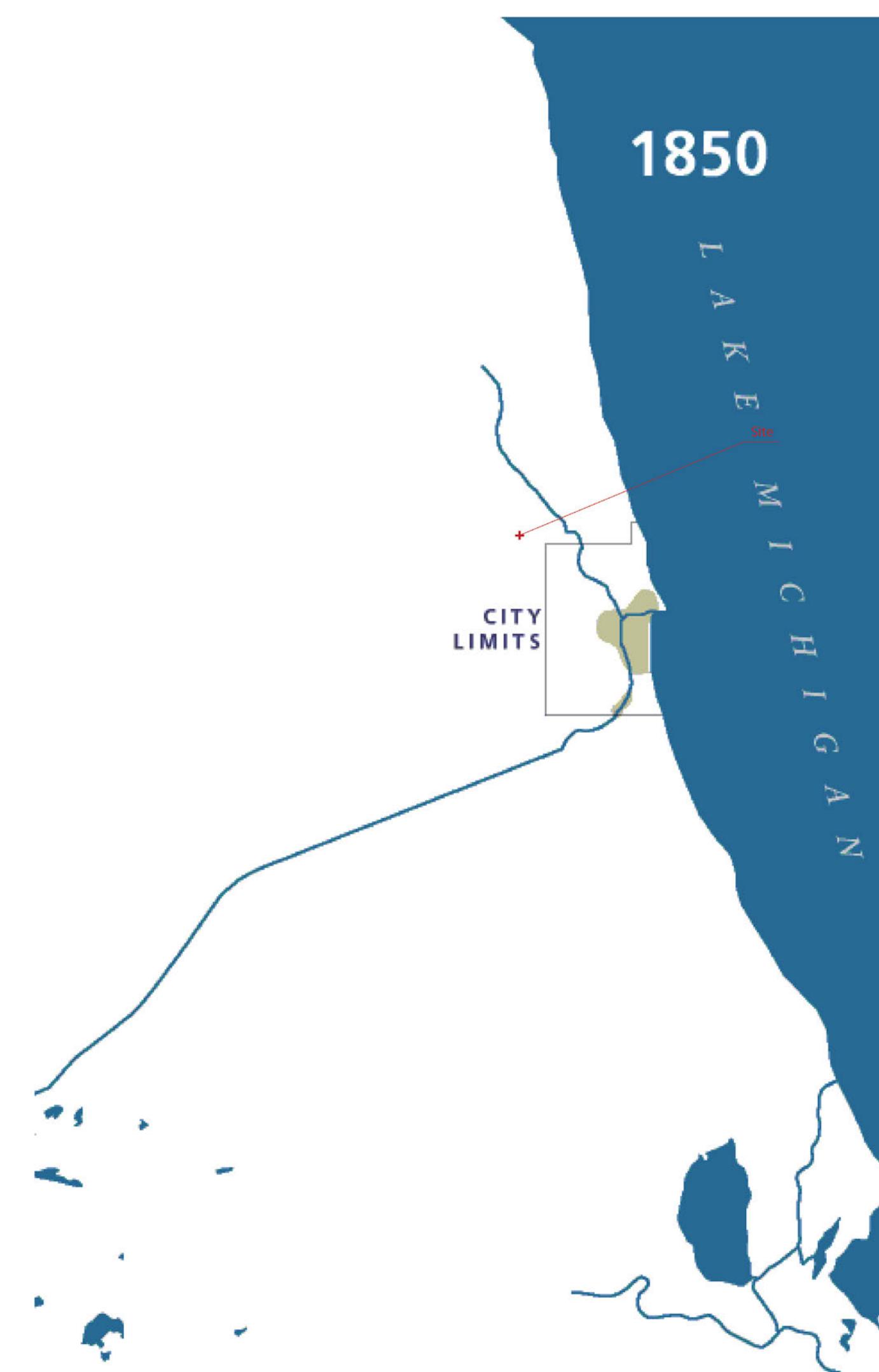


NEW CHAUTAUQUA INSTITUTE IN CHICAGO

Environmental Design Studio
Shengliang Rong
Yuntian Wan

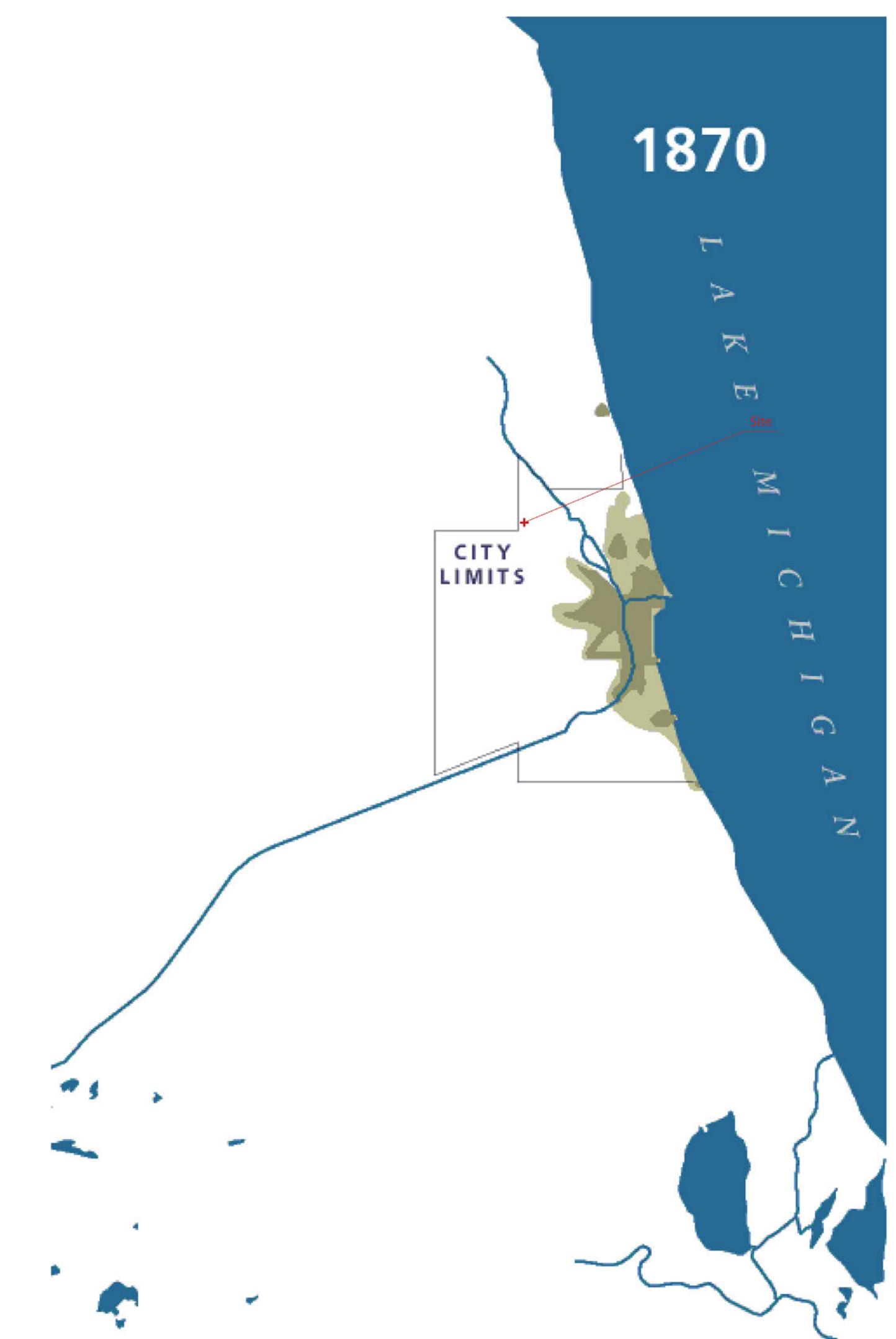
History and Linkages
First Railroad_ Chicago Fire



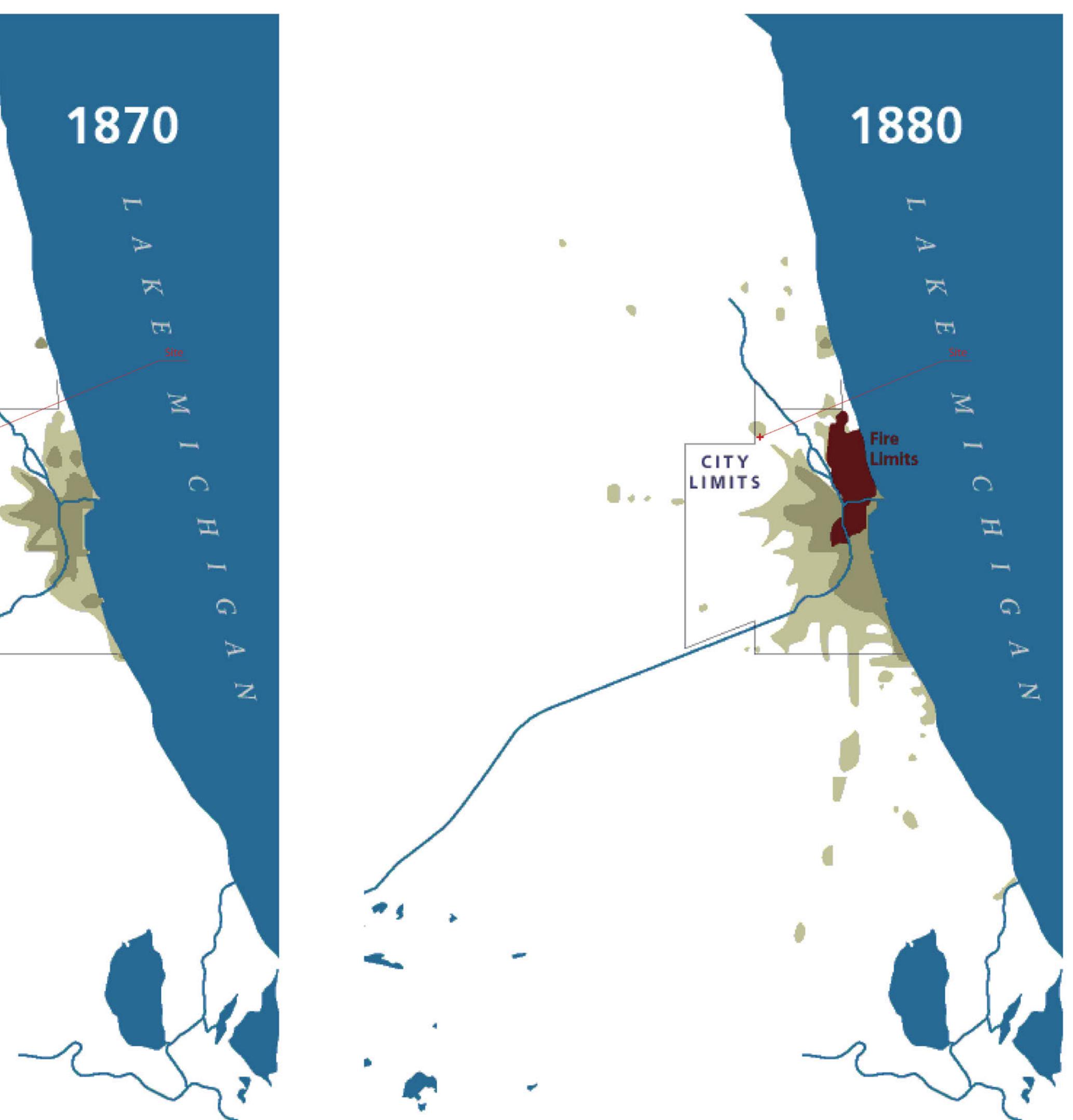
+Boundary Expand
+First Rail Road Arrived



+Boundary Expand



+Boundary Expand

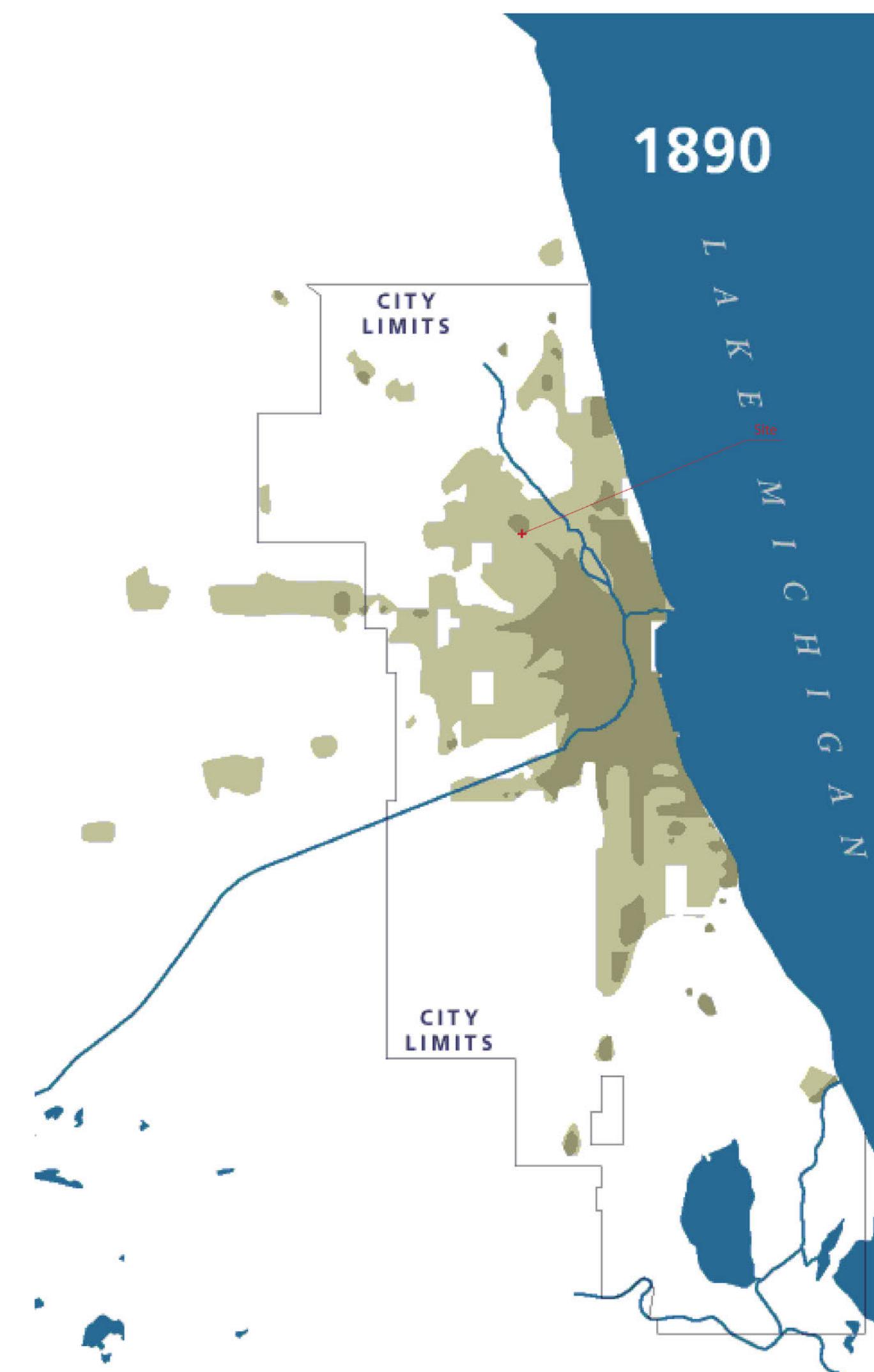


+Chicago Fire
Despite Destroyed by Fire, Chicago started to boost and population growth since its need for labor



Chicago Before fir

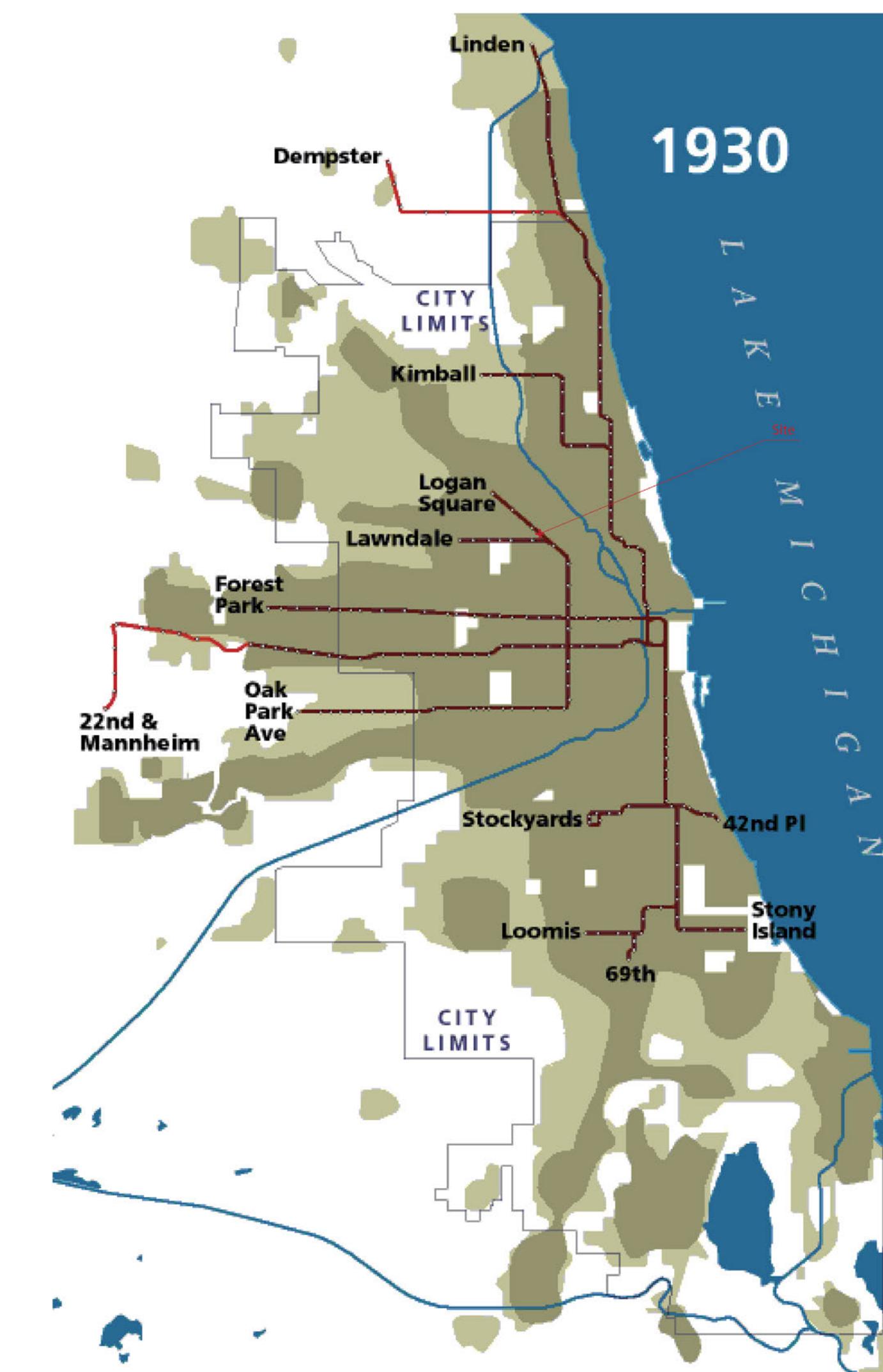
History and Linkages
 First CTA Subway_
 Industrialization_Burnham City Plan



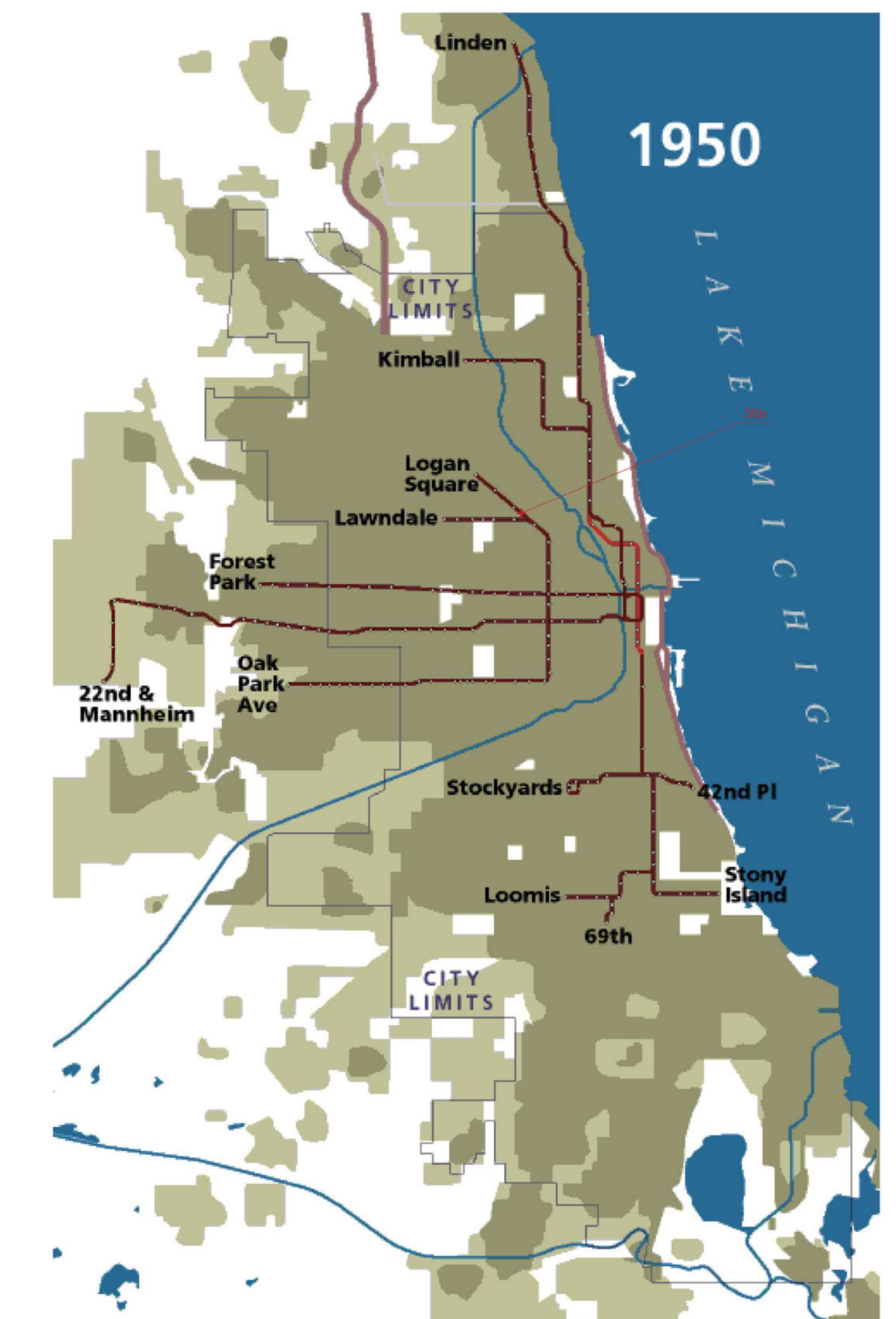
+Boundary Expand
 +World's Columbian Exposition
 Chicago started to become
 Industrial Center of Country



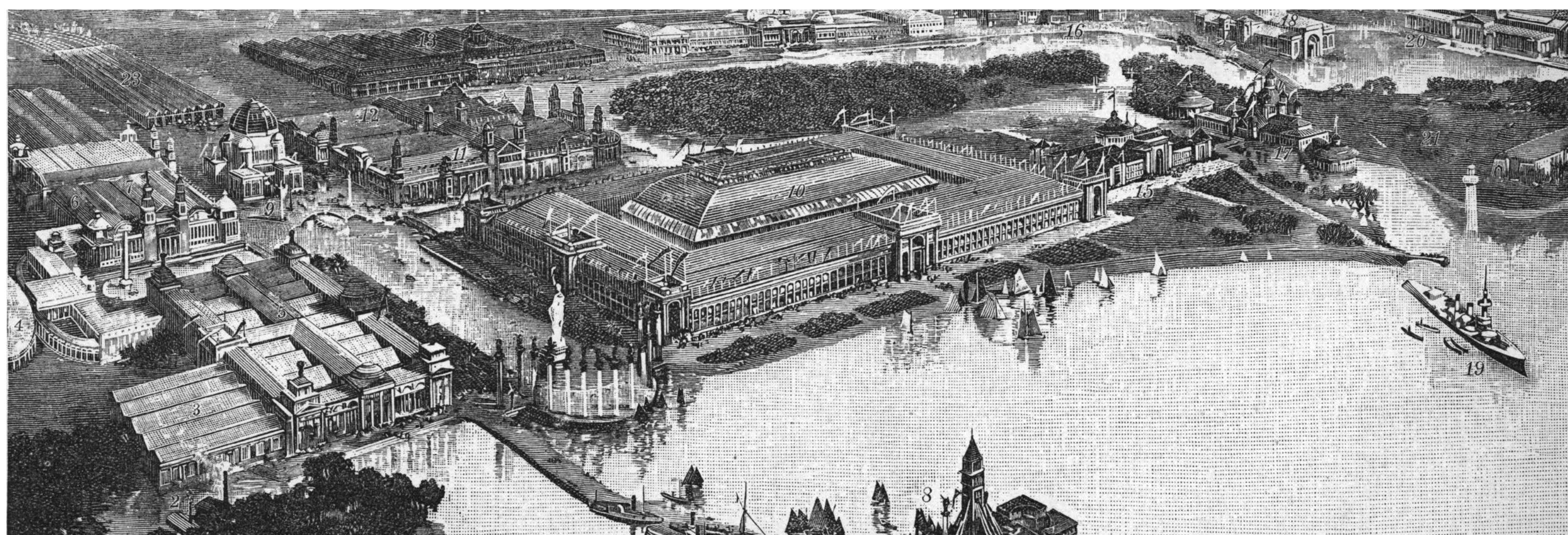
+Boundary Expand
+CTA,City Subway Start Running
+Burnham Plan of Chicago
+Chicago Loop Established



+CTA Service Range Expand



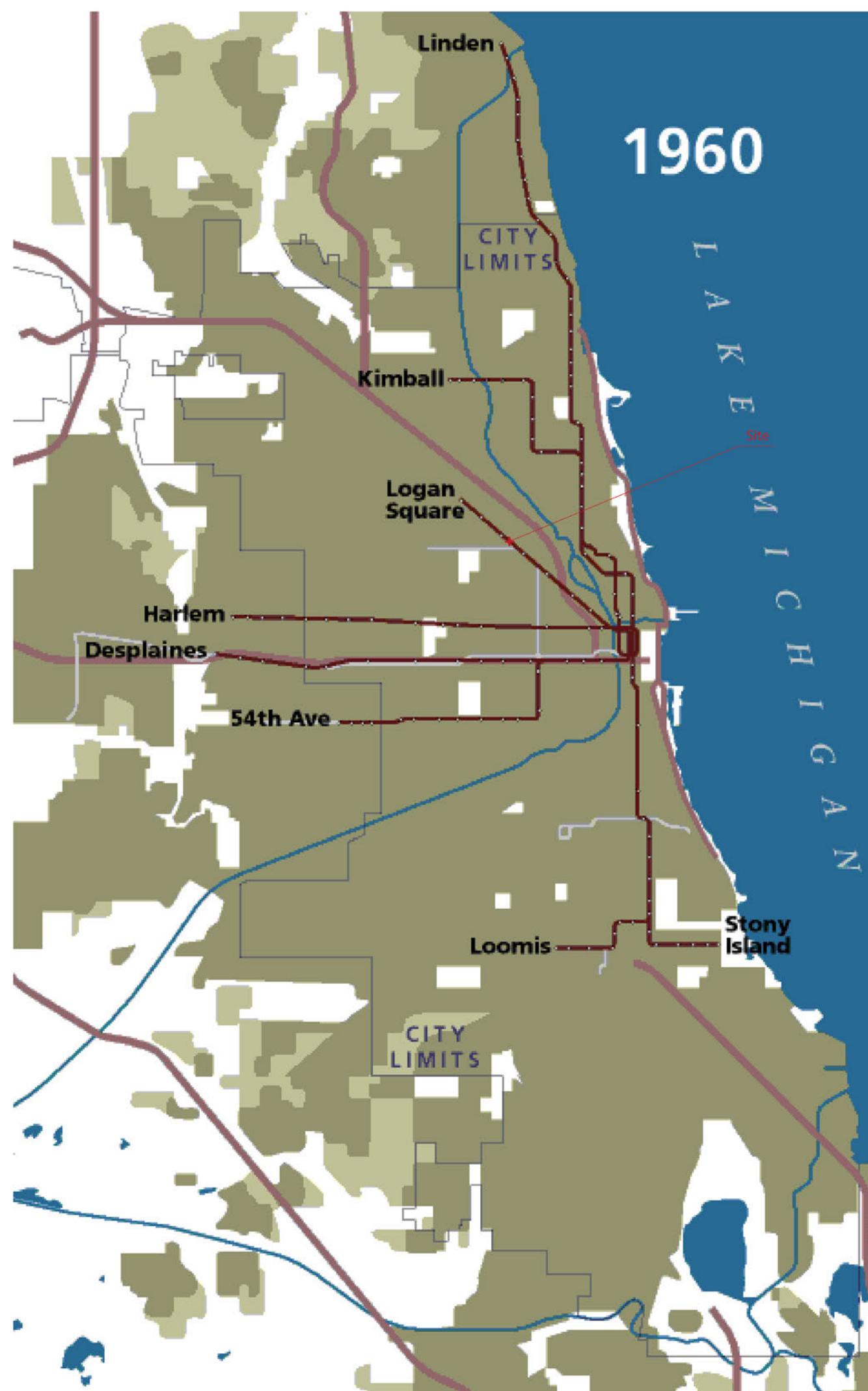
+Boundary Expand



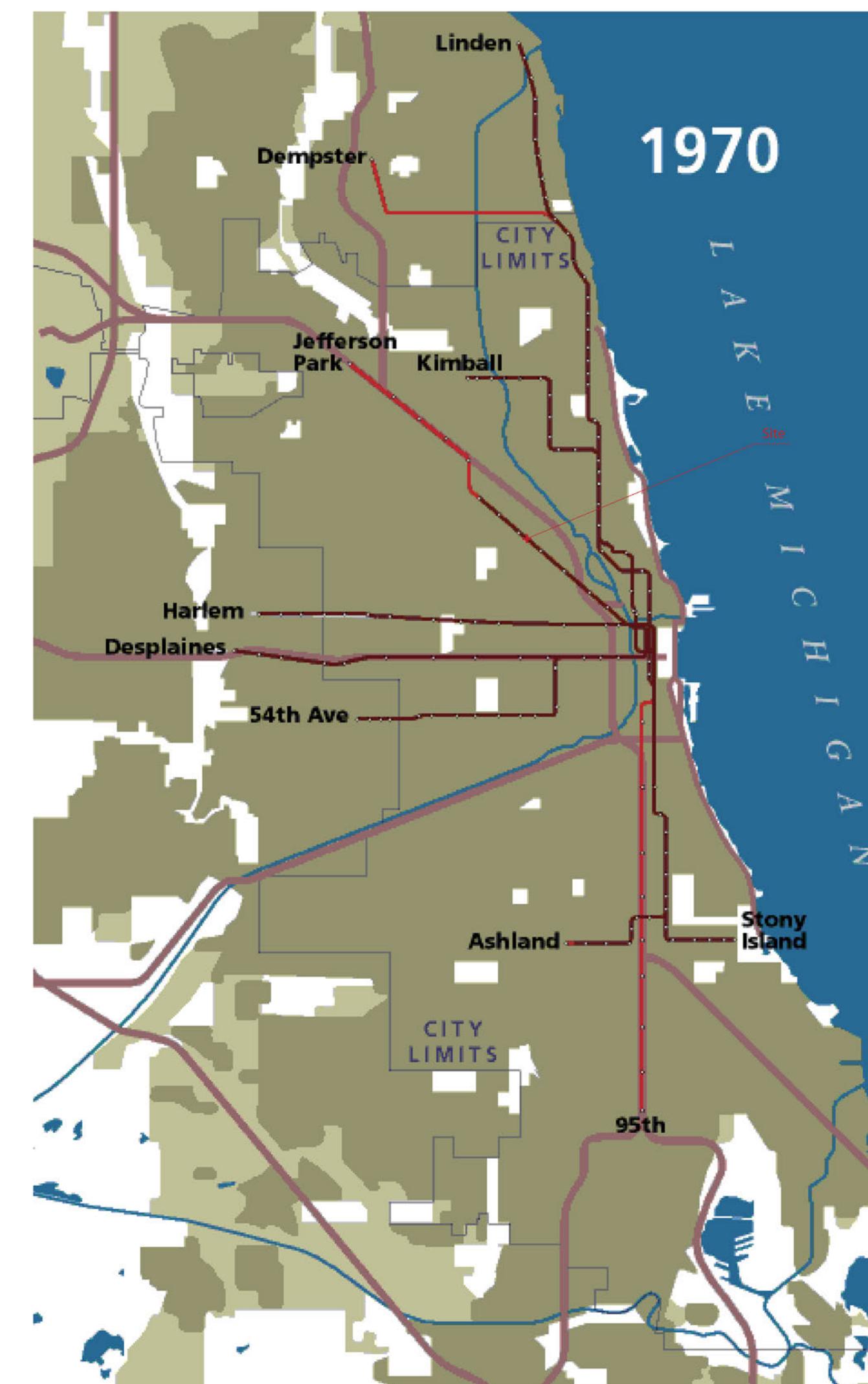
1893 Chicago Jackson Park World's Columbian Exposition

History and Linkages

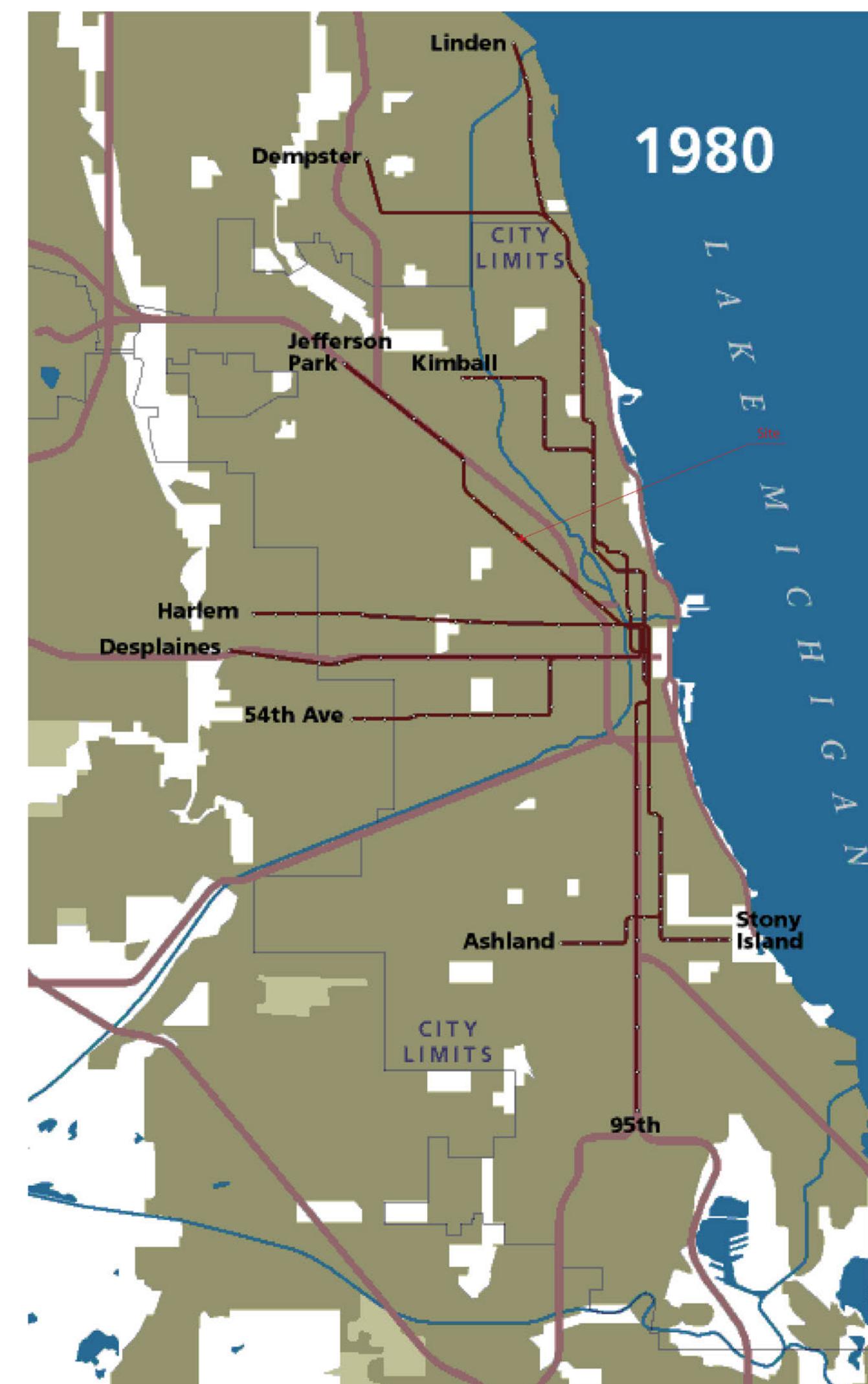
O'Hare Inte. Airport_Highway_De-industralization_De-urbanization



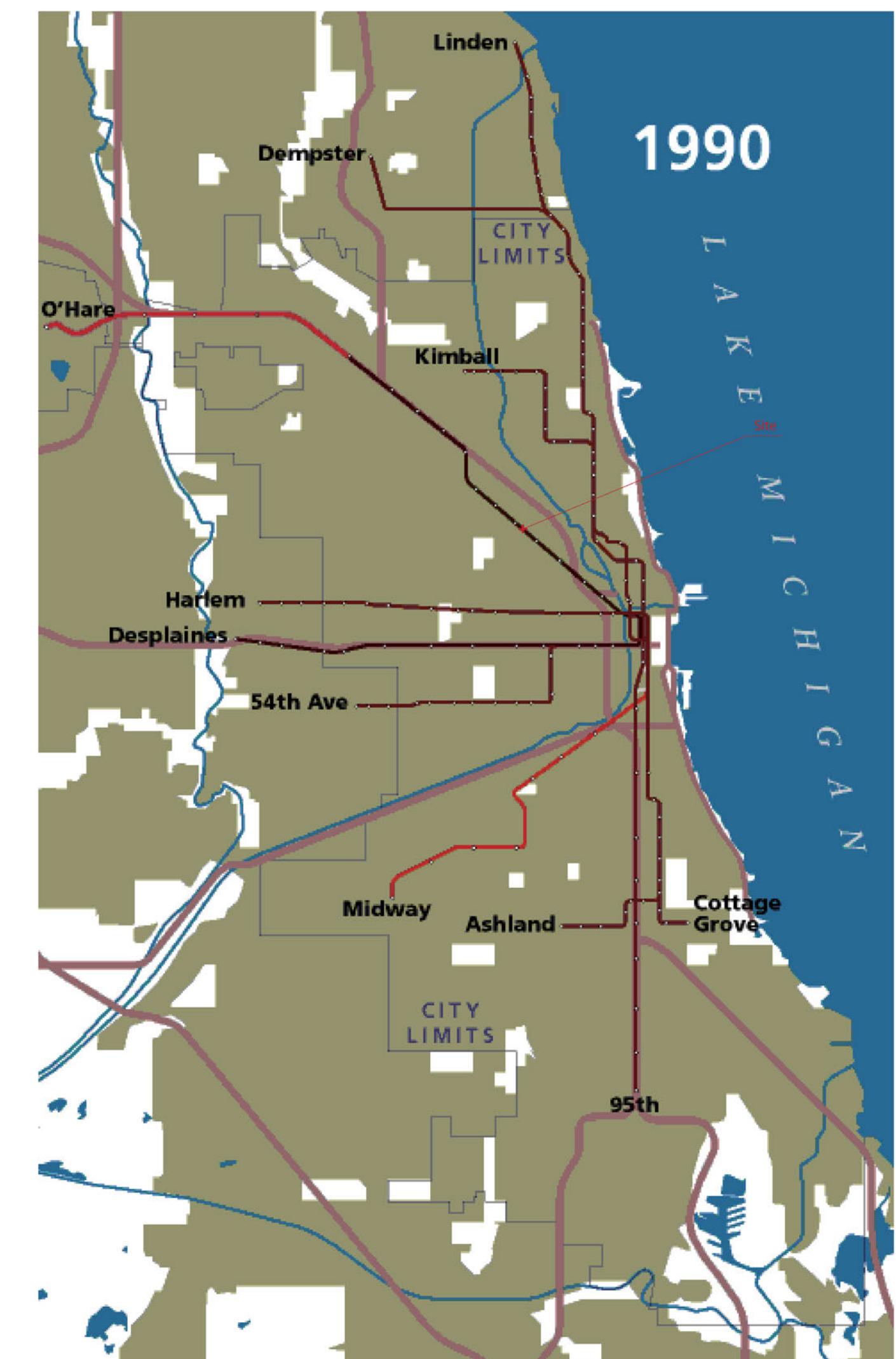
- +Boundary Expand
- +O'hare Airport Start Running
- +Highway in Chicago start to Built
- +Industry decline, Chicago start to deindustralization and Deurbanization



- +Deurbanization Continued
- +Chicago started to Transfer from manufacture center and Industry Center into Financial and turing Center

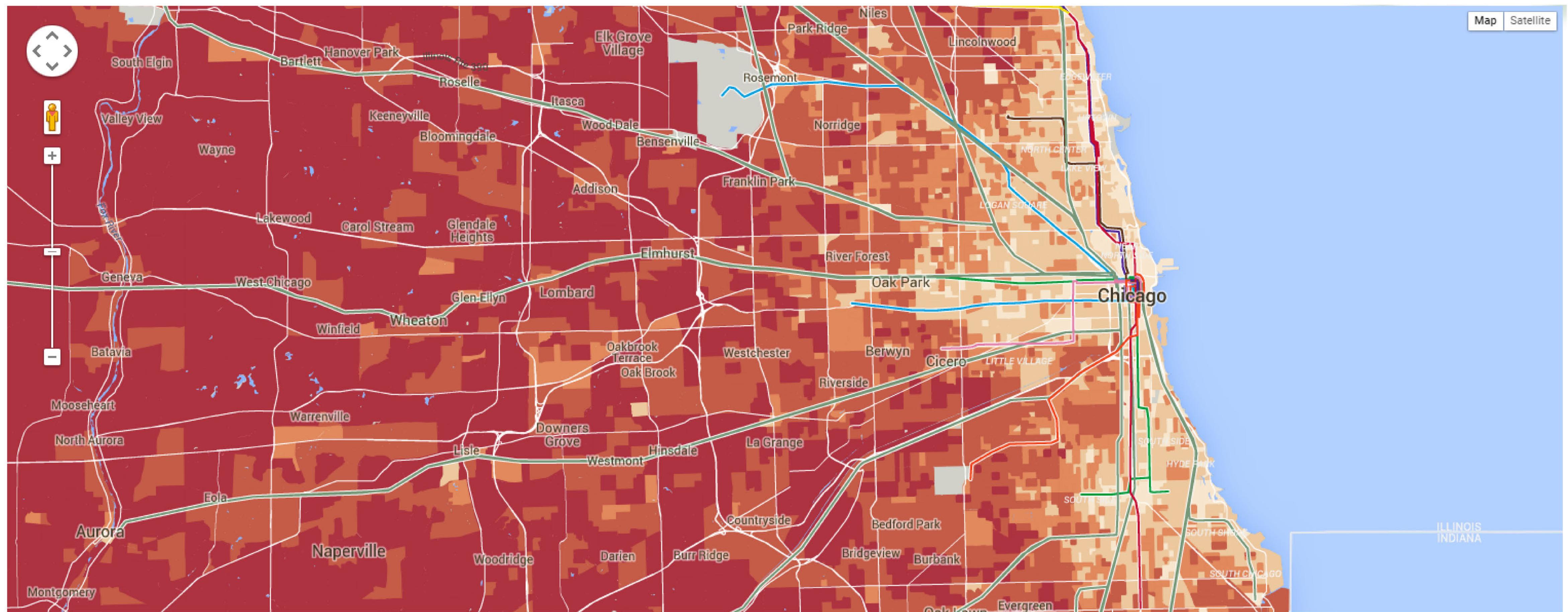


- +Deurbanization Continued
- +Chicago Transition Continued

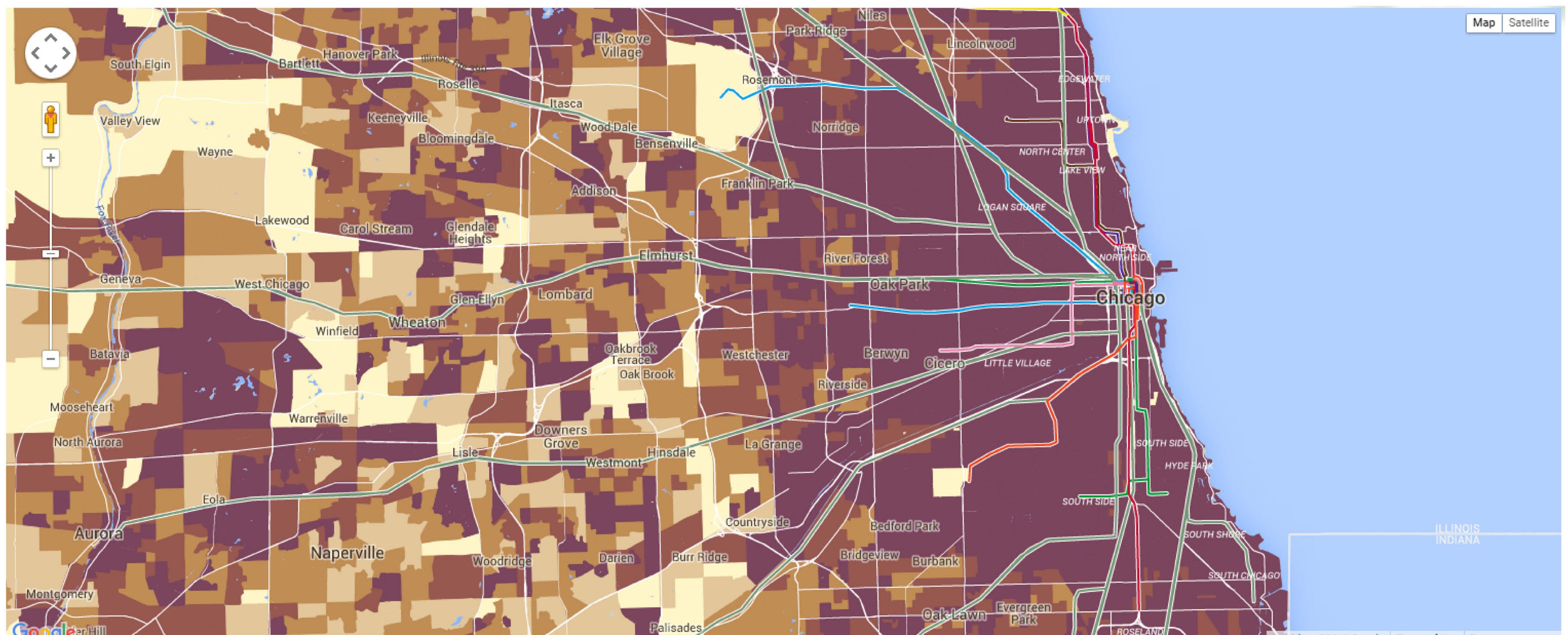


- +The end of Chicago as manufacture center

History and Linkages
Reverse Pattern between
GHG per Capita and Population Density



Annual GHG per Household



Residential Density

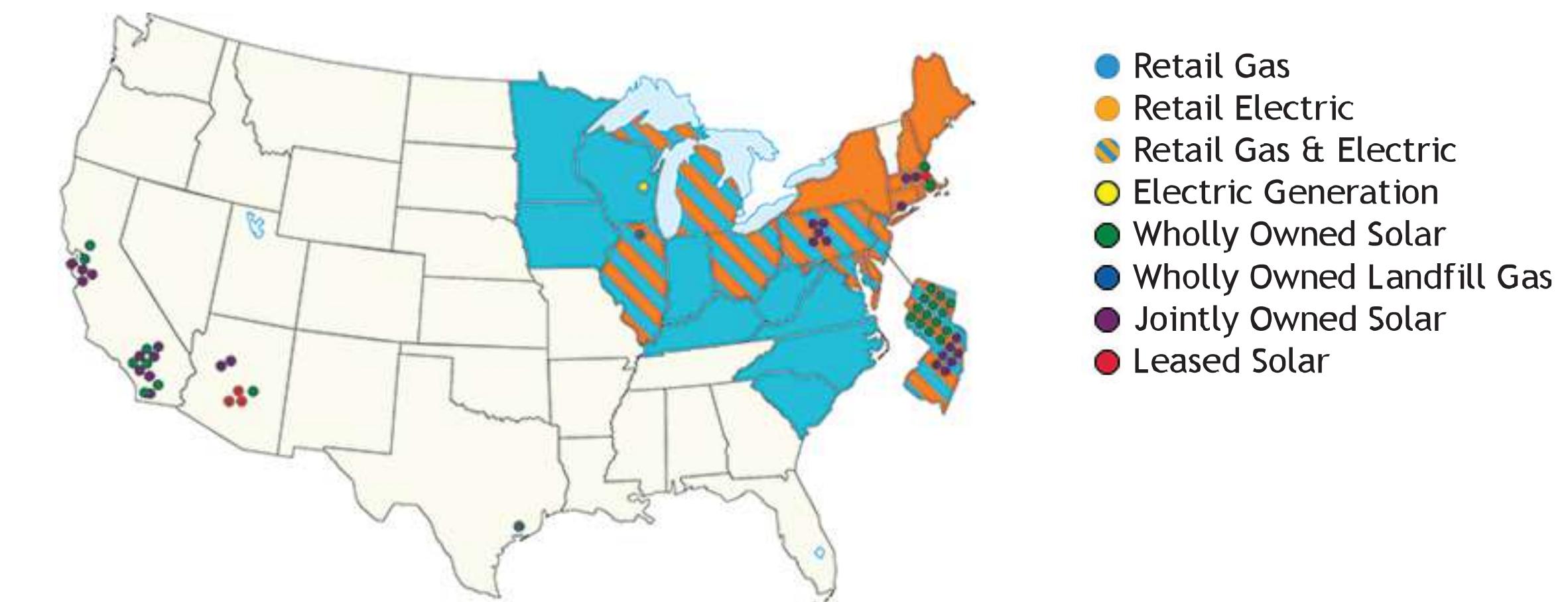
History and Linkages

Chicago Energy Profile



Integrys Company Profile

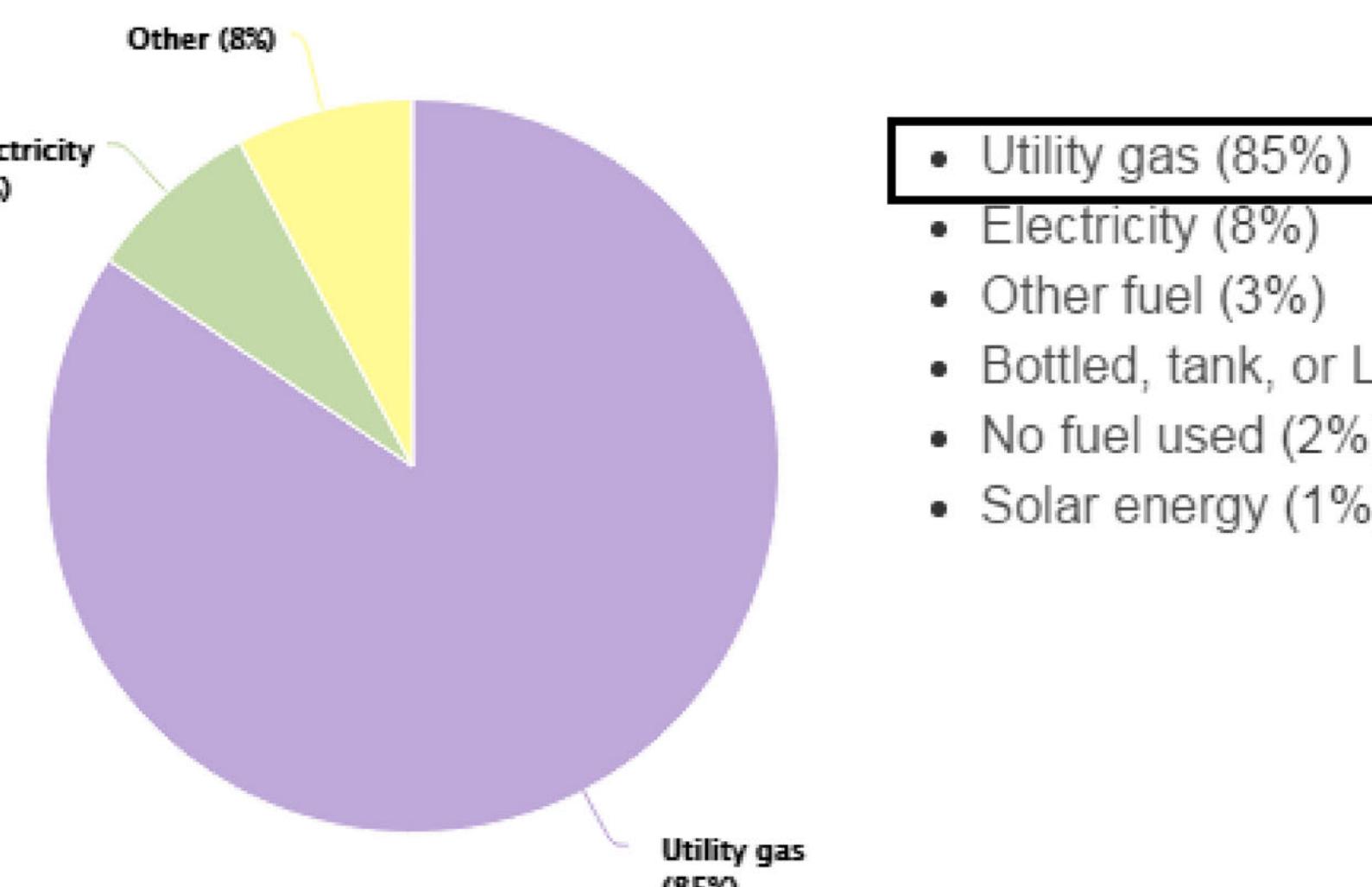
Integrys Energy Services - Facilities



Integrys Group's Generation Mix:

Coal: 72.6%
Natural Gas/Fuel Oil: 19.7%
Renewable Energy: 7.7%
Total Generation: 2,471.1 MW

Most commonly used house heating fuel:

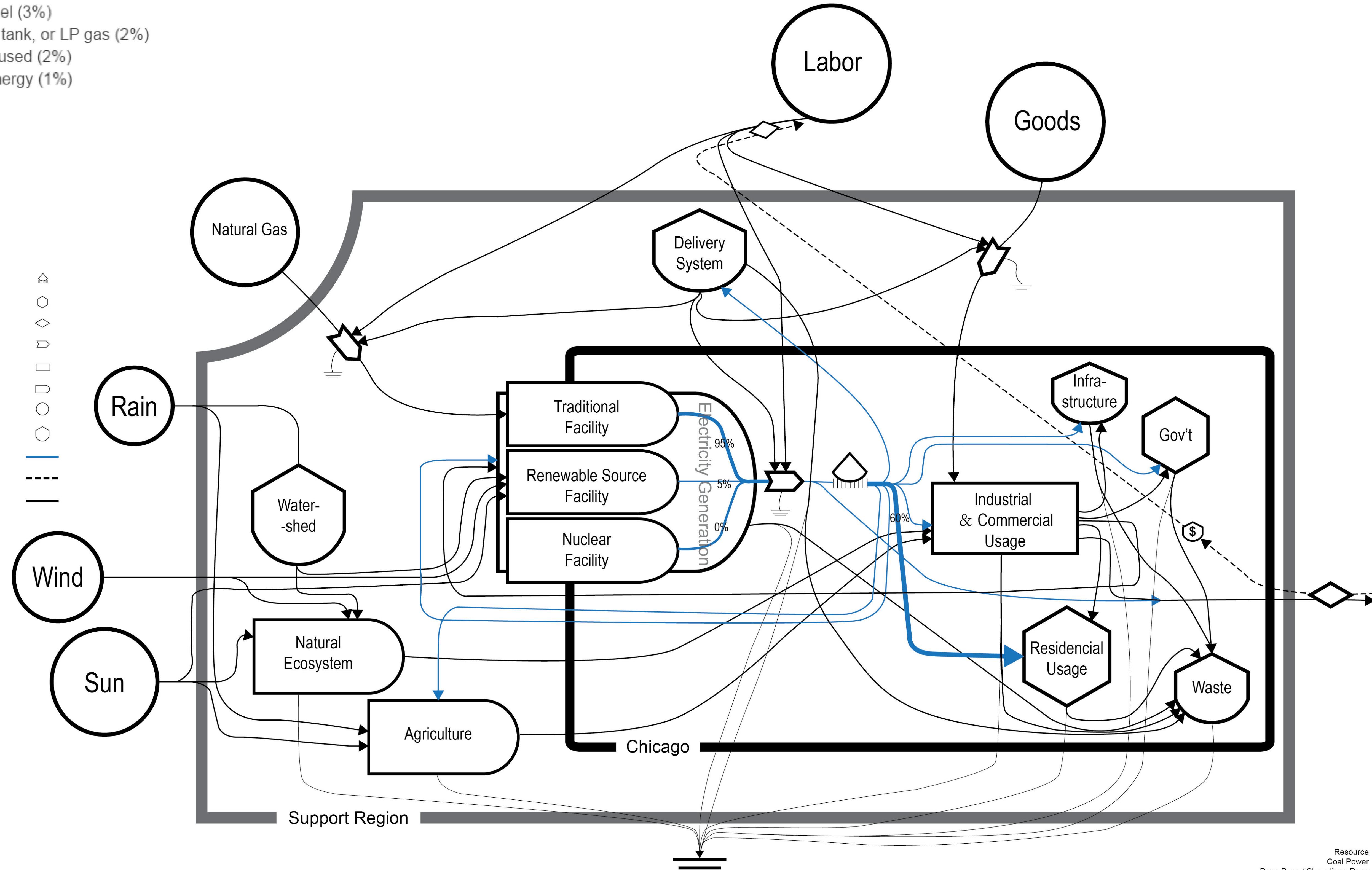


- Utility gas (85%)
- Electricity (8%)
- Other fuel (3%)
- Bottled, tank, or LP gas (2%)
- No fuel used (2%)
- Solar energy (1%)

Heavily depend on gas for heating

LEGEND

- Active Impedance
- Consumer
- Exchange
- Interaction
- Miscellaneous
- Production
- Source
- Store
- Energy Flow
- Money Flow
- Physical Flow

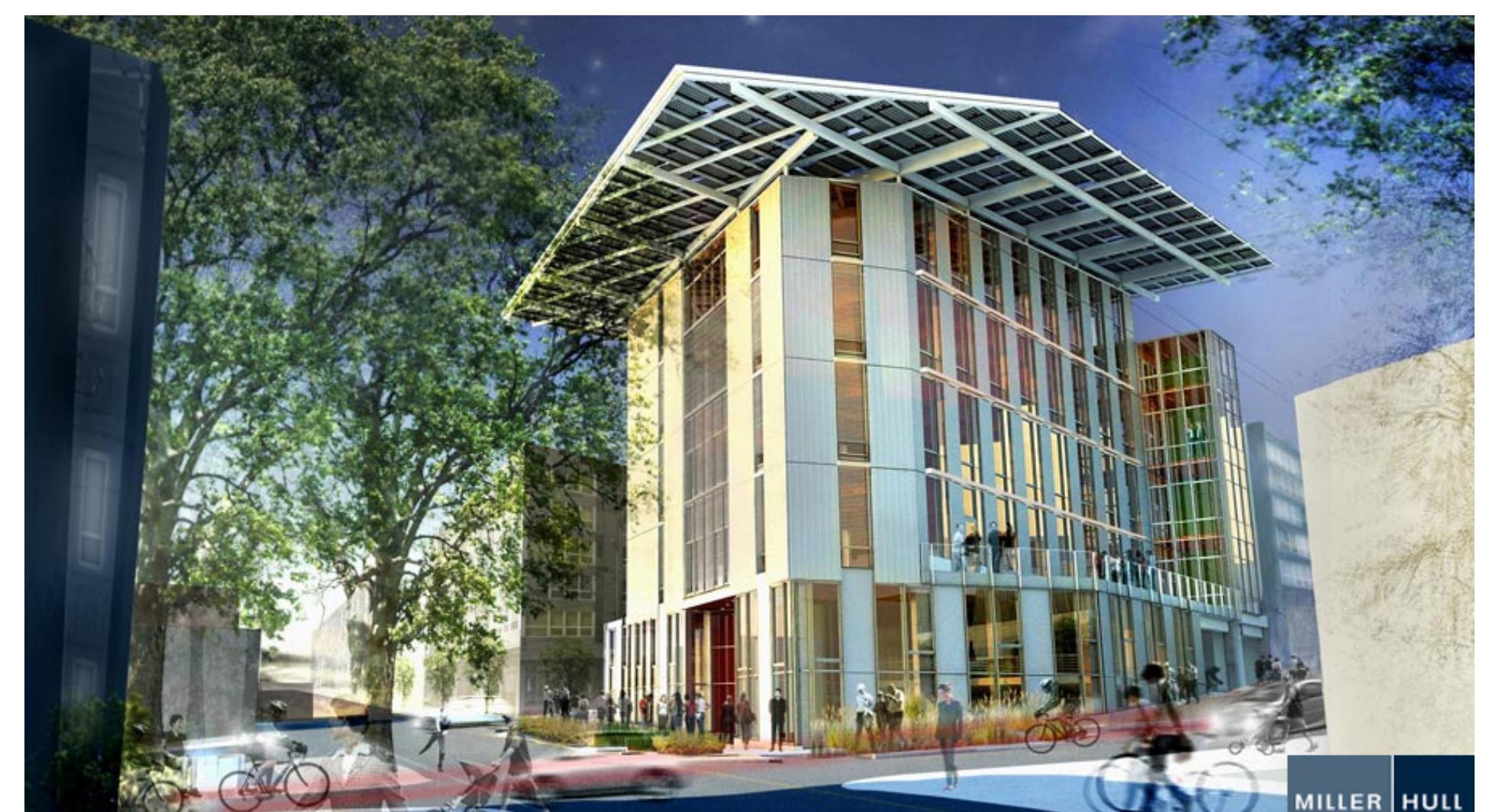




Chautauqua (in the late 19th and early 20th centuries)
“the most American thing in America”



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

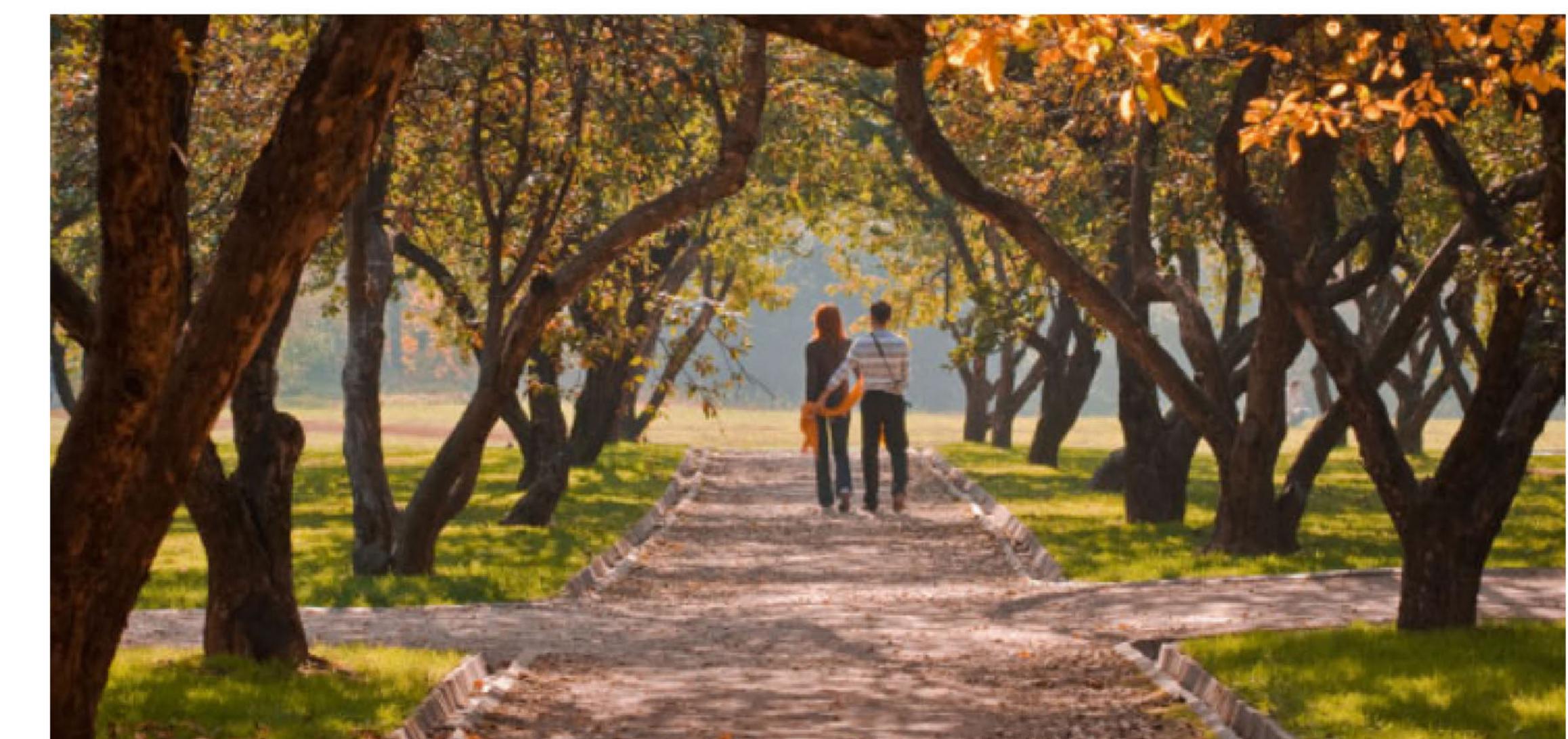
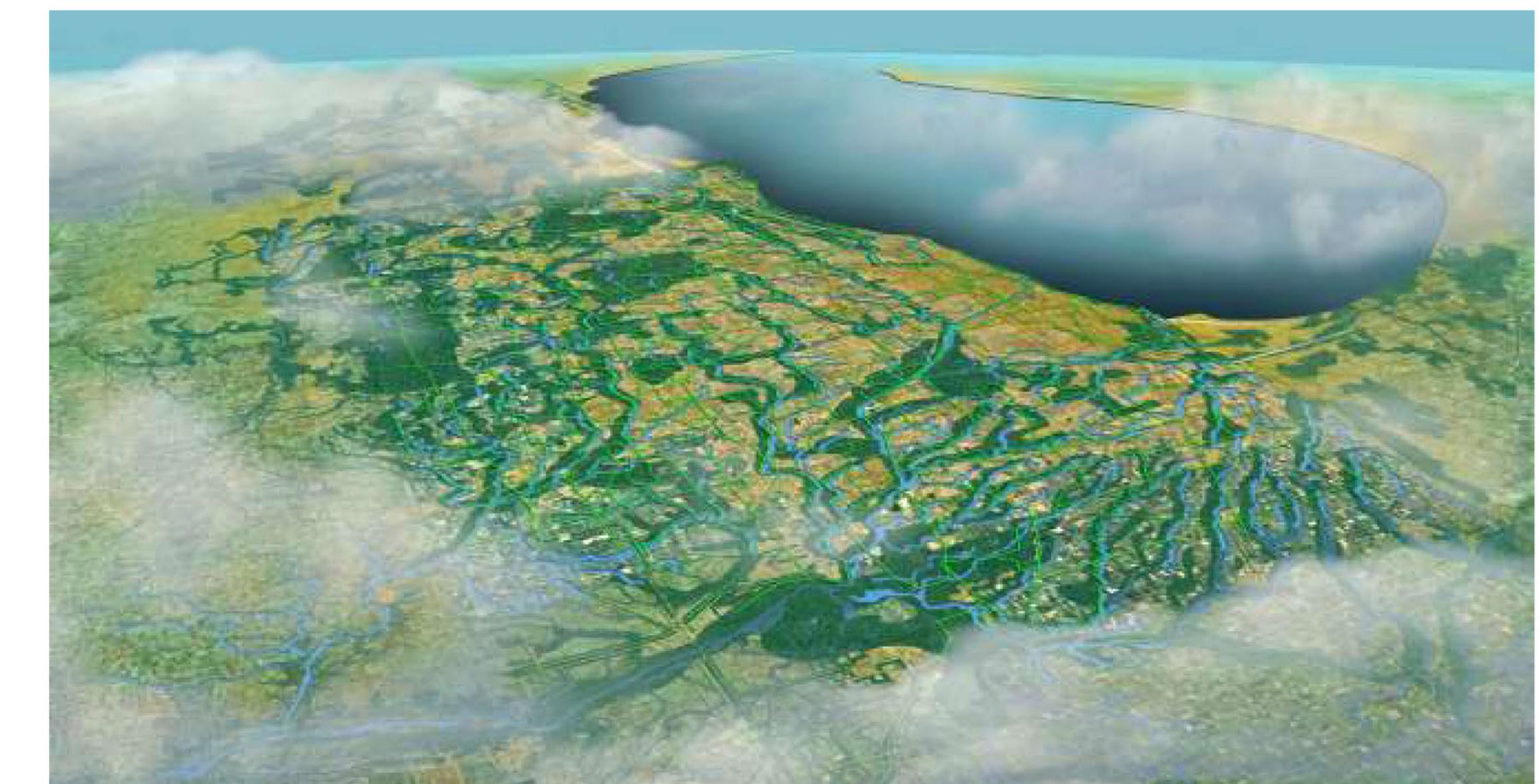
This theme addresses the vitality of our region's transportation system, which is crucial for economic prosperity and overall quality of life. The chapter on Regional Mobility includes the following sections of recommended actions: (This chapter also includes descriptions of major capital projects that 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

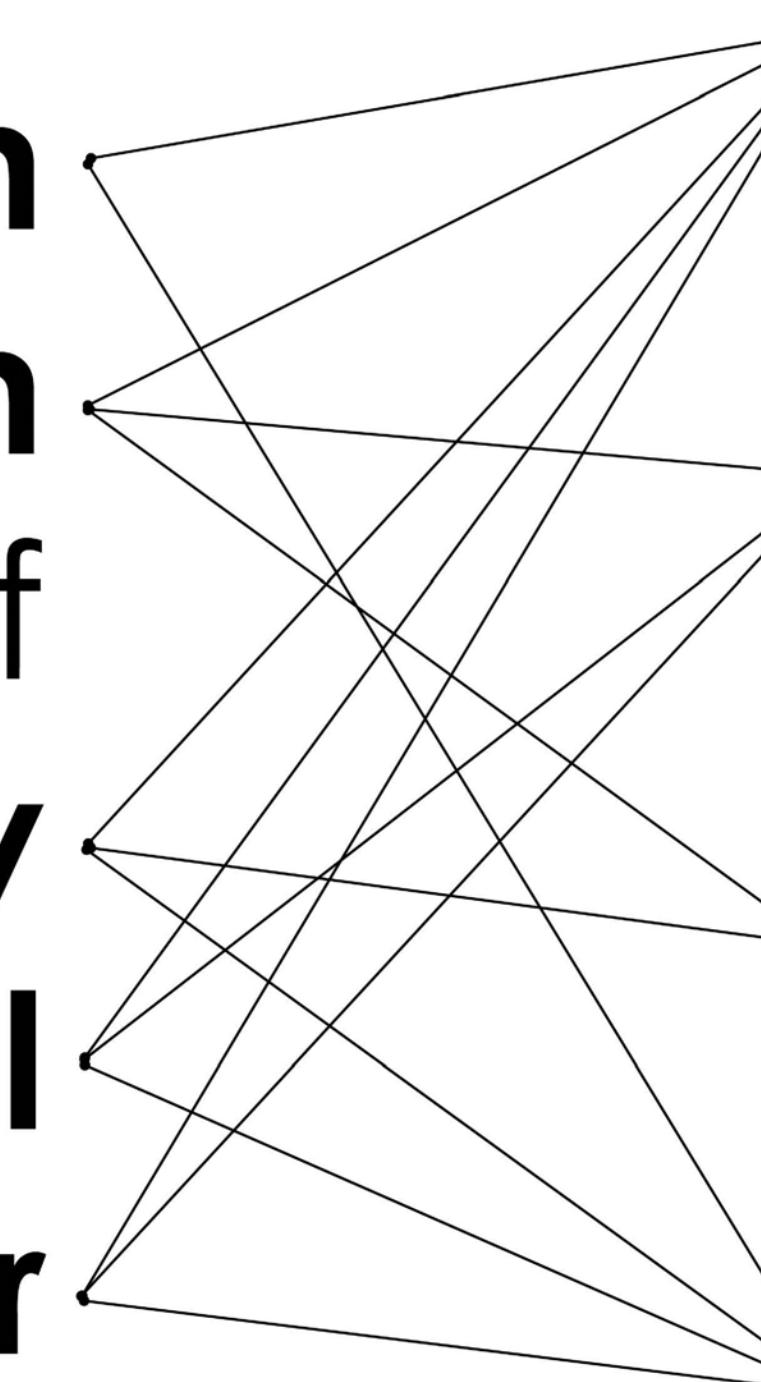
Missions of New Chautauqua

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

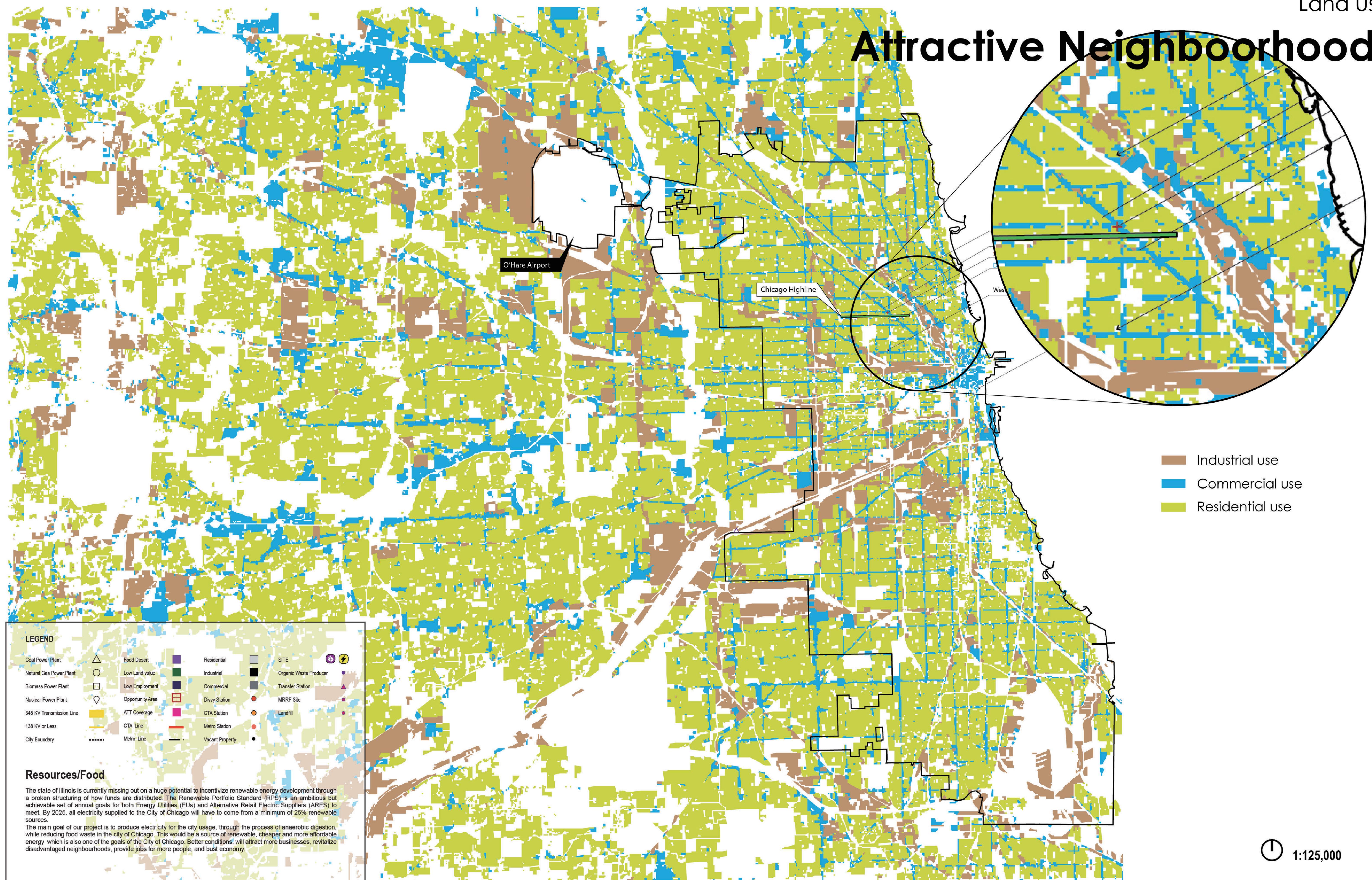
Missions of Chicago

*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

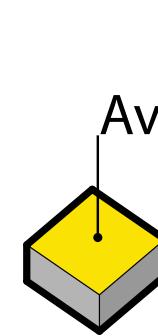


Site Resources

Energy Per Capita+Population Density

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
 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
 Pullman
 Burnside



Average Total Electricity Consumption Per Capita: 7.0249 KWH

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. 75 LOOP

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

No. 1 WEST TOWN

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

No. 77 BURNSIDE

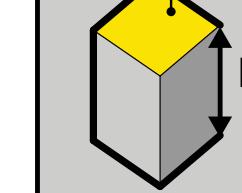
Electricity Consumption Per Capita: 69.8250KWH
 Res: 11.23 Com: 58.60 Ind: -
 Population Density: 1811

No. 76 PULLMAN

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

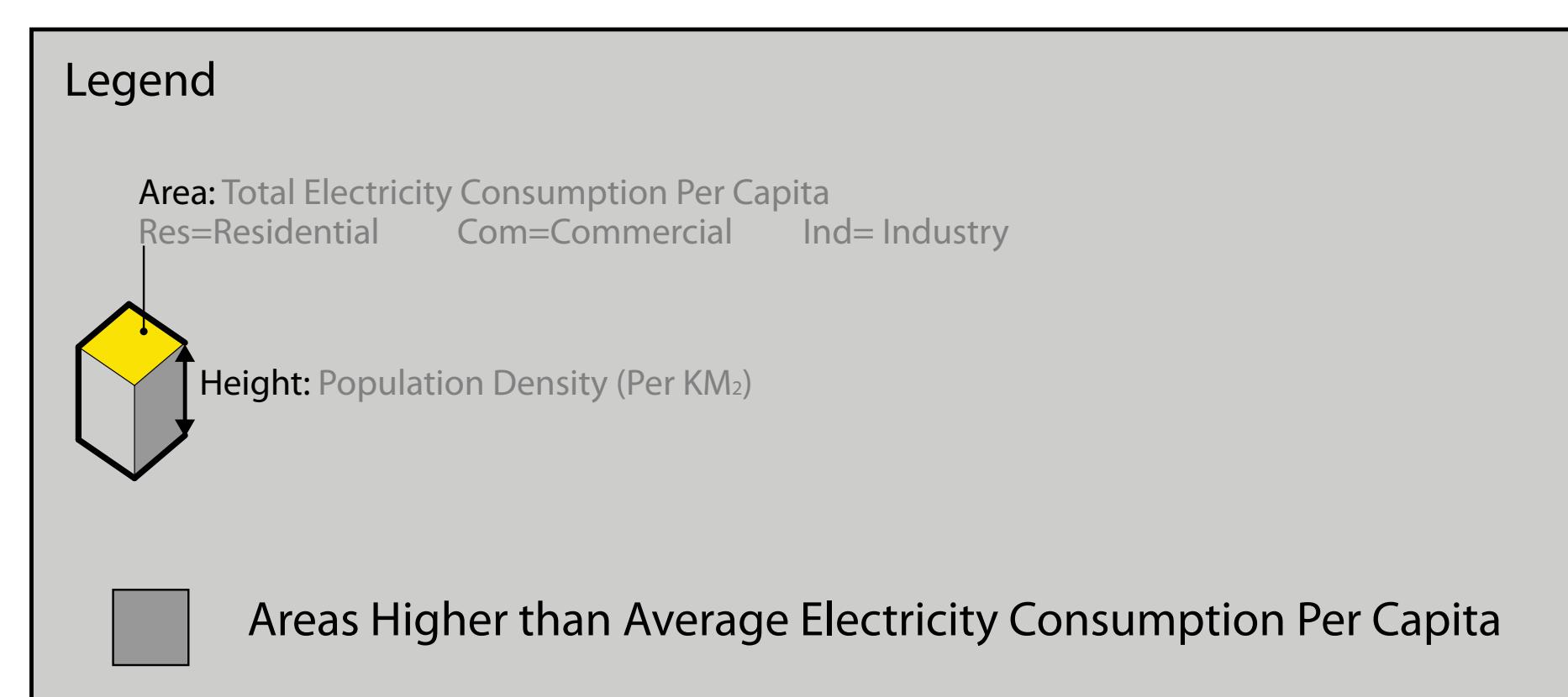
Legend

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



Height: Population Density (Per KM²)

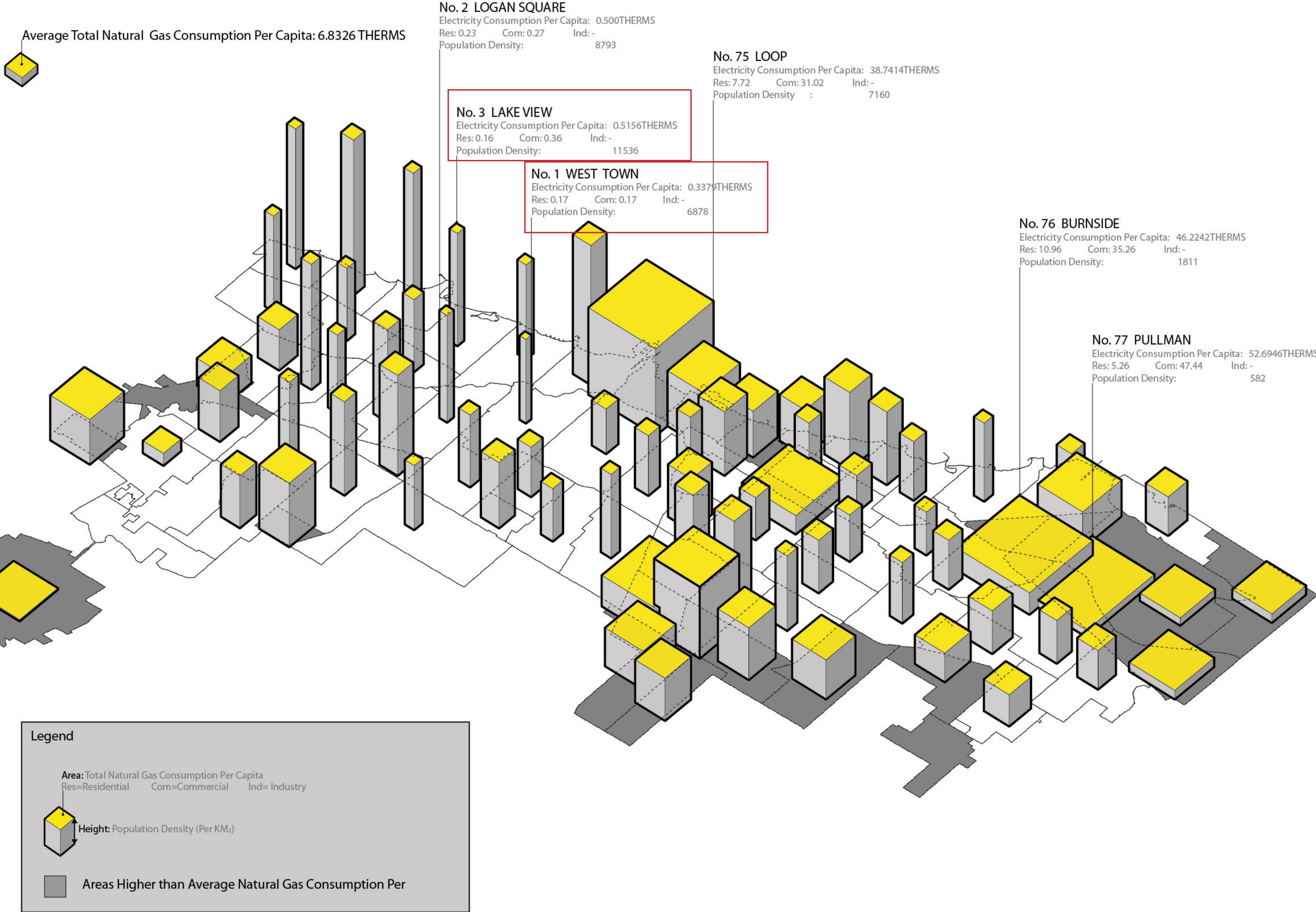
Areas Higher than Average Electricity Consumption Per Capita



Site Resources

Energy Per Capita+Population Density

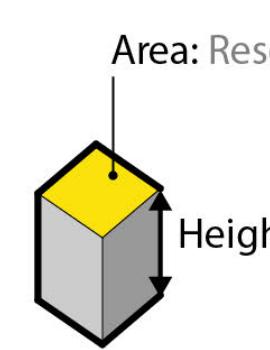
West Town
 Logan Square
 Lakeview
 Lincoln Park
 Rogers Park
 West Ridge
 Uptown
 Lincoln Square
 Irving Park
 Austin
 South Shore
 Albany Park
 South Lawndale
 Portage Park
 Humboldt Park
 Chicago Lawn
 Lower West Side
 North Lawndale
 North Center
 Greater Grand Crossing
 Belmont Cragin
 Grand Boulevard
 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
 Heigdon
 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



Site Resources

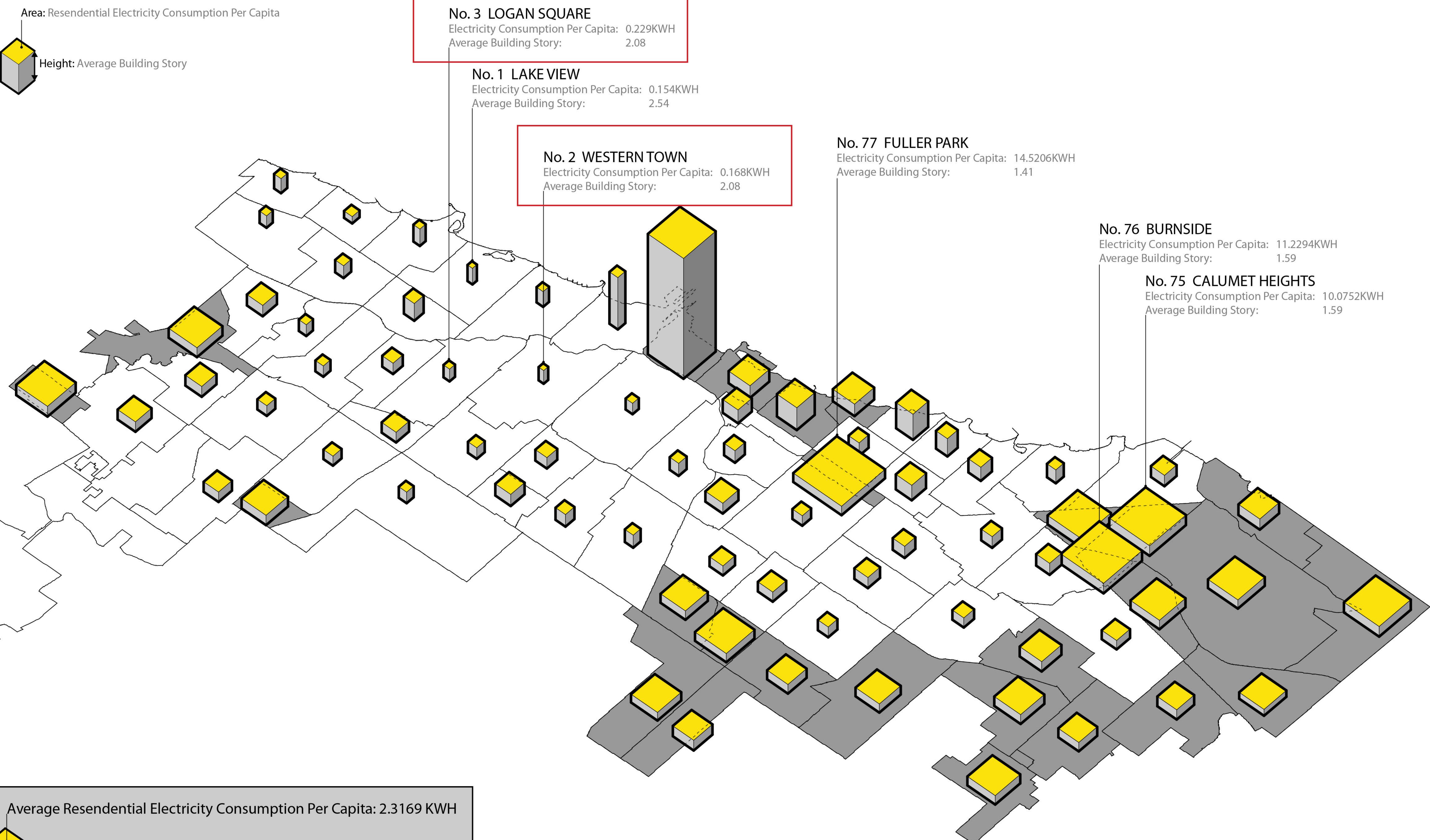
Energy Per Capita+Average Story

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

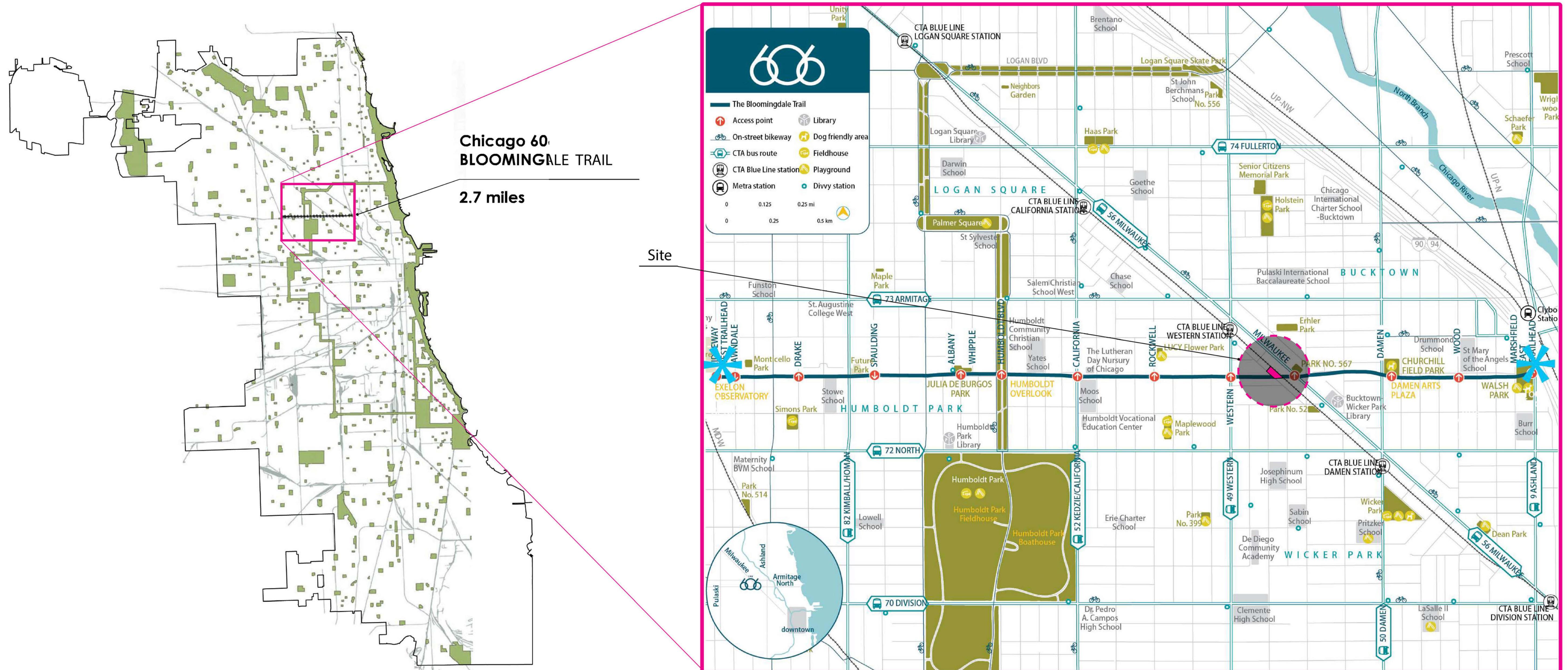


Area: Residential Electricity Consumption Per Capita
Height: Average Building Story

Average Residential Electricity Consumption Per Capita: 2.3169 KWH
Average Average Building Story: 2.18
Areas Higher than Average Electricity Consumption Per Capita



Attractive Neighbourhood



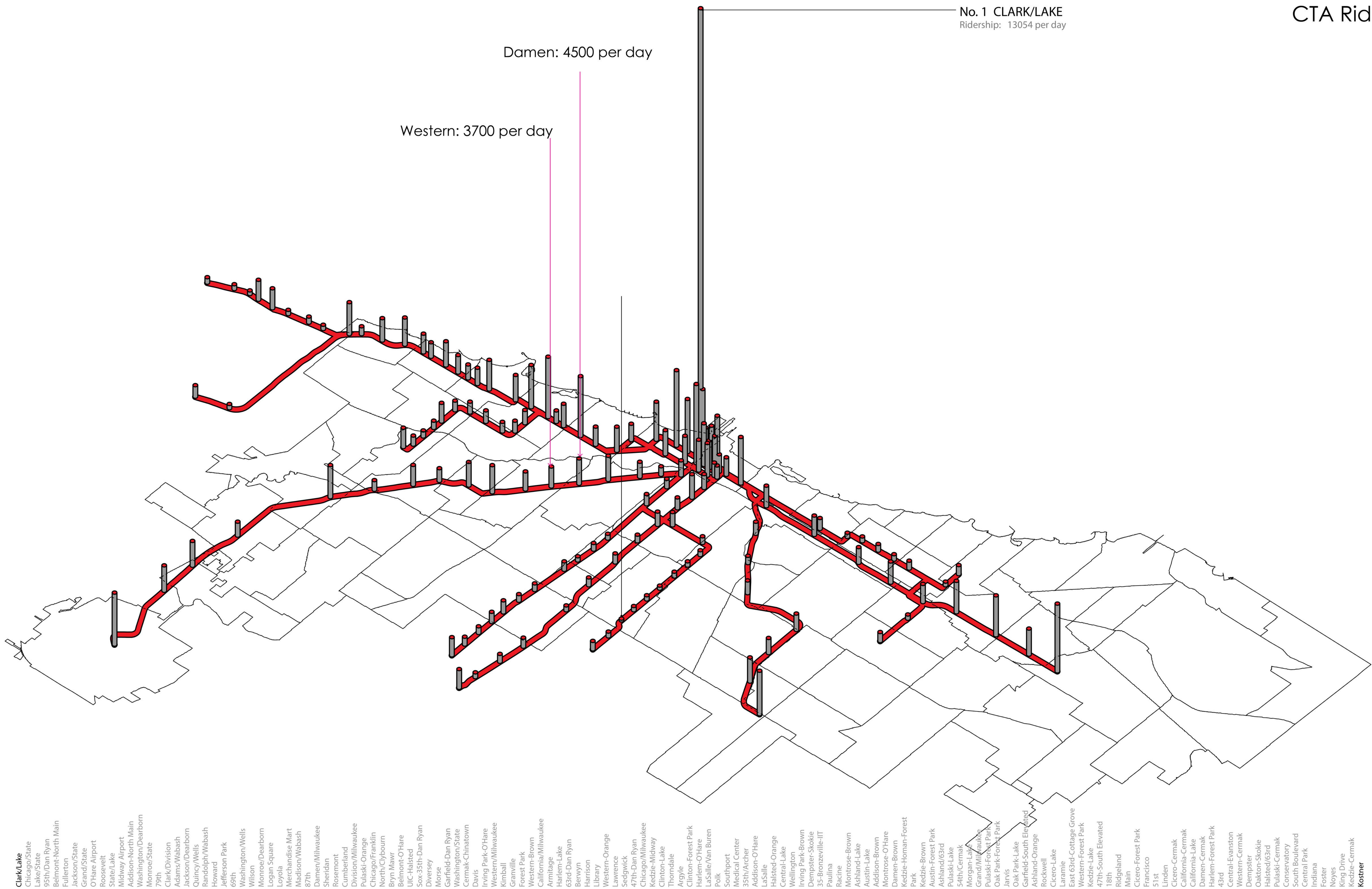
Chicago 606

- 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

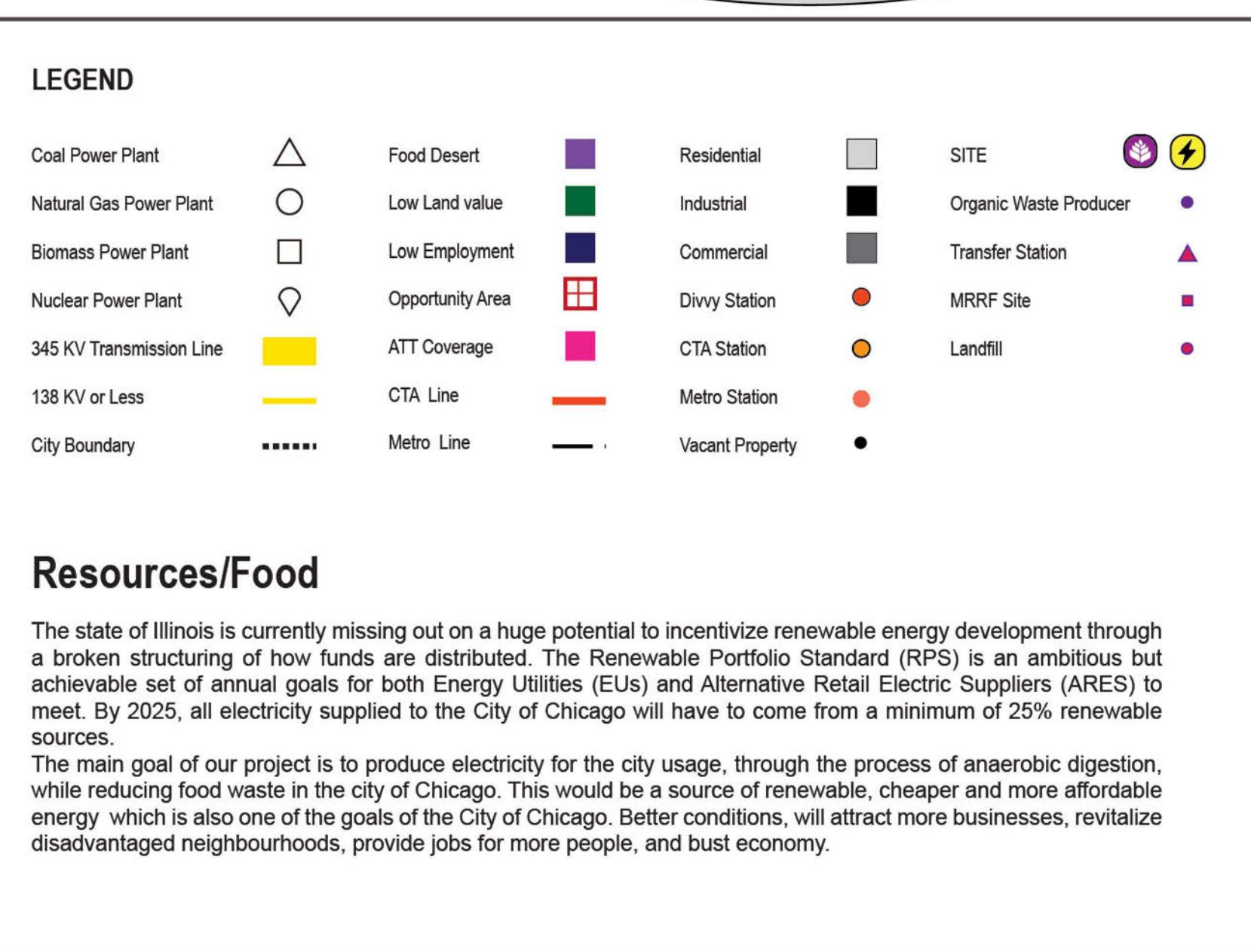
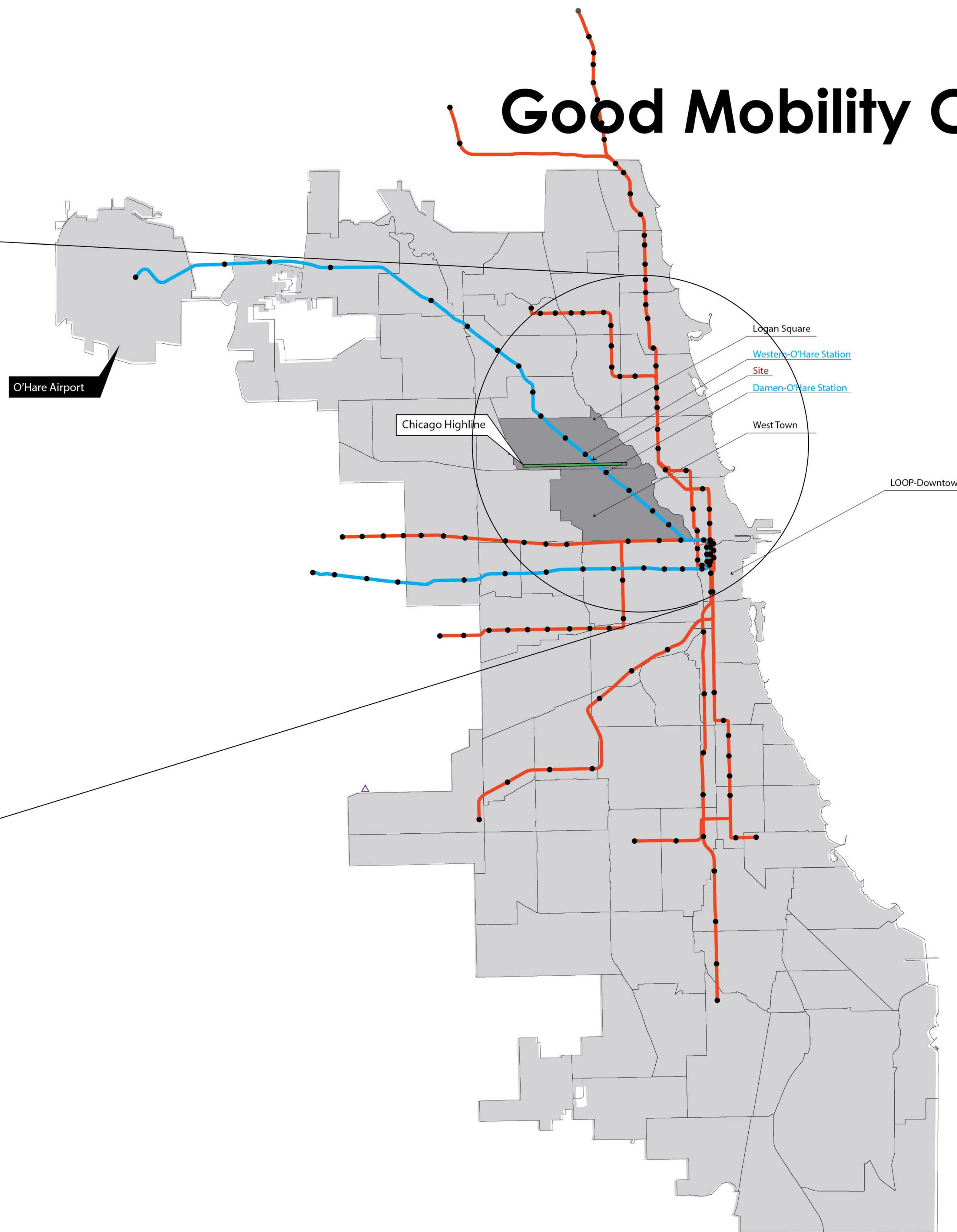
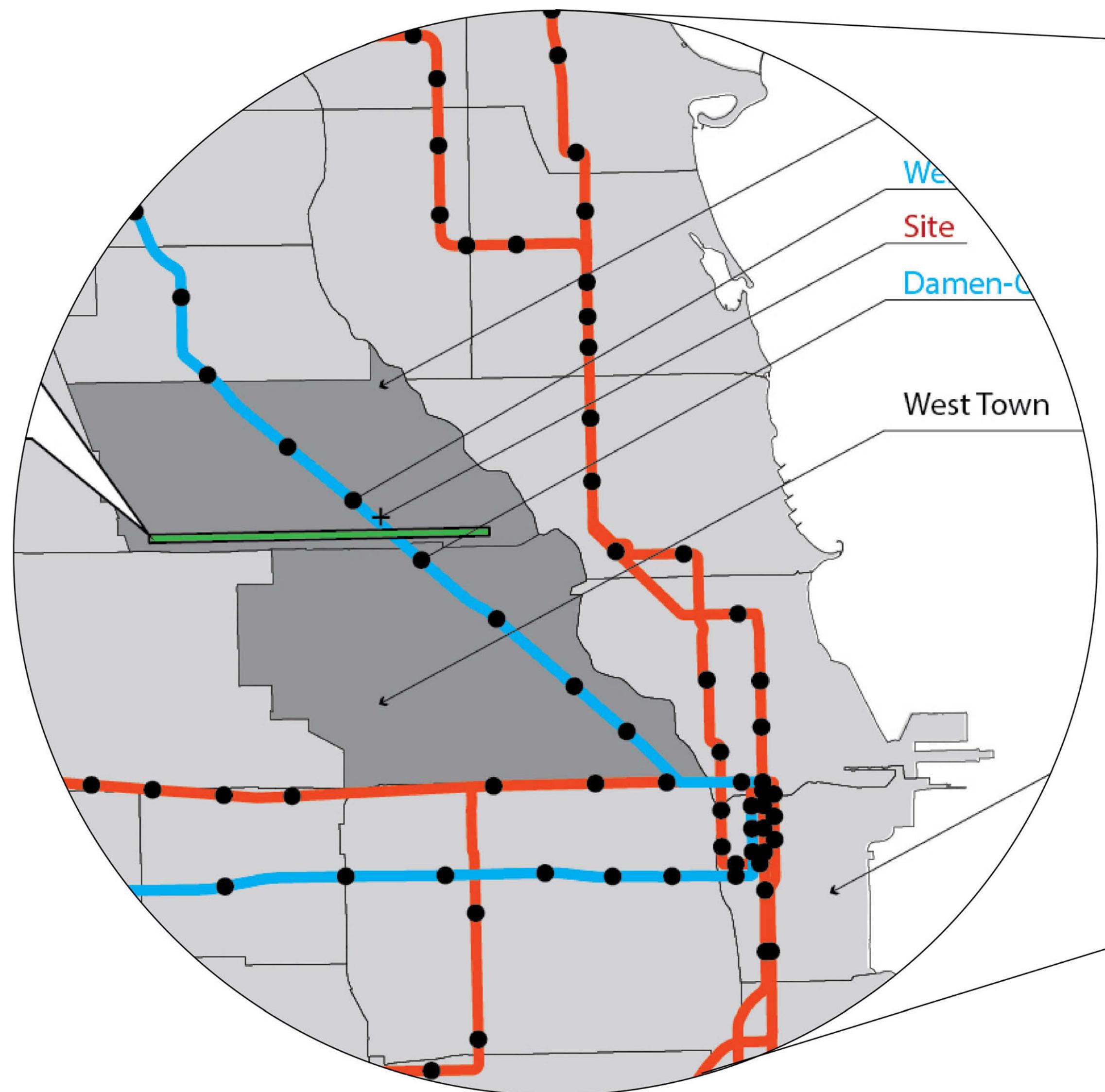
Site

- 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

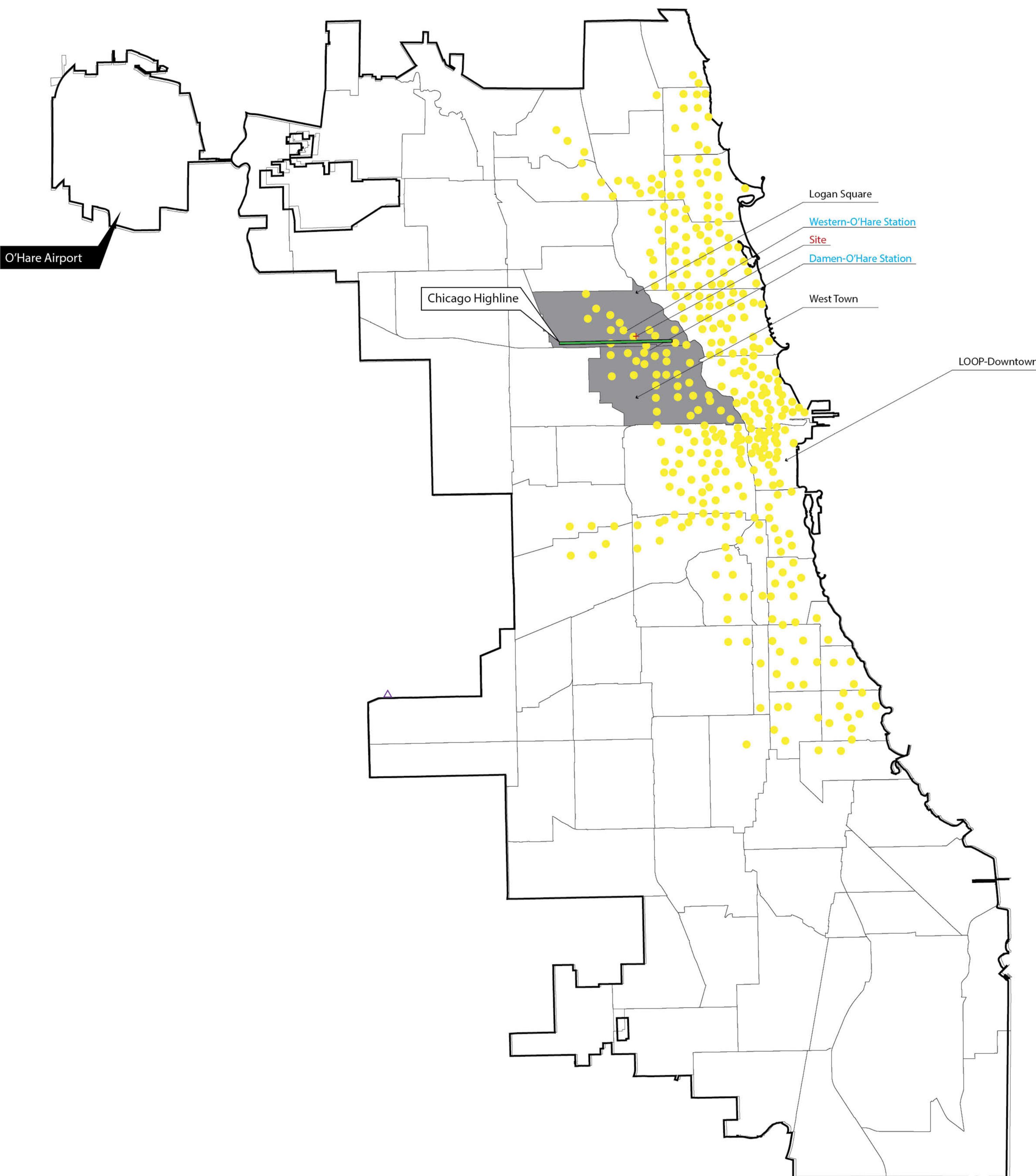
Site Resources
CTA Connection
CTA Ridership



Good Mobility Connectivity



Good Mobility Connectivity



LEGEND

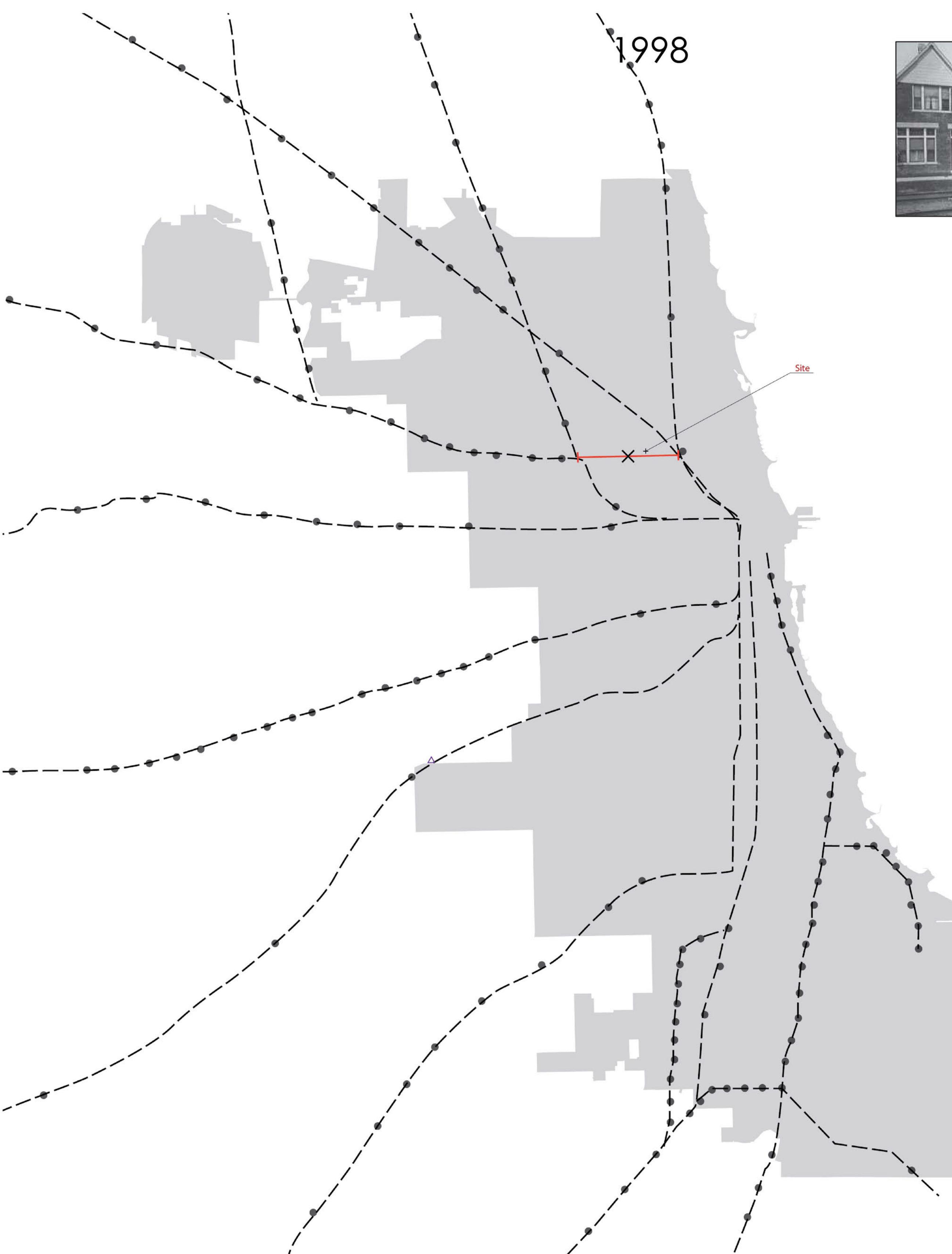
Coal Power Plant	△	Food Desert	■	Residential	■	SITE	●
Natural Gas Power Plant	○	Low Land value	■	Industrial	■	Organic Waste Producer	●
Biomass Power Plant	□	Low Employment	■	Commercial	■	Transfer Station	▲
Nuclear Power Plant	◊	Opportunity Area	■	Divvy Station	●	MRRF Site	■
345 KV Transmission Line	■	ATT Coverage	■	CTA Station	●	Landfill	●
138 KV or Less	—	CTA Line	—	Metro Station	●		
City Boundary	····	Metro Line	—	Vacant Property	●		

Resources/Food

The state of Illinois is currently missing out on a huge potential to incentivize renewable energy development through a broken structuring of how funds are distributed. The Renewable Portfolio Standard (RPS) is an ambitious but achievable set of annual goals for both Energy Utilities (EUs) and Alternative Retail Electric Suppliers (ARES) to meet. By 2025, all electricity supplied to the City of Chicago will have to come from a minimum of 25% renewable sources.

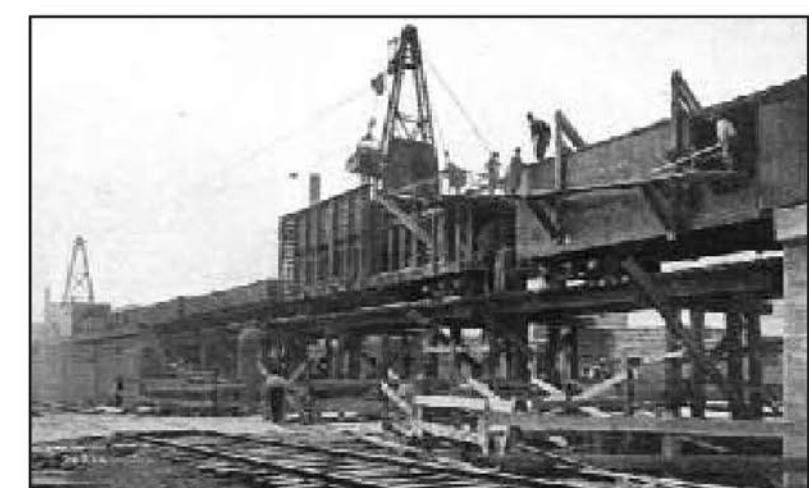
The main goal of our project is to produce electricity for the city usage, through the process of anaerobic digestion, while reducing food waste in the city of Chicago. This would be a source of renewable, cheaper and more affordable energy which is also one of the goals of the City of Chicago. Better conditions, will attract more businesses, revitalize disadvantaged neighbourhoods, provide jobs for more people, and boost economy.

Green Infrastructure



1872

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



1910

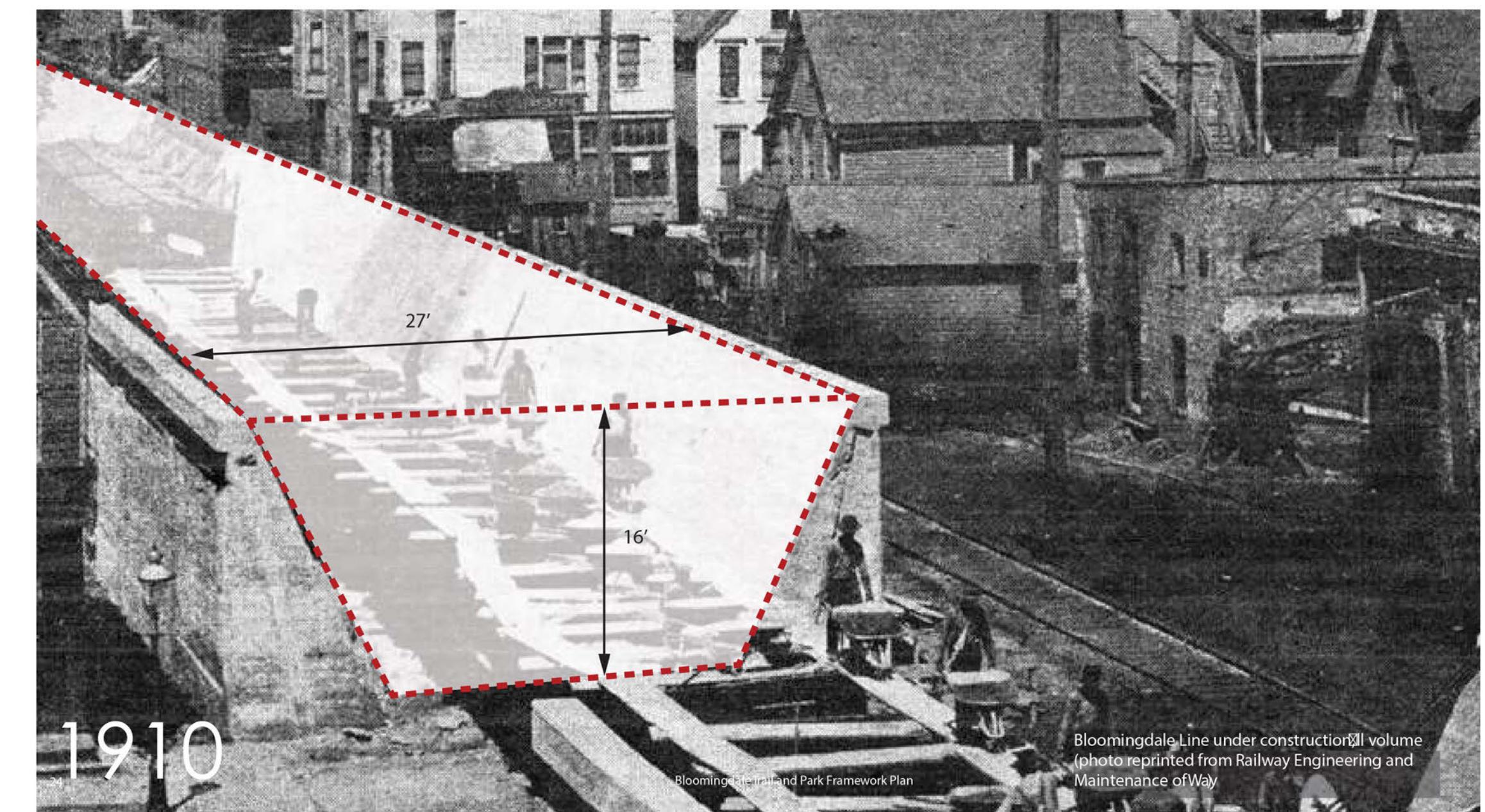
In 1910, Chicago passes an ordinance requiring that the railroad be elevated by 1914 to reduce dangers to the public from at-grade travel.



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.

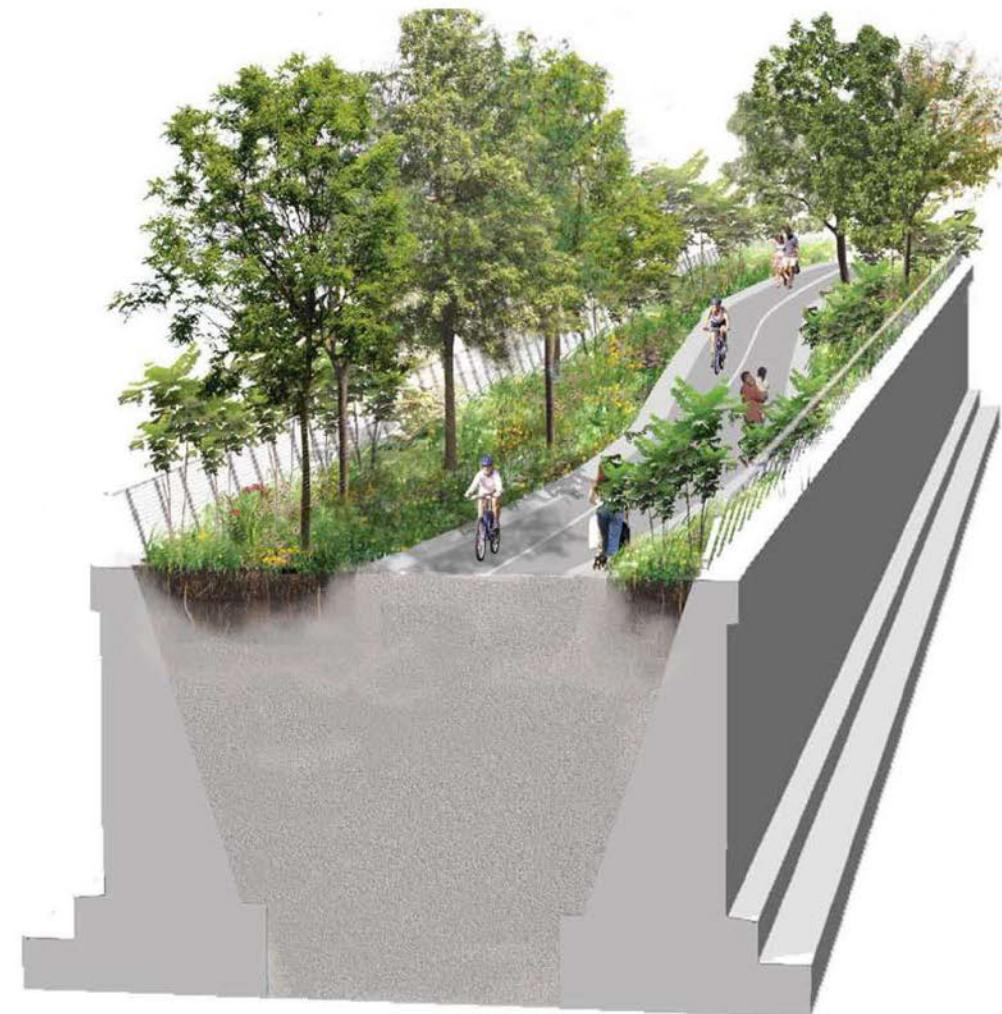
1914

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.

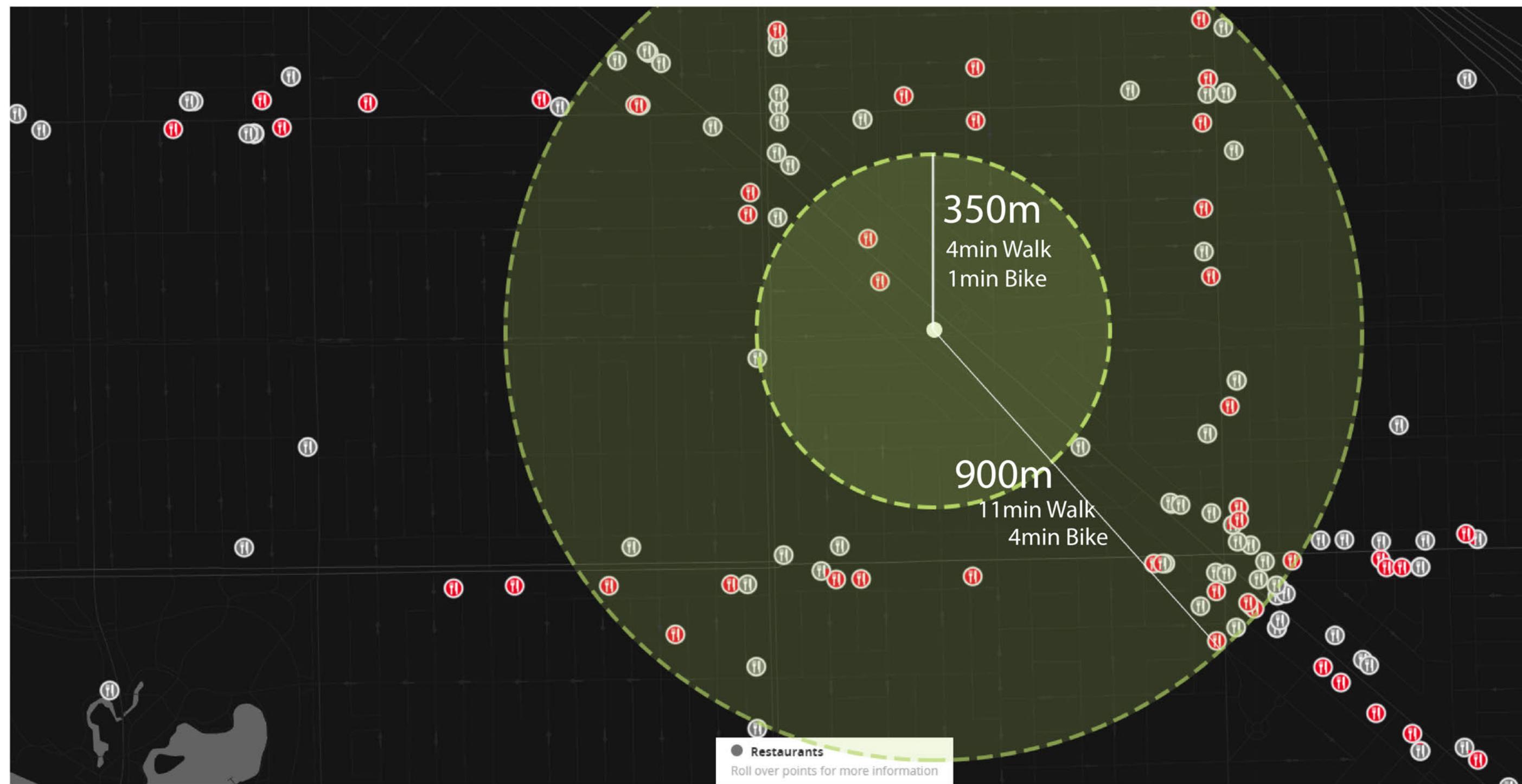


1910

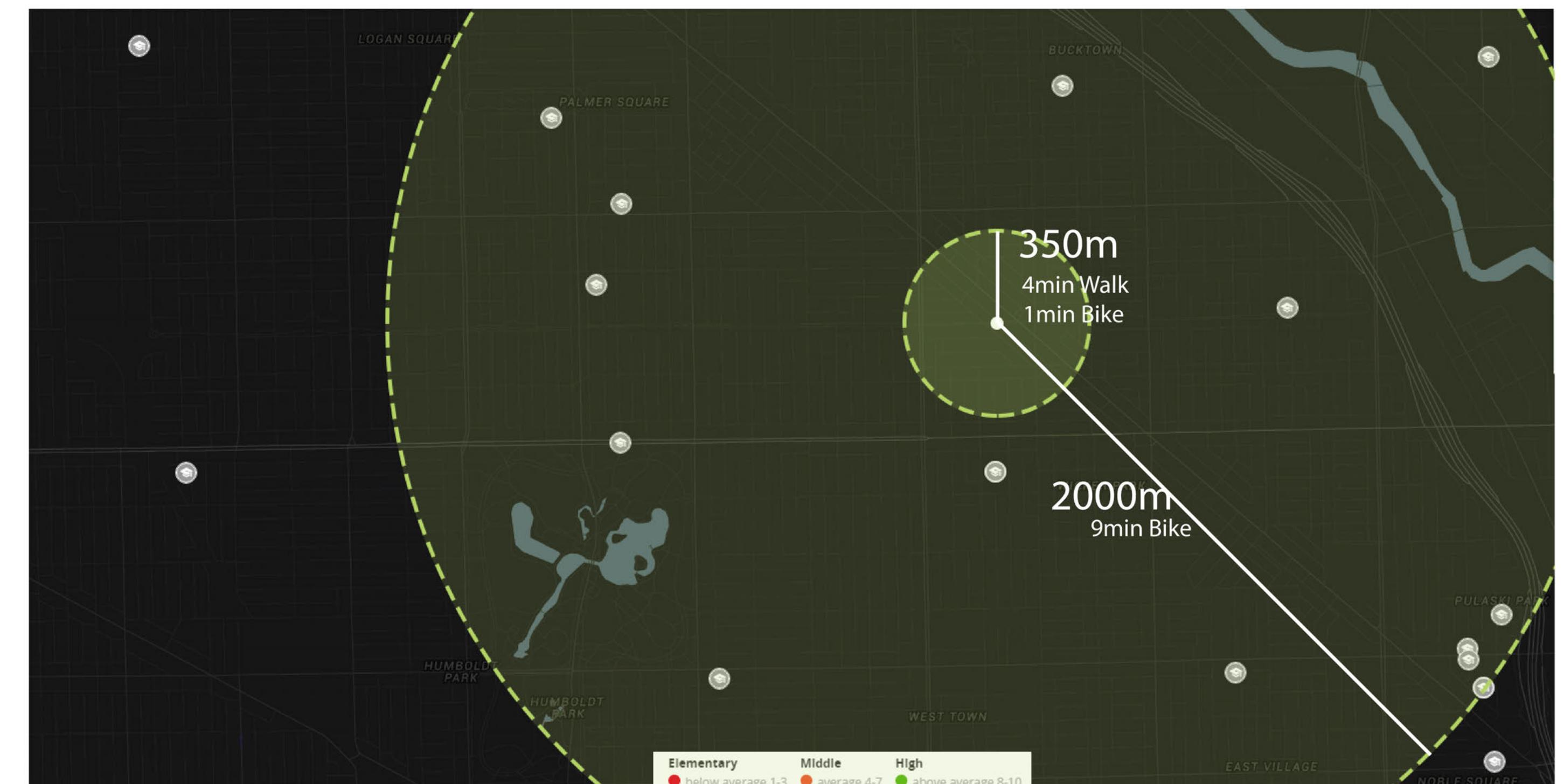
2020



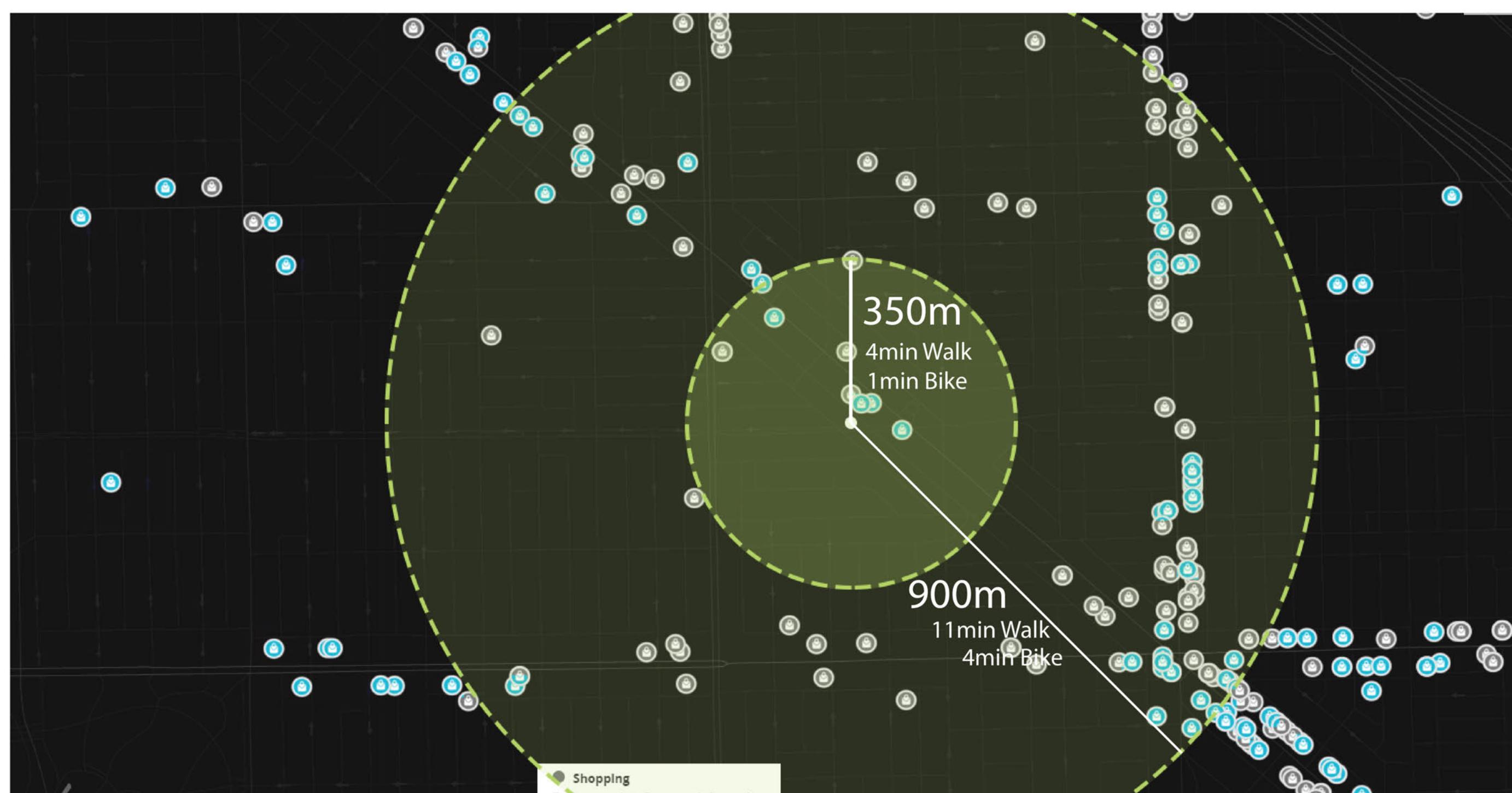
Neighborhood Infrastructure



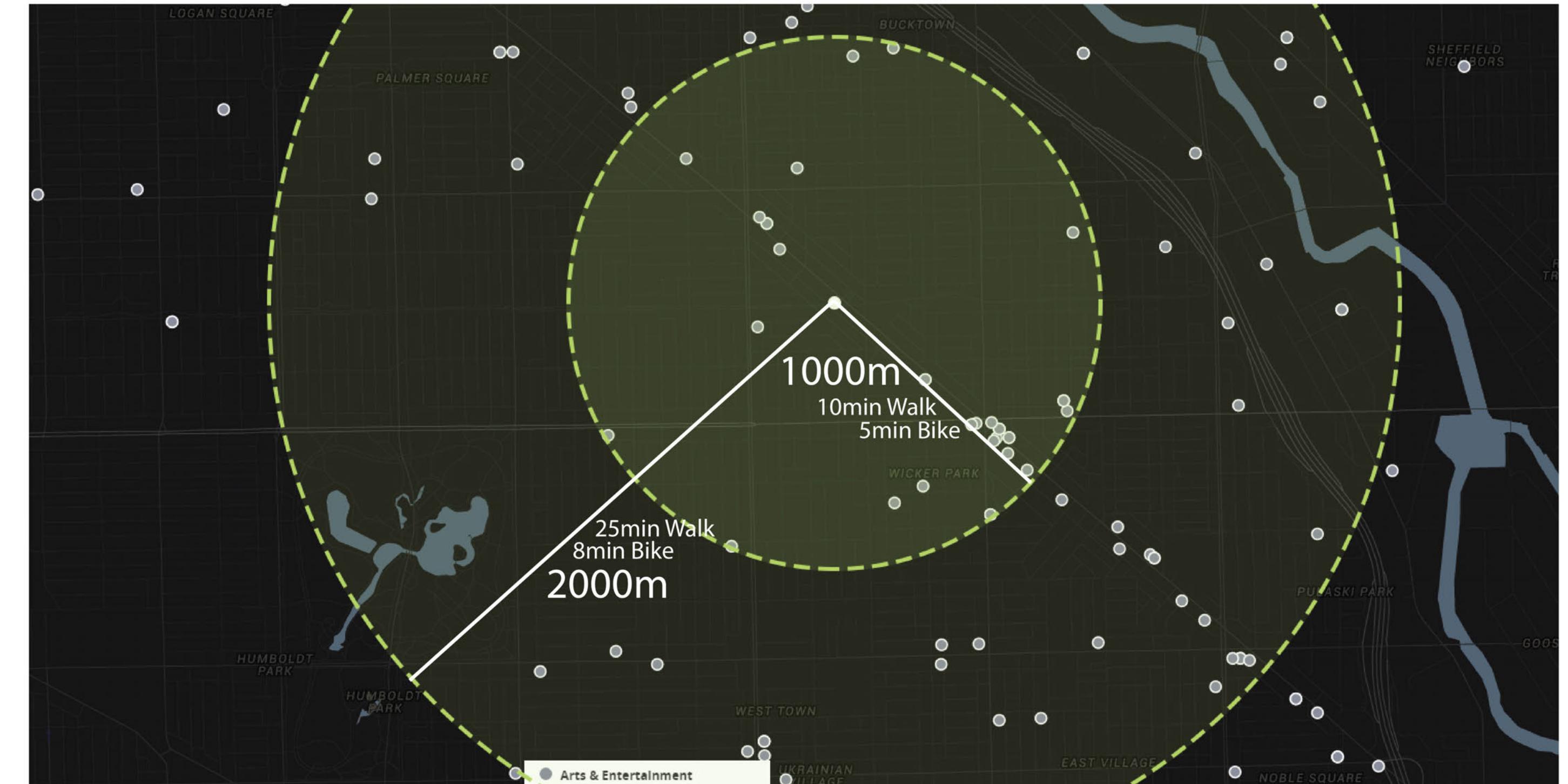
Restaurants



Schools

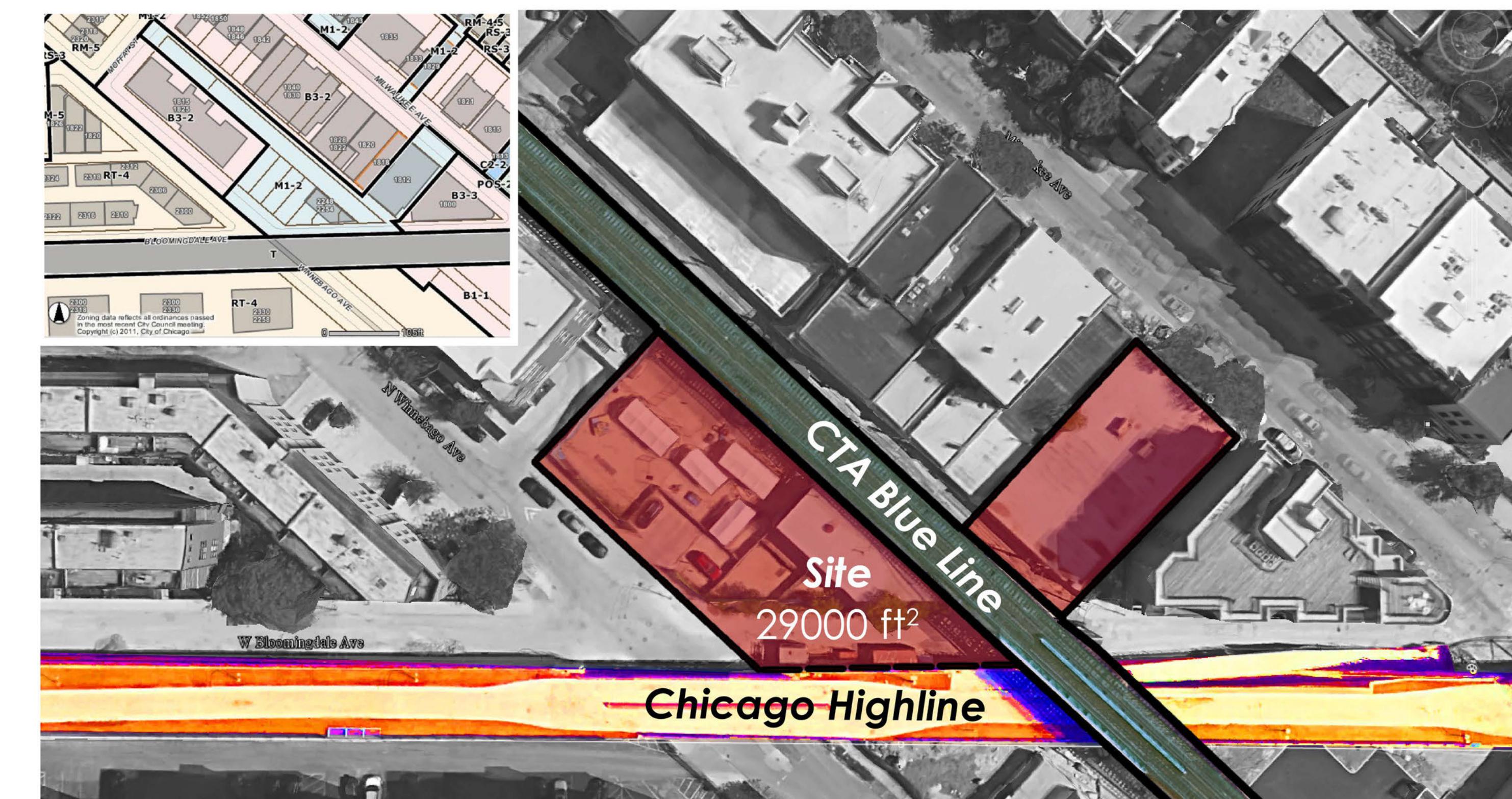
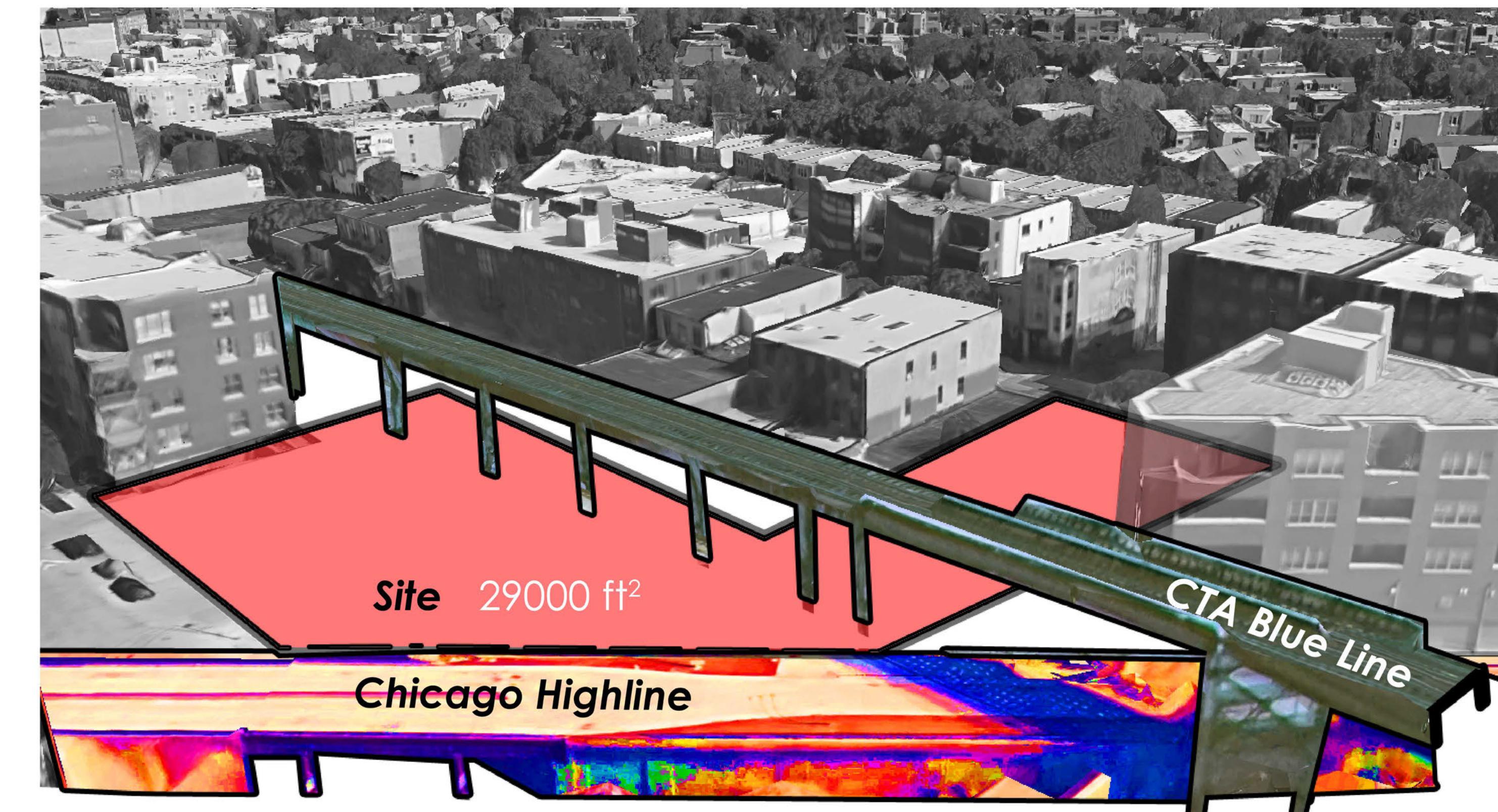


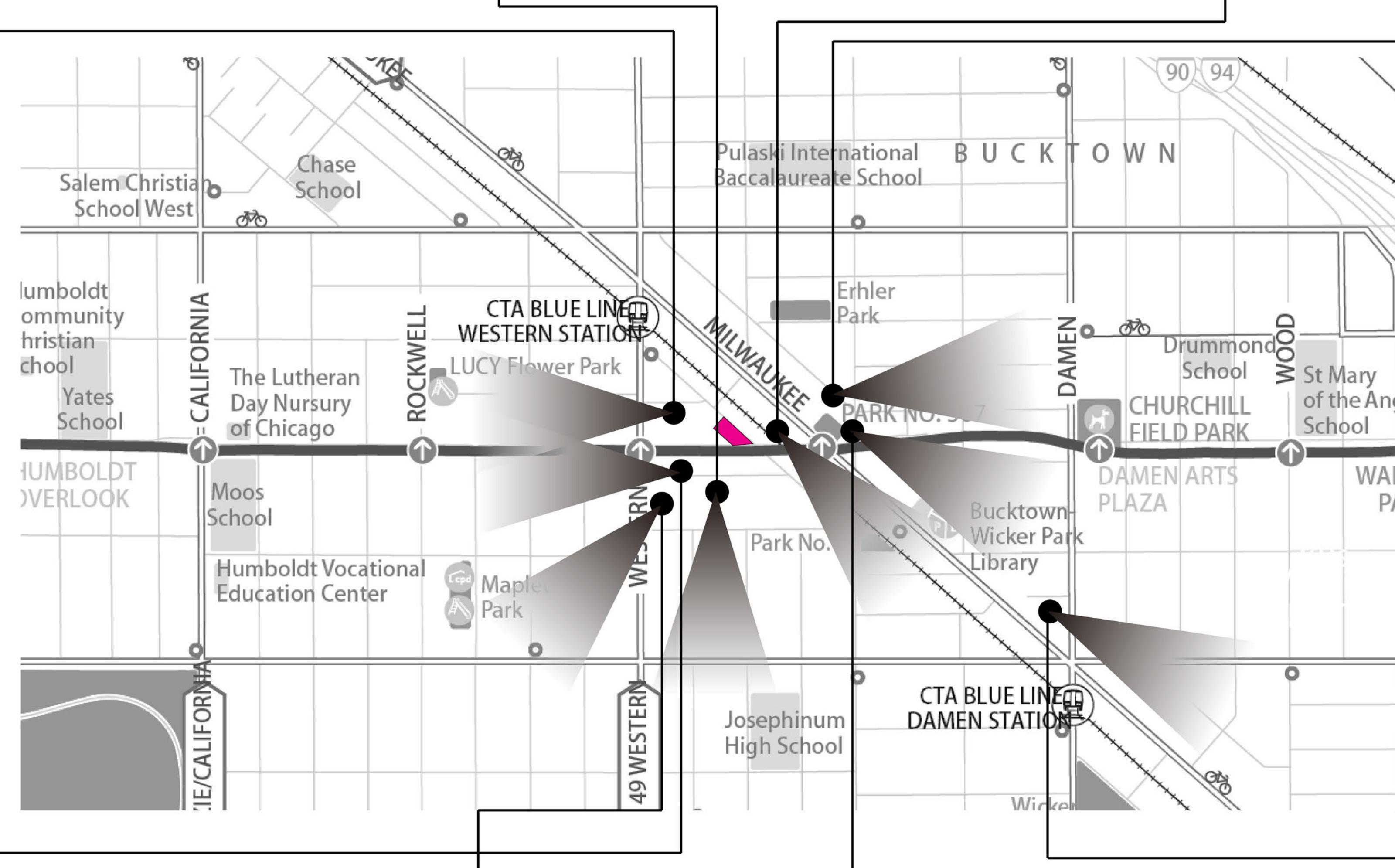
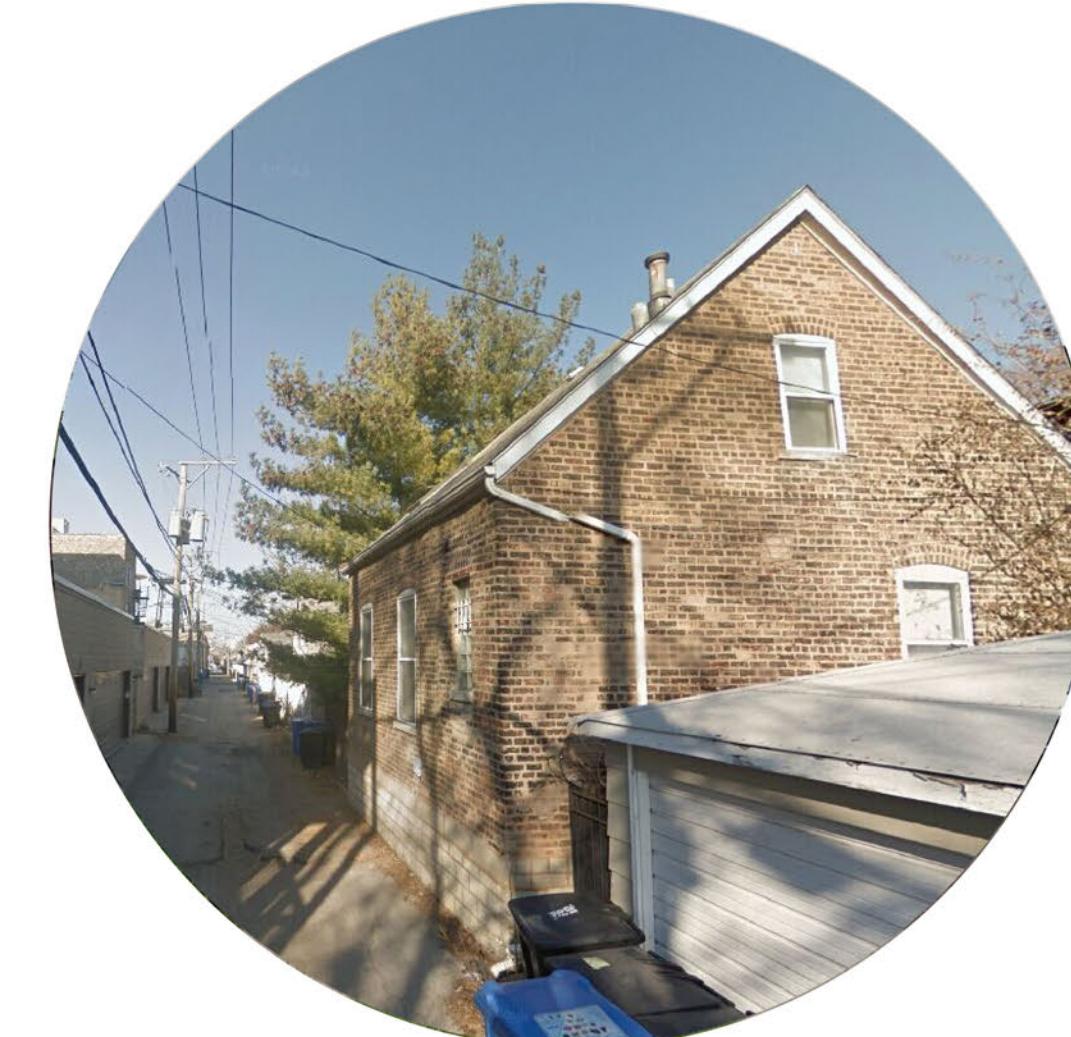
Groceries



Theater and museum

Space Complexity + Multiple Layer



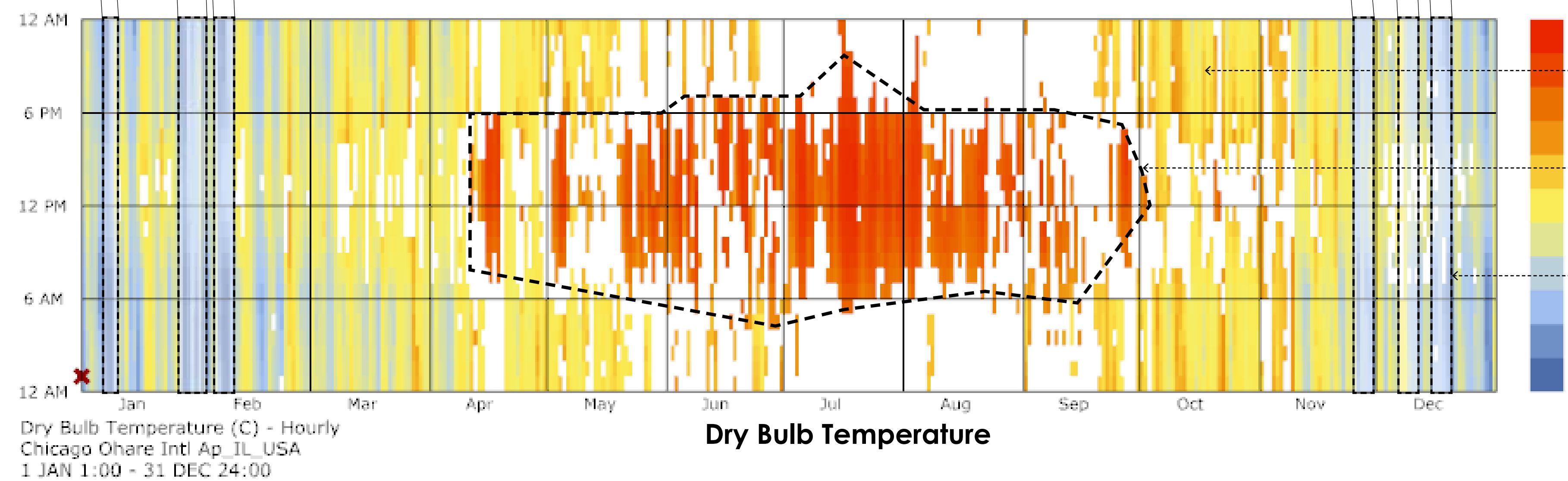
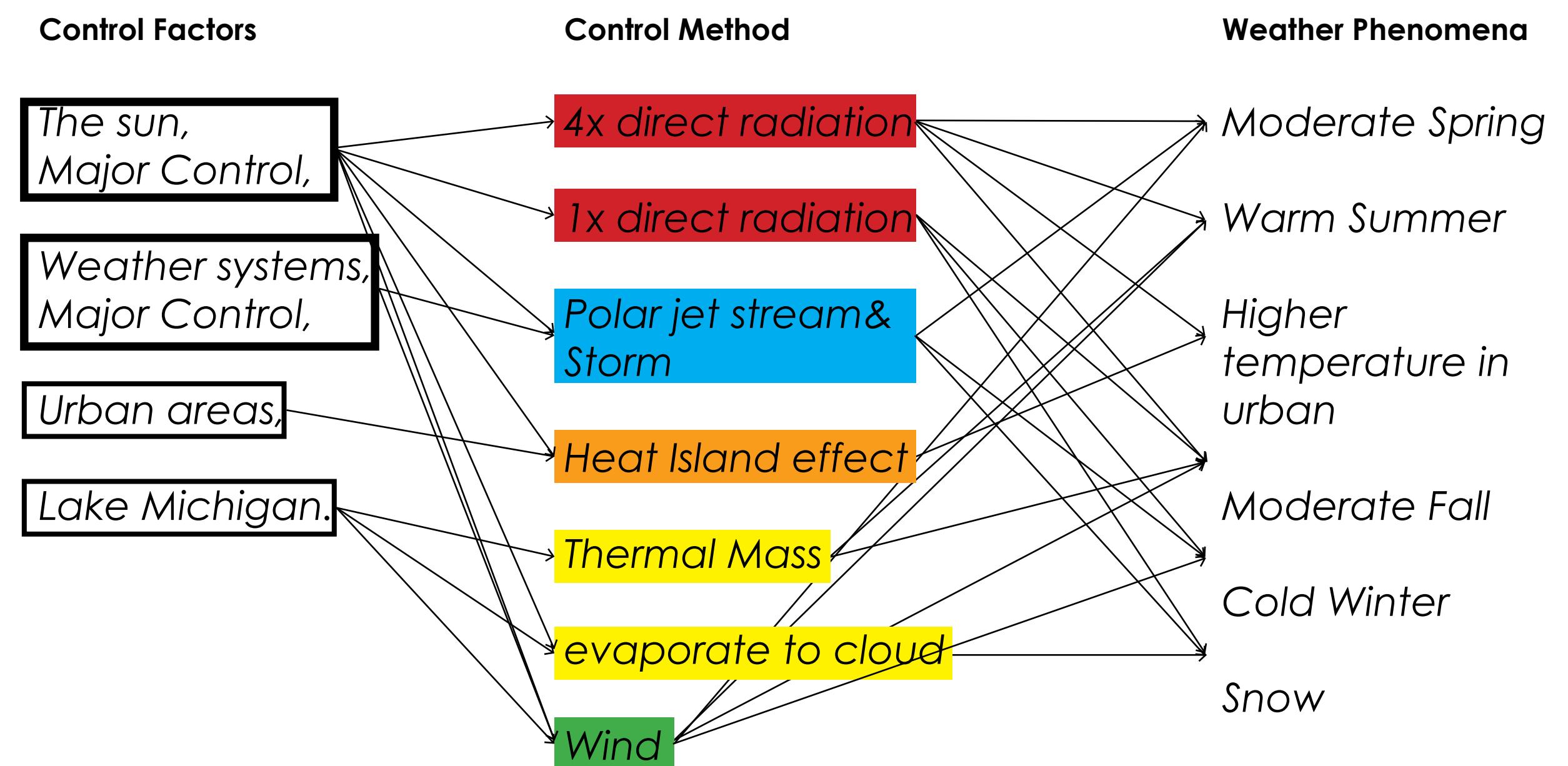
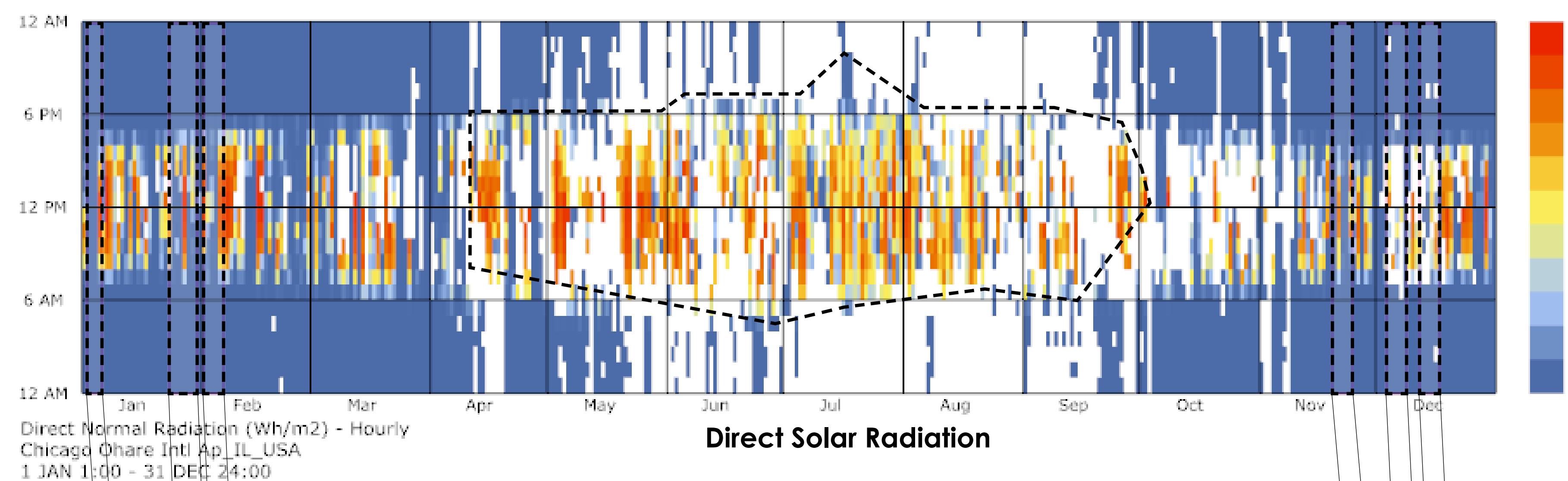


Chicago Brick

Chicago brick was manufactured in the mid 1800's. The brick became very famous and popular in the construction industry during the Great Chicago Fire of October 1871. The fire melted the iron supported structures and mortar filled construction buildings except the buildings built with the Chicago brick by the Irish in the Chicago Irish Ghettos. The Great Fire transformed the lives of the Chicagoans and gave the city a lasting image as a place of renewal, progress and great possibilities. Chicago brick became the backbone of the cities plan to rebuilt a "fireproof" Chicago. The unmatched beauty of Chicago brick has proven impossible to duplicate.



Climate and Weather Patterns



Short Time Comfortable caused by
Low Solar Radiation

Heat stress caused by High Solar Radiation

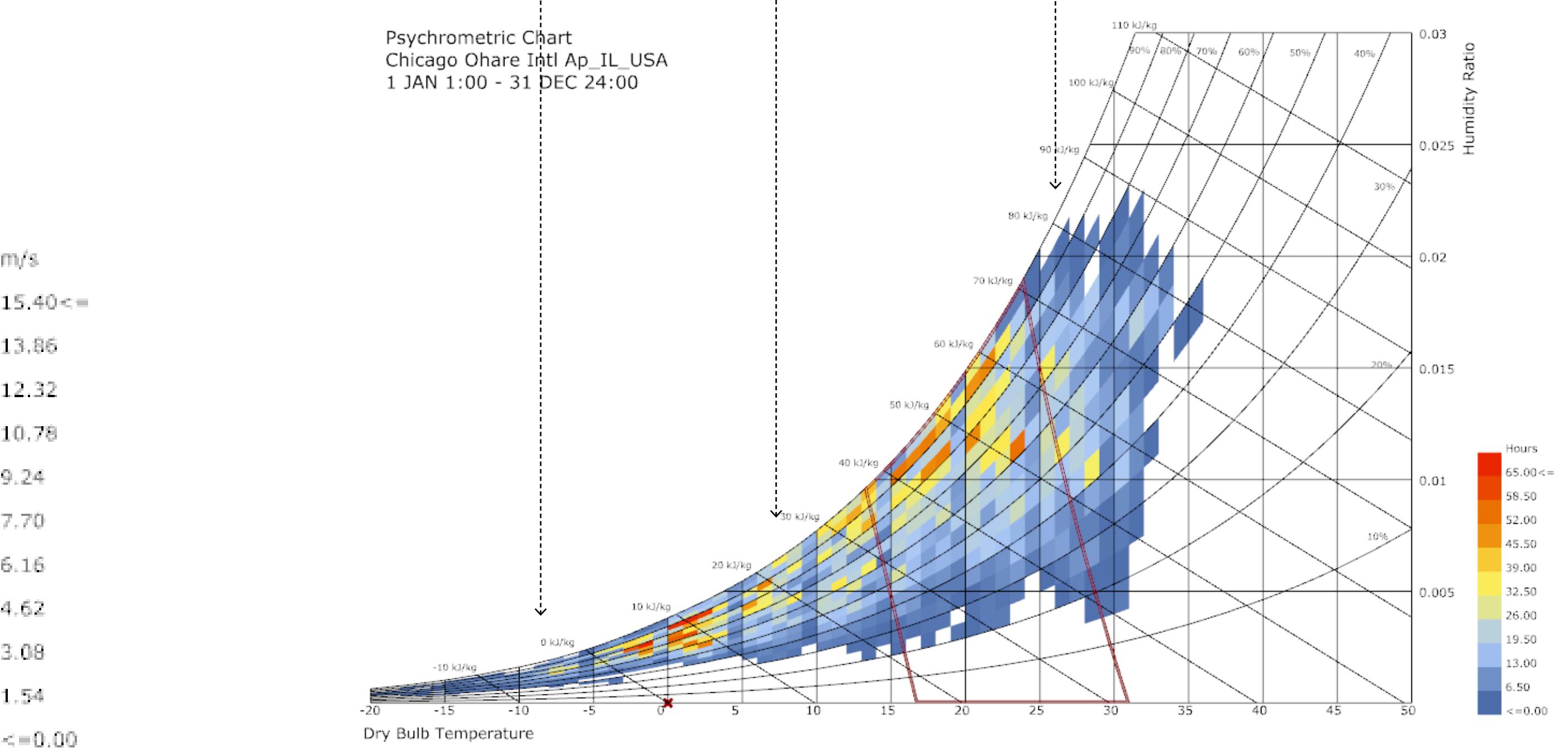
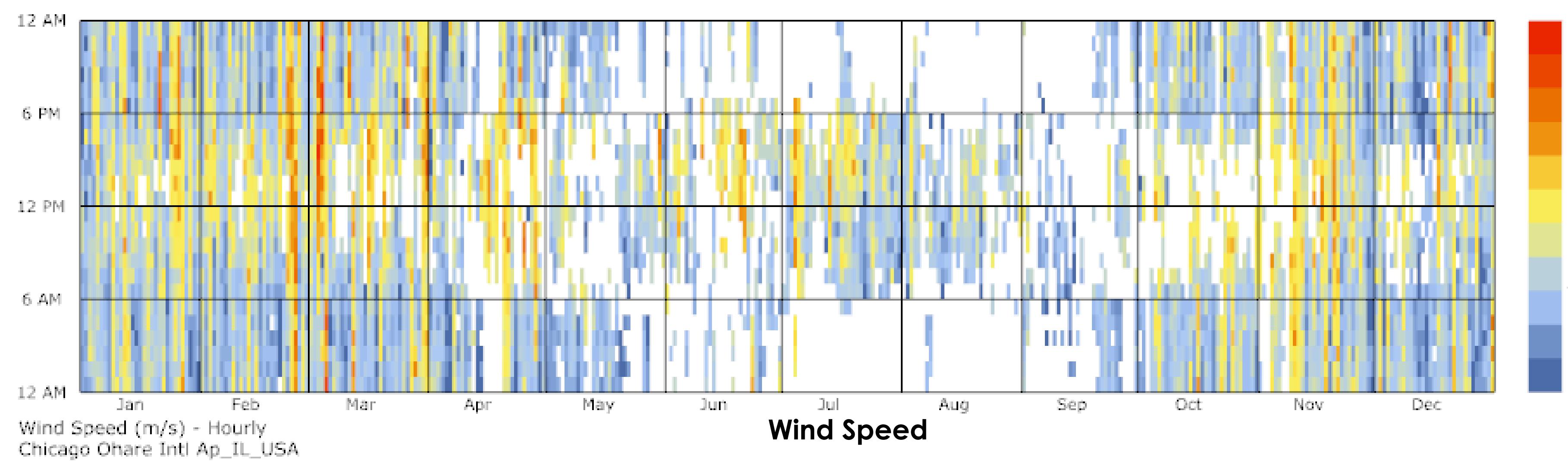
Cold stress caused by
Low Solar Radiation + Cold Stream

33% of year
Comfortable

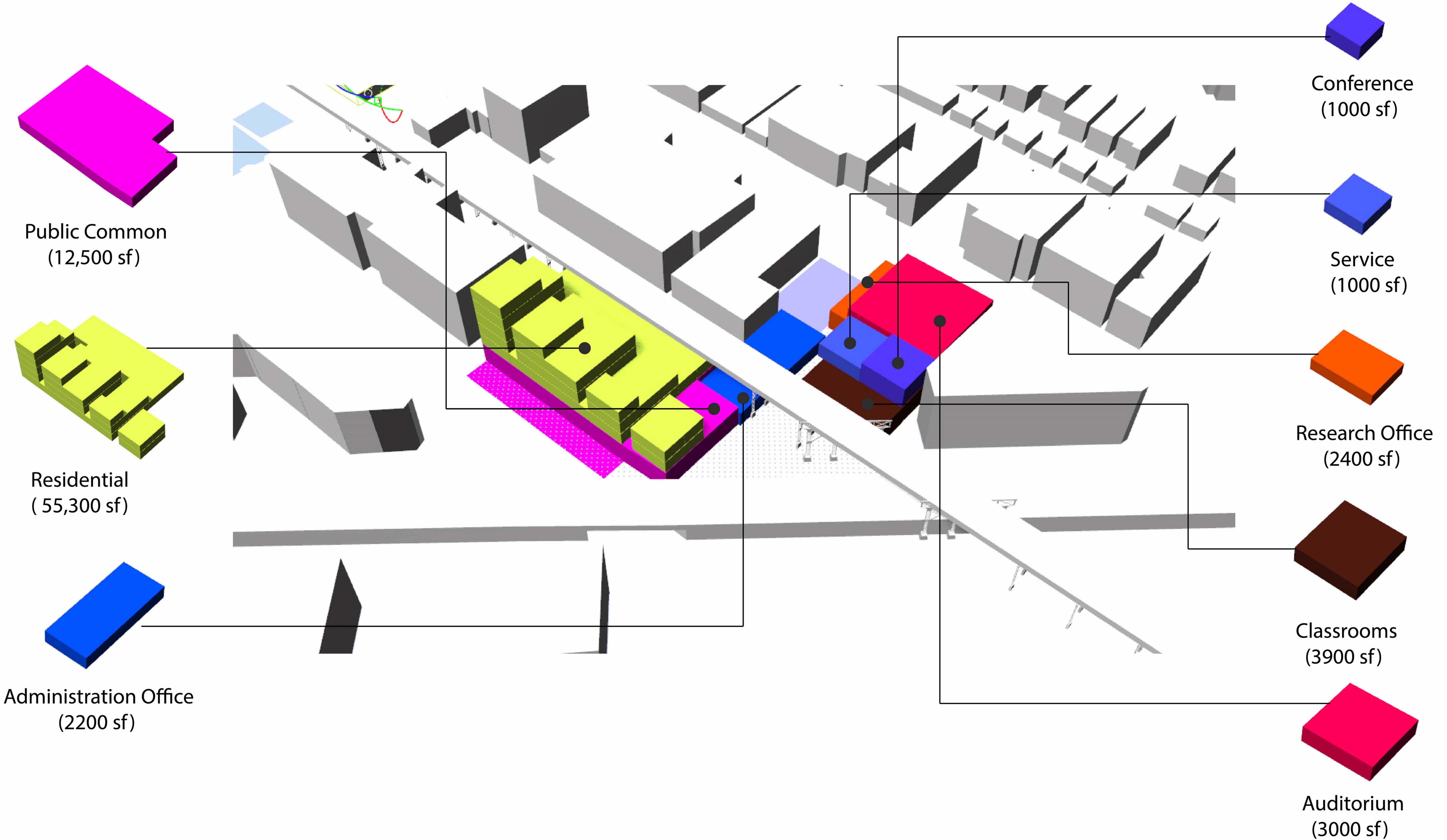
18% of year Short
Comfortable

10% of year Heat Stress

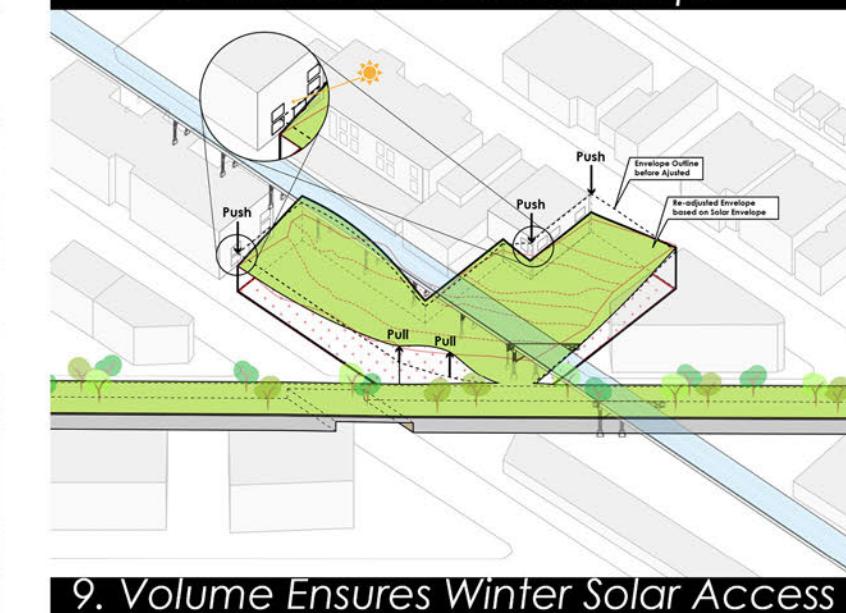
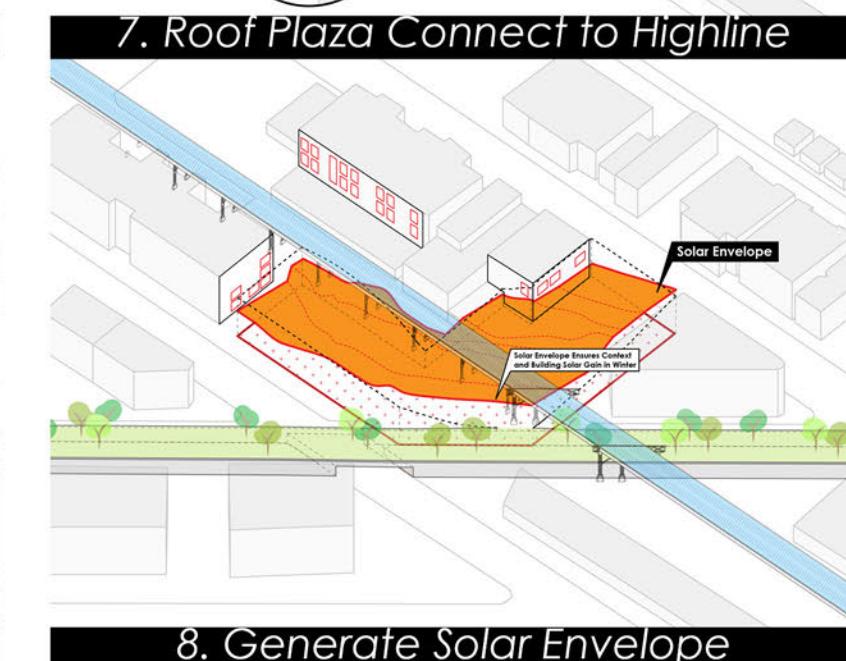
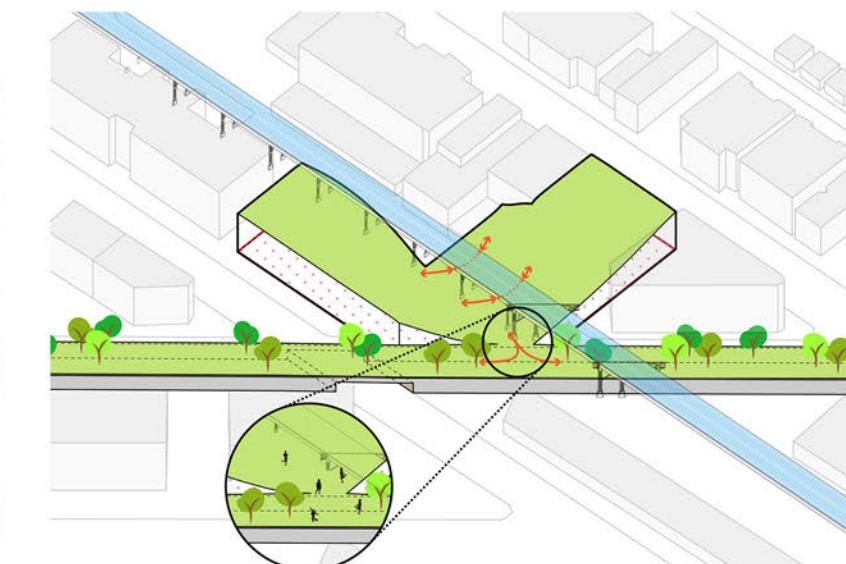
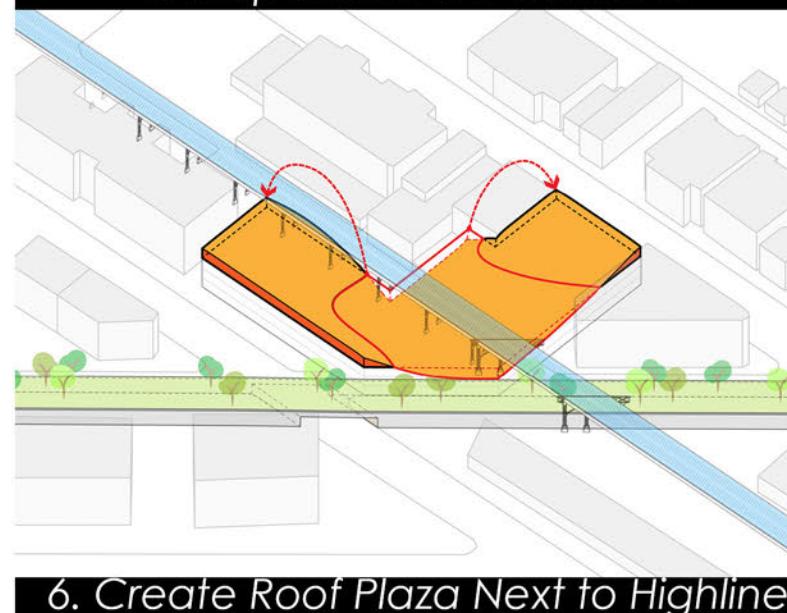
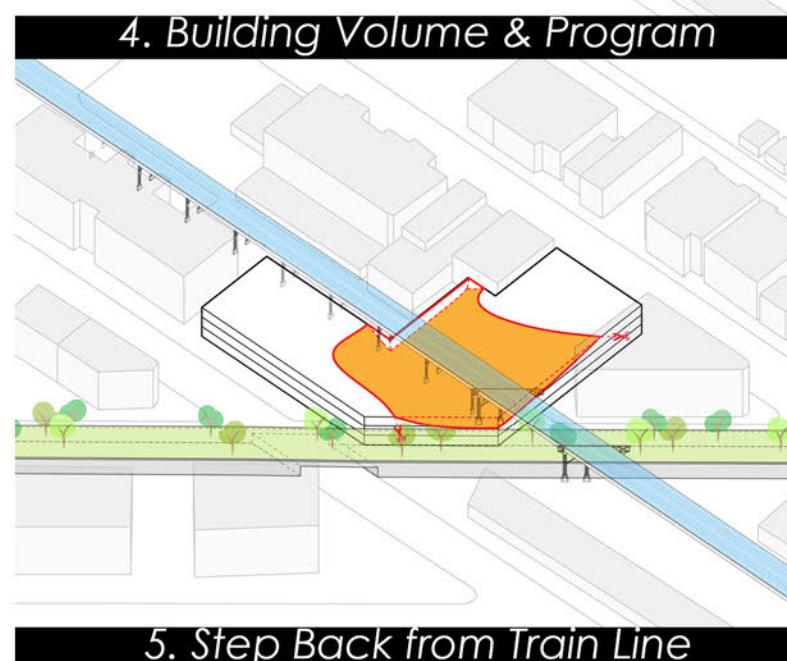
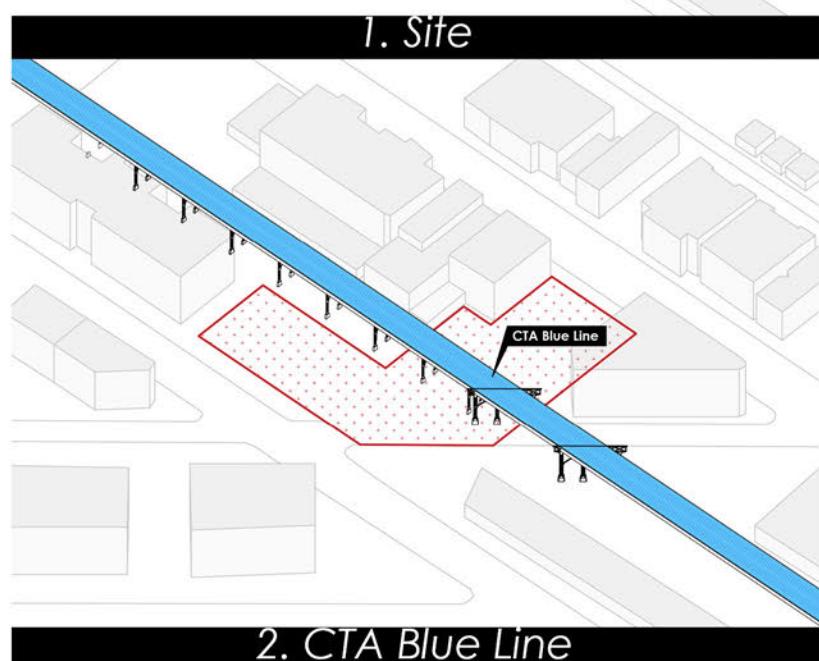
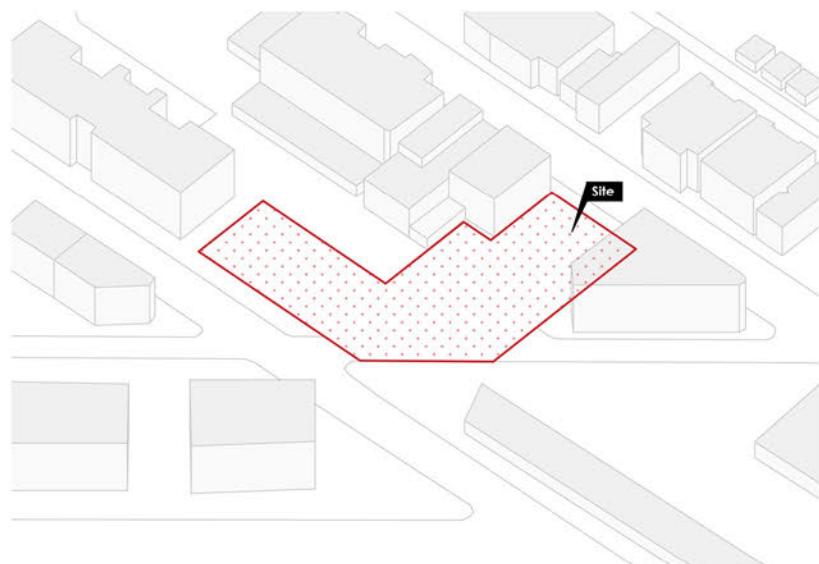
39% of year
Cold Stress



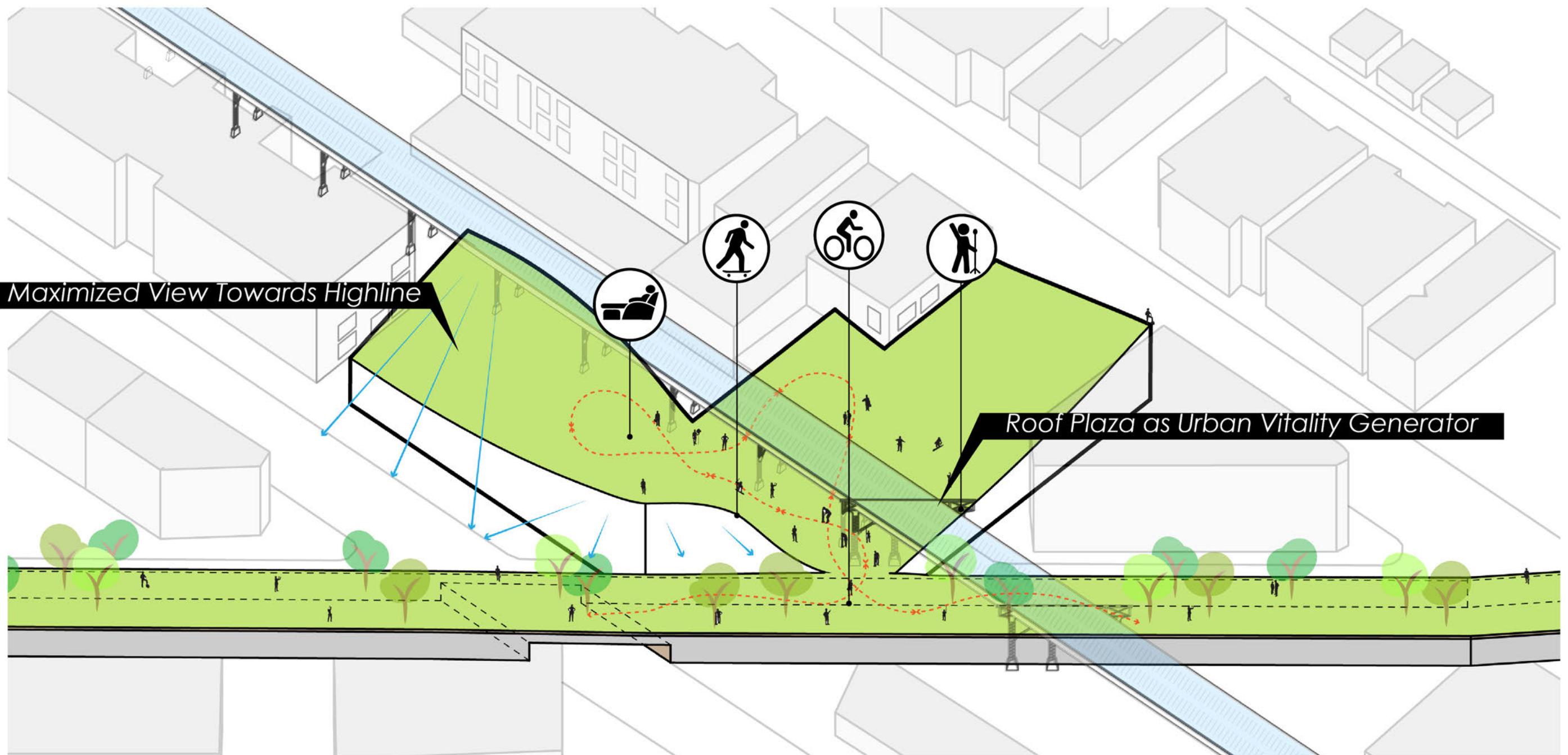
Program

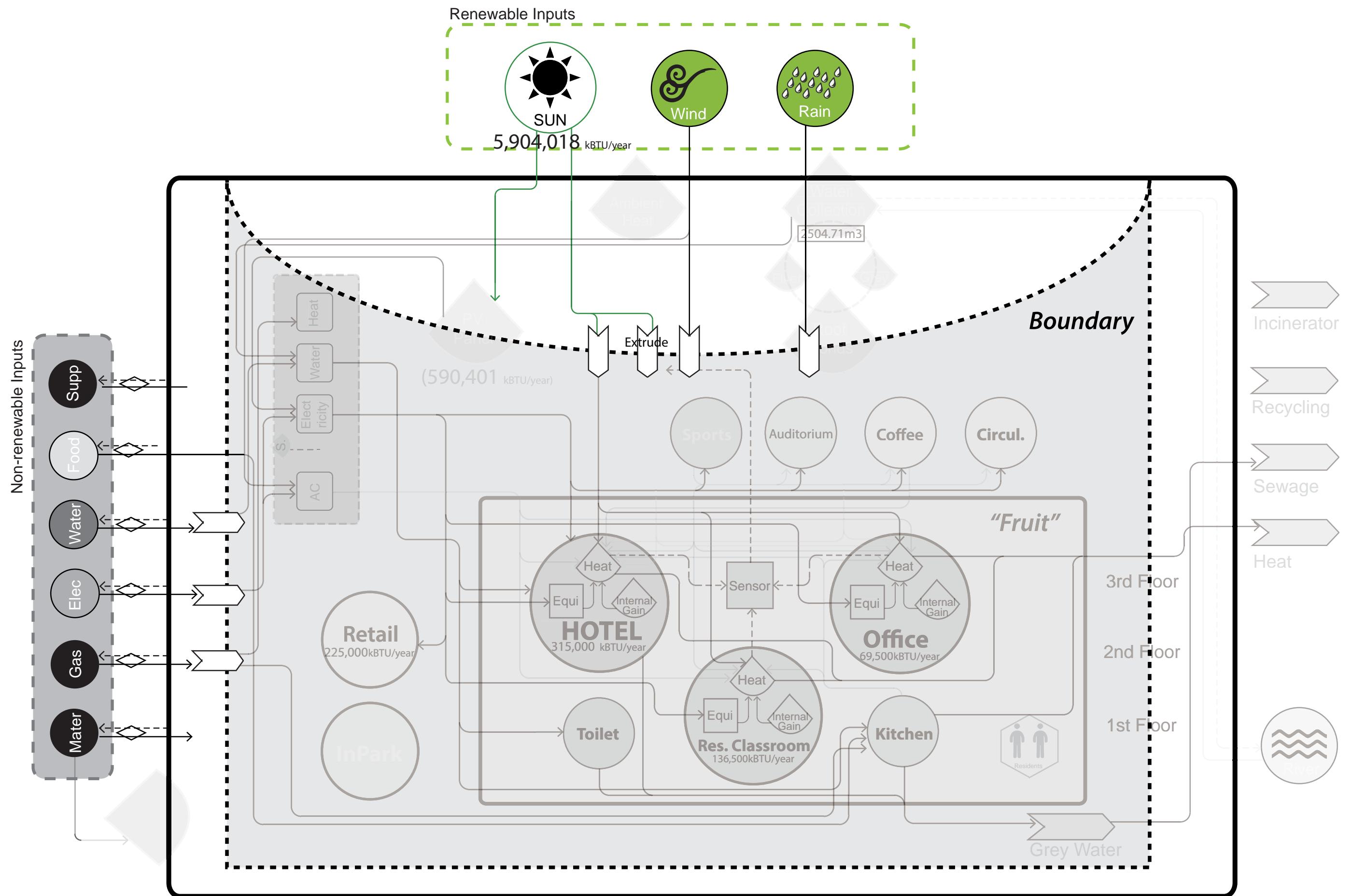


Building Volume Shaped by URBAN FORCES

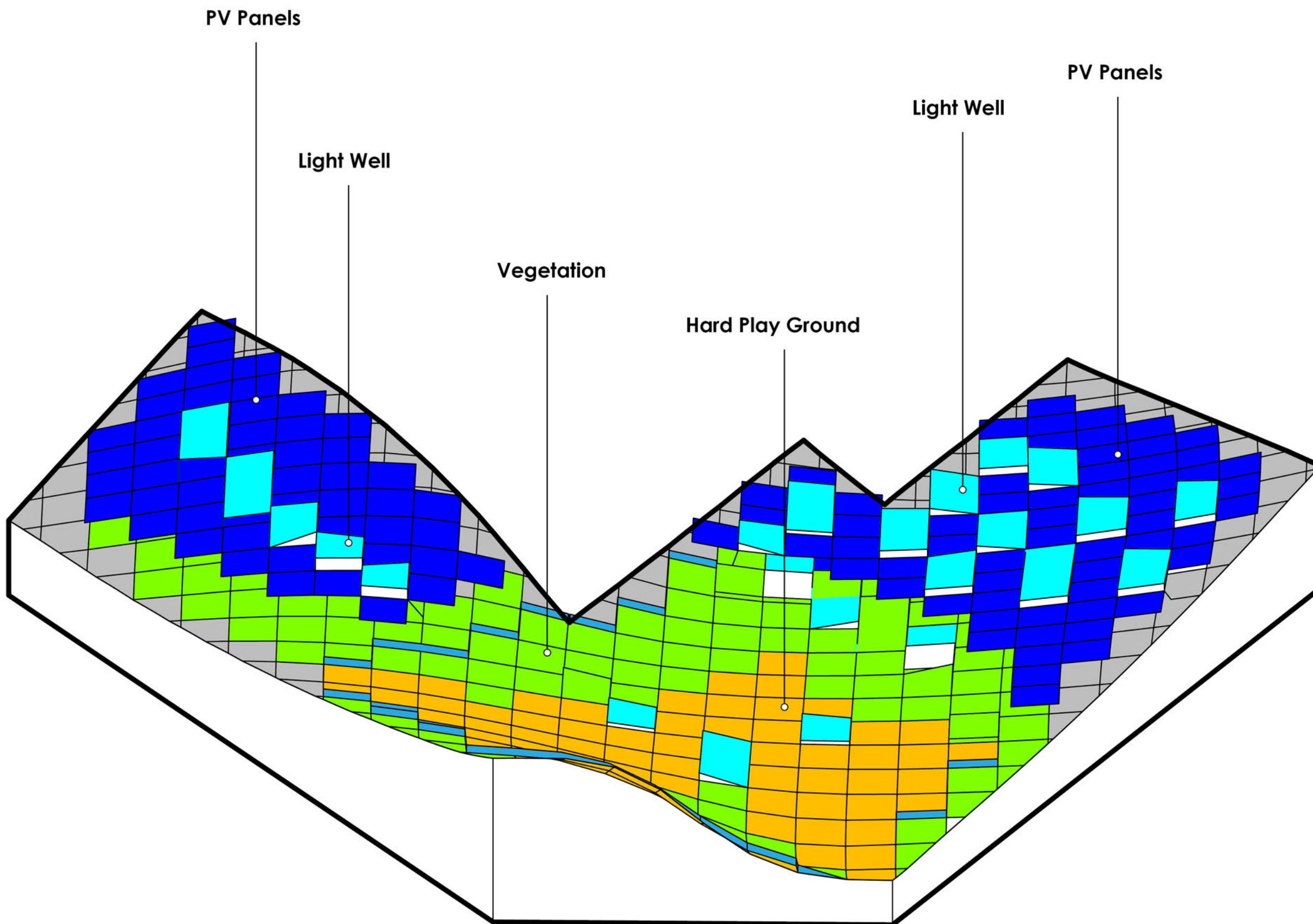


Building Volume Shaped by URBAN FORCES

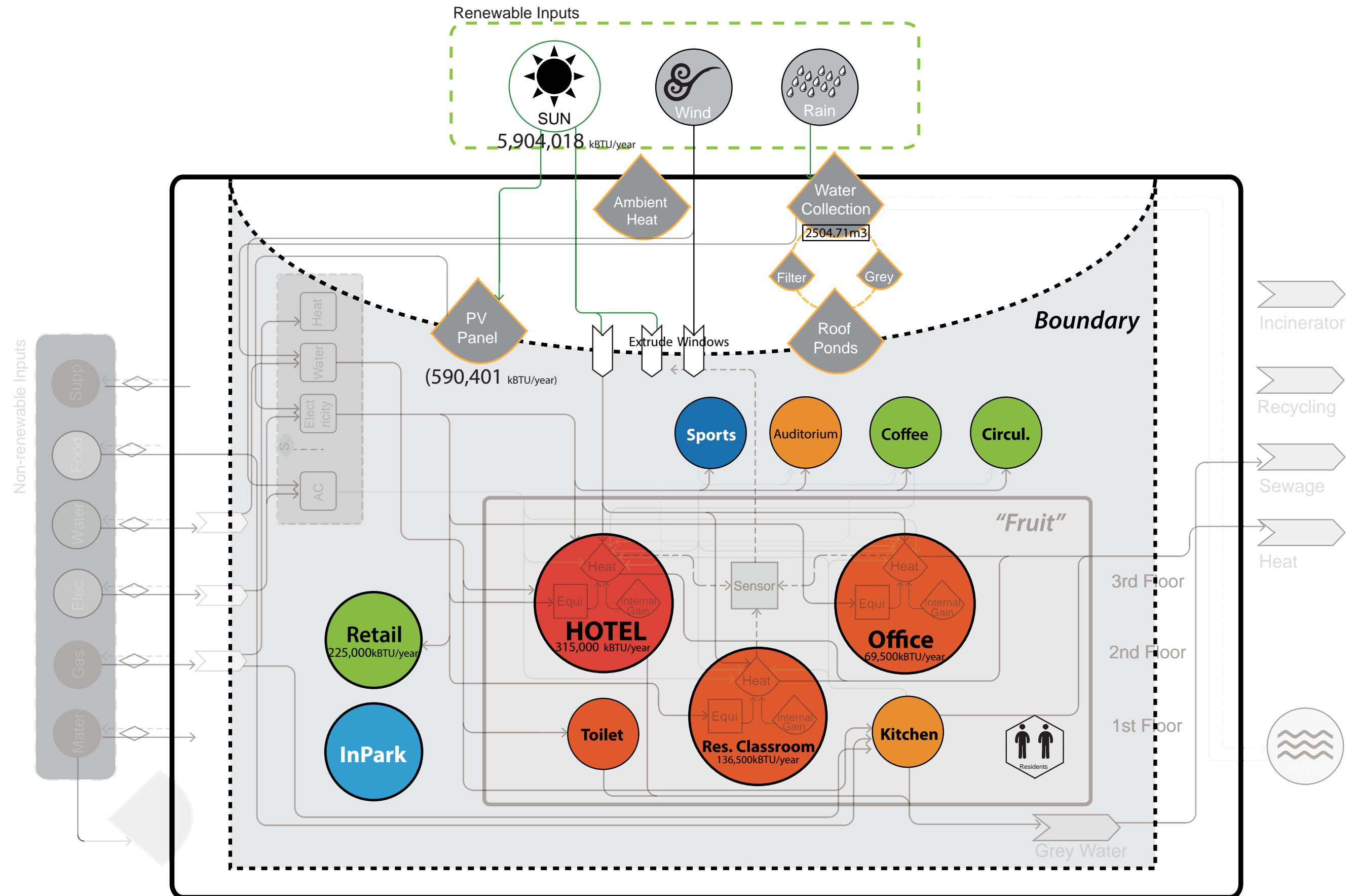




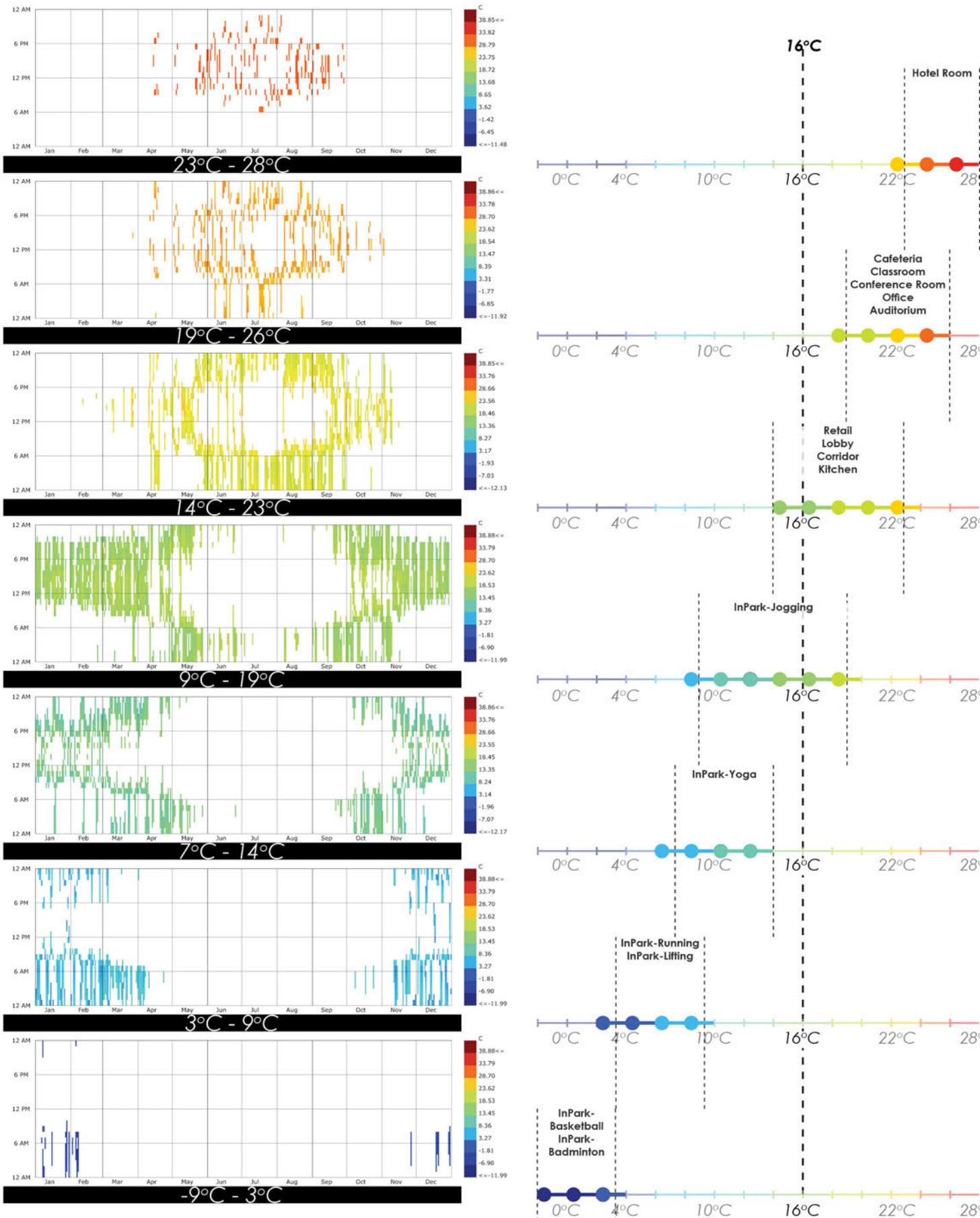
Building Volume Shaped by URBAN FORCES



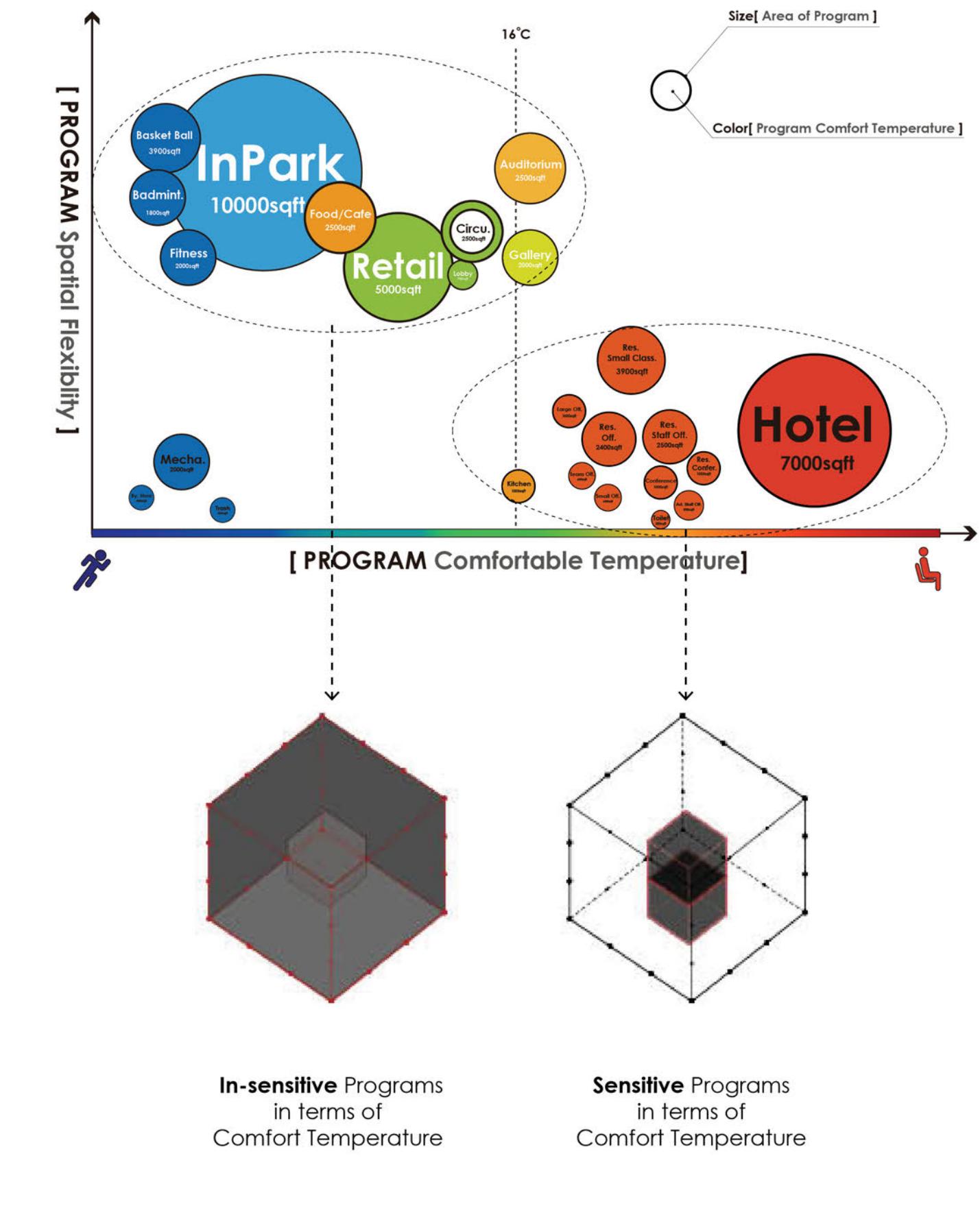




Comfort Temperature Study for Different Program

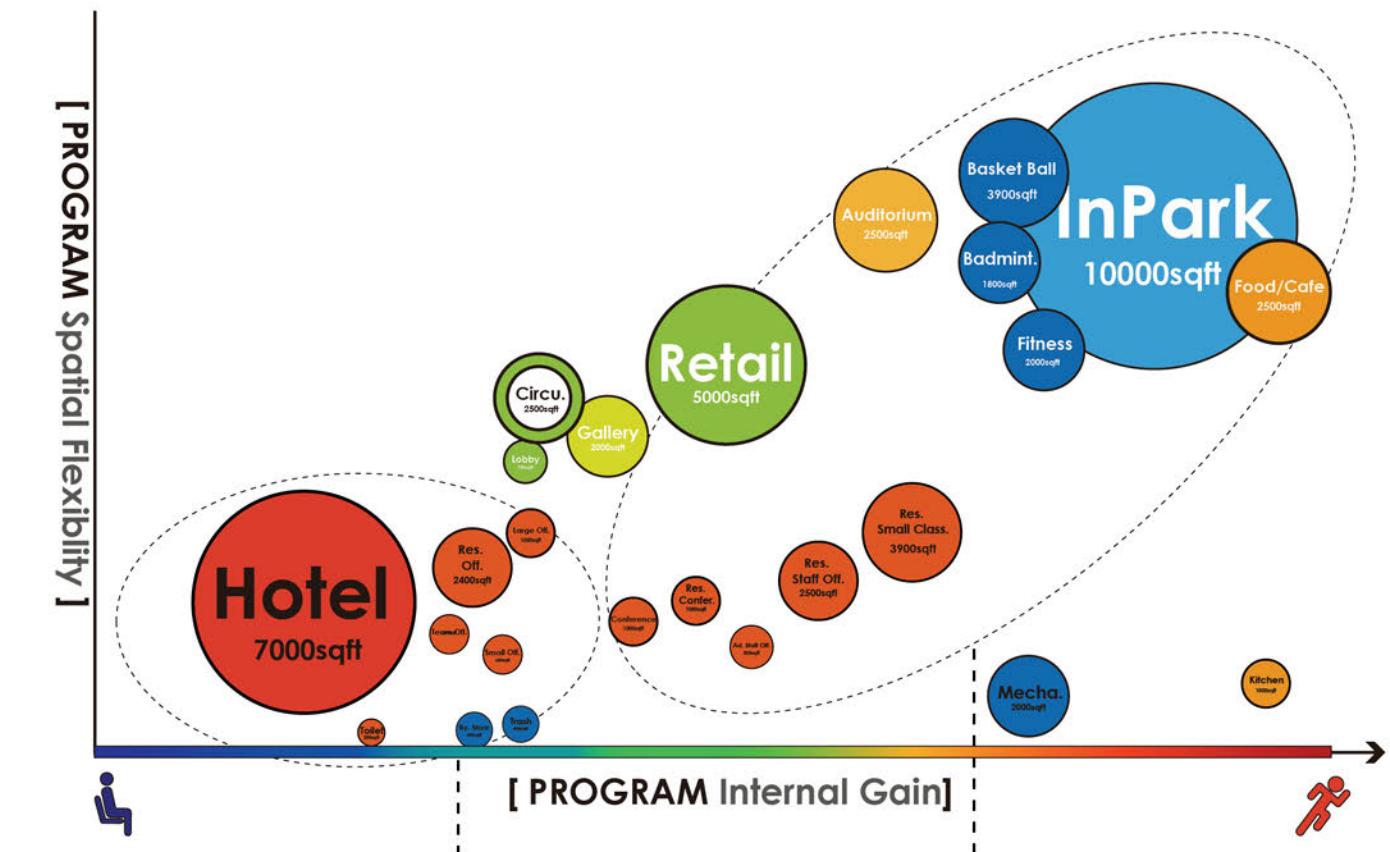
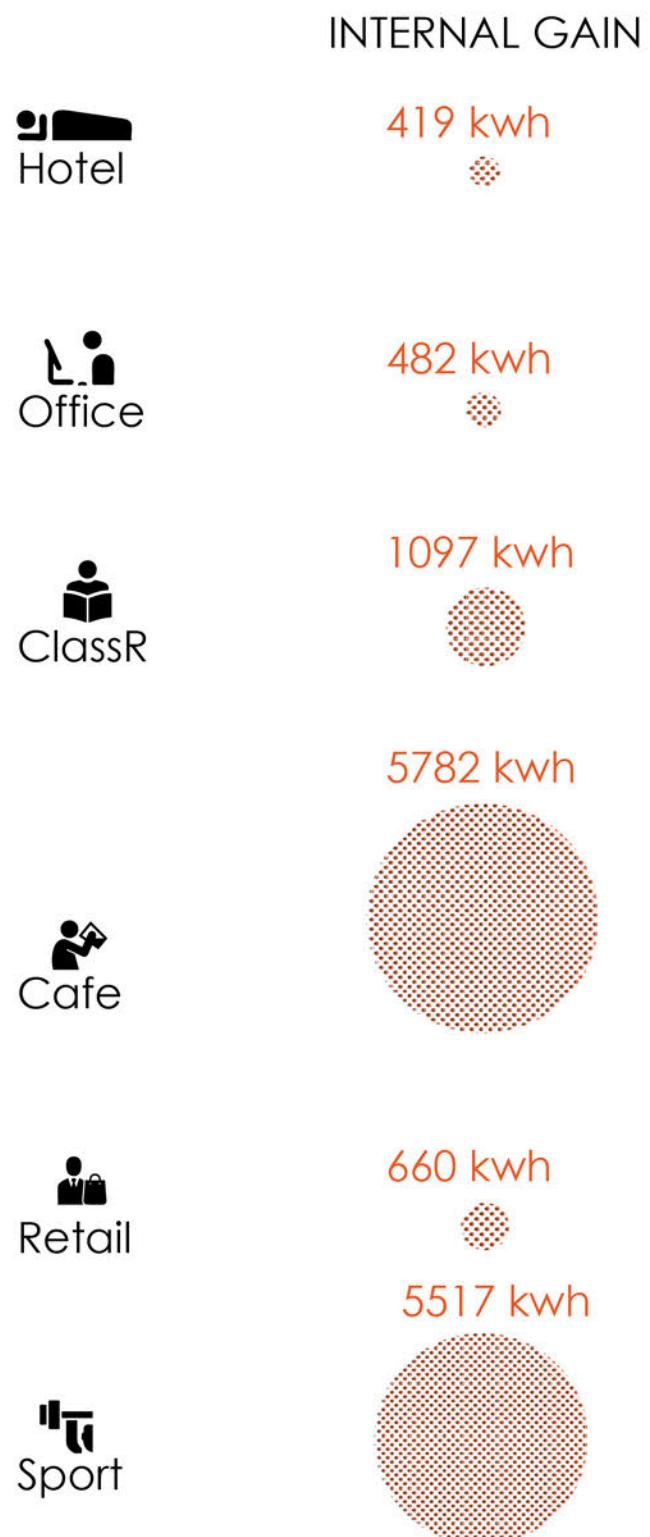


Nature of Programs

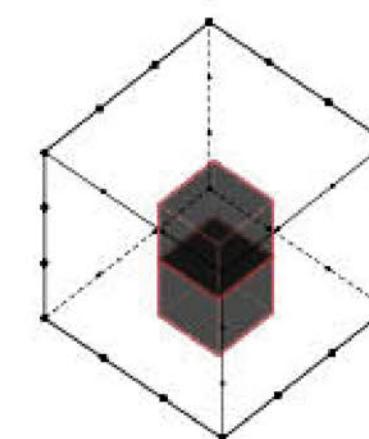


Internal Gain Study for Different Program

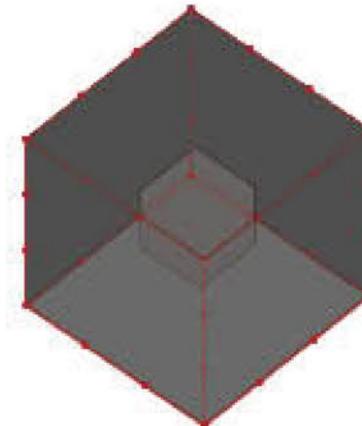
Nature of Programs



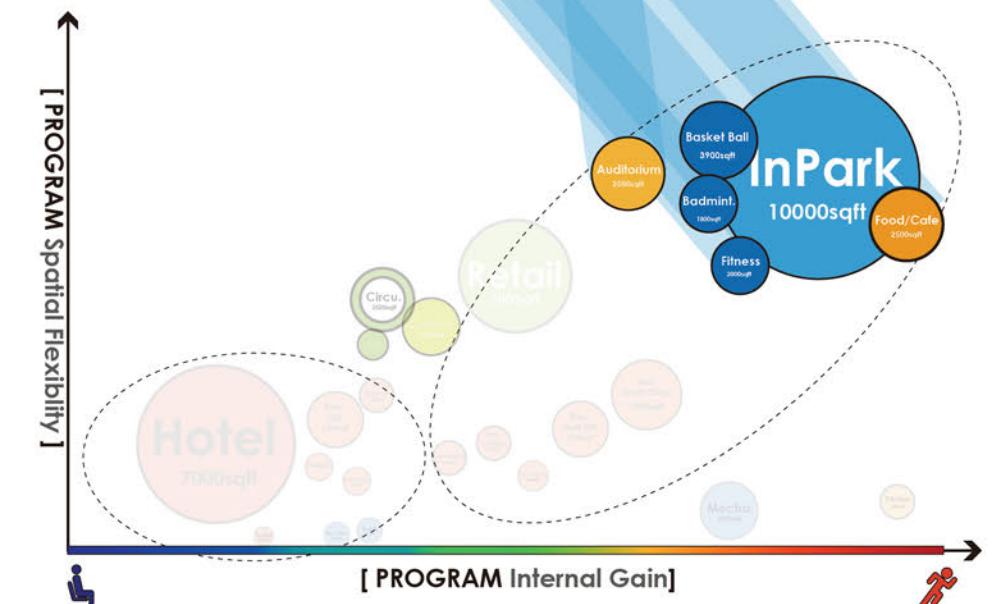
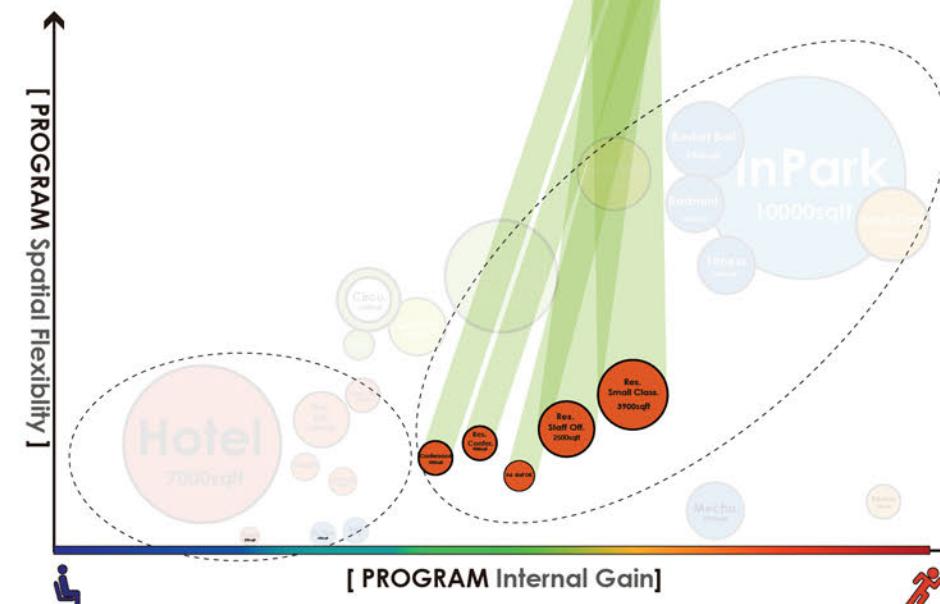
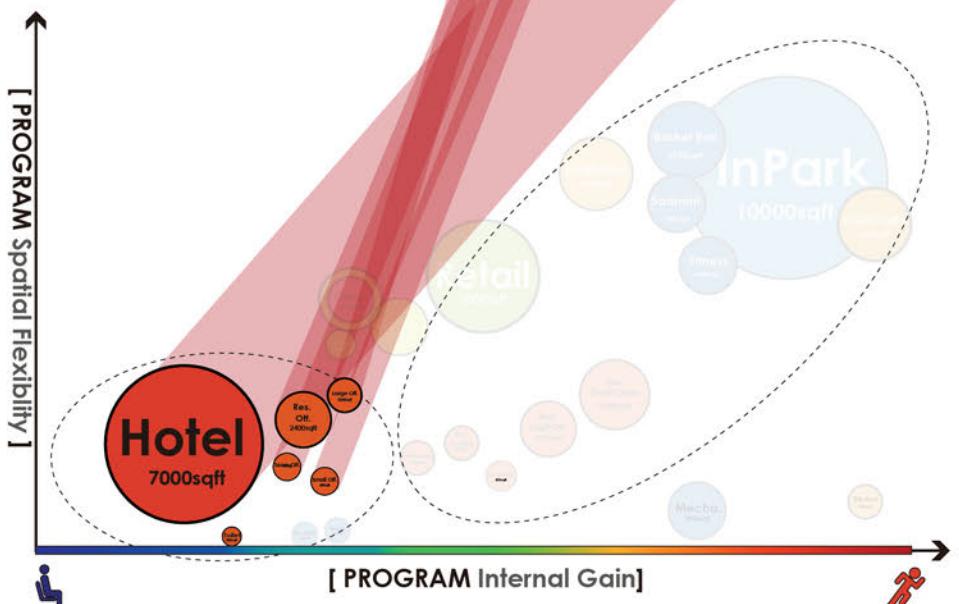
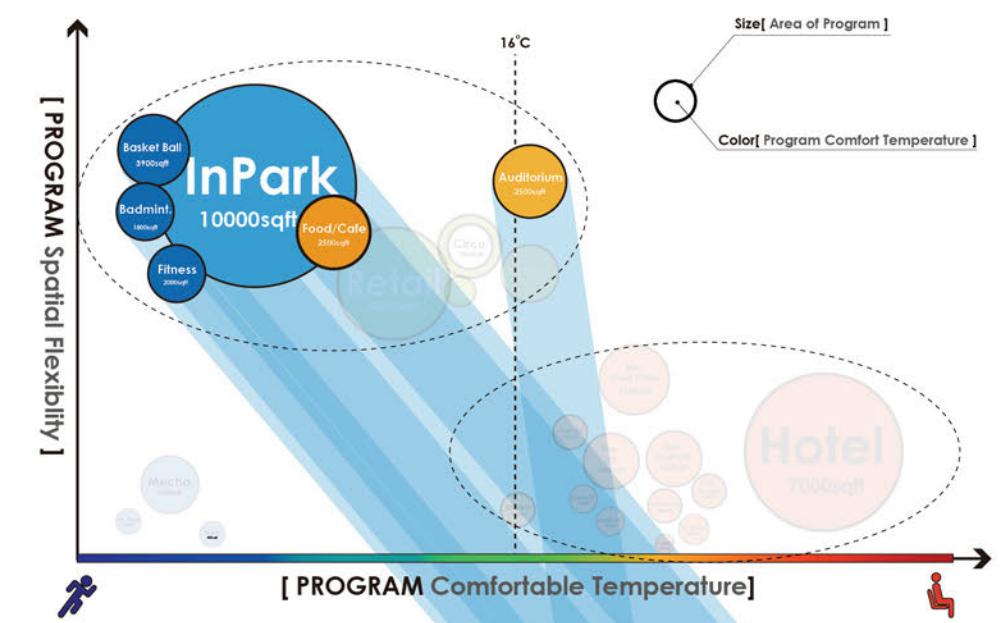
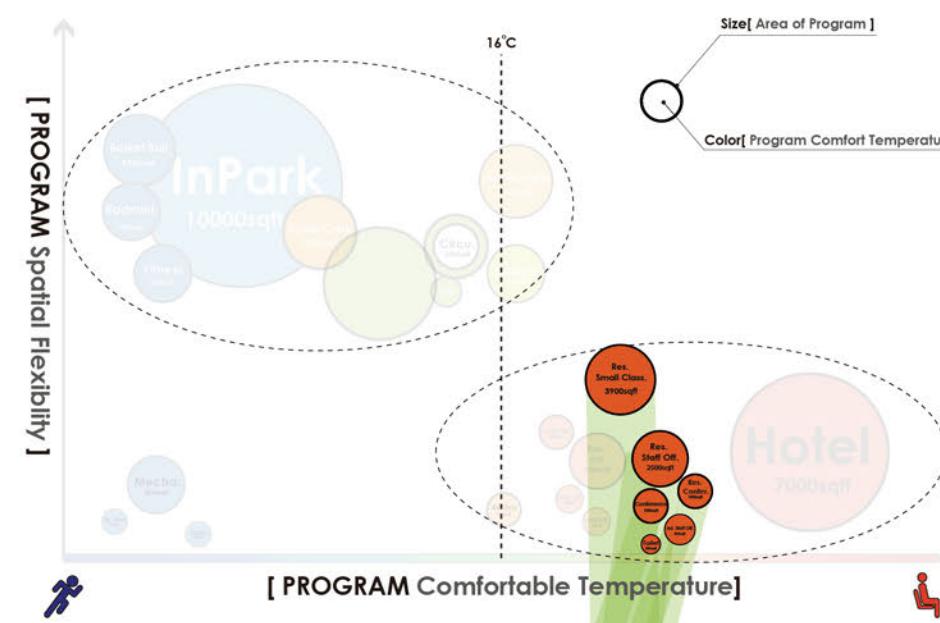
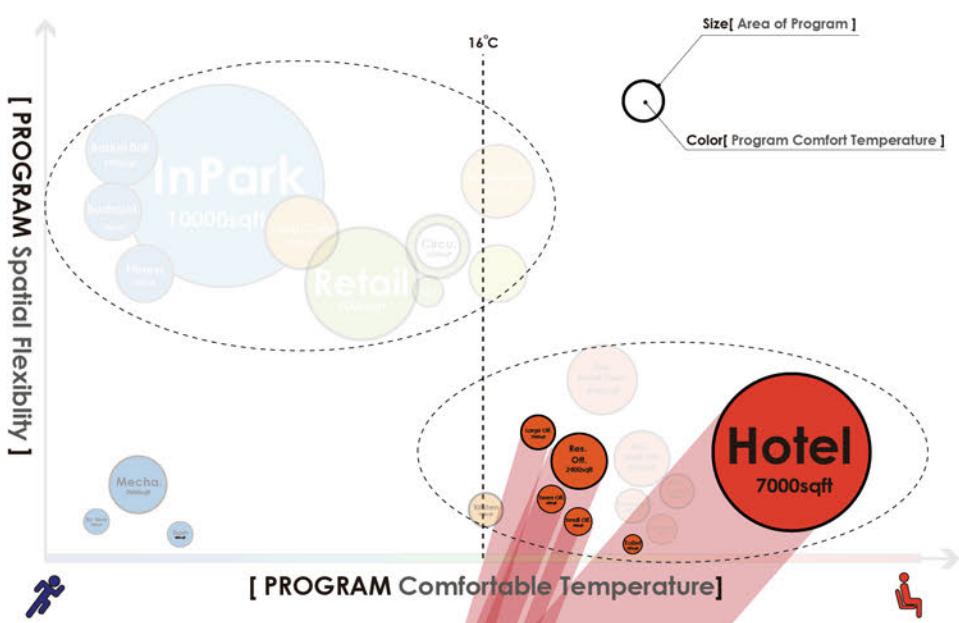
Vulnerable Programs
in terms of
Internal Gain



Invulnerable Programs
in terms of
Internal Gain



Categorizing Programs

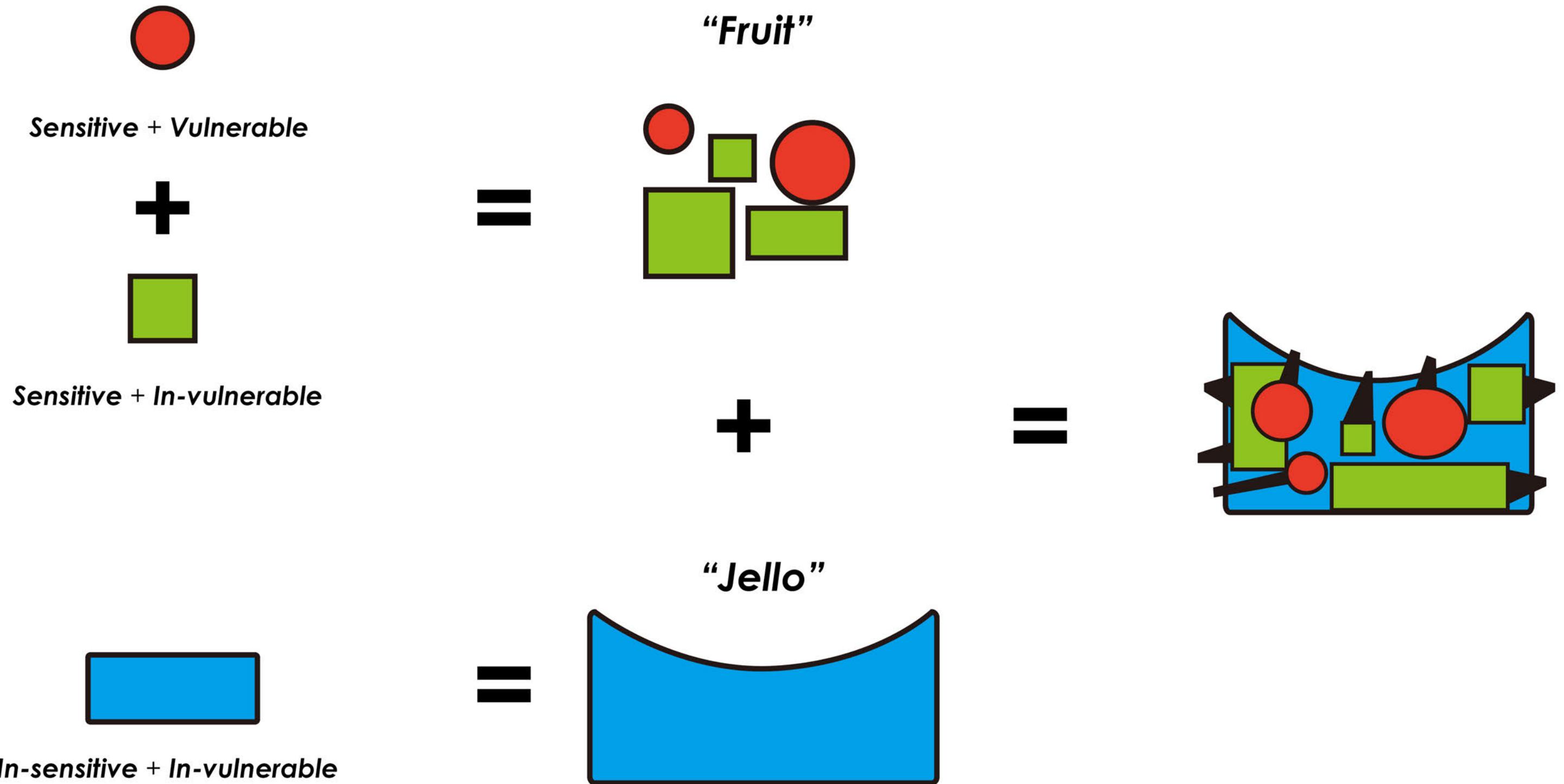


Sensitive + Vulnerable

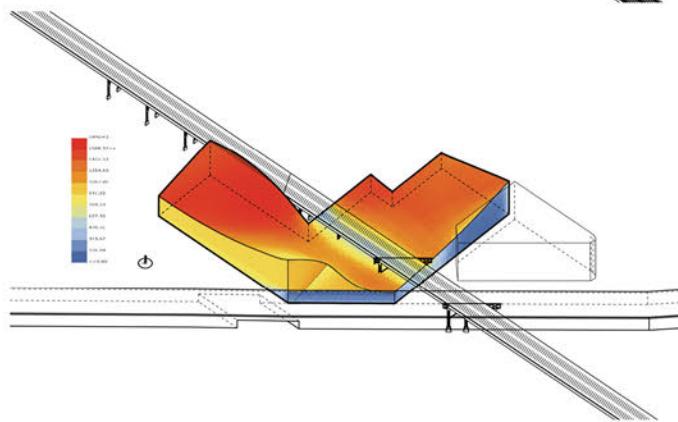
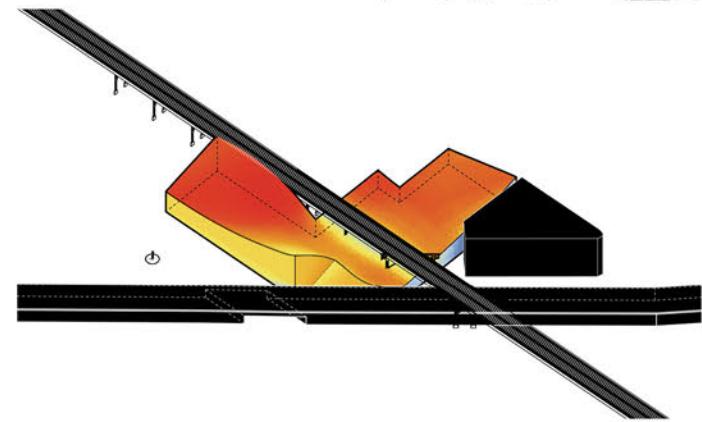
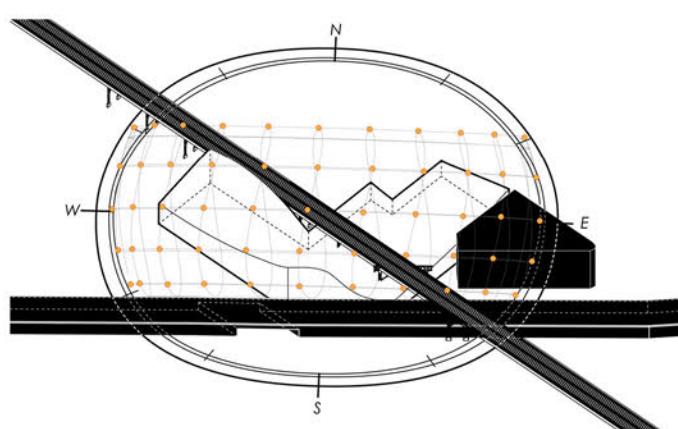
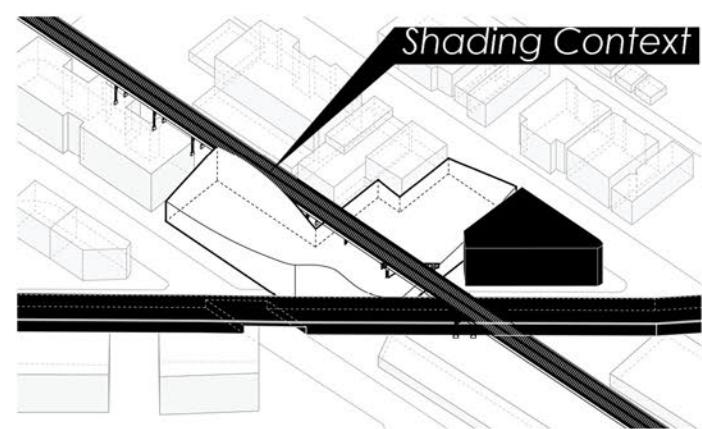
Sensitive + In-vulnerable

In-sensitive + In-vulnerable

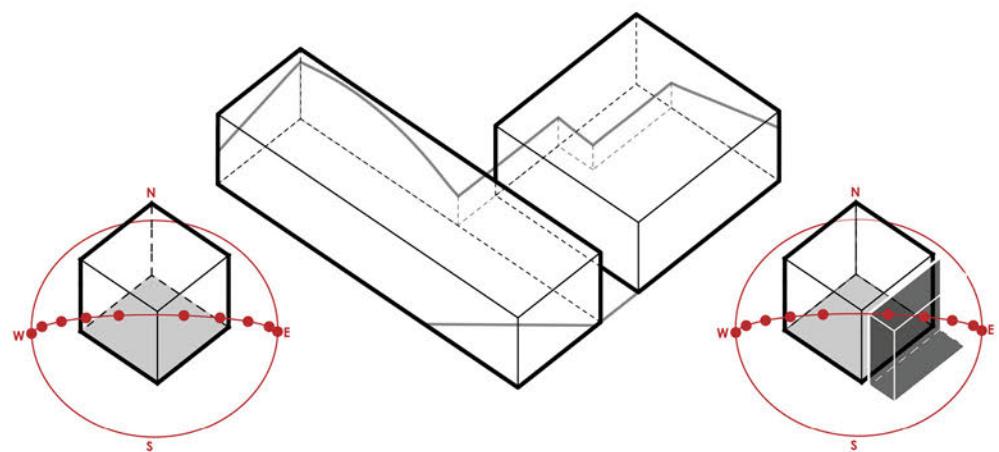
Nature of Programs



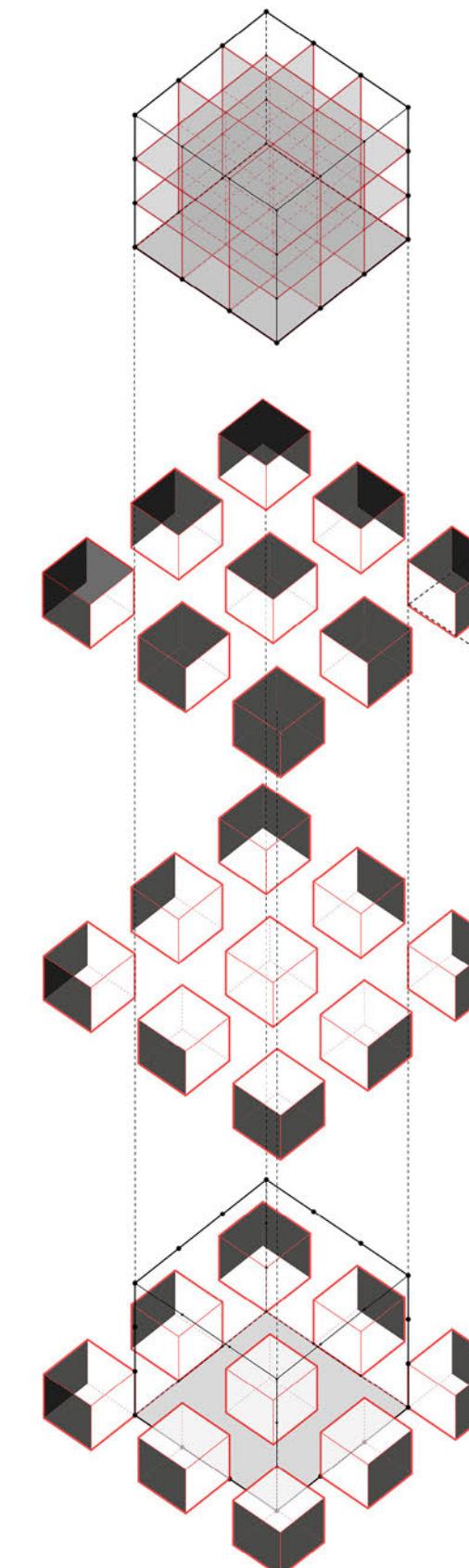
Building Environmental Strategy Shaped by CLIMATE FORCES



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

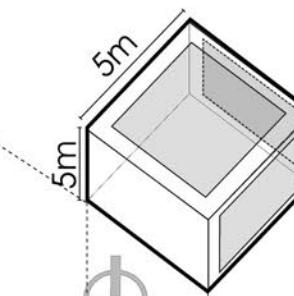
-Surface with
0/0.4/0.6WWR,

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

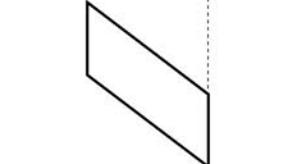
Represent Exterior
Surface of Sub-zone

-Volume Represent
Shading Context

Sub-zone for
East Volume



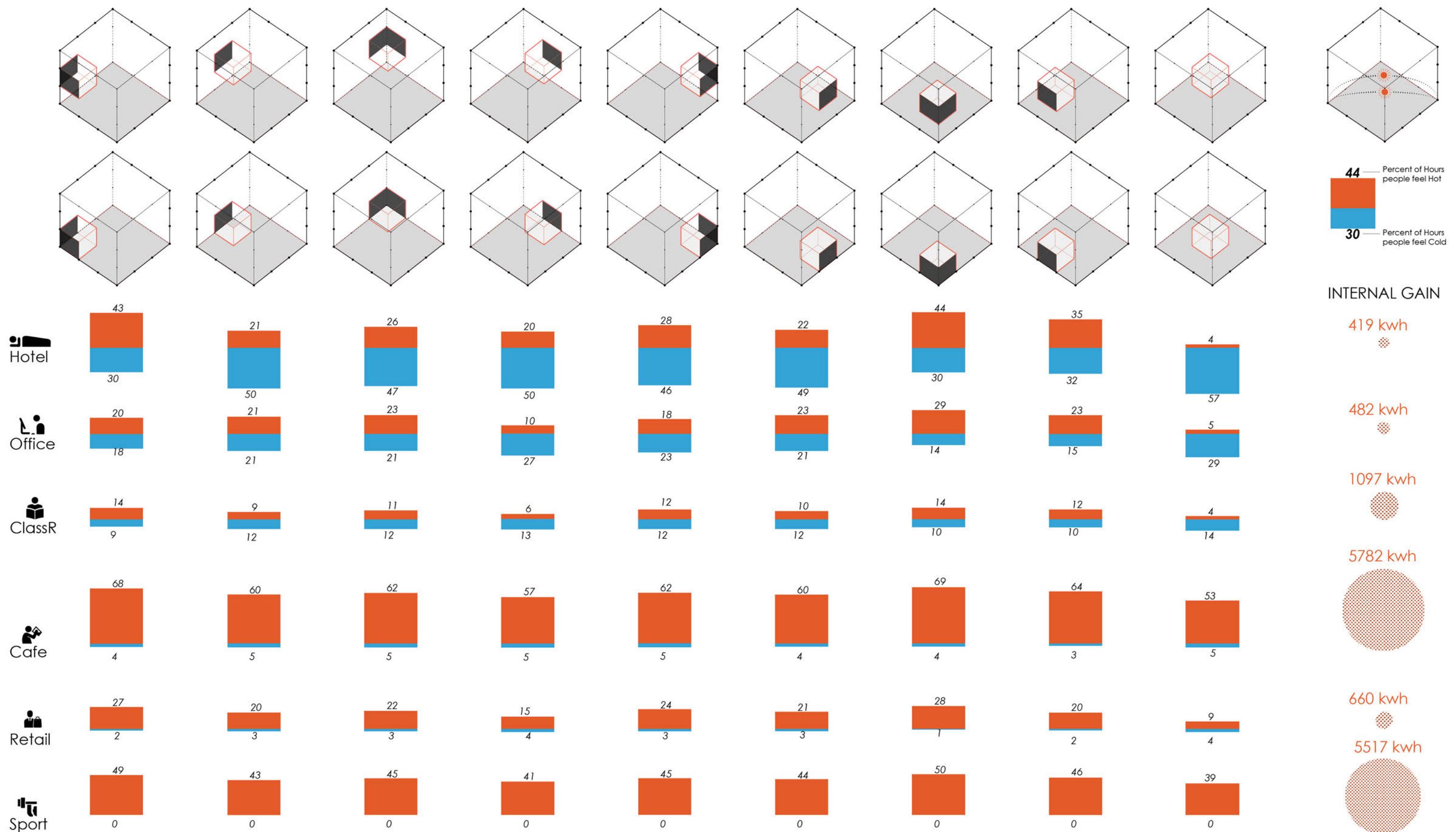
Sub-zone for
West Volume

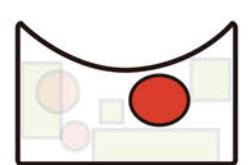


-Adiabatic Surface
Represent Interior
Surface of Sub-zone

Heat Stress Study through All Program

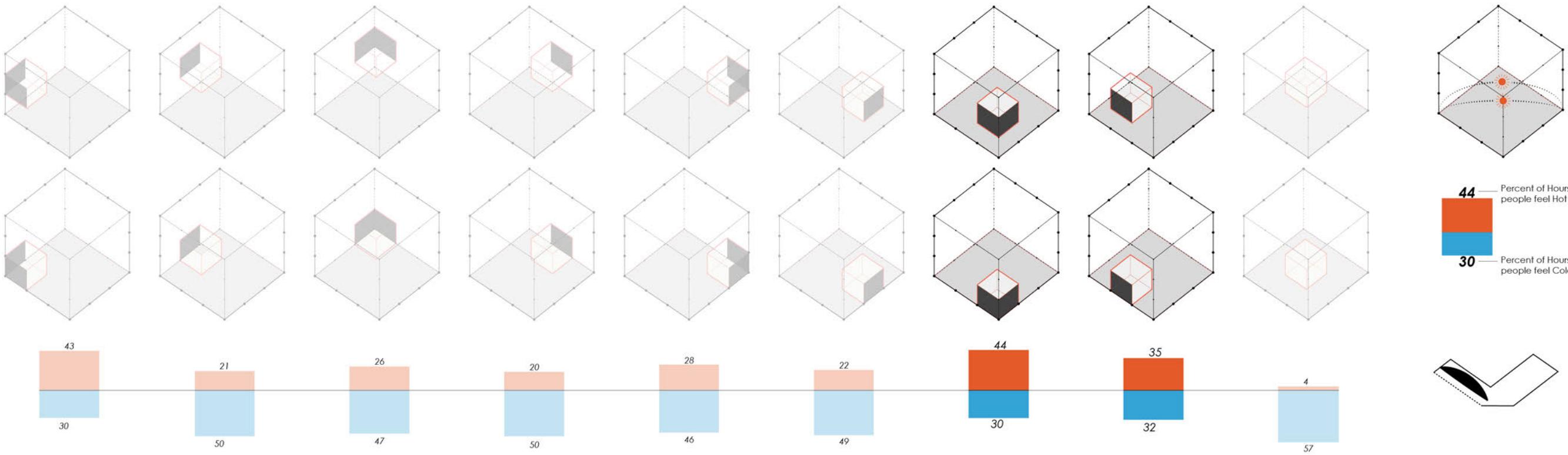
Building Environmental Strategy Shaped by CLIMATE FORCES



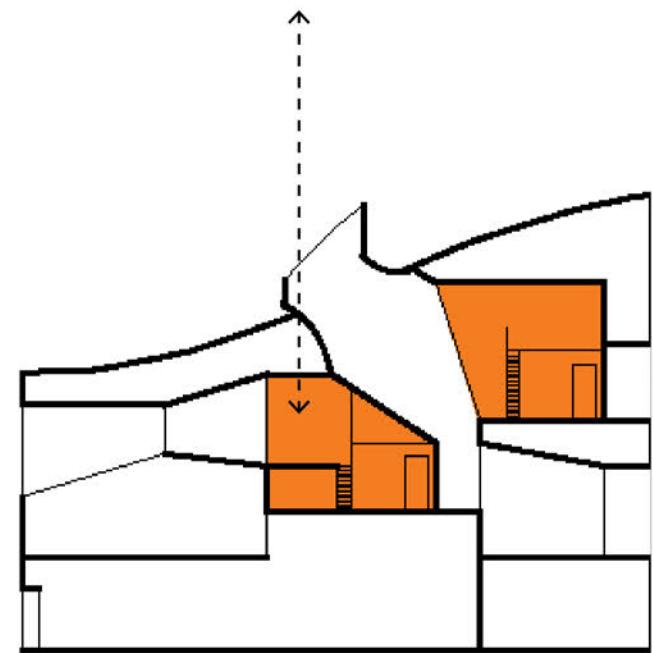
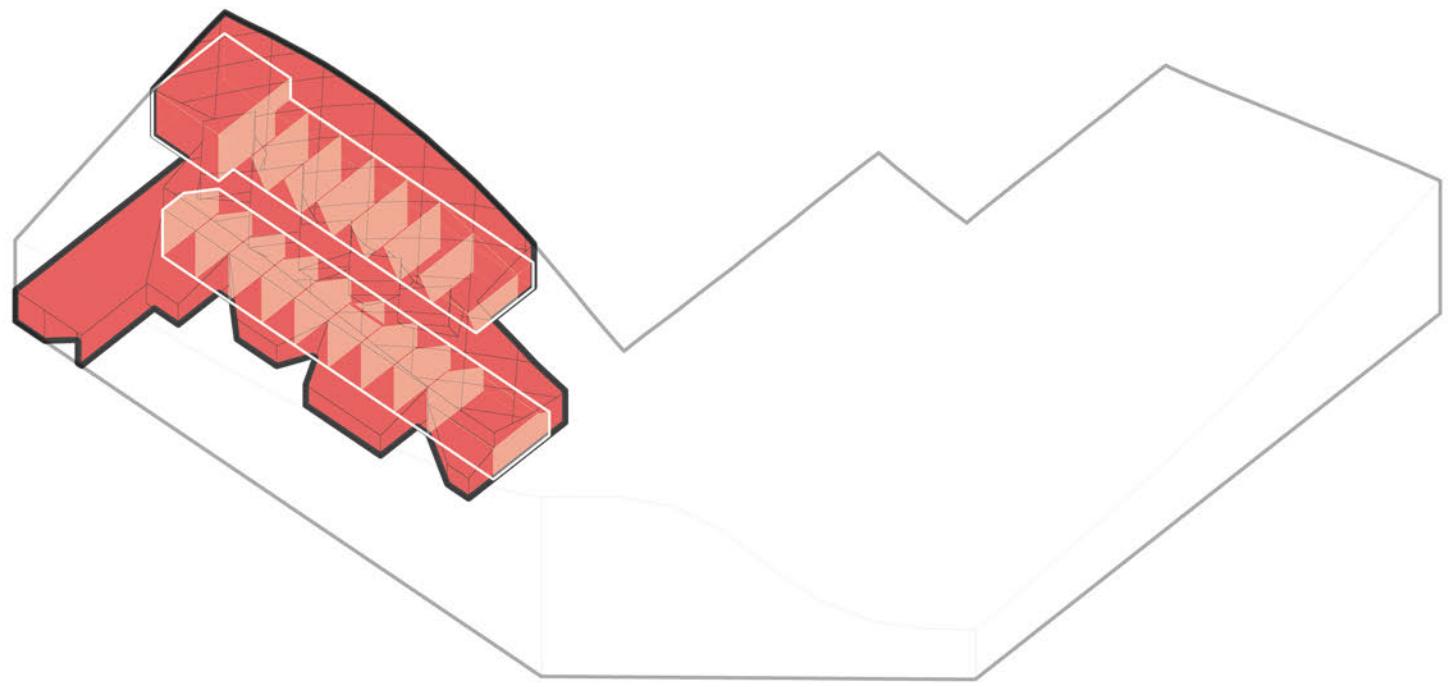


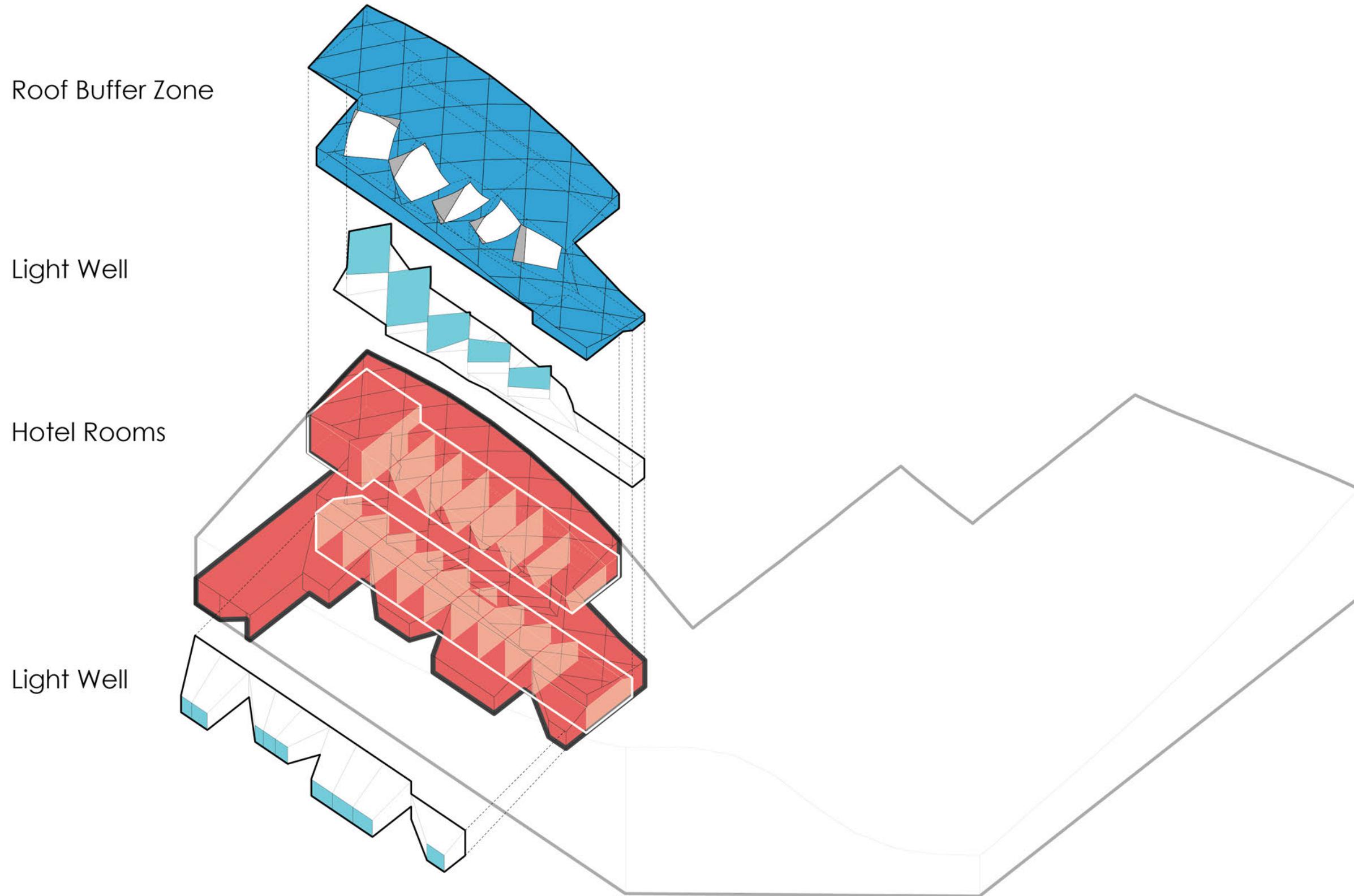
Sensitive

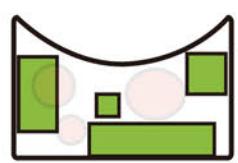
+
Vulnerable



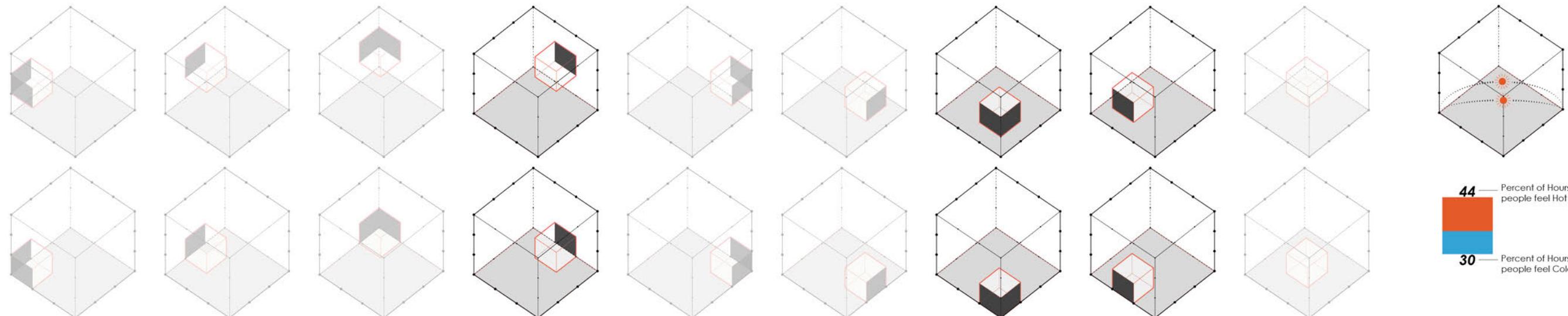
Hotel Room



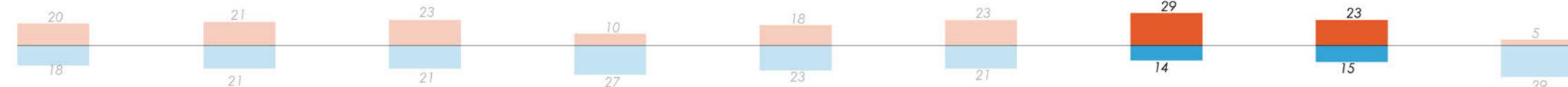




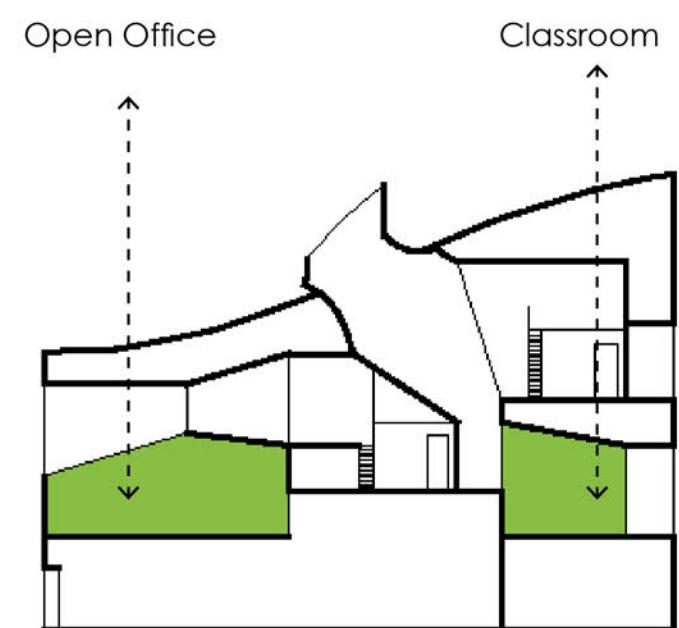
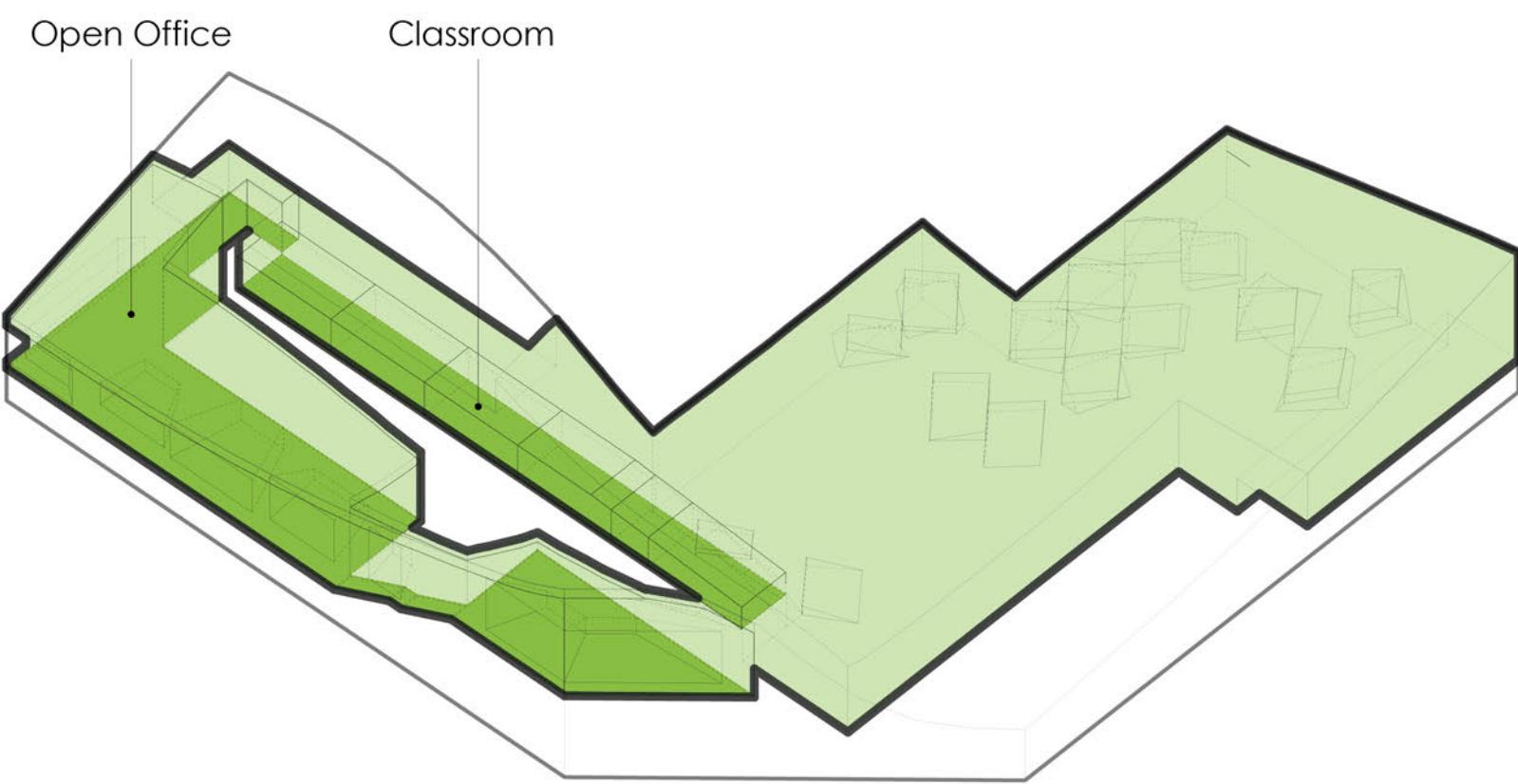
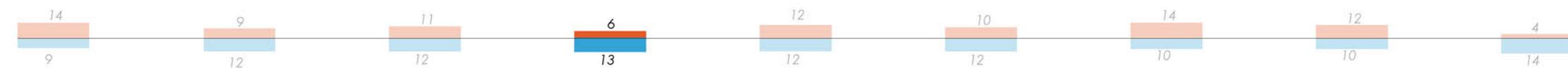
Sensitive
+
In-vulnerable

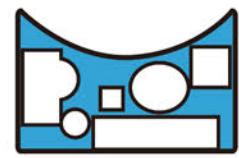


Office

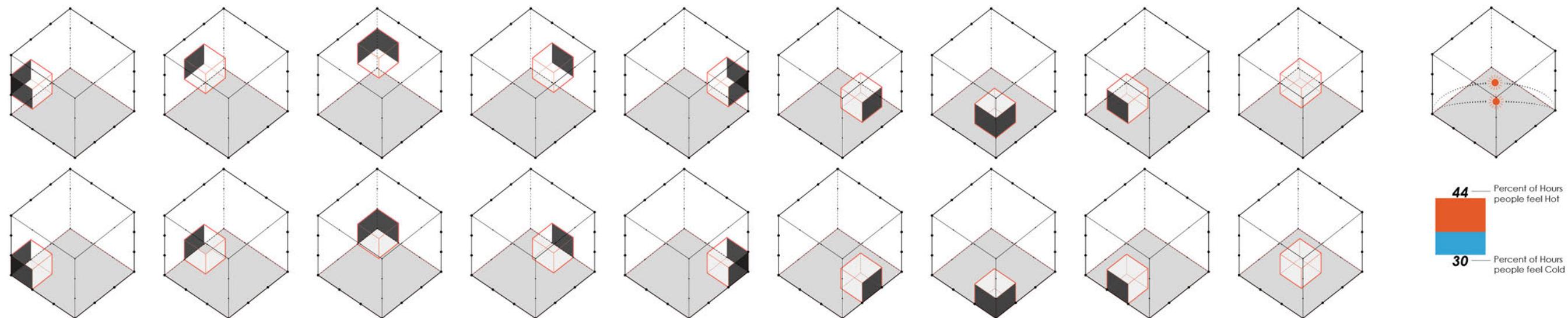


ClassR

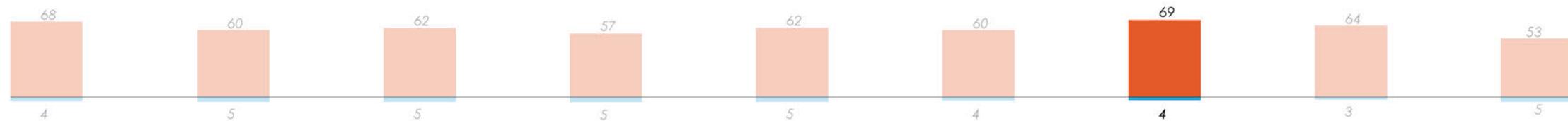




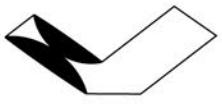
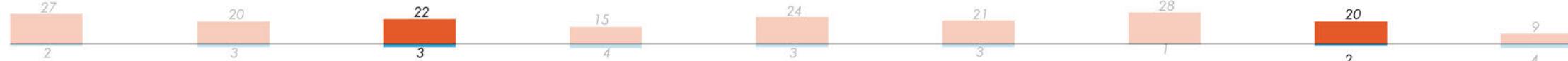
In-sensitive
+
In-vulnerable



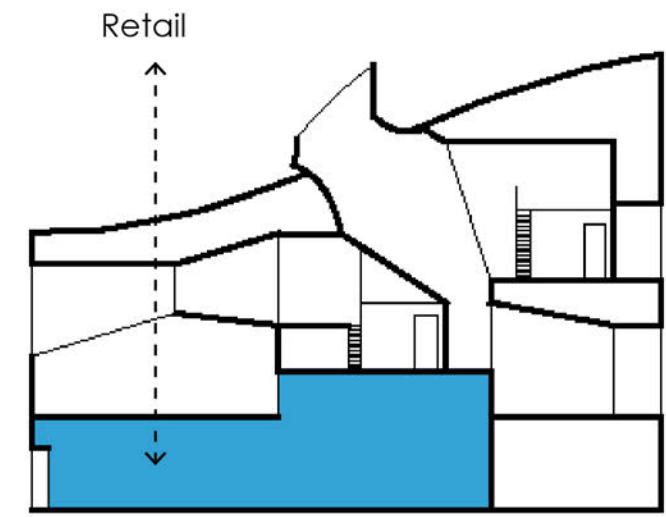
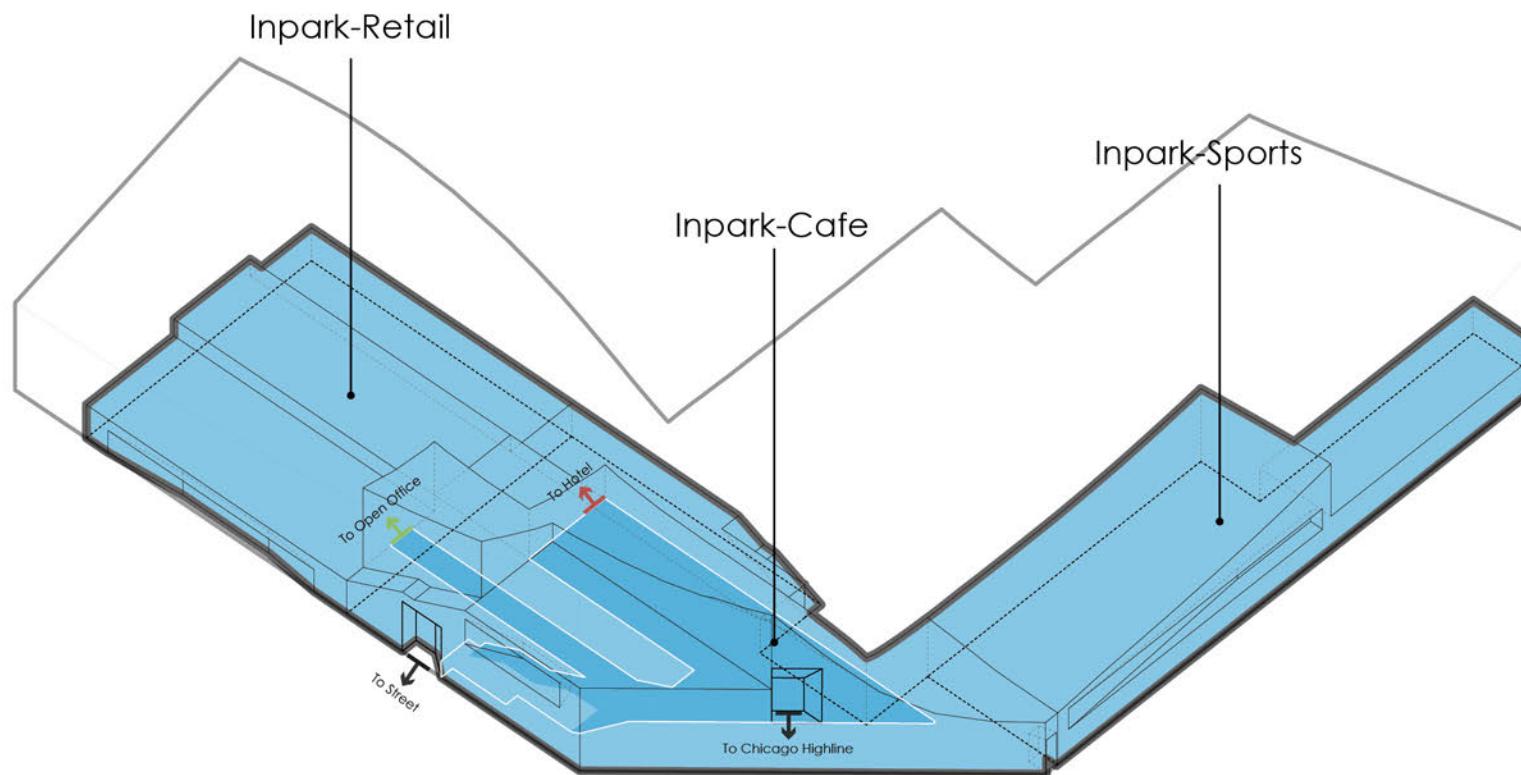
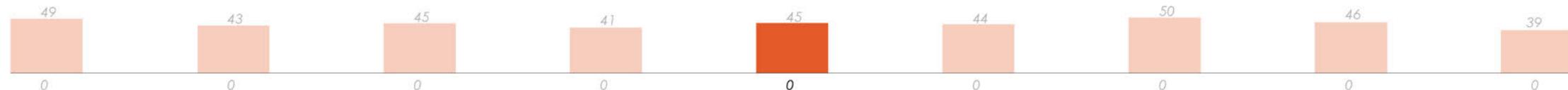
Cafe



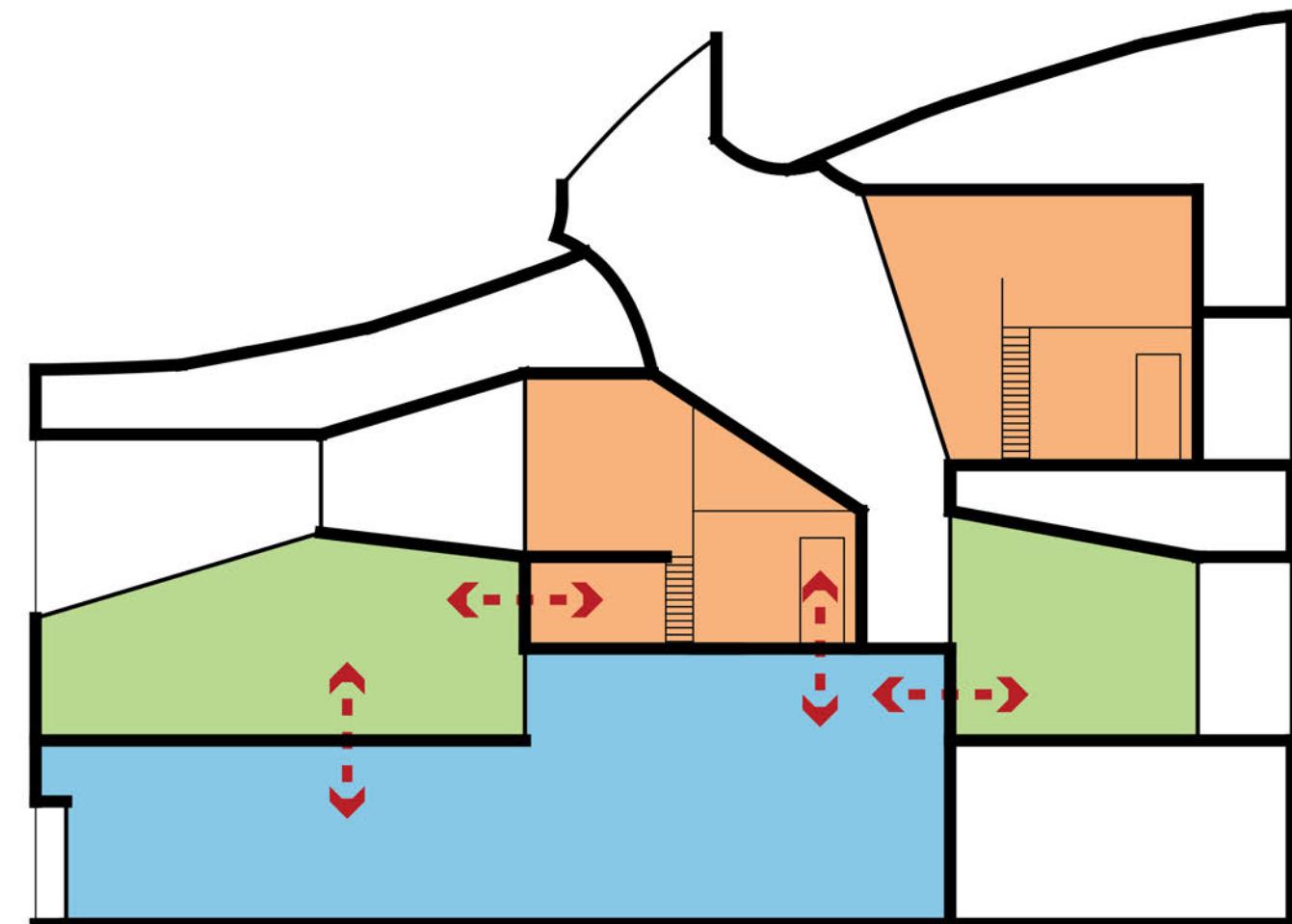
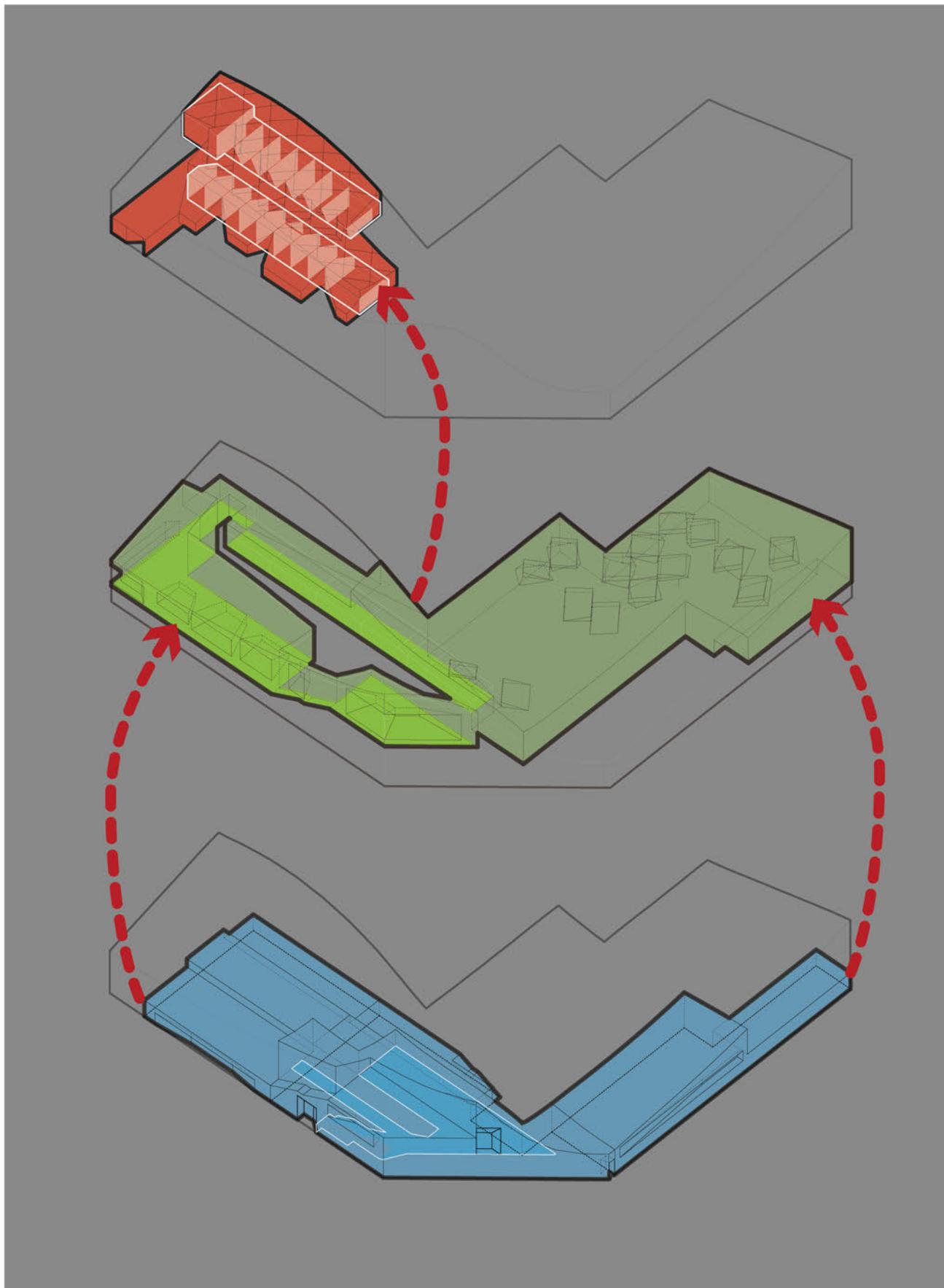
Retail



Sport



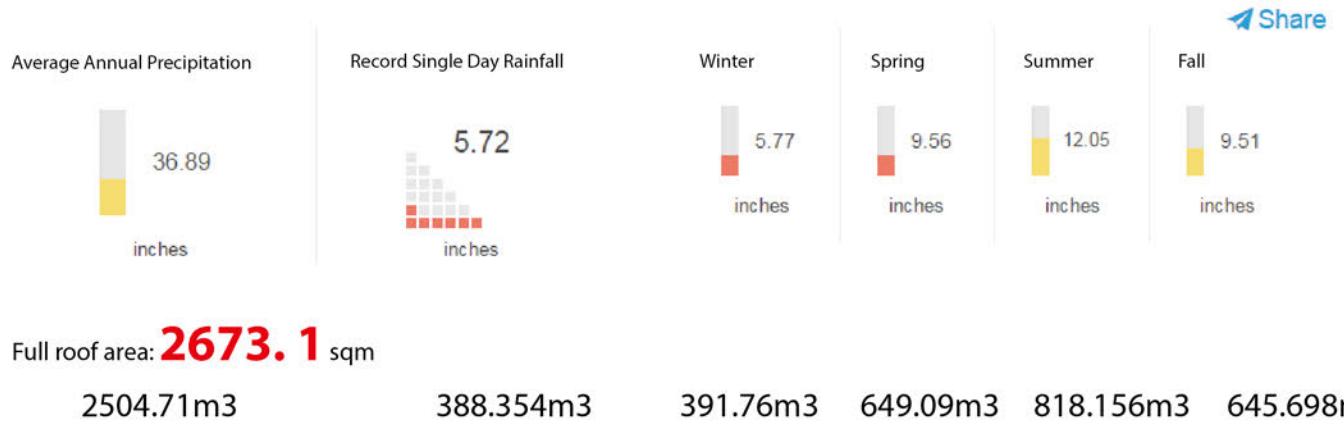
Heat Sharing Between Programs



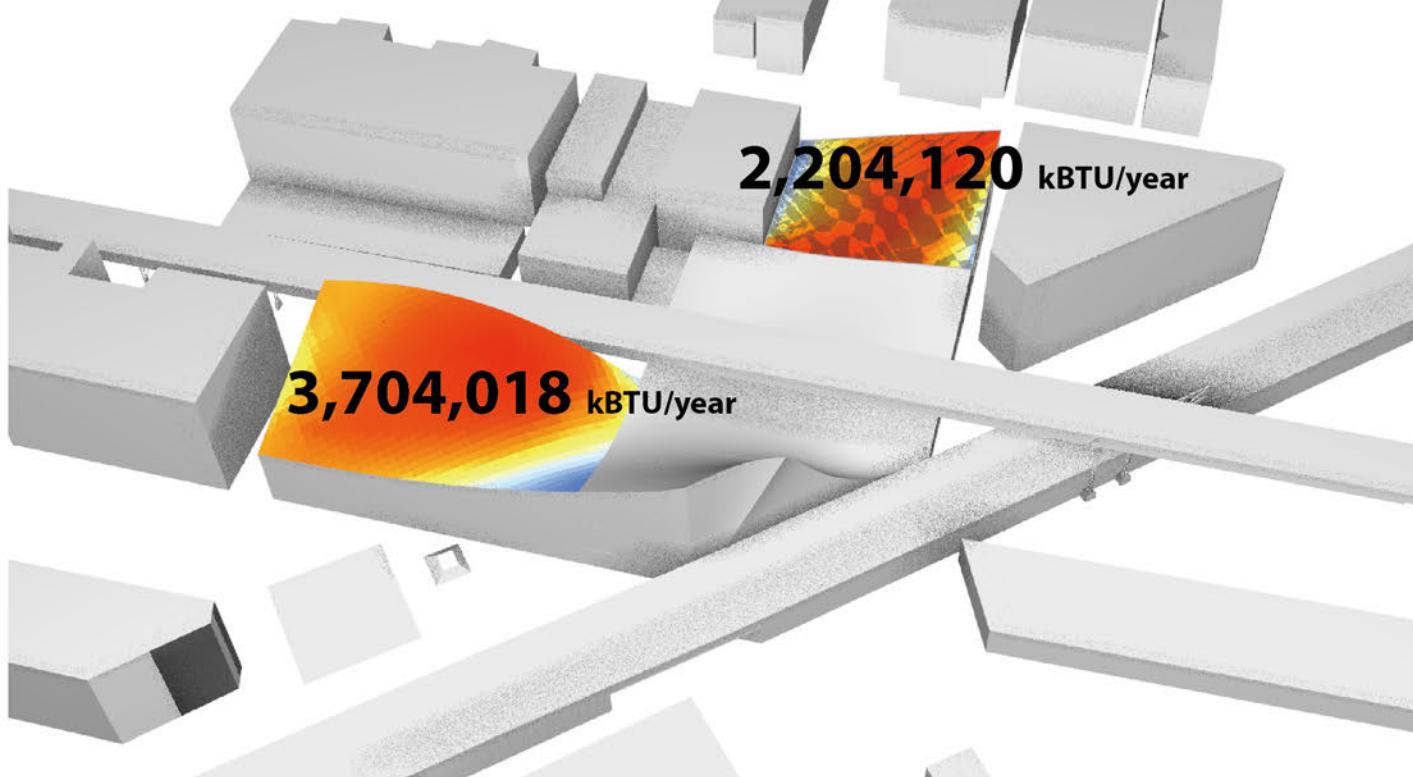
ENERGY NEEDS

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

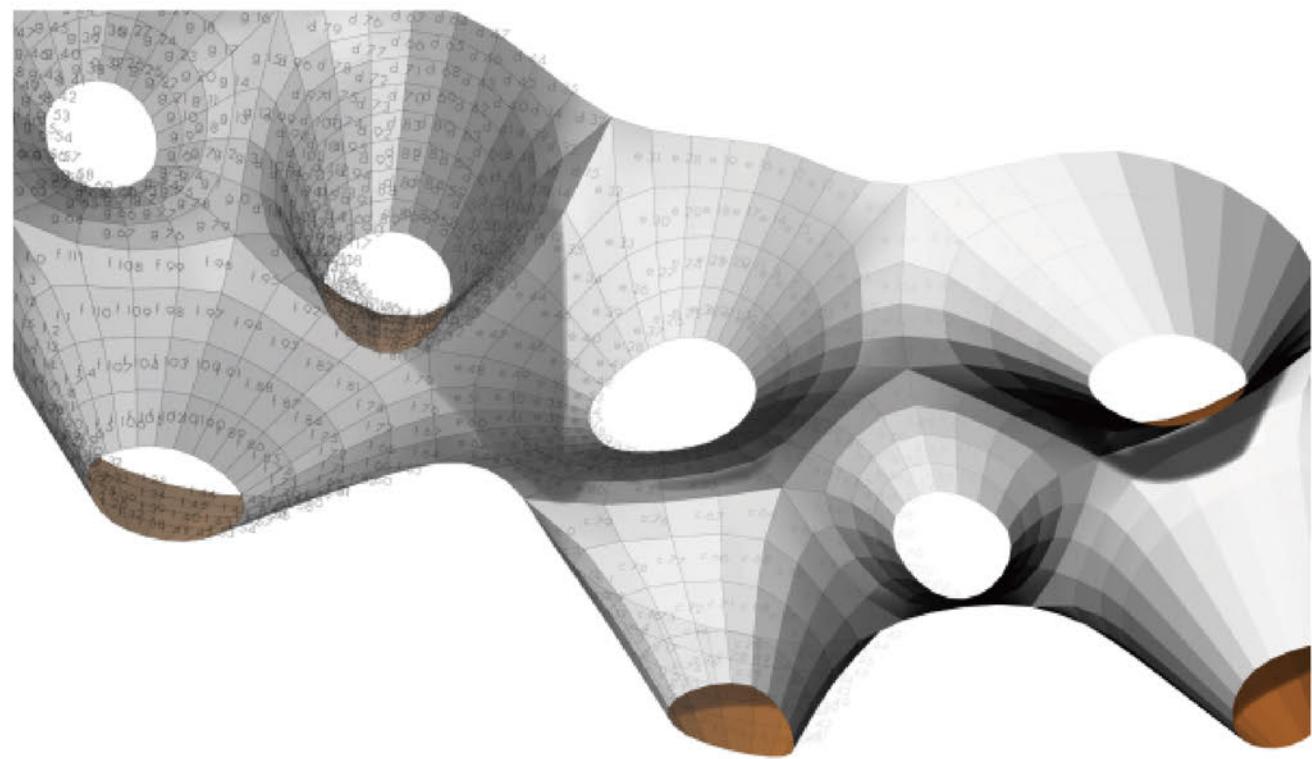
RAIN WATER



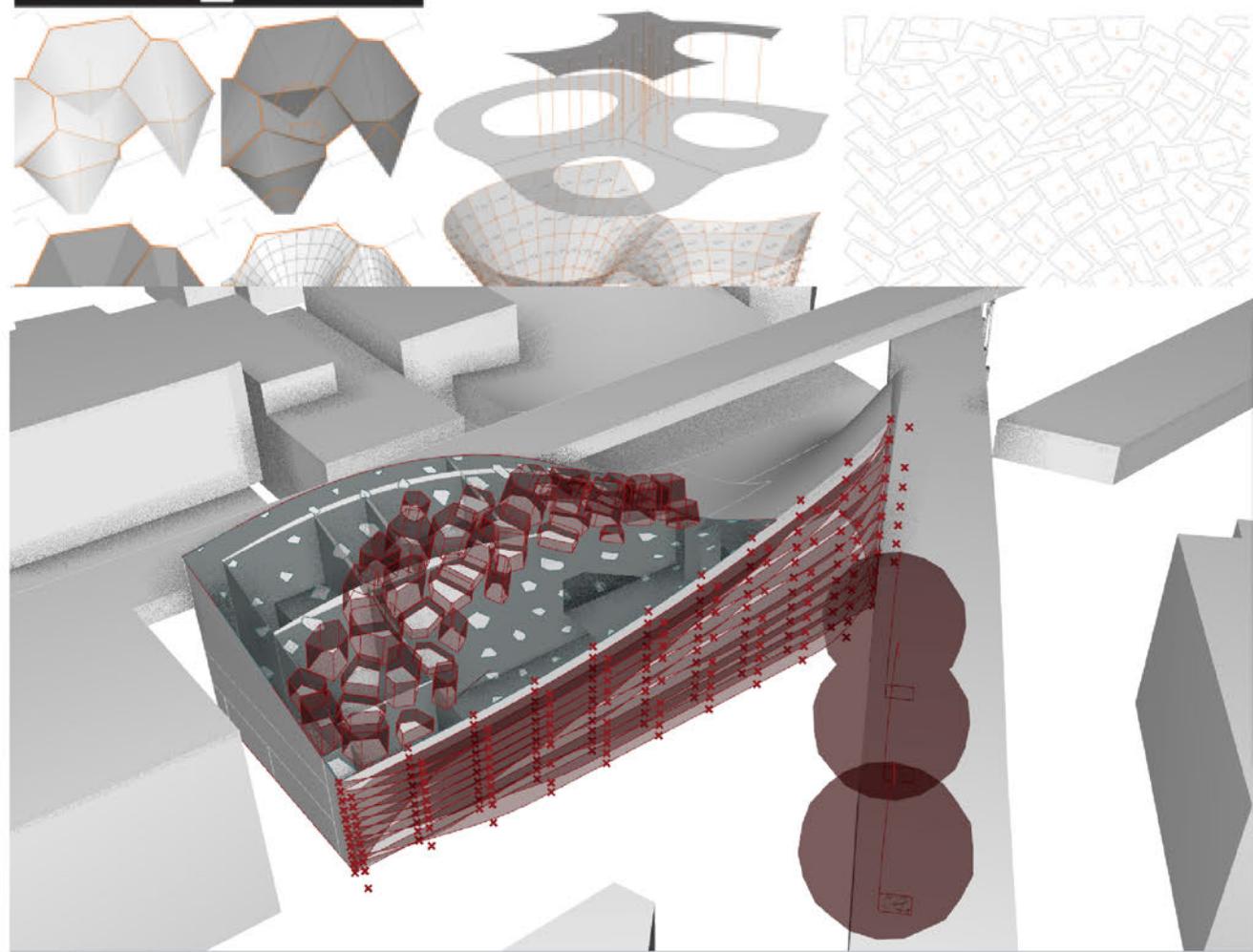
RADIATION



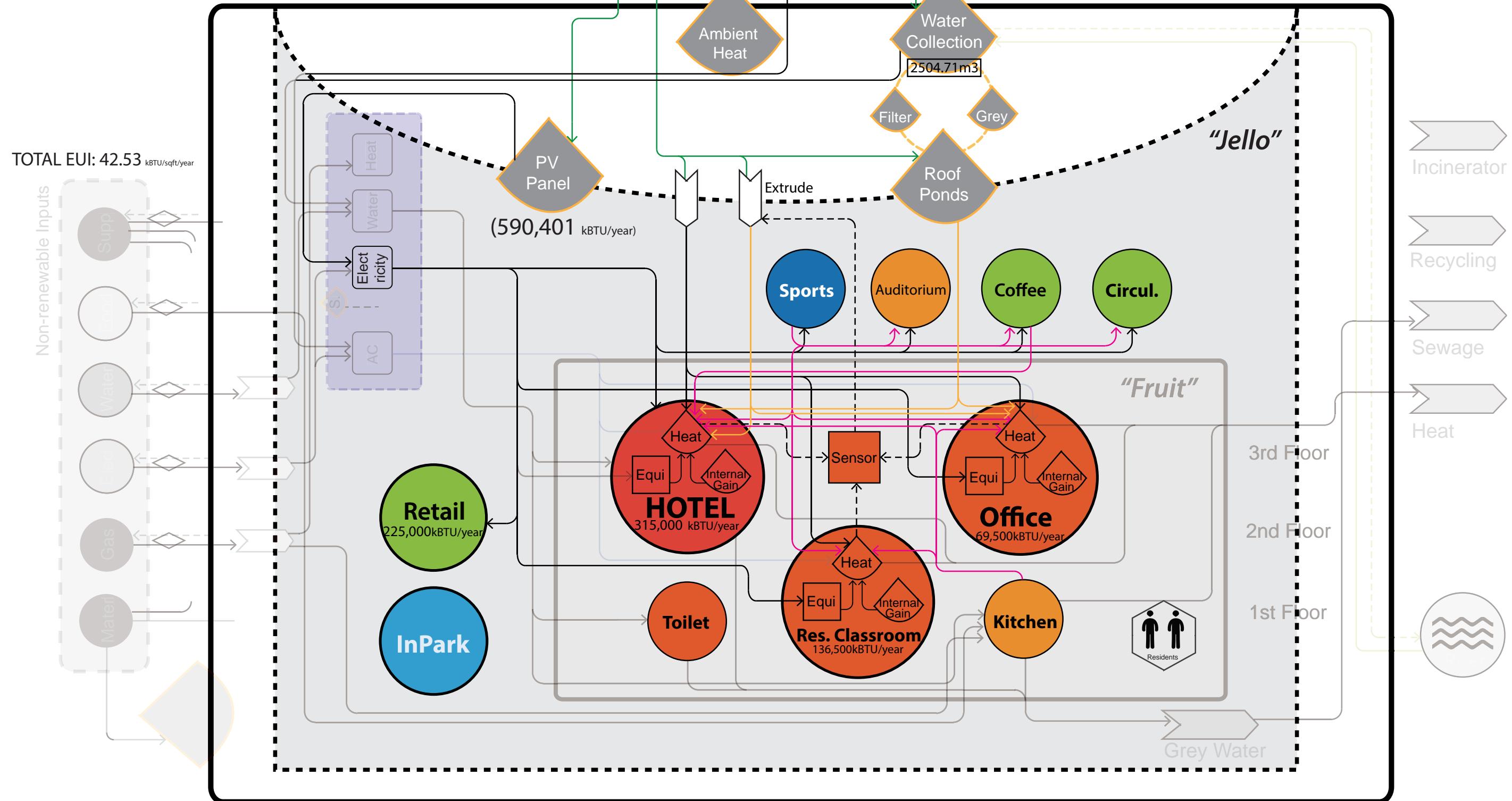
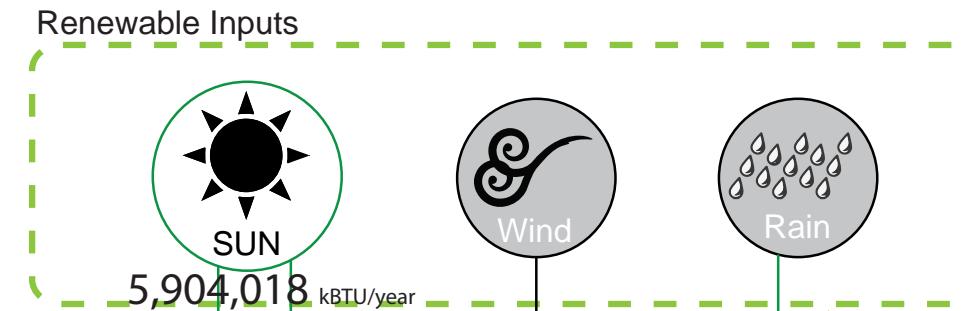
PROPOSAL



QUAD_LIGHT

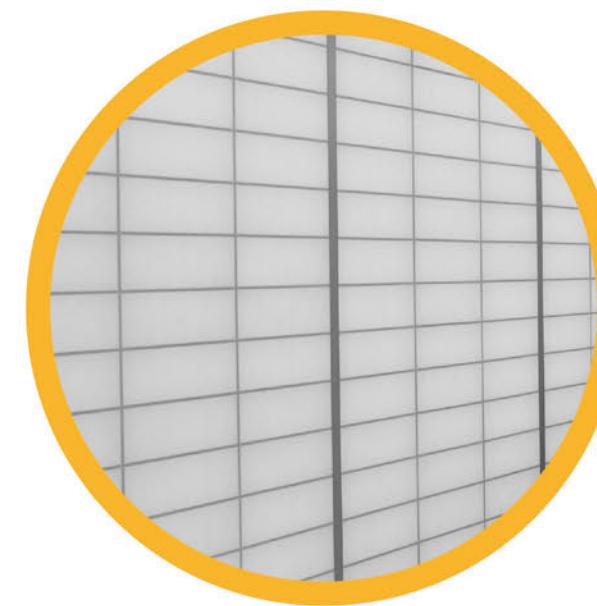


Function	Feul EDI	Area	Total
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Office	0-10 kBtu/sqft/year	13900 sqft	69,500 kBtu/year

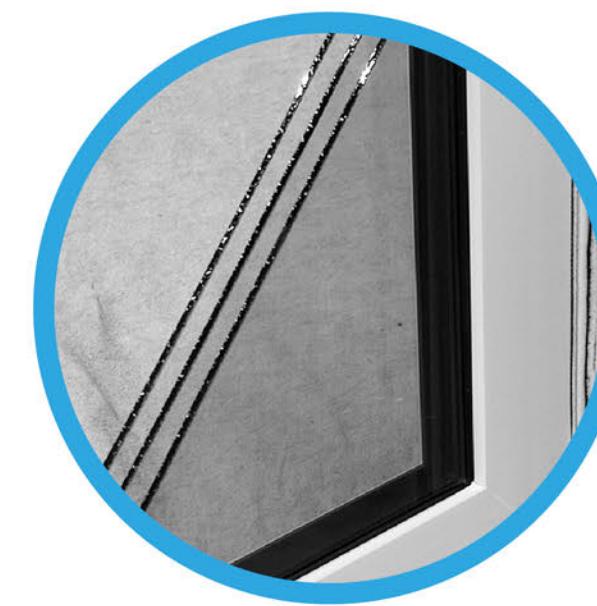




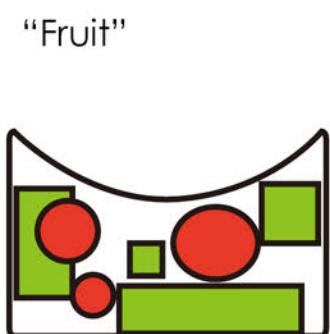
Chicago Brick



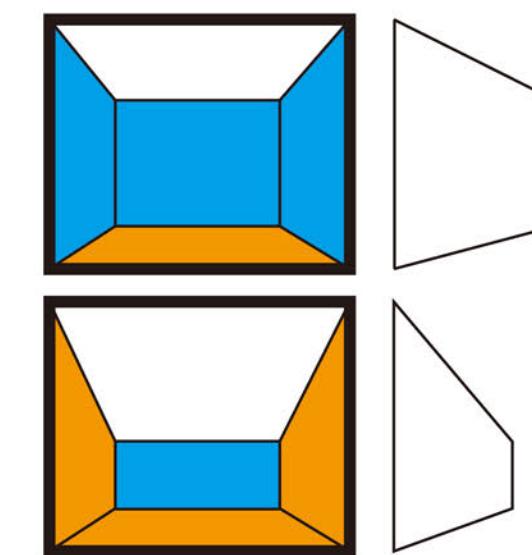
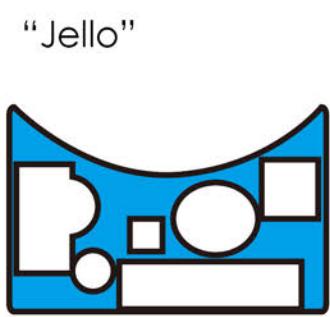
Nanogel Glass



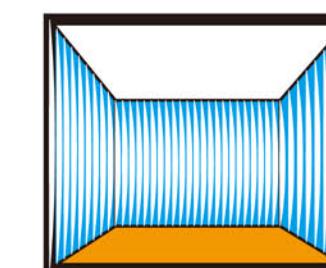
Triple Pane Glass



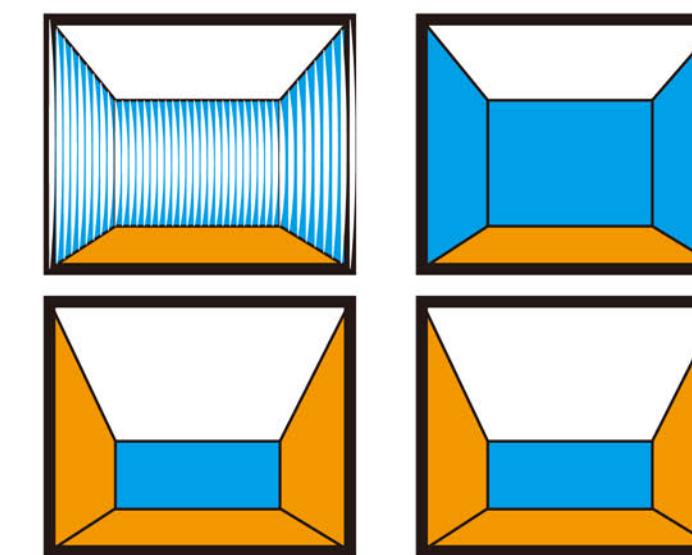
Composition Percentage



Summer

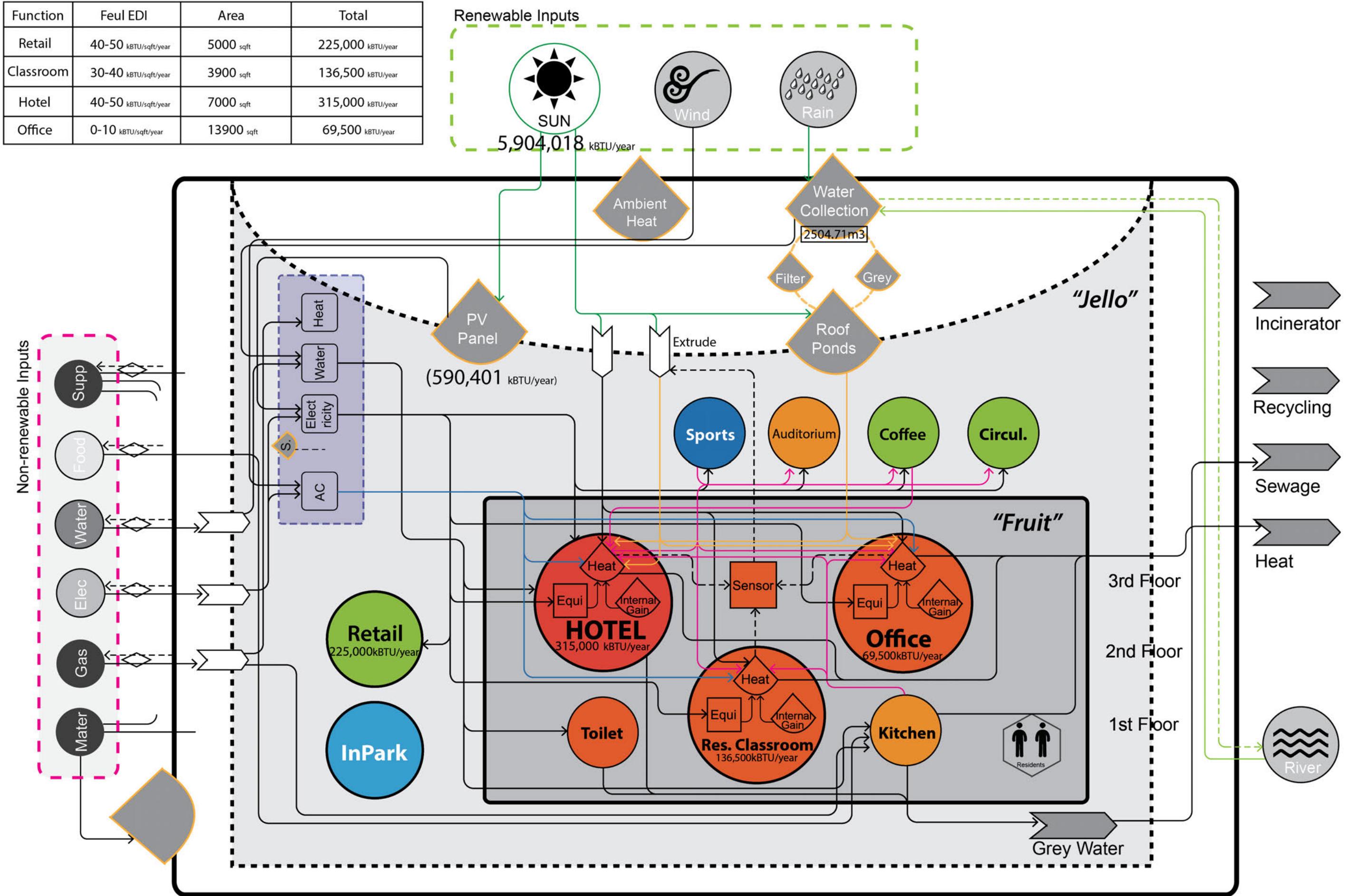


Winter

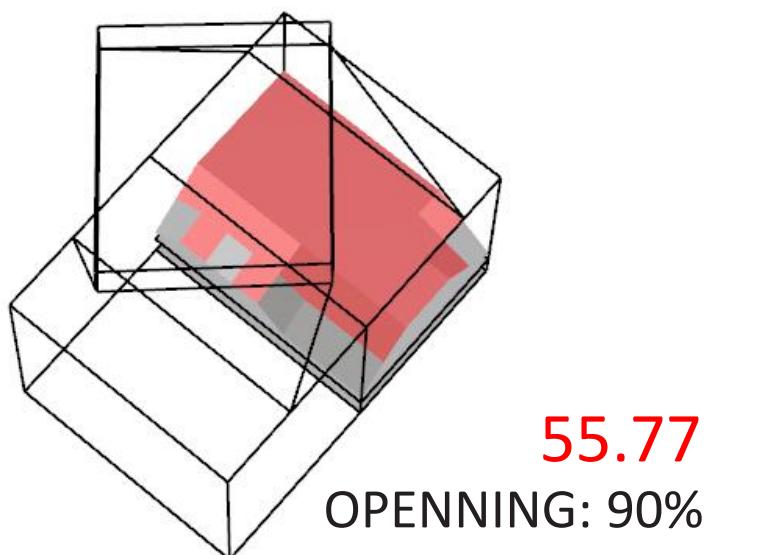
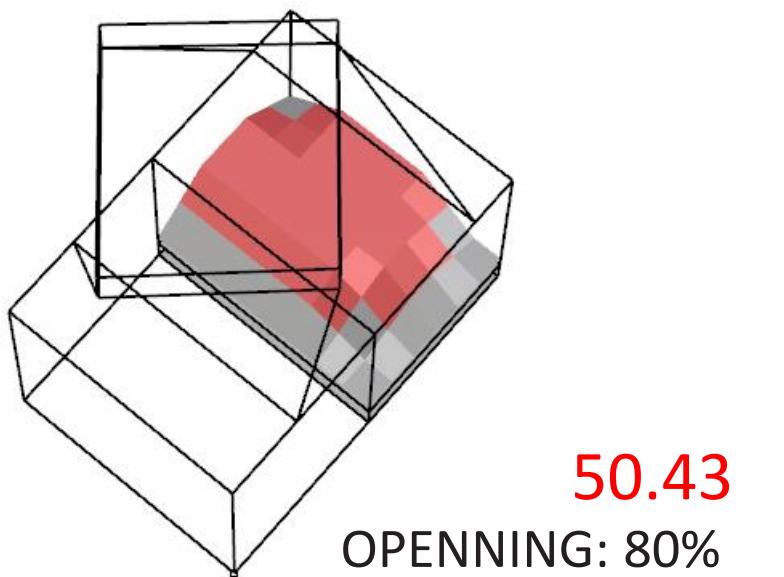
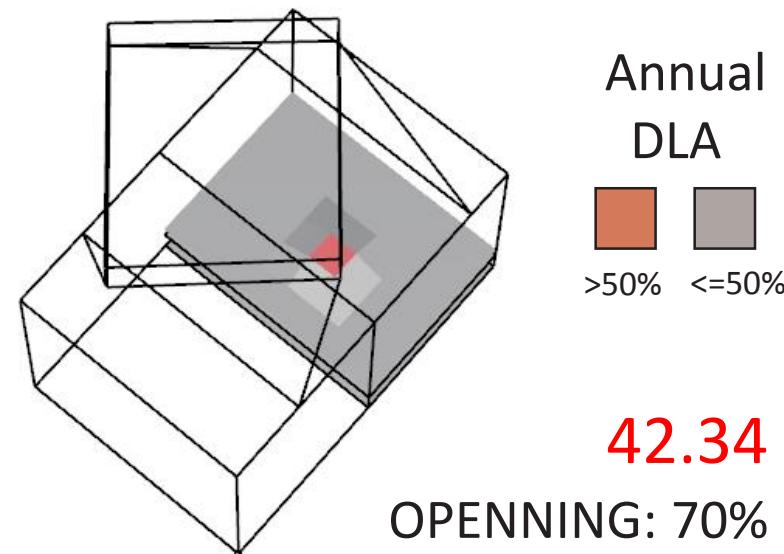




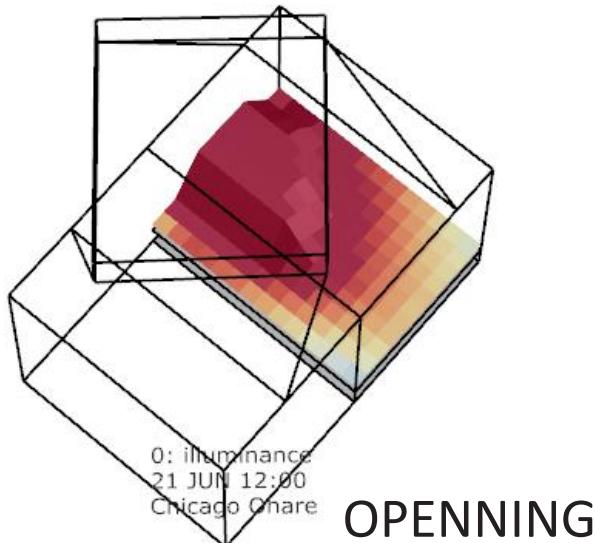
Function	Feul EDI	Area	Total
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Classroom	30-40 kBtu/sqft/year	3900 sqft	136,500 kBtu/year
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Office	0-10 kBtu/sqft/year	13900 sqft	69,500 kBtu/year



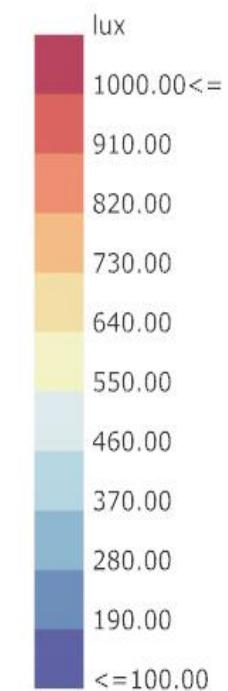
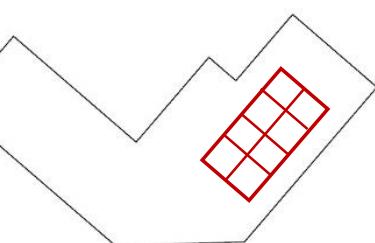
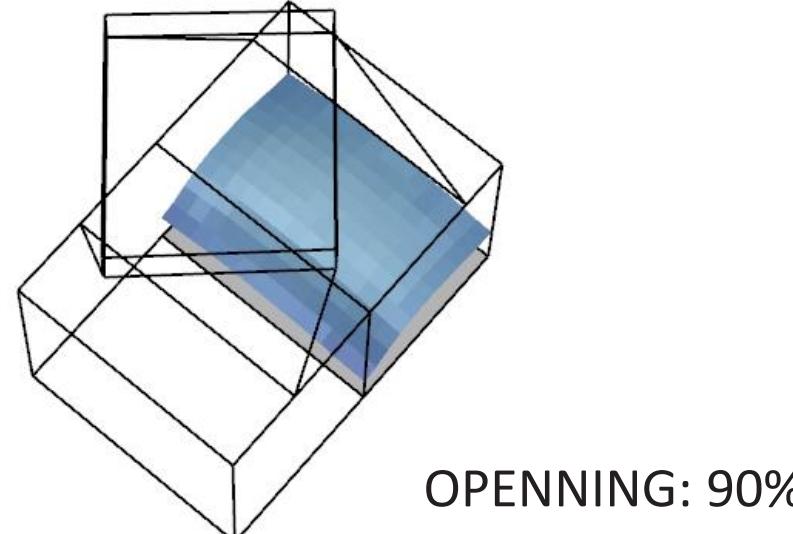
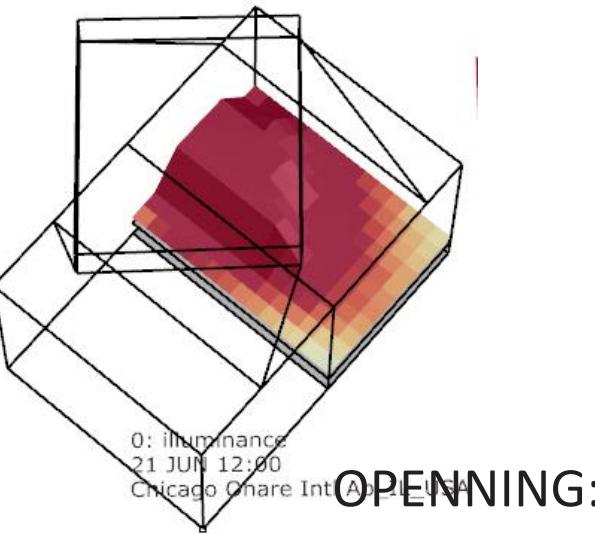
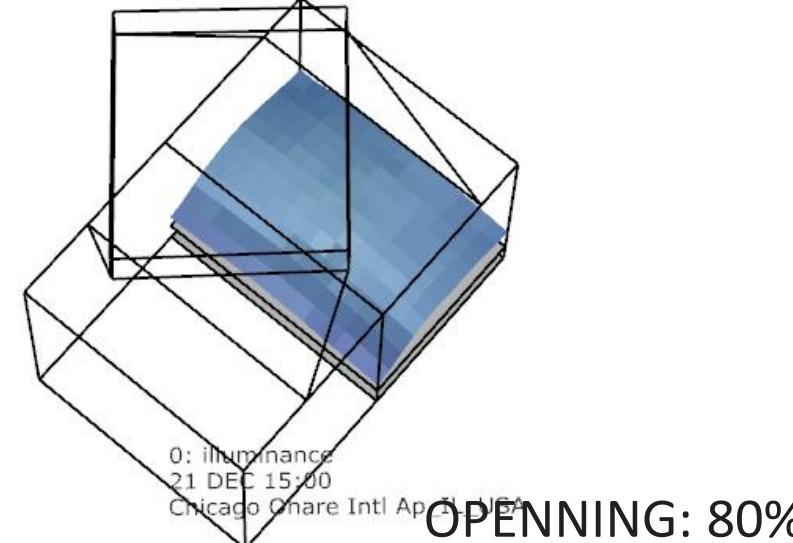
Office Daylight



June 21 12:00
Illuminance

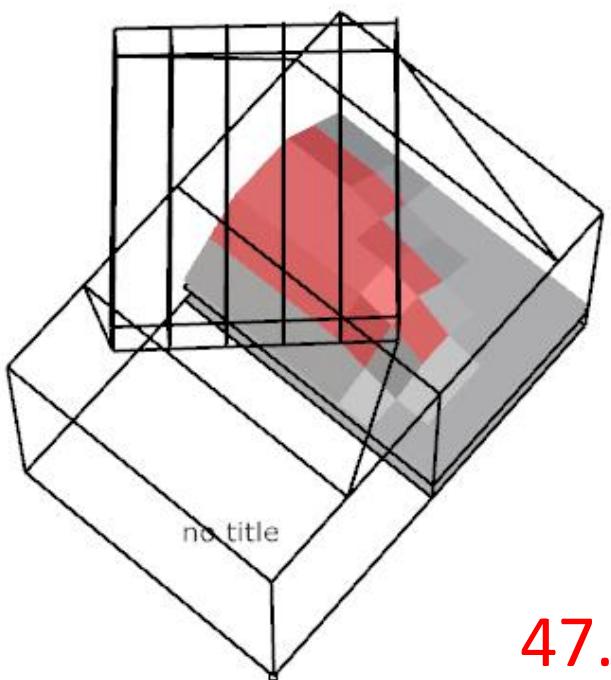


Dec 21 15:00
Illuminance

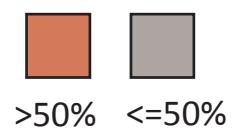


Office Daylight

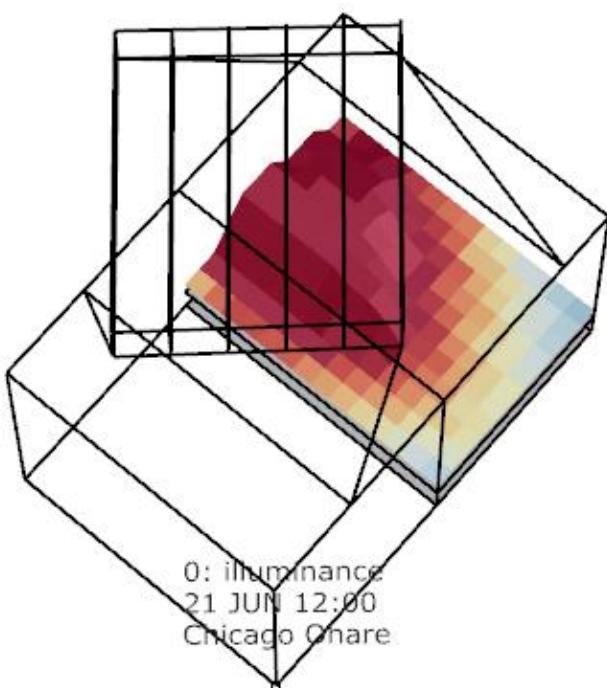
Annual
DLA



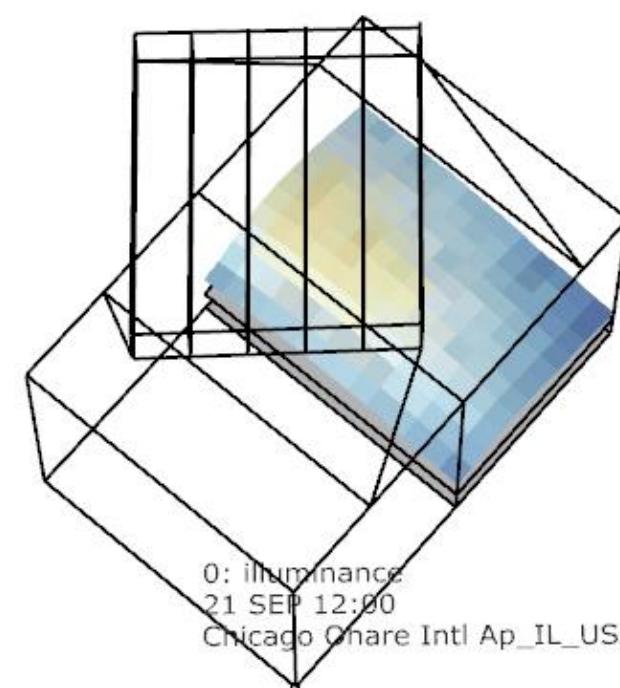
47.34
OPENNING: 90%



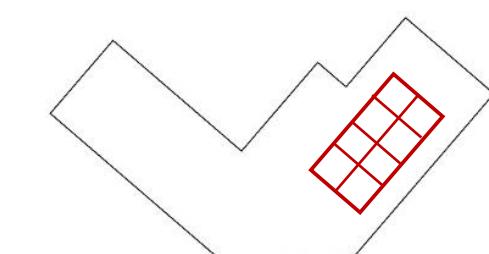
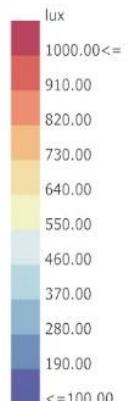
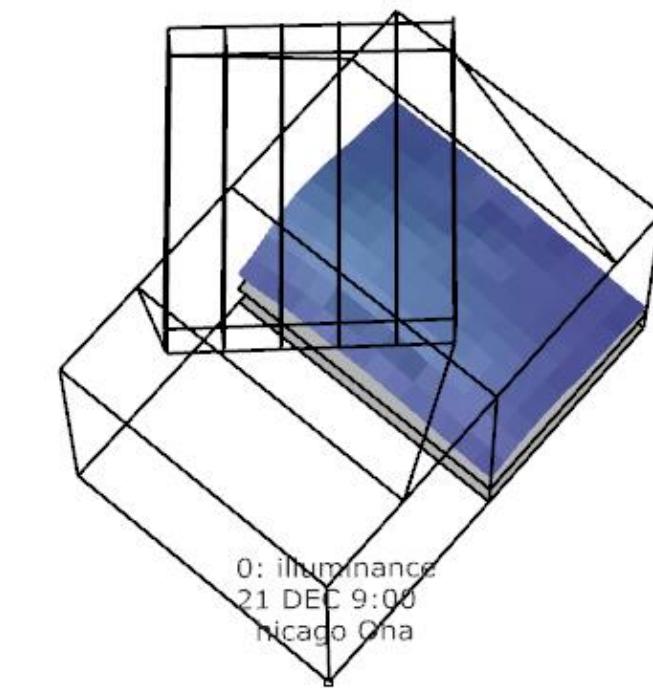
June 21 12:00
Illuminance



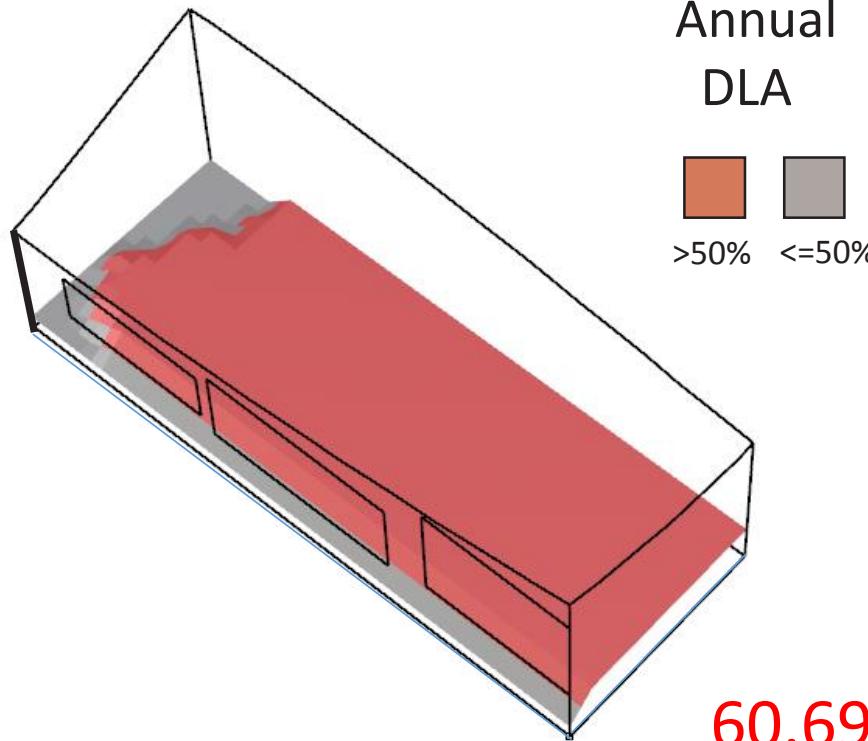
Dec 21 15:00
Illuminance



Dec 21 15:00
Illuminance



Office Daylight



60.69

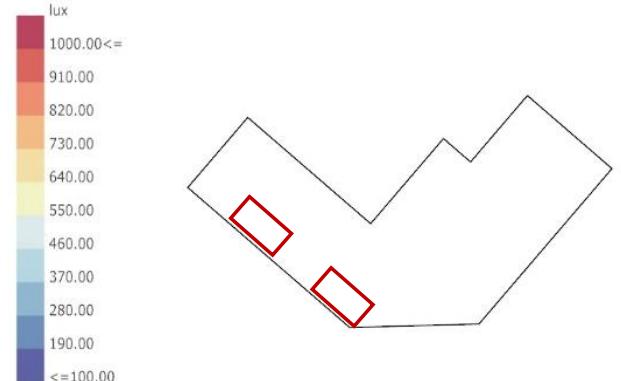
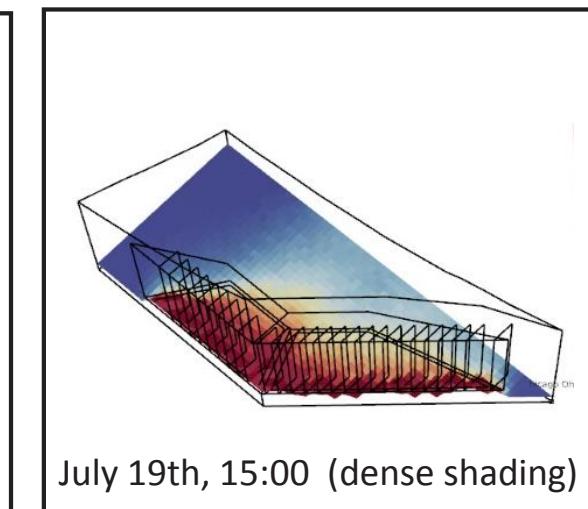
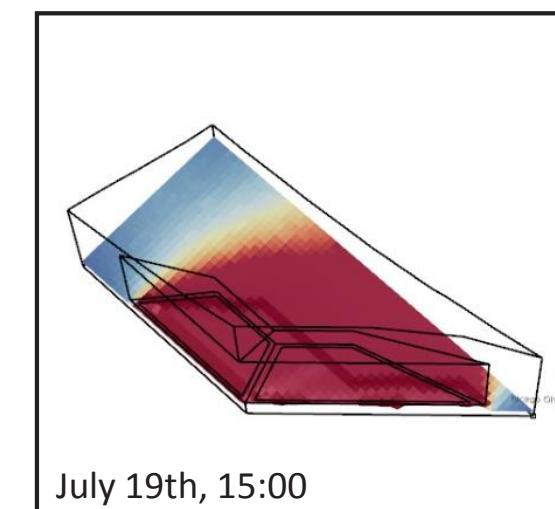
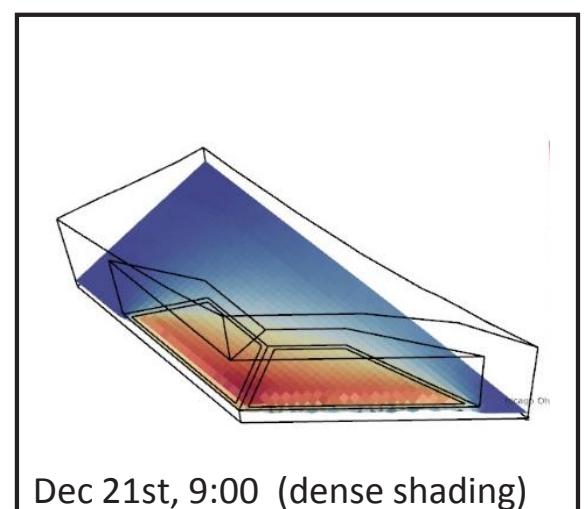
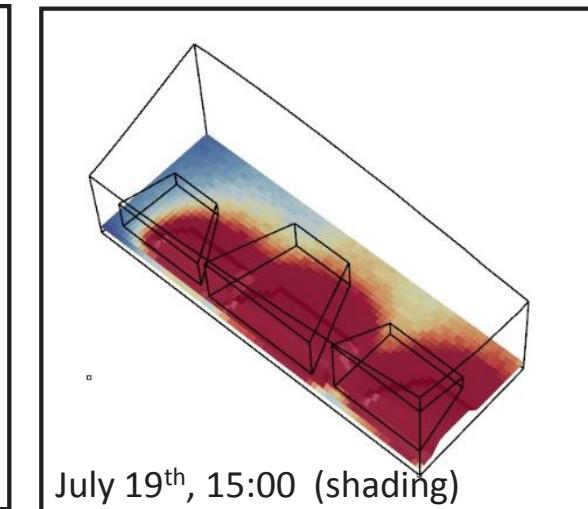
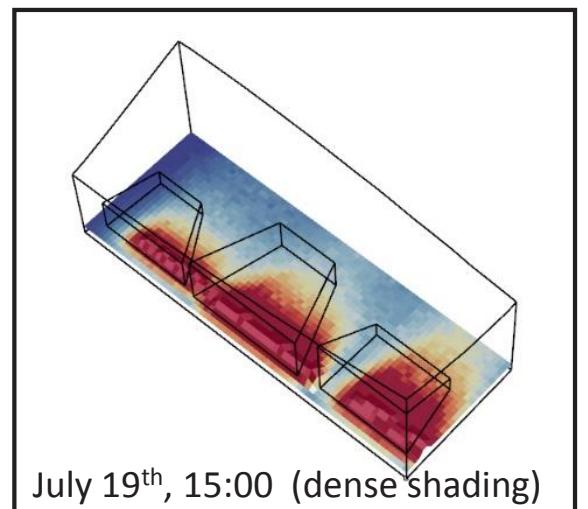
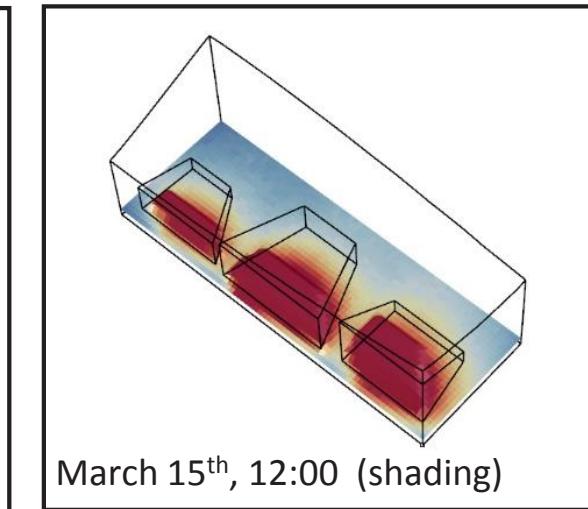
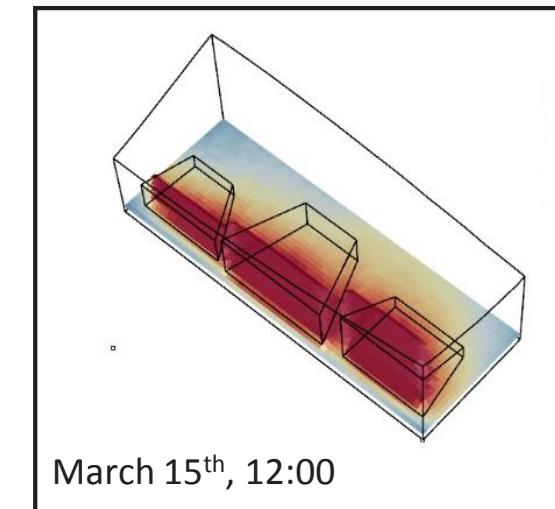
No Extrusion Window

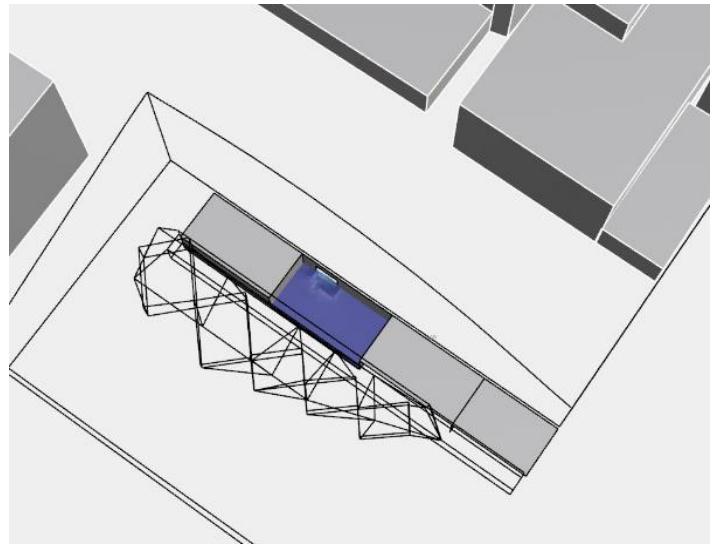
U_Value: 0.05
SHGC: 0.28
VT: 0.20

U_value 0.63
SHGC 0.69
VT0.74

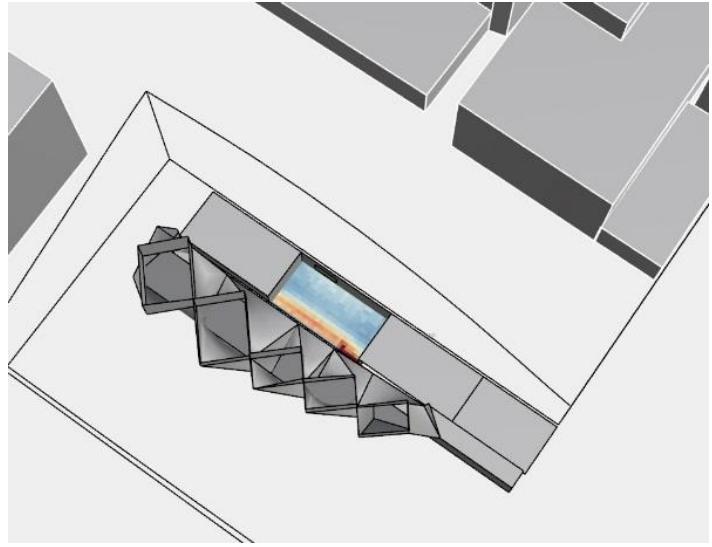
65.76

Extrusion Window

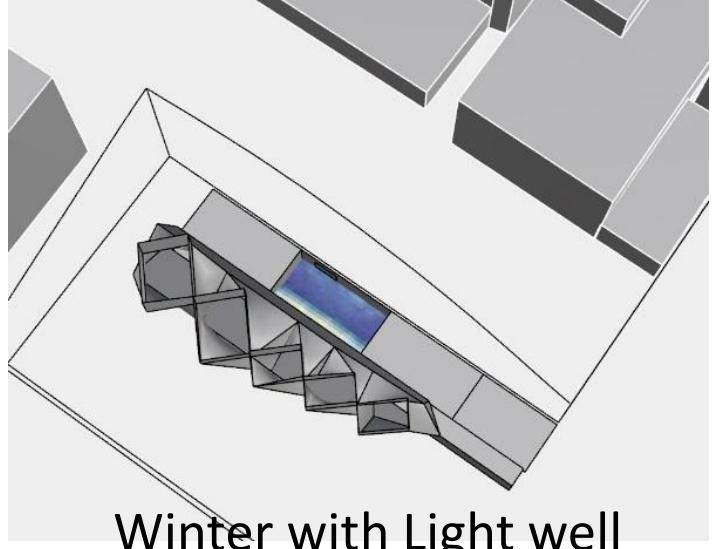




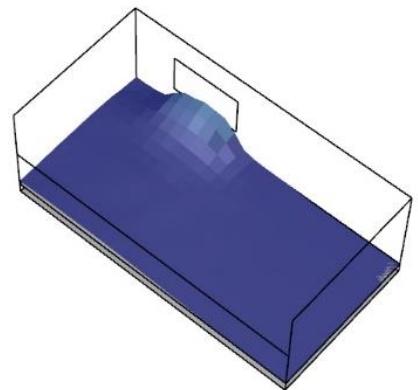
No Light well



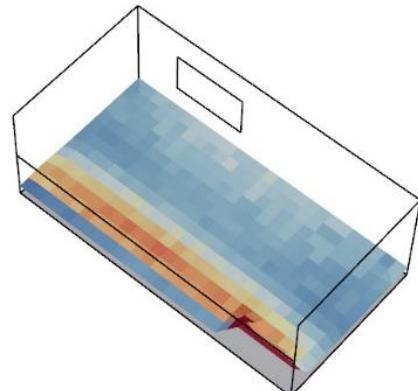
Summer with Light well



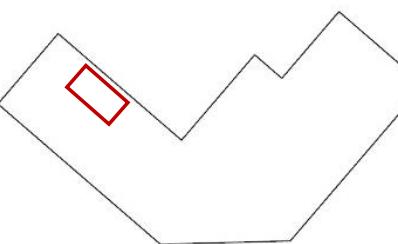
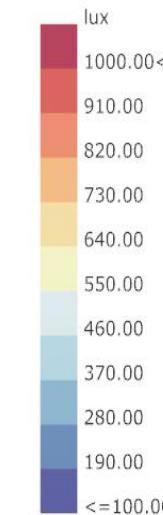
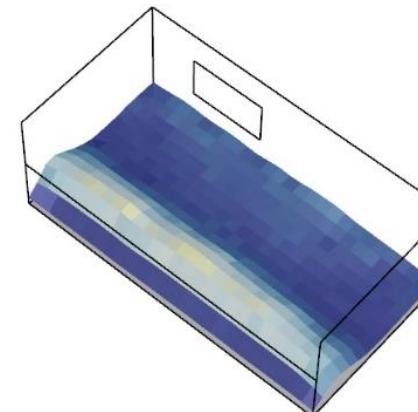
Winter with Light well



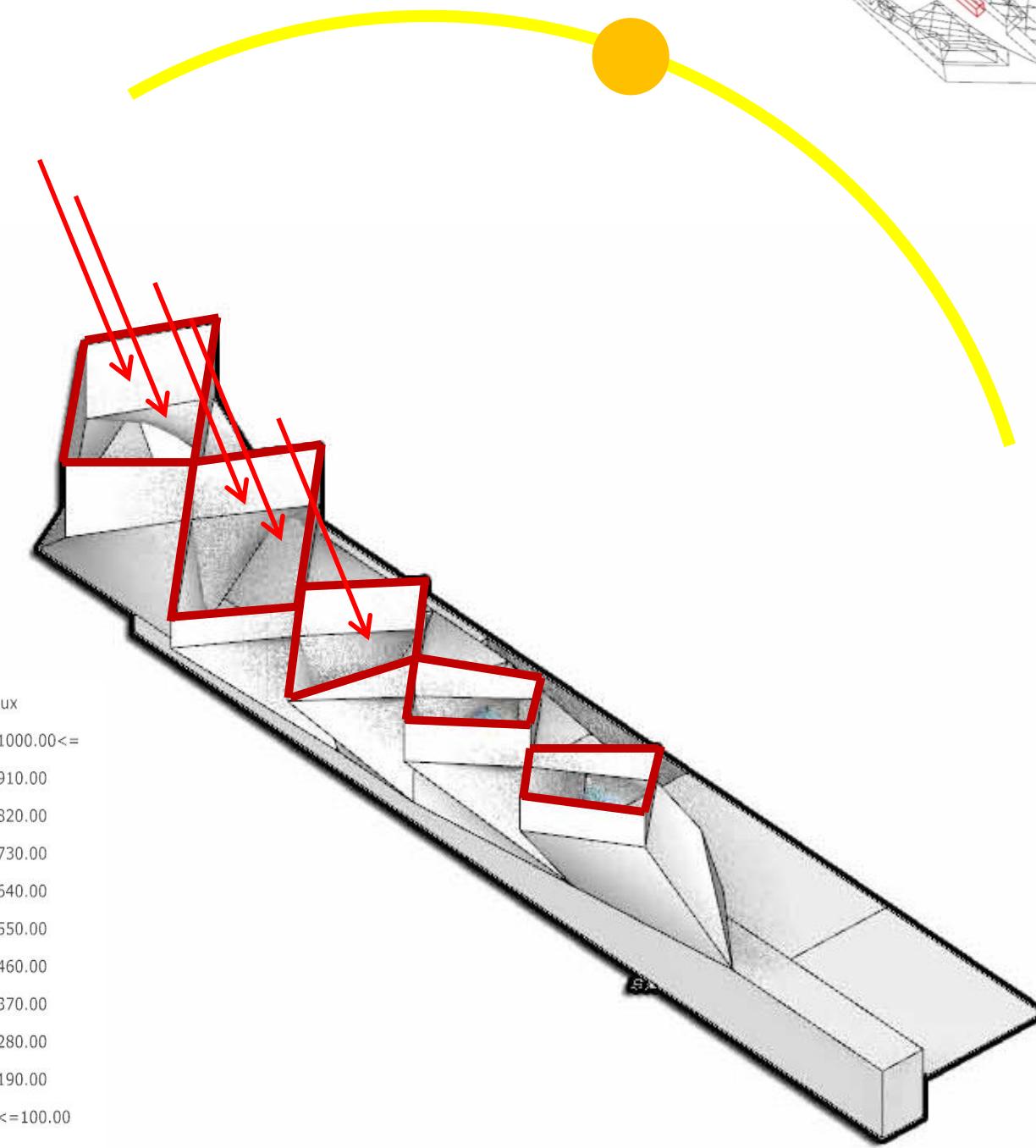
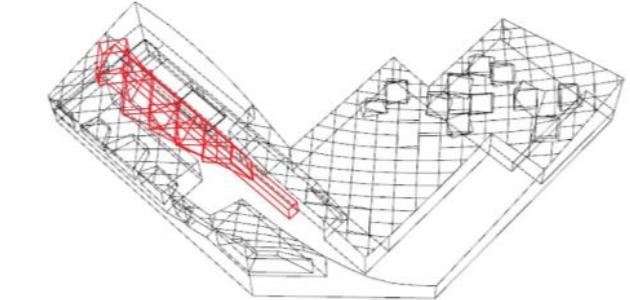
No Light well



Winter with Light well



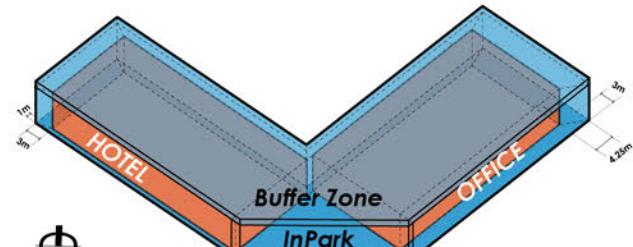
Hotel Daylight



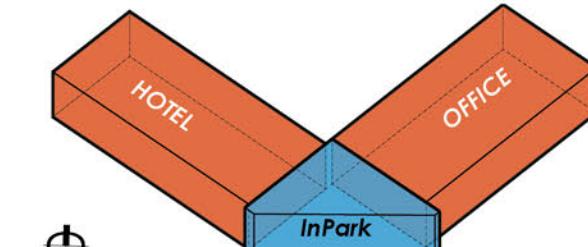


Appendix

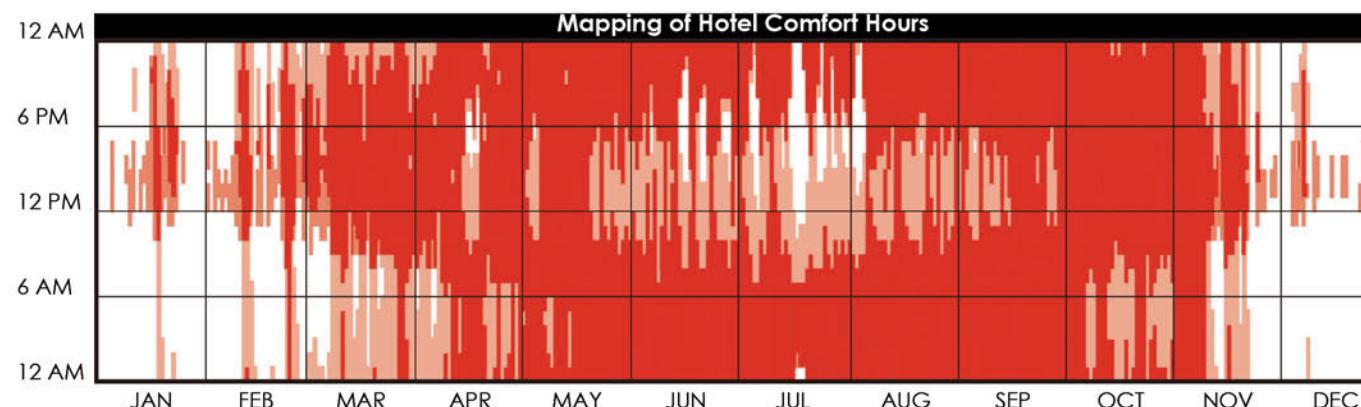
Benefit of "Fruit" in "Jello" -Comparison between Buffer Zone Scenario and No Buffer Zone Scenario



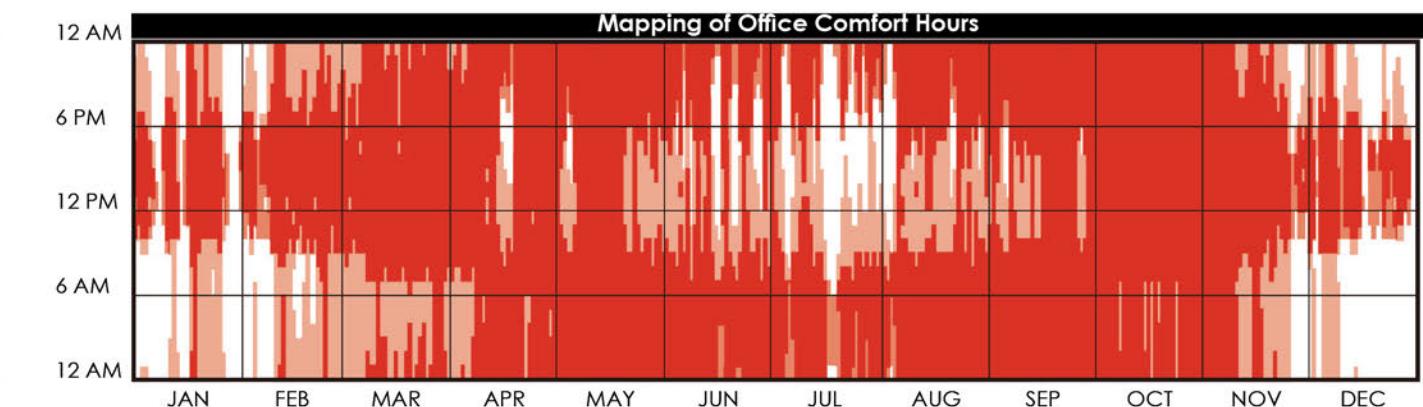
Scenario with Buffer Zone



Scenario without Buffer Zone



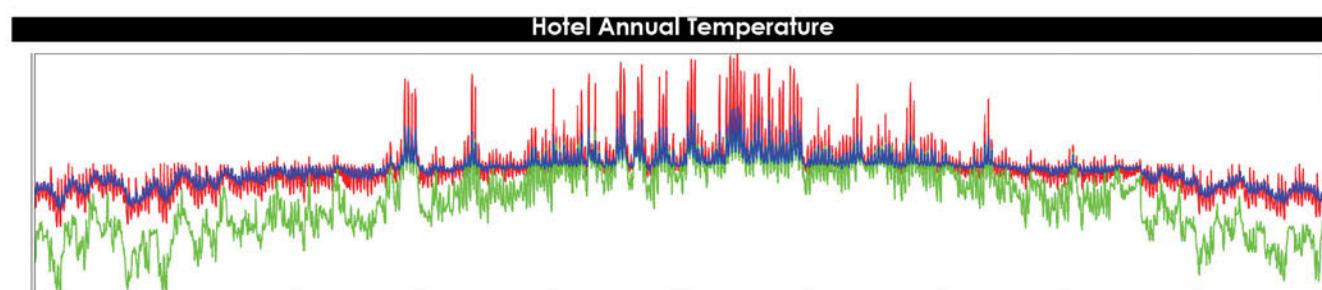
Boolean
1.00 <= 0.90 0.80 0.70 0.60 0.50 0.40 0.30 0.20 0.10 <= 0.00



Boolean
1.00 <= 0.90 0.80 0.70 0.60 0.50 0.40 0.30 0.20 0.10 <= 0.00

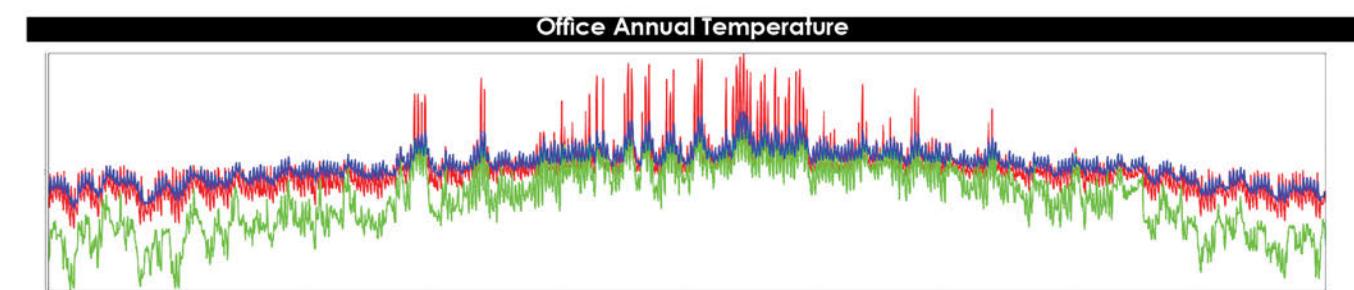
Scenario with Buffer Zone provide **more Comfort Hour** than Scenario without Buffer Zone

Scenario with Buffer Zone provide more Comfort Hour than **Scenario without Buffer Zone**



— Scenario with Buffer Zone — Scenario without Buffer Zone — Outside Temperature

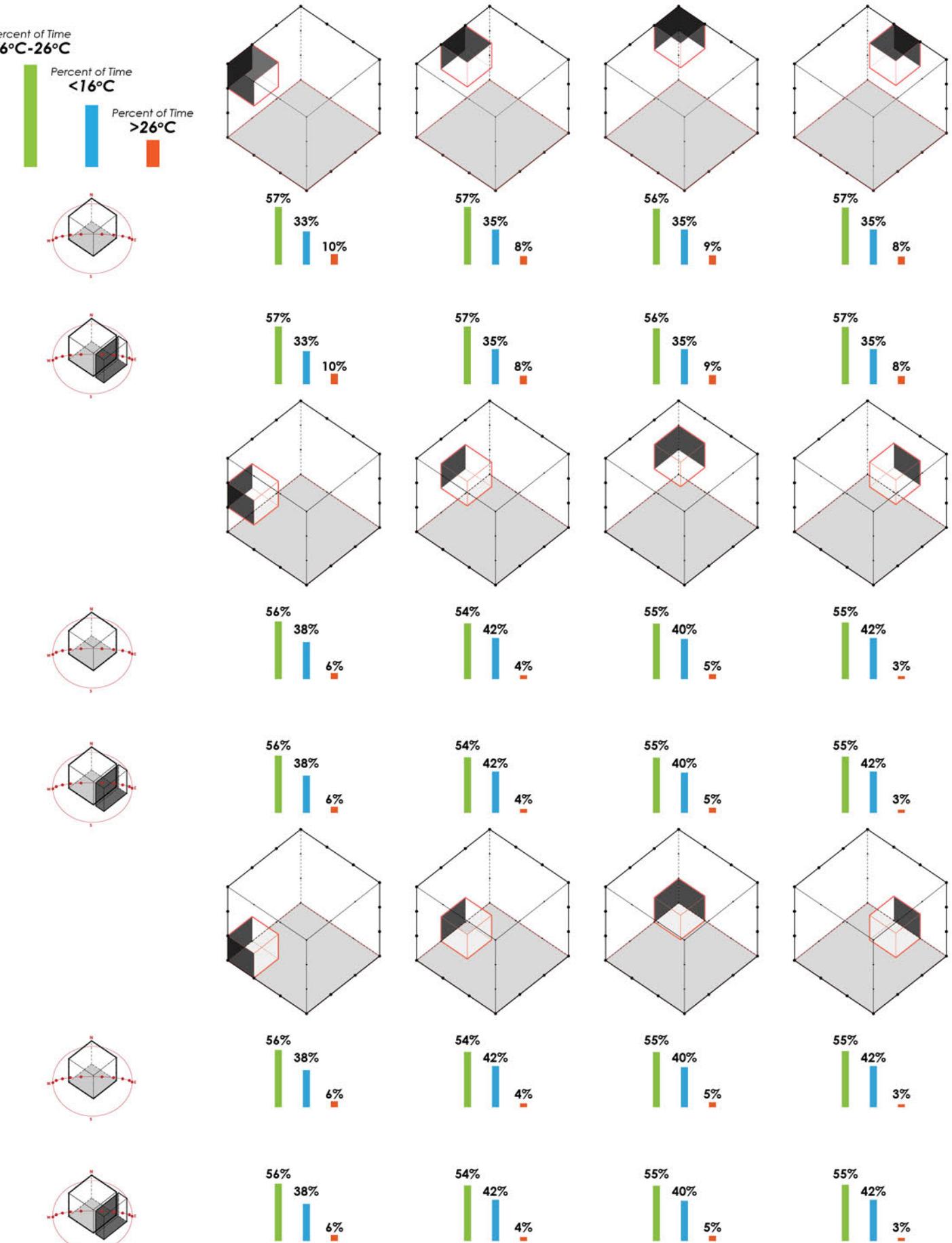
Scenario With Buffer Zone Provide **Smaller Temperature Swing**.



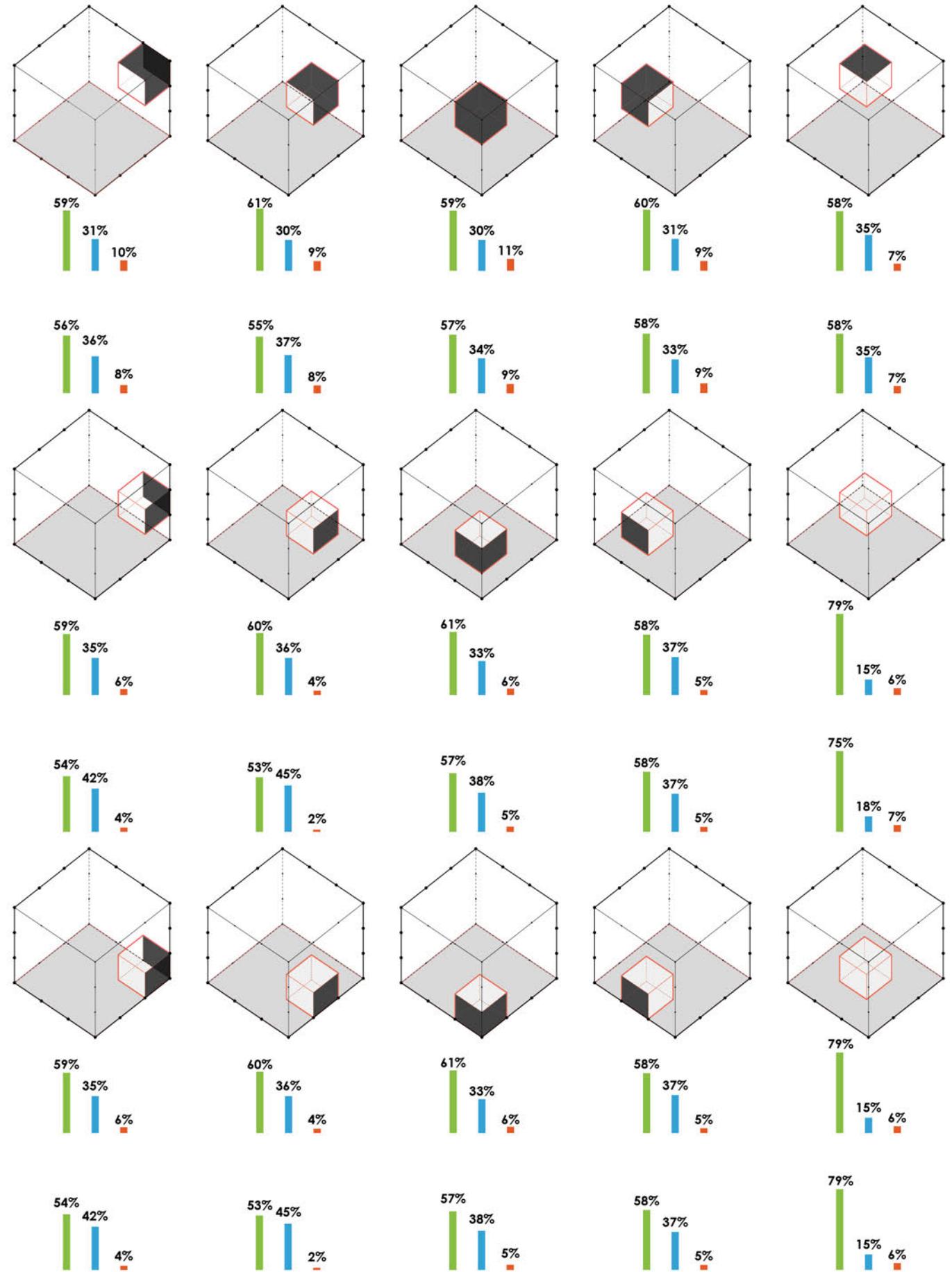
— Scenario with Buffer Zone — Scenario without Buffer Zone — Outside Temperature

Scenario With Buffer Zone Provide **Smaller Temperature Swing**.

Sub-zone Annual Temperature Study



Building Environmental Strategy Shaped by CLIMATE FORCES



Explore Optimal Parameters for Office Space Daylighting & Adaptive Comfort

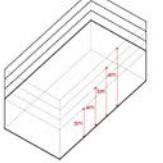
- Run daylighting and comfort simulation of different **Input Parameter** combinations,
- Visualize all results** in "DesignExplorer",
- Select result with best adaptive comfort as potential **Optimal Result**,
- Use input parameter of Optimal Results as **guidance for next step design**.

Input Parameters

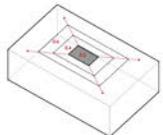
Floor Area= 50 sqm,
Depth from 5m to 9m



Floor Area= 50 sqm,
Height from 3m to 6m



Floor Area= 50 sqm,
SRR from 0.2m to 0.6m,
SRR=Skylight to Roof Ratio



Output Values

sDA

Spatial Daylight Autonomy (sDA) describes how much of a space receives sufficient daylight. Specifically, it describes the percentage of floor area that receives at least 300 lux for at least 50% of the annual occupied hours.

Total Solargain

Solar radiation energy received over one year.

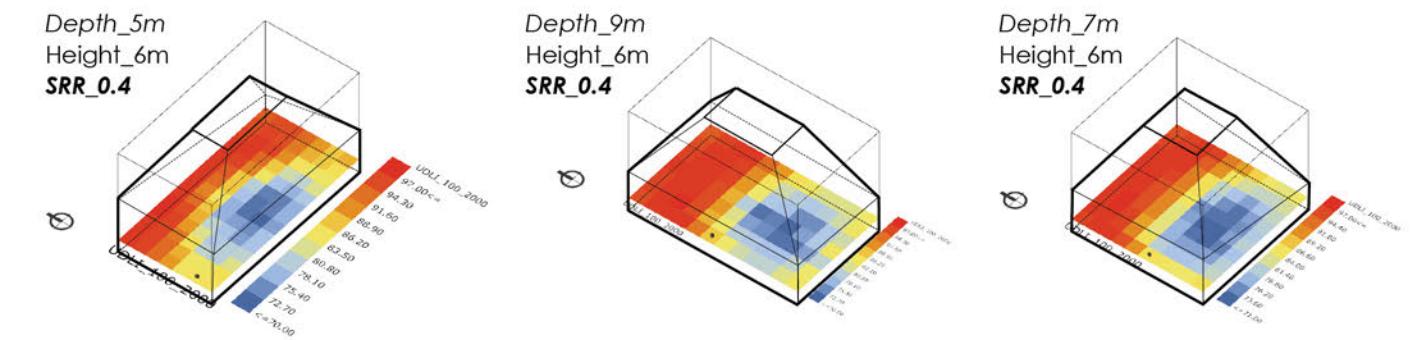
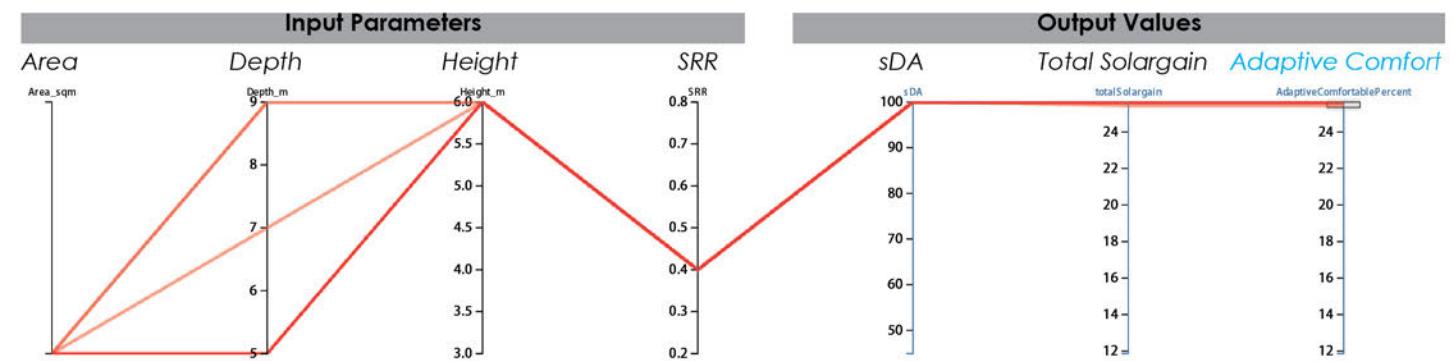
Adaptive Comfort Percentage

Without HVAC System, how many percentage of time a indoor space is comfortable.

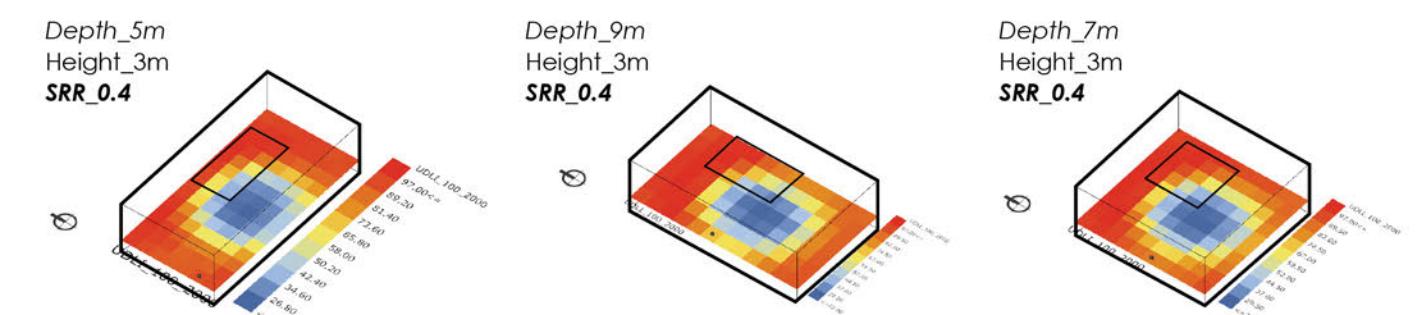
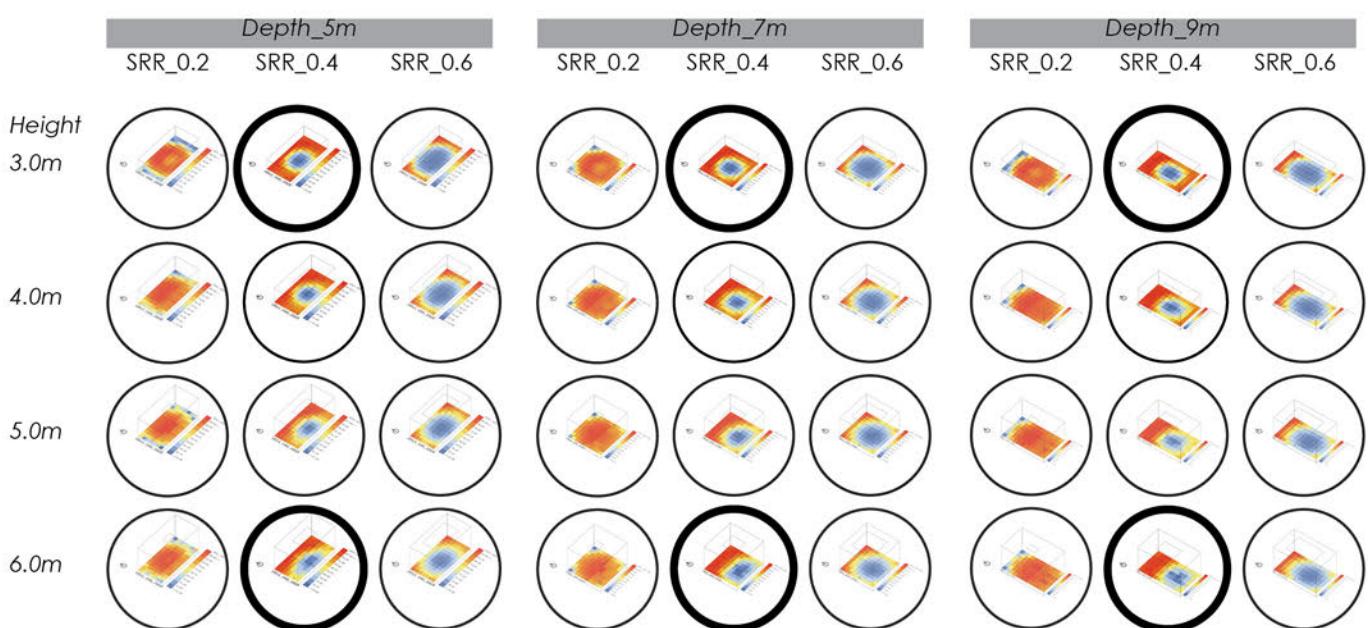
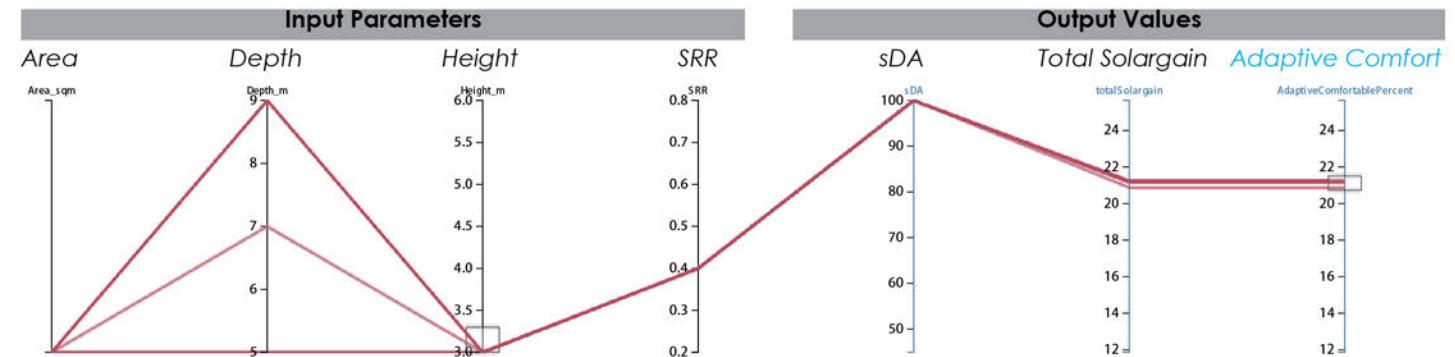
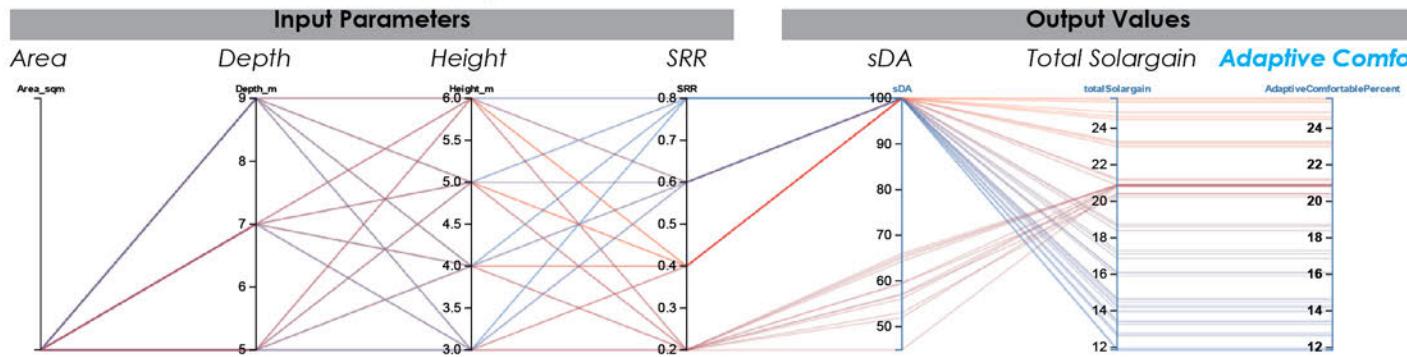
UDLI

Percentage of time during the occupancy hours that the test point receive 100lux-2000lux

Select Optimal Results



Visualize all Results in "Design Explorer"



Compared to Depth and Height, skylight to roof ratio(SRR) is the major driven force in Daylighting and Adaptive Comfort. Given the results of simulation, when skylight to roof ratio(SRR) equals 0.4, office space in different depth and height would achieve best performance.

Explore Optimal Parameters for Office Space Daylighting & Adaptive Comfort

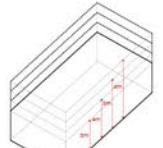
- Run daylighting and comfort simulation of different **Input Parameter** combinations,
- Visualize all results** in "DesignExplorer",
- Select result with best adaptive comfort as potential **Optimal Result**,
- Use input parameter of Optimal Results as **guidance for next step design**.

Input Parameters

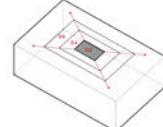
Floor Area= 50 sqm,
Depth from 5m to 9m



Floor Area= 50 sqm,
Height from 3m to 6m



Floor Area= 50 sqm,
SRR from 0.2m to 0.6m,
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Solar radiation energy received over one year.

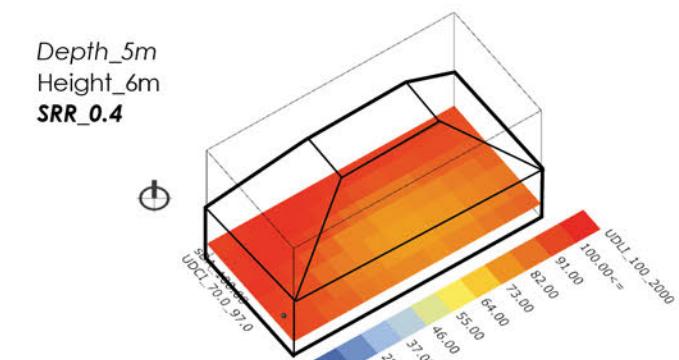
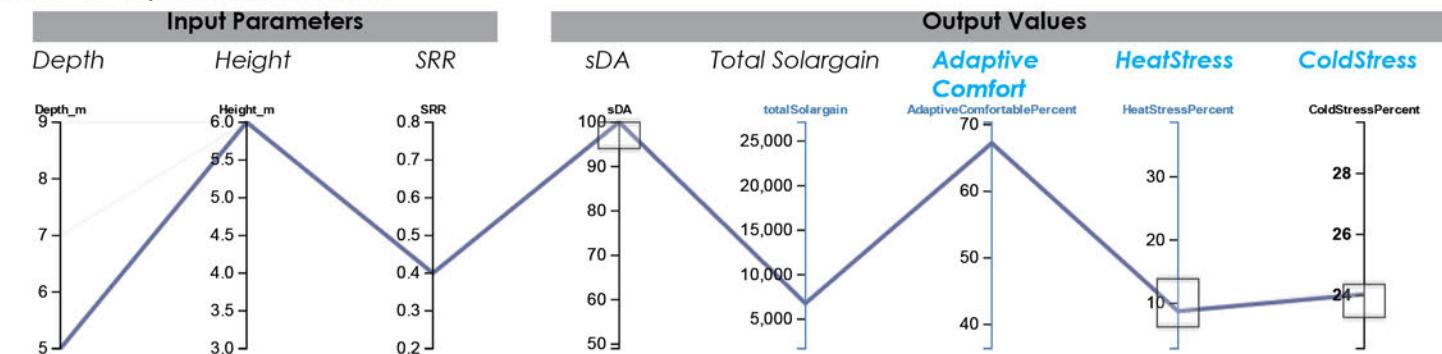
Adaptive Comfort Percentage

Without HVAC System, how many percentage of time a indoor space is comfortable.

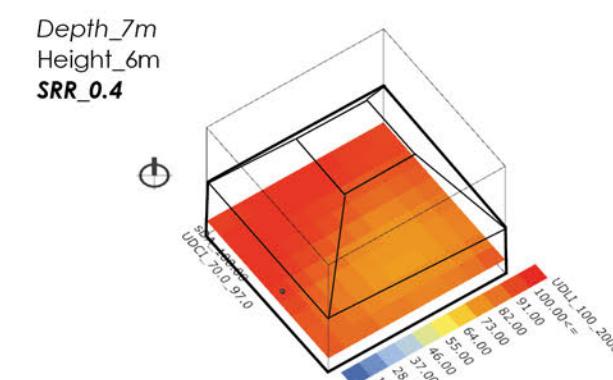
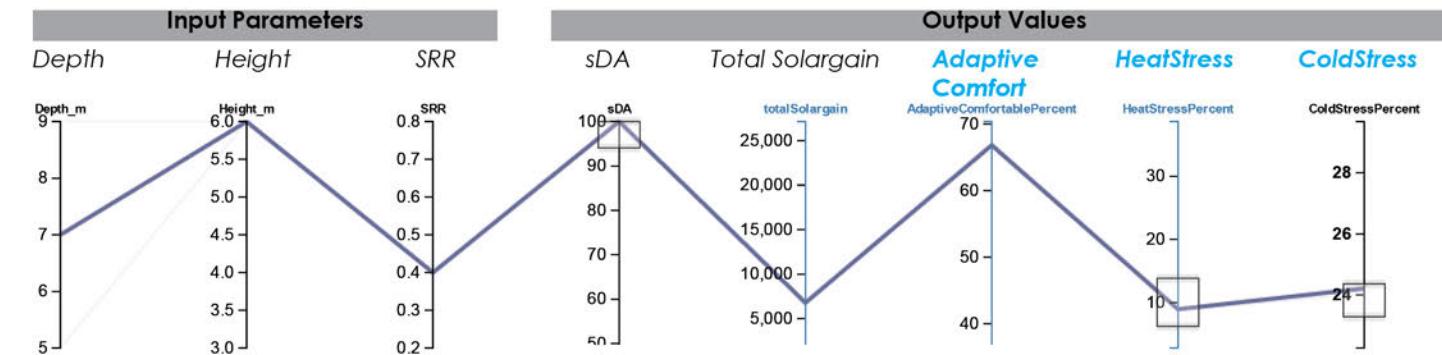
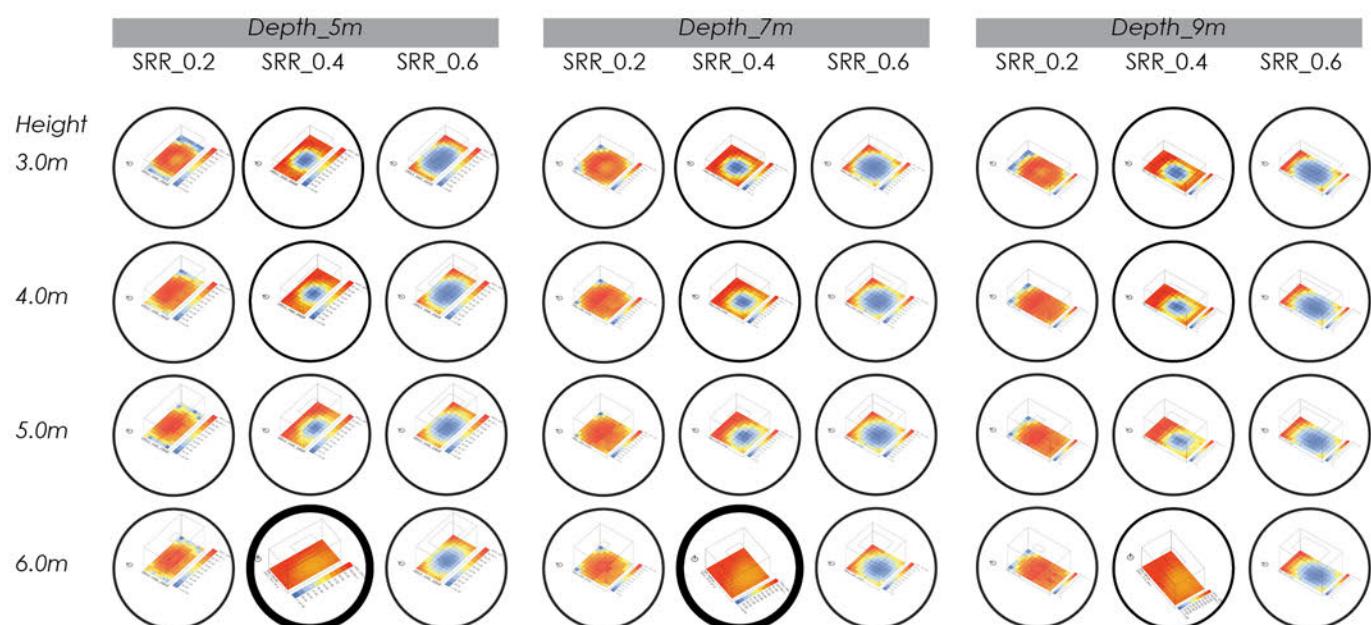
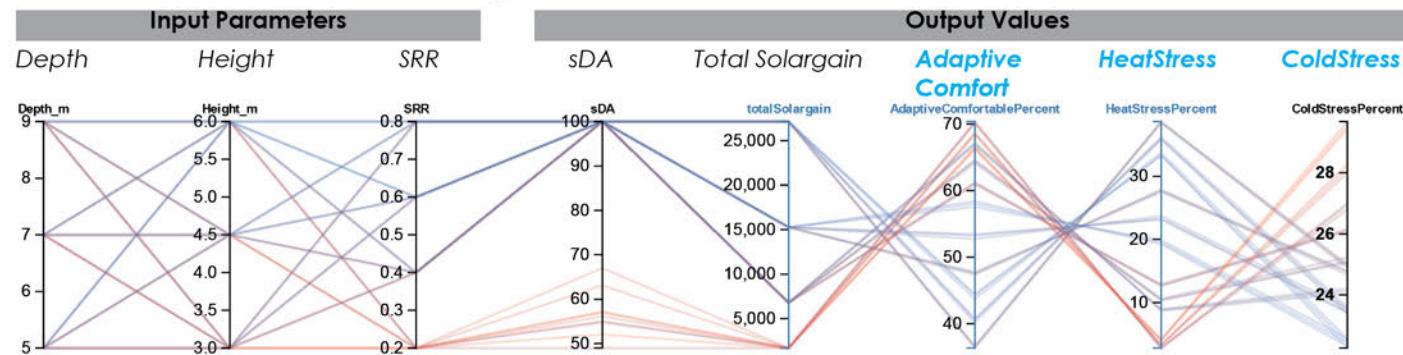
UDLI

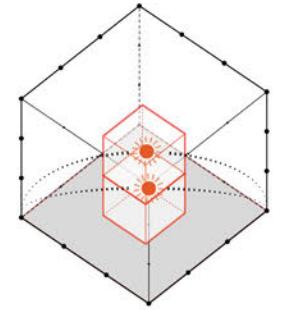
Percentage of time during the occupancy hours that the test point receive 100lux-2000lux

Select Optimal Results

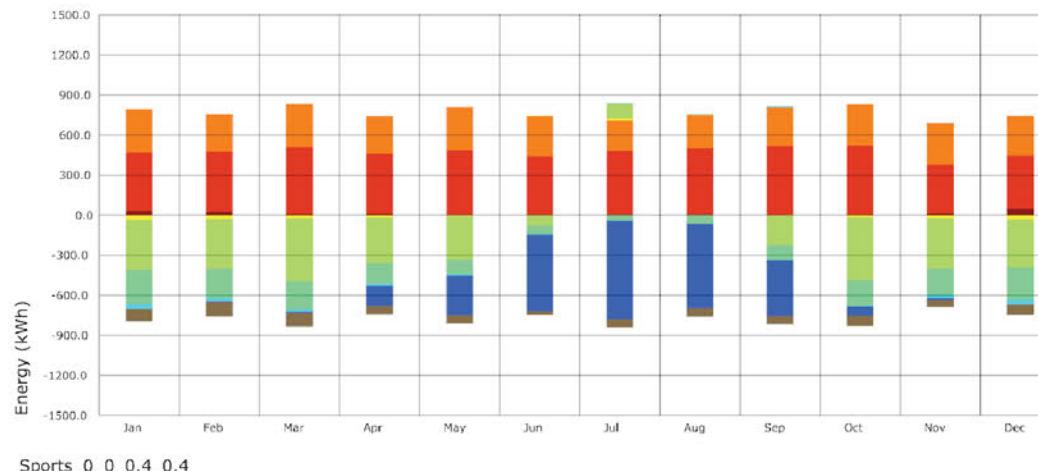
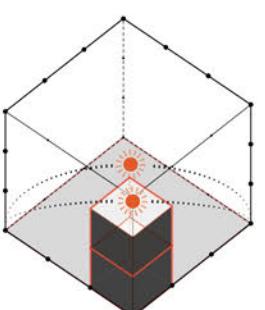
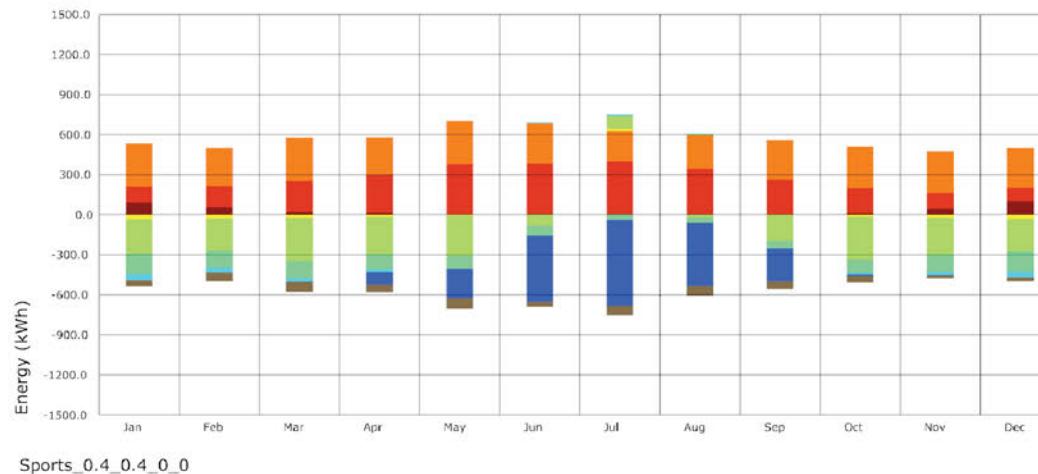
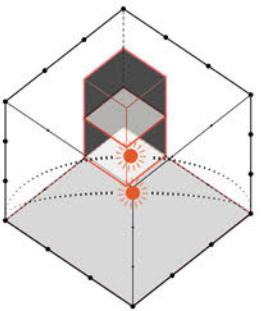
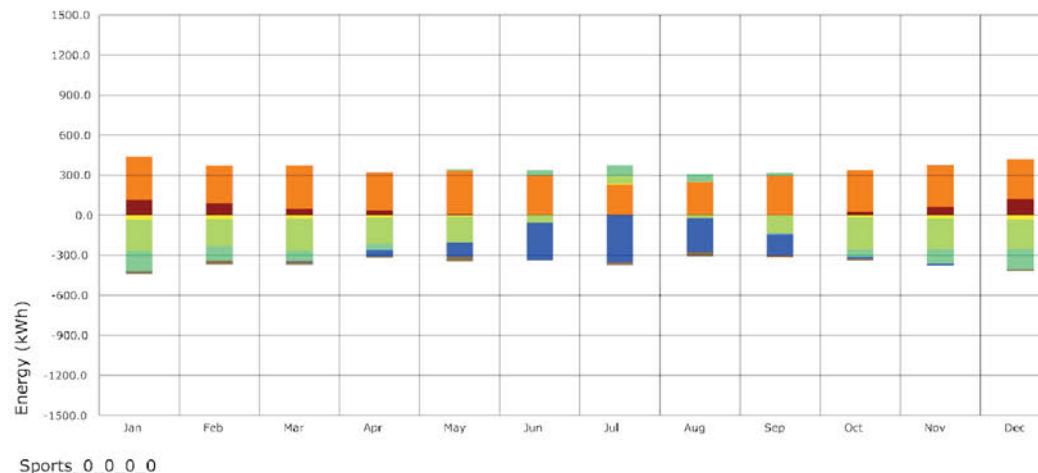


Visualize all Results in "Design Explorer"

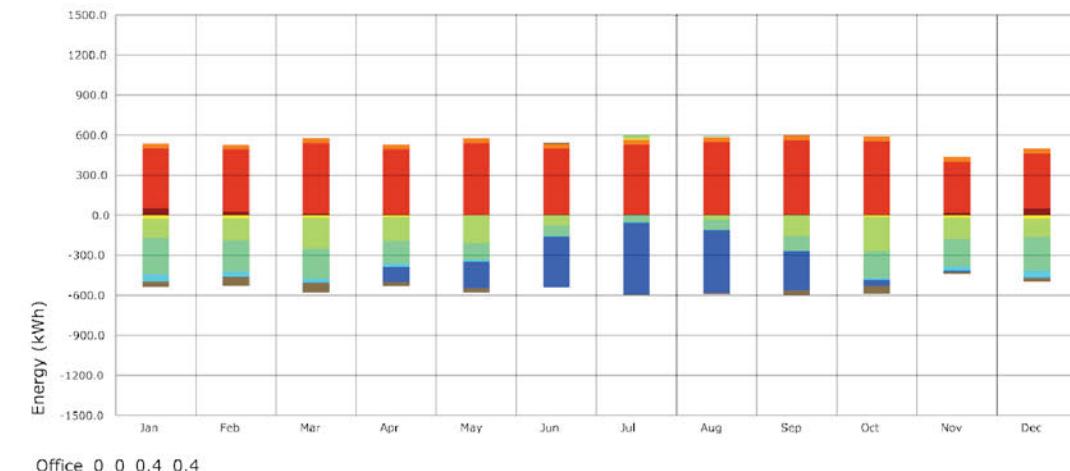
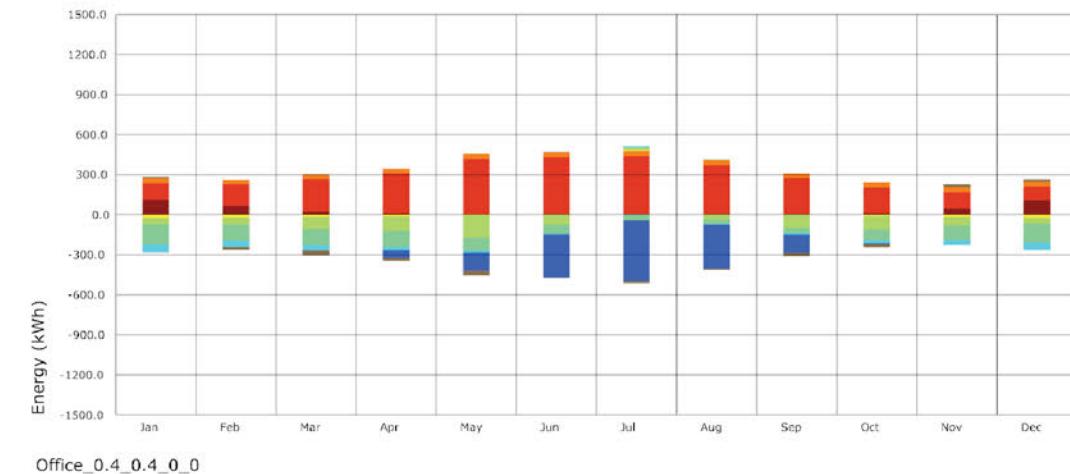
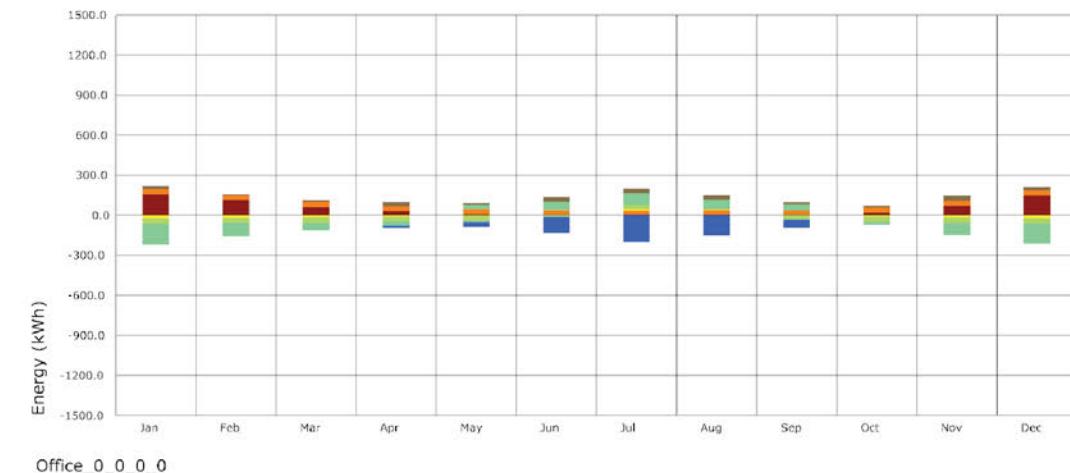




 Sport



Office

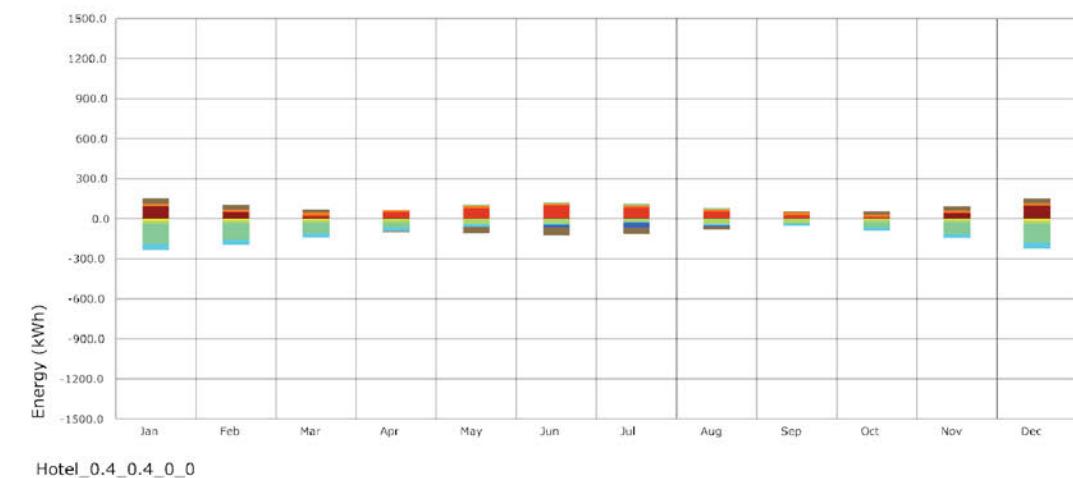
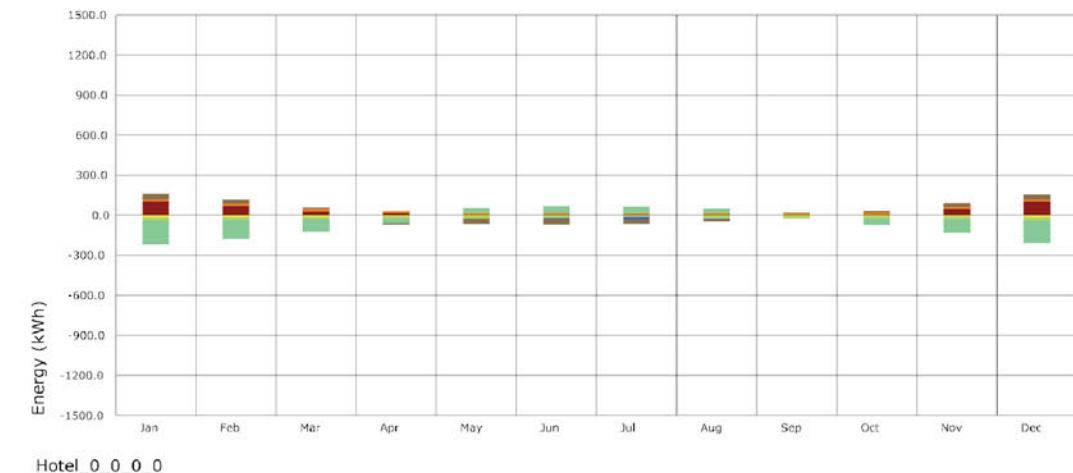
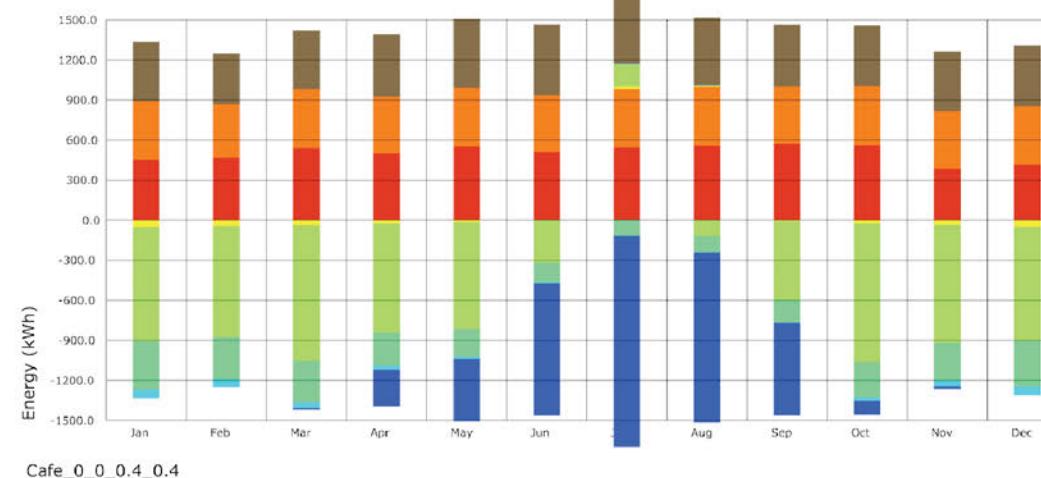
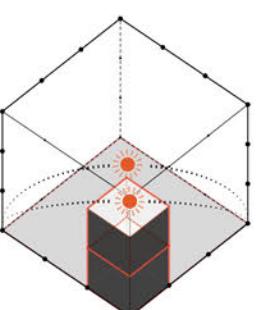
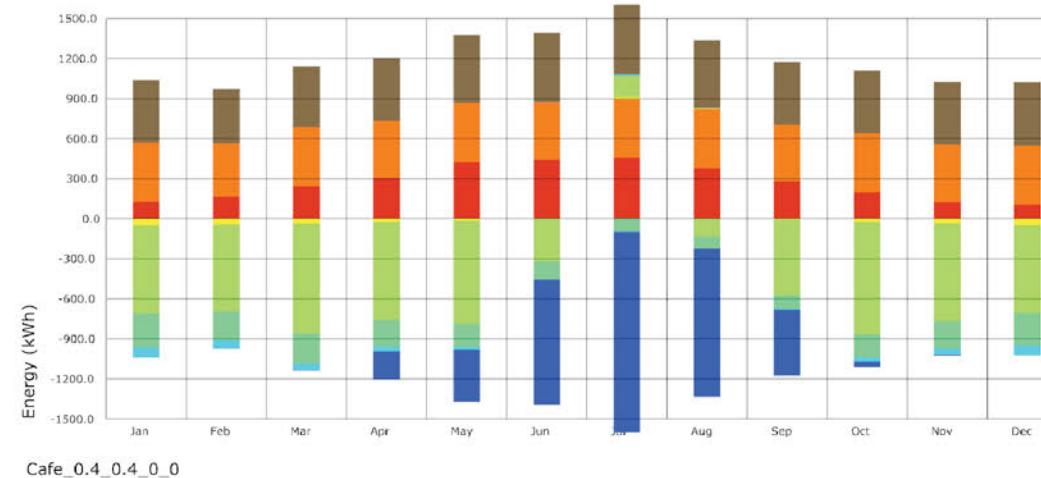
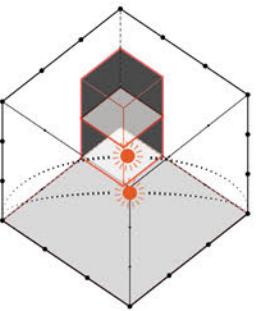
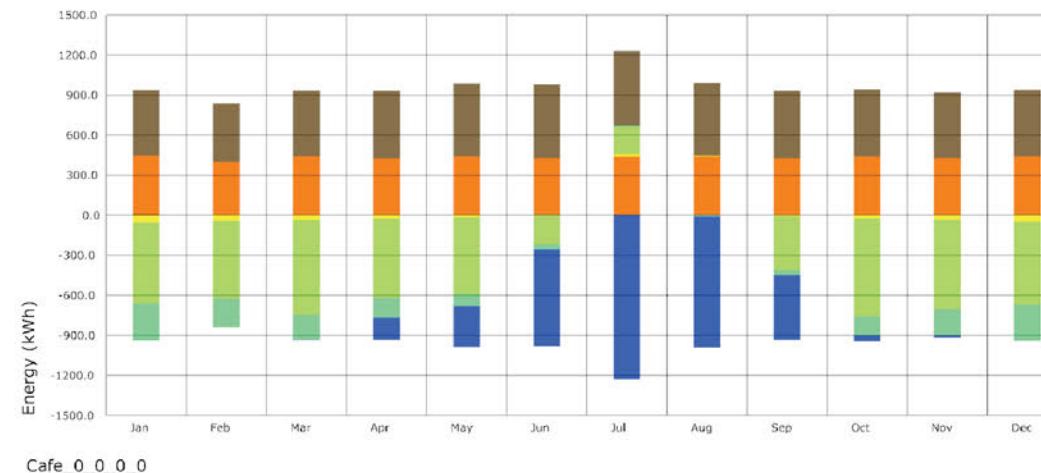
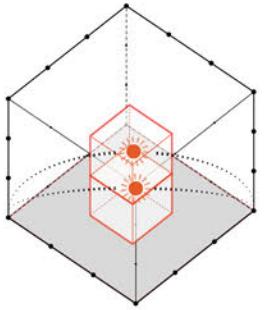


The chart displays the following monthly energy consumption components:

- Storage (Monthly)**: 10%
- Cooling (Monthly)**: 15%
- Opaque Conduction (Monthly)**: 20%
- Outdoor Air (Monthly)**: 10%
- Infiltration**: 10%
- People (Monthly)**: 15%
- Solar**: 10%
- Heating (Monthly)**: 10%

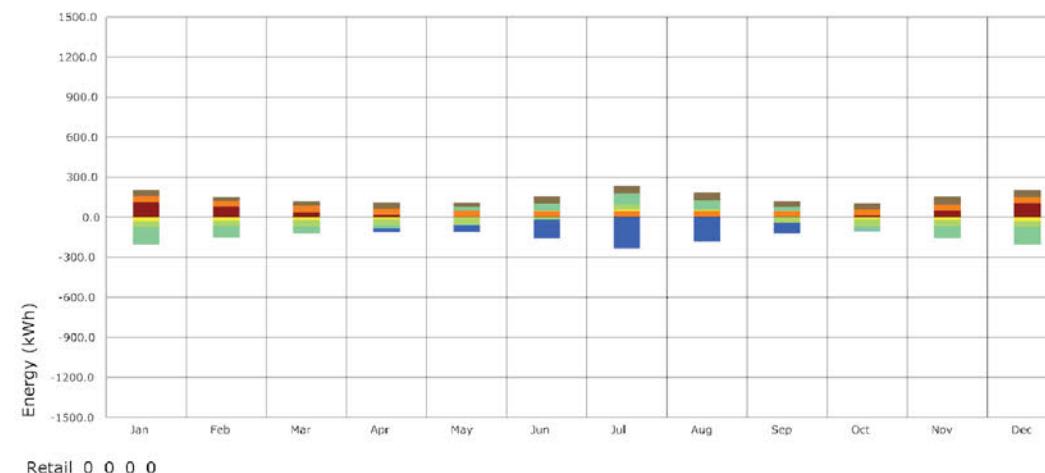
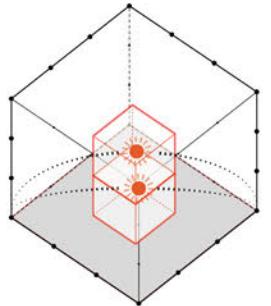
The chart displays the following energy components:

- Storage (Monthly)
- Cooling (Monthly)
- Glazing Conduction (Monthly)
- Opaque Conduction (Monthly)
- Outdoor Air (Monthly)
- Infiltration (Monthly)
- People (Monthly)
- Solar (Monthly)
- Heating (Monthly)

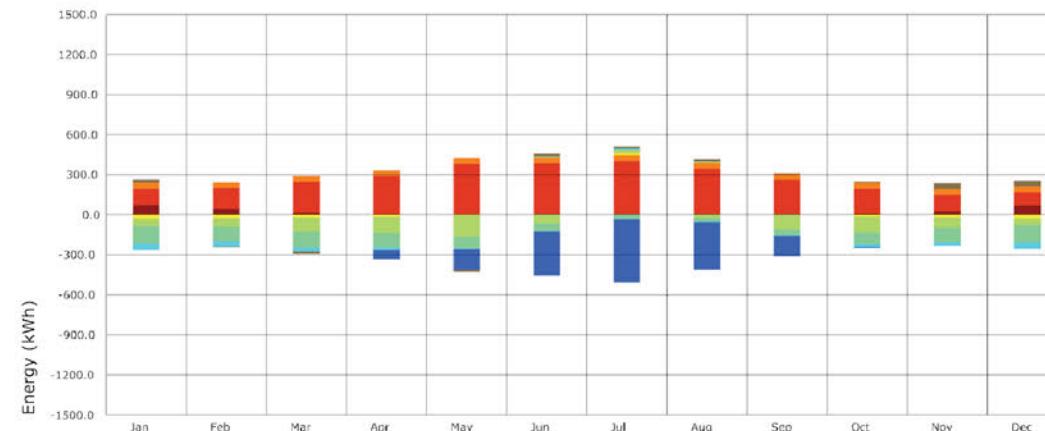
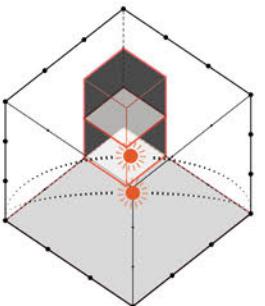




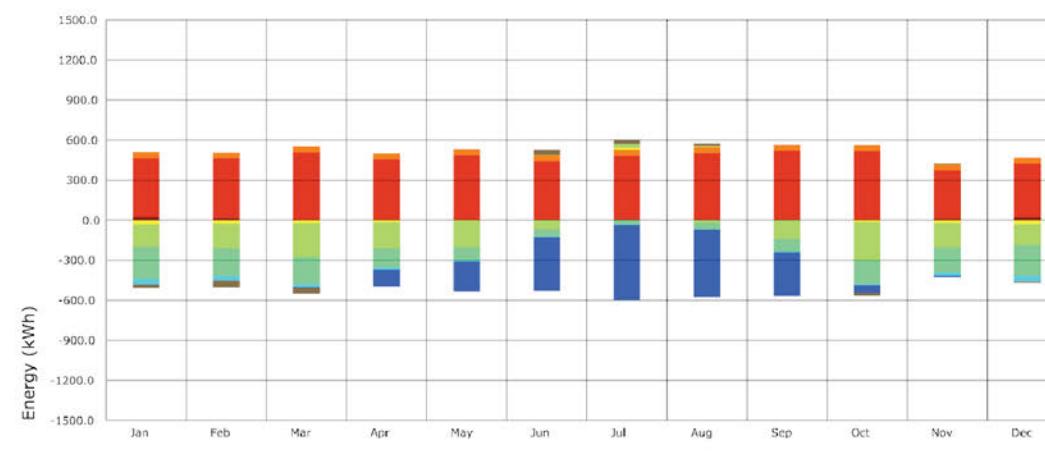
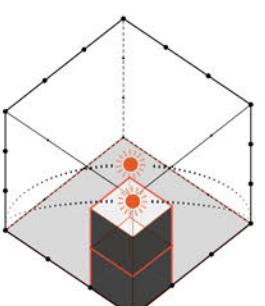
Retail



Retail_0_0_0_0



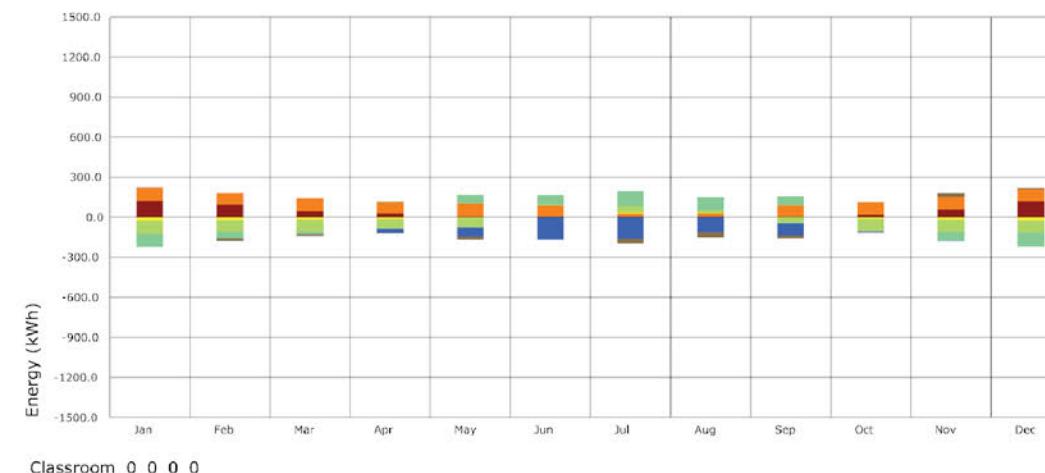
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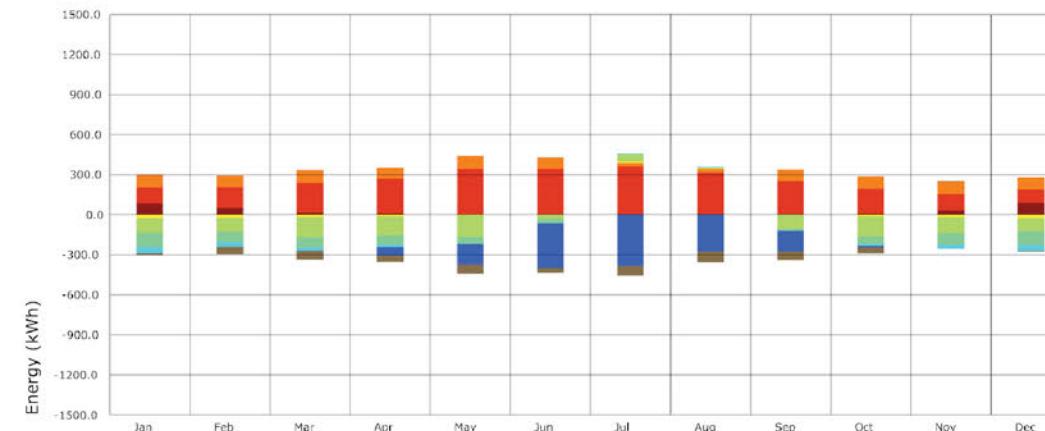
Retail_0_0_0.4_0.4



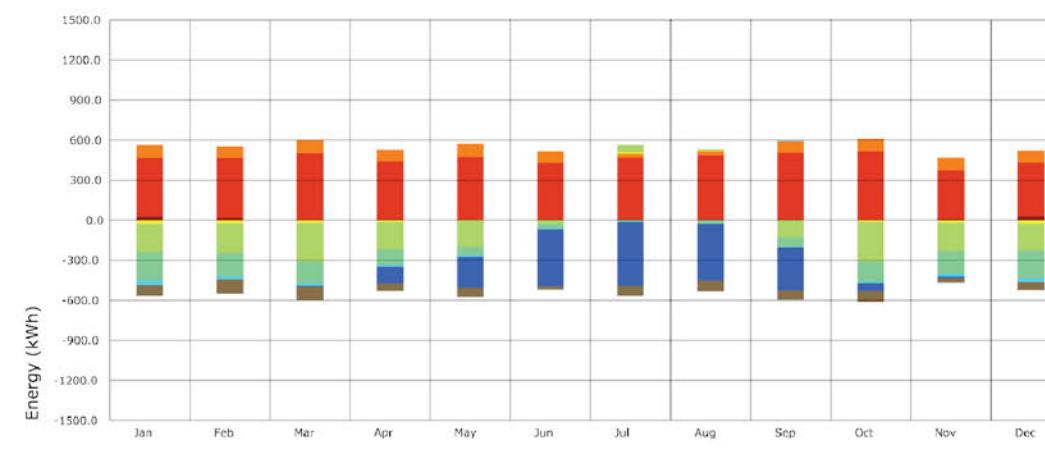
ClassR



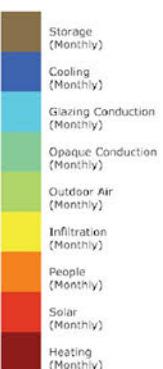
Classroom_0_0_0_0



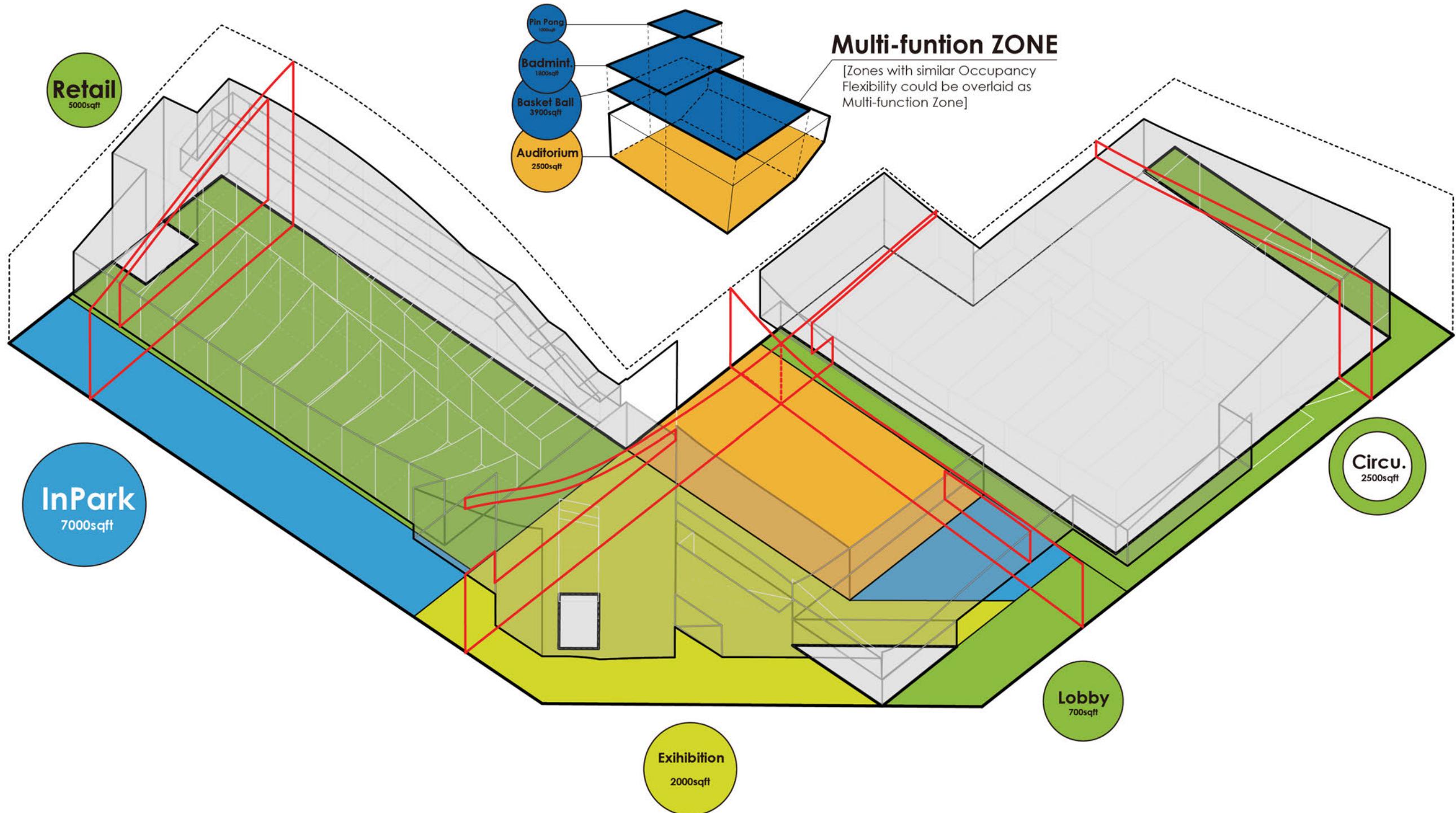
Classroom_0.4_0.4_0_0



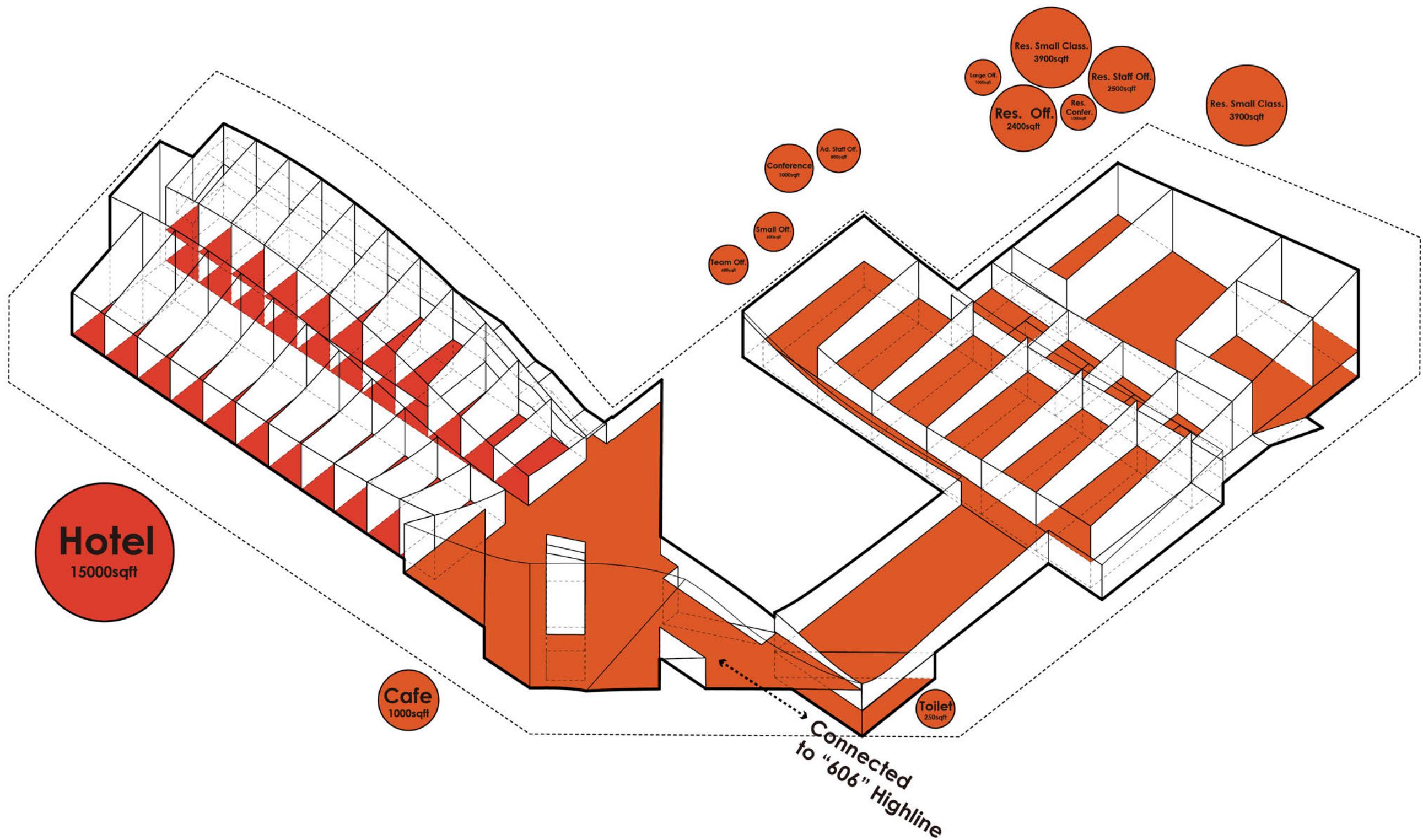
Classroom_0_0_0.4_0.4



"Jello" - Buffer Space



"Fruit"



"Fruit" in "Jello" Section

