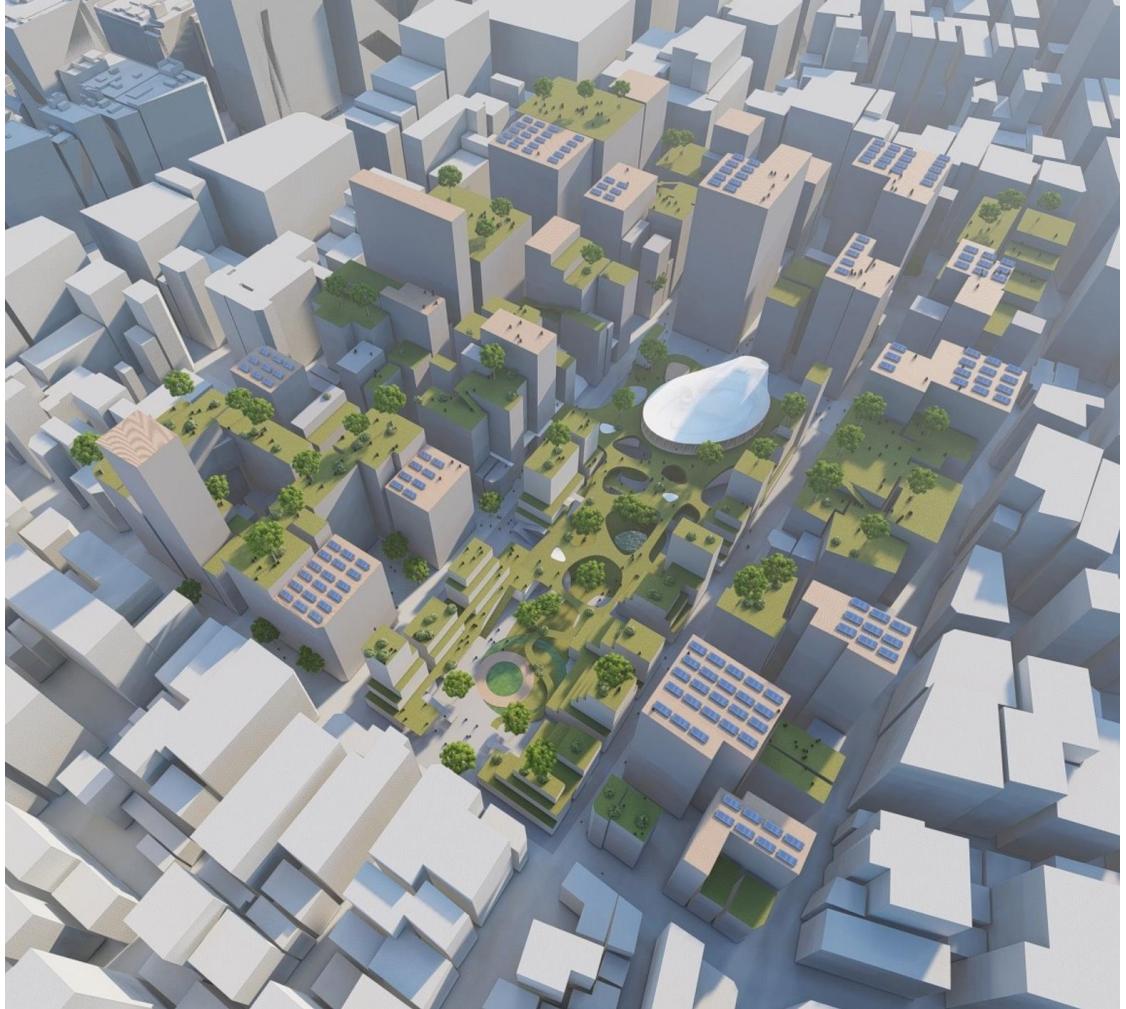


Urban Regeneration

都市再生



Proposal Team



Emily Dean

Master in Architecture



Miles Rawlins

Master in City Planning



Siddharth Sivakumar

Master in City Planning



Peirui Yan

Master in Architecture

Purpose

OVERVIEW

ECO-
PERFORMANCE

DISTRICT
UTILITY

LIVING CENTER

DISTRICT
CHARACTER

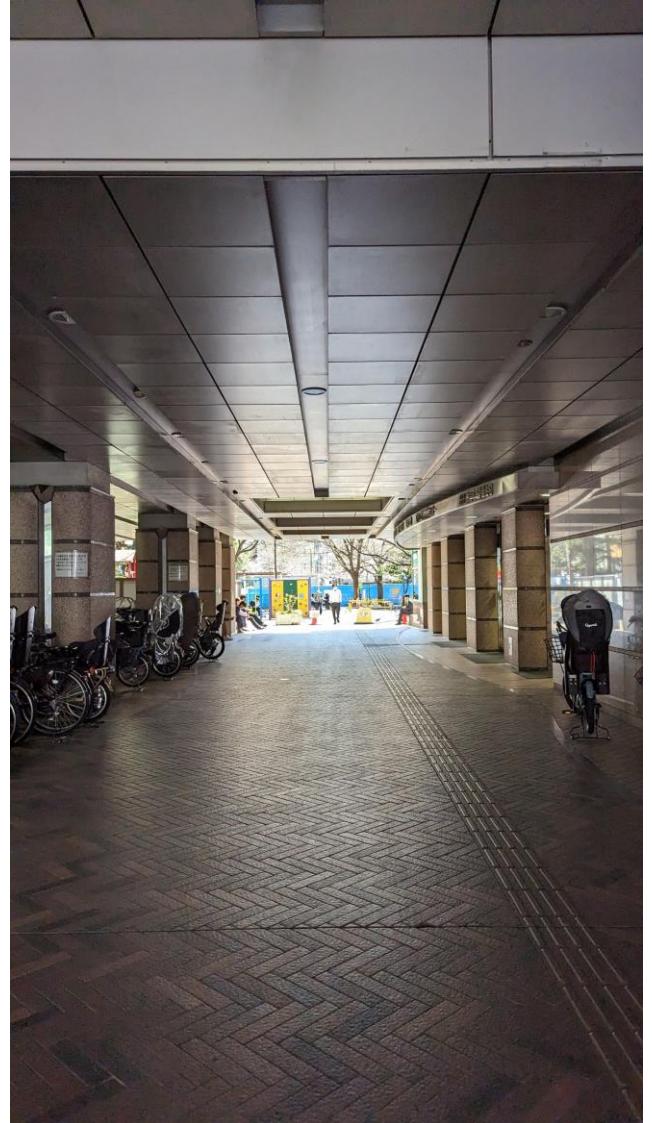
MECHANISM

SUMMARY

The purpose of this proposal is to achieve carbon neutrality and neighborhood vitality in a manner that is as non-intrusive as possible.

We do not want wholesale demolition and reconstruction. We want to identify the unique characteristics of Nihonbashi and preserve and enhance them through iterative redevelopment based on the principles of sustainable, smart-city systems and:

まちづくり Machizukuri



A Living Urban District

OVERVIEW

ECO-
PERFORMANCE

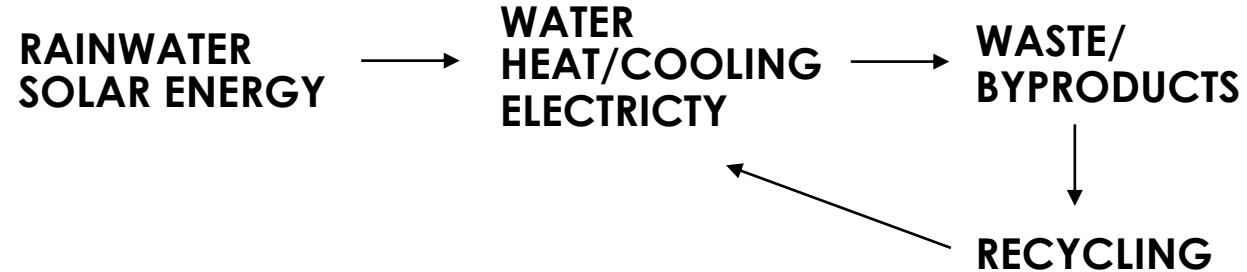
DISTRICT
UTILITY

LIVING CENTER

DISTRICT
CHARACTER

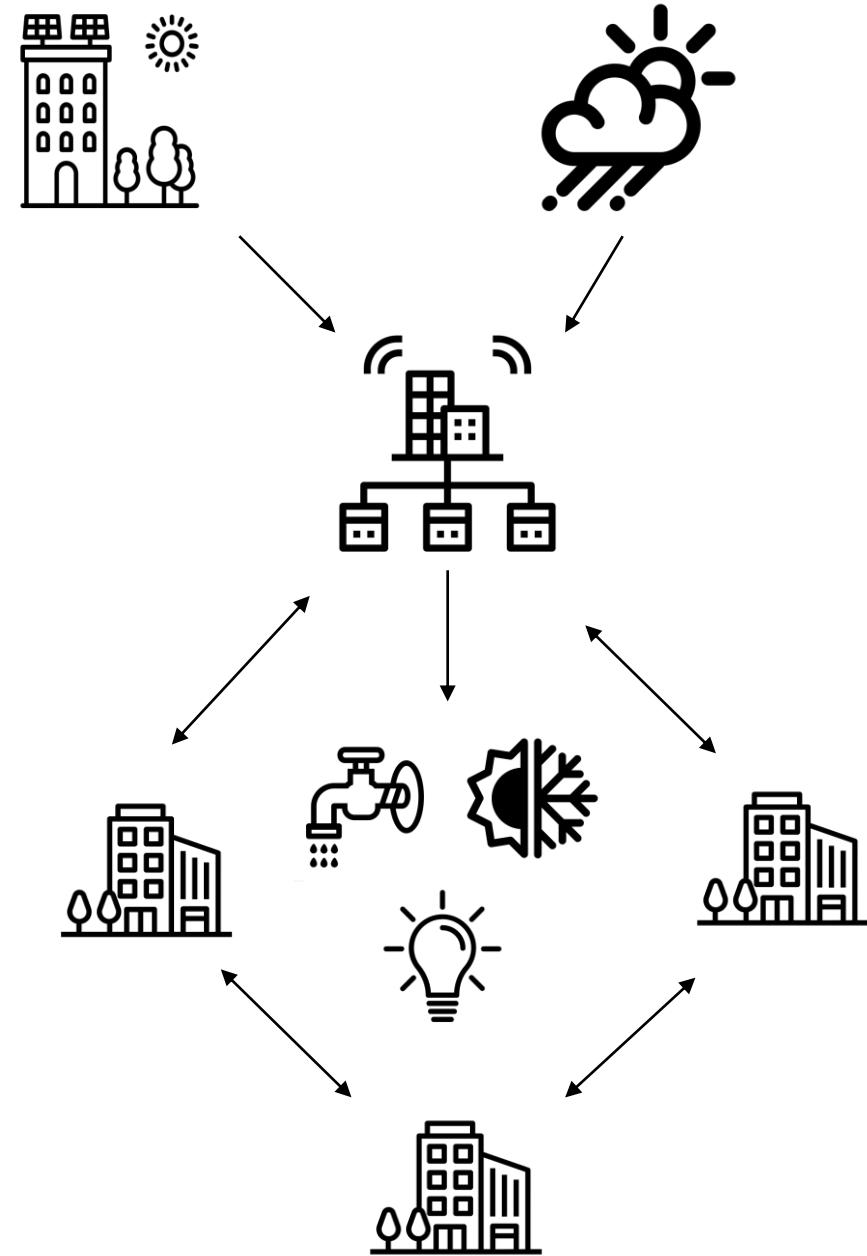
MECHANISM

SUMMARY



To achieve the goal of carbon neutrality, we took inspiration from the processes that exist in forests. Trees exchange information and resources. Why not buildings?

To facilitate the transfer of data within the district, a central data-center will be required. In addition to the utilitarian processes such a facility would provide, data could be presented publicly to provide district residents with information on their home's environmental performance.



A Living Urban District: Inner District Connectivity

OVERVIEW

ECO-
PERFORMANCE

DISTRICT
UTILITY

LIVING CENTER

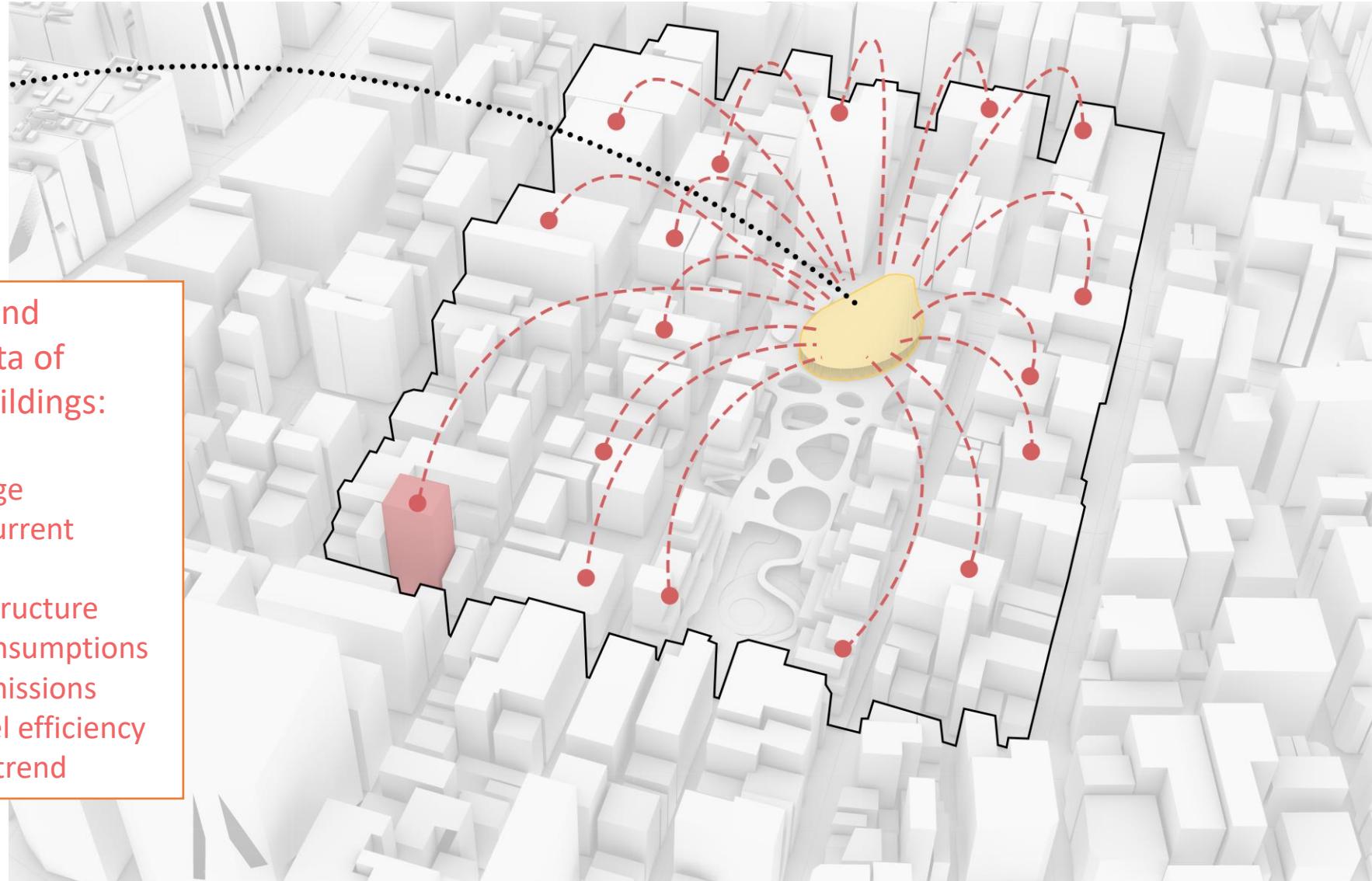
DISTRICT
CHARACTER

MECHANISM

SUMMARY

Monitoring and
collecting data of
individual buildings:

1. Building age
2. Building current function
3. Building structure
4. Energy consumptions
5. Carbon emissions
6. Solar panel efficiency
7. Area rent trend



A Living Urban District: Smart Networks

OVERVIEW

ECO-
PERFORMANCE

DISTRICT
UTILITY

LIVING CENTER

DISTRICT
CHARACTER

MECHANISM

SUMMARY



Monitoring and collecting data of public spaces:

1. Frequency of people accessing ground floor functions
2. Frequency of pedestrians in each street
3. Frequency of vehicles in each street
4. Brightness of the streets and public areas
5. Carbon performance and air quality of each areas
6. Weather datas that have influence to public spaces and human activities

A Living Urban District: Connectivity Across Tokyo

OVERVIEW

ECO-
PERFORMANCE

DISTRICT
UTILITY

LIVING CENTER

DISTRICT
CHARACTER

MECHANISM

SUMMARY



A Living Urban District: Maximum Flexibility

OVERVIEW

ECO-
PERFORMANCE

DISTRICT
UTILITY

LIVING CENTER

DISTRICT
CHARACTER

MECHANISM

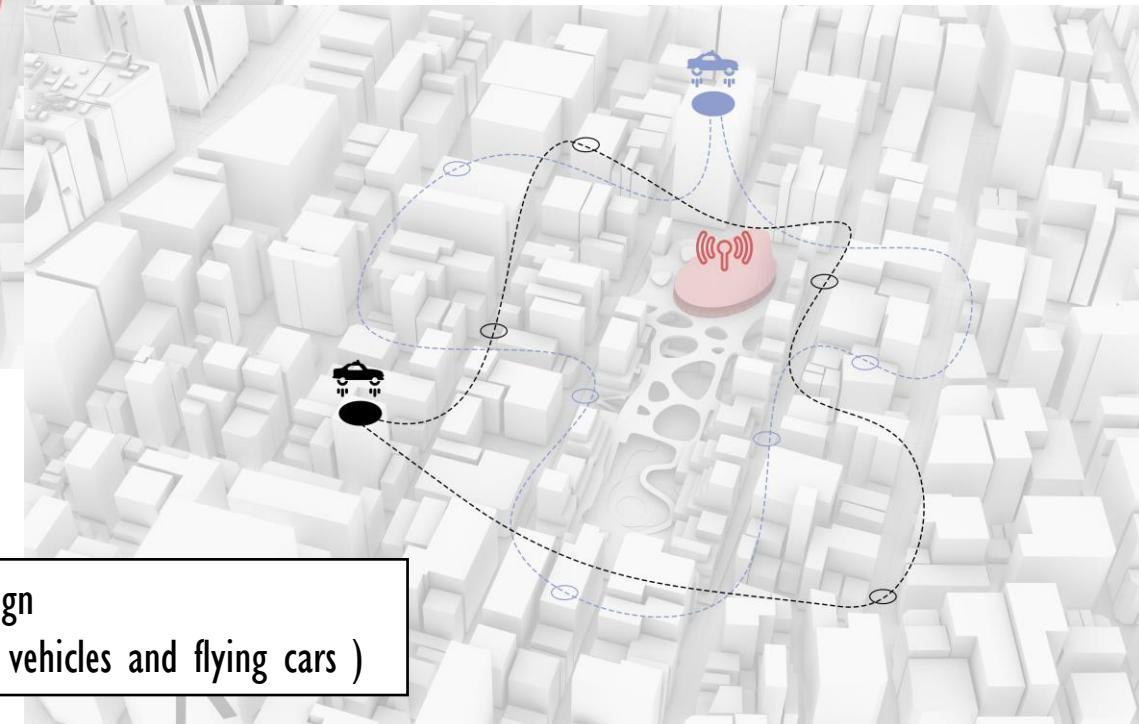
SUMMARY

Changing the ratio of each usage applied to roof top areas



Function of mix-use buildings changing based on demand

Targeting next stage of redevelopment and guide the design



Public transportation route design
(Future may invite autonomous vehicles and flying cars)

A Living Urban District: An Iterative Process

OVERVIEW

ECO- PERFORMANCE

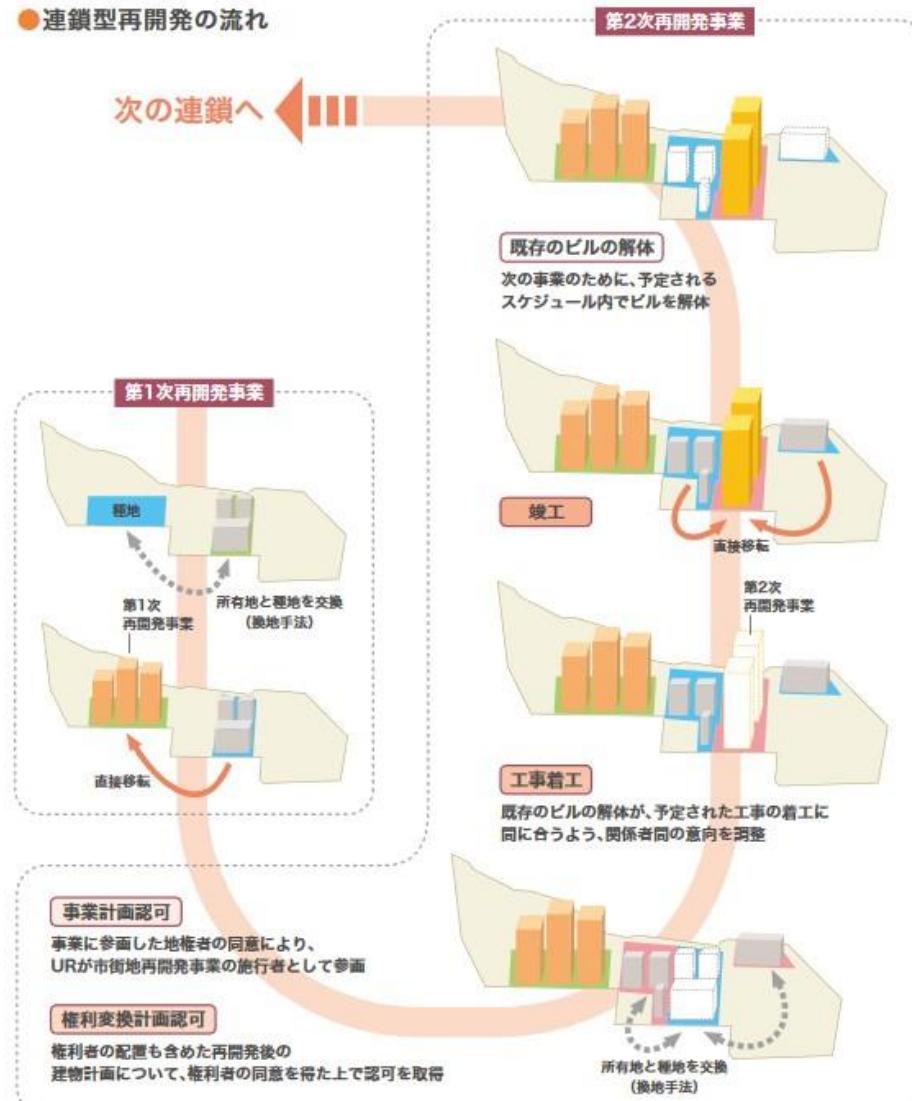
DISTRICT UTILITY

LIVING CENTER

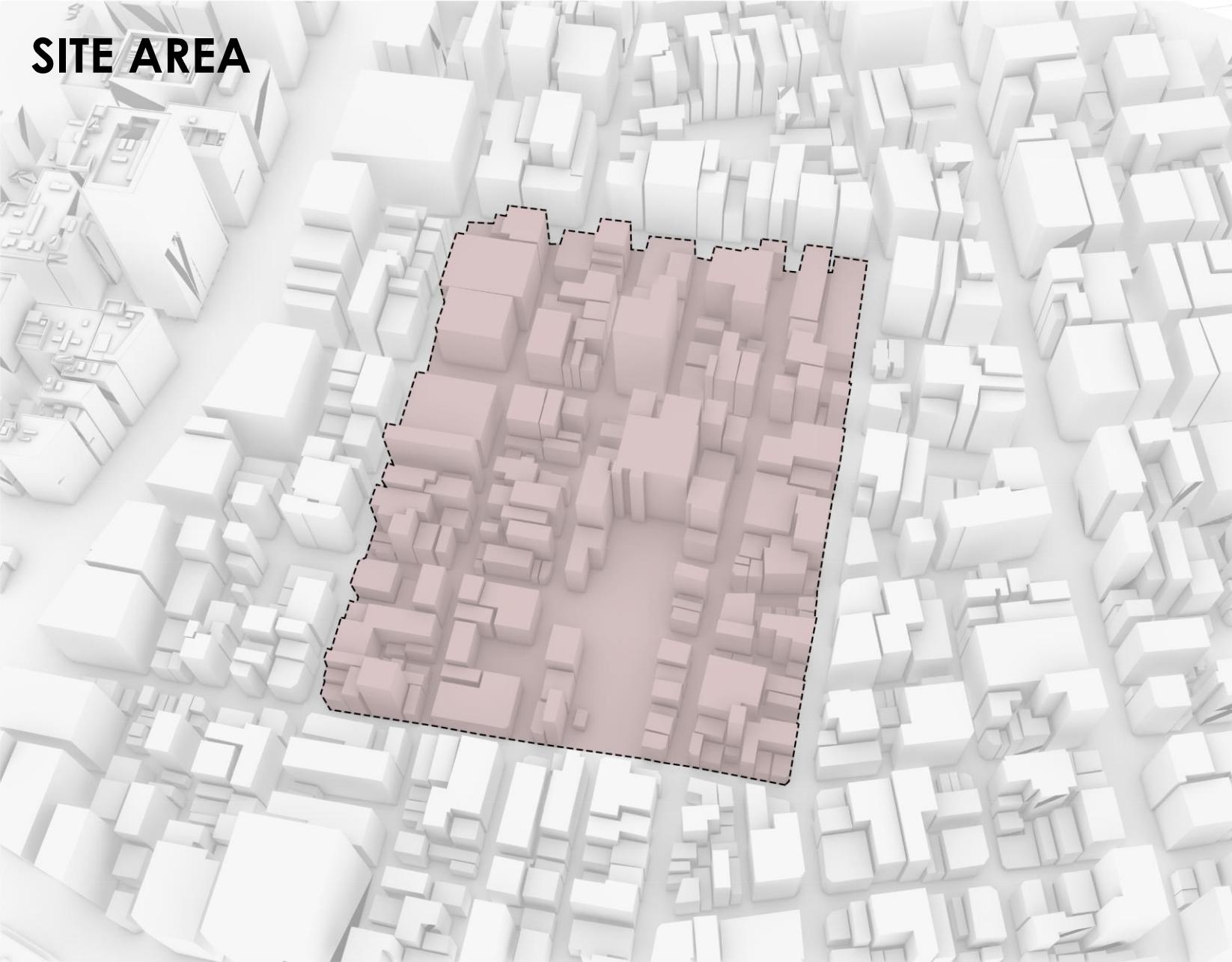
DISTRICT CHARACTER

MECHANISM

SUMMARY



SITE AREA



OVERVIEW

ECO-
PERFORMANCE

DISTRICT
UTILITY

LIVING CENTER

DISTRICT
CHARACTER

MECHANISM

SUMMARY

EXISTING OPEN GROUD AREAS AS PARKINGS (POSSIBLE SPACE FOR RELOCATION HAPPEN)



OVERVIEW

ECO-
PERFORMANCE

DISTRICT
UTILITY

LIVING CENTER

DISTRICT
CHARACTER

MECHANISM

SUMMARY

RELOCATING POPULATION WHEN CONSTRUCTION HAPPENS



OVERVIEW

ECO-
PERFORMANCE

DISTRICT
UTILITY

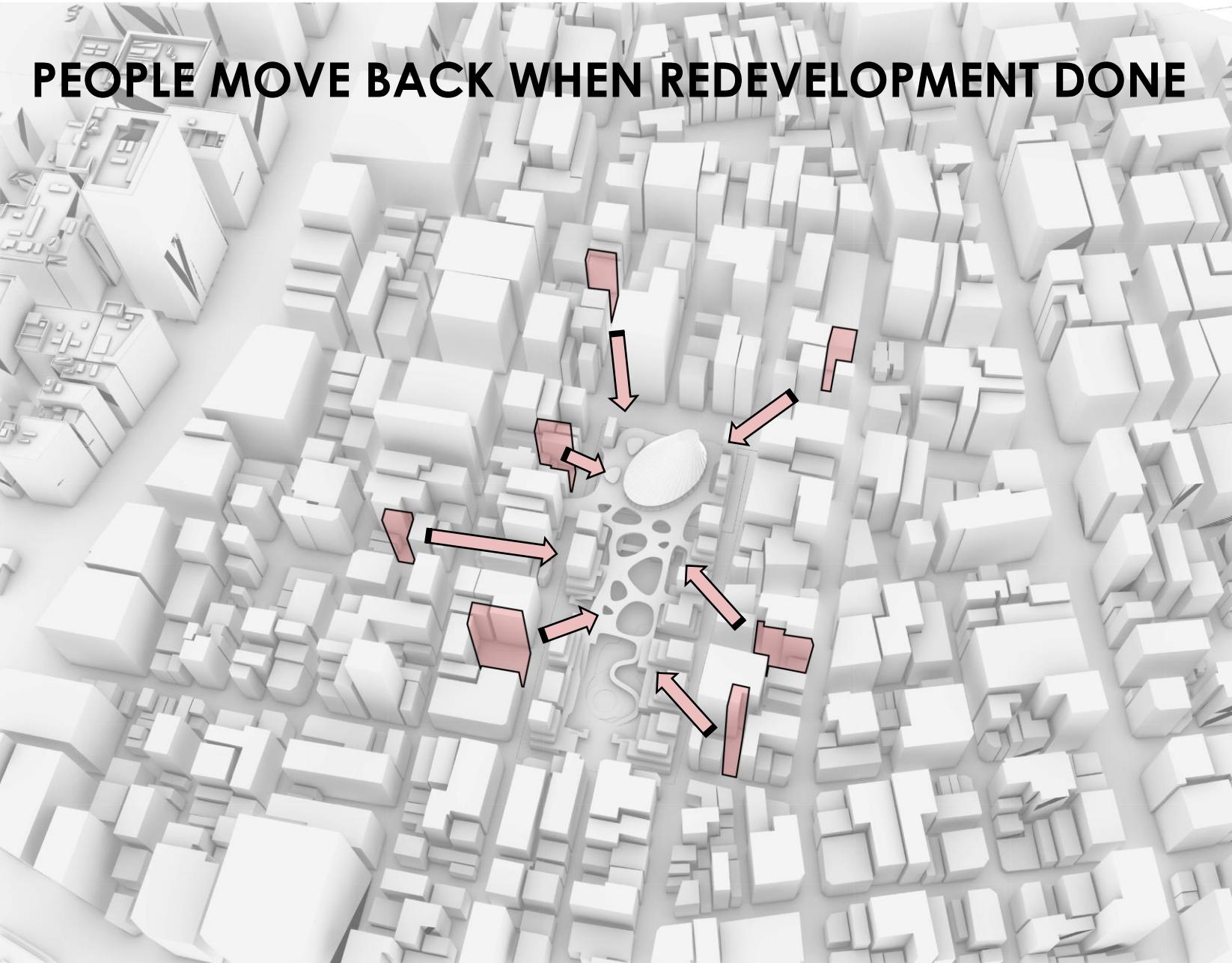
LIVING CENTER

DISTRICT
CHARACTER

MECHANISM

SUMMARY

PEOPLE MOVE BACK WHEN REDEVELOPMENT DONE



OVERVIEW

ECO-
PERFORMANCE

DISTRICT
UTILITY

LIVING CENTER

DISTRICT
CHARACTER

MECHANISM

SUMMARY

RELOCATION HAPPENS AGAIN FOR REDEVELOPMENTS



OVERVIEW

ECO-
PERFORMANCE

DISTRICT
UTILITY

LIVING CENTER

DISTRICT
CHARACTER

MECHANISM

SUMMARY

CONNECTION GROWS FROM CENTER PART



OVERVIEW

ECO-
PERFORMANCE

DISTRICT
UTILITY

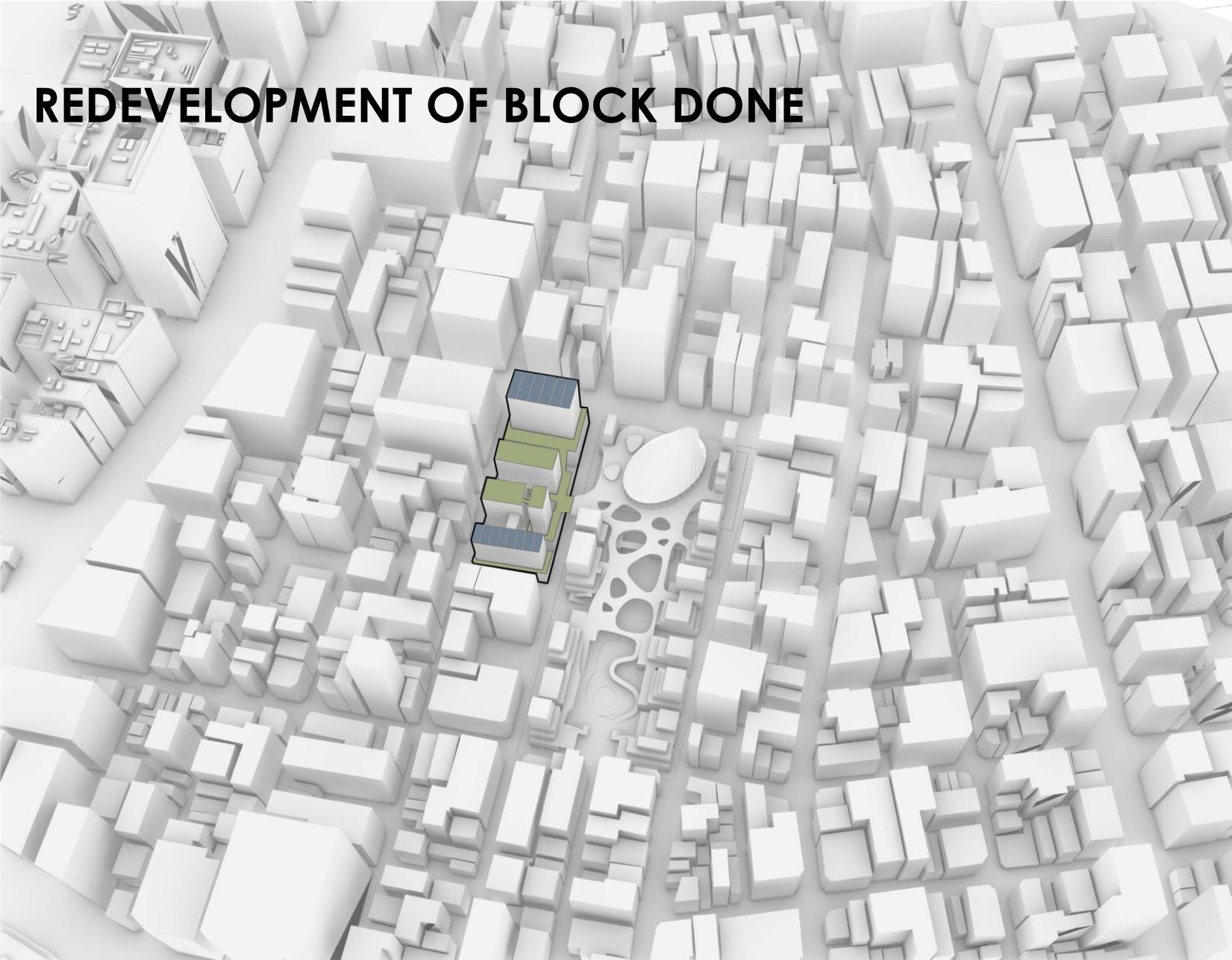
LIVING CENTER

DISTRICT
CHARACTER

MECHANISM

SUMMARY

REDEVELOPMENT OF BLOCK D ONE



OVERVIEW

ECO-
PERFORMANCE

DISTRICT
UTILITY

LIVING CENTER

DISTRICT
CHARACTER

MECHANISM

SUMMARY

REDEVELOPMENT MOVING ON



OVERVIEW

ECO-
PERFORMANCE

DISTRICT
UTILITY

LIVING CENTER

DISTRICT
CHARACTER

MECHANISM

SUMMARY

REDEVELOPED DISTRICT 2



OVERVIEW

ECO-
PERFORMANCE

DISTRICT
UTILITY

LIVING CENTER

DISTRICT
CHARACTER

MECHANISM

SUMMARY

INCREASE IN DISTRICT FAR FROM 2023-2050

OVERVIEW

ECO-
PERFORMANCE

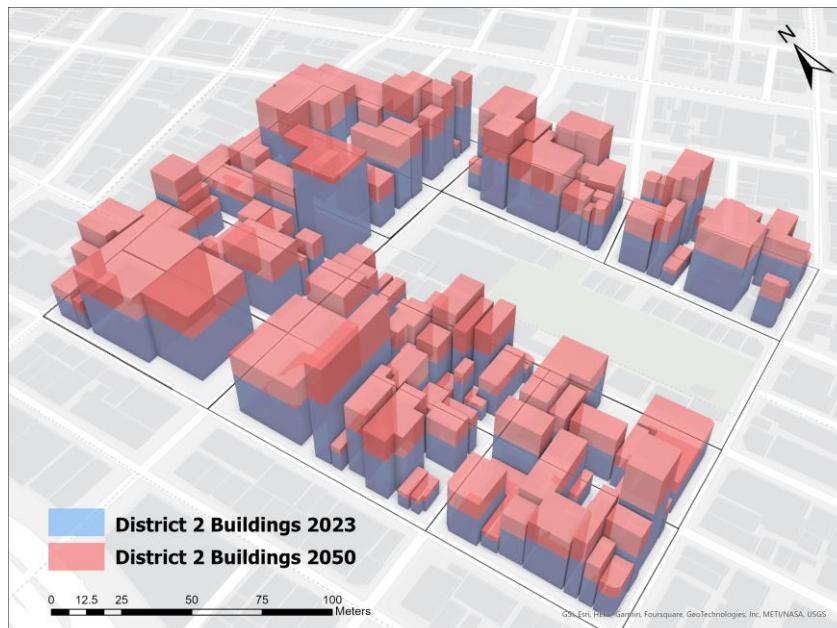
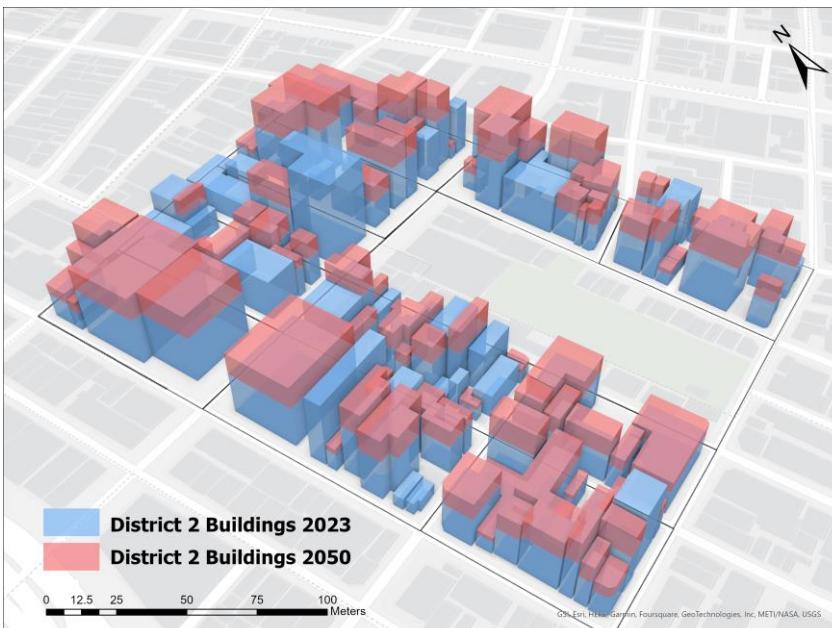
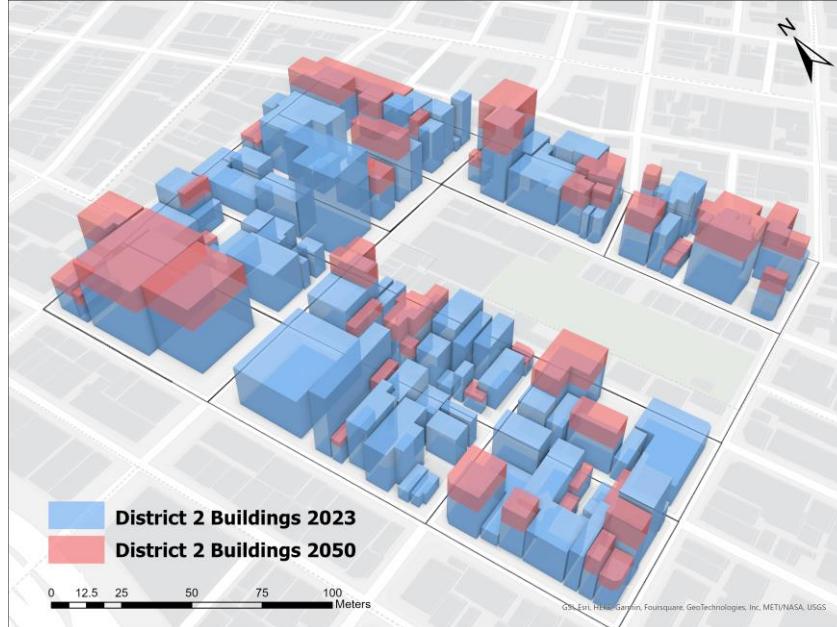
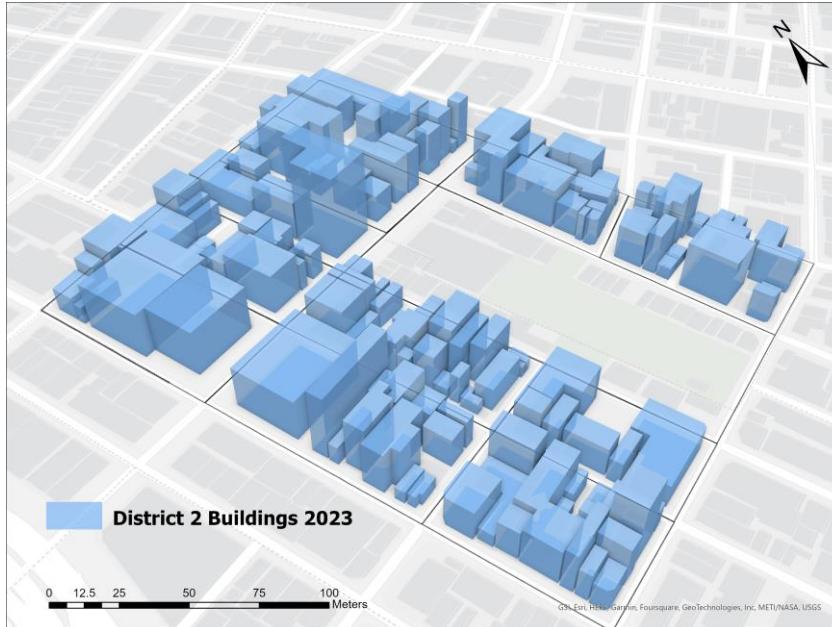
DISTRICT
UTILITY

LIVING CENTER

DISTRICT
CHARACTER

MECHANISM

SUMMARY



District 2 - 2023

Total Floor Area: 161,082

Max Building Height: 52m

Floor Area Ratio: 3.03

District 2 - 2050

Total Floor Area: 258,829

Max Building Height: 60m

Floor Area Ratio: 4.87

DESIGN STRATEGIES + POLICY FRAMEWORK



OVERVIEW

ECO-PERFORMANCE

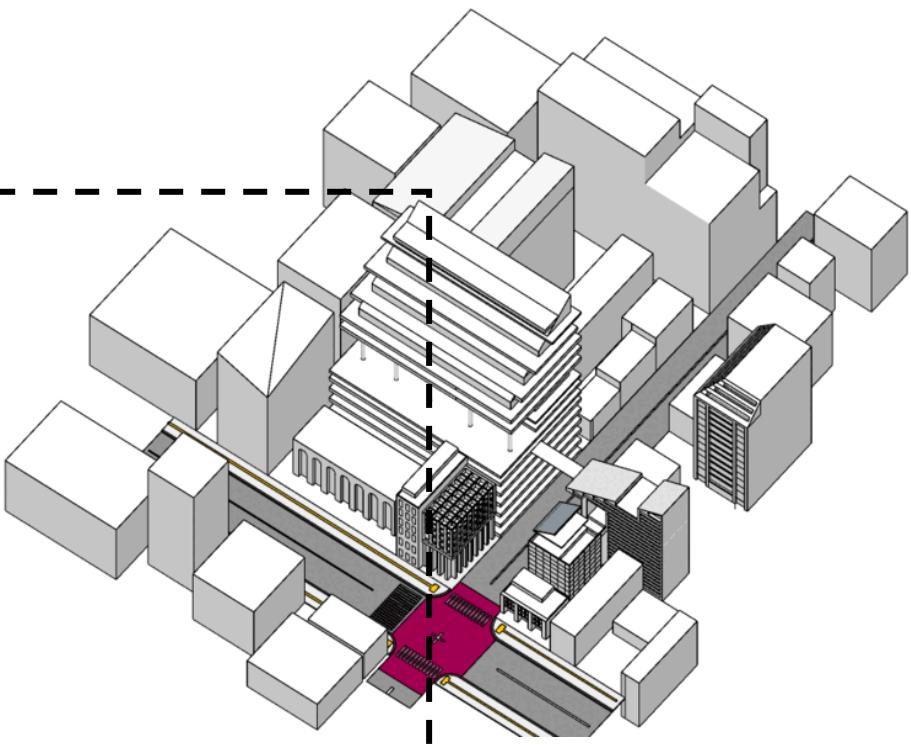
DISTRICT UTILITY

LIVING CENTER

DISTRICT CHARACTER

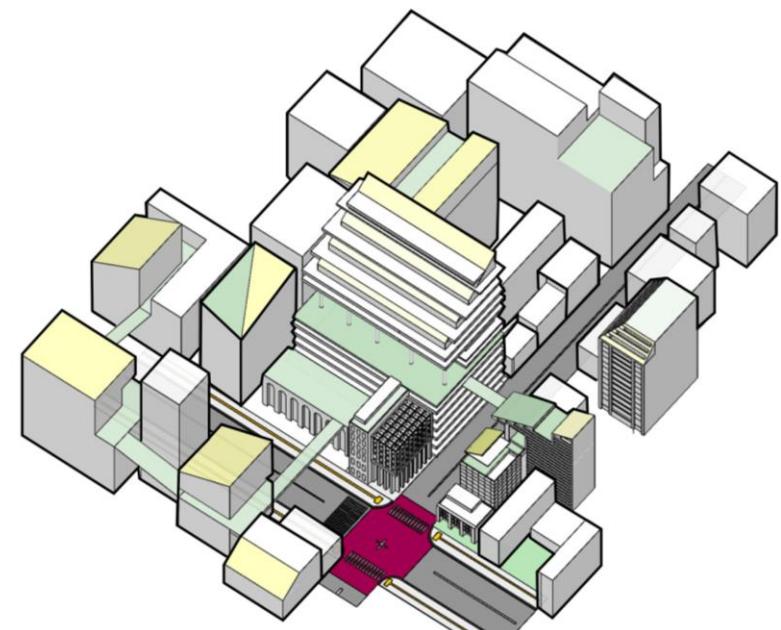
MECHANISM

SUMMARY



INCREMENTAL GROWTH

BALANCING LOW CARBON GROWTH AND NEIGHBORHOOD CREATION



Eco-Performance

OVERVIEW

ECO-
PERFORMANCE

DISTRICT
UTILITY

LIVING CENTER

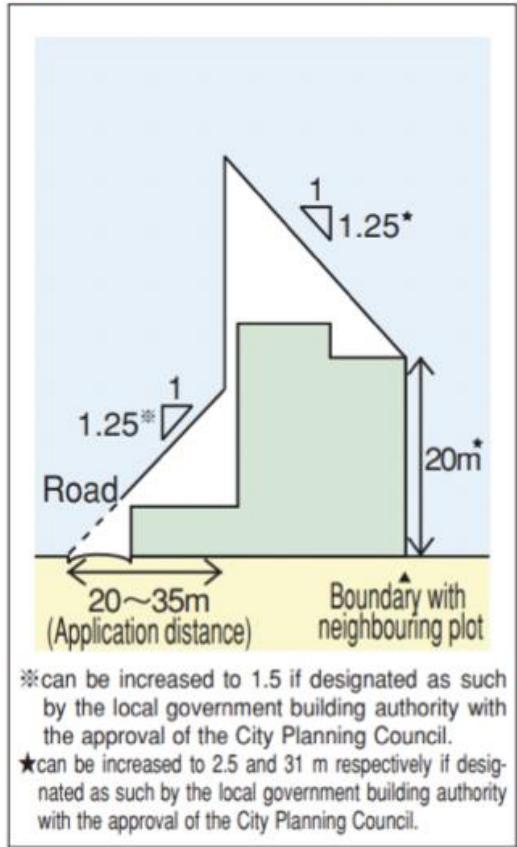
DISTRICT
CHARACTER

MECHANISM

SUMMARY

[Slant Plane Restriction]

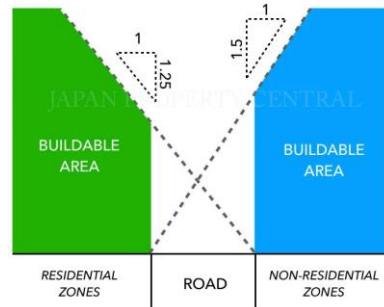
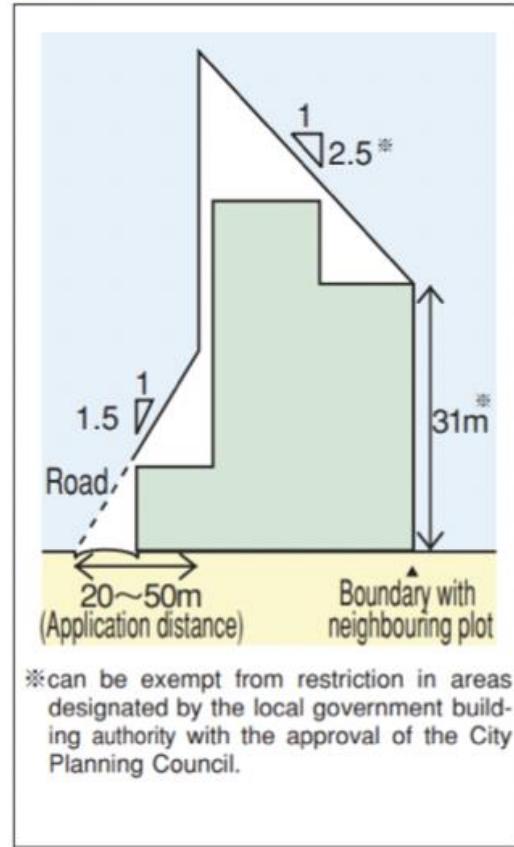
● Residential Land Use Zone



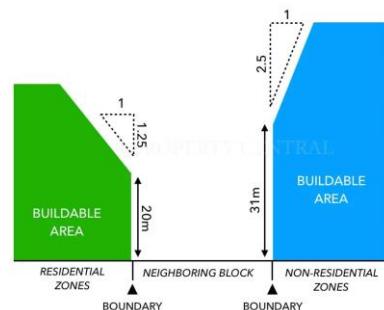
建物形状の制限

RESTRICTION ON BUILDING SHAPE

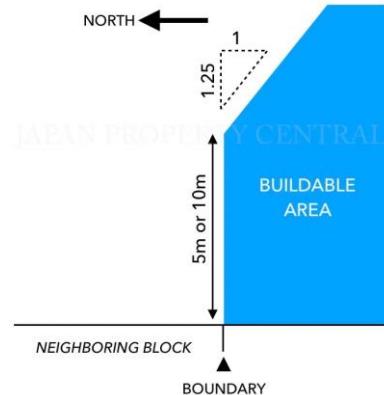
● Other Zones



道路傾斜の制限
ROAD SLANT RESTRICTIONS

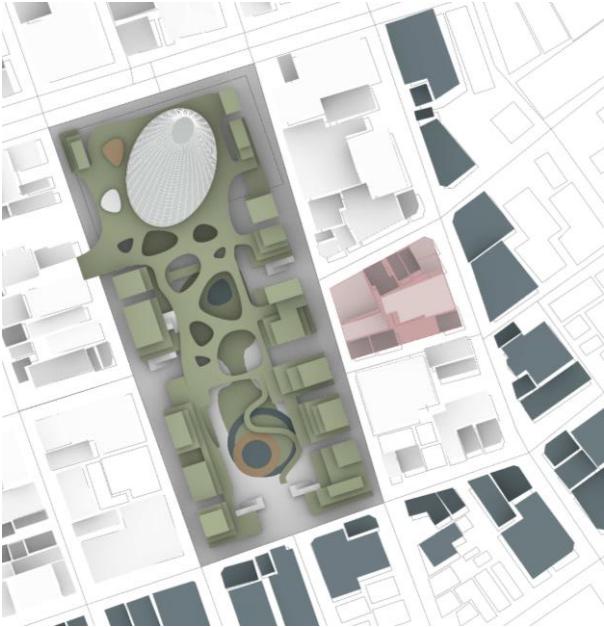


隣接境界の傾斜制限
NEIGHBORING BOUNDARY
SLANT RESTRICTIONS

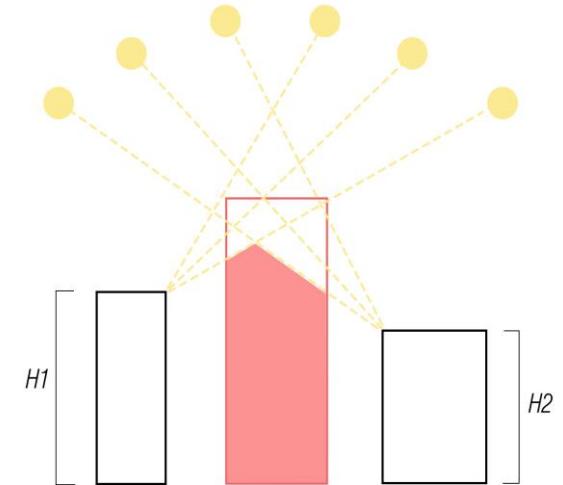
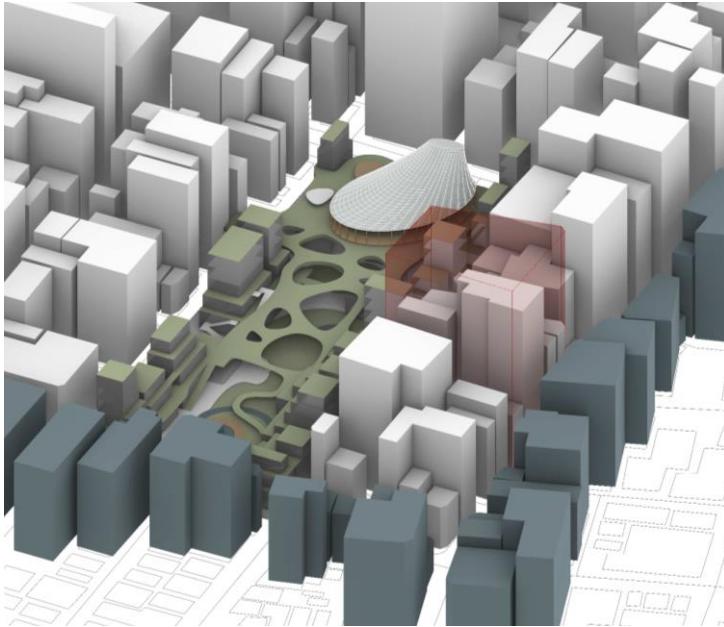


北斜面の制限事項
NORTH SLANT RESTRICTIONS

SOLAR ENVELOPE (SUNLIGHT ALLOWANCES) 太陽の箱



再開発領域
REDEVELOPMENT AREA



太陽の箱
SOLAR ENVELOPE

OVERVIEW

ECO-
PERFORMANCE

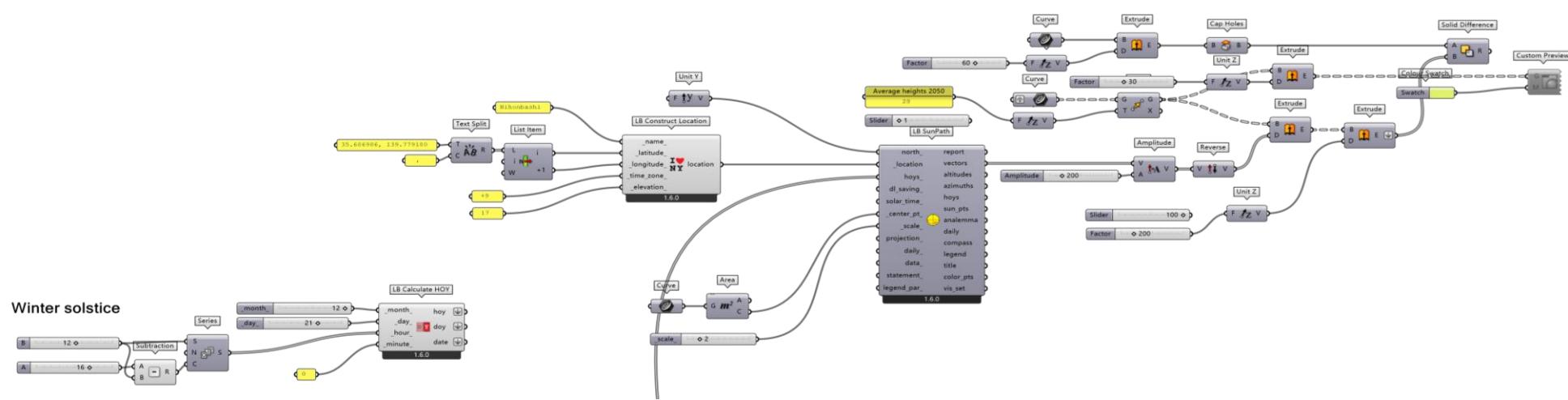
DISTRICT
UTILITY

LIVING CENTER

DISTRICT
CHARACTER

MECHANISM

SUMMARY



SOLAR ENVELOPE 太陽の箱

OVERVIEW

ECO-
PERFORMANCE

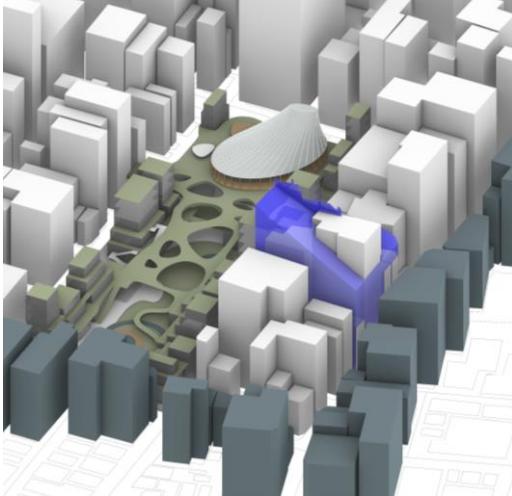
DISTRICT
UTILITY

LIVING CENTER

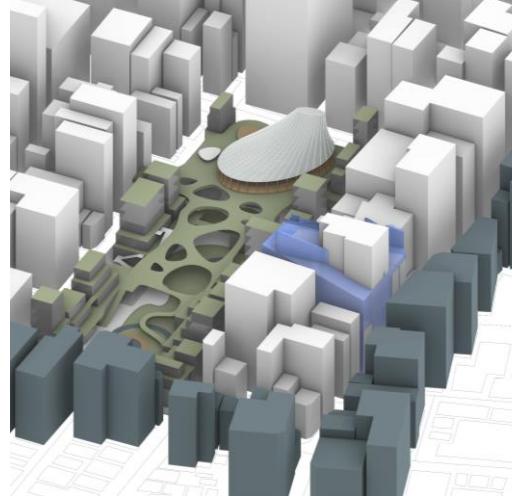
DISTRICT
CHARACTER

MECHANISM

SUMMARY



秋
AUTUMN



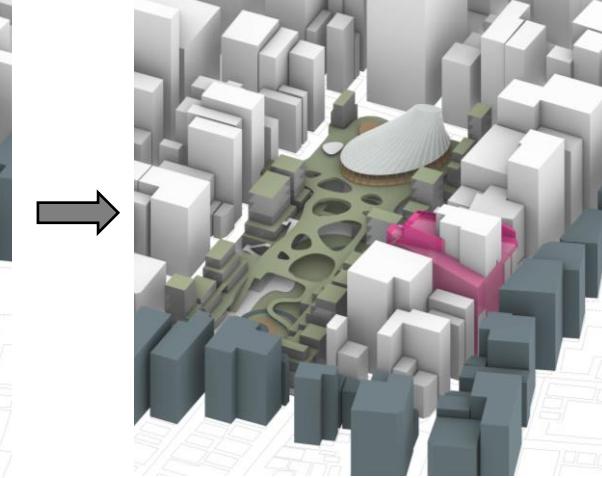
冬
WINTER



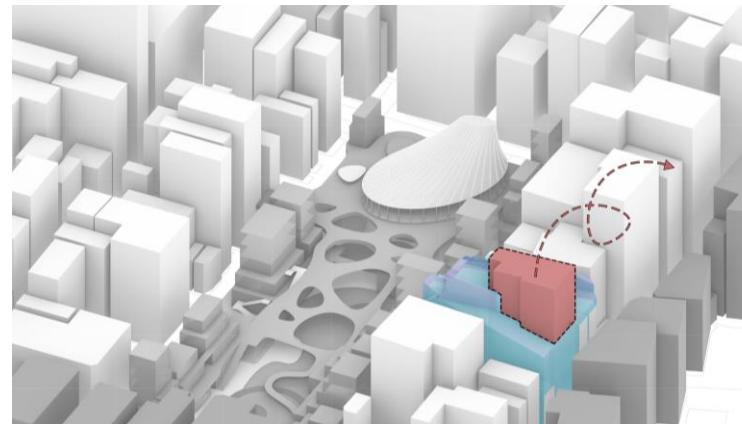
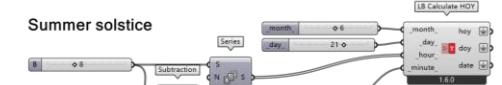
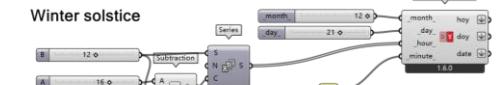
春
SPRING



夏
SUMMER



年間
ANNUAL



OVERVIEW

ECO-
PERFORMANCE

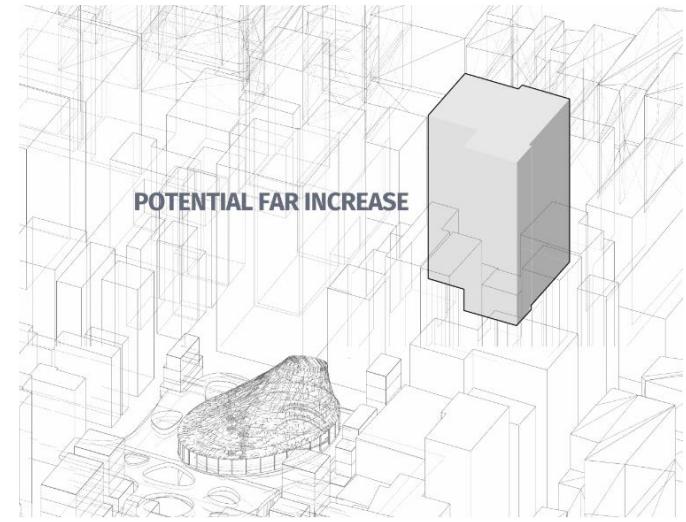
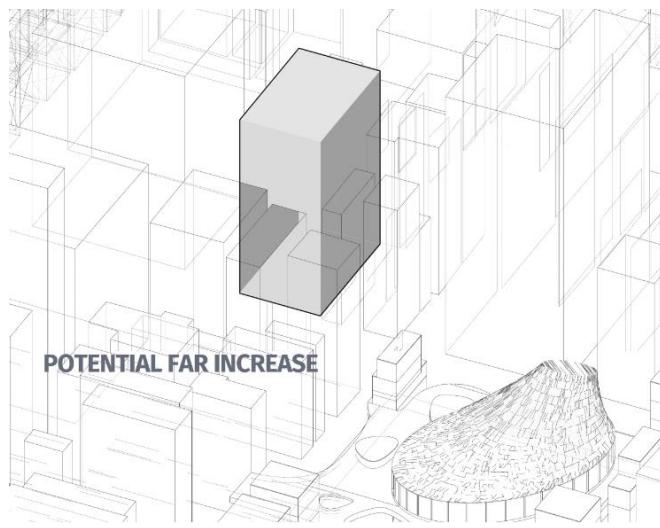
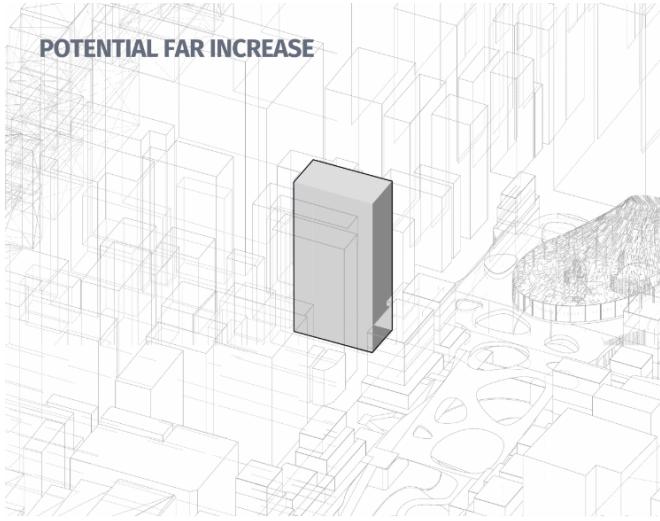
DISTRICT
UTILITY

LIVING CENTER

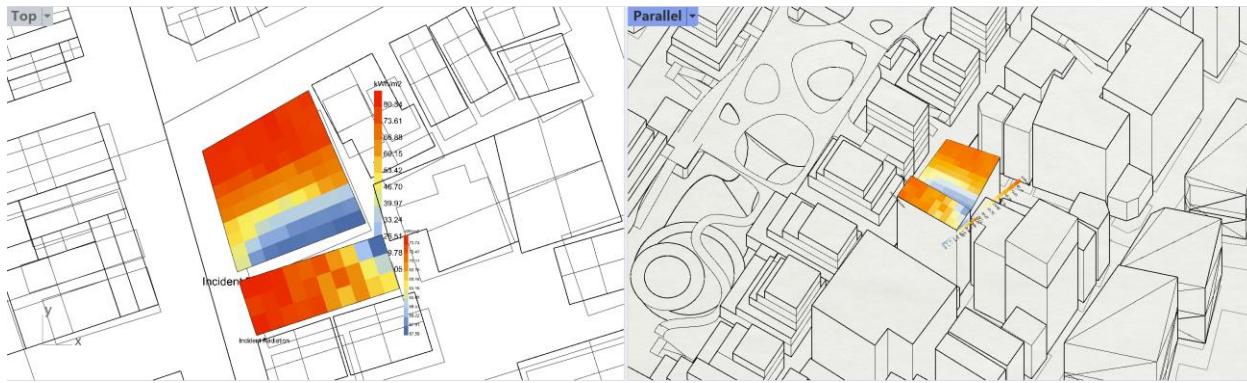
DISTRICT
CHARACTER

MECHANISM

SUMMARY



Solar Radiation



OVERVIEW

ECO-
PERFORMANCE

DISTRICT
UTILITY

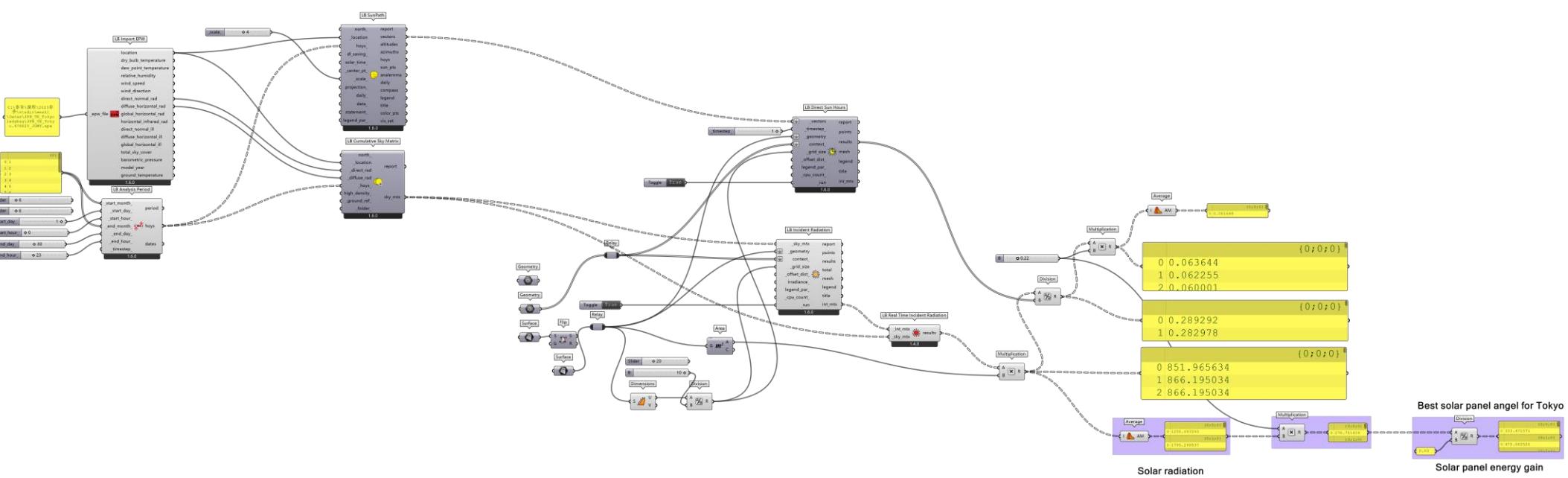
LIVING CENTER

DISTRICT
CHARACTER

MECHANISM

SUMMARY

Solar Energy Construction by Solar Panels



Assuming the efficiency of solar panels is 23%, and the angle of all solar panels is 36 degrees, which is the best placement angle in Tokyo.

OVERVIEW

ECO- PERFORMANCE

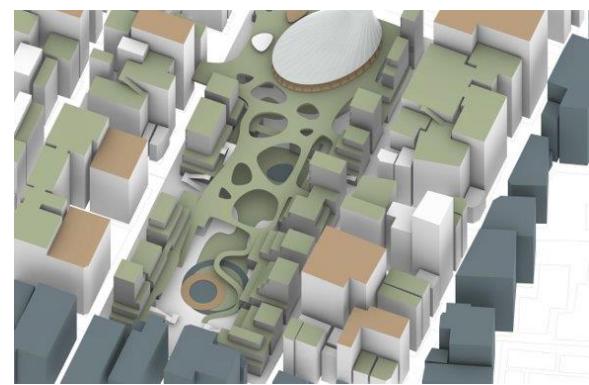
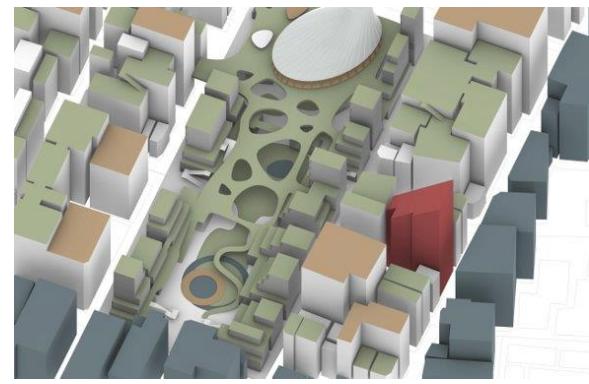
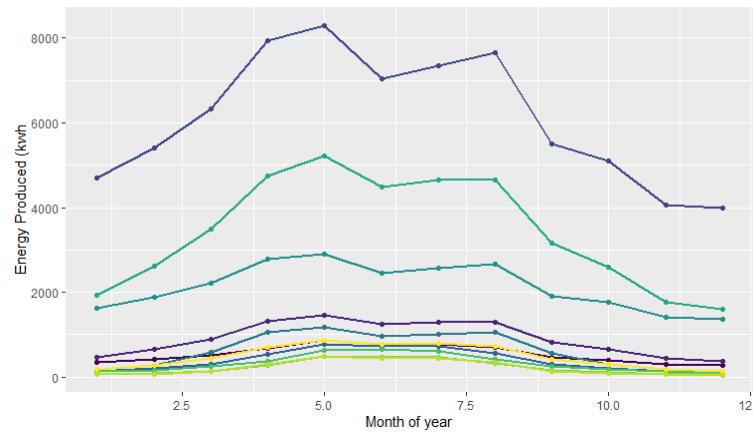
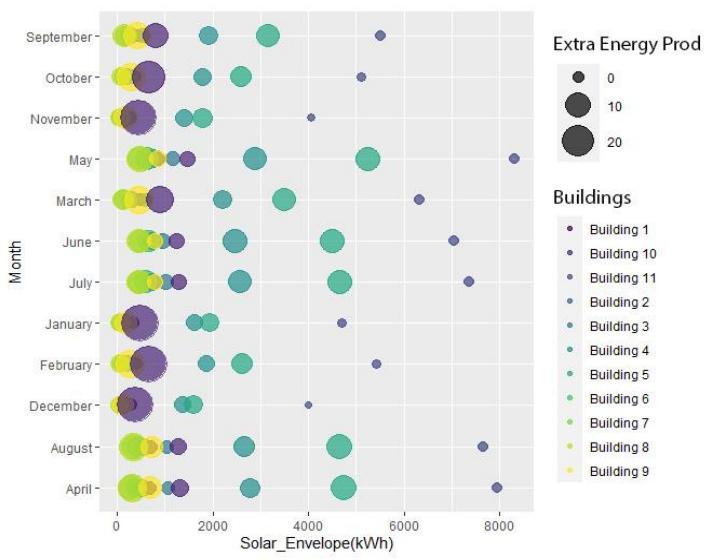
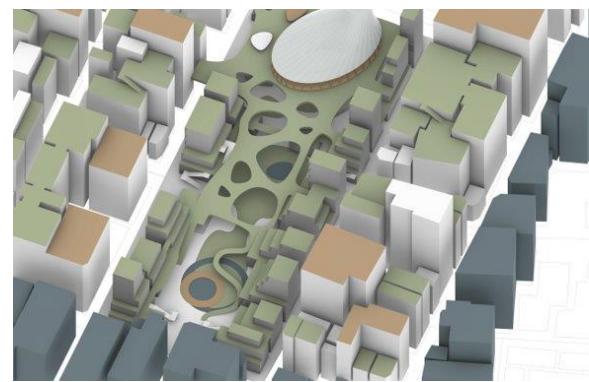
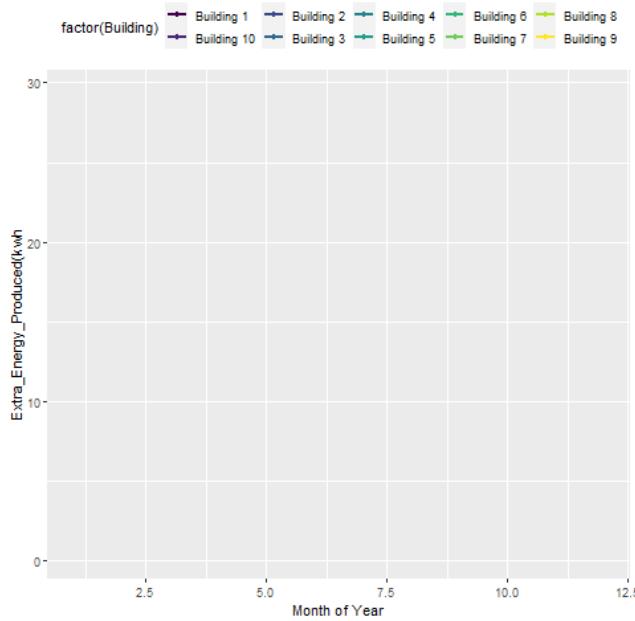
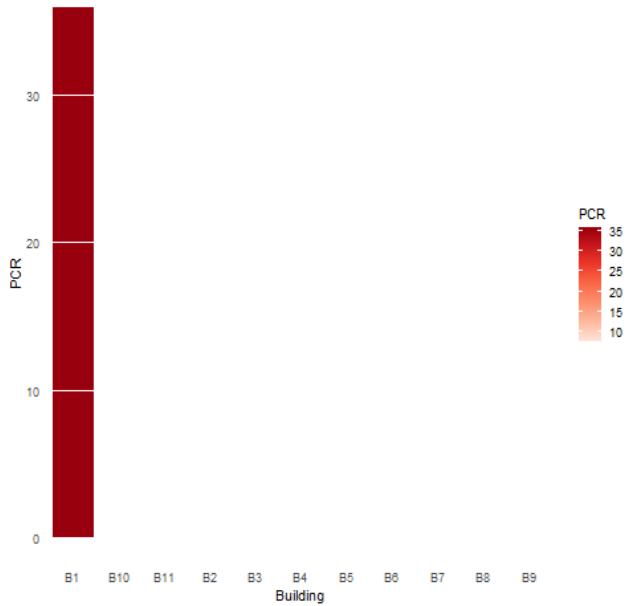
DISTRICT UTILITY

LIVING CENTER

DISTRICT CHARACTER

MECHANISM

SUMMARY



District Utility: Rooftop Balance

OVERVIEW

ECO-PERFORMANCE

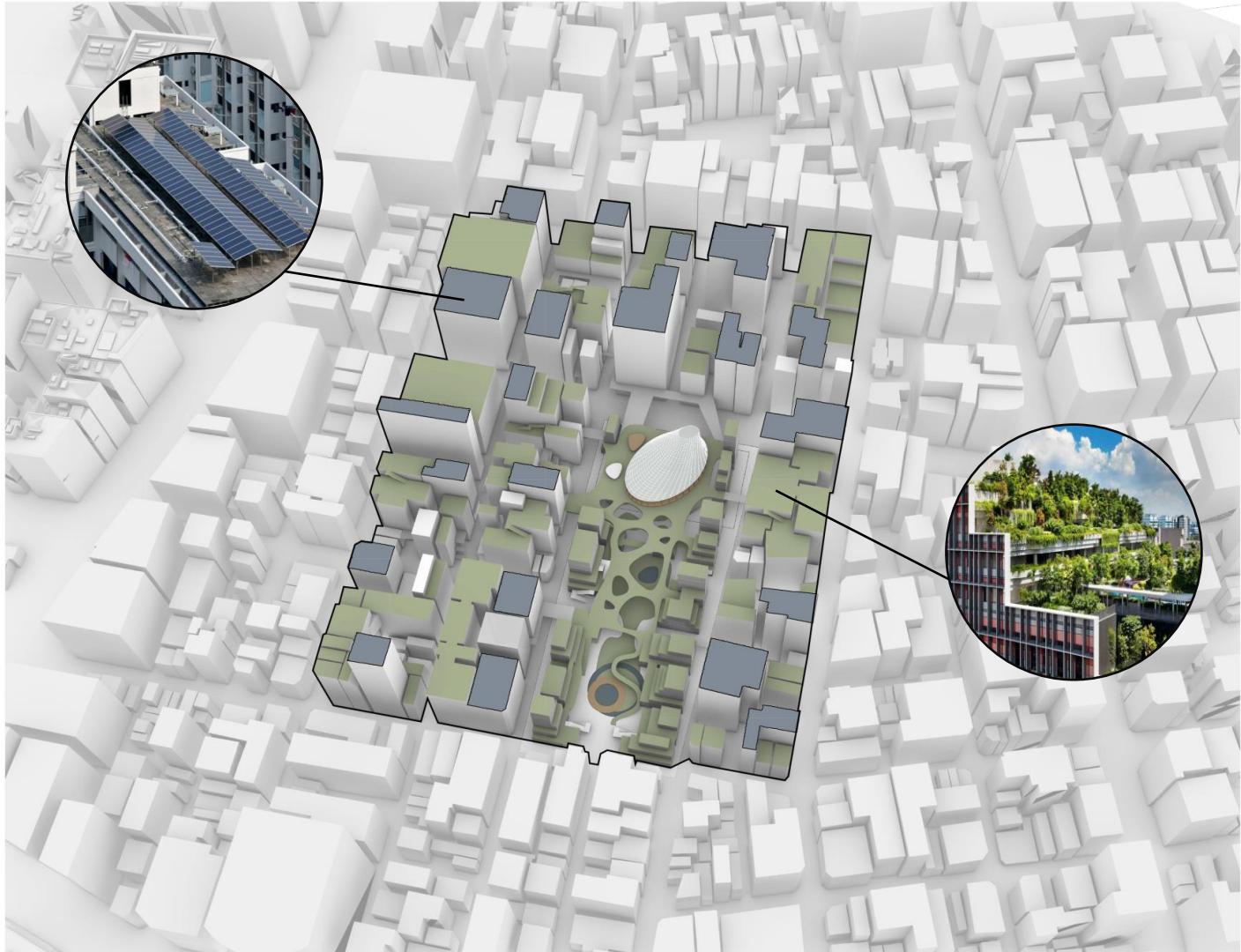
DISTRICT UTILITY

LIVING CENTER

DISTRICT CHARACTER

MECHANISM SUMMARY

- Total Roof Area: $25,360 m^2$**
- Average Solar Panel Size: 1.6m
 - Average Solar Panel Efficiency: 20%
 - Average Daylight Hours (Tokyo in the Summer): 8.5 Hours
 - Potential Energy Output Per Day (Ideal conditions with all rooftop area utilized): **$68,979 \text{ kwh/ } m^2$**
 - Green roofs provide their own carbon footprint reduction through individual plant sequestration and building energy savings



Central Park: A Living Center

OVERVIEW

ECO-
PERFORMANCE

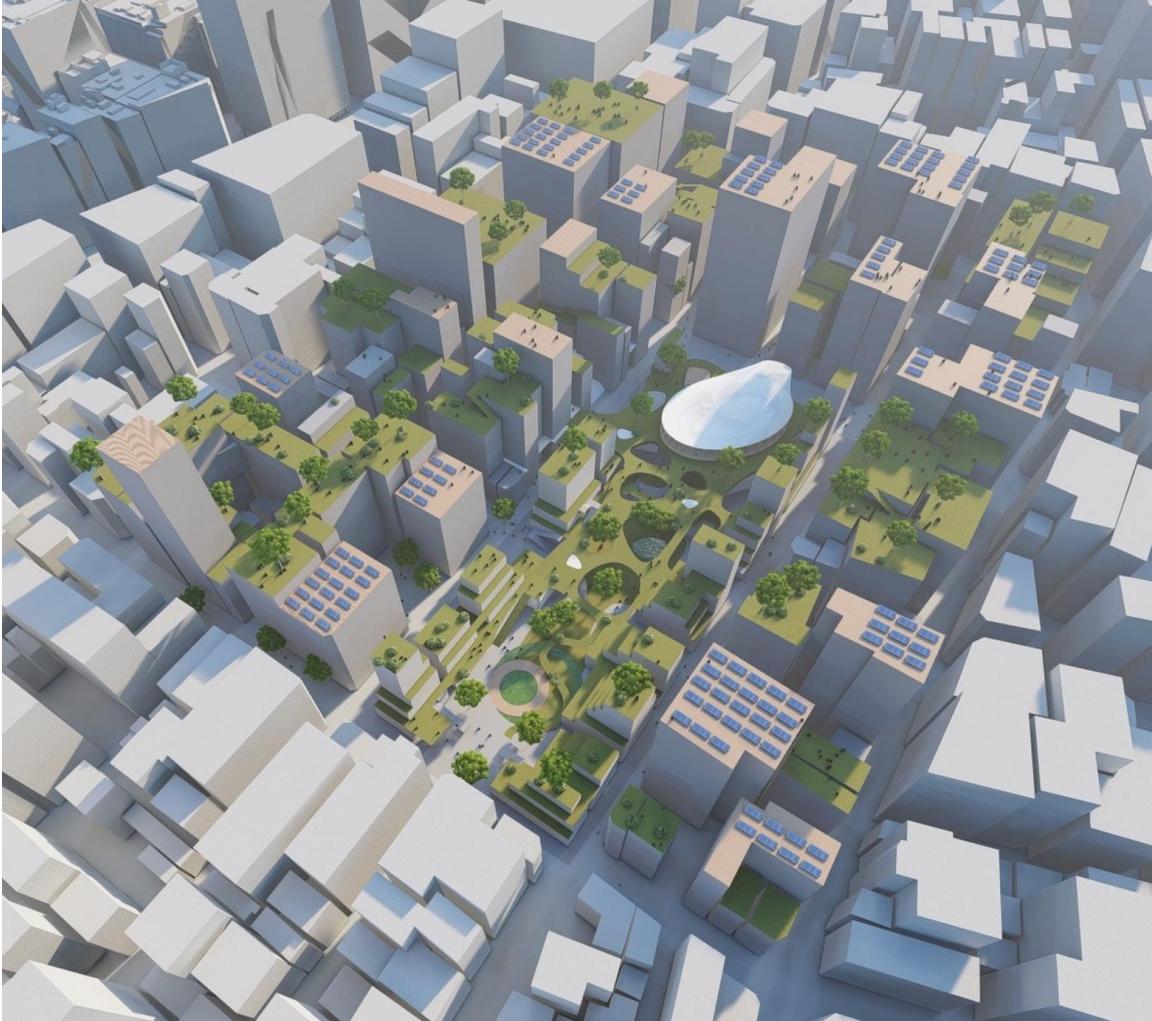
DISTRICT
UTILITY

LIVING CENTER

DISTRICT
CHARACTER

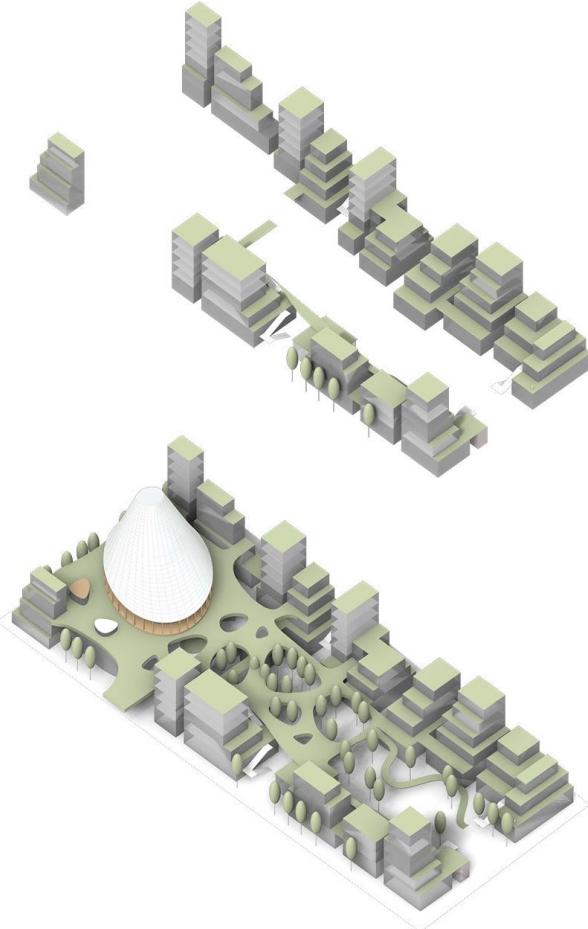
MECHANISM

SUMMARY



[Building Regeneration –
Sustainability Driven Design
& Accessible Alleyways](#)

[Total Central Park Design](#)



Central Park: A Living Center

OVERVIEW

ECO-
PERFORMANCE

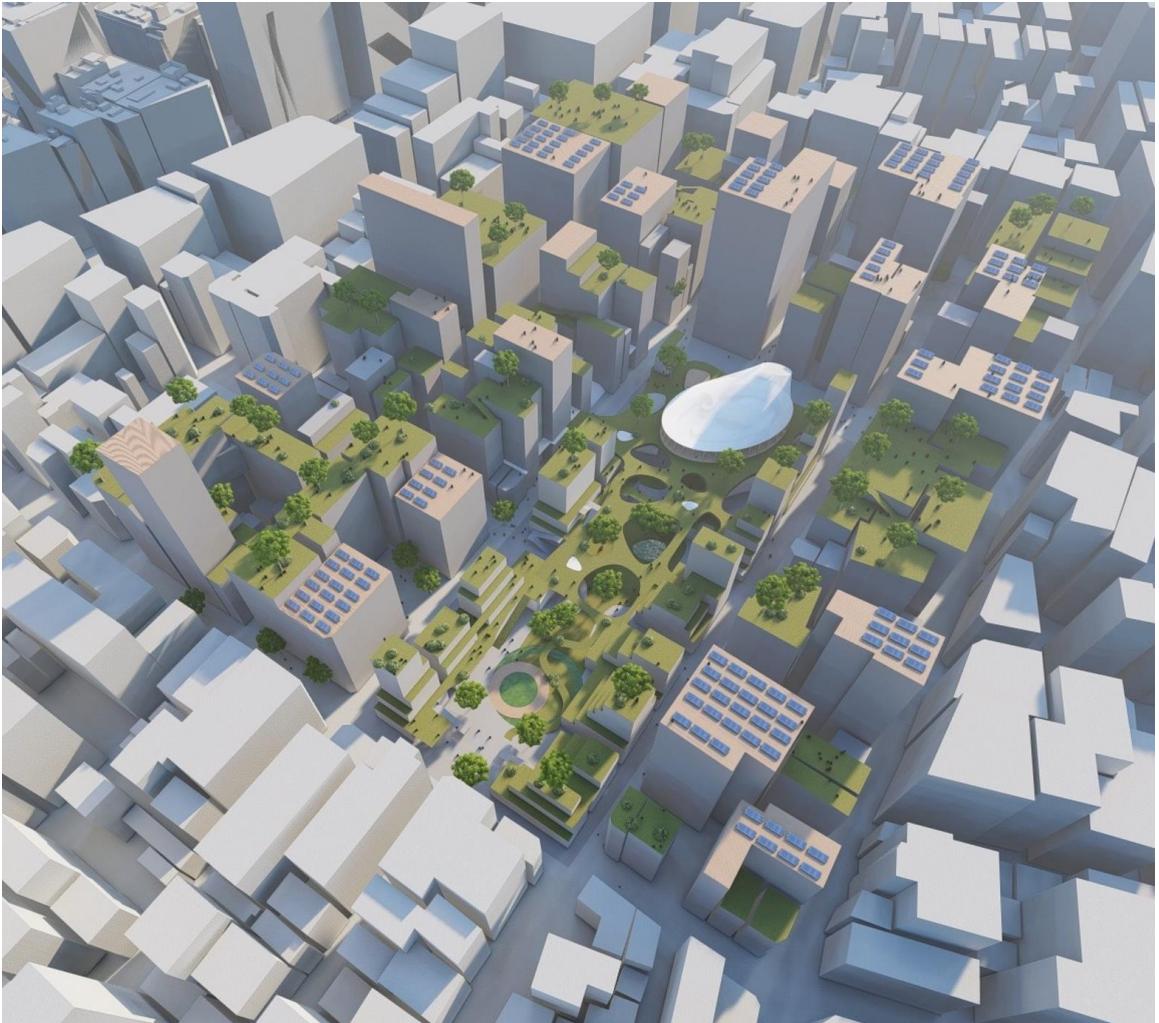
DISTRICT
UTILITY

LIVING CENTER

DISTRICT
CHARACTER

MECHANISM

SUMMARY

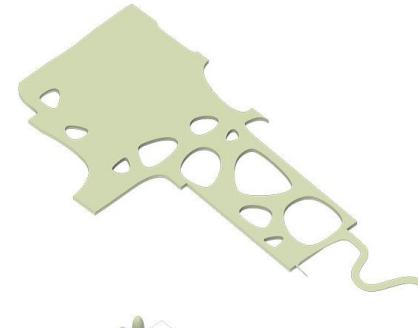


Nihonbashi Park Pavilion

- Business Conference Hall
- Flexible Meeting Spaces
- Engawa Outdoor Porch

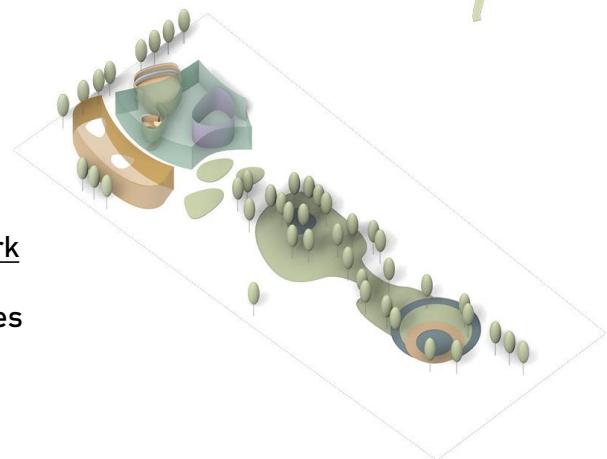


Second Level Pedestrian Park



Street-Level Pedestrian Park

- Data Center
- Business Conference Spaces
- Kindergarten



Central Park: Pavilion Design

OVERVIEW

ECO-
PERFORMANCE

DISTRICT
UTILITY

LIVING CENTER

DISTRICT
CHARACTER

MECHANISM

SUMMARY



Central Park: Pavilion Materials

OVERVIEW

ECO-
PERFORMANCE

DISTRICT
UTILITY

LIVING CENTER

DISTRICT
CHARACTER

MECHANISM

SUMMARY



ETFE Plastic Derivative Membrane
Pavilion Roof

CLT Timber Frame
Engawa Porch

Central Park: Atmosphere

OVERVIEW

ECO-
PERFORMANCE

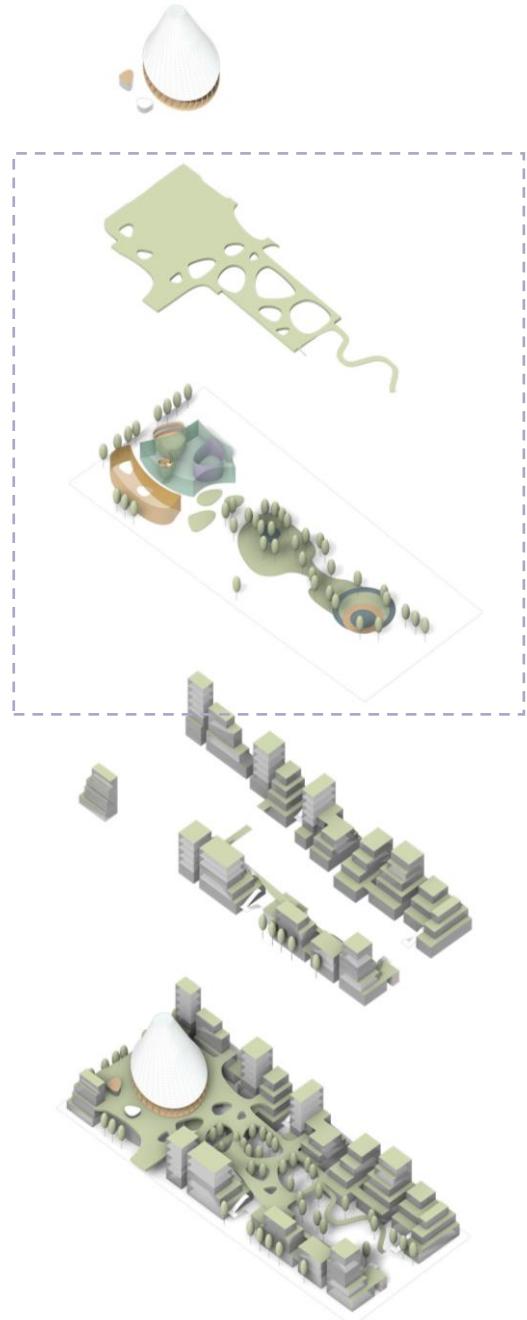
DISTRICT
UTILITY

LIVING CENTER

DISTRICT
CHARACTER

MECHANISM

SUMMARY



Central Park: Defining the Streetscape



OVERVIEW

ECO-
PERFORMANCE

DISTRICT
UTILITY

LIVING CENTER

DISTRICT
CHARACTER

MECHANISM

SUMMARY



DISTRICT 2
EXISTING



DISTRICT 2
PROPOSED

Nihonbashi: District Character

OVERVIEW

ECO-
PERFORMANCE

DISTRICT
UTILITY

LIVING CENTER

DISTRICT
CHARACTER

MECHANISM

SUMMARY



OVERVIEW

ECO-
PERFORMANCE

DISTRICT
UTILITY

LIVING CENTER

DISTRICT
CHARACTER

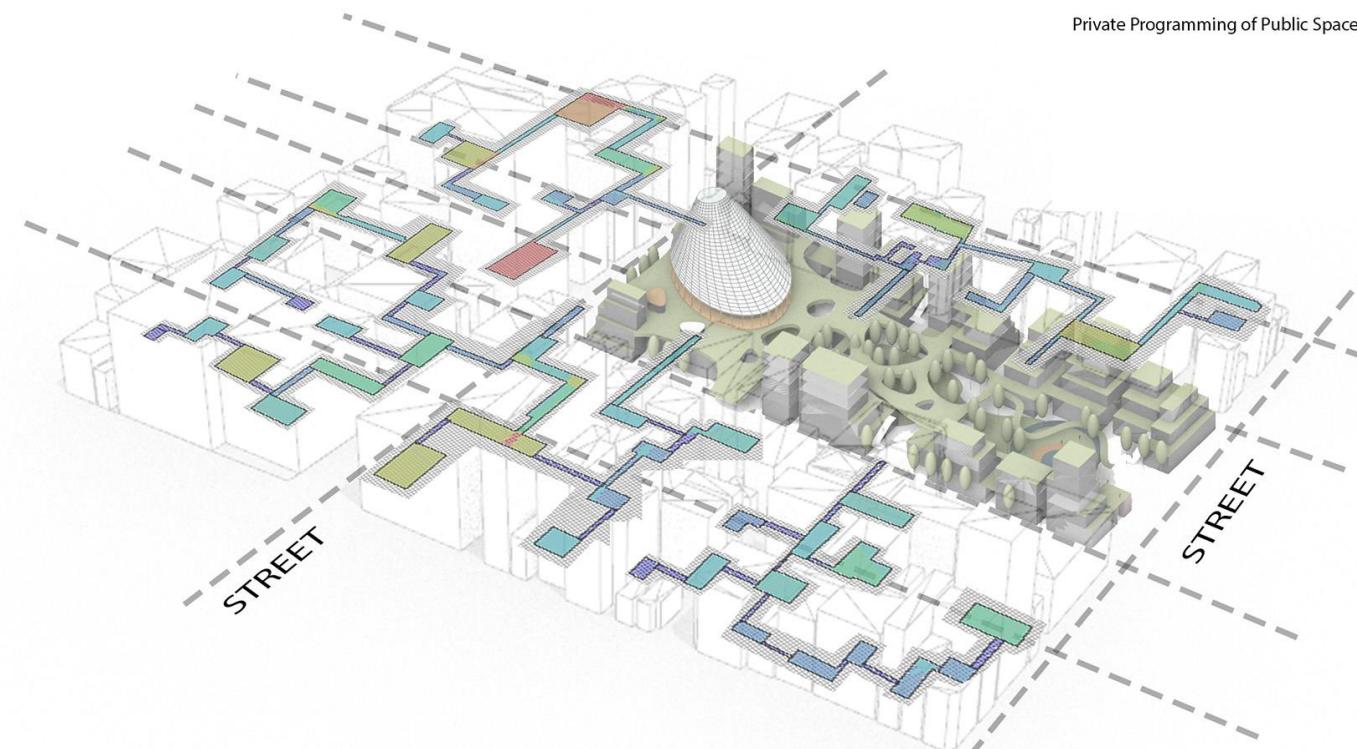
MECHANISM

SUMMARY

このネットワークでは、通りのフロンテージが 2800 メートルから 4000 メートルに増加し、各建物内での小売の機会が増えています。
STREET FRONTAGE INCREASES FROM 2800 TO 4000 METERS IN THIS NETWORK INCREASING OPPORTUNITIES FOR RETAIL WITHIN EACH BUILDING.

地区が密集するにつれて、公共スペースの提供を増やすには、マルチレベルのネットワークの作成が必要です。 SPACE SYNTAX ANALYSIS は、地区ネットワークの各部分の最適な用途を特定するために使用できます。

THE CREATION OF MULTI-LEVEL NETWORKS IS NECESSARY TO INCREASE PUBLIC SPACE PROVISION AS THE DISTRICT DENSIFIES. SPACE SYNTAX ANALYSIS CAN BE USED TO IDENTIFY BEST USES FOR EACH PART OF THE DISTRICT NETWORK.



Low Visibility
Low Connectivity

Private Access
Private Volume
Low Occupancy

High Visibility
Low Connectivity

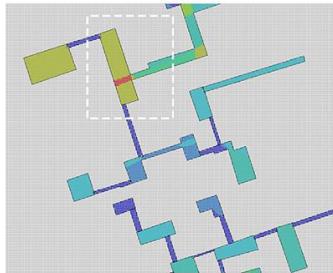
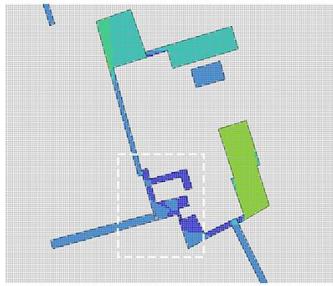
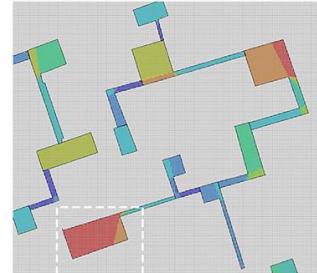
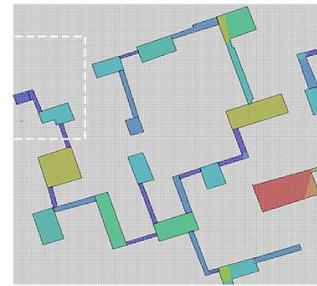
Private Access
High Occupancy
Public Volume

Low Visibility
High Connectivity

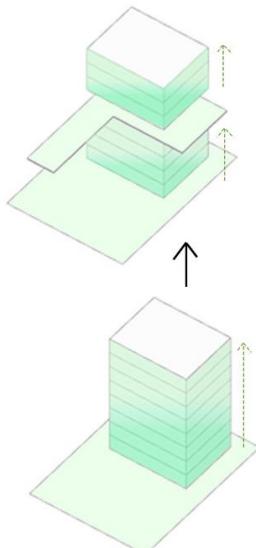
Public Access
Private Volume
Low Occupancy

High Visibility
High Connectivity

Public Access
Public Volume
High Occupancy



Private Programming of Public Spaces



公共レベルへのアクセスが増加
ACCESS TO PUBLIC LEVEL INCREASES.

District Character: Interstitial Space

OVERVIEW

ECO-
PERFORMANCE

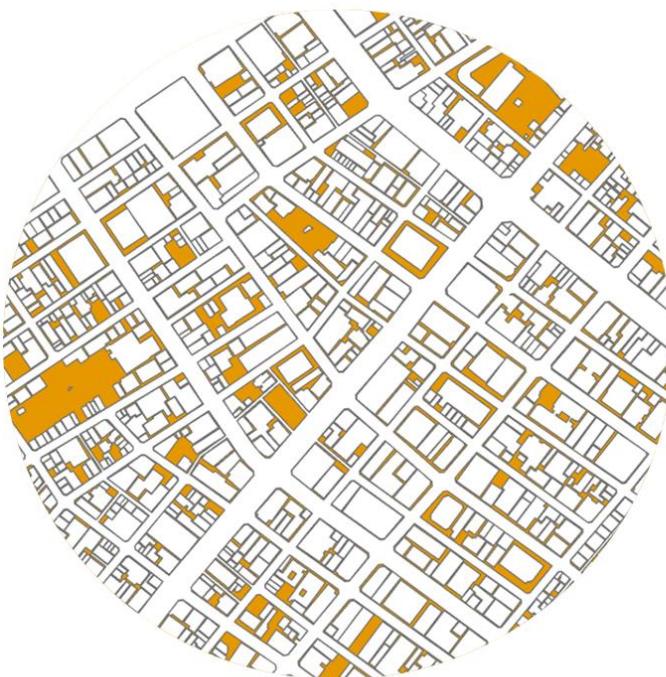
DISTRICT
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ストリートとは異なり、イン特斯ティシャル スペースには研究されたヒエラルキーがありません。 SPACE SYNTAX METHOD により、これらのスペースをさらに使用するための新しい定義を作成できます。

UNLIKE STREETS, INTERSTITIAL SPACES HAVE NO RESEARCHED HIERARCHY. THE SPACE SYNTAX METHOD ALLOWS US TO CREATE A NEW DEFINITION FOR THESE SPACES FOR FURTHER USE.

OVERVIEW

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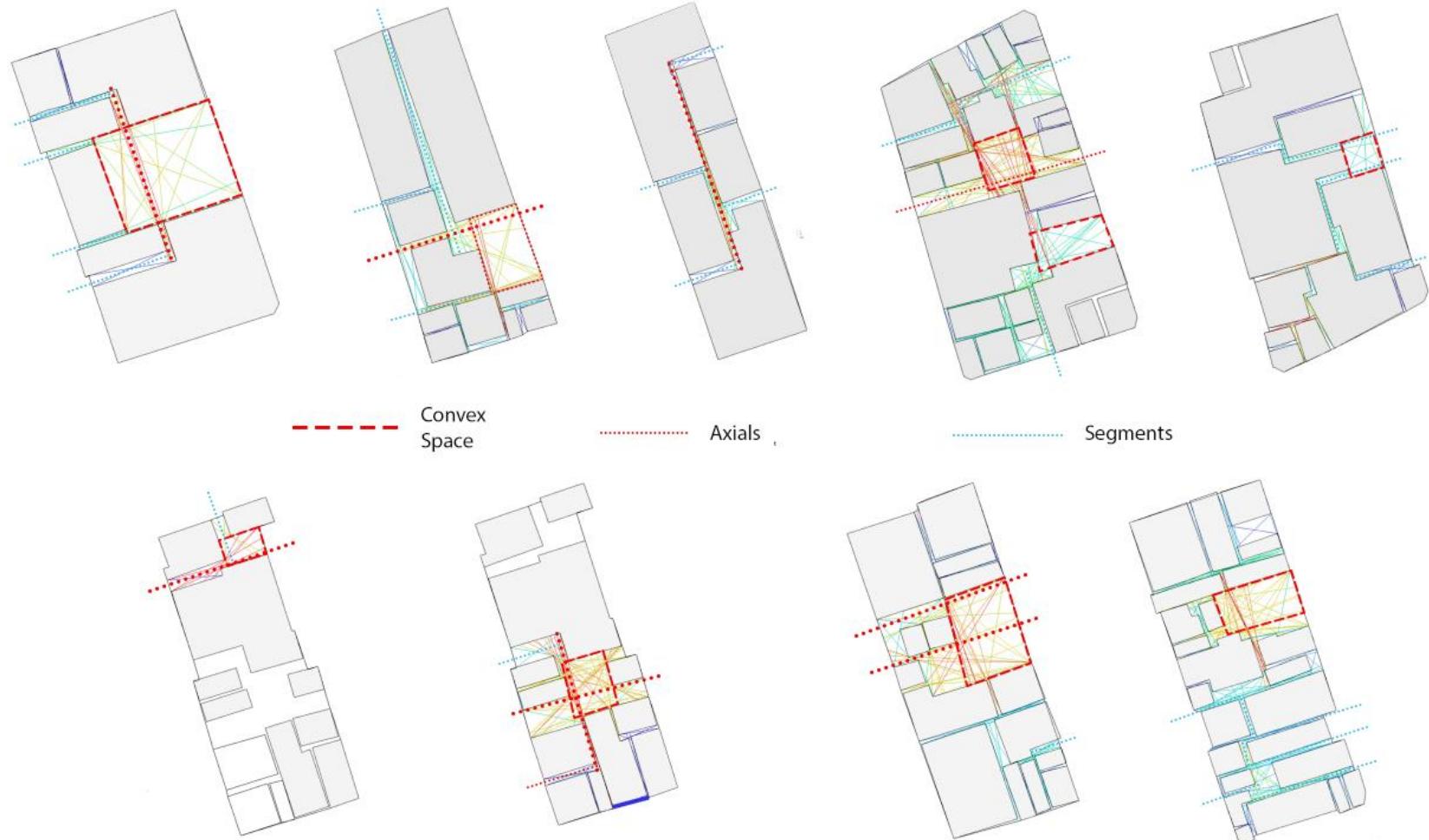
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小さなイン特斯ティシャル スペースは、グリーン スペース、小規模な小売店、小規模なサービスをアーバン ファブリックに組み込む機会を提供します。

SMALL INTERSTITIAL SPACES PROVIDE THE OPPORTUNITY TO INCORPORATE GREEN SPACE AND SMALL-SCALE RETAIL AND MINOR SERVICES INTO THE URBAN FABRIC.

OVERVIEW

ECO-
PERFORMANCE

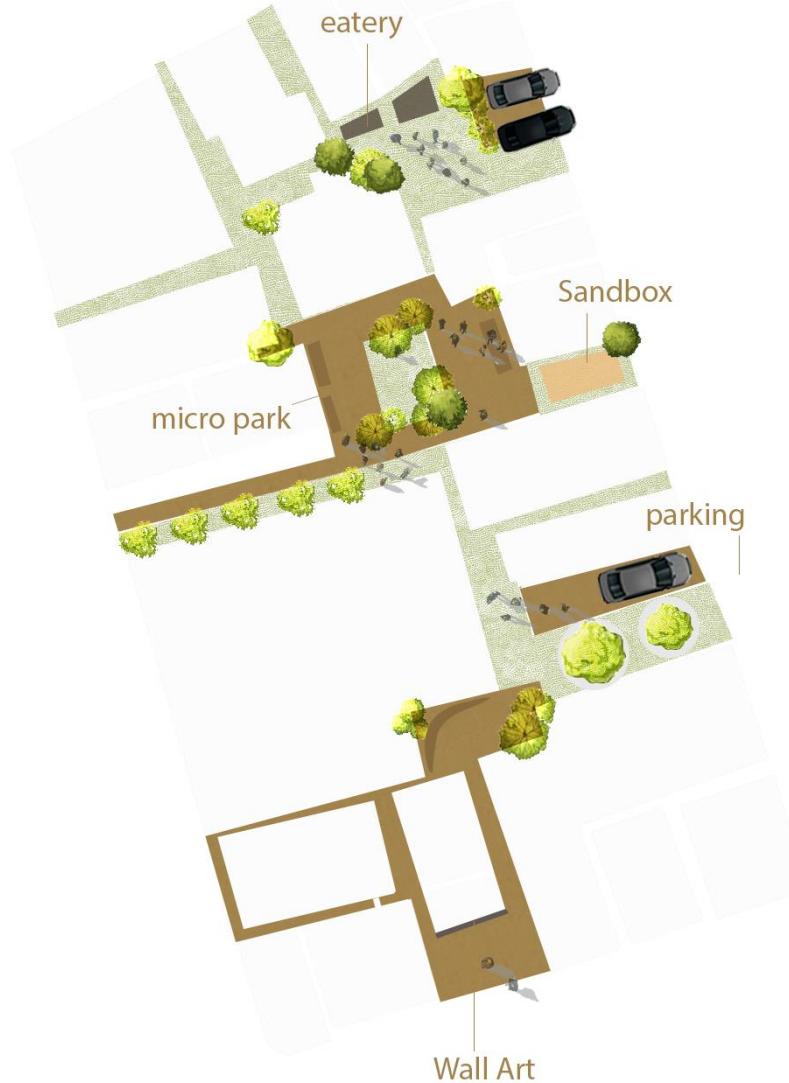
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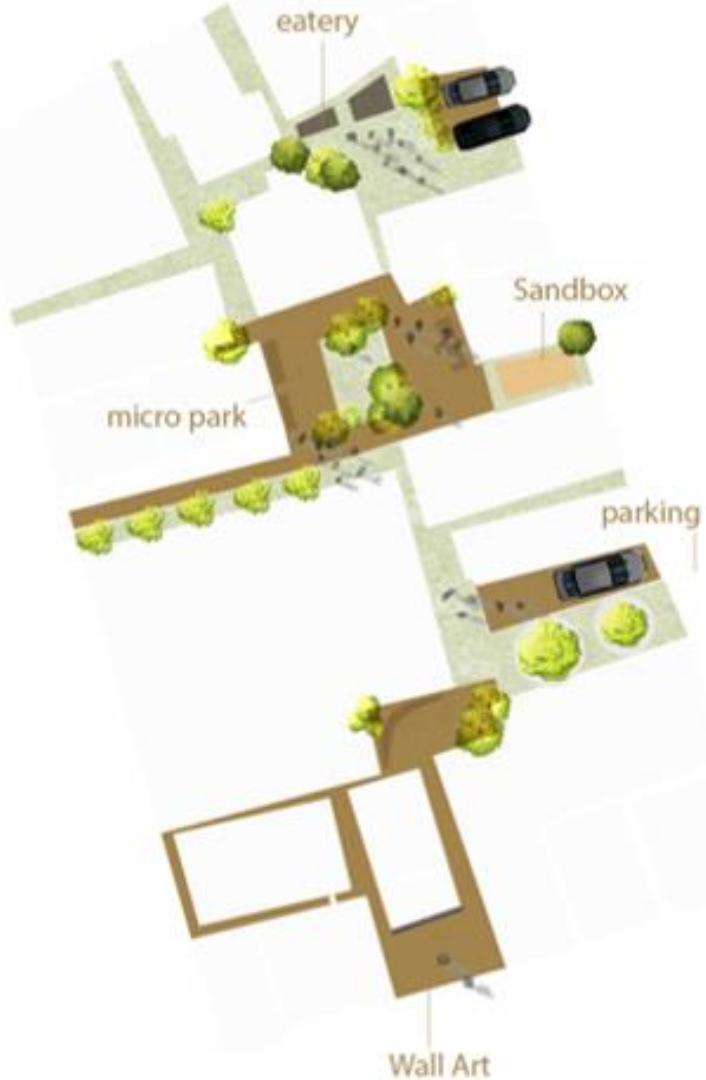
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Mechanism: A Framework for Development

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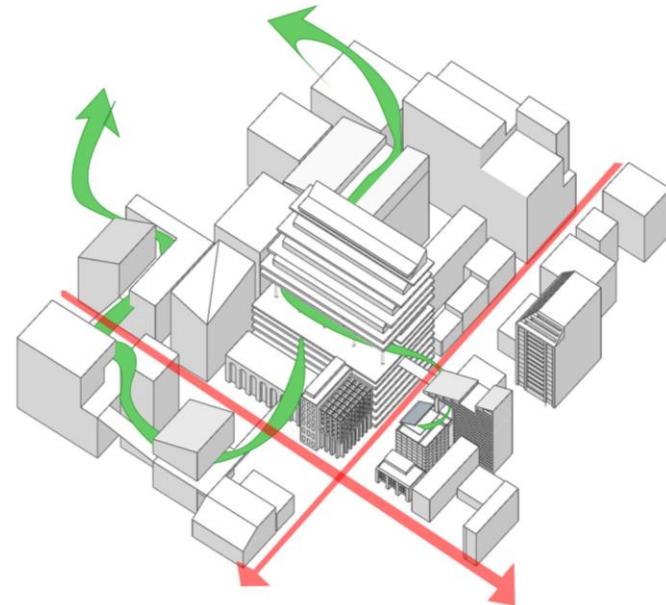
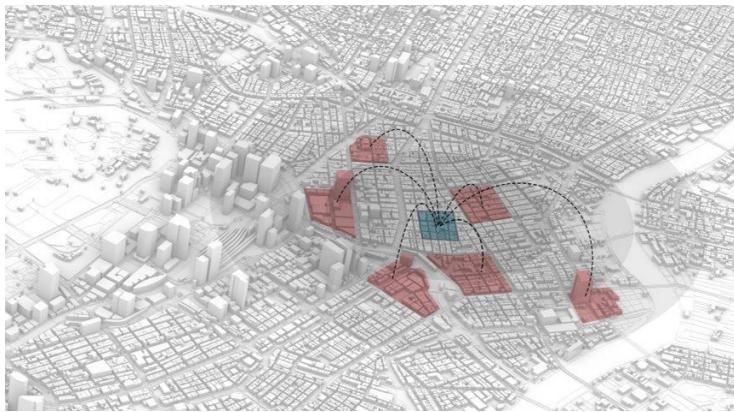
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SMART DISTRICT PLAN :

SCALE: NIHONBASHI

CREATE A LAYERED SMART DISTRICT PLAN THAT UTILIZES THE PARKS AS A DIGITAL AND PHYSICAL CENTER SIMULTANEOUSLY.

CREATES 21ST CENTURY MODEL FOR SOCIAL COHESION AND NEIGHBORHOOD CREATION.

公園をデジタルおよび物理センターとして同時に利用する階層化されたスマート地区計画を作成します。

COMPREHENSIVE MULTILEVEL NETWORK PLAN

SCALE: DISTRICT

EACH DISTRICT SHOULD DEVELOP A MULTILEVEL PATHWAYS FRAMEWORK. THIS SHOULD AID THE DEVELOPMENT OF NEW PROPERTIES THAT PROVIDE PRIVATELY OWNED PUBLIC SPACES.

CREATES A PUSH FOR MIXED USE NEIGHBORHOODS AND GREATER RETAIL AND COMMERCIAL SPACES.

各地区は、複数レベルの経路フレームワークを開発する必要があります。これは、私有の公共スペースを提供する新しいプロパティの開発を支援する必要があります

GROUPED GROUND USE: SCALE: BLOCK TAX INCENTIVES FOR UTILIZING ADJACENT GROUND FLOORS IN A BLOCK FOR A SINGLE OR ALLIED USE. INCENTIVIZES THE USE OF INTERSTITIAL SPACES THEREBY IMPROVING LAND EFFICIENCY. THIS CAN PROMOTE THE UNIFICATION OF SMALL PARCELS INTO LARGER PARCEL. CREATES A STRONG PUSH FOR RETAIL AND SERVICES AT THE GROUND LEVEL.

ブロック内の隣接する 1 階を単独または共同で使用するための税制優遇措置。中間スペースの使用を奨励し、それによって土地の効率を向上させます。これにより、小さな区画をより大きな区画に統合することができます。地上レベルでの小売サービスに対する強力な推進力を生み出します。

OVERVIEW

ECO-PERFORMANCE

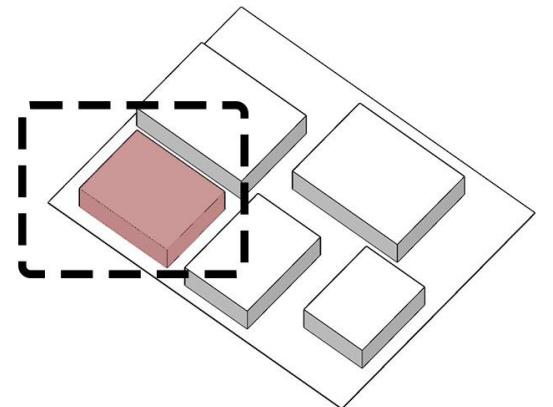
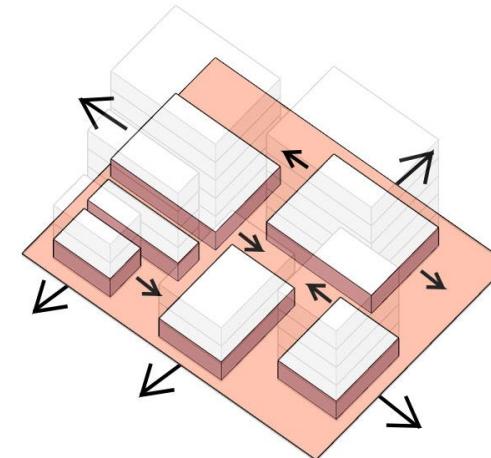
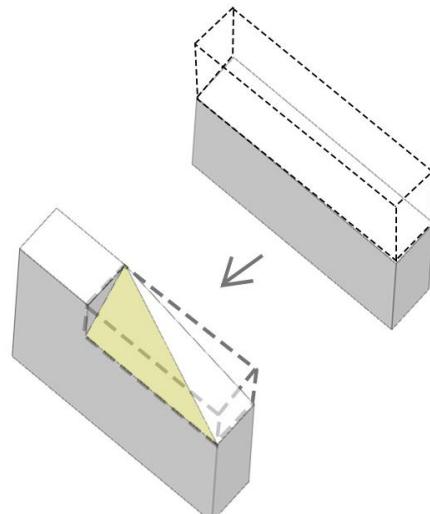
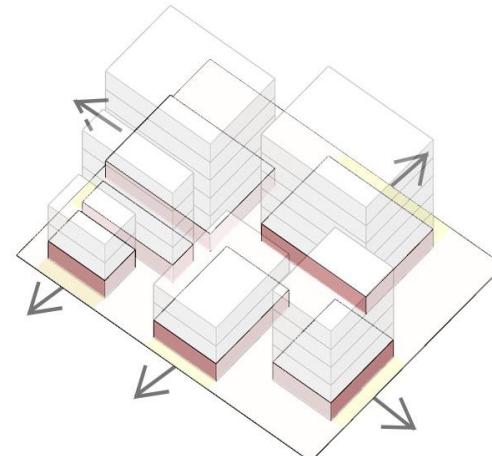
DISTRICT UTILITY

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SOLAR ENVELOPE DENSITY BONUS: SCALE: BUILDING IN CONJUNCTION WITH THE CITY OF TOKYO CARBON NEUTRALITY PLAN FOR 2050, ENERGY GENERATION SHOULD BE MAXIMIZED. PROVIDING **FAR DENSITY BONUS** CAN ASSIST IN THE PUSH FOR LANDOWNERS PRIORITIZING SOLAR ENERGY.

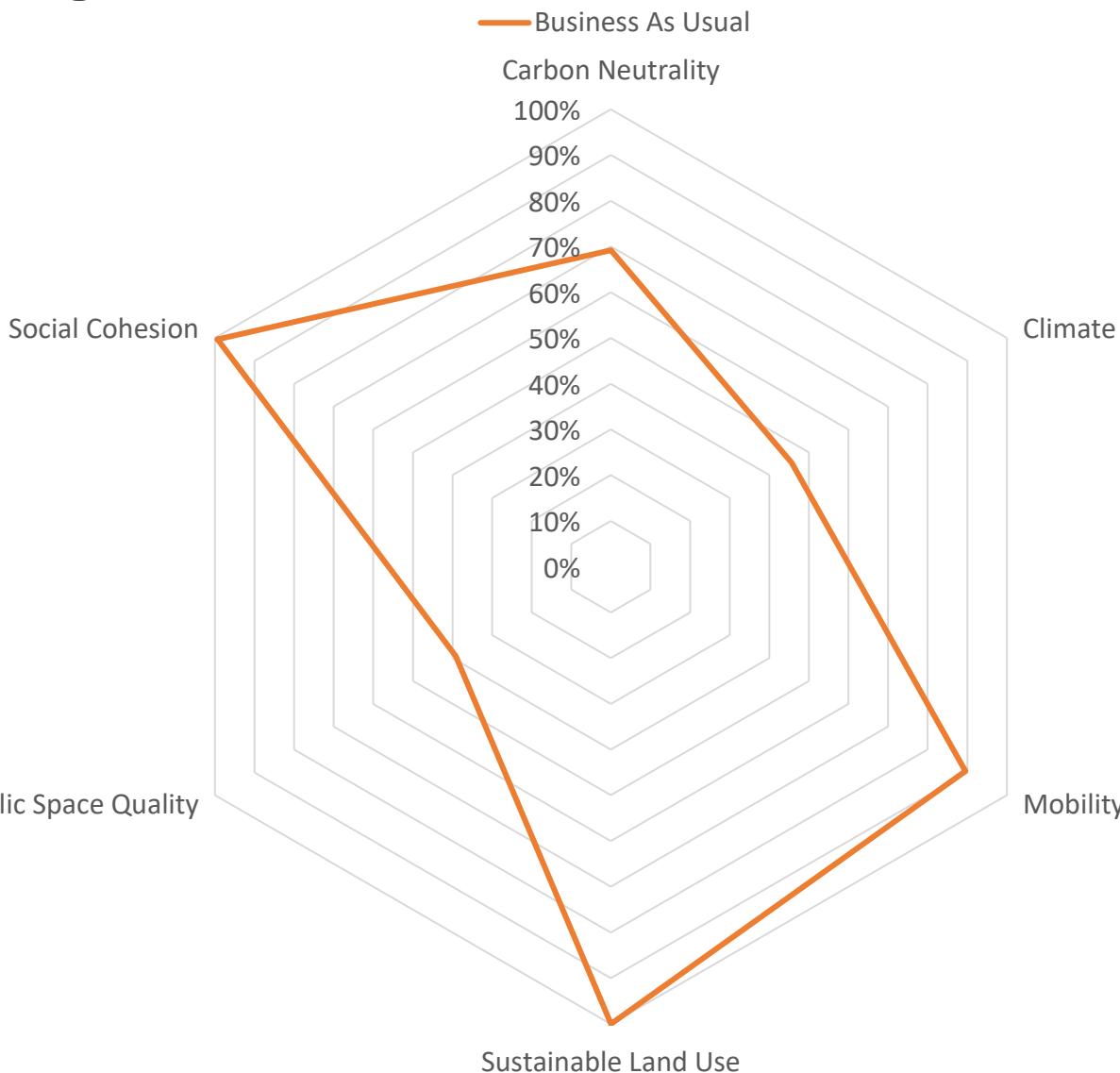
2050 年に向けた東京カーボンニュートラル計画と連携して、エネルギー生成を最大化する必要があります。はるかに密度の高いボーナスを提供することで、太陽エネルギーを優先する土地所有者を後押しすることができます。

Conclusion

	Indicator	Minimum Objective	Desirable Objective	Actual	Points Earned		Max. Points
OVERVIEW		Residential Energy Demand <80 kWh/m2	<65 kWh/m2	66.22 kWh/m2	9.6	/	10
		Office-Commercial Energy Demand <125 kWh/m2	<110 kWh/m2	101.15 kWh/m2	10	/	10
		Building CO2 Emissions <30 kg CO2/m2	<20 kg CO2/m2	30.79 kg CO2/m2	1	/	10
ECO-PERFORMANCE		Greenspace Cover 50%	100%	39.29%	0.8	/	6
		Greenspace per Inhabitant >10 m2/inhabitant	>15 m2/inhabitant	4.44 m2/inhabitant	0.4	/	6
		Green Roof Coverage >10%	>60%	58.6%	7.9	/	8
DISTRICT UTILITY		Proximity to Public Transportation >80%	>100%	77.60%	4.3	/	6
		Pedestrian Space >60%	>75%	147.42%	2.0	/	2
		Bicycle Parking Compliance	Compliance + Designated Bicycle Parking	Compliant + Designated Bicycle Parking	6.0	/	6
LIVING CENTER		Crosswalk Connectivity >80%	100%	100.00%	2.0	/	2
		Absolute Compactness >10 m for min. 50% total land area	>10 m for min. 75% total land area	14.22 m	6.0	/	6
		Residential Density >80 units/ha	>100 units/ha	112.93 units/ha	6.0	/	6
DISTRICT CHARACTER MECHANISM		Corrected Compactness 10-50m for min. 50% total land area	10-50m for min. 75% total land area	25.42 m. 55.9%	2.2	/	4
		Street Tree Coverage 50 trees/km	70 trees/km	50.00 trees/km	1.0	/	2
		Public Space per Inhabitant 10 m2/inhabitant	15 m2/inhabitant	0.96 m2/inhabitant	0.1	/	2
		Sidewalk Accessibility >90% sufficient	>90% ideal	100%	2.0	/	2
		Street Proportion >50% sufficient	>50% ideal	35% sufficient	0.4	/	2
SUMMARY		Allocation of Social Infrastructure >10%	>15%	42.68%	1.0	/	1
		Medical Space per Capita >0.6 m2	>1 m2	0.17 m2	0.3	/	1
		Commercial Space per Capita >0.001m2	>0.003	3.97 m2	2.0	/	2
		Park Space per Capita >2 m2	>2.5 m2	0.78 m2	0.4	/	2
		Daytime to Nighttime Population Ratio <6.0	<1.2	5.59	2.2	/	4
				Total Score:	64.9	/	100

Conclusion

Design Alternative KPI Comparison



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Thank you.
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