NJFUTURE:

A Rail Station Typology Guide for New Jersey's North East Corridor

RUTGERS
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A Rail Investment Plan

SCOPE

"The purpose of **NEC FUTURE** is to upgrade aging infrastructure and to improve the reliability, capacity, connectivity, performance, and resiliency of future passenger rail service on the NEC…while promoting environmental sustainability and continued economic growth."

Themes: economic growth/development, land use/environment, resilience, sustainability, public engagement

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METHODS
TYPOLOGY FRAMEWORK

Typology: a means of thinking about urban *patterns* by classifying urban places or regions according to their associations amongst various categories,

Typology Categories could include:

- Intensity of development
- Walkability
- Demographic traits, and more

A typology framework simplifies the decision-making process for development

PASSENGER RAIL CORRIDOR STUDY
Tucson to Phoenix

Table 2: System Hub Characteristics

Influence Area Characteristics	Area	Desired Land Use Mix	Typical Land Uses	Typical Building Heights	Average Employment Density	Average Residential Density	Parking Types
Transit Core ▪ 1/4 mile radius from station ▪ 5-minute walk	125 acres	▪ Up to 75% employment ▪ Up to 35% residential ▪ Up to 10% other	▪ Corporate offices ▪ Government offices ▪ Regional sports/ entertainment ▪ Convention/conference facilities ▪ High-rise residential towers	10 stories or more	3.0 – 5.0 FAR (Floor Area Ratio)	100+ DU/acre	▪ Multi-story structure
Transit Neighborhood ▪ 1/2 mile radius from station ▪ 10-minute walk	375 acres	▪ Up to 60% employment ▪ Up to 50% residential ▪ Up to 15% other	▪ Mid-high rise office towers ▪ Mid-high rise residential towers ▪ Government/educational/ employment/research campuses	6 stories or more	1.5 – 3.0 FAR	50 - 100 DU/acre	▪ Multi-story structure
Transit Supportive Area ▪ 1 mile radius from station ▪ 20-minute walk ▪ 5-minute drive	1,500 acres	▪ Up to 40% employment ▪ 60% or more residential ▪ 15% or more other	▪ Lofts/condominiums ▪ Mid-rise residential towers ▪ Apartments/townhomes ▪ Office/research park ▪ Medical facilities ▪ Lifestyle retail centers ▪ Mixed-use developments	4 stories or more	0.5 – 1.5 FAR	25 - 50 DU/acre	▪ Short term: surface lot ▪ Long term: parking deck

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Arizona Station Area Typology Definitions (2012)

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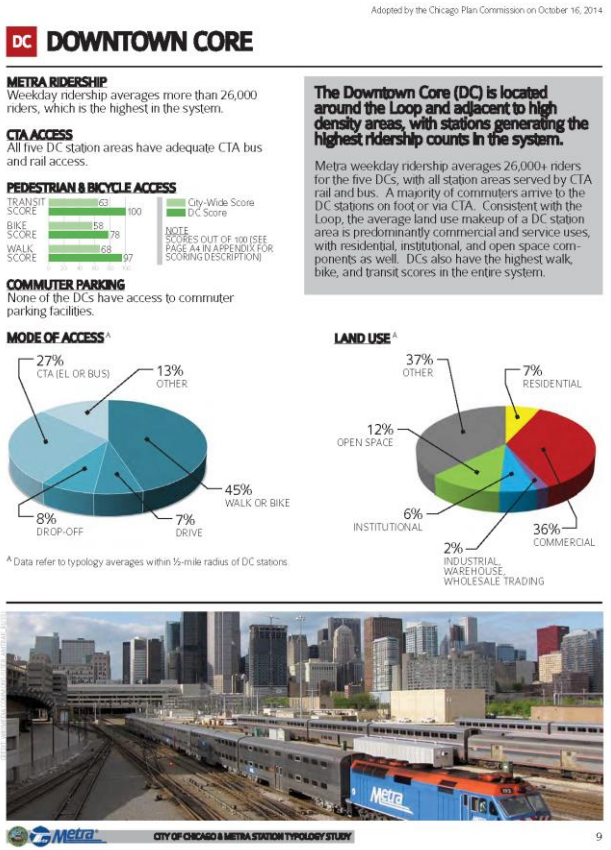
METHODS
TYPOLOGY FORMATION

Typology groupings are often created by thinking about concepts such as:

Type: The general structure or form that distinguishes a particular group, or kind of development.

Activity: What happens in the environment in terms of social and cultural activity

Circulation: The way people and things move in a space, as well as to and from a place



METRA Station Typology Study (2014)

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METHODS
NJFUTURE PROCESS

Analysis began with a review of rail station-area development schemes across the nation

The creation of the NJ Future typology framework came from a rigorous consensus-visioning process

Past transit typology creation informed and guided the framework process

Denver, Chicago, St Louis, Seattle, Arizona, Portland, Los Angeles

Each looked at different characteristics of their respective station areas

METHODS
NJFUTURE PROCESS

Group Typology Draft	Station	Population	Density	Median Age	Median HH Income	Walk Score	Parking Spaces	Lots	Primary LU	%	Secondary LU	%	Tertiary LU	%
City Center	Elizabeth	88,393	6,969	34.3	$43,449	97	1,348	3	Res. (med/hi)	56.3%	Comm./Mix	18.0%	Other	13.8%
City Center	New Brunswick	53,601	5,749	27.7	$63,566	97	4,002	4	Res. (med/hi)	46.8%	Wetlands	16.2%	Comm./Mix	15.0%
City Center	Newark Penn	81,891	14,292	34.0	$43,614	97	NA	9	Comm./Mix	28.7%	Res. (med/hi)	27.8%	Other	20.1%
City Center	Trenton	51,640	10,844	33.4	35,002	79	3,683	5	Res. (med/hi)	49.9%	Comm./Mix	20.9%	Other	15.3%
Neighborhood Center	Edison	33,662	3,874	36.9	$92,542	50	817	3	Res. (med/hi)	51.9%	Other	13.6%	Wetlands	12.1%
Neighborhood Center	Linden	30,050	2,984	37.5	$64,021	87	676	3	Res. (med/hi)	51.4%	Other	20.4%	Industrial	13.0%
Neighborhood Center	Metuchen	25,353	3,464	41.7	$100,764	77	1,570	11	Res. (med/hi)	57.5%	Other	13.7%	Wetlands	11.5%
Neighborhood Center	North Elizabeth	55,827	2,113	34.3	$44,141	76	126	2	NA	NA	NA	NA	NA	NA
Neighborhood Center	Rahway	35,390	3,023	39.4	$73,777	85	697	4	Res. (med/hi)	49.1%	Industrial	15.3%	Other	13.7%
Suburban	Hamilton	11,248	1,358	42.4	$72,226	9	3,581	2	Wetlands	36.1%	Res. (med/hi)	29.2%	Other	17.04%
Suburban	Jersey Ave	40,927	3,815	31.6	$52,380	38	1,412	3	Res. (med/hi)	46.0%	Other	17.6%	Industrial	13.9%
Suburban	Metropark	33,943	5,177	40.8	$90,049	59	3,556	2	Res. (med/hi)	51.4%	Wetlands	12.8%	Res. (low)	12.7%
Suburban	Princeton Junction	19,203	1,044	41.7	167,174	55	4,161	8	Wetlands	35.1%	Res. (low)	28.7%	Other	14.0%
Special Use	Newark Airport	25,107	1,389	35.2	$31,328	12	NA	NA	NA	NA	NA	NA	NA	NA
Special Use	Secaucus Junction	7,063	503	41.4	$82,250	14	1,094	1	Water	29.7%	Industrial	23.2%	Other	21.2%
New Jersey		**8.8 Million**	**1,210**	**39.0**	**$71,637**									

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NJFUTURE PROCESS

This typology process focused on the **15 New Jersey stations** included in the **NEC** plan

Focused on creating easily legible and flexible Typology framework

Focused on current station conditions

Considered variety of themes in our typology formation including:

Intensity of development, walkability, land-use mix, parking, demographics

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METHODS
ULTIMATE APPROACH

New Jersey Future Typology

Legibility: generally based on the perceived "character" of a place
Marketability: useful at planning public meetings
Flexibility: to choose among various development paths
Allows movement between types, and by extension, suggested development guidelines

Analysis showed associations with:

> Density, walkability, accessibility, median age, and median household income (inverse)

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STATION TYPOLOGIES

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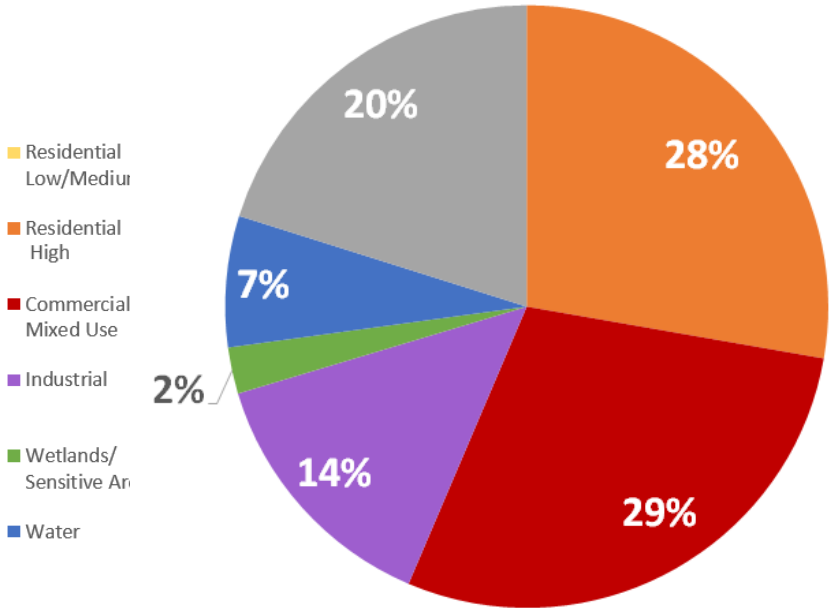
CITY CENTER

NEWARK PENN, ELIZABETH, NEW BRUNSWICK, TRENTON



Pie chart represents an average City Center distribution of land use

City Center stations are characterized by high accessibility, intense population density, and a considerable use of commercial activity within 1 mile of stations.

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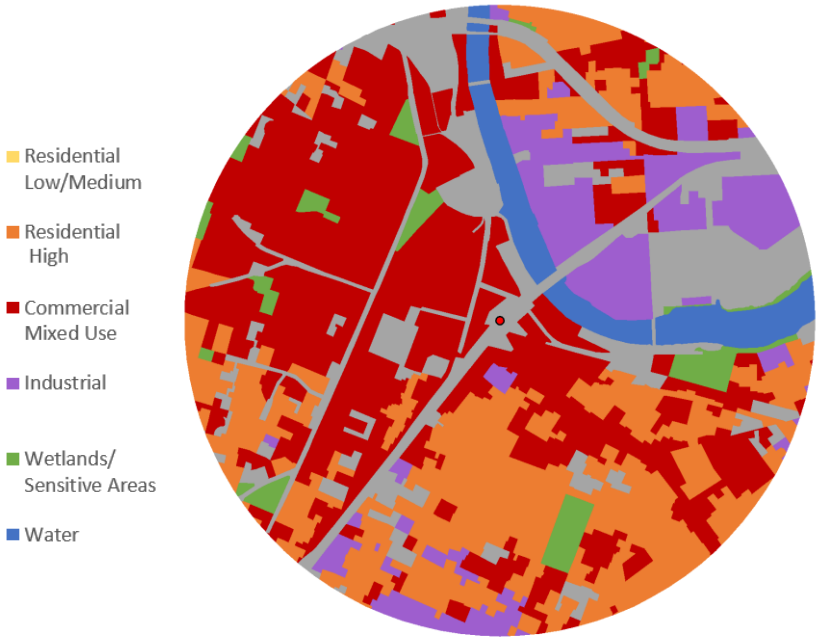
CITY CENTER
NEWARK PENN STATION



Newark Penn Station land use within 1 mile of station

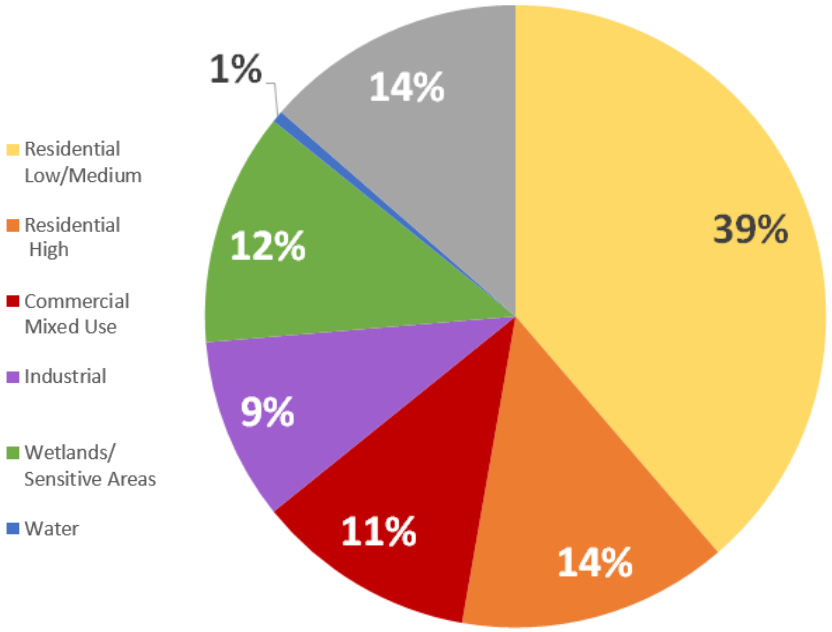
Level of Service
City Center stations see, on average, 12 local train visits during morning commutes (7 am to 9 am, EST).

Surrounding Transportation
The City Center designated stations have connections to extensive bus transportation systems.

Walk Score: 90 to 100
Walk Scores were one of the leading indicators of similar station typologies. City Center stations were graded as at least “very walkable” indicating, “most errands can be accomplished on foot.”

NEIGHBORHOOD CENTER

METUCHEN, LINDEN, RAHWAY, EDISON, NORTH ELIZABETH



Pie chart represents an average Neighborhood Center distribution of land use

Neighborhood center stations serve small to medium size urban areas that are usually within commuting distance of major urban centers. A mix of higher/medium density housing surrounds stations, while single-family housing is prevalent further away from the station.

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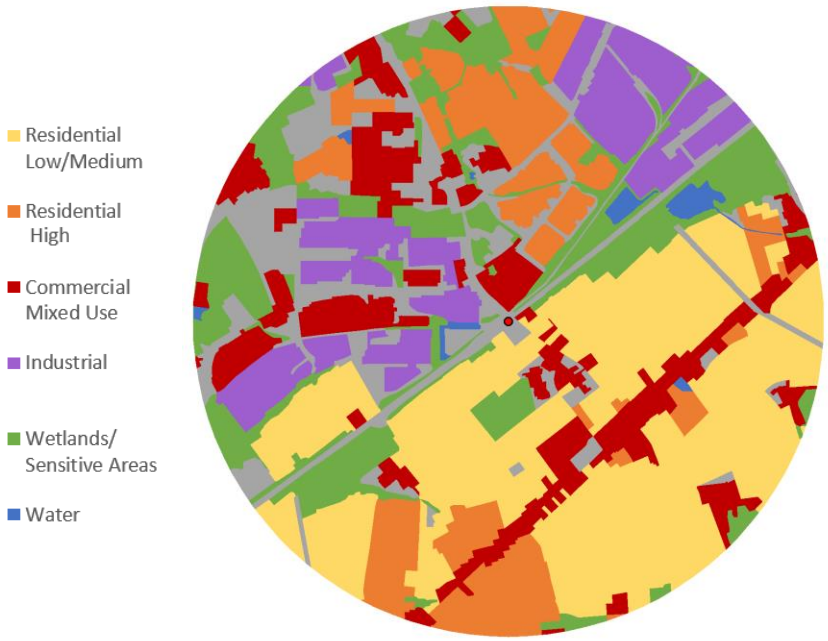
NEIGHBORHOOD CENTER

EDISON



Edison land use within 1 mile of station

Accessibility

Neighborhood Centers may be served by several (1 to 5) bus routes. Commonly, there is a low rate of households with no car, ranging from 2% to 7%. Bicycle accommodations vary from none to lanes and storage near stations.

Level of Service: Local/Transfer Station

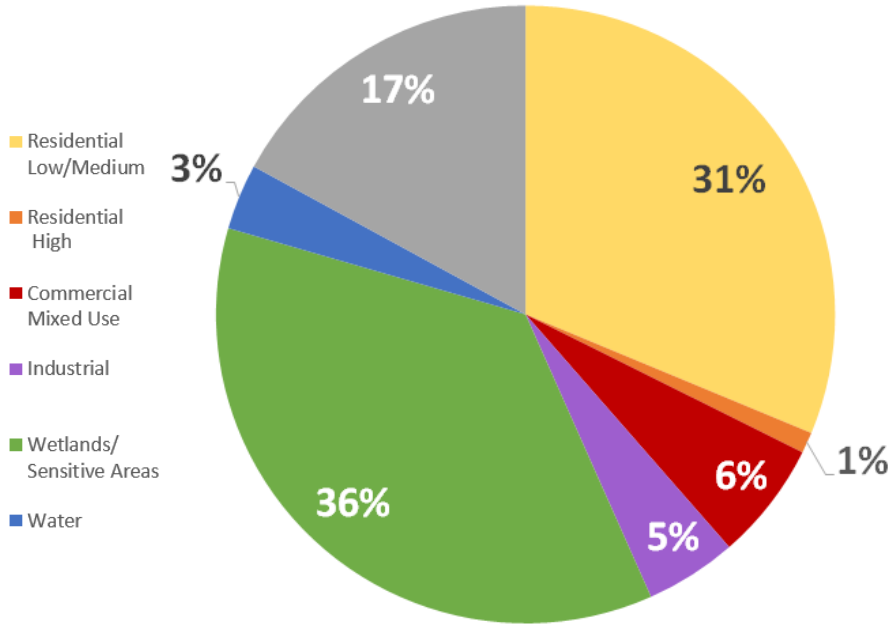
Most local commuter trains stop at neighborhood center stations. Typically, no Amtrak trains neighborhood centers.

Walk Score: 50 to 87

Neighborhood centers with higher scores typically have a larger downtown commercial/mixed use core, while neighborhood centers with lower scores have less mixed uses surrounding train stations.

SUBURBAN

METROPARK, PRINCETON JUNCTION, HAMILTON, JERSEY AVENUE



Pie chart represents an average Suburban distribution of land use

The Suburban category serves areas outside and on the fringes of City and Neighborhood Centers. Often commuters will travel to these Station by car and park thus coining the term 'Park and Ride'. Each of these stations are highly frequented by those commuting to the City for work.

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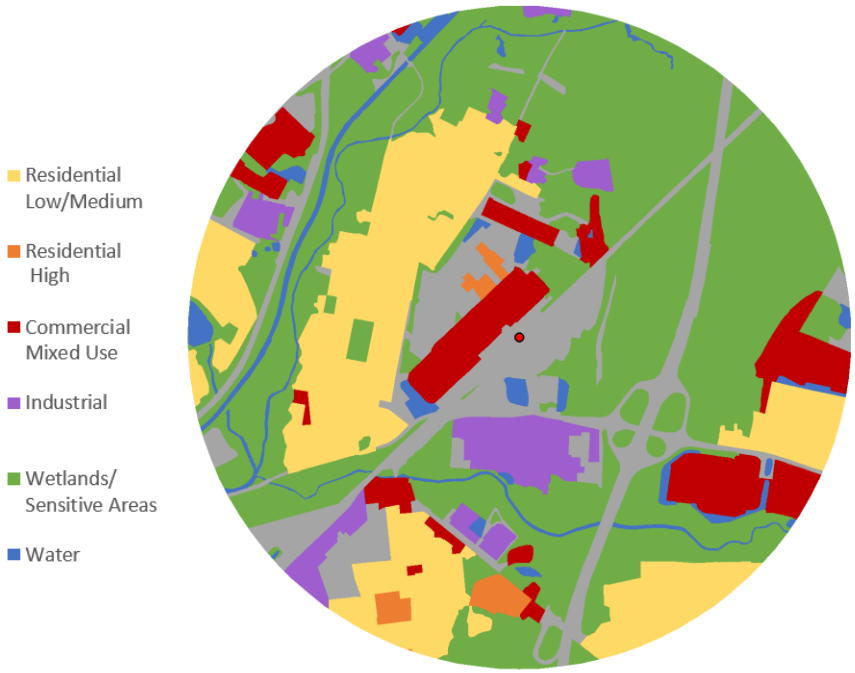
SUBURBAN
HAMILTON



Hamilton land use within 1 mile of station

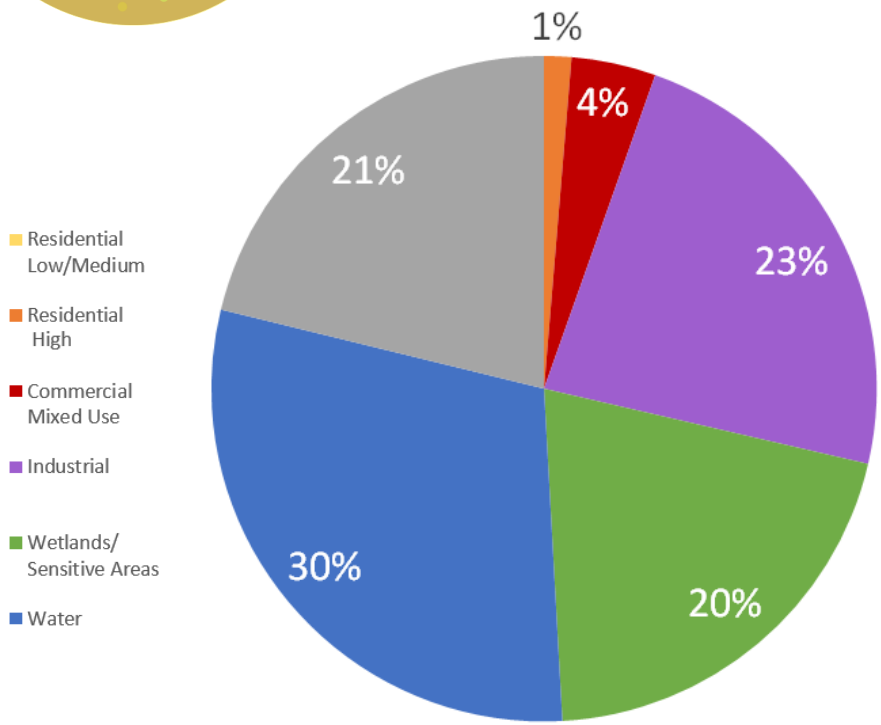
Level of Service
The vast majority of commuter trains stop at all four Suburban stations. These stations have local or regional service typologies and are generally not local hubs.

Walk Score: Varies
Suburban stations, in general, are not accessible by foot. These stations are not situated near major arterial roads and lack sufficient sidewalk access.

Land Use
The land use around the station is predominantly low density, residential in nature.

SPECIAL USE

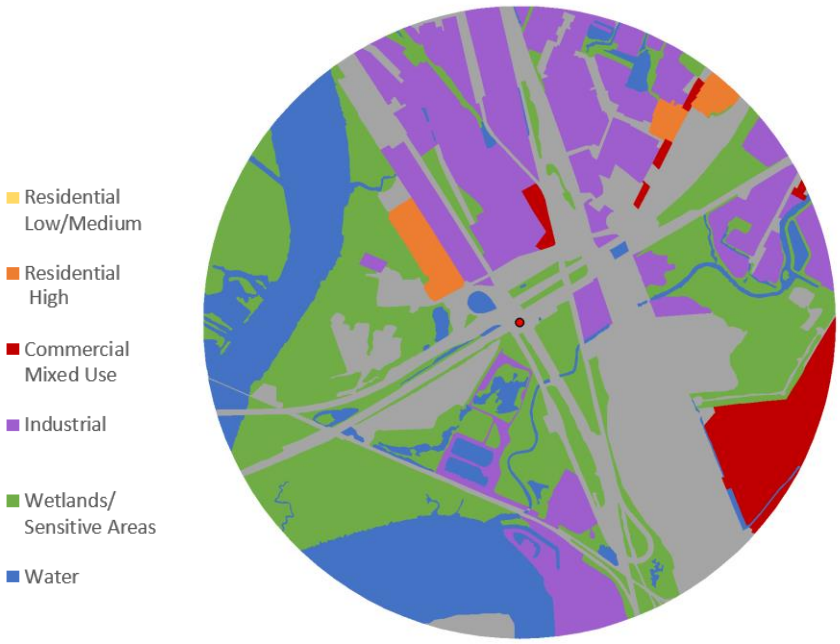
SECAUCUS JUNCTION, NEWARK AIRPORT



Pie chart represents an average Special Use distribution of land use

Special Use stations are characterized by low population density, low accessibility, and low potential for future development while having a high level of service.

SPECIAL USE
SECAUCUS JUNCTION



Secaucus Junction land use within 1 mile of station

Level of Service
Special Use stations have a high level of train service. These stations are considered transfer and/or regional stations served by local and/or regional rail lines.

Demographics
Special Use stations have low population densities ranging from 500 to 1,500 people per square mile within a 1 mile radius.

Walk Score and Accessibility: Low
Over 50% of land use surrounding Special Use stations consists of sensitive areas or undevelopable land and industrial areas.

DEVELOPMENT GUIDELINES

Development goals to increase ridership:

Support multimodal station access
Encourage mixed-use development
Increase municipal tax revenue
Accommodate anticipated station area demand for the year 2040

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DEVELOPMENT GUIDELINES
CITY CENTER

Enhance Station Accessibility

Multimodal framework of accessibility
Prioritize and enhance pedestrian and bicycle connectivity
Encourage non motorized modes through bike share program and safe streets

Land Development Patterns

Encourage transit oriented development and walkability
Redevelop surface parking lots into mixed use development
Renovate existing housing stock for neighborhood revitalization
Add affordable housing to create mixed income development

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DEVELOPMENT GUIDELINES
CITY CENTER

Economic Development

Integrate more commercial uses to generate tax
Introduce incentives for commercial entities to relocate in city center
Reduce crime to encourage economic development

Environment

Green site design for redevelopment projects
Bioswales along streets
Electric vehicle charging stations in parking areas
Increase green landscaping

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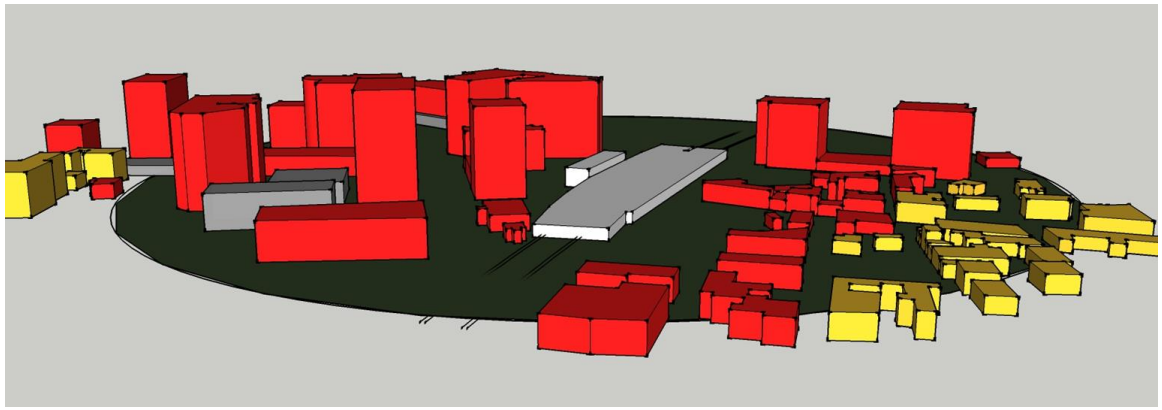
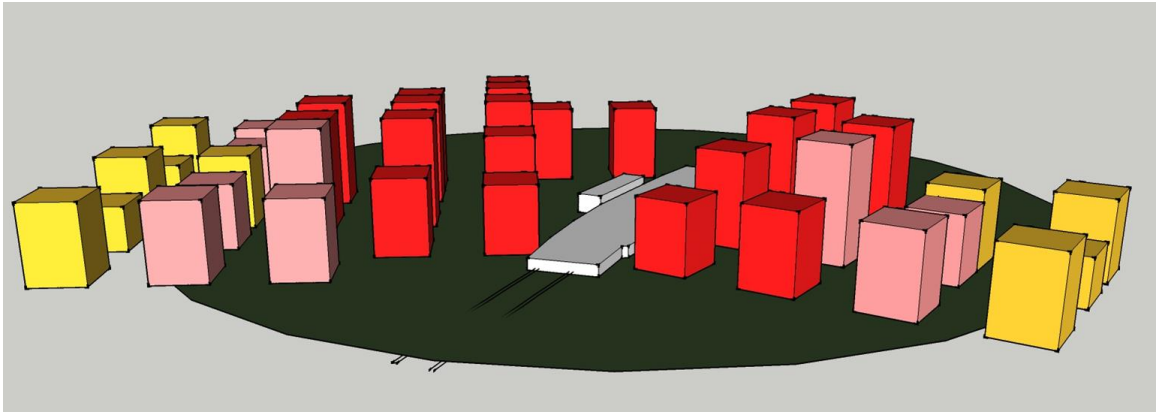
DEVELOPMENT GUIDELINES
CITY CENTER

Newark Penn Station,
Existing Development





Newark Penn Station,
Future Development

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DEVELOPMENT GUIDELINES
NEIGHBORHOOD CENTER

Enhance Station Accessibility

Improve multimodal transportation connectivity
Renovate and upgrade the station
Complete streets design techniques
Public open space

Land Development Patterns

Encourage mixed-use development near station
Repurpose underutilized parking
Preserve historic structures

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DEVELOPMENT GUIDELINES
NEIGHBORHOOD CENTER

Economic Development

Ensure region has a comprehensive land use plan
Utilize public-private partnerships
Mixed-use development

Environment

Increased open space development
Protect natural, cultural, and historic resources
Revitalize damaged sites

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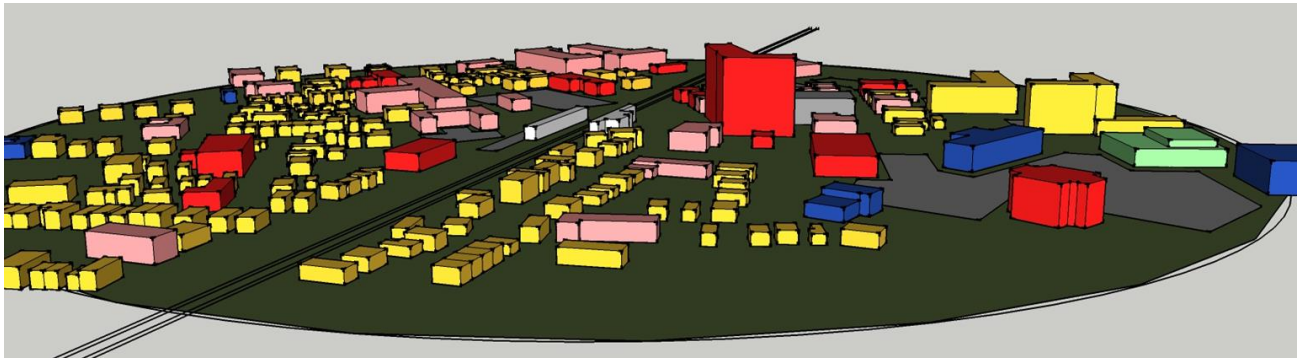
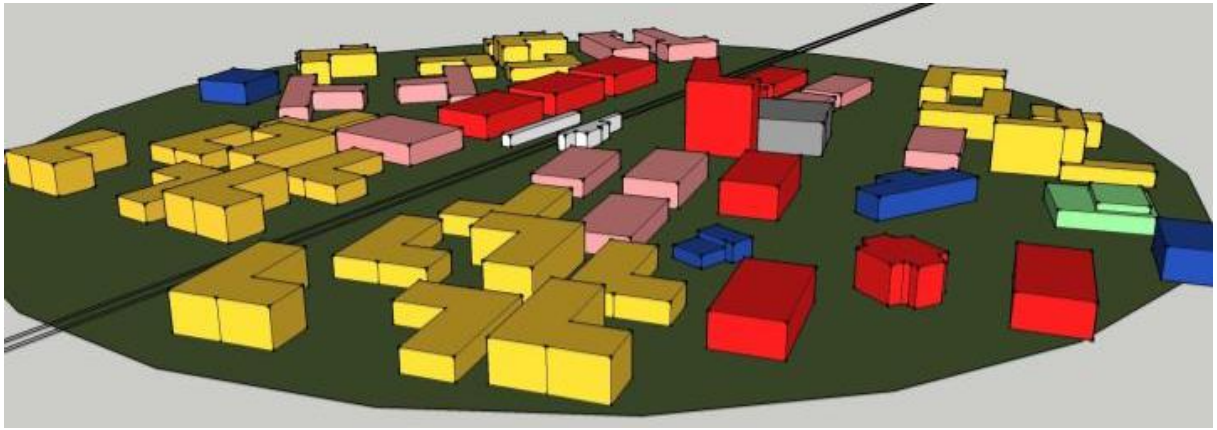
DEVELOPMENT GUIDELINES
NEIGHBORHOOD CENTER

Rahway,
Existing Development





Rahway,
Future Development

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DEVELOPMENT GUIDELINES
SUBURBAN

Enhance Station Accessibility

Improve and maintain road network Active circulation patterns for pedestrians, bikes, vehicles and utilities
Encourage safety and sustainability with complete streets

Land Development Patterns

Mixed use redevelopment, revitalization and infill development
Compact development to accommodate more activities
Provide well proportioned infrastructure and utilities

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DEVELOPMENT GUIDELINES
SUBURBAN

Economic Development

Generate revenue with compact mixed use redevelopment
Increase ridership to attract more commercial activities
Encourage entrepreneurship to create more jobs

Environment

Preserve and enhance existing wetlands and ecology
Water retention and storm water management
Encourage mass transit along with substantial parking spaces

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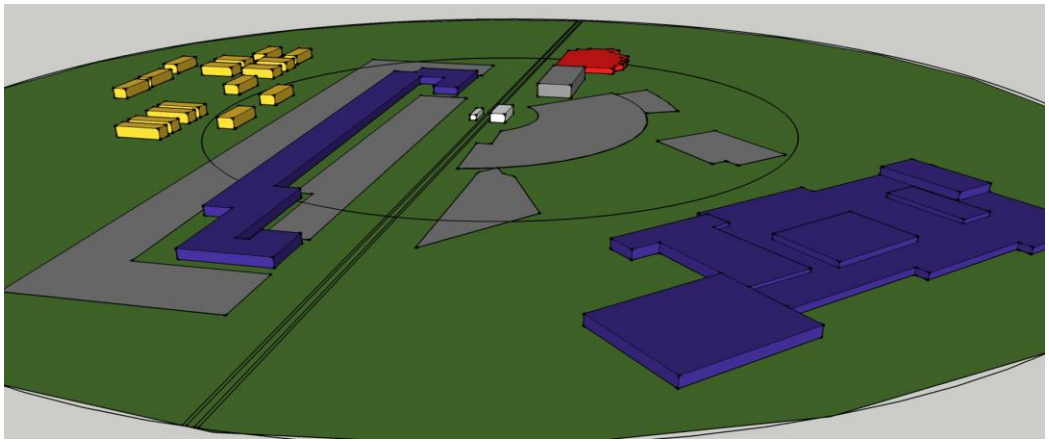
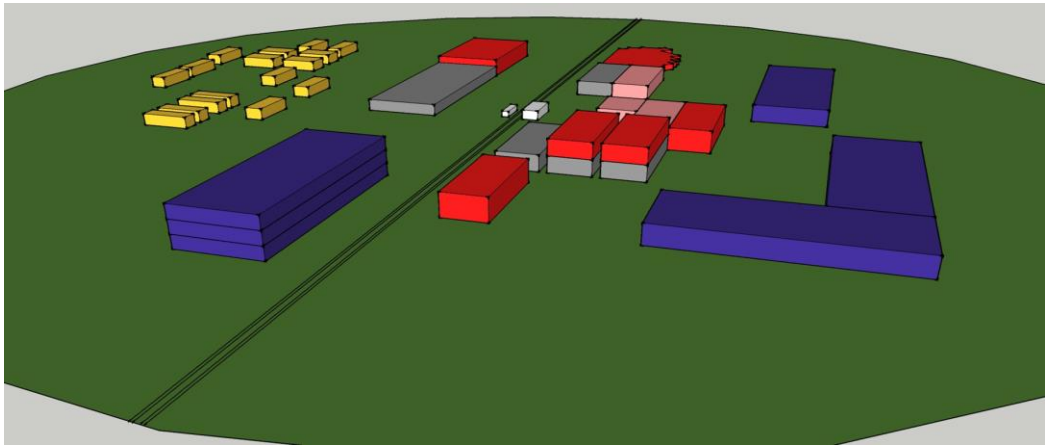
DEVELOPMENT GUIDELINES
SUBURBAN

Hamilton,
Existing Development





Hamilton,
Future Development

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DEVELOPMENT GUIDELINES
SPECIAL USE

Enhance Station Accessibility
Improve roadway conditions
Enhance Street Connectivity
Complete Streets

Land Development Patterns
Encourage mixed-use development
Repurpose any vacant industrial land

Economic Development
Adopt smart growth principles
Block plans

Environment
Take a special interest on sustainable development
Save open space and agricultural resources policies
Decide who is responsible for waste clean up

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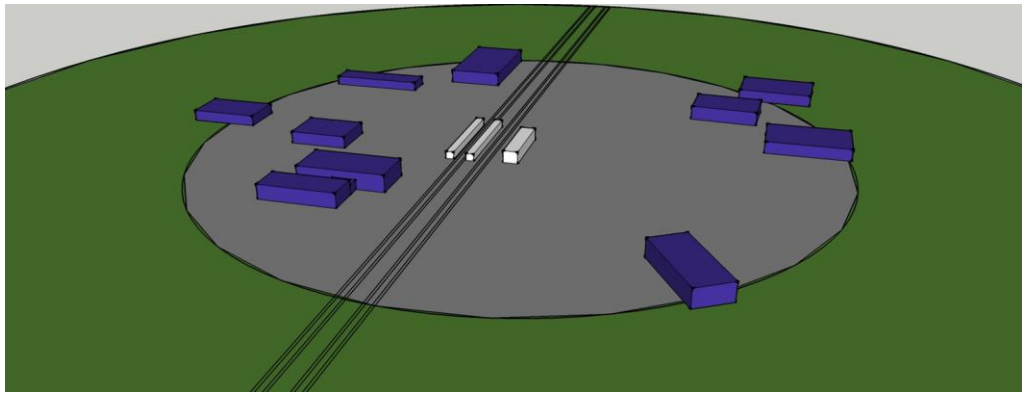
DEVELOPMENT GUIDELINES
SPECIAL USE

Newark Airport Station,
Existing Development



Newark Airport Station,
Future Development

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PLANNING APPROACHES
PUBLIC ENGAGEMENT

Good public engagement processes build trust and bring a broader array of perspectives into the decision-making process.

A legacy of robust public engagement.

Planners as educators and advocates for the public health, safety, and welfare.

Results from public engagement processes should be made available to the public

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PLANNING APPROACHES
ECONOMIC DEVELOPMENT

How and *Where*?

Strategies for Economic Development:
- Marketing
- Technical Studies
- Development Assistance
- Small Business Support
- Streamlining Legal Processes

Prioritizing Infill

Role of the Private Sector

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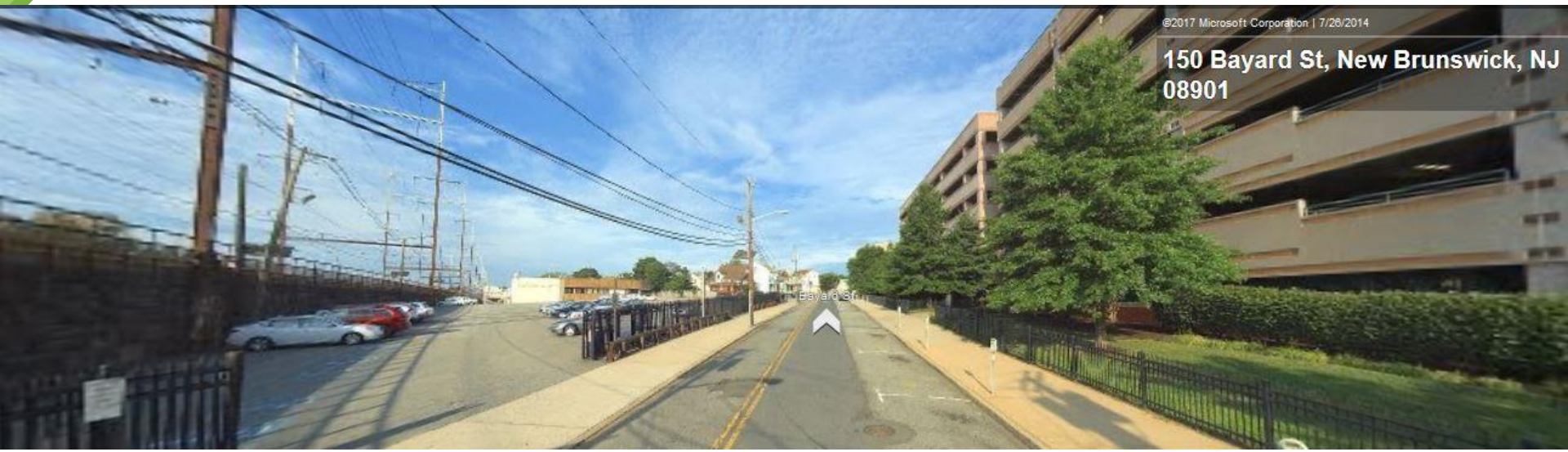
PLANNING APPROACHES
LAND USE & DESIGN



Fix-it-First

Walkable communities are healthy communities

"Mixed-Use and Walkable"

Getting density right

Parking

Goldilocks and the Lot, Deck, and Meter

Form Follows Regulation

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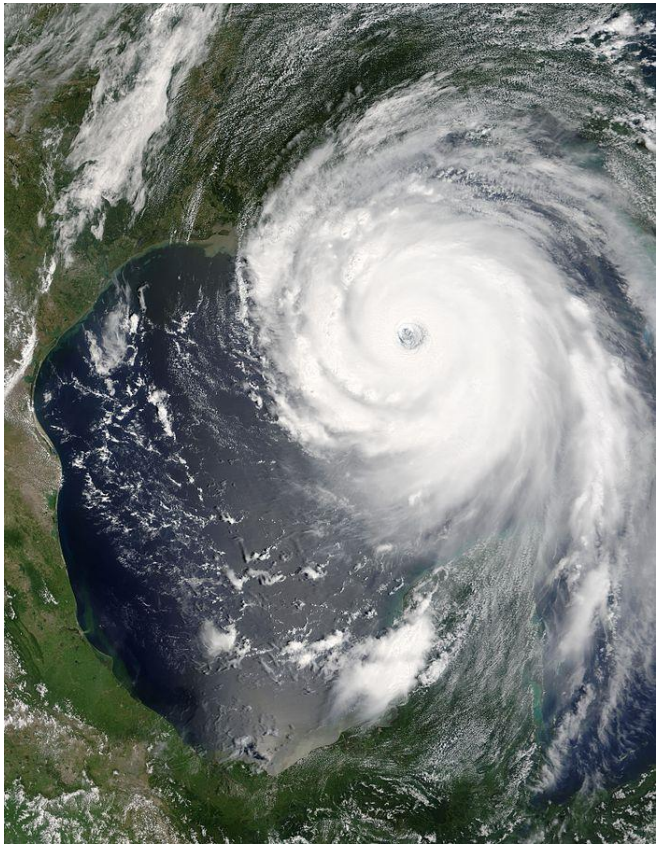
PLANNING APPROACHES
ENVIRONMENT



NEPA Process & EIS
Legal obligation

Environmental Justice
Moral obligation

Planning in an uncertain future

Sustainability

Resilience

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PHASE II

NEXT STEPS

Finalize station typologies and development guidelines

Choose 1-2 existing or proposed sites as case studies

Apply the framework to develop site-specific plans that fulfill the mission of the NEC Future plan:

- Land use regulations
- Economic development
- Resilience and sustainability
- Transportation

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