



ONTRACK

PHASE II

Transit-Oriented Development
Paths for North Brunswick

RUTGERS

Edward J. Bloustein School
of Planning and Public Policy

AECOM

NEC 
FUTURE
A Rail Investment Plan

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INTRODUCTION

The fundamental focus and goal of this studio is to identify how to help communities along the Northeast Corridor understand and realize the benefits of proposals in the Northeast Corridor Future (NEC) plan. Phase I focused on achieving this goal by creating a set of land use development guidelines based on a determination of the station area typology. Phase II converts these broad development guidelines into three development options for the proposed station area in North Brunswick, New Jersey. The studio is based on the NEC work that AECOM and the Federal Railroad Administration (FRA) are currently planning. The studio was informed by a recent New York Times article that discussed the Transit Oriented Development on the North Brunswick Site (March 2017).

The typology-based development guidelines in Phase I were produced by completing a detailed, fine-grained analysis of existing New Jersey stations along the NEC. The studio chose to create station area typologies because they are a useful tool to illustrate station area trends in affected municipalities. The typologies display the municipality's existing conditions and potential development paths under the NEC Future plan. We expect that increased rail service will impact land use, demographic, and economic trends. Typologies are a legible and flexible tool for presentation and discussion that are easily understood by a community. Typologies translate complex municipal conditions into accessible, graphics-based components that demonstrate

how a community may change and develop with increased rail service.

Phase II is proof-of-concept for these station area typologies. These Phase II plans convert the typology framework from broad development guideline recommendations into a site-specific application. Phase II focuses on the future station site in North Brunswick and tests the feasibility of using a typology-based development framework to capitalize on level of service (LOS) increases proposed in the NEC Future plan. The studio assessed how three different development scenarios -- Suburban, Neighborhood Center, and City Center -- would change the municipality.

The exercise seeks to identify the "carrot" for encouraging local municipal interest by helping North Brunswick conceptualize what it wants to become by the year 2040. The three typologies represent different development options for the municipality under the NEC Future plan. These options are actionable through the typology framework; the alternative plans allow elected officials, stakeholders, and members of the community to visualize the impacts of LOS increases and outline steps that can be accomplished to enact municipal goals.

In Phase II we seek to demonstrate to affected municipalities, by way of North Brunswick's alternative plans, how to capitalize on and manage the negative externalities of in-

STUDIO GOALS

Provide options and toolkit for communities impacted by NEC Future plan

"Market the future"

Provide realistic and ideal pictures for development paths

Maintain sustainability as a tenet

Show communities how to take advantage of increased service under NEC Future

Illustrate strengths and weaknesses of each development path

creased rail service by employing good local planning. This booklet includes site plans, policy recommendations, and high-level impact analyses, is graphics-based and can be easily presented and understood by a community. It helps explain the proposals in the NEC Future to stakeholders and translates the large-scale project into something compelling for a local audience by making the plan's regional ideas specific.

COMMUNITY PROFILE

The proposed station area in North Brunswick, New Jersey is a 212-acre site located between the Jersey Avenue and Princeton Junction stations along the NEC. It is bounded by U.S. Route 1 to the east, the NEC to the west, and Commerce Road to the north. Although there is currently no rail service to North Brunswick, the NEC Future plan proposes constructing a new rail station there, with NJ Transit and Amtrak trains expected to provide daily service to the station by 2040.

This site was selected to test the typology development framework because increased service under the NEC Future plan will have direct impacts on land use and demographic trends in the immediate station area. One of this studio's goals was to develop a toolkit to help municipalities understand the potential impacts of the NEC Future plan. The contents of this brochure detail the final site plans for each development option, as well as high-level development impact analyses and policy recommendations. Together, these materials are intended to help North Brunswick stakeholders conceptualize and realize a preferred development option that capitalizes on increased rail service under the NEC Future plan.

To produce recommendations for the development paths, the studio divided into three teams: Suburban, Neighborhood Center, and City Center. Each group was organized to include individuals with complementary strengths, including design, site planning, land use, and transporta-

tion planning. Over a series of six weeks, the breakout groups drafted individual site plans, which were critiqued and improved through an iterative process with the entire class. This method allowed each breakout group to develop specific knowledge regarding their development path and guidelines while also ensuring the final site plans and recommendations were established by consensus with the full studio. This involved several discussions and a thorough airing of opportunities and constraints by alternative. Although the final site plans reflect notable differences in density and urban form, each option maintained a focus on realizing the baseline goals of Phase I development guidelines: supporting multimodal station access, encouraging mixed-use development, and accommodating anticipated station area demand for the year 2040.

Existing land use conditions in the study area are informed by a transit-oriented development (TOD) plan. The North Brunswick station area formerly functioned as an industrial site, but many of the old warehouse buildings are now unused or demolished. In their place, a new development oriented around the proposed rail station is under construction. The development, Main Street North Brunswick, is a partnered plan led by the Township of North Brunswick, the developer North Brunswick TOD Associates LLC, and New Jersey Transit (NJT), who has committed to build a rail station on the site. When complete, the project is expected to add 1,875 residential units, a hotel, and office and com-

mercial space to the site. The plan is regulated by a local Transit Oriented Mixed Use Development Overlay zone, which allows for residential uses and high densities, both of which are currently prohibited by the area's existing I-2 industrial zoning. This studio's proposals supersede the Main Street North Brunswick site plan and land use regulations.



EXISTING CONDITIONS

	North Brunswick	Middlesex County	New Jersey
Population	42,268	830,300	8,904,413
Approximate Population per Square Mile	3,523	2,688	1,201
Age			
Under 5 years	7.4%	6.0%	6.00%
5 Years to 19 Years (School aged)	18.0%	19.2%	19.3%
20 Years to 64 Years (Working aged)	64.5%	61.6%	60.3%
Over 65 Years	10.2%	13.1%	14.4%
Race/Ethnicity			
Hispanic or Latino	18.90%	19.60%	19.00%
White	35.90%	46.10%	57.20%
Black or African American	16.90%	9.20%	12.70%
American Indian and Alaska Native	0.30%	0.10%	0.10%
Asian	26.30%	23.20%	9.00%
Native Hawaiian and Other Pacific Islander	0.00%	0.00%	0.00%
Other	0.30%	0.30%	0.40%
Two or more races	1.40%	1.60%	1.60%
Household Income			
Less than \$15,000	6.50%	7.30%	9.30%
\$15,000 to \$24,999	7.90%	6.90%	8.10%
\$25,000 to \$34,999	6.20%	7.00%	7.80%
\$35,000 to \$49,999	9.60%	9.90%	10.50%
\$50,000 to \$74,999	16.70%	16.30%	15.80%
\$75,000 to \$99,999	13.90%	13.60%	12.50%
\$100,000 to \$149,999	20.50%	19.70%	17.20%
\$150,000 to \$199,999	10.10%	9.40%	8.70%
\$200,000 or more	8.70%	9.80%	10.10%
Median household income	\$80,358	\$79,593	\$72,093
Commuting to Work			
Drive Alone	78.10%	73.10%	71.90%
Carpool	8.20%	8.40%	8.10%
Public Transportation	7.40%	9.50%	11.10%
Walk	1.70%	2.90%	3.10%
Other	1.20%	2.30%	1.90%
Worked at home	3.40%	3.80%	4.00%
Educational Attainment (25 years and over)			
Less than 9th grade	5.20%	5.90%	5.30%
9th to 12th grade, no diploma	5.90%	5.30%	6.10%
High school graduate (includes equivalency)	24.50%	26.30%	28.60%
Some college, no degree	12.00%	15.20%	16.90%
Associate's degree	6.50%	6.20%	6.30%
Bachelor's degree	27.50%	24.50%	22.80%
Graduate or professional degree	18.30%	16.50%	14.00%



US Highway 1

Costco

Target

North East Corridor

EXISTING SITE





SUBURBAN





SITE PLAN

The suburban vision for the redevelopment site seeks to create a transit-oriented community around the new Northeast Corridor station that most closely resembles the current character of broader North Brunswick.

Aside from park and open space, single-family homes make up the largest portion of the site, albeit with much smaller lots than are typically seen with new development.

A curvilinear street grid with network-wide bicycle and pedestrian facilities is intersected by a more grid-like shared use path, creating direct routes to and from key destinations for pedestrians and cyclists.

Two multifamily clusters are located on either end of the development, one surrounded by parkland and the other in the heart of the mixed-use office, retail, and commercial center.

Easy access to a decked parking facility will allow commuters farther afield to use the North Brunswick train station and take advantage of the local amenities.

Density

Single-family detached dwelling unit should not exceed 2 stories.
Multi-family dwelling units should not exceed 6 stories (including any commercial at ground level) unless approved by planning board.

Stormwater Management

Limit impervious surfaces to minimize flood risk and to allow for the recharge of groundwater and aquifers.
Mitigate negative impacts on the quality of local water sources by developing a long-range stormwater management plan.
Incorporate open space into the stormwater management system.



Bikes and Pedestrians

Prioritize walkable and bikeable street systems to provide active, affordable transportation choices to residents.
Foster a human-scale and pedestrian-friendly environment by allowing for breaks in the massing of building.

POLICY

Parking

On-street parking should not be permitted in residential zones.
Integrate parking facilities into commercial and residential areas by providing pedestrian pathways.

Mix of Uses

Commercial and mixed-use development must not exceed 15% of the TOD overlay. One large-box retail is permissible.

Green Buildings

Require all new construction to be minimum LEED Certified
Provide incentives for the installation of solar panels on single family homes.

Street Design

Design streetscapes to physically and visually enhance various land uses.
Limit traffic speed in residential zones.



DEVELOPMENT IMPACTS



Fiscal

- Compared to the other visions, the suburban plan requires the least upfront public investment, but also has the least potential increase in the municipal tax base
- The site is estimated to attract more workers than residents, lessening the net impact of new service provision
- There are many positive examples of suburban communities making successful investments in transit-oriented development



Community Facilities

- Most community facilities are on the east side of the NEC
- Development at this level will not necessitate many new facilities, but rebalancing facility location may need to be considered
- Addition of 200 school-aged children should not have a detrimental impact on existing North Brunswick school facilities
- Location of emergency services may need to be reevaluated, but need for additional police, fire, or EMS services is minimal
- Additional parkland included in the development more than counteracts the additional population



Environmental

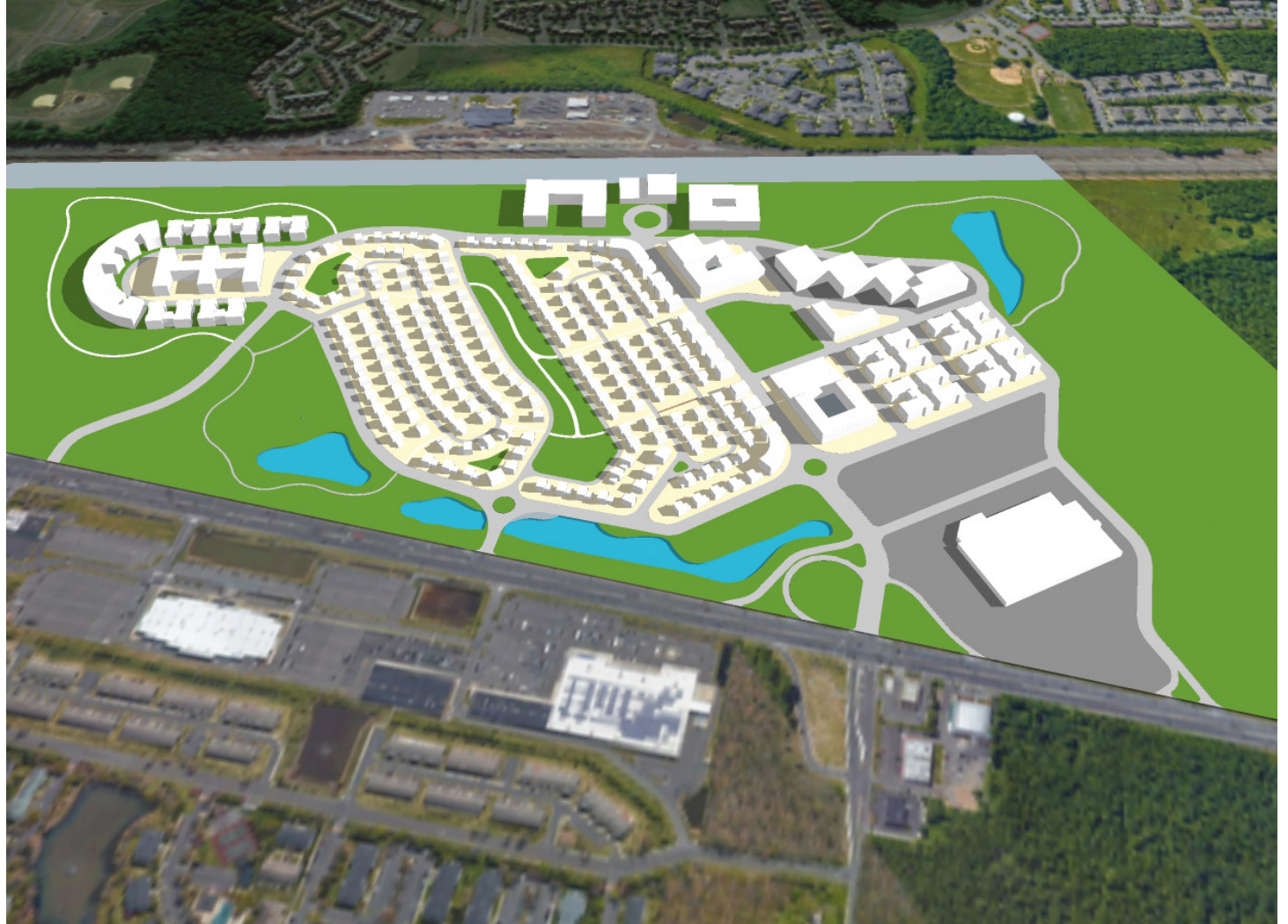
- Over 50% of the site would be left as pervious surfaces
- Existing stormwater retention infrastructure left in place
- Green building materials and methods should be required for commercial structures, and encouraged for residential structures
- Parkland fronting rail ROW will lessen the noise impacts of additional rail service
- Extensive bike/ped infrastructure and access to the train station will encourage fewer car trips

CASE STUDY Orland Park, Illinois



Orland Park, IL is a suburban village located 25 miles southwest of Chicago. Beginning in 2000, the village decided to capitalize on underused land around their METRA station by implementing a TOD plan. By 2007, the station had been rehabilitated and mixed use facilities were under construction. The real estate crash of 2008 caused private investors to pull out, jeopardizing the future of the site, but Orland Park stepped in with an infusion of bond-backed credit to keep development on track. Today, the site continues to be built out and is returning a profit.

CONCEPTUAL OBLIQUE



Above: inspiration sources for the Suburban concept and site plan. From top to bottom: Mamaroneck, New York, Mount Prospect, Illinois, and Houten, Netherlands. Left: a conceptual rendering of the proposed Suburban site plan for North Brunswick.



NEIGHBORHOOD CENTER





SITE PLAN

The 2040 North Brunswick neighborhood Center scenario is one that focuses on how to make a community for future residents that is more sustainable, healthy, and accommodating to all needs. Harnessing the access of regional rail service in North Brunswick, the new community will be an all-encompassing site where residents can live, learn, work, and play.

This new transit-oriented development will be uniquely livable because of the variety of options that are provided to residents including a diversity of housing options, retail, restaurants, community space, parkland, and more.

From everyday needs such as grocery shopping and park access to high paying office jobs and world class restaurants the North Brunswick neighborhood center will have it all!

Green Buildings

Provide density bonuses for LEED certification and green roofs.

Stormwater Management

Use sustainable streetscape materials, considering costs, durability, and ecological impacts

Parking

Eliminate parking minimums for commercial and residential uses.
Allow and encourage shared-parking policies.
Allow for adaptive parking decks to be built.

Street Design

Use excess portions of right-of-way, such as overly wide lanes, unused street space, or spaces created by streets coming together at odd angles to create landscaped and/or usable areas.

Bikes and Pedestrians

Implement complete streets policy
Support safe, comfortable walking. The standard sidewalk width should be 10'.
Require bicycle parking for projects over a certain size.

POLICY

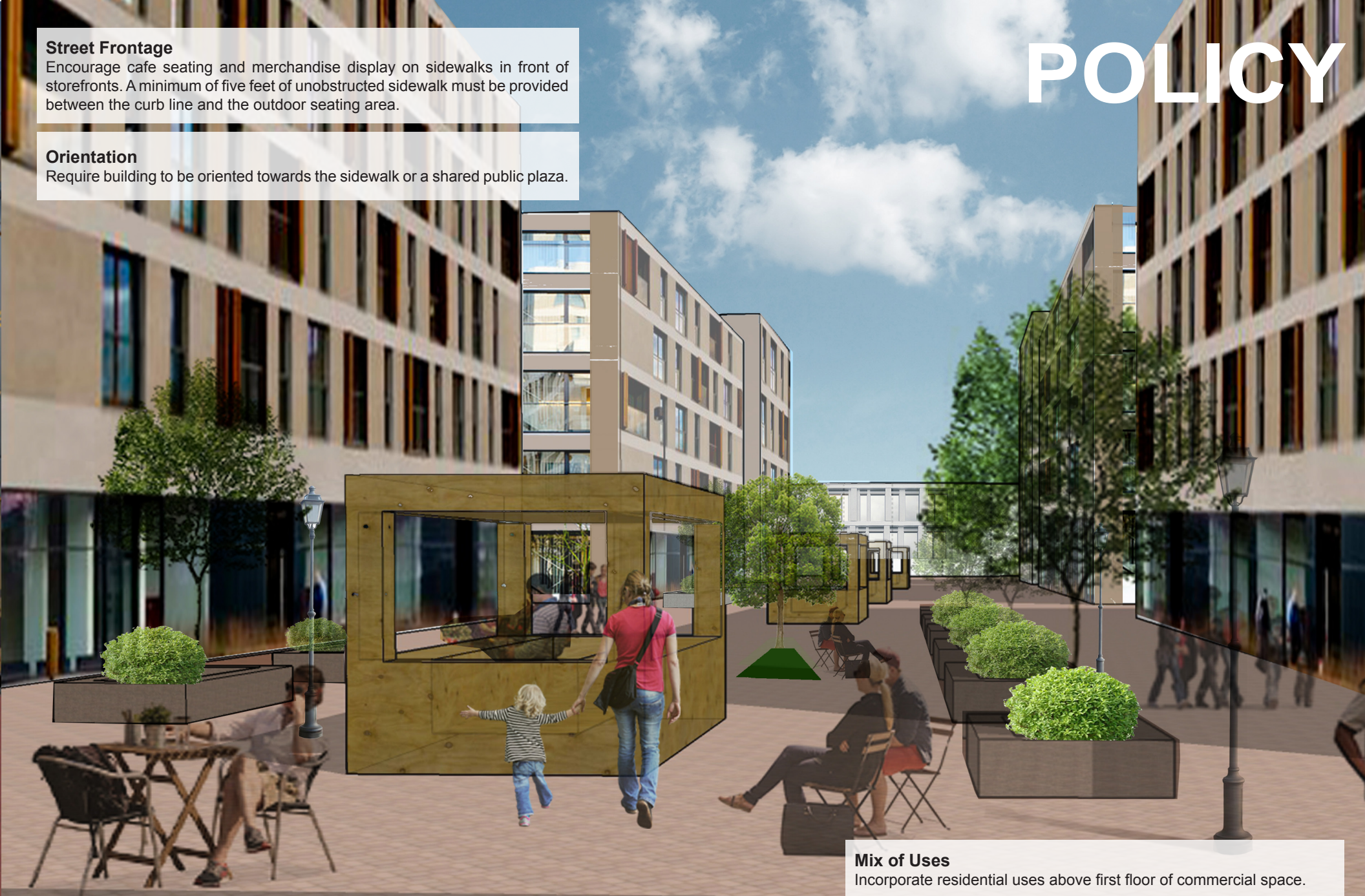
POLICY

Street Frontage

Encourage cafe seating and merchandise display on sidewalks in front of storefronts. A minimum of five feet of unobstructed sidewalk must be provided between the curb line and the outdoor seating area.

Orientation

Require building to be oriented towards the sidewalk or a shared public plaza.



Mix of Uses

Incorporate residential uses above first floor of commercial space.

Access

Encourage public seating, both formal (benches, chairs) and informal (seating walls, bollards) as part of street improvement projects.

Regulate Building Frontage

Require a minimum amount of transparent space for buildings with first floor commercial uses.
Require architectural articulation to stimulate the first-floor experience

DEVELOPMENT IMPACTS



Fiscal

- Significant increase in infrastructure investment necessary but much larger range of revenue with the increased job base, retail and residential opportunities.
- Increased sewer and electrical capacity will increase the initial expenditures
- North Brunswick would receive a huge increase to their tax base through new residences and businesses.
- Plan would require additional upfront investment which may not be politically enticing



Community Facilities

- With a population of over 1,500 children expected by 2040 a new school and daycare facilities will be necessary
- Pedestrian-friendly routes to schools, parks, and public space an important community need in this vision
- Park space will be within 1/4 mile of all residential sites creating a healthy and close knit environment for all residents.



Environmental

- Design of site limits the use of cars and encourages pedestrian modes of transportation
- The site will have roughly 11,500 parking spaces, significantly less than the current zoning ordinance proposes
- Less than 50% of site will be developed. providing access to park space and natural stormwater management

CASE STUDY Charlottesville, Virginia



Our concept for a car-free, pedestrian friendly business and retail corridor was inspired by places our team members have visited including the pedestrian mall in Charlottesville.

The mall is accessible by public transit and allows pedestrians to move freely between businesses, enjoy a vibrant and communal space, and relax outdoors.

This concept is great for business, community gathering, and events as it allows for considerable pedestrian activity right in the heart of downtown.

CONCEPTUAL OBLIQUE



Above: inspiration sources for the Neighborhood Center concept and site plan. From top to bottom: Downtown Fredericksburg, Virginia, Downtown Durham, North Carolina, and Savannah, Georgia. Left: a conceptual rendering of the proposed Neighborhood Center site plan for North Brunswick.




URBAN CENTER





SITE PLAN

The Urban Center typology allows for rapid development and a massive increase in density in North Brunswick. Because this plan considers an urban setting 20+ years from now, the vision for this applied typology places its focus beyond transit oriented development and instead looks to promote variability in transportation options throughout the municipality. This scenario places special emphasis on what is needed to make North Brunswick a central node for the region's growing population. It is an ambitious vision that incorporates development goals that maximize use of the proposed train station and the capabilities of its surrounding developments.



Stormwater Management

Incorporate stormwater management facilities into public amenities such as parks and open space.

Maximize opportunities in the streetscape for on-site stormwater retention and infiltration.

Density

Buildings should have a medium-rise base with some high-rise elements to provide density without overwhelming the urban environment.

Open space, such as courtyards, should be incorporated into the design of most buildings.

Green Buildings

Adopt incentives for the private installation of green roofs.

Adopt Municipal Green Buildings Ordinance.

Adopt LEED standards for public buildings.

Explore incentives for the private adoption of LEED standards for new construction

POLICY

Street Activity

Street life should be encouraged by ensuring that the proper space is allocated for all sidewalk cafe spaces.

Five to ten feet of unobstructed sidewalk space must be provided between the curb and any outdoor seating area.

POLICY

An architectural rendering of a modern urban street scene. In the background, there are several multi-story buildings with a mix of glass and solid facades. The sky is blue with scattered white clouds. In the foreground, a wide street is shown with a white car parked on the right side. Pedestrians are walking on the sidewalks and crossing the street. There are trees and a street lamp on the right side of the street. The overall atmosphere is bright and clear.

Parking

Prohibit on-street parking.

Locate parking garages on the edge of development with strong pedestrian connections to and from them.

Eliminate commercial and residential parking minimums.

Prepare for the adaptive reuse of parking decks by permitting the construction of retrofittable structures.

Mix of Uses

Sidewalk-level retail should be required at the base of each tower with other commercial, residential and office uses being situated on the floors above.

Bikes and Pedestrians

Sidewalks should follow all NACTO design standards

Maintain a desired minimum through zone of eight feet.

Sidewalks must be designed with the needs of wheelchairs and other mobility devices in mind.

Street Frontage

Limit setbacks to create a cohesive and urban street wall.

Buildings must orient their primary entrance toward the sidewalk, but may conditionally orient around a shared public plaza.

Street Design

Motorized speeds should be limited to the greatest degree possible to allow for the safe usage of streets as shared space. This should be accomplished through design, not regulatory measures.

DEVELOPMENT IMPACTS



Fiscal

- With an expected residential population of 20,000 and an additional 23,000 potential daytime employees, pursuing an urban development would significantly increase the municipality's tax base.
- Extensive infrastructure expansions would be needed to accommodate a project of this size. However, this conceptual plan looks to mitigate the cost of an urban project in North Brunswick.



Community Facilities

- This urban development will serve as an extension and intensification of development in nearby New Brunswick and Piscataway. As such, considerable attention should also be given to connecting bus services to this area as it develops.
- Local institutions such as Robert Wood Johnson University Hospital and Rutgers University should be treated as assets, and connectivity to these institutions should be prioritized.
- Additional public facilities, such as schools and fire departments, may be required due to the large increase in population. Over half of the land uses in this development are planned as multi-family residential structures.



Environmental

Parking accounts for about 5% of the total land uses in the area with all of the related facilities placed around the outskirts of the development. This plan looks to integrate multimodal transportation options, with special attention given to cyclists and pedestrians. Limited parking options and increased amounts of green space limits car use and encourages walkable developments.

CASE STUDY Richmond City Centre



Our design inspiration came from similar developments in city centers around TransLink facilities in British Columbia, Canada. Downtown Richmond which is just south of Vancouver, has seen rapid mixed-use and commercial development near its metro station over the last ten years. Planners there have paid special attention to the design of bike paths and the regulation of higher density development to create human-scale spaces and to promote walkability.

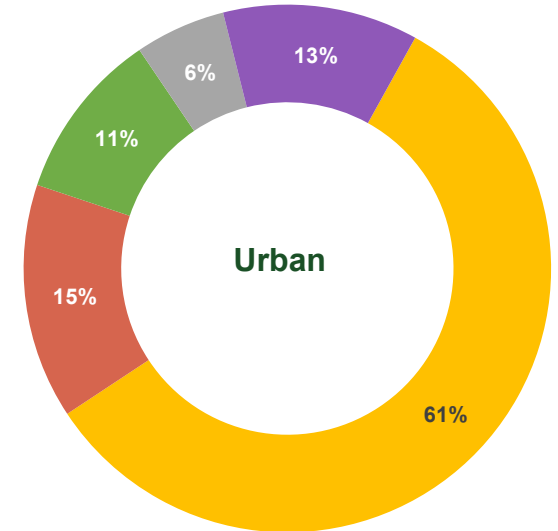
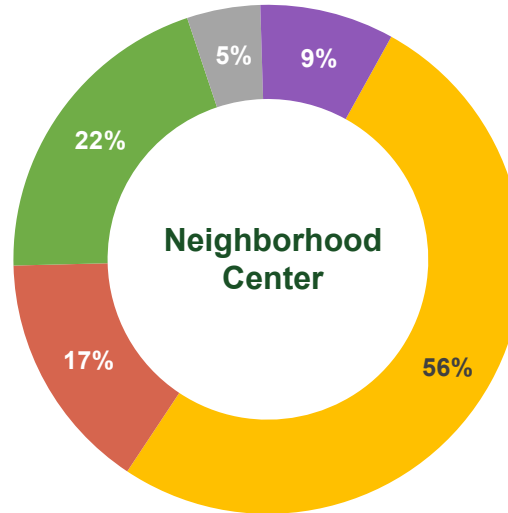
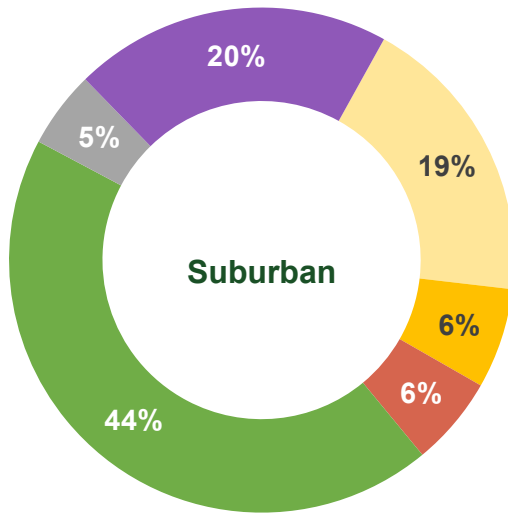
CONCEPTUAL OBLIQUE



Above: inspiration sources for the Urban Center concept and site plan. From top to bottom: San Jose, California, Vancouver, British Columbia, and Portland, Oregon. Left: a conceptual rendering of the proposed Urban Center site plan for North Brunswick.

COMPARISON

LAND USE DISTRIBUTION



	Suburban	Neighborhood Center	Urban
Residential Units	1,324	2,475	9,150
Single Family	503	295	0
Multi-Family	821	2,180	9,150
Commercial Units	1,612	8,422	23,168
Office	1,168	4,422	19,840
Retail	154	1,906	1,902
Restaurant	290	2,094	1,426
Total Units	2,936	10,897	32,318
Population	2,833	5,401	20,007

SHARED POLICIES



Financing

- Tax Increment Finance (TIF) is a method that captures tax gains from a development and the additional revenue is used to fund projects in the proposed district
- Municipal Investments are direct funding options or incentives to reduce the cost for developers to build
- Tax Credits are a reduction in taxes owed to local, state, or the federal government for developments that meet certain qualifications. Popular programs include, New Market Tax Credits, Low-Income Housing Tax Credits (LIHTC), and Historic Rehabilitation Tax Credits.



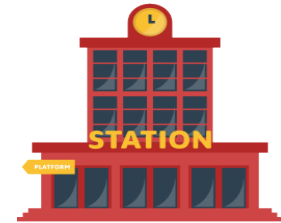
Community Facilities

- Enable and require Development Impact Fees as a condition for development. This can help finance the construction of new public facilities, such as roads, parks, schools, and libraries.
- Prioritize Public Private Partnerships (PPP) for designing, building, financing, and maintaining certain community facilities, such as hospitals or transit infrastructure. PPP's can reduce project costs and improve long-term operations of public facilities.
- Implement revenue sharing program between parking garage operators and municipality to generate funding for community facilities.



Affordable Housing

- Require set-asides of 20% for affordable housing through the use of incentive zoning, which can include density bonuses for developers.
- Reduce housing stratification and spur the development and preservation of affordable housing through development regulations to be formulated in the comprehensive planning process.
- Support a regional fair share distribution of housing, in general, and affordable housing, in particular, in proximity to employment centers and moderate- and low-wage jobs.
- Incorporate the preservation of existing housing stock as a core policy objective of a comprehensive and coordinated housing strategy.



Station Access

- Work with agencies and private partners to develop a bus boarding and alighting area, which should further incorporate regional busses.
- Plan local bus routes to serve North Brunswick.
- Support high-quality bike and pedestrian infrastructure including racks and lockers in the station.
- Build and maintain an active pedestrian plaza at the base of the station.
- Use high-quality architecture in the design of the rail station to make it a focal point for the community.
- Build adequate parking facilities within walking distance of the rail station, but do not make them directly adjacent to the station itself.