

# Opportunities for Bicycle Sharing in **Westchester County**

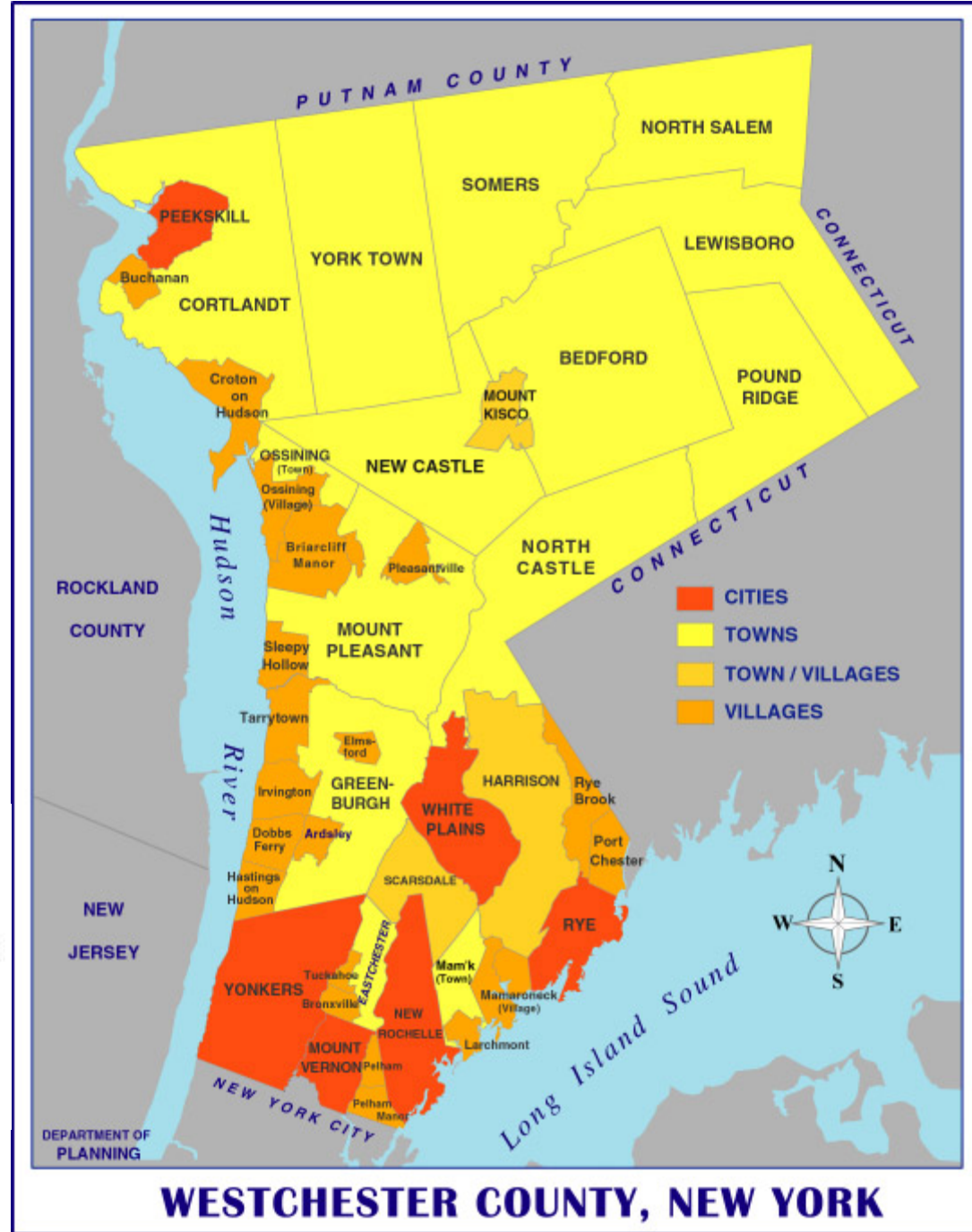
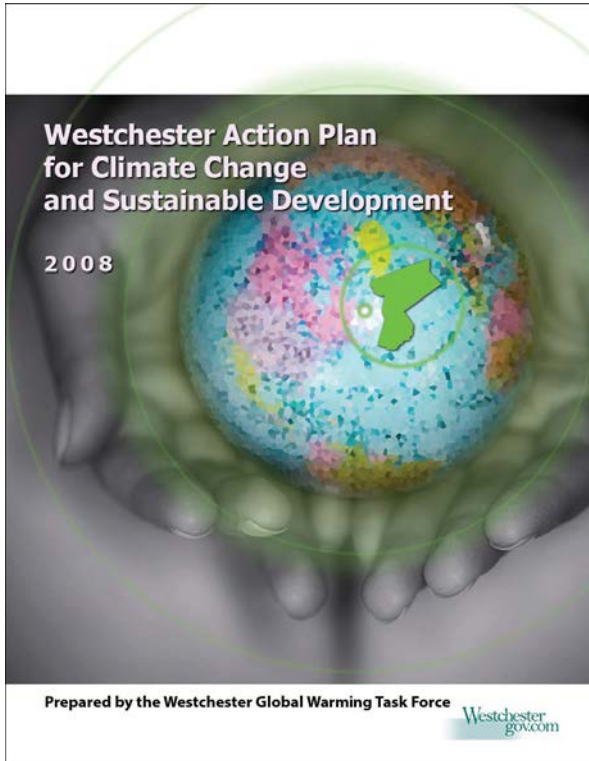
*2009 – 2010 Capstone Presentation  
Westchester County Department of Transportation  
NYU Wagner Capstone Client*

**Bike 914**

**NYU Wagner School for Public Service**

Nicole Kolinsky • David Sabatino • Patrick McCandless • Luke DePalma • Andrew Steininger

# Background of Issue



## ***Use Alternate Modes of Transportation***

Consider walking or riding a bike to destinations such as:

- Transit locations such as train stations, bus lines, and transit hubs
- School
- Work
- Shopping centers

# Project Deliverables

- I. Interim Report - 1/31
  
- I. Final Report - 4/30



# What is Bike Sharing?

*A bike share is a transportation program in which bikes are made available for use.*



# Benefits of Bike Sharing

- Transportation



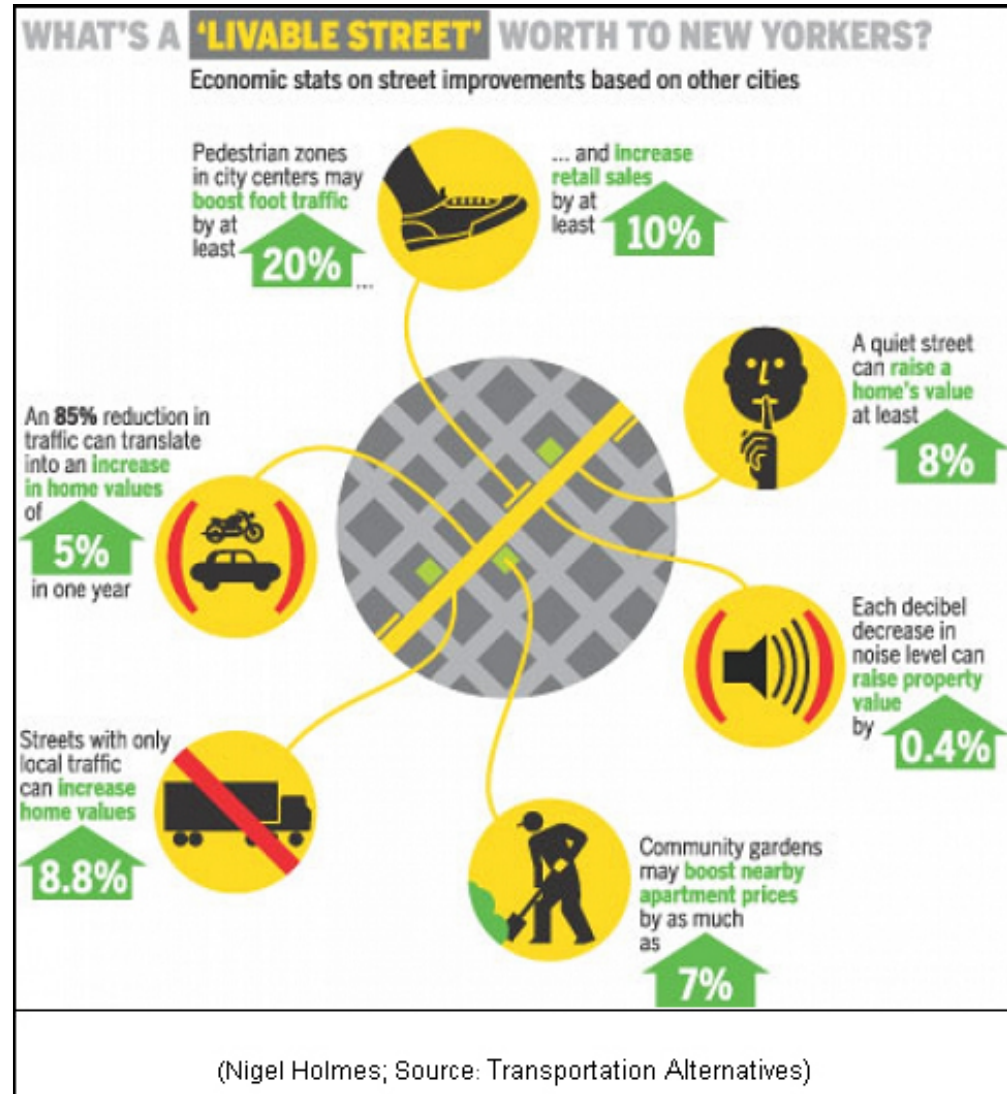
- Health



- Environmental



- Economic





# Operating Models

- Public-Private Partnership



- Private



- Not-For-Profit



- Government



# Case Studies

- Paris
- Montreal
- Washington, DC
  
- Elements Identified

# Existing Programs

## VÉLIB' PARIS, FRANCE

<b>Size</b>	44 square miles
<b>Population</b>	2.2 million
<b>Density</b>	53,000 people/square mile
<b>Established</b>	July 2007
<b>Program Model</b>	Advertising-based public-private partnership
<b>Bikes</b>	20,600
<b>Stations</b>	1,451

### Introduction

As the largest and most recognized bike-sharing system in the world, Paris' Vélib' program has set the initial tone for bike-sharing programs of today. Mayor Delanoë launched Vélib' in July 2007 as a part of *Espaces Civilisés* (Civilized Spaces), a greening and livability project introduced when he took office in 2001.

### Bike Share Network

Vélib' began with 10,000 bikes and 750 stations and five months later grew to 20,600 bikes and 1,451 stations. Currently, there are plans to expand to the Parisian suburbs with another 3,300 bikes and additional stations.

Vélib' has bike stations at nearly every metro stop and commuter rail station as well as stations on side streets near heavily visited monuments. Average bike-station density is 28 stations/square mile, although station density is determined by population density and the number of trips estimated to occur there. There are 12-70 bikes at each station, also dependent upon location and population density of the surrounding area.

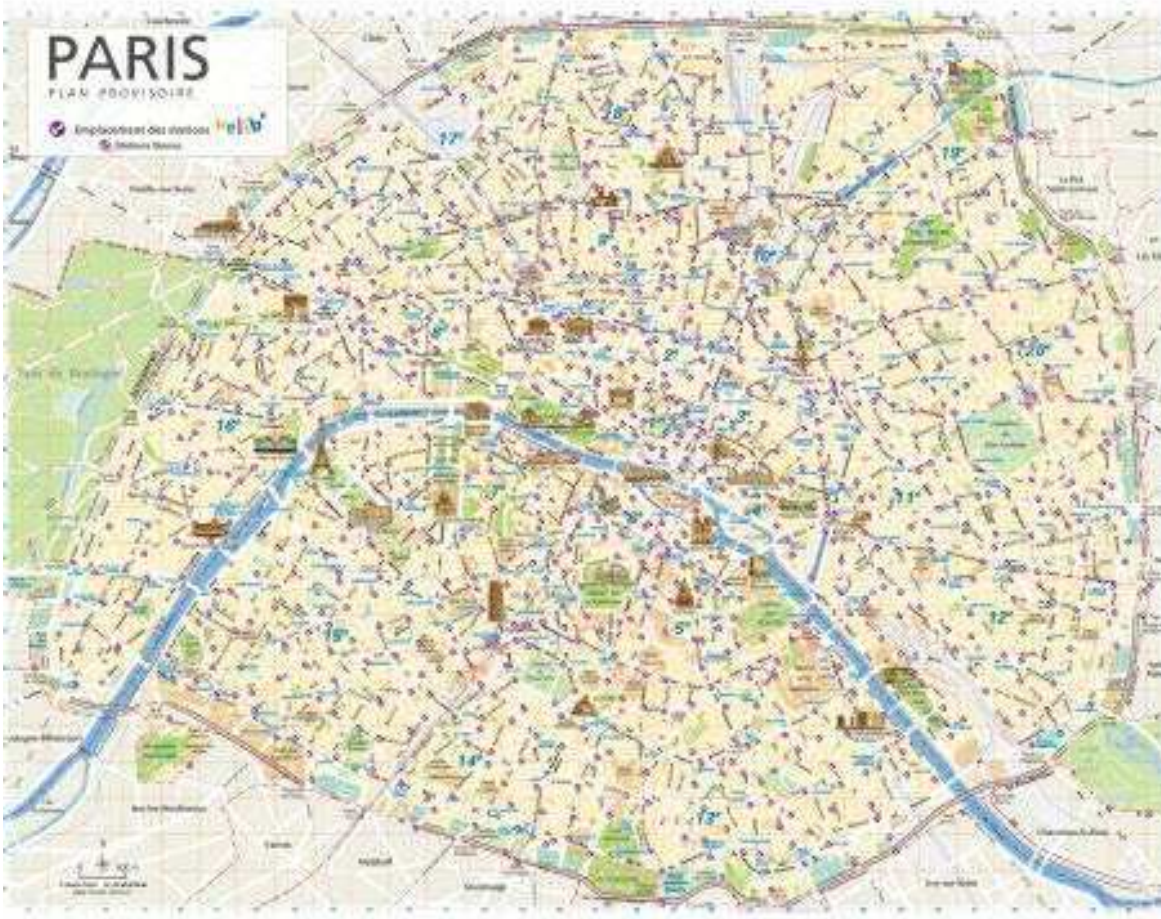
### Program, Fees, and Funding

Vélib' utilizes a subscription card that requires an initial subscription plus hourly usage charges. Riders can order the annual subscription card online or receive short-term subscription cards at service hubs around the city. Hourly fees are debited from the Vélib' subscription account. Subscription costs are €1/day, €5/week or €29 (\$46)/year. To encourage short trips, the first 30 minutes is free and the second 30 minutes is €1. Another 30 minutes is €3 total and every 30 minutes after is an additional €4. €150 is charged to the subscriber's credit card if bike is not returned in 24 hours.<sup>16</sup>

Vélib' is privately operated by SOMUPI, a joint company owned by JCDecaux, a multinational outdoor advertising and street-furniture company, and Publicis, a large advertising and communications enterprise. Under the ten-year contract with the city, JCDecaux is responsible for all of Vélib's capital and operating expenses. JCDecaux paid €90 million (approximately



# Existing Programs



# Existing Programs

## BIXI MONTRÉAL, QUEBEC

<b>Size</b>	140 square miles
<b>Population</b>	2.1 million
<b>Density</b>	11,496/square miles
<b>Established</b>	May 2009
<b>Program Model</b>	Government run with limited advertising
<b>Bikes</b>	5,000
<b>Stations</b>	400

### Introduction

Bixi was launched by the *Stationnement de Montréal*, the city parking authority, in spring 2009. Montréal envisions bike share as a cultural movement as well as a transportation initiative. Montreal advertises Bixi with images of young, attractive Canadians accompanied by captions stating: "I'm thinking differently," "I'm cycling and recycling," and "Time to get rolling." Additionally, Bixi uses poetic verse in promotions. One example is its paraphrasing of a classic Bob Dylan song: *"Because the times, they are a-changin'. Because we believe in cities that are more habitable and green. Cities that show their human face... WE ARE BIXI."*



Map of Bixi Stations

### Bike Share Network

Montréal's Bixi bike-share program is innovative in practice and ambitious in scale. Bixi Phase I came online in May 2009 and with 3,000 bikes in 15 kilometers of central Montréal. There are 300 stations that are spaced within a 250-300 meter diameter. Phase II, implemented just three months after Phase I in August 2009, increased the number of bikes to 5,000 by adding 2,000 bikes in neighborhoods outside Montréal's central district. Given Montréal's population of 1.8 million people, the City's bike-share program provides one bike for every 360 residents. Montréal Mayor Andre Lavallee views Bixi as an extension of the City's transit system and has coordinated its implementation with city transit agencies.

Bixi's technological innovations make for easier implementation, increased flexibility, and cost savings. Montréal claims to be able to install a station in a city street in 20 minutes. Stations were developed with a modular "drop and go" design. The bike docks are bolted



# Existing Programs

## SMARTBIKE D.C. WASHINGTON D.C.

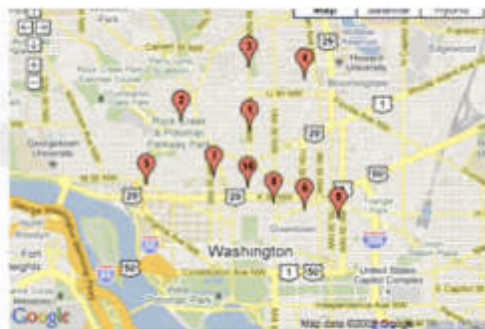
<b>Size</b>	68 square miles
<b>Population</b>	591,833
<b>Density</b>	9,378 people/square mile
<b>Established</b>	August 2008
<b>Program Model</b>	Advertising-based public-private partnership
<b>Bikes</b>	120
<b>Stations</b>	10

### Introduction

Launched by a partnership between Clear Channel Outdoor and the District Department of Transportation (DDOT), SmartBike DC was the first bike share to deploy in a major city in the United States. As part of this public-private partnership Clear Channel supplies the bicycles, stations and maintenance while receiving a 20 year contract for street furniture advertising in Washington D.C.<sup>33</sup>

### Bike Share Network

Bike stations are located throughout Washington D.C.'s central business district just north of the Capital Mall. The distance between stations can make it difficult for potential users to spot a station, but expansion plans intend to fill those gaps. While most stations are located on the sidewalk there are a few that are located in the street.<sup>34</sup>



Map of SmartBike Stations

After a successful first year, DDOT hopes to expand SmartBike DC to include an additional 80 to 90 stations, and more than 1,000 bicycles. Looking further into the future there are plans to combine access to the rail, bus, bicycle and even rent-a-car systems through the use of one card.<sup>35</sup>

### Program, Fees, and Funding

<sup>33</sup> New York City Department of City Planning. "Bike Share Opportunities in New York City 2009." p. 38. New York City Department of City Planning. [http://www.nyc.gov/html/dcp/pdf/transportation/bike\\_share\\_part3.pdf](http://www.nyc.gov/html/dcp/pdf/transportation/bike_share_part3.pdf)

<sup>34</sup> Ibid.

<sup>35</sup> The City Fix. "SmartBike DC Succeeds and Expands." The City Fix. <http://thecityfix.com/video-smartbike-dc-succeeds-and-expands/>



# **Transportation Professionals and Stakeholders**

# Transportation Professionals

## Professionals We Spoke To:

- NYC Department of City Planning
- NYC Department of Transportation
- Bike and Roll
- Portland Bureau of Transportation
- Sam Schwartz Engineering
- Transportation Alternatives
- CityRyde
- Budget Bicycle Center
- Bison Bikes at Bucknell University

# Westchester Stakeholders

## Stakeholders We Spoke To:

- City of White Plains
- City of Yonkers
- City of Mount Vernon
- Village of Tarrytown
- Village of Dobbs Ferry
- Town of Greenburgh
- Westchester Cycle Club
- Rye YMCA

# Major Findings



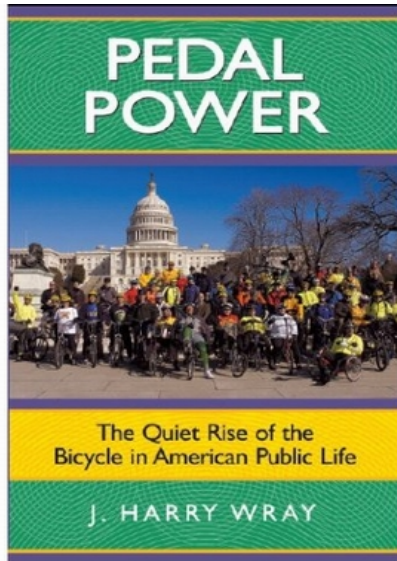
*Each bike share is tailored to the needs and goals of its location.*



# Major Findings – Prerequisites

## Bike Policy

- Bike Safety Campaigns
- Enforcement of Bike Laws and Regulations
- Public and Political Support



## Bike Infrastructure

- Bike Routes
- Bike Lanes
- Bike Signage
- Bike Storage
- Changing Facilities and Showers



# Major Findings – Prerequisites

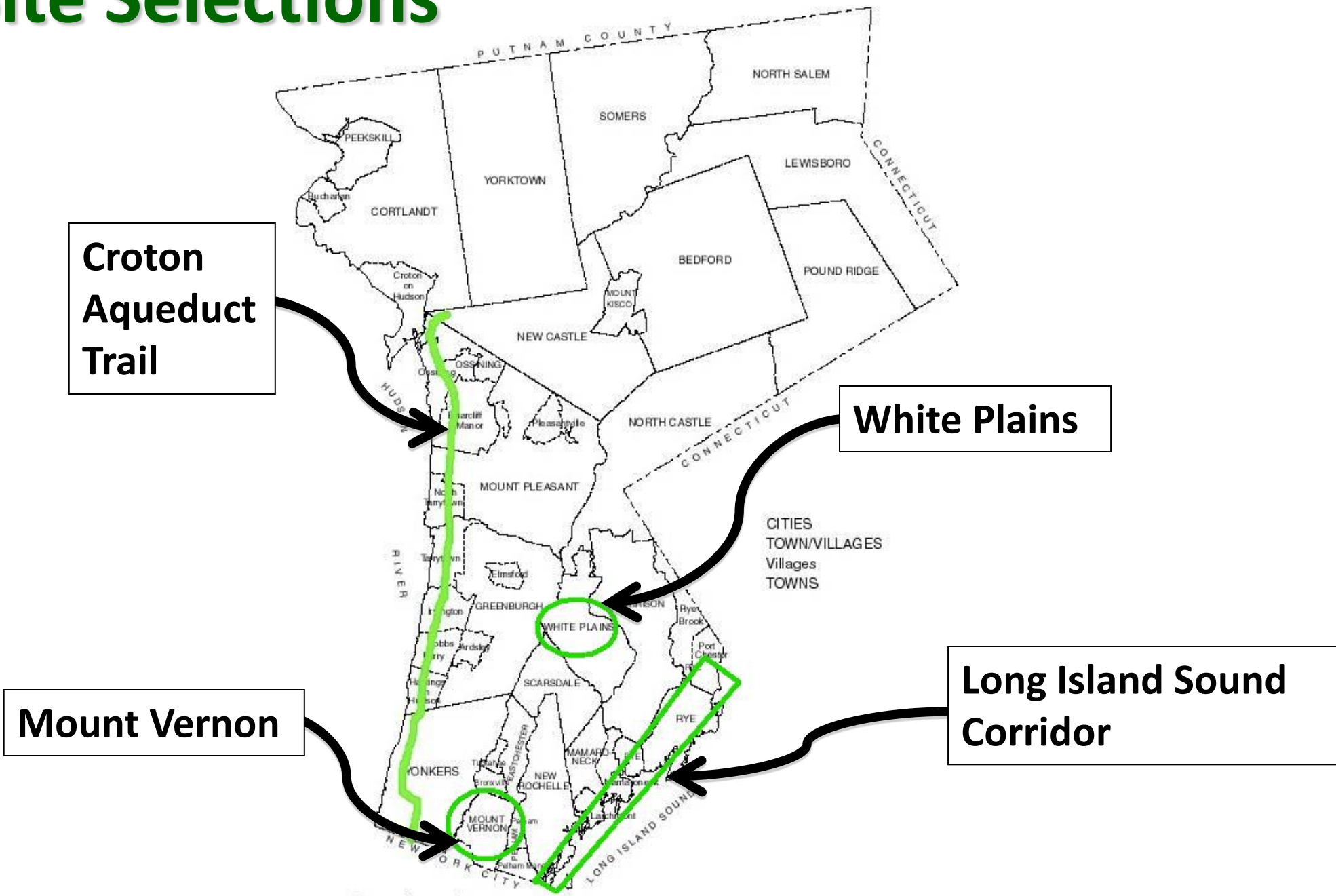
## Bike Sharing

- Identify Catchment Areas
- Identify Corridors/Spines
- Placing Stations Near Points of Interest
- Gradual Roll Out for Communities With Lower Levels of Biking

# Major Findings – Criteria

- Density
- Connectivity
- Topography
- Professionals and Stakeholder Recommendations
- Diversity of Uses
- Social Equity
- Visibility

# Site Selections



**Croton  
Aqueduct  
Trail**

**White Plains**

**Mount Vernon**

**Long Island Sound  
Corridor**



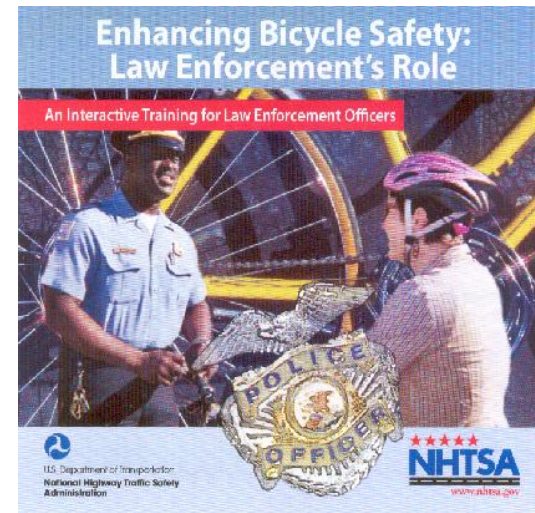
MAP 1

Municipalities

# Policy Recommendations

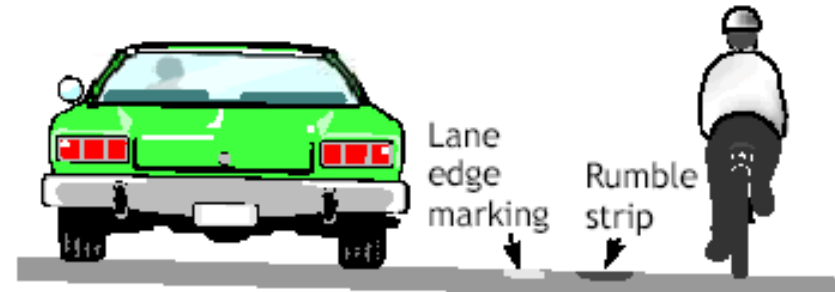
## Education and Outreach

- Create *Road-Rules* Safety Campaign
- Develop a Brand
- Conduct Education Classes
- Conduct Outreach
- Increase Enforcement



# Infrastructure Recommendations

- Bike Lanes



- Shoulder Bikeways



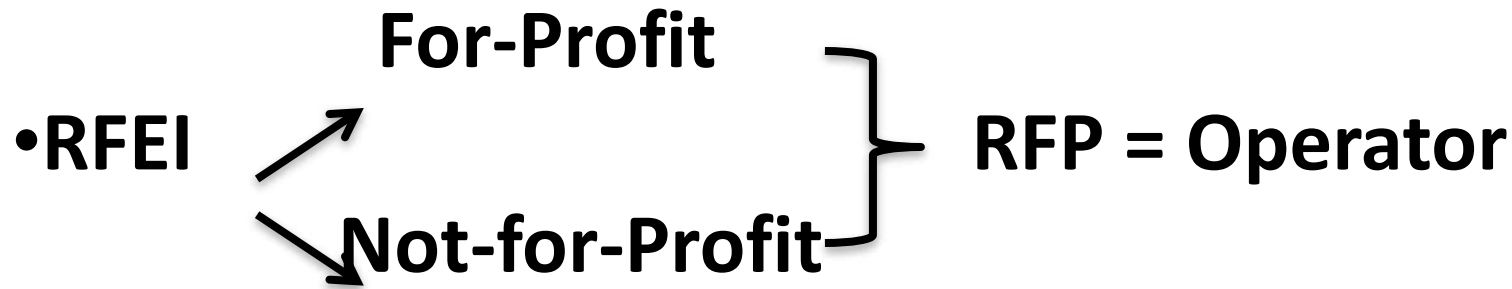
- Multi-Use Paths

- Shared Roadway Bike Lanes: *Sharrows*



# Operational Recommendations

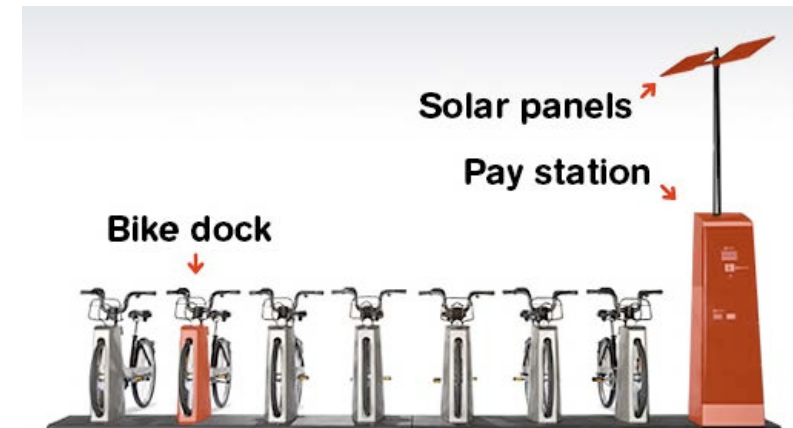
## Operator Selection: *The Potential to Profit*



## Administration Guidelines: *Community Oversight*



## Technology and Physical System



# Operational Recommendations

## Accessibility, Security and Liability



→ The Kiosk

→ The Docking Post

→ The Bike

# Mount Vernon



# Mount Vernon

## Catchments

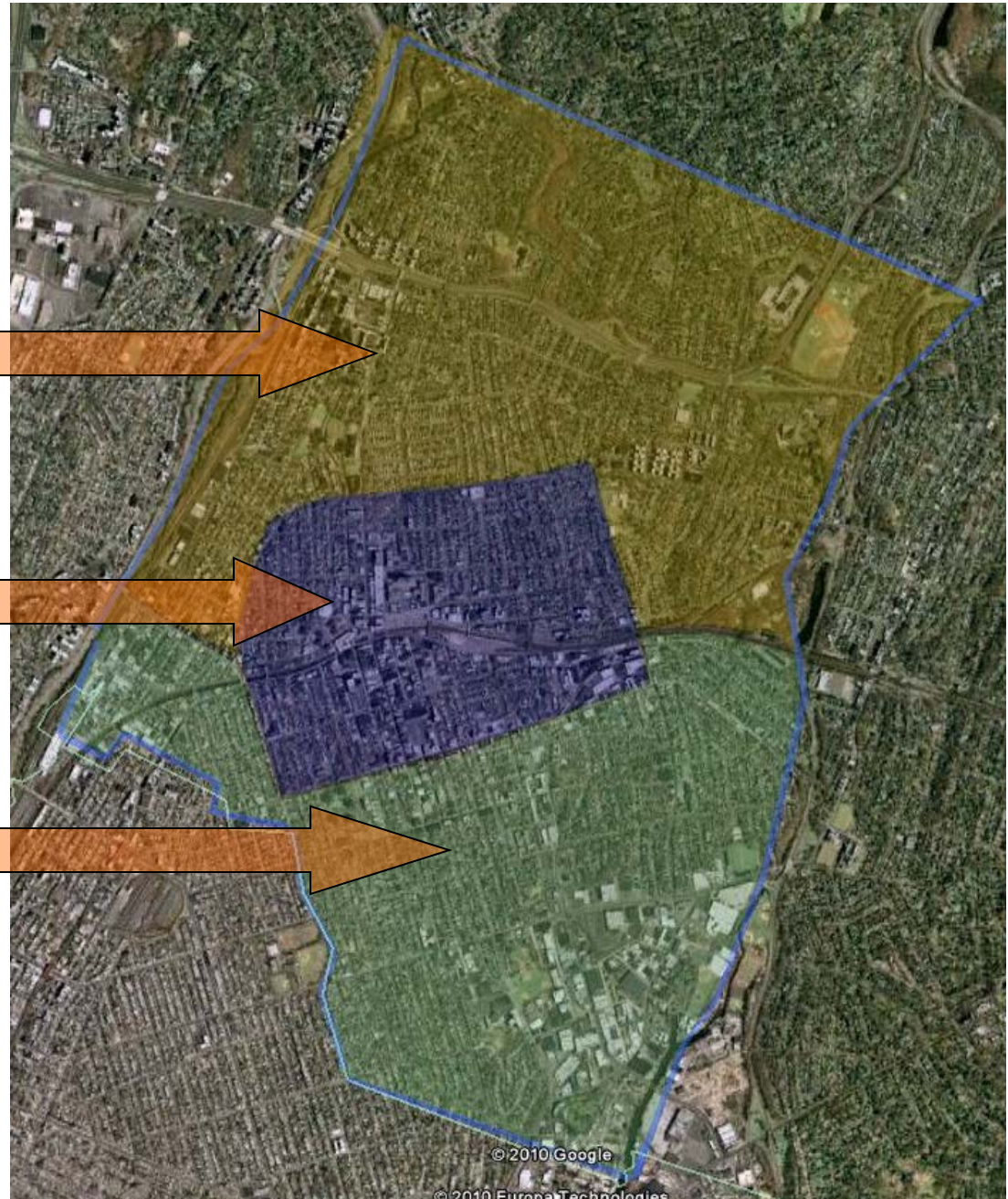
• Northern Mount Vernon



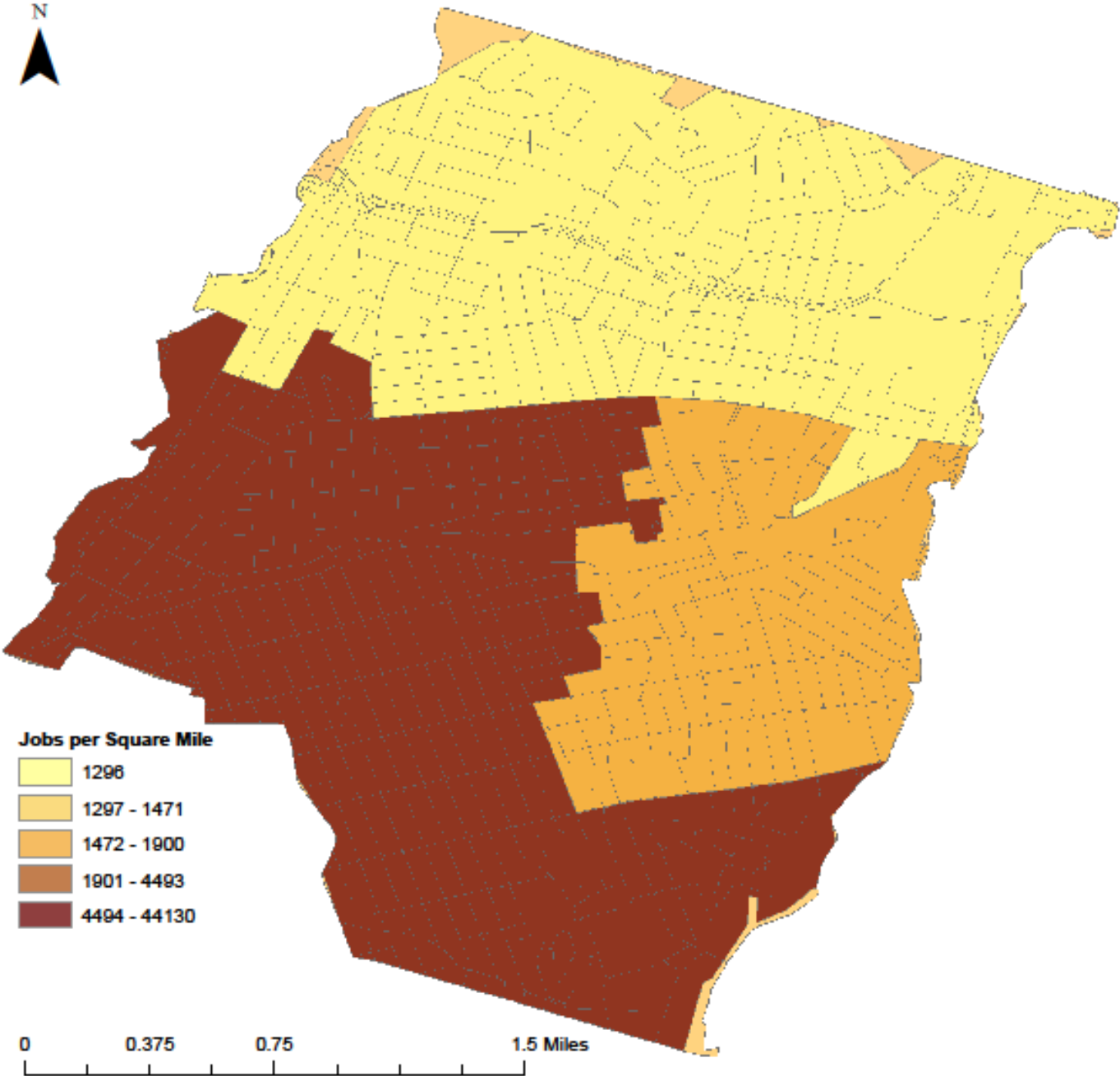
• Downtown Mount Vernon



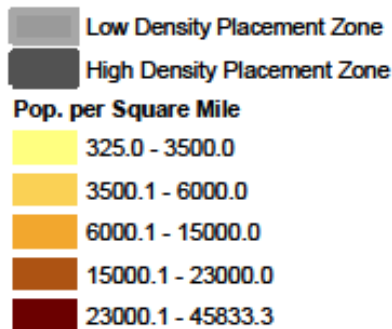
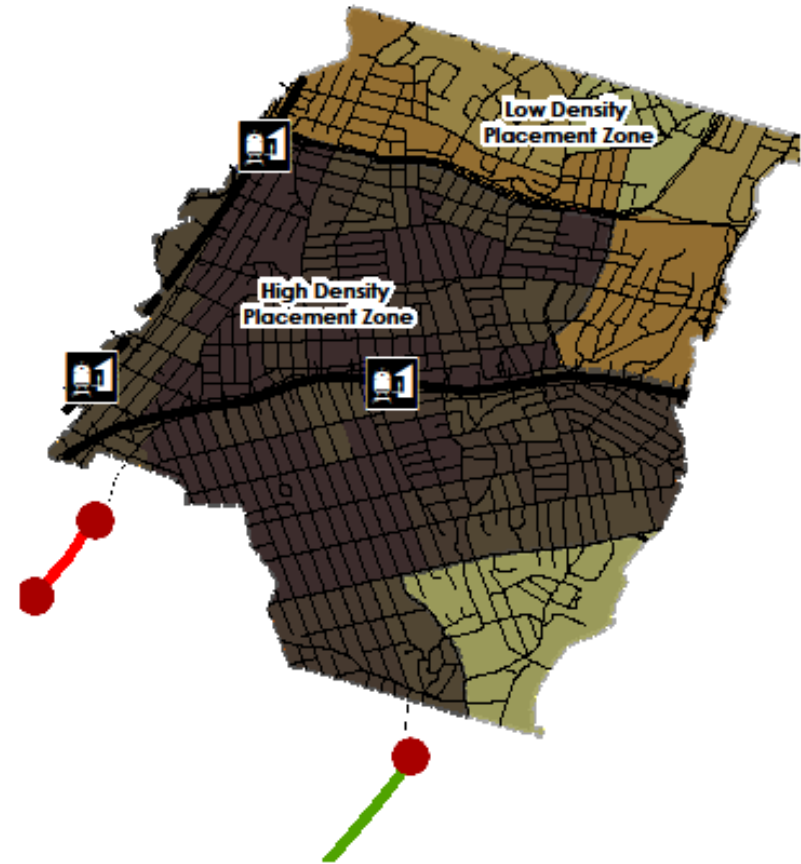
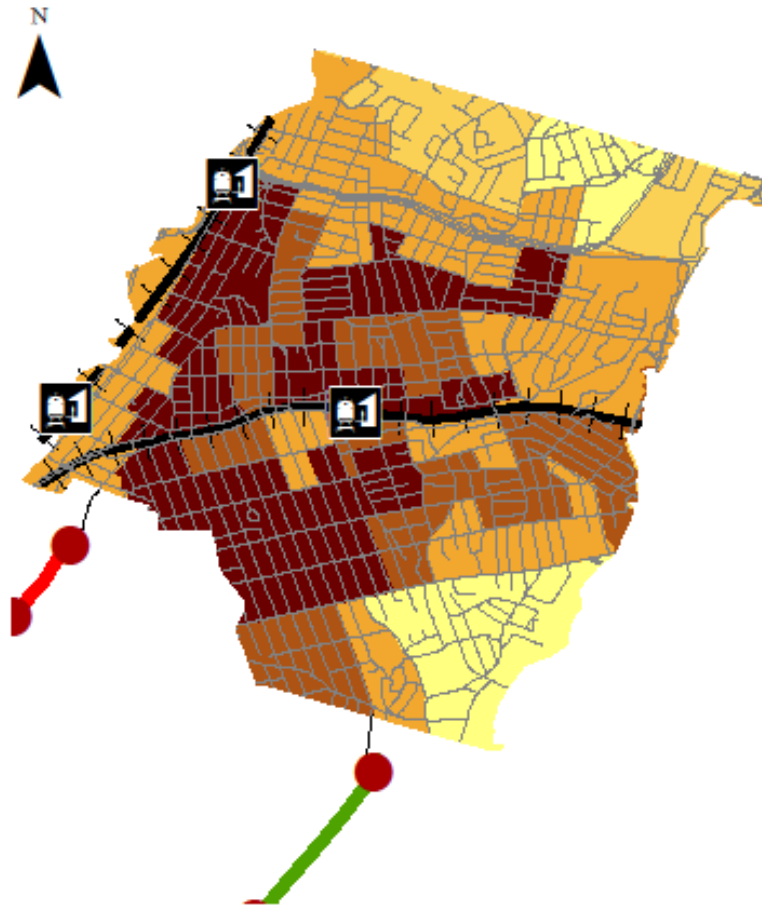
• Southern Mount Vernon



# Mount Vernon: Programming Considerations



# Mount Vernon: Programming

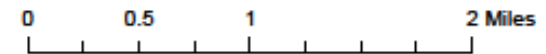


### Programming for Low Density Placement Zone

Area: 1.5 Square Miles  
Number of Stations: 32-38  
Number of Bikes: 191  
Bikes per Square Mile: 12

### Programming for High Density Placement Zone

Area: 2.9 Square Miles  
Number of Stations: 8-10  
Number of Bikes: 50  
Bikes per Square Mile: 7



## Bike Placement for Mount Vernon Bike Share

# Mount Vernon: Programming

High Density  
Placement Zone



Bike Station in  
High Density Zone



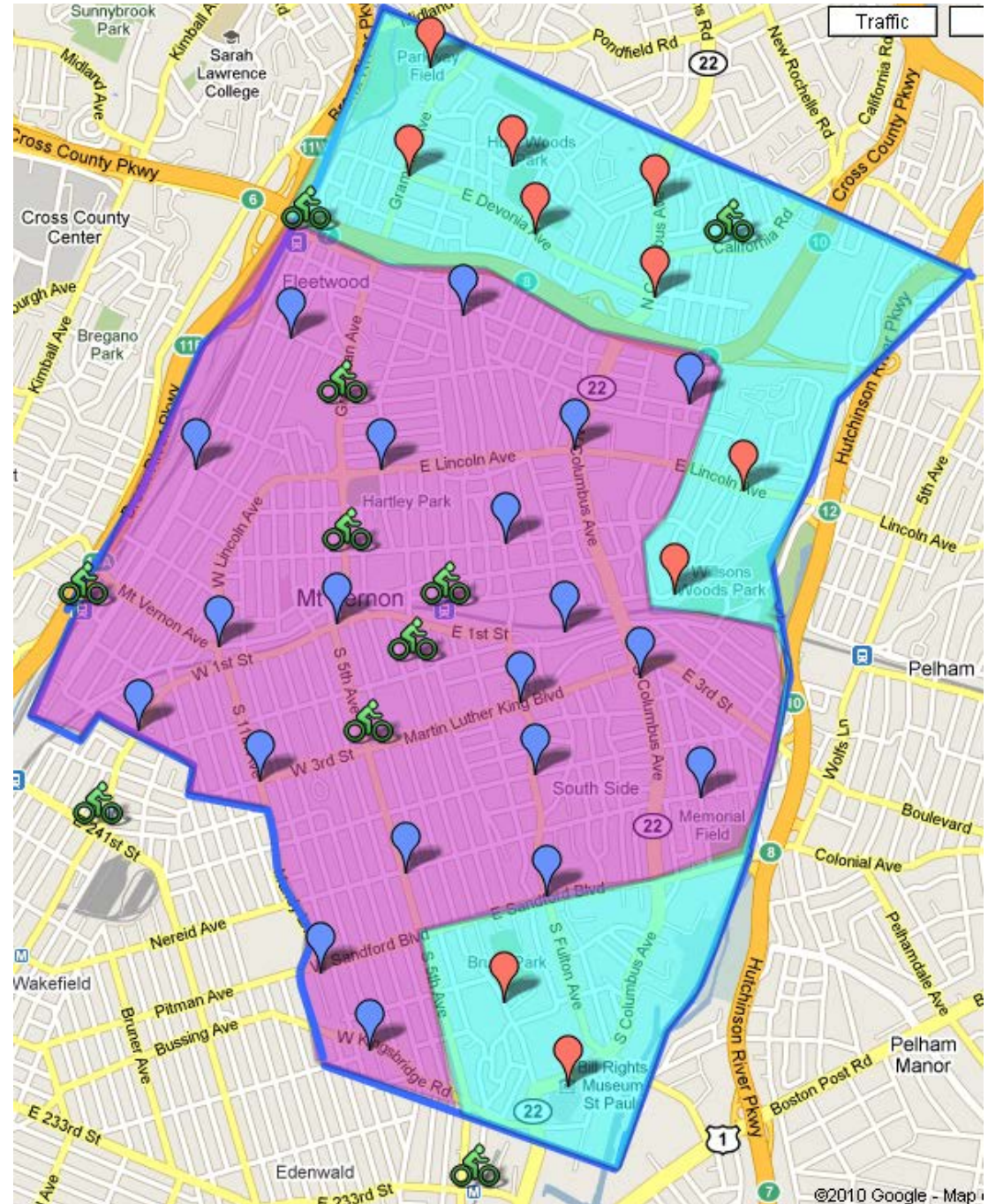
Low Density  
Placement Zone



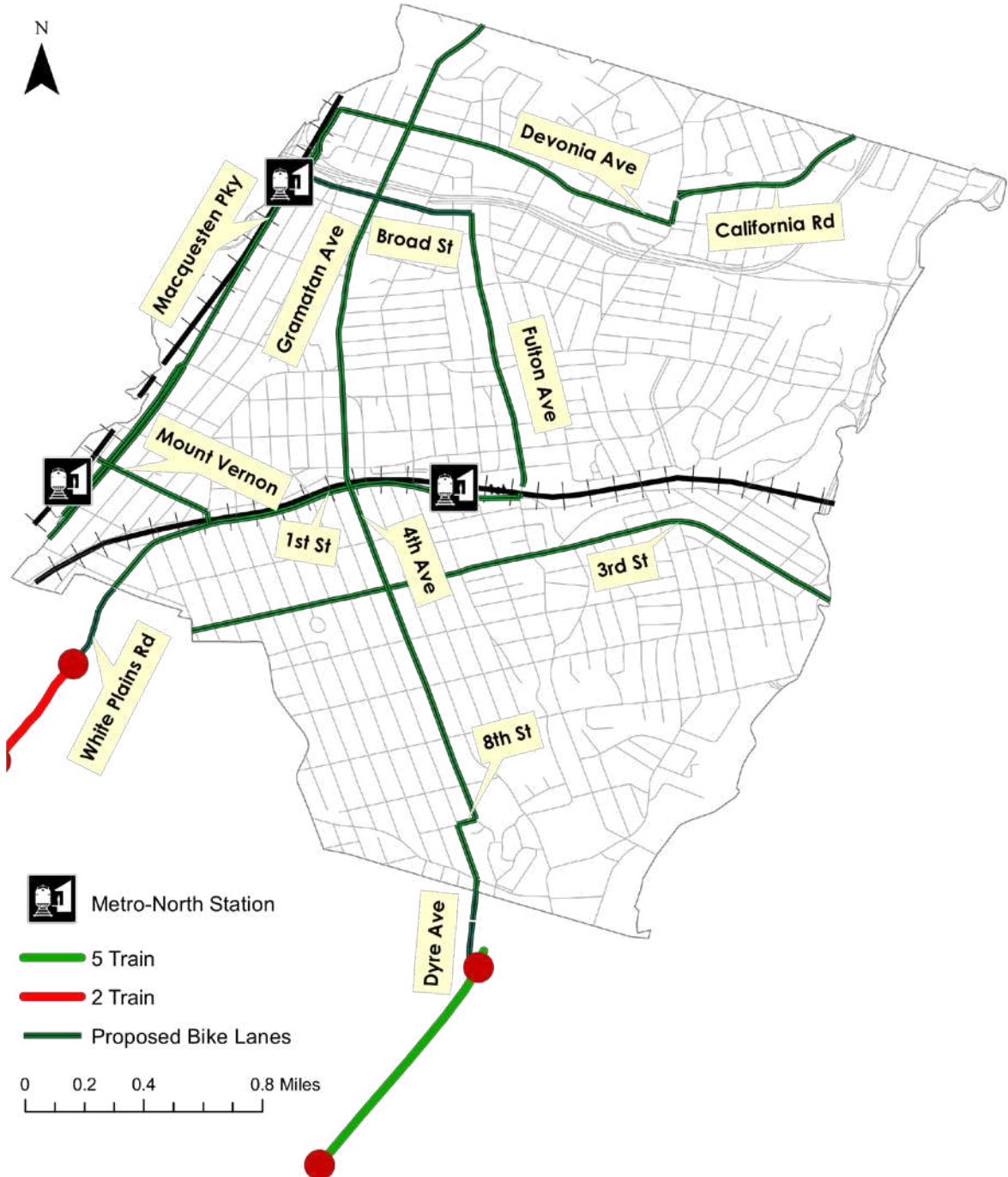
Bike Station in  
Low Density Zone



Bike Station at  
Point of Interest



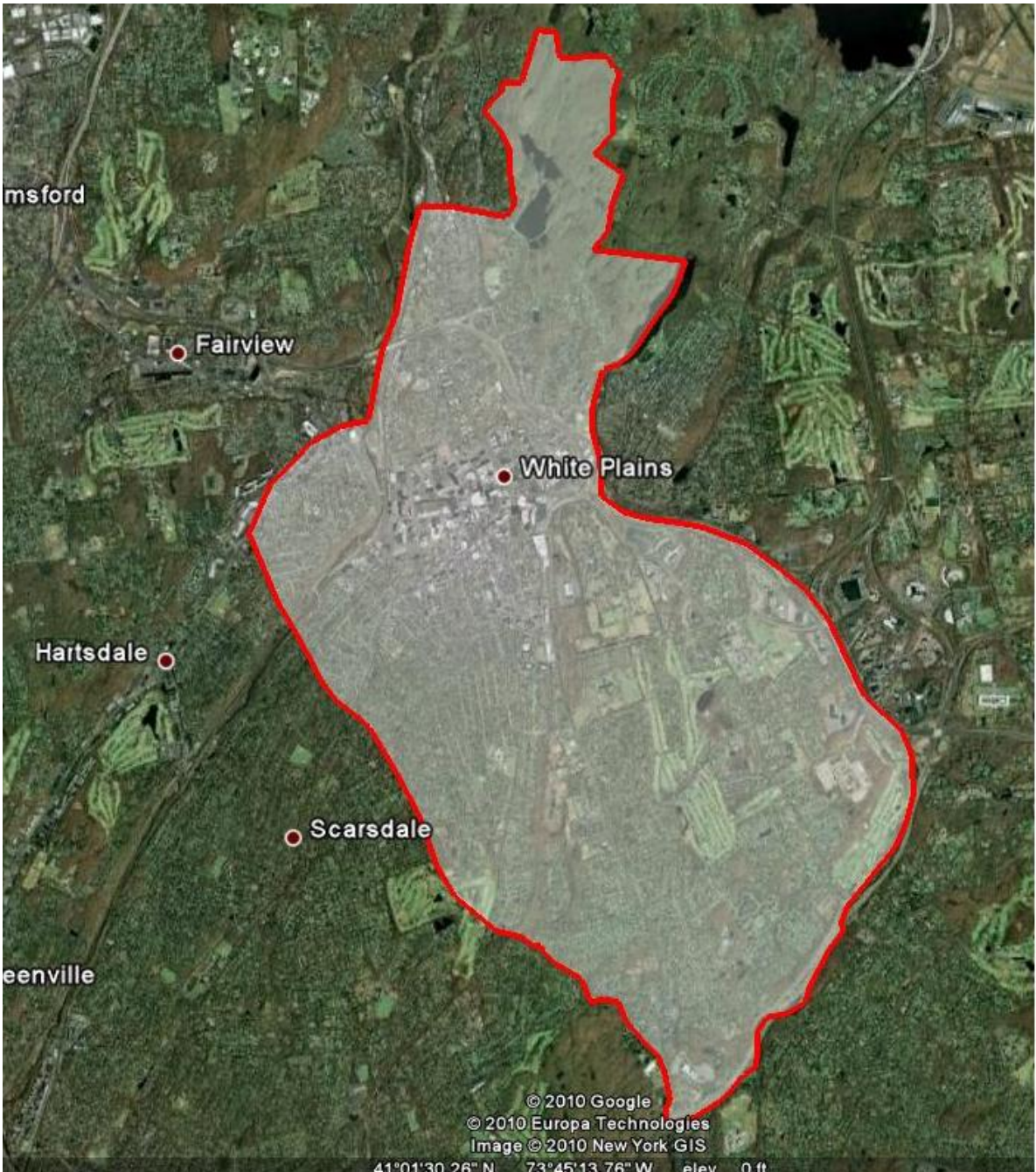
# Mount Vernon: Bike Lanes



# Mount Vernon: Policy Considerations

- **Accountability Measures for lost/stolen bikes**
- **Bike lanes**
  - Truck traffic on the South Side
  - Bus operations
  - 2-way street direction
- **Future Connections**
  - Cross County Shopping Center via Broad Street or Yonkers
  - Leatherstocking bike trail (New Rochelle)

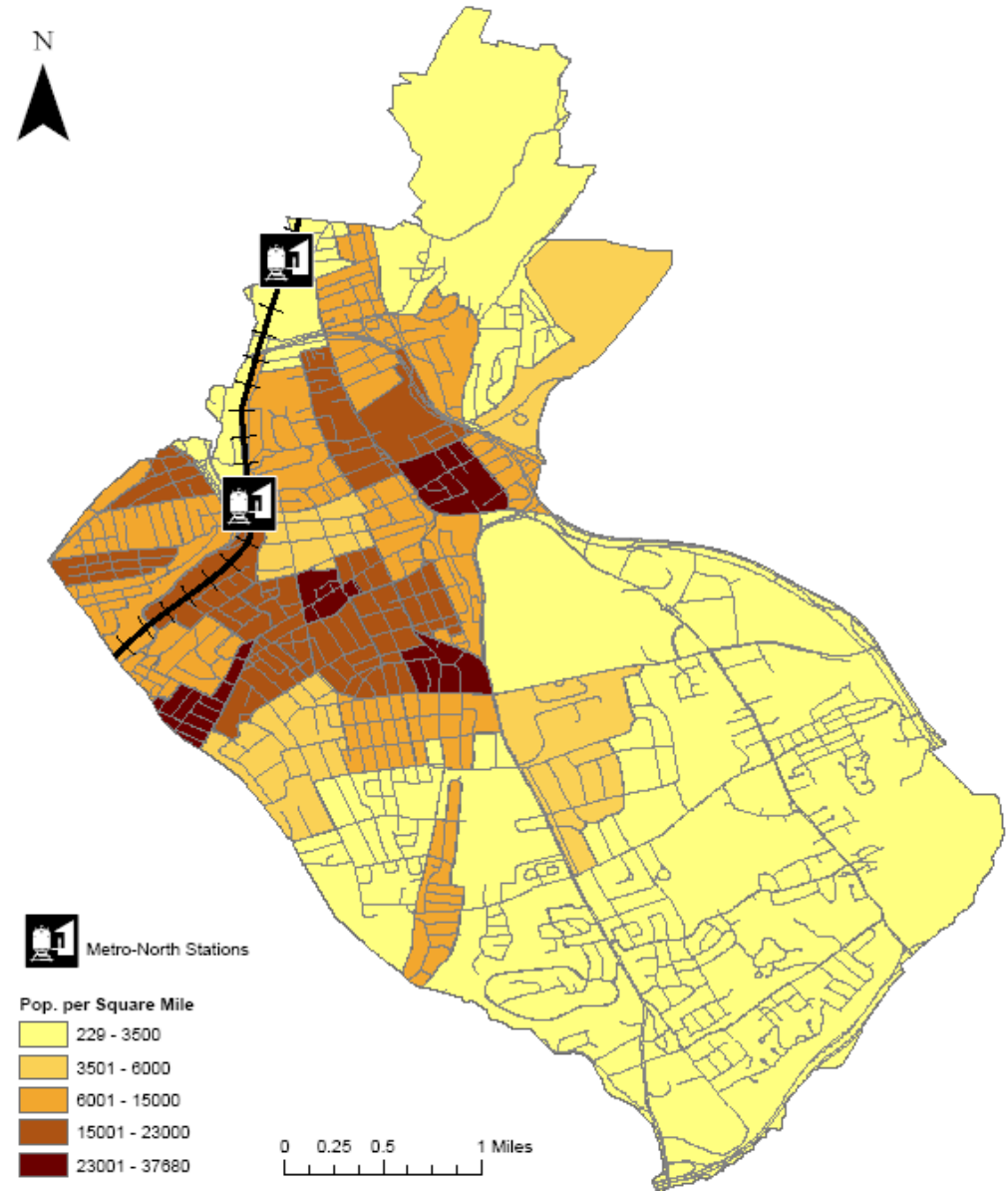
# White Plains Overview



# White Plains: Programming Considerations

Density:

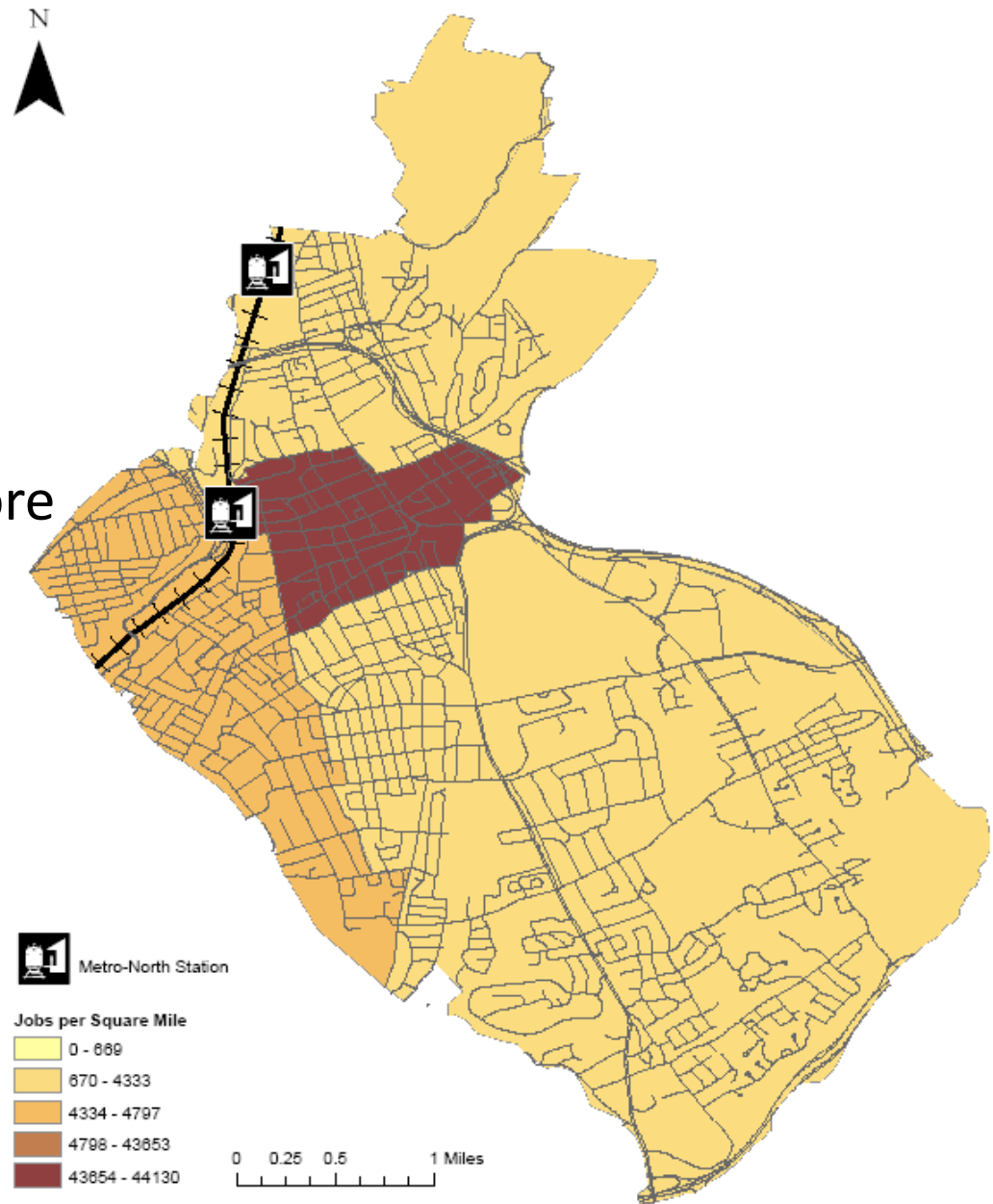
- Not uniform
- Highest density near the train station and central business district
- Low density in north east and south east portions of White Plains



# White Plains: Programming Considerations




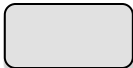
Job Density:

- Concentrated in the downtown core



# White Plains: Components

## Catchments

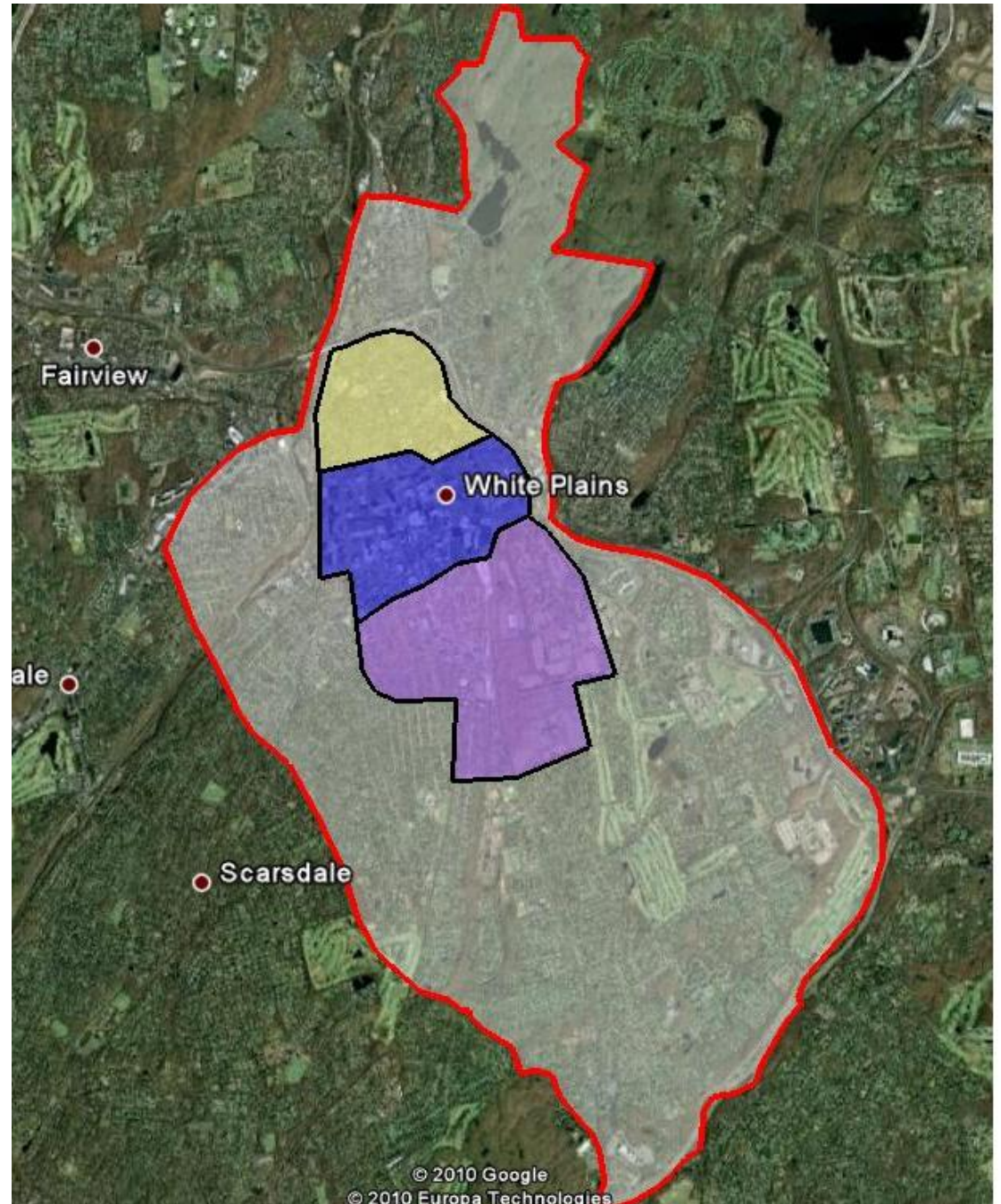
- Northern 
- Downtown 
- Southern 
- Outside Catchments 

## Maximum Build Out

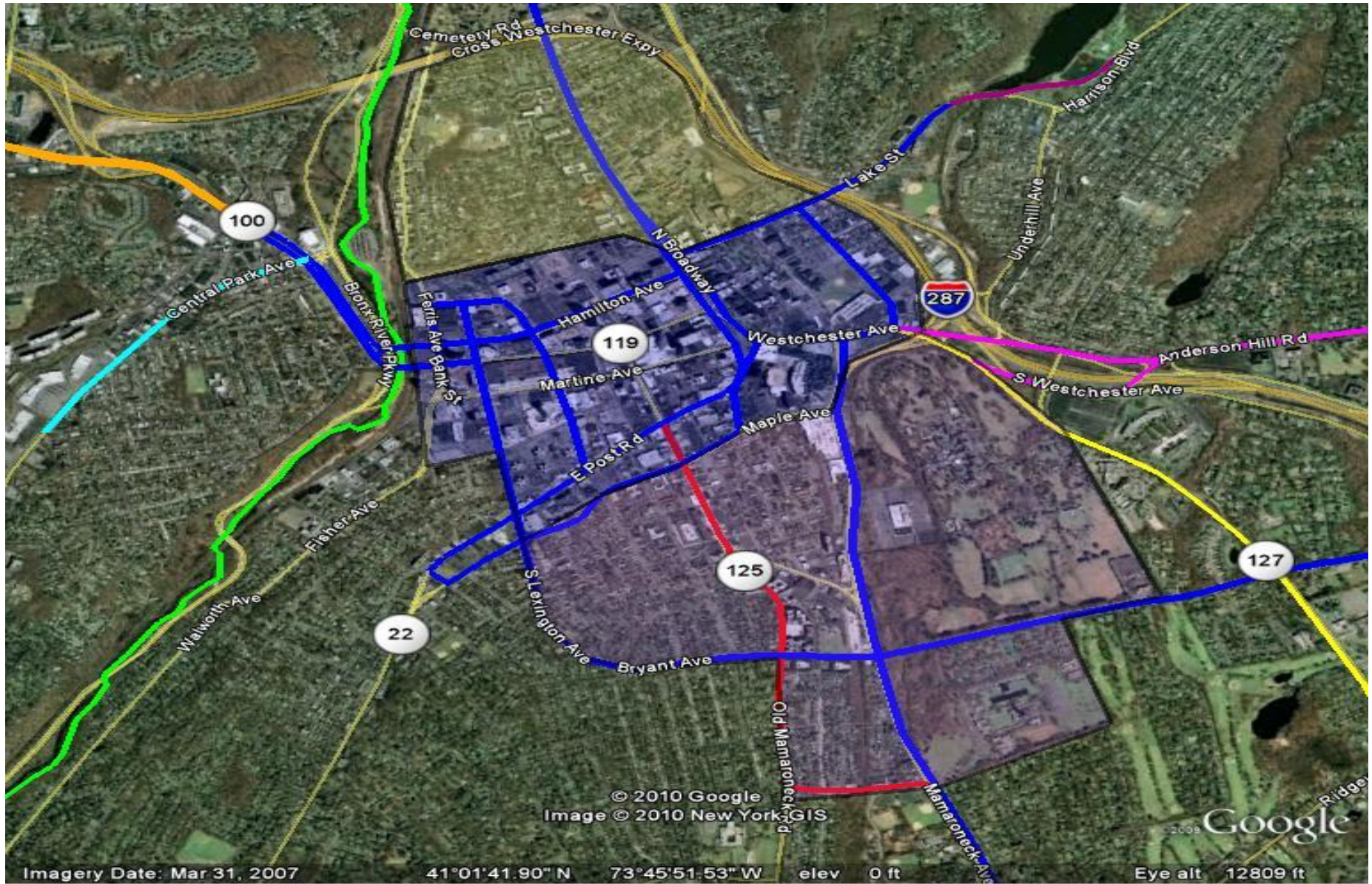
-35 bike stations









-1,250 bikes

(flexible for distribution)

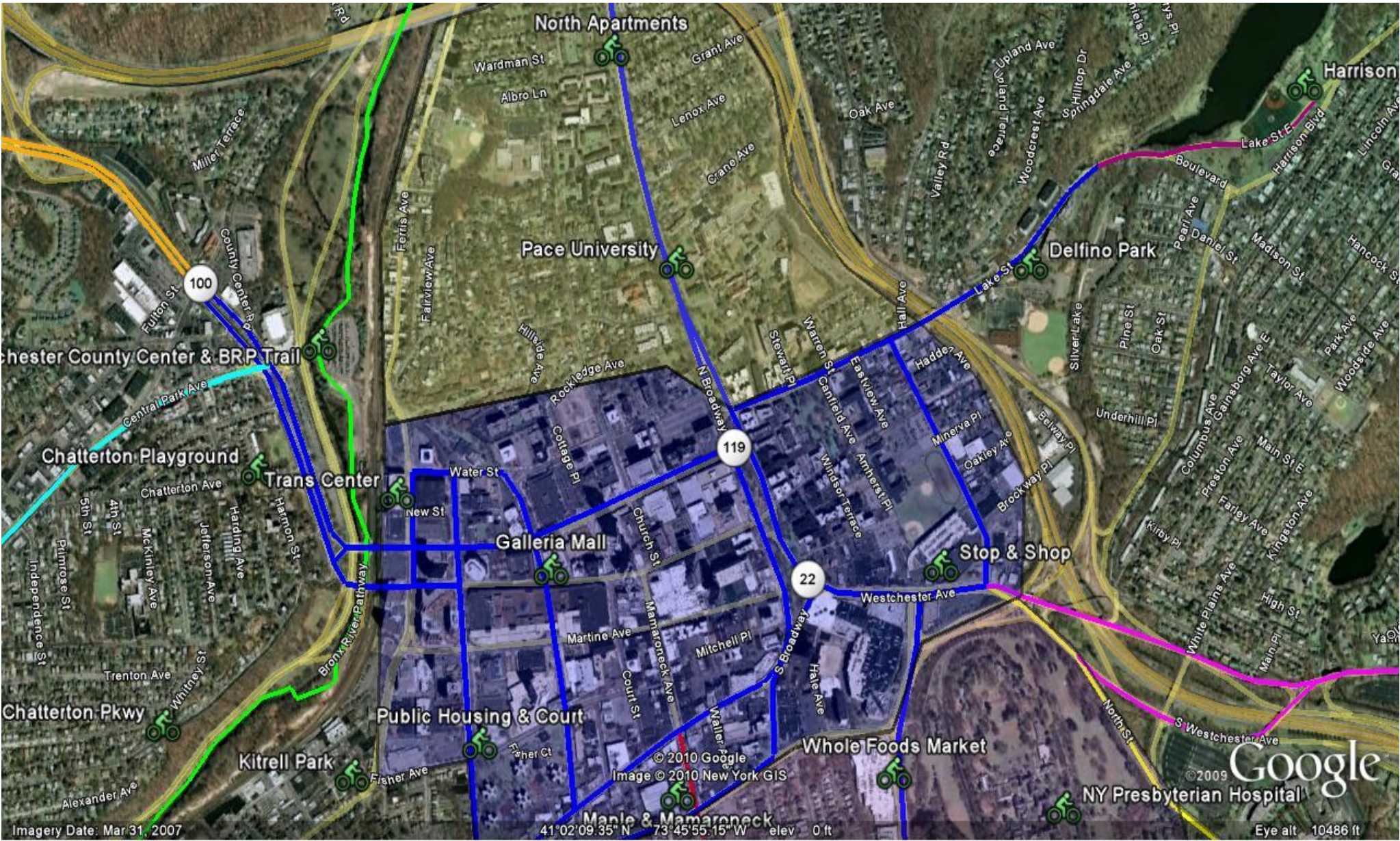


# WHITE PLAINS. BIKE ROUTES

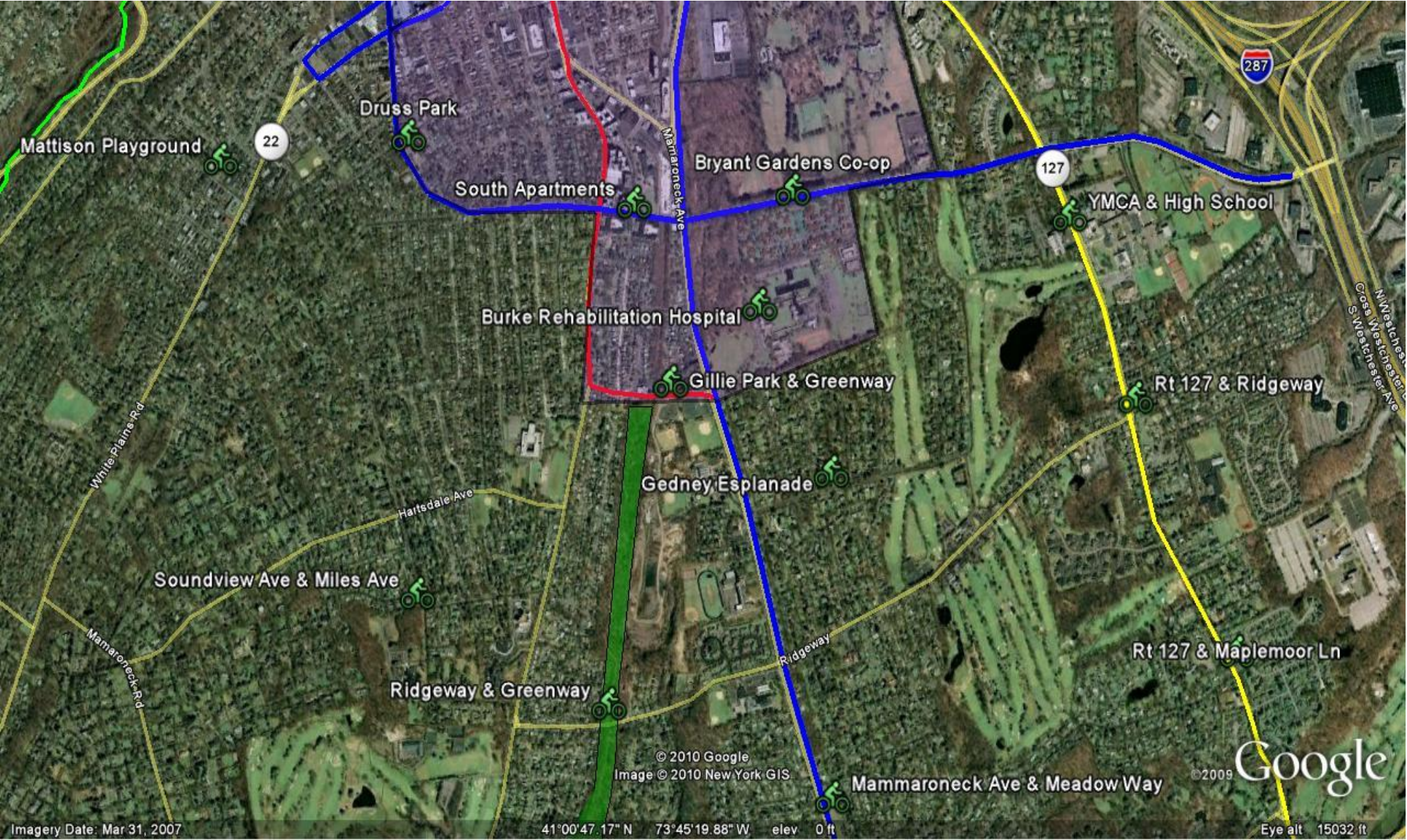


- |  |                                  |   |                                |   |                                   |
|--|----------------------------------|---|--------------------------------|---|-----------------------------------|
|  | <b>2002 Bike Routes</b>          |  | <b>SUNY Purchase Extension</b> |  | <b>Harrison Extension</b>         |
|  | <b>Bronx River Parkway Trail</b> |  | <b>Rt 127 Extension</b>        |  | <b>Central Park Ave Extension</b> |
|  | <b>Greenburgh Extension</b>      |  | <b>Rt 125 Extension</b>        |   |                                   |

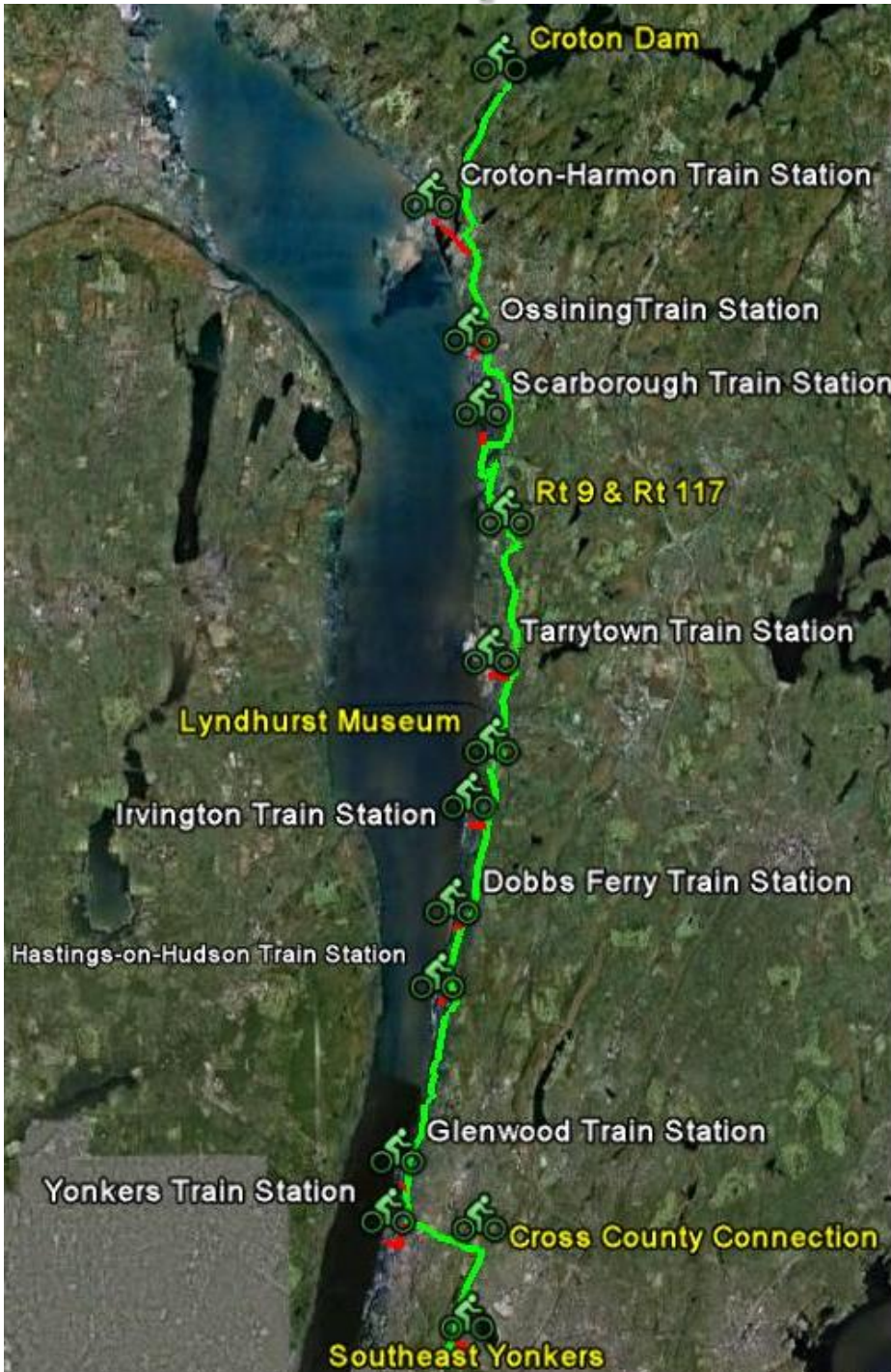
# White Plains: Routes and Stations



# White Plains: Routes and Stations



# Croton Aqueduct Trail



# Croton Aqueduct: Downtown Routing



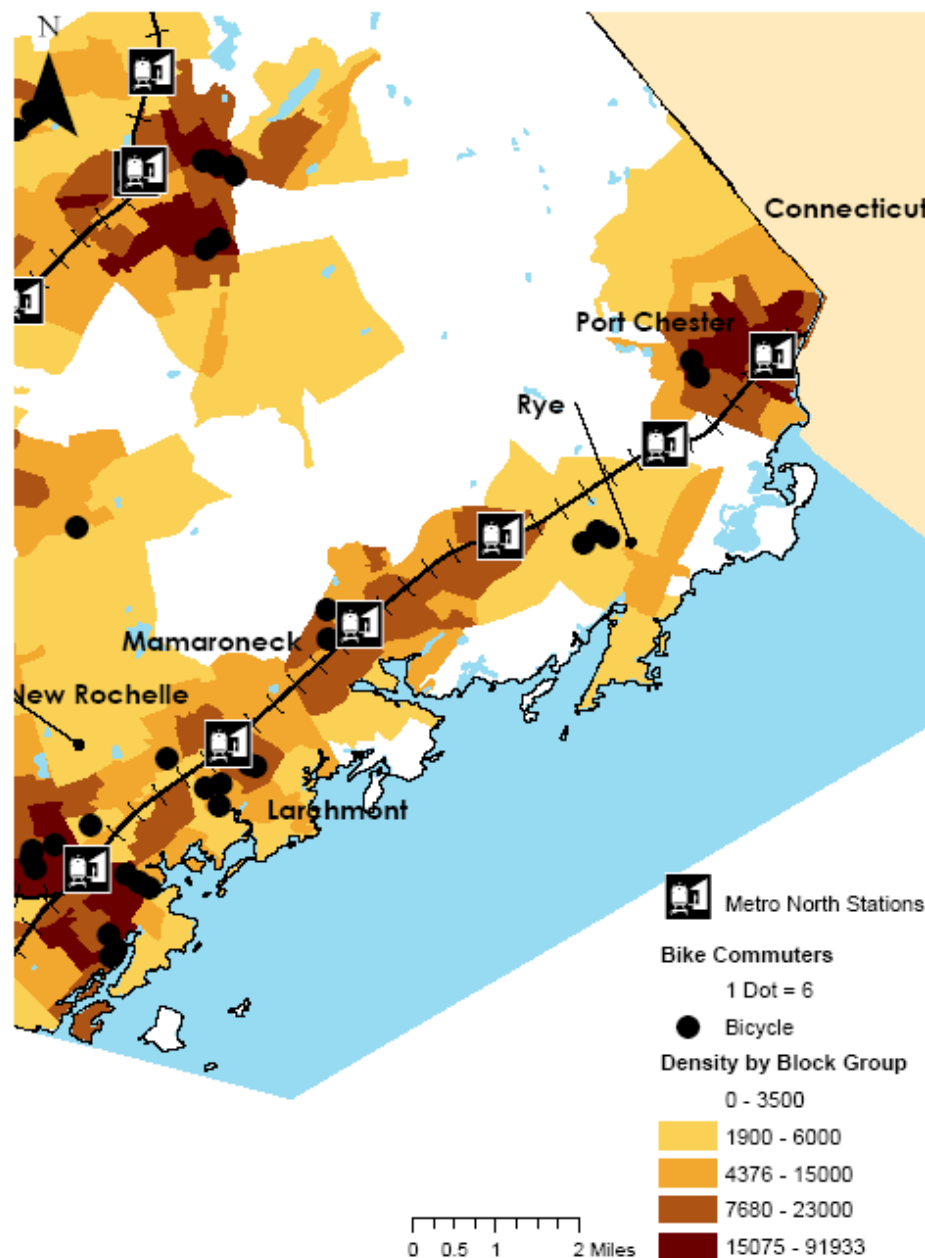
# Long Island Sound Communities

## Opportunity for Bike Share

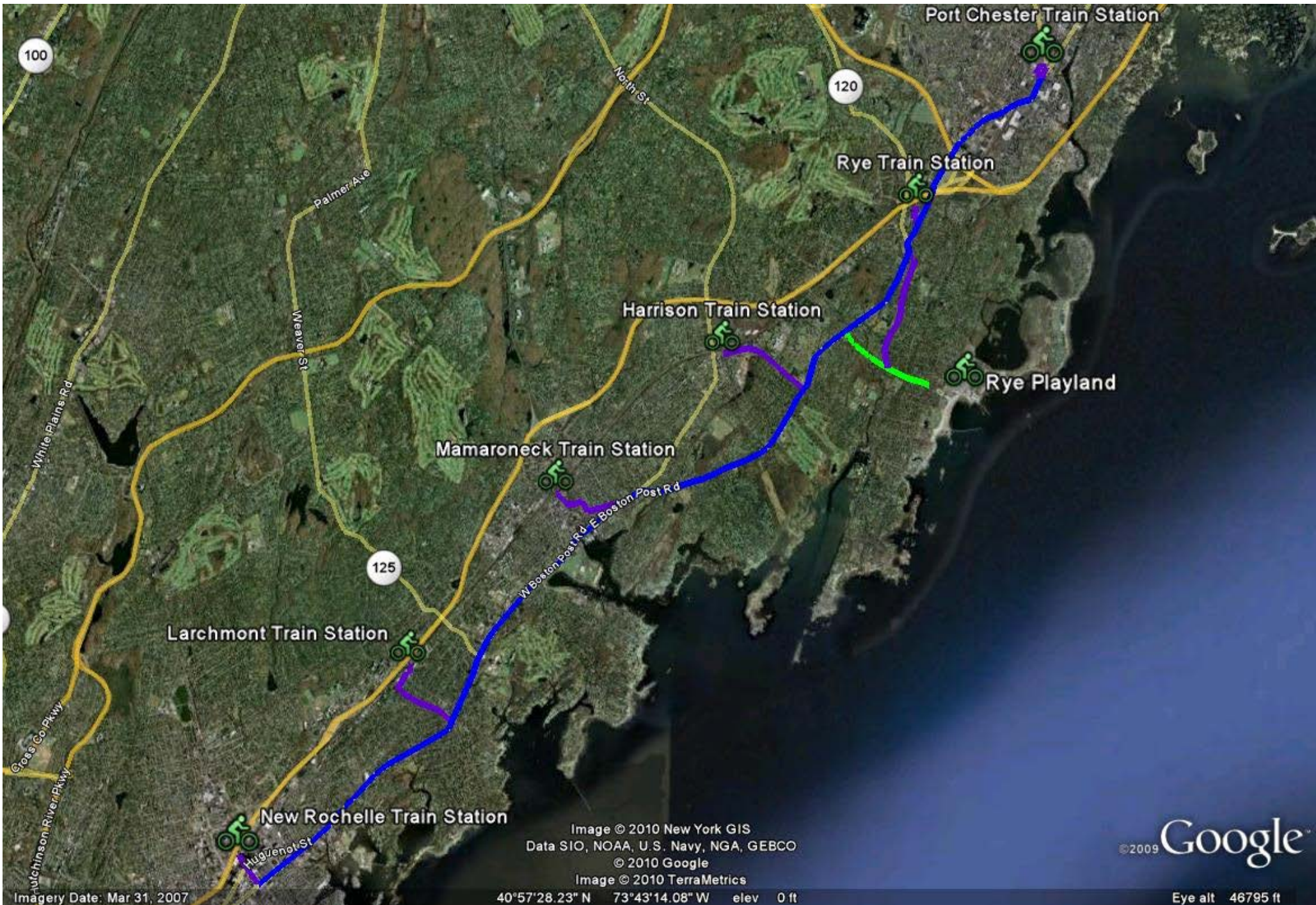
- Dense communities
- Minimal topographical challenges
- High degree of connectivity to transit

## Challenges

- Infrastructure improvements
- Distance from beginning to end
- Inter-municipality cooperation



# Long Island Sound Components



# Questions and Comments?



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