



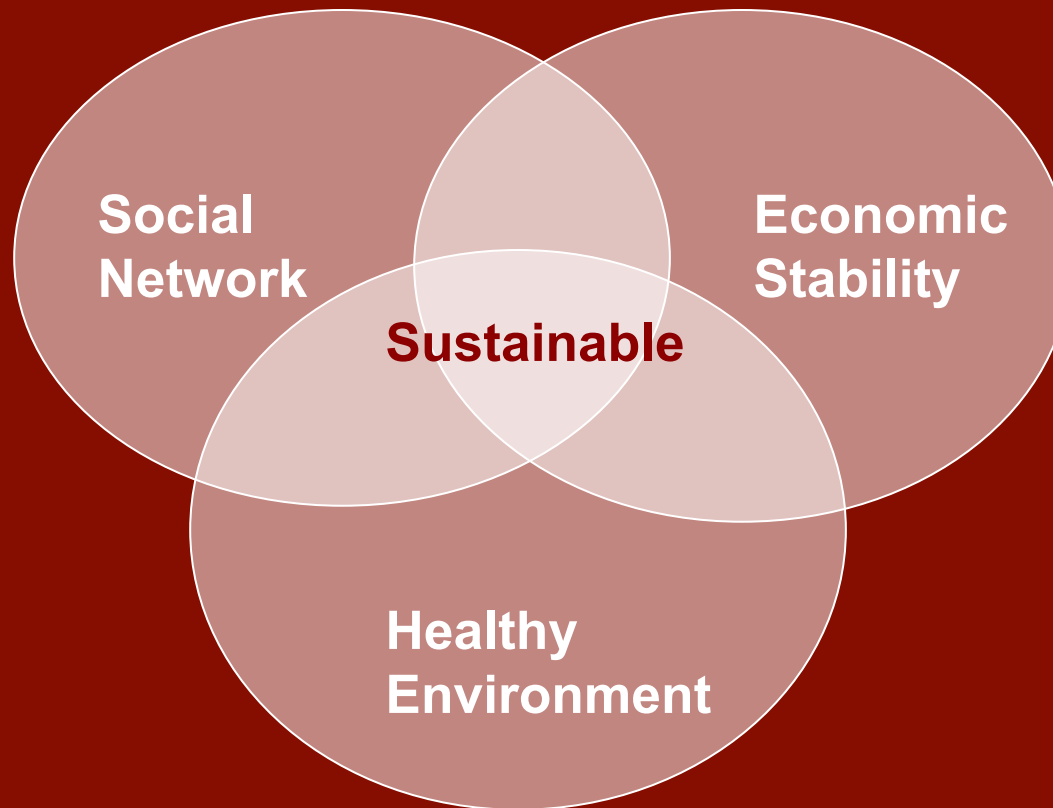
## ROCKLAND P.L.U.S. PLANNING LAND USE WITH STUDENTS

High School Students from throughout Rockland County consider sustainable planning for our community.

Concluding with a Symposium Event  
3/23/17 at HNA Conference Center

# How can we plan for a healthy, sustainable community?

Sustainable Community Planning means thinking both locally and regionally



# Rockland P.L.U.S. Helps us to S.E.E. the Community – the Social, Economic, and Environmental aspects of our communities



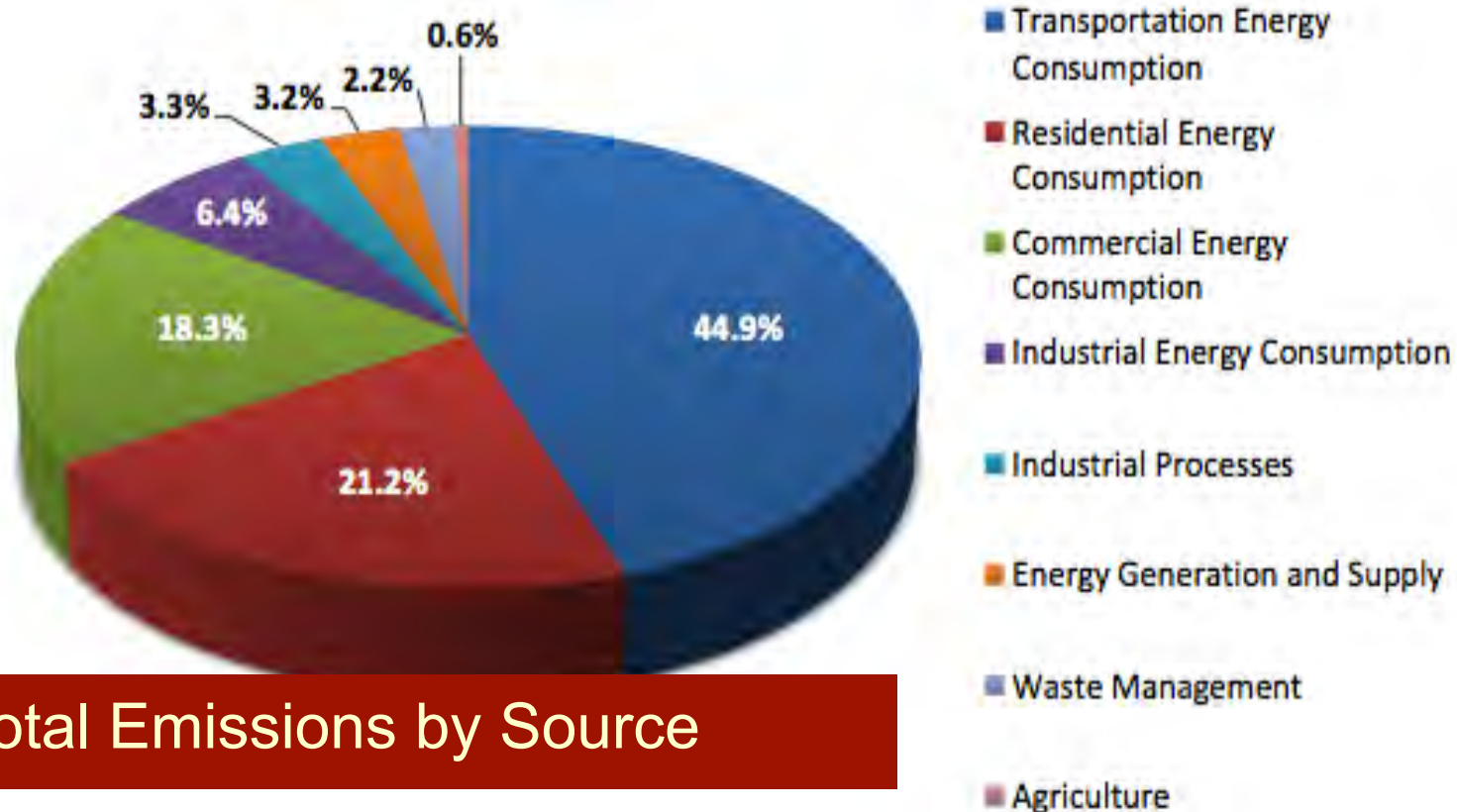
# For Rockland considering transportation is important



82% of Rockland residents live & work in the County.  
Transportation within the County, transportation to Westchester (7.2%) & to New York City (10.8%) must all be considered.

<http://hudsonvalleyregionalcouncil.org/wp-content/uploads/2013/12/CEDS-FINAL-DRAFT-Dec-10-2013.pdf>

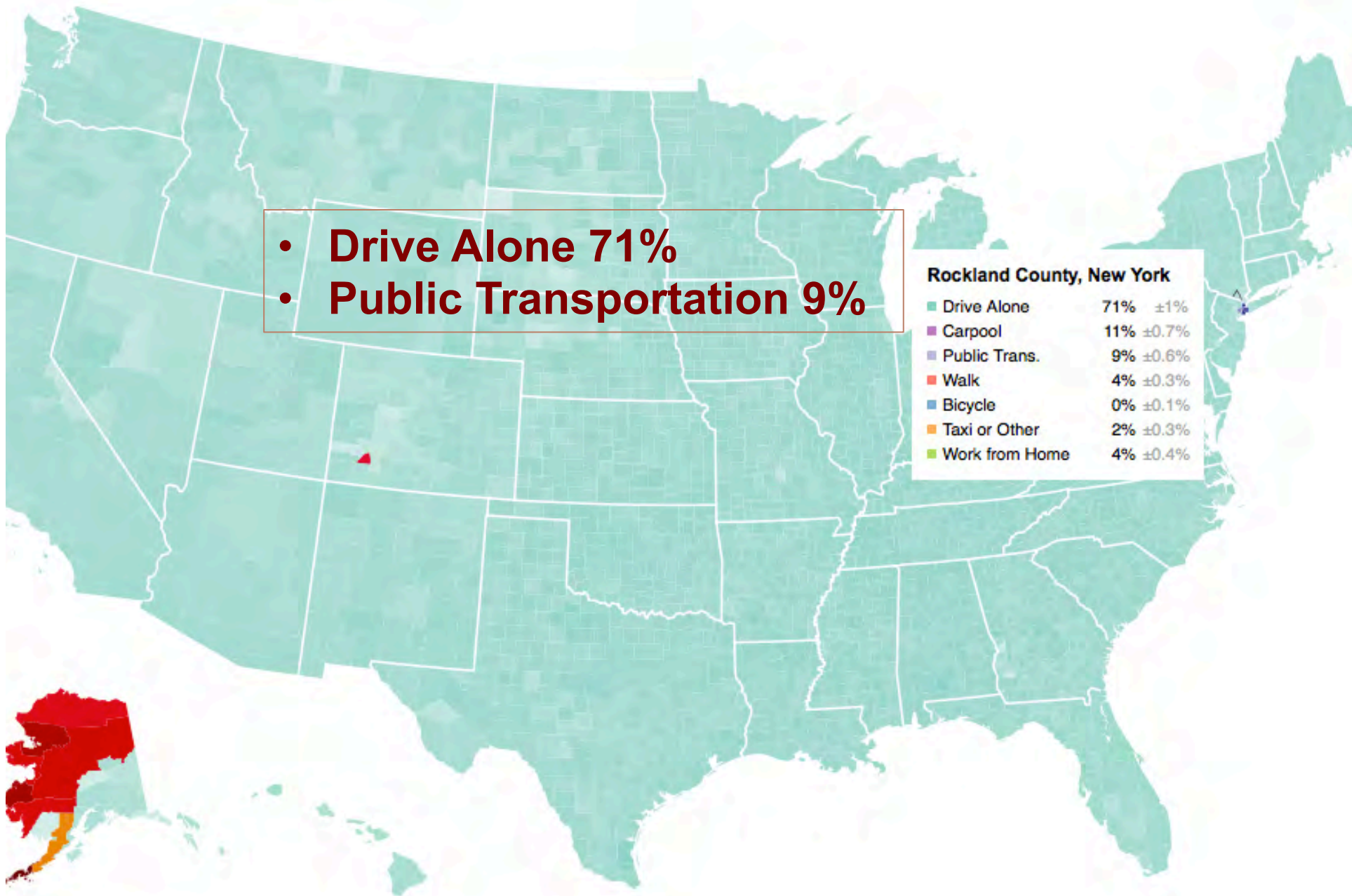
# Why Focus on Transportation? Consider the following...



Total Emissions by Source

This graph from the Mid-Hudson Regional Sustainability Report shows almost half of our region's emissions come from transportation. We need to plan for how to move people more efficiently.

[http://www.co.orange.ny.us/filestorage/124/1362/MHRSP\\_FinalDraftExecSummary\\_May2013.pdf](http://www.co.orange.ny.us/filestorage/124/1362/MHRSP_FinalDraftExecSummary_May2013.pdf)



# Emissions Impact Climate

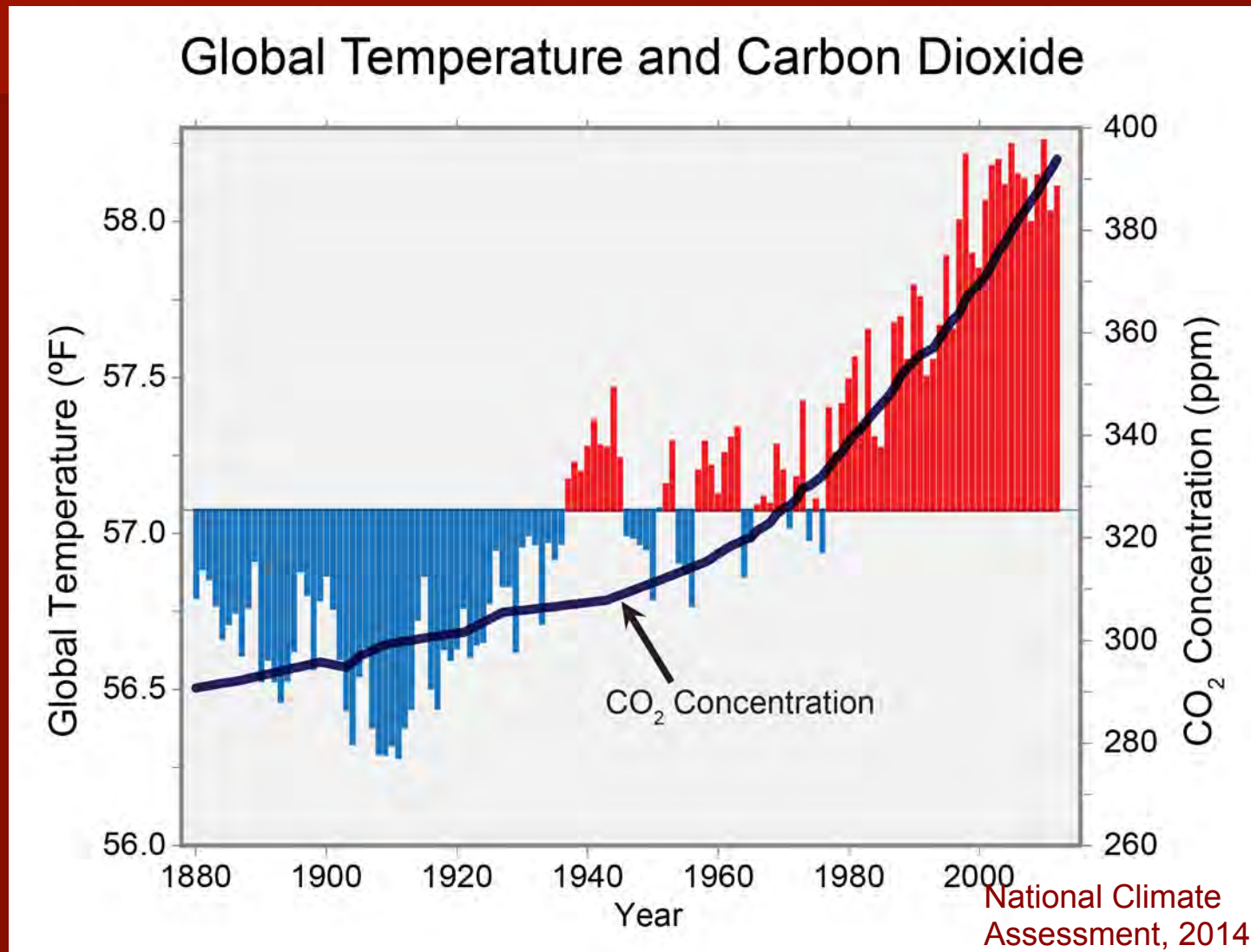


Oil used for transportation and coal used for electricity generation are the largest contributors to the rise in carbon dioxide that is the primary driver of observed changes in climate over recent decades.

©Tom Mihalek/Reuters/Corbis; Phillip J. Redman, U.S. Geological Survey

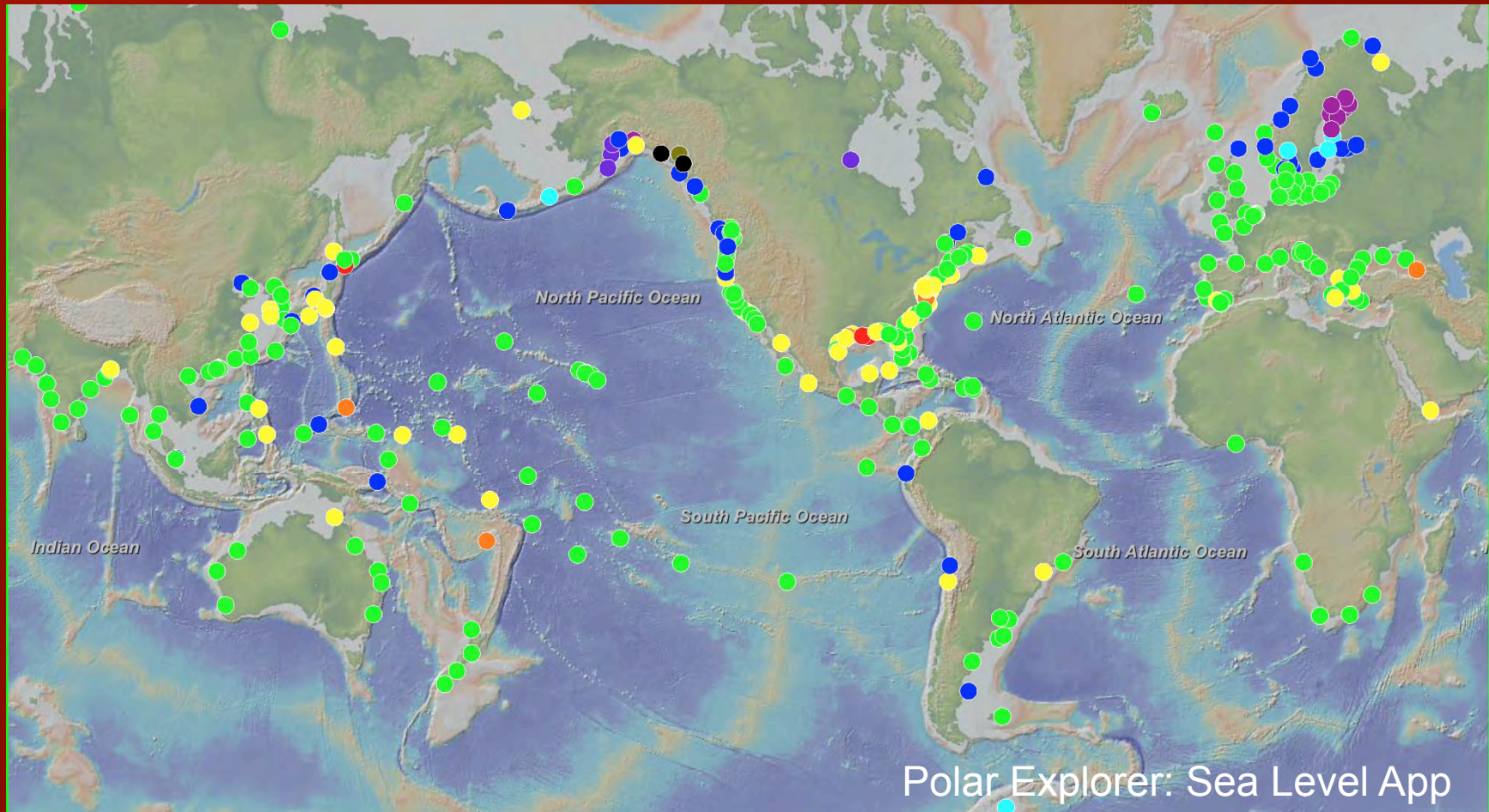
National Climate  
Assessment, 2014

# Emissions Impact Climate



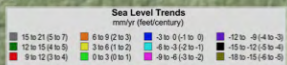


# What is the impact to us?

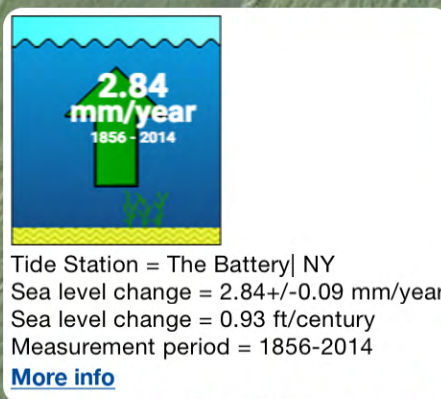


Changes in Sea Level!

These are all tide gauges measuring sea level change.



Currently the global average sea level rise is 3 mm/yr.



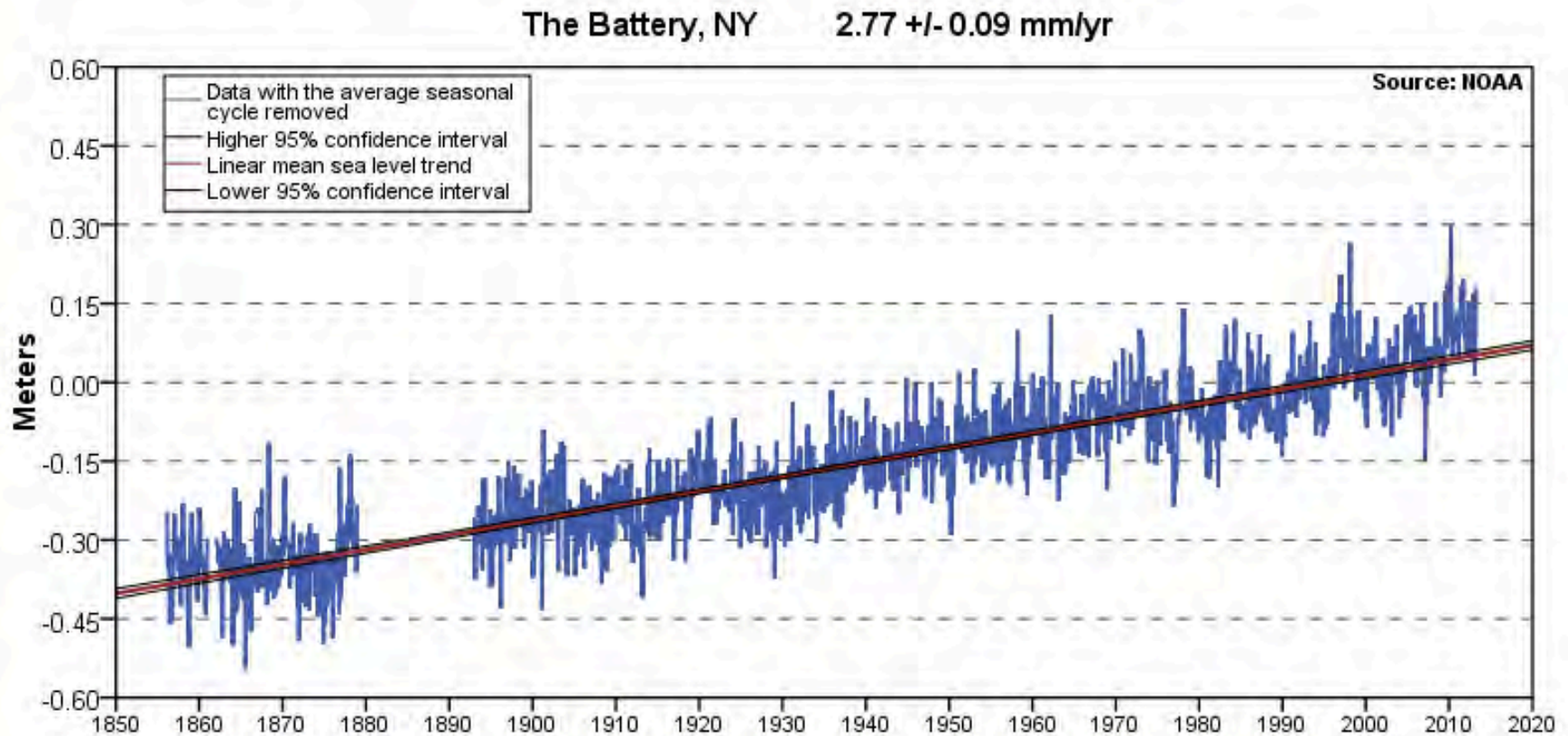
The gauge at the tip of the NYC Battery shows ~3mm/yr. rise in sea level.

Philadelphia

New York City

# Our Sea Level has been on the rise.

## Mean Sea Level Trend 8518750 The Battery, New York



**The mean sea level trend is 2.77 millimeters/year with a 95% confidence interval of +/- 0.09 mm/yr based on monthly mean sea level data from 1856 to 2006 which is equivalent to a change of 0.91 feet in 100 years.**

# But how will that really affect us?

**RPA** Regional Plan Association

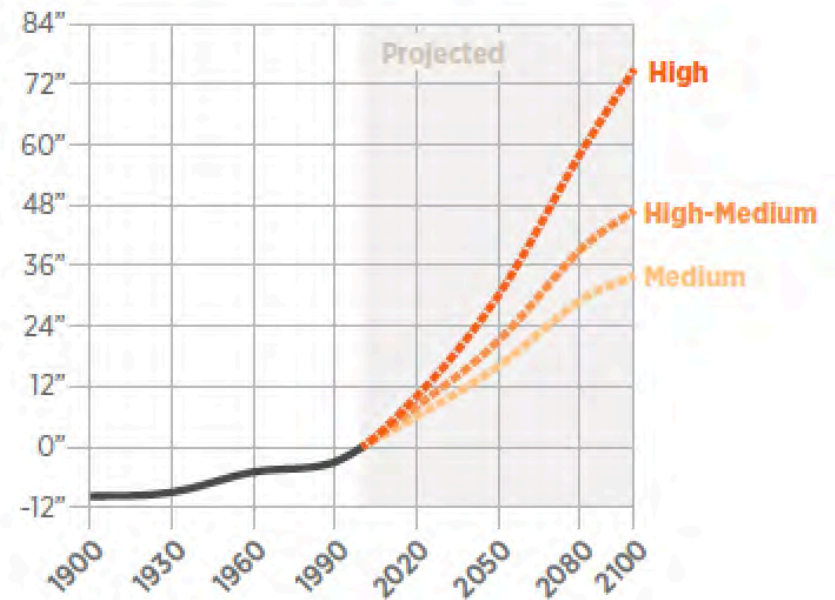
## Under Water

How Sea Level Rise Threatens the Tri-State Region



A Report of The Fourth Regional Plan  
December 2016

Historic sea level rise observations and future projections for New York City / Lower-Hudson Region.



Source: Adapted from NPCC and New York State projections.

Note: The Low scenario developed by the NPCC is not included in this chart. That scenario is dependent on a radical and immediate reduction in carbon emissions reduction that is considered by many experts to be unrealistic, and most consider the Medium scenario to be the lower range of what may occur.

Sea Level Rise is  
accelerating

# Regional Impacts of SLR

## Hudson Valley / Long Island Sound

Residents Inundated +1': 659 +3': 2,454 +6': 6,652

**+1'** Because of topography and historical development patterns, Hudson River communities, many of which are developed on higher ground, are less at risk from sea level rise than other communities in the region. Still, places like Yonkers, Piermont and Stony Point, whose waterfront edges are more developed or are developed on fill, begin to see permanent flooding. Sections of Long Island Sound towns to the east including New Rochelle, Rye and Mamaroneck town are also likely to see permanent flooding.

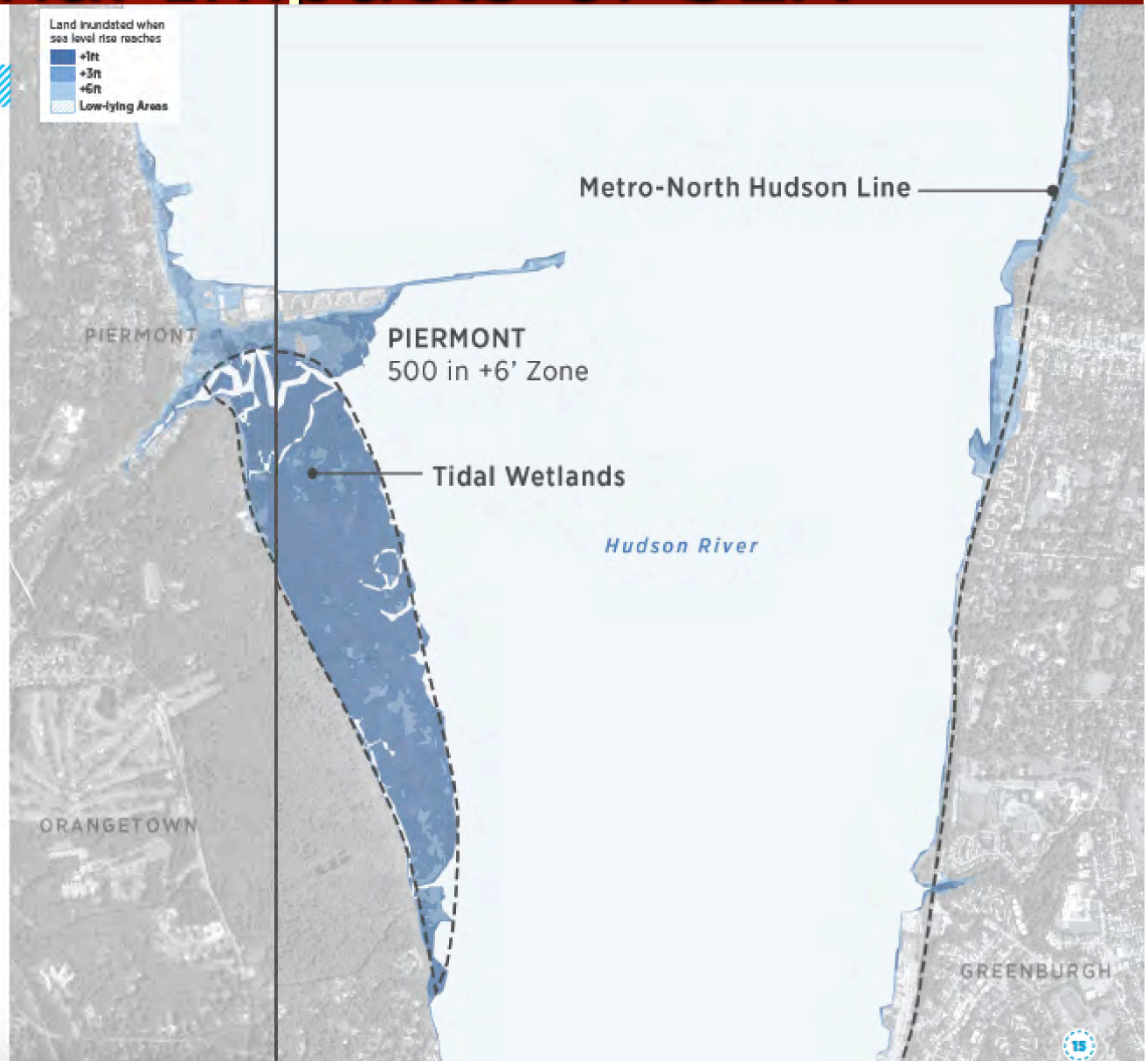
**+3'** Those New York communities along the Hudson River and Long Island Sound that saw flooding affecting sections of town at one foot sea level rise are likely to see the area and depth of flooding increase at three feet. Portions of the Metro-North Hudson rail line could become threatened at three feet of sea level rise. More than 2,000 of today's Westchester and Rockland County residents live in places along the Hudson and the Sound that could be permanently flooded at three feet of sea level rise, with the greatest numbers in Yonkers, Rye, New Rochelle and Mamaroneck town. Nearly 9% of Piermont's population today faces inundation at three feet.

**+6'** At six feet of sea level rise, the Hudson River is likely to have reclaimed many of the areas that had been filled in over time, affecting over 2,500 residents as well as critical infrastructure including waterfront parks, wastewater treatment plants and power generating facilities. The Metro-North Hudson rail line and its 12 stations between New York City and Poughkeepsie along with Amtrak's Empire Corridor line is at risk of inundation in a number of low lying sections along the Hudson's eastern shore. On the western shore, the River Subdivision — a freight line owned by CSX — runs north along the shoreline to Selkirk. Just south of Albany and has low lying sections at risk in places as well.

About one third of the Town of Mamaroneck's population today could be inundated at six feet of sea level rise, making it one of the hardest hit Long Island Sound towns. Rye and New Rochelle continue to lose land to the Sound at six feet.

Land inundated when sea level rise reaches

- +1ft
- +3ft
- +6ft
- Low-lying Areas



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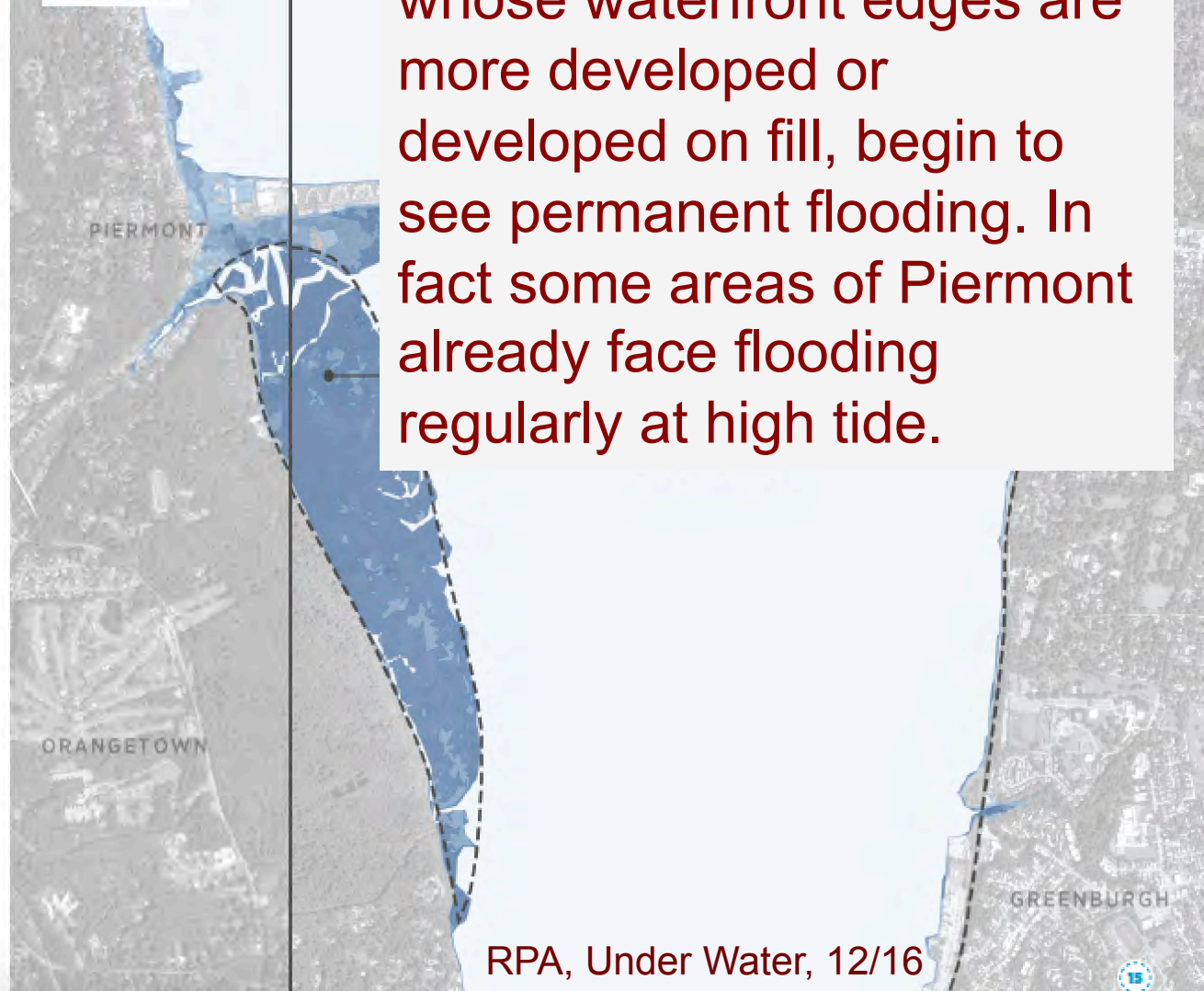
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At 1 ft. places like Piermont whose waterfront edges are more developed or developed on fill, begin to see permanent flooding. In fact some areas of Piermont already face flooding regularly at high tide.

# Regional Impacts of SLR

At 3 ft. portions of Metro North are flooded. More than 2000 of Westchester and Rockland residents live in places that would be permanently flooded. Nearly 9% of Piermont's population today face inundation at 3 ft.

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Sound towns, Rye and New Rochelle continue to lose land to the Sound at six feet.

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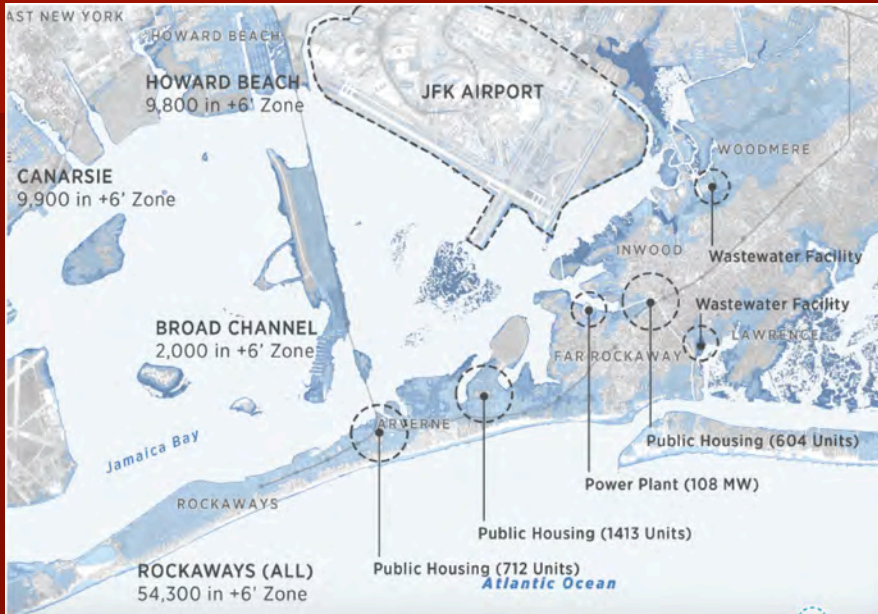


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At 6 ft. over 2,500 residents as well as critical infrastructure, railroads east and west, wastewater treatment plants & power generating facilities flooded.



# Airports



JFK would not permanently flood but would be affected by storm surge. La Guardia would begin to flood at 1 ft. of rise. At 2 ft. 13 of 31 runways would be lost and portions of its terminals.

The ports of NY and NJ and Newark airport would be permanently inundated with 6 ft. of water, as would more than 6000 Newark residents.

# Storm Surge in addition to Sea Level Rise is a concern



Where Storm Surge from Super Storm Sandy left its mark.



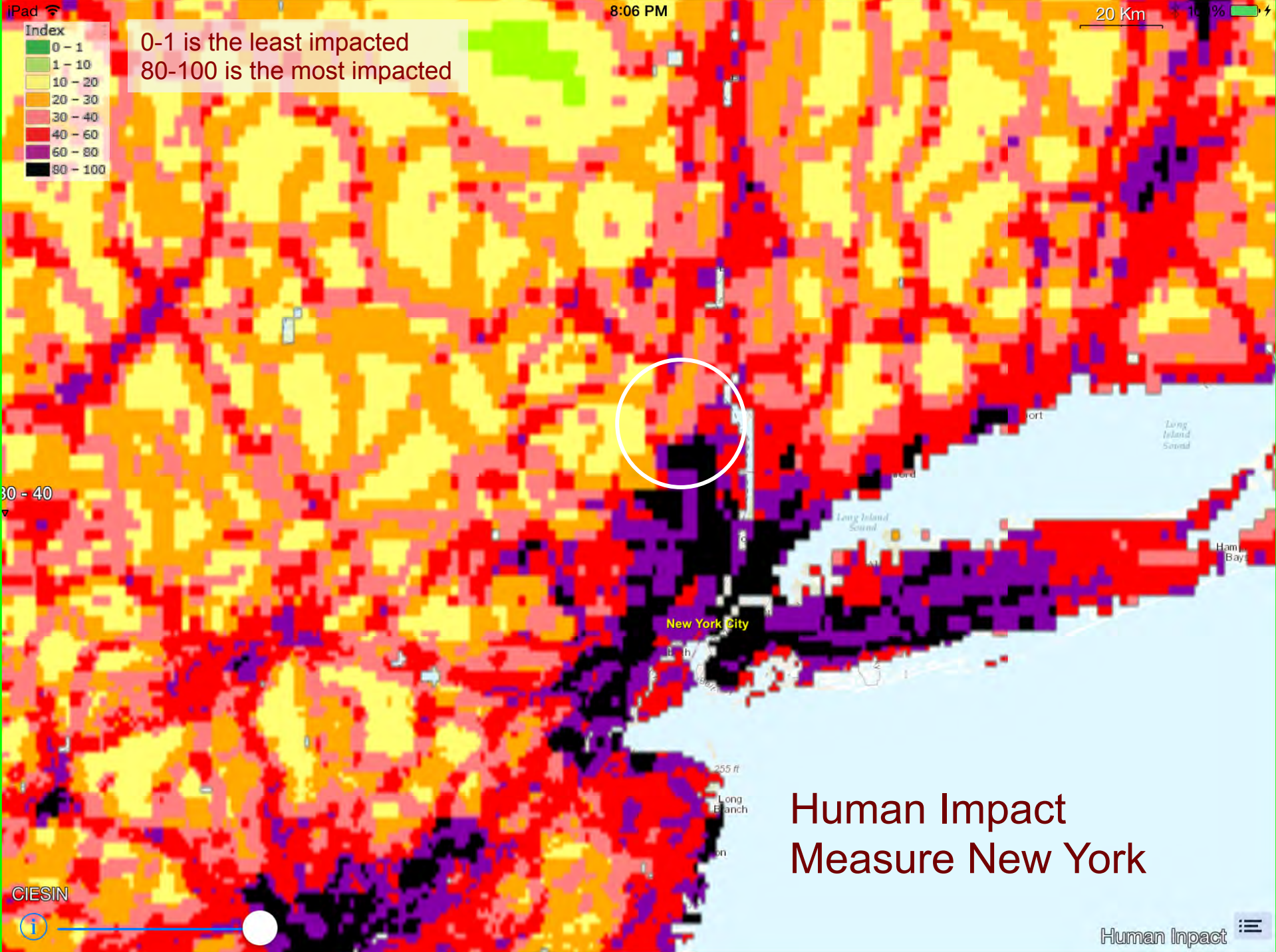
Piermont images from "Resilience Roadmap: Planning for Piermont's Future" Task Force Report 2014.

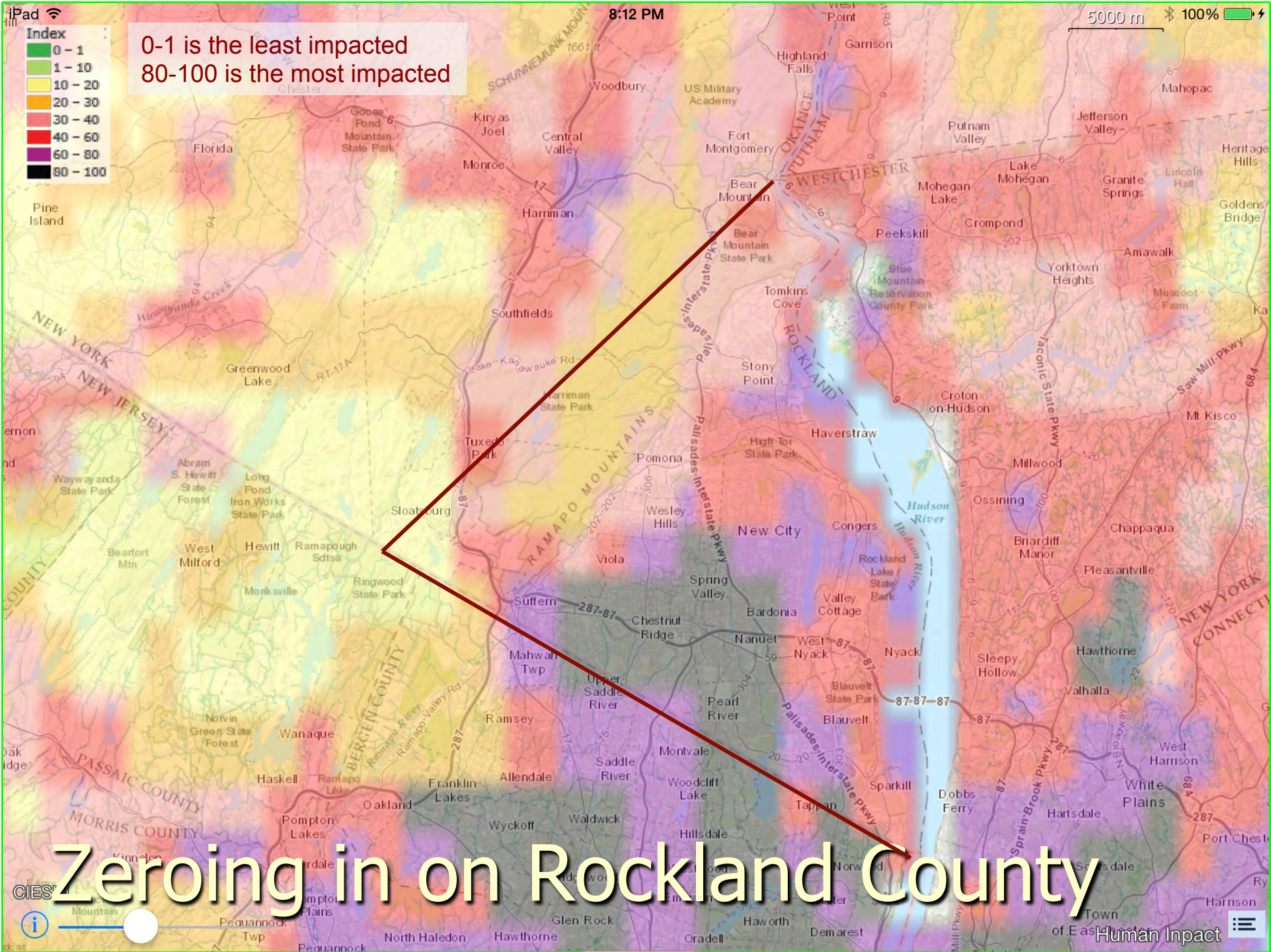
# What does this have to do with planning?

We have made ourselves less resilient with the way that we have changed our landscape and hardened our surfaces.

The following maps are a measure of Human Impact. We can improve this with changes in our planning practices and land use decisions.

Maps from Polar Explorer: Sea Level app.  
[www.polarexplorer.org](http://www.polarexplorer.org)

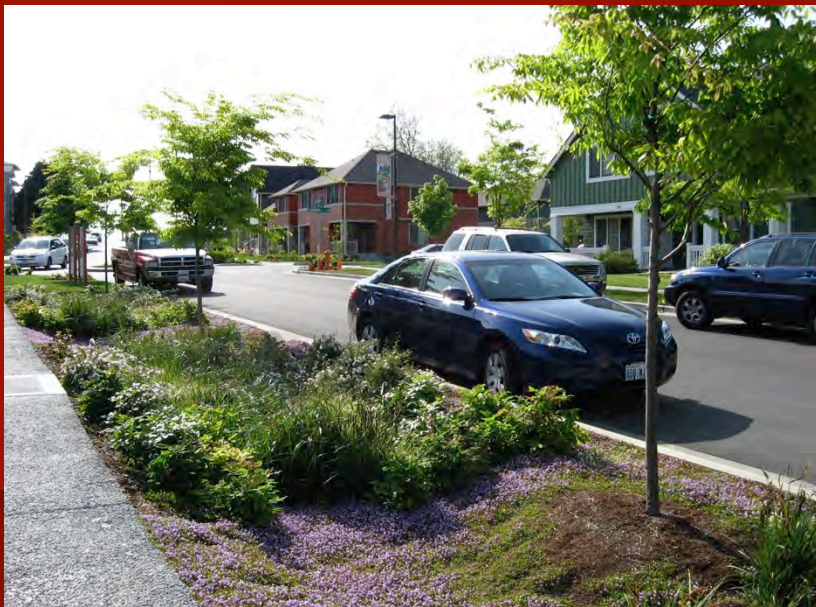




# We can create change through planning



**Permeable Pavement**



**Vegetation Islands  
for 'run on'**

**Plant buffers between  
sidewalks & streets**

# We can create change through planning



**Rain Barrels**



**Green Roofs**



**Rain Gardens**



**Retain Original Trees**

# We can create change through planning

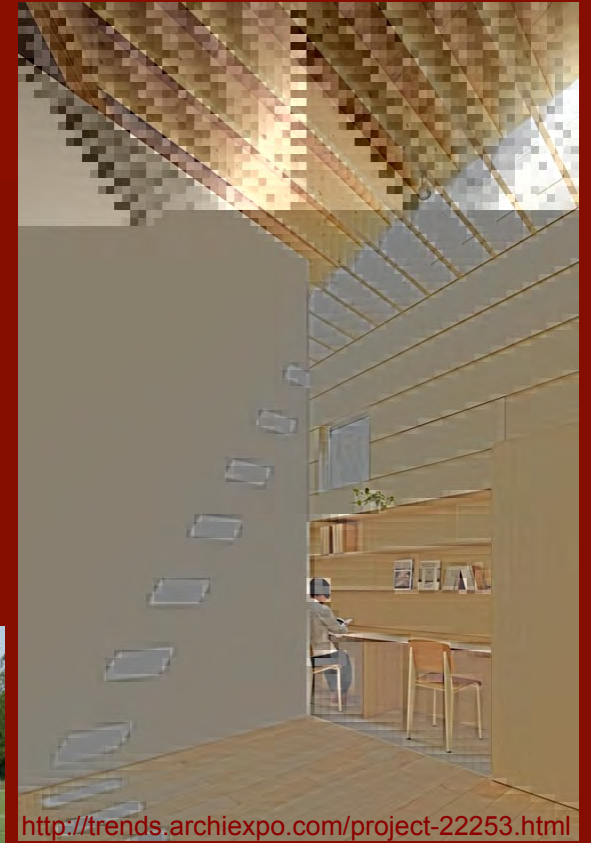
Encourage reduced energy use!

CARPOOL  
& HYBRID  
PARKING



Spaces that are walkable, bikeable, and encourage fuel conservation!

Solar to fuel our homes & businesses!



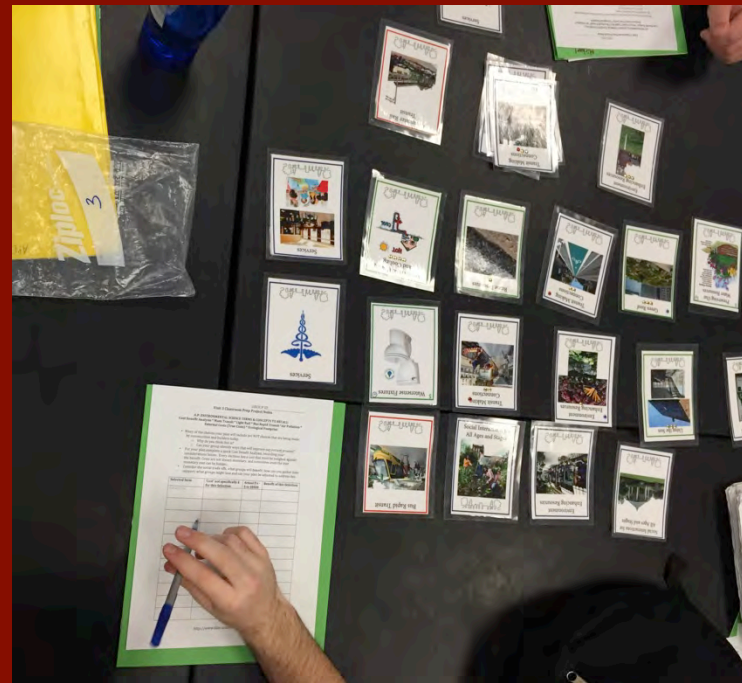
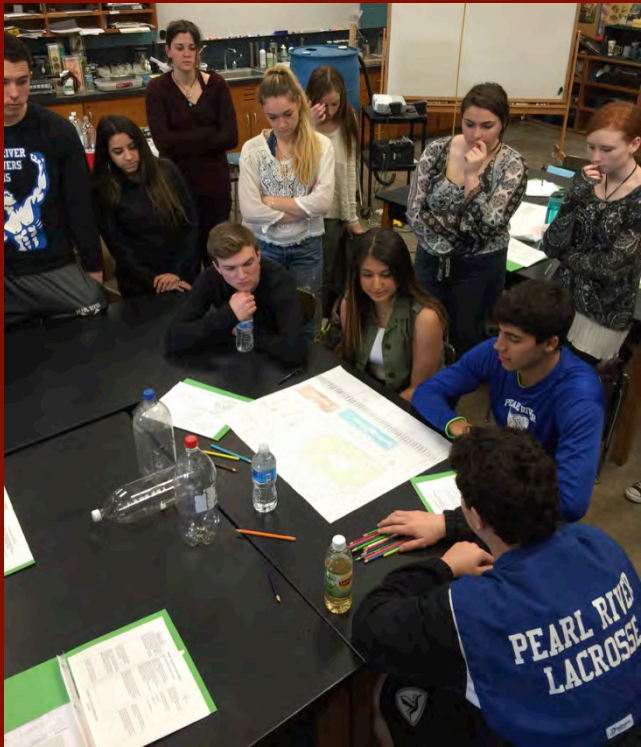
<http://trends.archiexpo.com/project-22253.html>

Natural sunlight!



# What will we be doing in this program?

You will be working with your class to re-envision a local space, considering social, economic and environmental issues.




# What will we be doing in this program?

You will turn your ideas into a poster presentation to share with professionals from throughout the County.

***Downtown Nyack, Nyack Senior High School***

ROCKLAND P.L.U.S. 2016  
PLANNING LAND USE WITH STUDENTS



Our location is **Downtown Nyack**, right off of the bustle of Main St. Our location includes a run down and ill-populated retail building called Riverspace, with a lot of potential.

We have a form of **BRT** with a covered bus station, and we have utilized a real time app to **inform customers** of the bus location and ETA.


**STAKEHOLDERS/COMMUNITY GROUPS TO WORK WITH:**  
Some stakeholders we hope to include are the **Nyack Chamber of Commerce**, which contains many local businesses and nonprofit organizations. Other groups include **Dept. of Transportation, school districts, and possibly Riverkeeper.**

**HOW DO YOU S.E.E. IT?**


**Social Pieces** - Convenient heated indoor bus stop waiting room complete with Town Of Nyack Info-Center.

**Economic Pieces** - Utilization of installed solar panels reduces energy expenses and will eventually pay for itself.


**Environmental Choices** - We incorporated solar panels and several rooftop gardens into our design.




What is feels like to be waiting here.



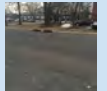
What there is to do




Our favorite feature





Top thing to improve




Water friendly feature











**GREEN FEATURES:**  
Installation of **solar panels** on a south facing roof top for maximum efficiency, and surrounded by a beautiful **rooftop garden** to create an appealing aesthetic

Installation of **pervious pavement** to allow for rain water to permeate down into the soil

Our downtown transformation includes a **bus overhang** and waiting station, a **visitor information center**, **reserved parking** for environmentally-friendly vehicles, **rooftop gardens** and **solar panels**, and a center square.

**BLUE FEATURES:**

**Town Square** - Water fountain to create aesthetic, benches for community seating, easy access to and from Nyack's Main Street

**Information Center** - Gives visitors & locals information about stores open at the time and events happening

**Town History Timeline** - Gives people a view into the past about what has helped Nyack to become Nyack

**Billboard** - A place where people can post alerts and advertisements about events to occur soon, events like parades, shows, and more

Ben Sarna, Jeremy Cohen, Remy Kris, Peter Dailey, Jessica Speakman, Pratima Rosen

# What will we be doing in this program?

- Collaborating with peers from other Rockland high schools to use what you have learned to plan for a new location.

## CONSIDERING:

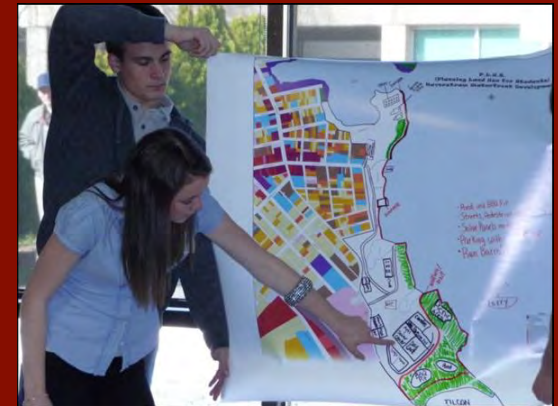
How to collaborate while bringing in new ideas?



How to enhance the wider community through our project?



How the project will blend & connect to the community?



Rockland P.L.U.S.  
March 23, 2017  
Rockland Community College  
8:30 a.m. – 1:30 p.m.



Photo by Geraldine  
Collins

# Rockland P.L.U.S. 2017 is a collaborative partnership of

1. Lamont-Doherty Earth Observatory of Columbia University
2. Keep Rockland Beautiful
3. Rockland Conservation & Service Corps

## Thank You Sponsors!

**Old York  
Foundation**



Rockland Planning  
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 Rockland County