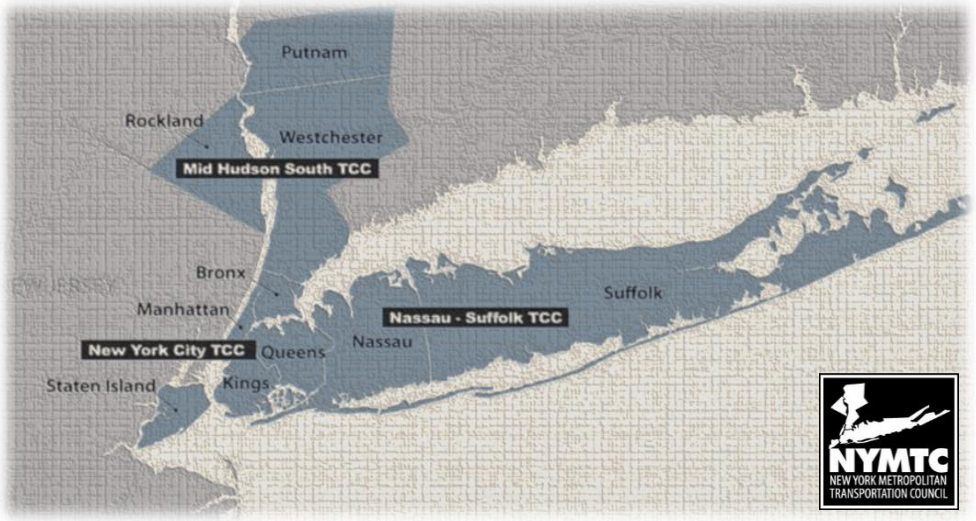
Vertical Integration Of Land Use and Transportation Planning



Shirin Najafabadi

September 11th Memorial Recipient (2017-2018)

Project Outline

1. **Literature Review & State of the Knowledge**

2. **Benchmarking**

   - *Research the land use-transportation planning practices of peer MPOs and develop a comparative analysis of the practices of these MPOs.*

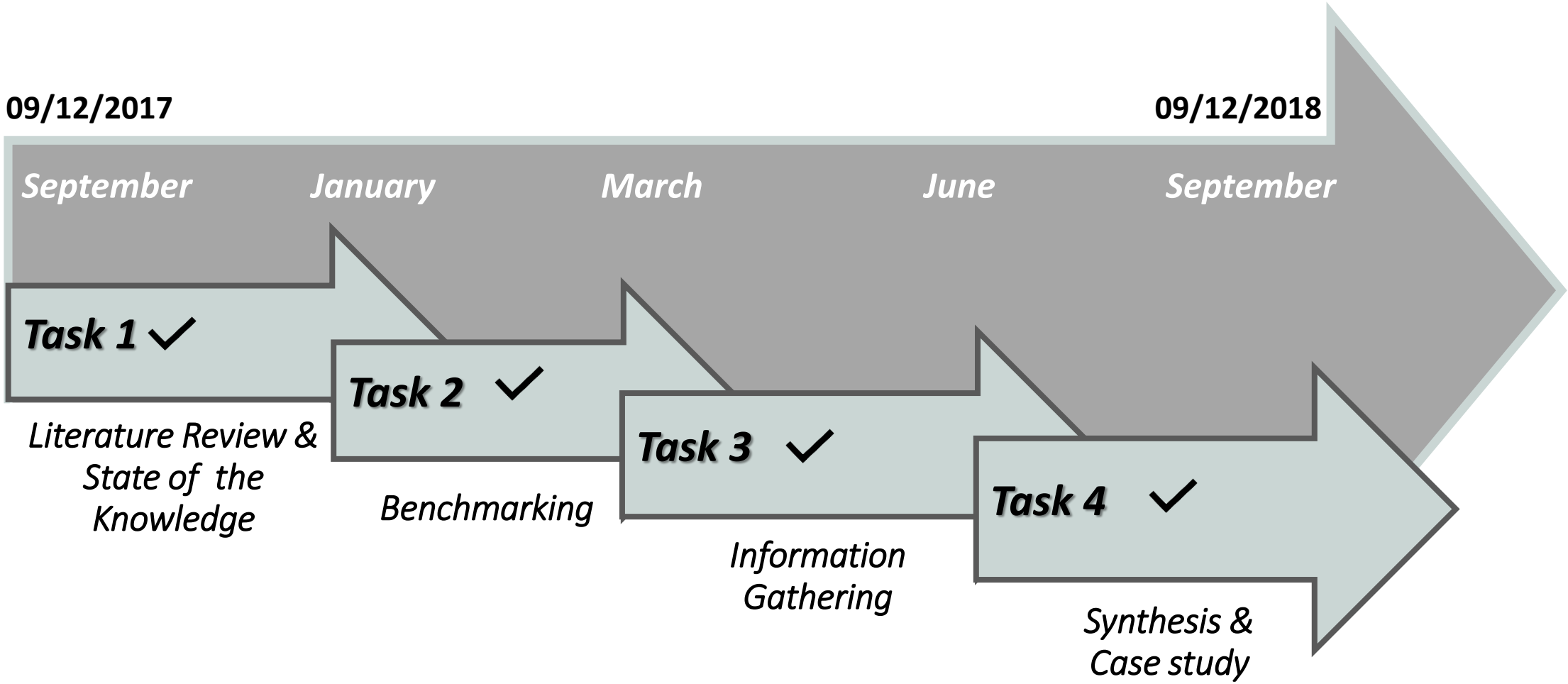
3. **Information Gathering**

   - *Collect the relevant Information from all the local municipalities in the NYMTC region.*
   - *Catalogue access to these documents and the contact information of the relevant municipalities /counties.*

4. **Synthesis**

   - *Analyze some CDEAs in NYMTC's Plan 2045 relative to the local master planning and zoning.*
   - *Develop recommendations for planning practices that could be employed by NYMTC to foster the vertical integration of transportation and land use planning.*

Project Timeline



Project Description

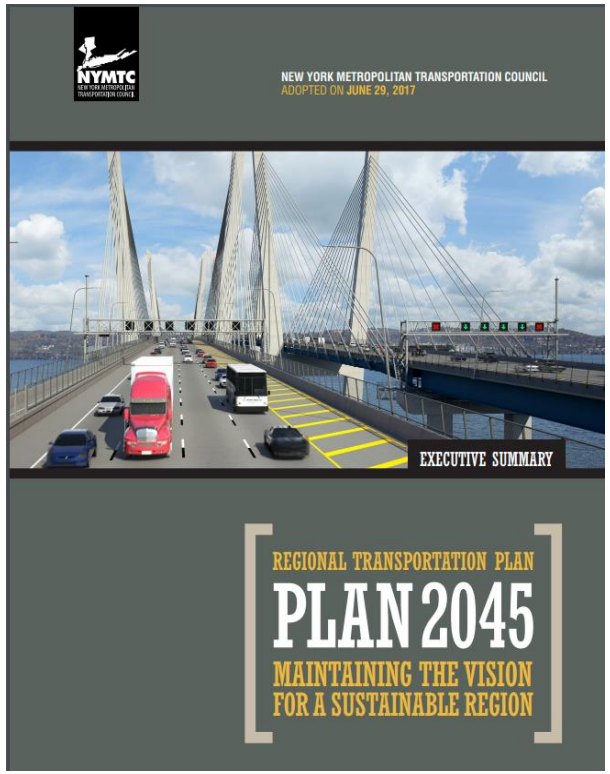
Coordinated Development Emphasis Areas (CDEAs)

NYMTC's members introduced the idea of CDEAs in Plan 2045, the recently adopted Regional Transportation Plan.

CDEAs: Areas within the NYMTC planning area, where land development and transportation investment planning are to be coordinated to achieve environmental sustainability, local economic revitalization, and improved quality of life.

Project Description

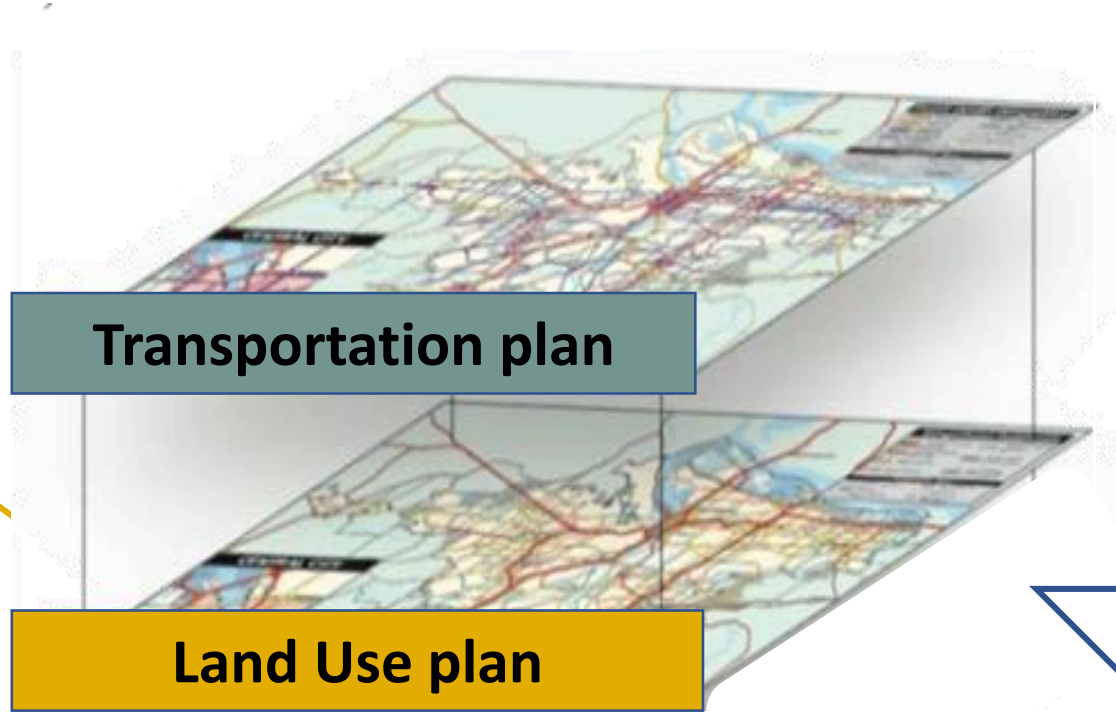
- **Objectives**
  - The student will research methods to enhance the influence of NYMTC's regional transportation plans on municipal land use planning decisions.
  - The student will also research methods to help NYMTC ensure that municipal planning efforts are incorporated into the regional planning perspective.
- **Challenges**
  - This coordination will challenge NYMTC as land use decisions are locally controlled within its planning area.



What We Mean by “Vertical Integration”

- In regional planning primarily involves connecting regional level efforts with federal- and state-level policymaking, as well as with local jurisdiction standards and actions.
- To integrate the regional project (such as highway corridor) with different local land uses.

An example of vertical integration for transportation network



Levels

Federal

Regional

State

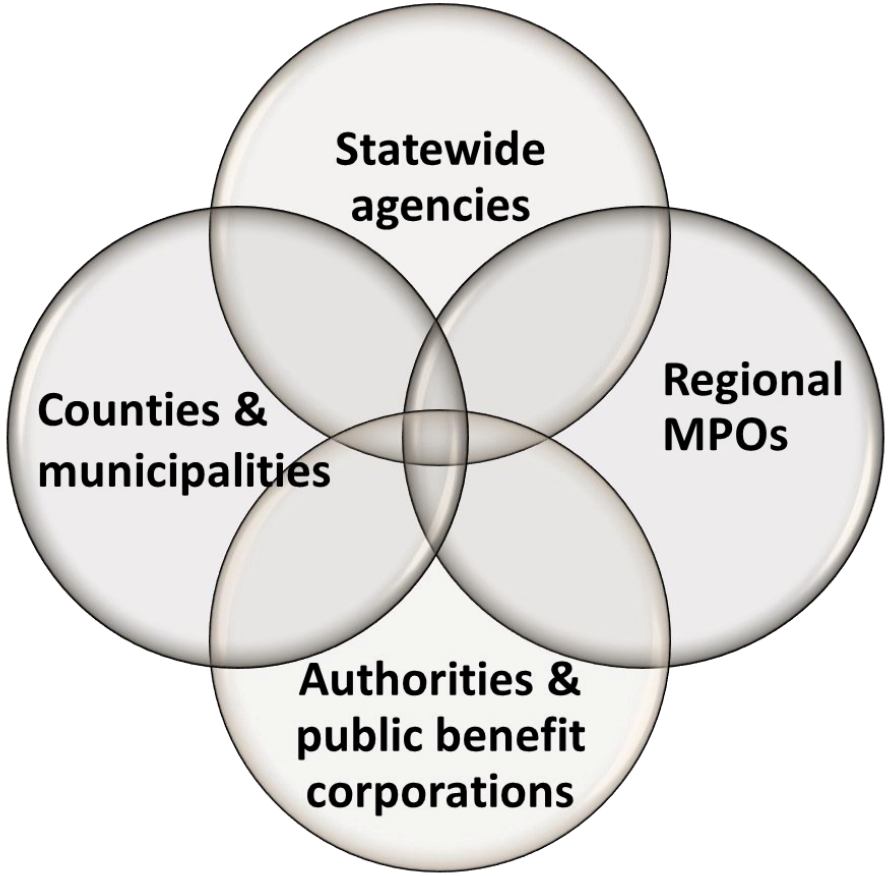
County

Local

Transport Planning Process

Goals & Objectives

- **Integrated planning**
- Use of public transport
- Raise of non-motorized modes
- Accessibility & Reliability
- Travel demand reduction
- Clean energy usage



Agency Interactions

Transportation Planning Process Includes

FORECASTING

-Employment growth

-Population

ASSESSING

-Projected land uses

REGIONAL TRANSPORTATION PLAN
PLAN 2045
MAINTAINING THE VISION FOR A SUSTAINABLE REGION

IDENTIFYING

-Major growth corridors

ANALYZING

-Transportation improvements

REGIONAL TRANSPORTATION PLAN
PLAN 2045
MAINTAINING THE VISION FOR A SUSTAINABLE REGION

Enhance the transportation system

ASSESSING

-Natural environment impacts

DEVELOPING

-Financial plan

-System maintenance

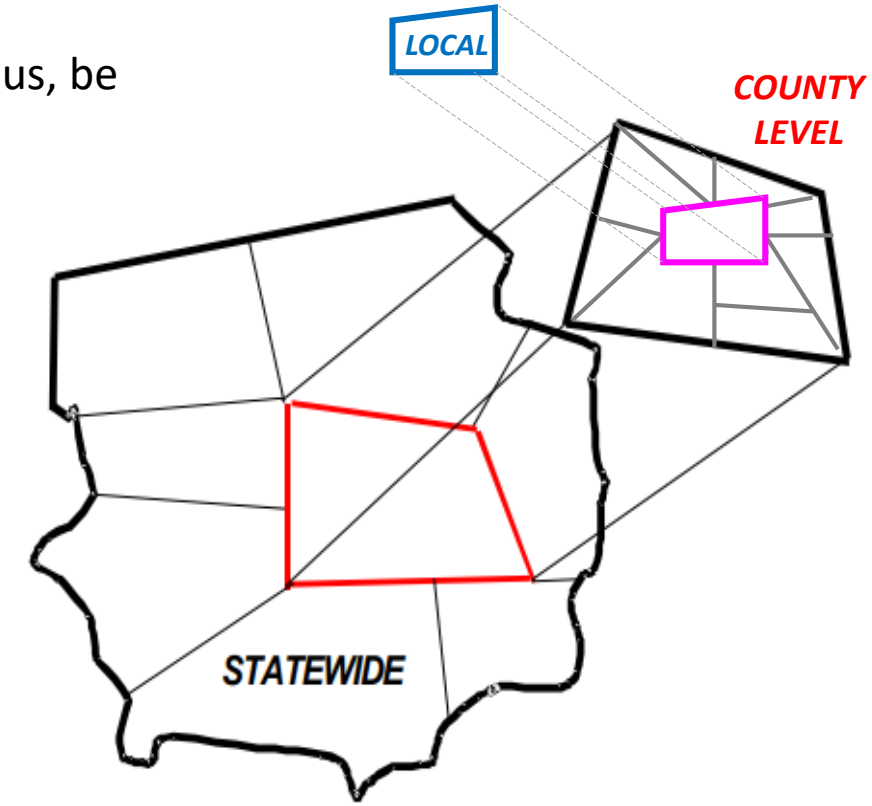
-New capital investments

NYMTC
NEW YORK METROPOLITAN TRANSPORTATION COUNCIL

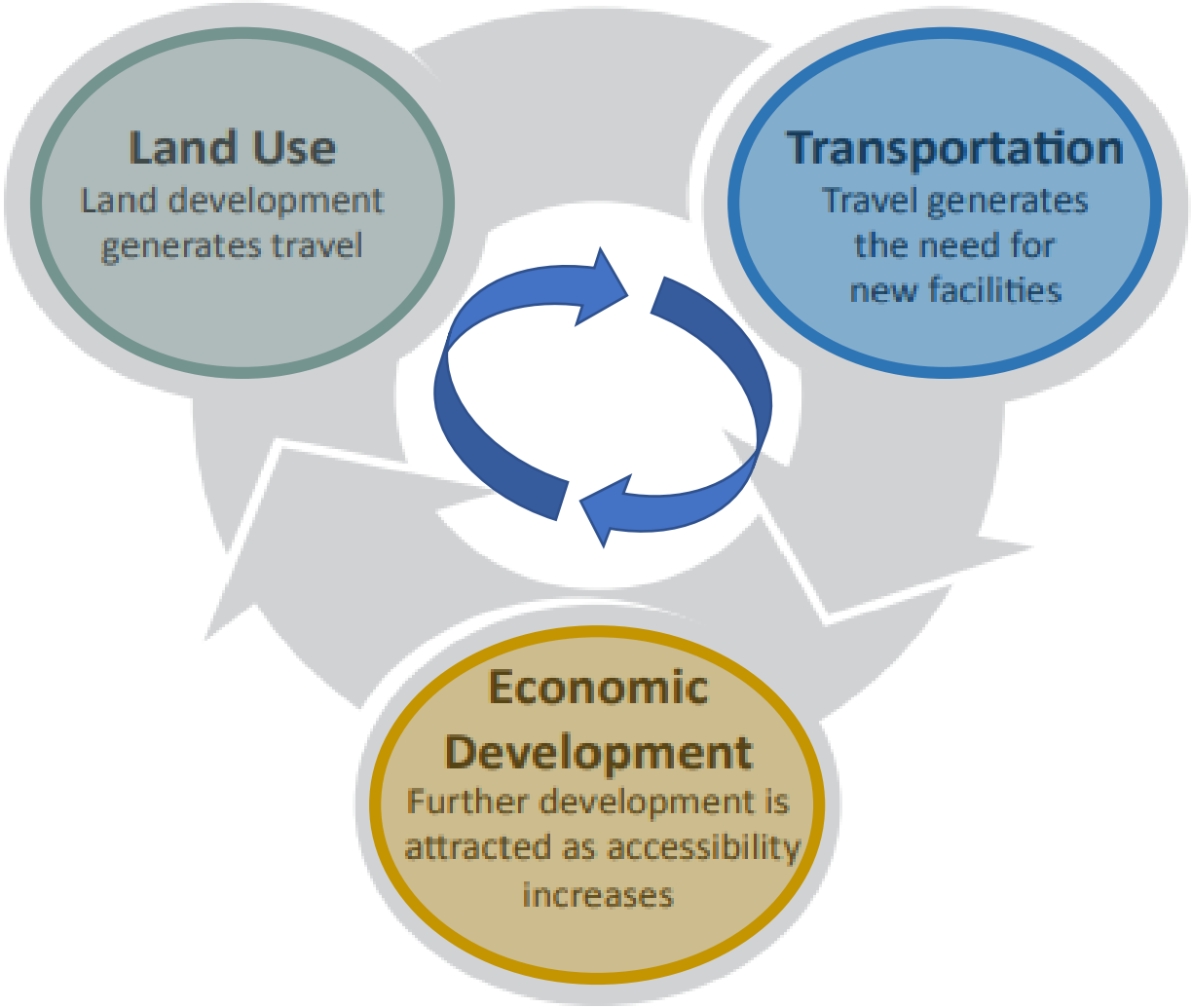
The Transportation Land Use Linkage

The Transportation Land Use Linkage

- In NYS, land use decisions are made locally by governmental review boards and elected officials.
- Counties are an intermediate level between local and state governments. With responsibility limited to county-owned lands.
- Provision of transportation facilities and services affects land use patterns.
- All land use decisions will ultimately affect travel patterns and, thus, be influenced by planning and programming.
- land use-transportation relationships can lead to:
  - Reduce vehicle miles of travel
  - Improvements in air quality
  - Increase levels of walking, bicycling and transit use
  - Economic and community revitalization
  - The preservation of neighborhood character



Integration of Land Use & Transportation & Economic Development Linkage



Examples of Planning Jurisdictions

Mega Regional	Regional Greenhouse Gas Initiative (RGGI) The I-95 Corridor Coalition	
Regional	Long Island Regional Planning Council Metropolitan Transportation Authority (MTA)	NYMTC
State	NYS Department of State NYS Department of Environmental Conservation	New York Planning Federation NY DOT
County	Industrial Development Agency Environmental Management Council	Office of Economic Development Department of Planning

Westchester

The Overall Evolution of Urban Planning Issues

One-dimensional

Single Topic

- Transportation
- Economic Development
- Housing
- Parks

Multidimensional

Integrated Topics

- Land Use Transportation & Air Quality
- Open Space & Parks & Water Resources

Integrating multiple issues into multidimensional planning frameworks

Integrated Systems Planning

- Regional Blueprint
- Climate Action Plan
- Public Health & Wellness Plan
- Regional Comprehensive Plan

Early 20th century → **Early 21st century**

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Integrating Land Use and Transportation Strategies

Some Methods for Regional Integration

Funding for Regional Plan Implementation

The distribution of regionally managed funds to specific projects in local jurisdictions that support regional planning goals and policies.

Collaboration with Implementation Partners

These partners may be governmental or quasigovernmental bodies.

Collaborative efforts can help obtain funding for plan implementation and translate regional objectives into local actions.

Technical Assistance & Performance Monitoring

These programs include performance monitoring, which relates to tracking whether established goals have been achieved as a result of actions taking place.

Integrating Land Use and Transportation Strategies

1. Create specific funding programs for transportation projects that support community and land use goals

- *San Francisco Metropolitan Transportation Commission's (**MTC)***
- *North Central Texas Council of Governments (**NCTCOG,** 2002-2004) Provided $41 million in STP and CMAQ funds for 19 transportation improvements supporting TODs and mixed-use developments.*

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2. Include land use goals as part of scoring criteria for analyzing potential transportation projects

- *Atlanta Regional Commission (**ARC** ,2025 Regional Transportation Plan) For federal STP funds included support of local land use, which can provide a maximum of 15 points out of 135 total.*
- *Denver Regional Council of Governments (**DRCOG** ,2005-2010 TIP plan) Include up to 16 points (out of 100) for various local actions supporting the regional Metro Vision.*
- *Puget Sound Regional Council's (**PSRC** ,2002 TIP plan)*

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3. Transit Oriented Development (TOD)

- *Region Plan Association (RPA, 2009) Springdale Village Center in Stamford*

- *Many Westchester communities are TODs such as Tuckahoe, Rye, and Chappaqua are walkable, mixed-use communities with transit access in the community center.*

Transit Oriented Development (TOD)

TOD is regional planning, local development, revitalization and walkable neighborhoods combined.

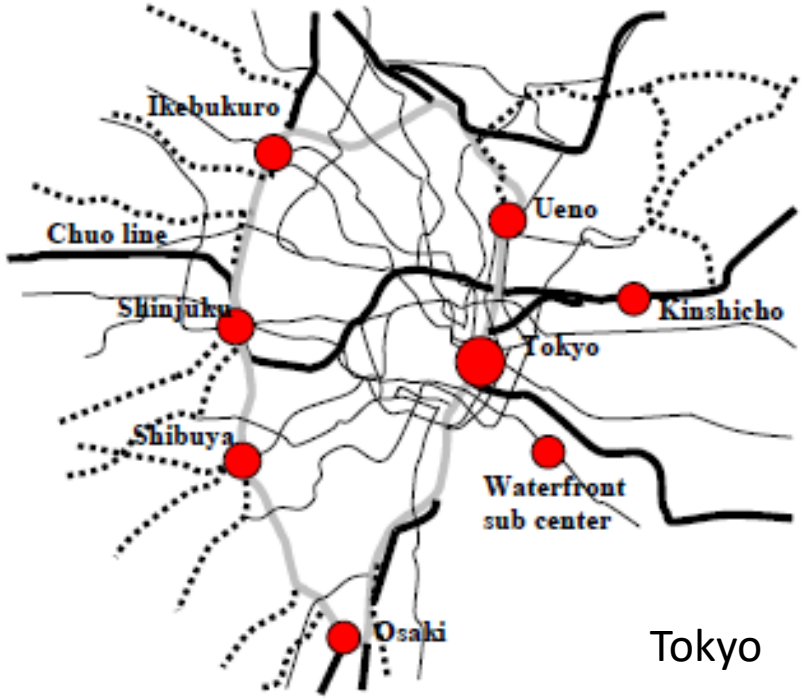
	New Development	Existing Development
New Transport	Self contained development anchored solely on a new transport node or corridor	Route or stop in an under-served or inaccessible area. Diversifying or changing land uses, increasing activity along side the new transport
Existing Transport	Infill development around an under utilised node or corridor	Improving capacity or quality of transport in under-served or inaccessible area. Diversifying or changing land uses, increasing activity along side the upgraded transport

Comprehensive Appraisal of Transportation and Land Use: Node- Place Approach

Node-Place Approach

The Node-Place assessment is a good example of a process that assesses land use-transport networks in a comprehensive and integrated way; providing opportunities for both new and existing developments to better integrate.

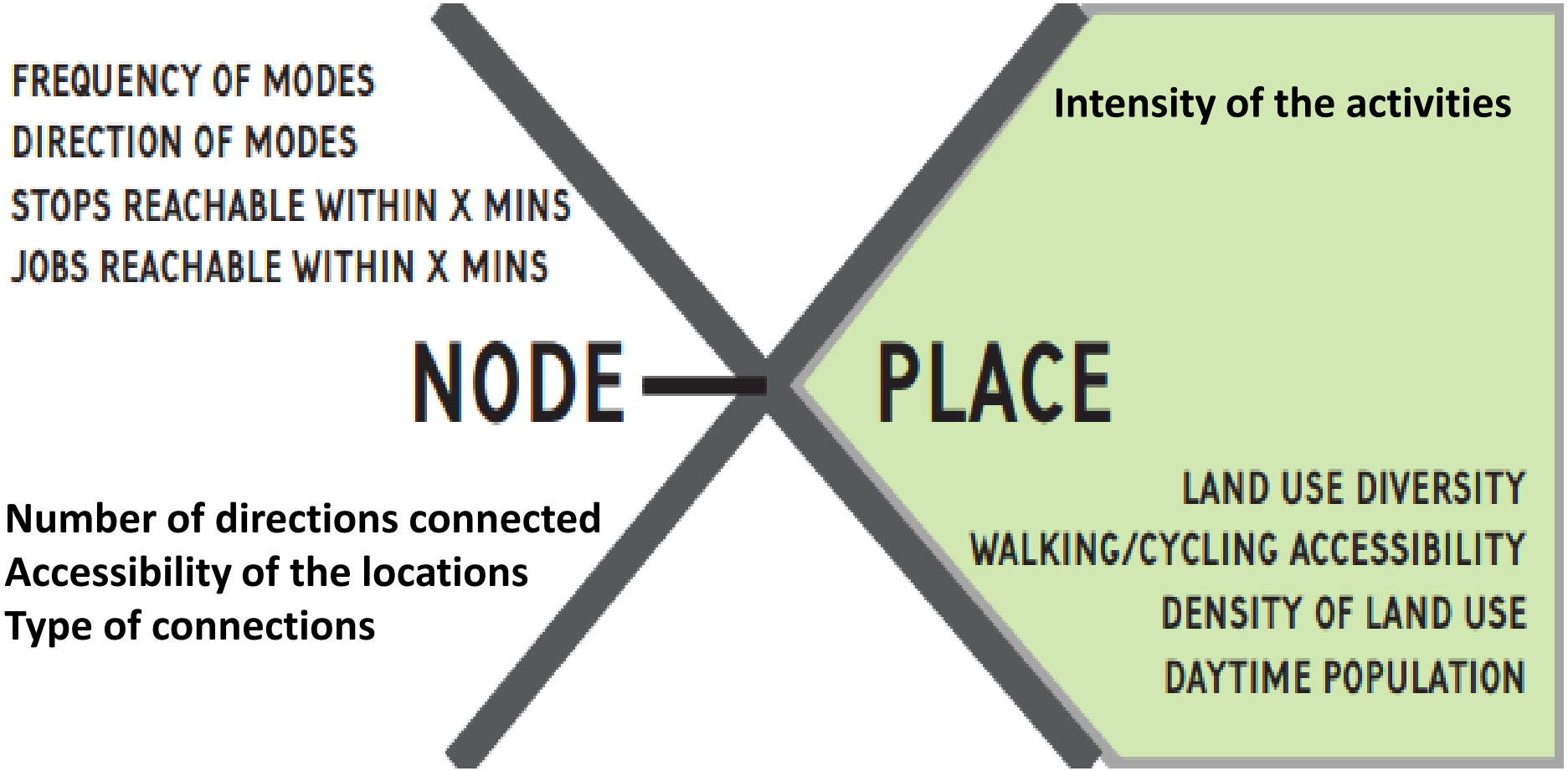
The Node-Place assessment appraises the nodes in a transit system for their accessibility to transportation against the land uses that form the ‘Place’ surrounding these nodes.



Tokyo

Train Station

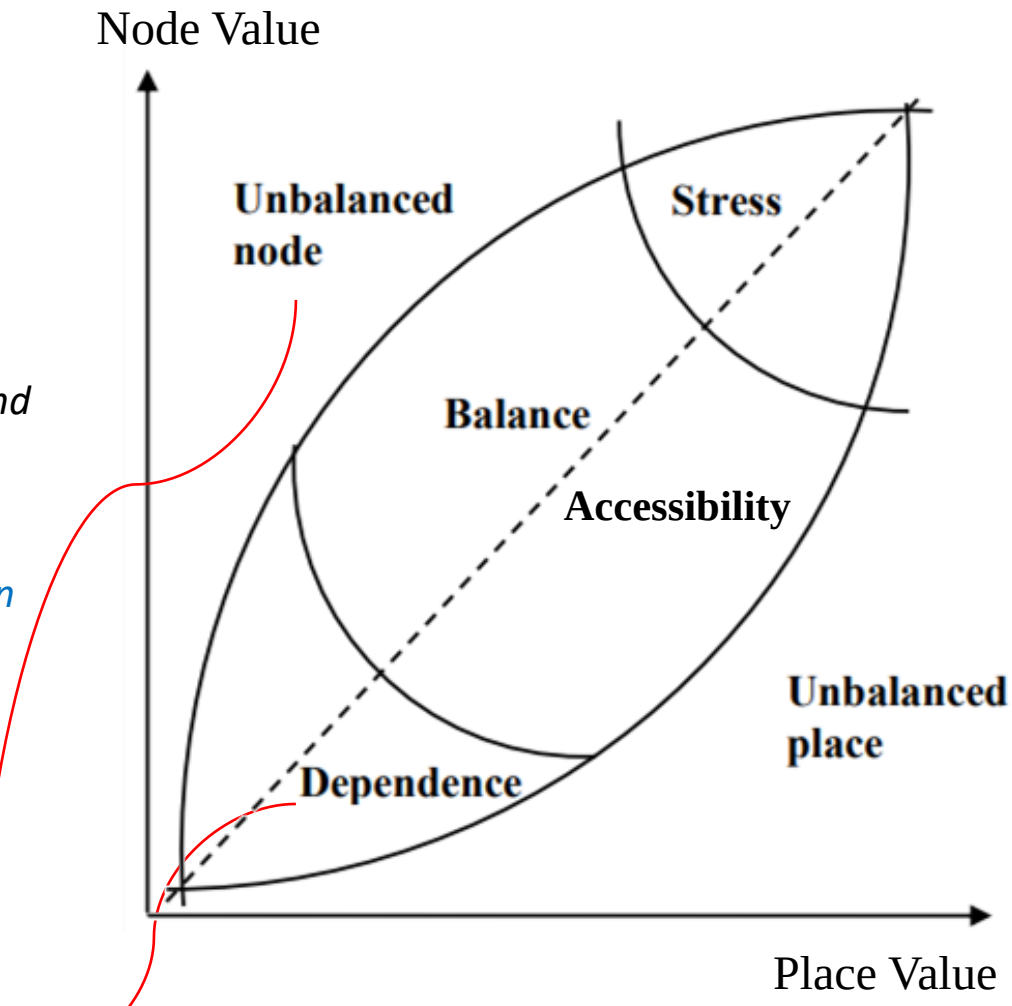
Node and Place Indicators



Number of directions connected
Accessibility of the locations
Type of connections

Node-Place Approach

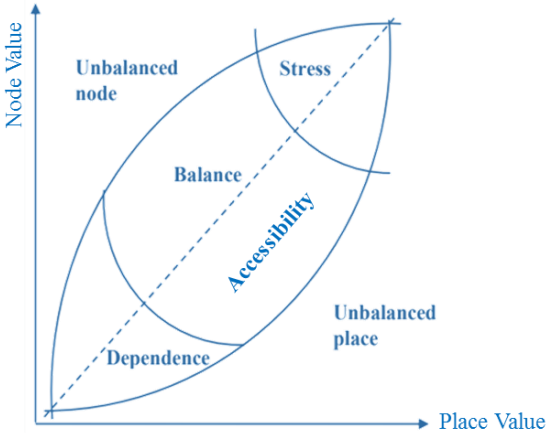
1) **Balance:** *A node and a place are as strong.*
2) **Stress:** *The intensity of both mobility flows and urban activities are maximal*
3) **Dependence:** *There is no competition for free space, and the demand of infra flows is so low (e.g. Small-town stations.)*
4) **Unbalanced node:** *Where transportation supply is relatively much more developed than urban activities (e.g. a newly opened stations on the urban fringe)*
5) **Unbalanced place:** *The urban activity is more intense than transportation supply. (e.g. old or ancient part of the city with low accessibility to transit system)*

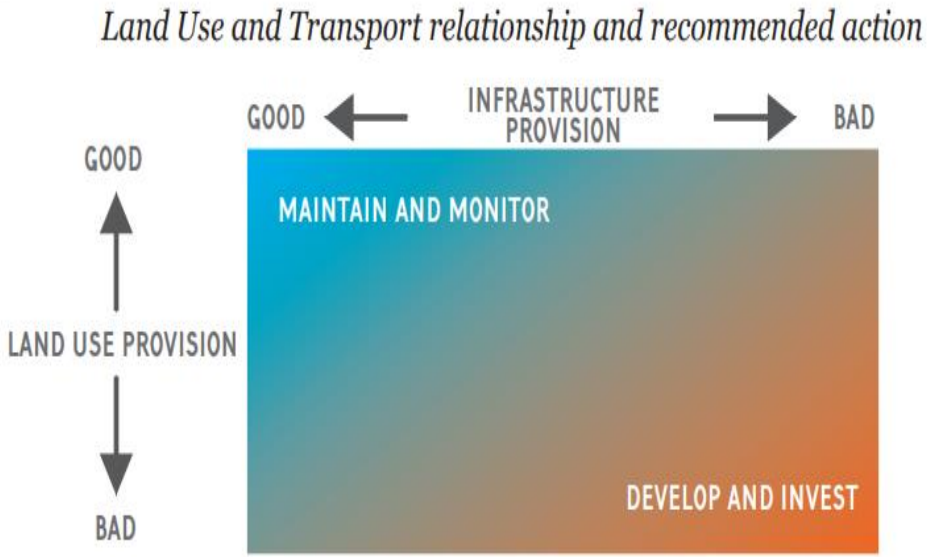


Place = The urban activities
Node = The transportation supply

Node-Place Benefits

- Deep collaboration between transport and land use planners.
- Develop a strong base of evidence that provides decision makers and the public with a clear guide of how transport and land use work together.
- Provide a robust basis for decision makers to distribute infrastructure/land use development or change according to their objectives.





Coordinated Development Emphasis Areas (CDEAs)

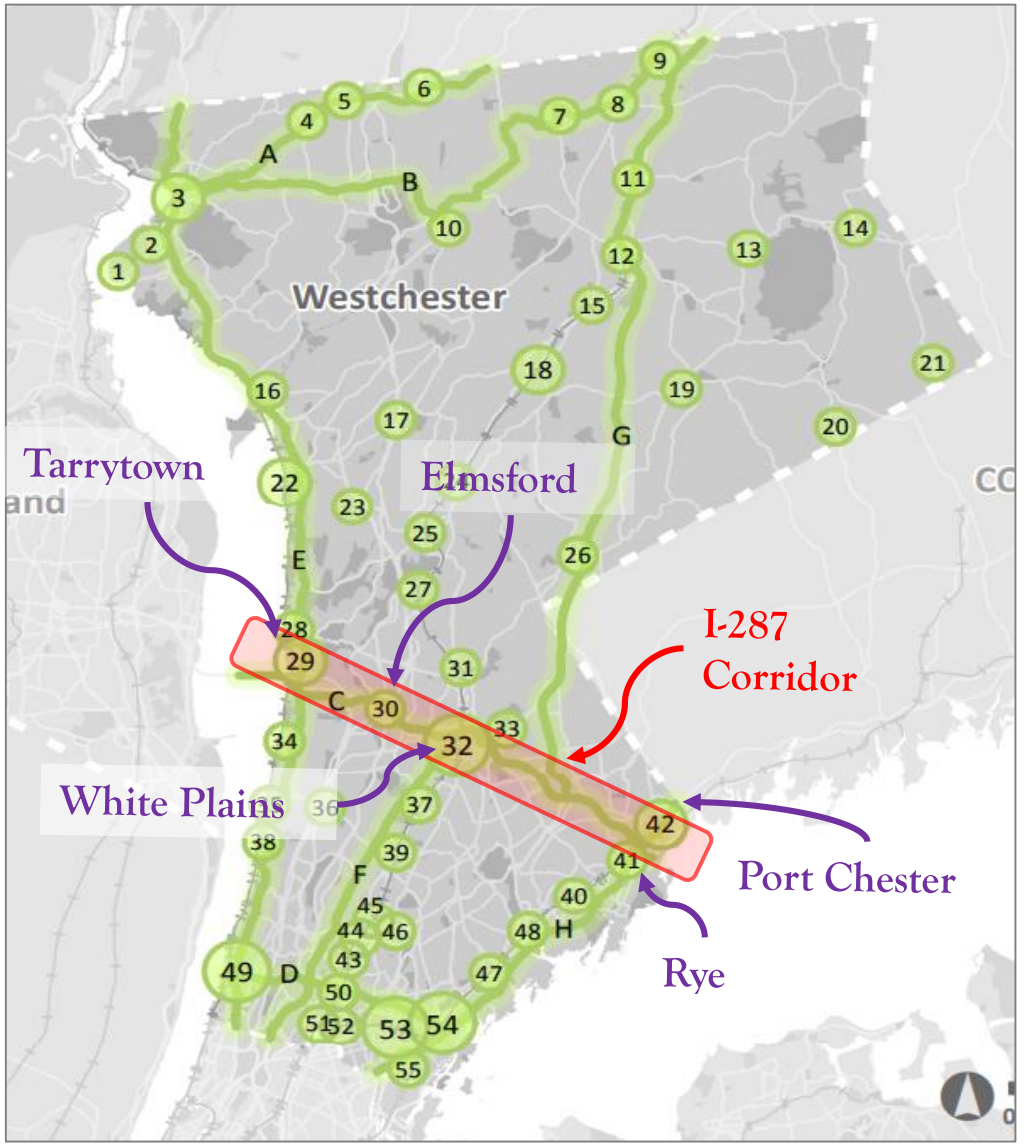
Case Study : I-287 Corridor

I-287 Corridor CDEAS

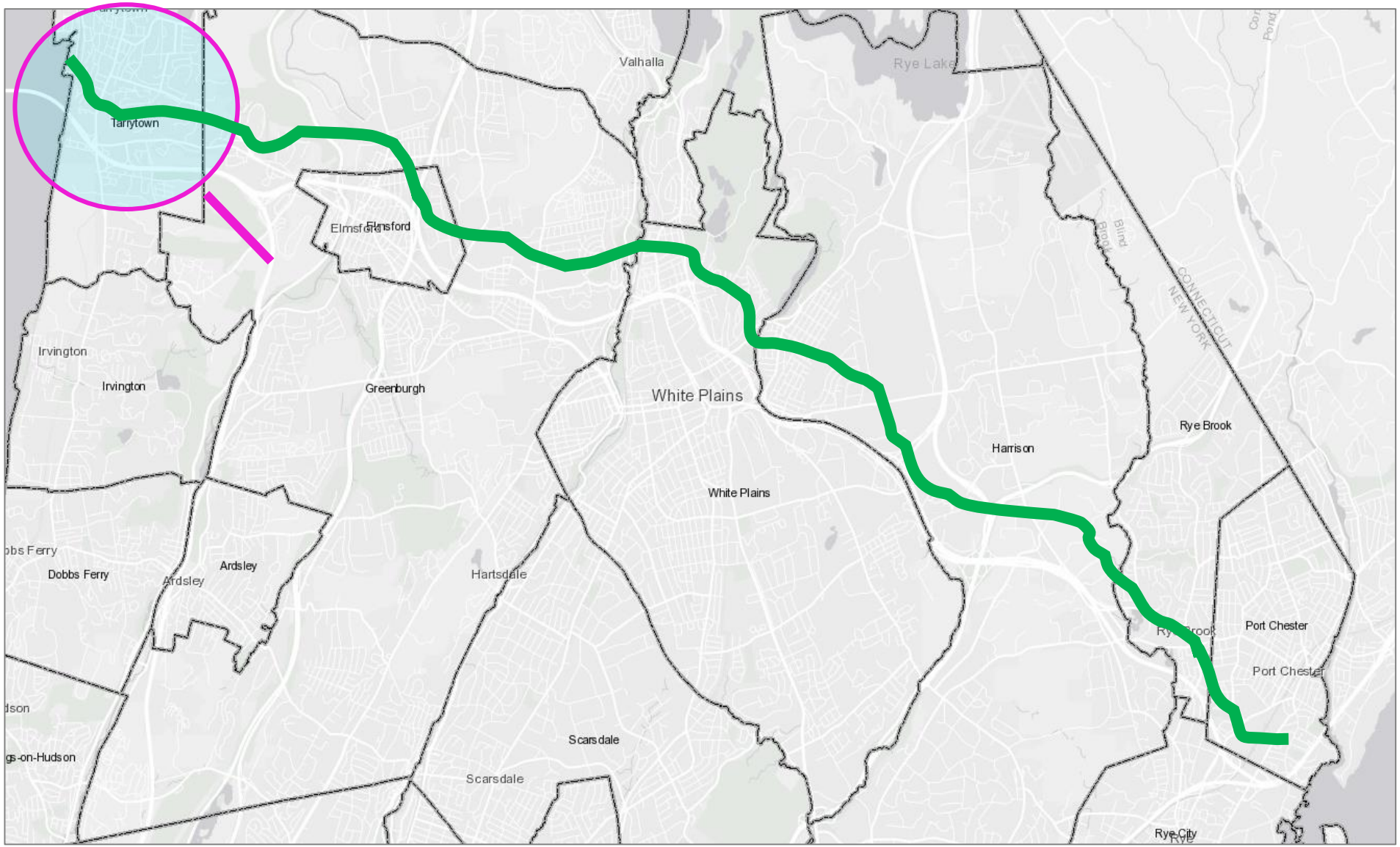
Sustainable Development Centers:

- Village of Tarrytown
- Village of Elmsford
- Town of Greenburgh
- City of White Plains
- Town of Harrison
- Village of Rye Brook
- City of Rye
- Village of Port Chester

CDEAS - Westchester



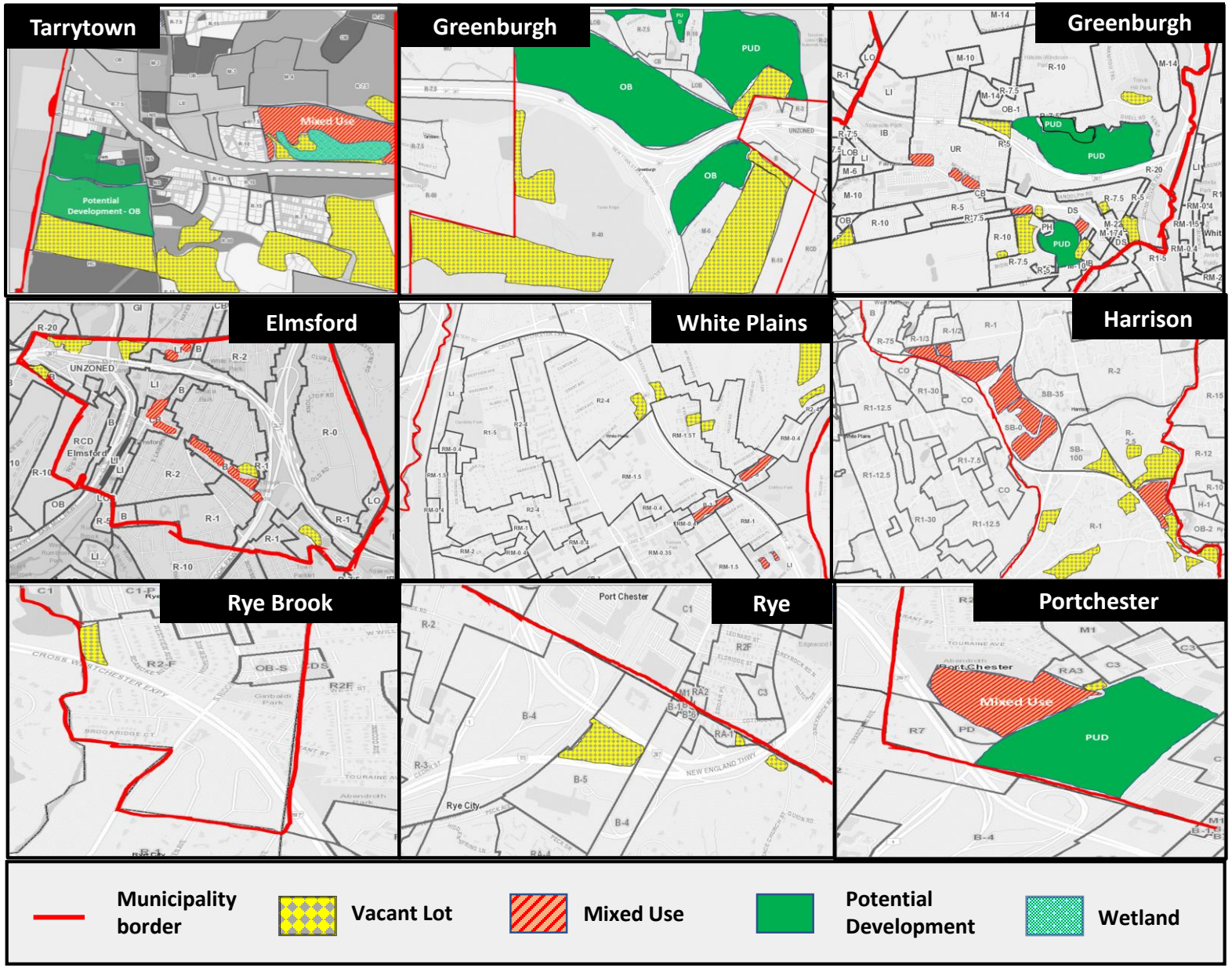
Review the local land use plans to find potential for development and growth



Land Use Assessment for Towns and Villages Close toI-287 Corridor

- This assessment shows the lots and lands with potential for development in each jurisdiction close to the I-287 corridor.

- For example Tarrytown and Greenburgh have lands with higher potential for development



Node-Place Model

Node Index

y_1 = Average Annual Daily Traffic (AADT)

y_2 = Number of highway lanes

y_3 = Connection to other highways

y_4 = Number of train station (within 15 min of travel)

y_5 = Number of bus lines (r < 1 mile)

y_6 = Land Use (Vacant lands and Mixed Use < 1 mile)

y_7 = *D*istance to next highway exit

Potential node Index*

Car parking capacity	No data available
Bicycle parking capacity	No data available
Bicycle access	No data available

Place Index

x_1 = Population (r < 1 mile)

x_2 = The number of workers in labor force

x_3 = Degree of functional mix

$$x_3 = 1 - \frac{\left(\left(\frac{a-b}{d}\right) - \left(\frac{a-c}{d}\right)\right)}{2} \quad \text{with} \quad \begin{cases} a = \max\{x_1, x_2\} \\ b = \min\{x_1, x_2\} \\ c = \frac{1}{2}(x_1 + x_2) \\ d = (x_1 + x_2) \end{cases}$$

Node-Place Model

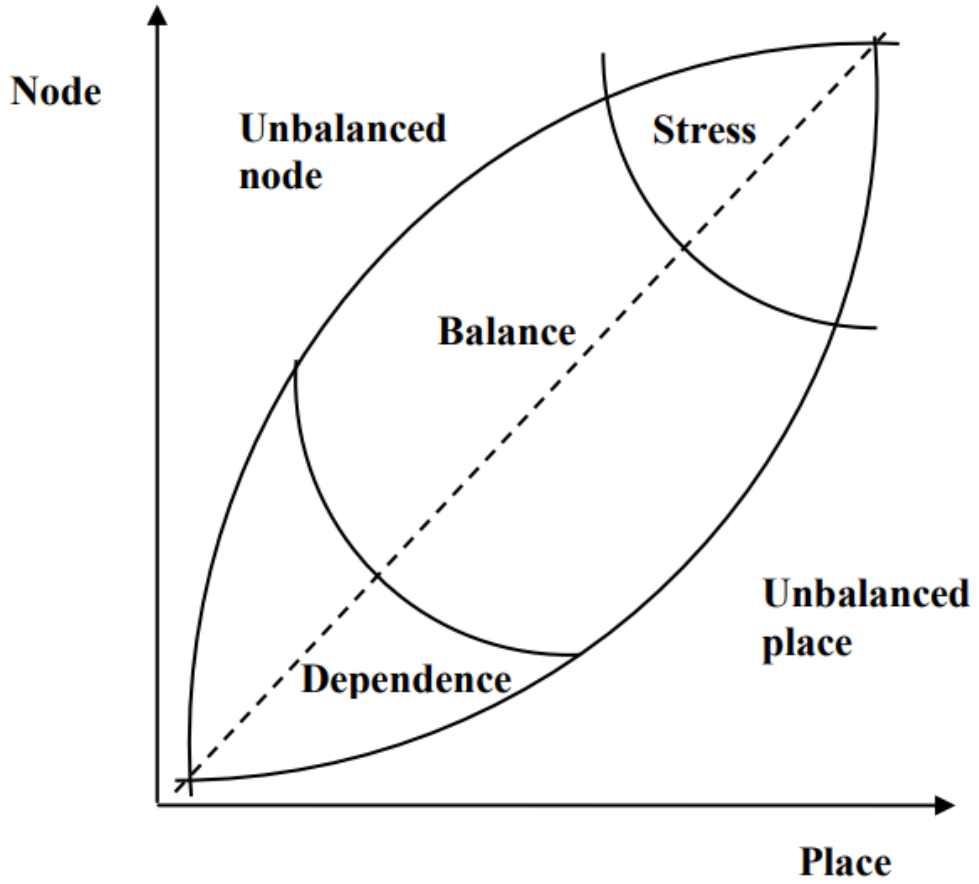
1) Balance: a node and a place are as strong.

2) Stress: Further development in these areas can become problematic as multiple claims on the limited amount of space can easily cause conflicts.

3) Dependence: There is no need for further development of transport systems due to the lack of local potential.

4) Unbalanced node: the transport systems are relatively more developed than the urban activities.

5) Unbalanced place: the urban activities are more intense in relation to the transport systems.



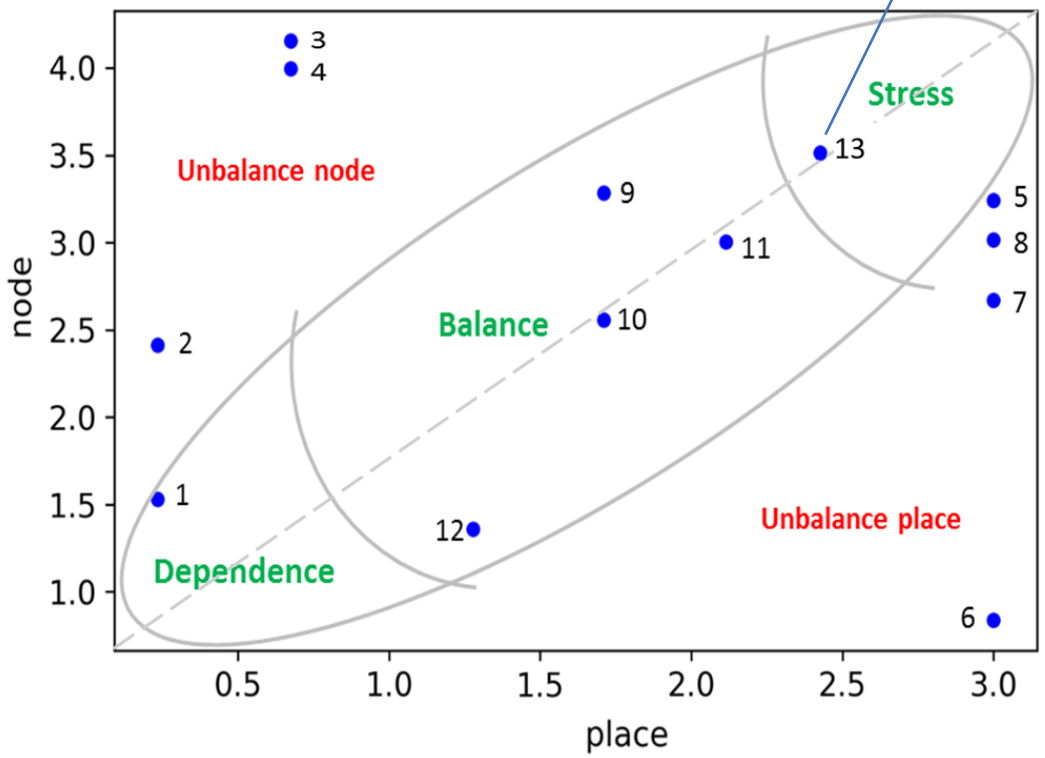
Node Place Model

The aim of this approach is:

- Not to advise a particular development path.
- To gain a better understanding of development dynamics.

Jurisdiction	Highway Exit
Village of Tarrytown	3-4
Village of Elmsford	1-2
Town of Greenburgh	13
City of White Plains	5-6-7-8
Town of Harrison	9-10
City of Rye	12
Village of Port Chester	11

The further development could cause conflicts due to the limited amount of space available.



I-287 corridor exits in Westchester county

Conclusions

VERTICAL INTEGRATION OF LAND USE & TRANSPORTATION PLANNING CAN BE ENHANCED IN NYMTC'S PLANNING AREA

- THE NODE-PLACE APPROACH, OR SIMILAR APPRAISAL METHOD, CAN IDENTIFY POTENTIAL FOR IMPROVED VERTICAL INTEGRATION
- THE LAND USE COMPONENT OF THE REGIONAL TRANPORTATION PLAN CAN GUIDE THE APPLICATION OF THE APPRAISAL METHOD

LOCAL OFFICIALS MUST BE BROUGHT TO THE PLANNING TABLE IN A TARGETED FASHION

LOCAL OFFICIALS CAN BE INCENTED THROUGH THE FOLLOWING:

- ASSESSMENTS OF DEVELOPMENT POTENTIAL
- TECHNICAL ASSISTANCE
- FUNDING FOR TRANSPORTATION PROJECTS AND STUDIES
- COLLABORATION WITH IMPLEMENTATION PARTNERS

LAND USE GOALS CAN BE APPLIED TO SCORING CRITERIA FOR POTENTIAL TRANPORTATION PROJECTS

~ Thank You ~


Putnam
Rockland
Westchester
Mid Hudson South TCC
Bronx
Manhattan
New York City TCC
Queens
Staten Island
Kings
Nassau
Nassau - Suffolk TCC
Suffolk