

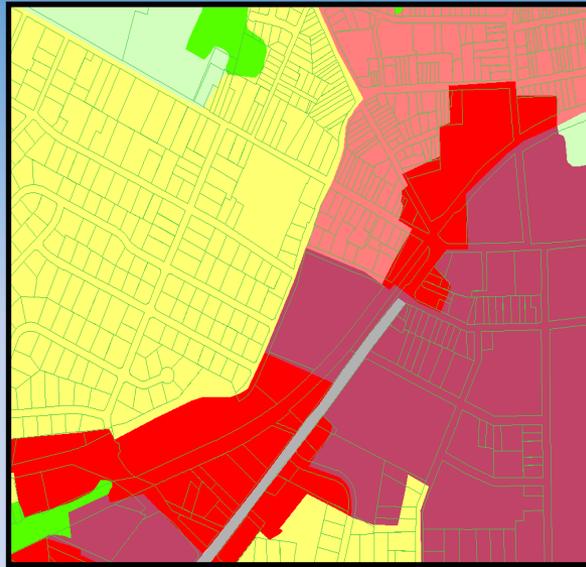
Travel Modeling & Visualization

“The SSTI Process”

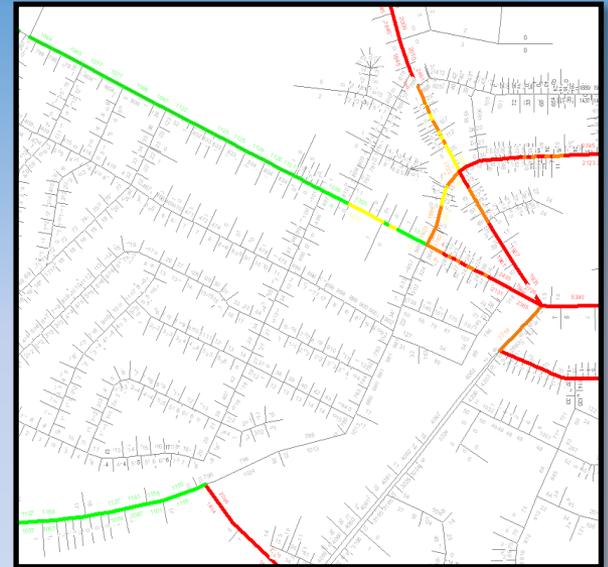
DOTS/Quality Section Winter Workshop February 14, 2013



Existing Land Use
& Transportation



Future Land Use
& Transportation



Model Process:
Analysis & Evaluation



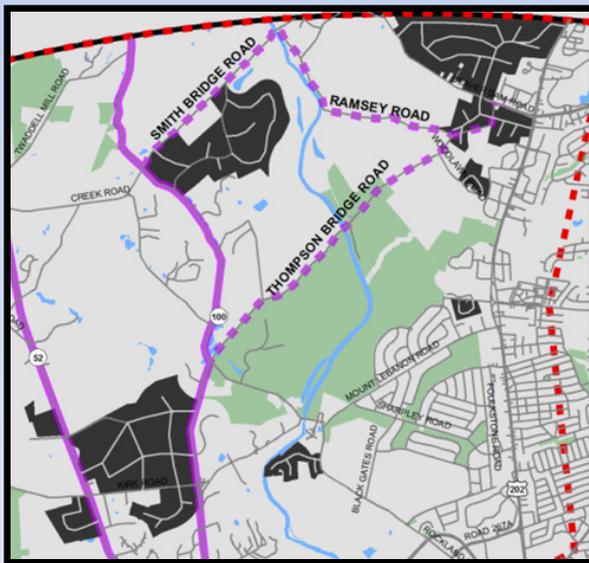
Project Goals:

1) Facilitate Detailed Travel Analysis of Existing & Potential Land Uses.

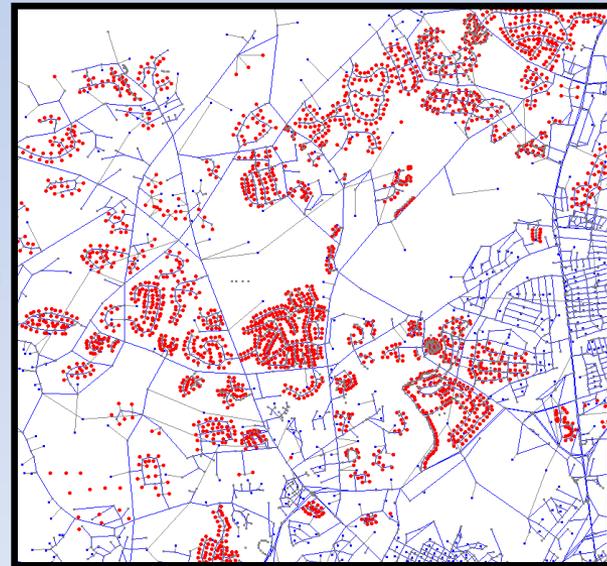
Leverage **ArcGIS Editing Functionality** with CUBE Model.

Reduce Network Editing Time.

Model **Policy Initiatives** (Example: Enhanced Interconnectivity).



Potential Growth Scenario



Detailed Travel Model

Project Goals:

2) Optional Step: Integrated 3-D Simulation.

Visualize Multiple Scenarios (with VISSIM).

Process Creates Draft Simulation Model, Not User (Very Time-Intensive).

Estimate & Visualize Effects of Adding & Enhancing Bike & Pedestrian Modes.

Local Vernacular Architectural Styles.



No Palm Trees !



**Kent County Development
Website Image**

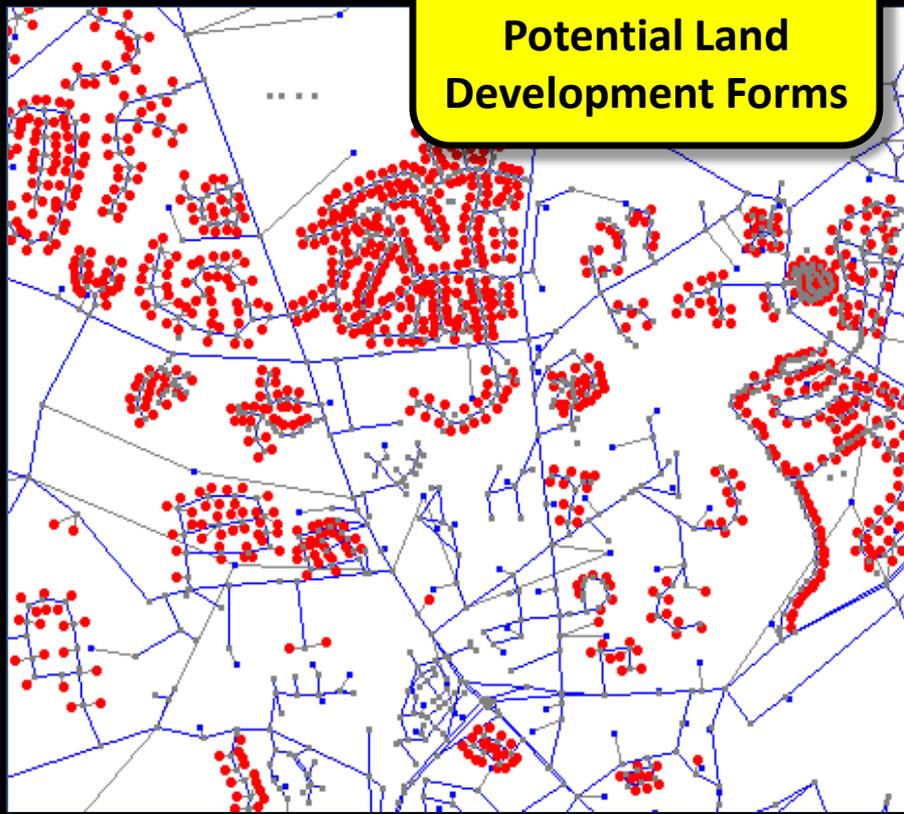


**Sussex County Development
Website Image**

“What About the Future ?”

*Current Tax-Parcel Models are Time Intensive
New Methods & Tools Needed*

GIS:
Potential Land
Development Forms



BLUE DOTS – Existing Units
RED DOTS – Potential Units

Simulation



Visualize:
Auto, Bus, Bike & Ped Travel

DeIDOT / SSTI Travel Model

Community Design Scenarios
3-D Image Models

GIS

Peak Hour Travel:
Auto, Bus, Bike, & Ped

**Travel
Model**

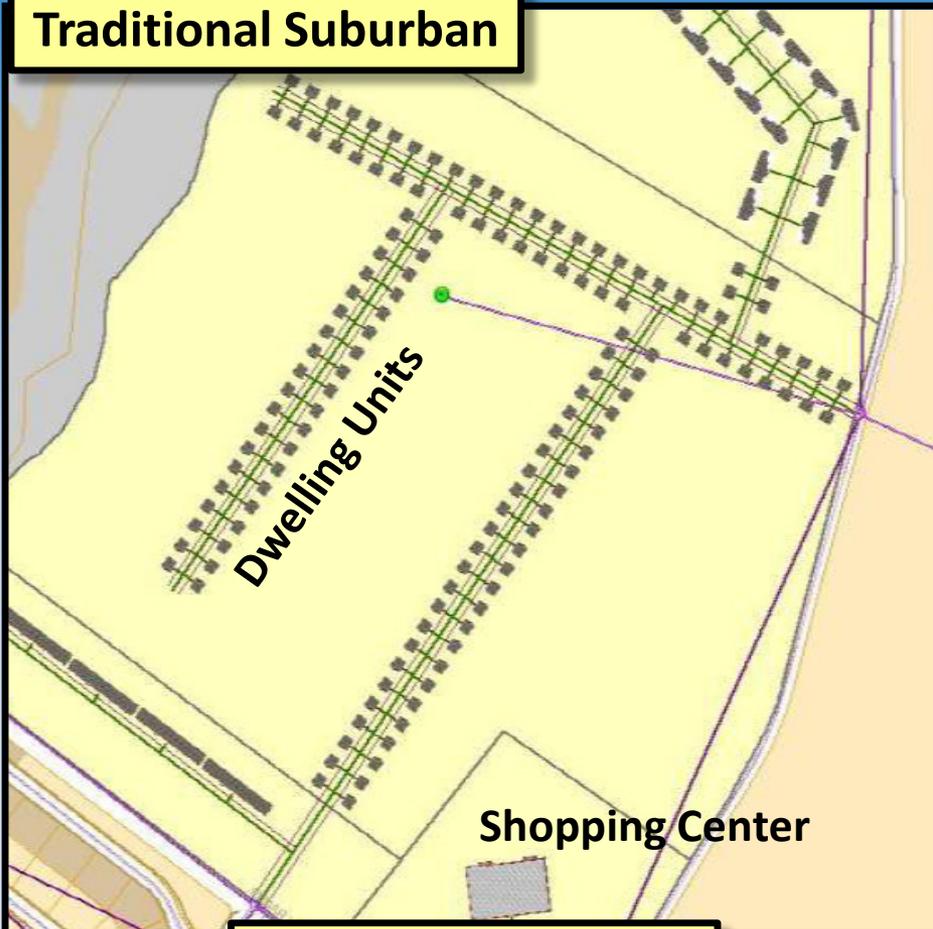
Analysis & Visualization

Simulation

Middletown Case Study:

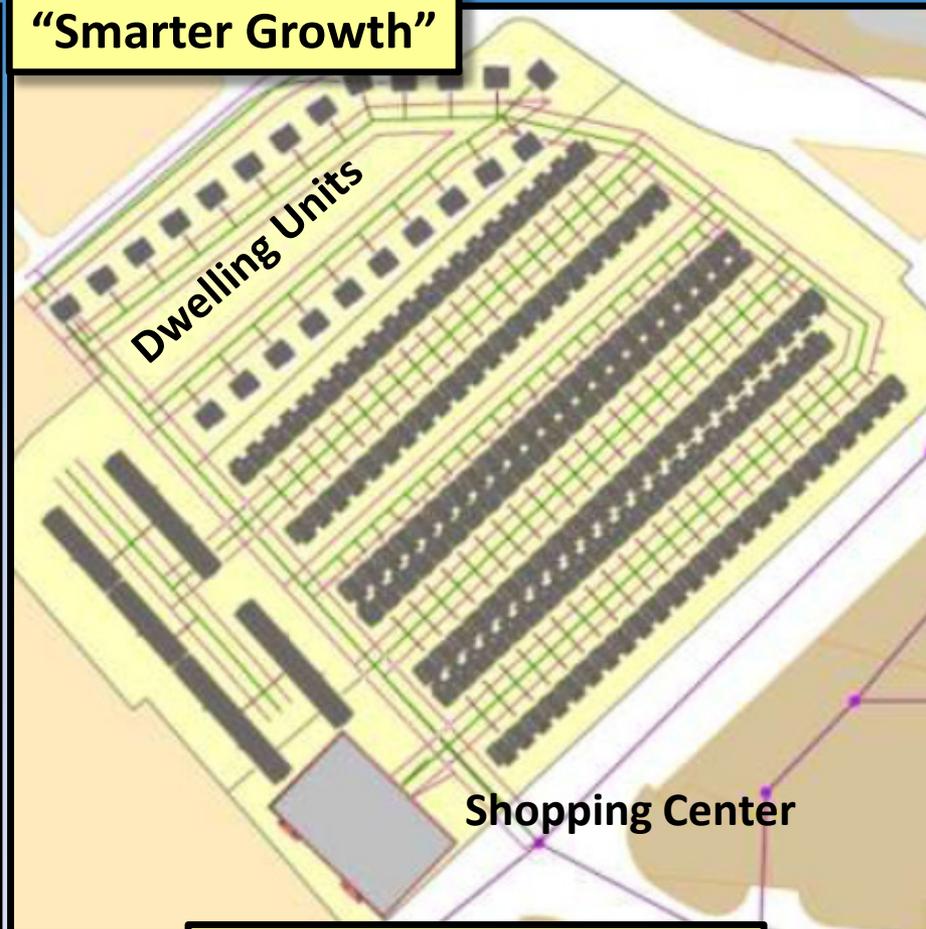
Compare Potential Land Use Forms.

Traditional Suburban



Single Family Units
2 and 4 Units/Acre
Little Bike/Ped
Shopping Not Connected

"Smarter Growth"



Single and Multi-Family Units
4, 10, and 20 Units/Acre
Complete Streets
Shopping Integrated

Middletown Case Study: Results

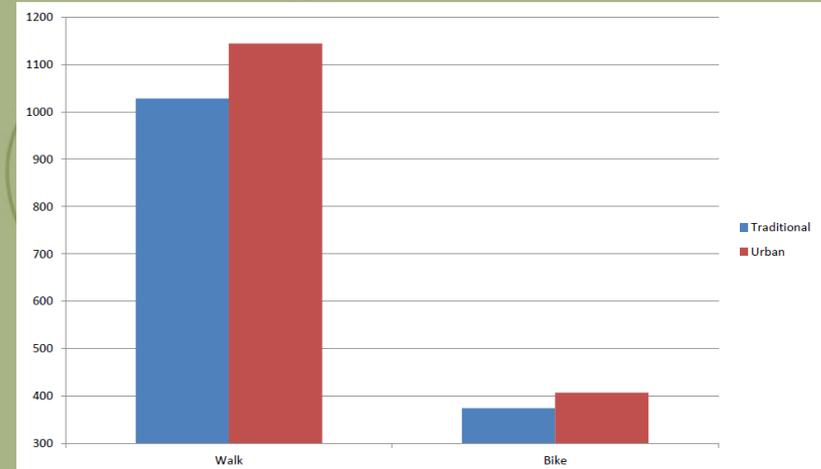
10% Higher Walking Trips

5% Higher Biking

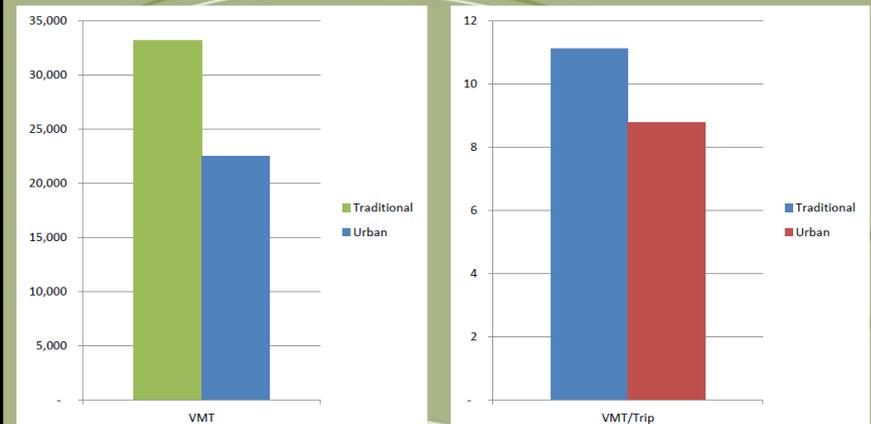
20% Less VMT / Unit

12% Less Emissions / Unit

Walk/Bike Trips (Daily)



VMT & VMT/Trip



North Smyrna Case Study

Background:

- Memorandum of Agreement (MOA) - July 2012

Goal:

- Transform U.S 13 corridor (within Town limits) into a more pedestrian and bike friendly environment with a “sense of place”

Process

- Planning Design Week Charrette (August 2012) to identify proposed and “vulnerable” parcels and develop future land use scenarios

SSTI Analysis:

- Pilot study area for large parcel south of Paddock Rd between US 1 and US 13 (traditional versus smart growth)

North Smyrna Case Study – Pilot Study Area



North Smyrna Case Study – Pilot Study Area



SSTI Model Output – Traditional growth

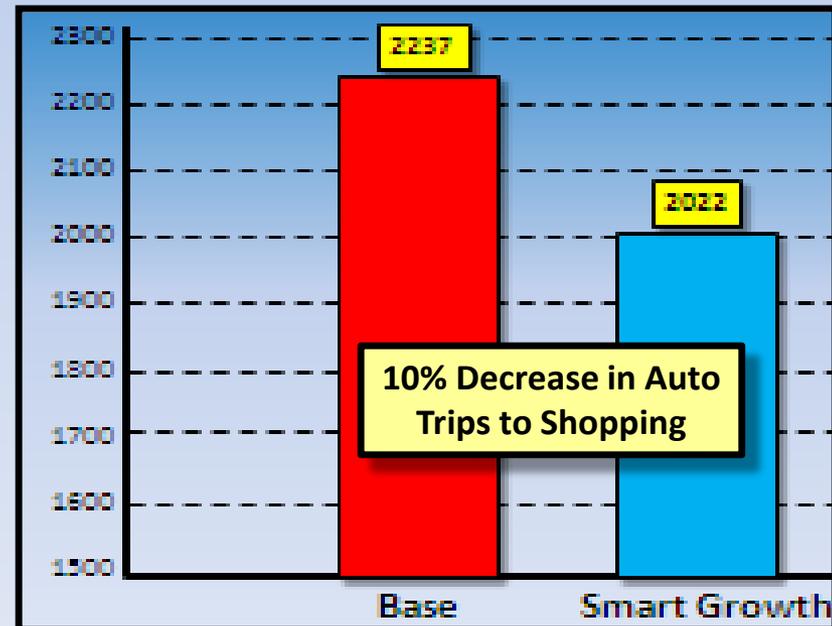
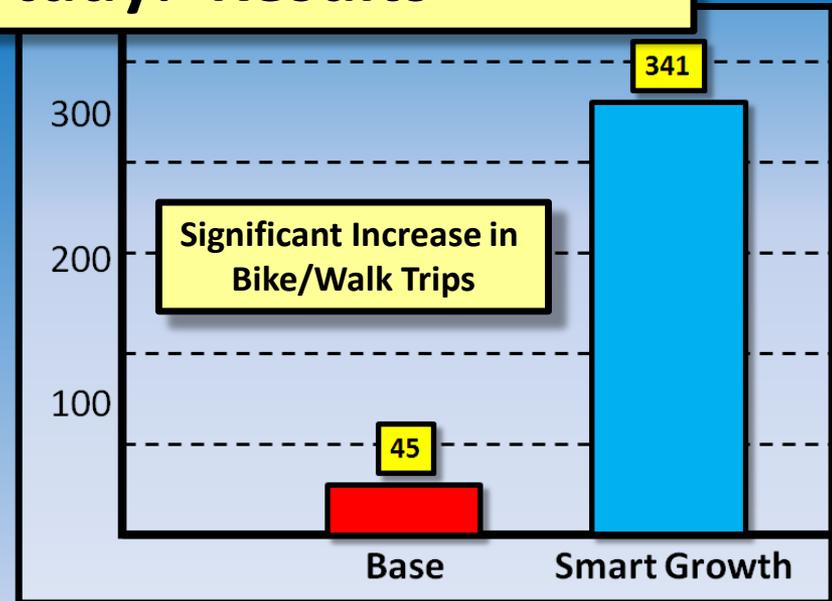
North Smyrna Case Study – Pilot Study Area



SSTI Model Output – Smart growth

North Smyrna Case Study: Results

- **Community Design:**
10% Less Vehicle Miles Traveled (VMT) per Unit.
- **Additional Interconnectivity:**
4% Less Travel on Nearby Arterials & Intersections
- **Vehicle Emissions:**
11% Less per Unit



North Smyrna Case Study: Lessons Learned

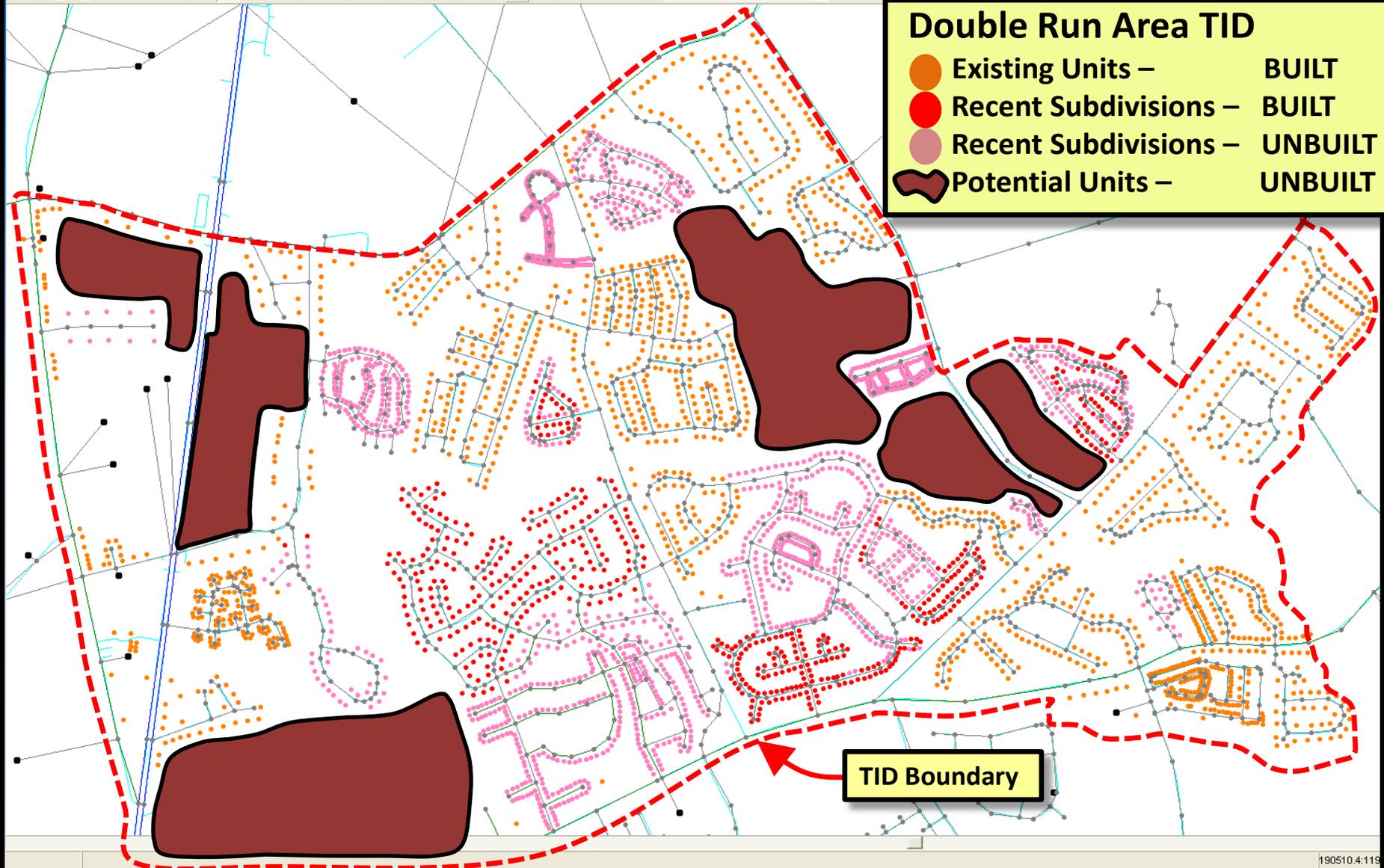
- SSTI provides analytical methods to quantify benefits associated with “best practice” land use policies (smart growth) including mixed-use development, bicycle, pedestrian, and transit amenities.
- SSTI provides a data driven methodology that can assist land use agencies and local governments regarding the potential transportation impacts of proposed zoning codes and site plans.
- SSTI provides a valuable tool to help educate stakeholders participating in regional and investment area studies about the value of smart growth transportation planning.

North Smyrna Case Study

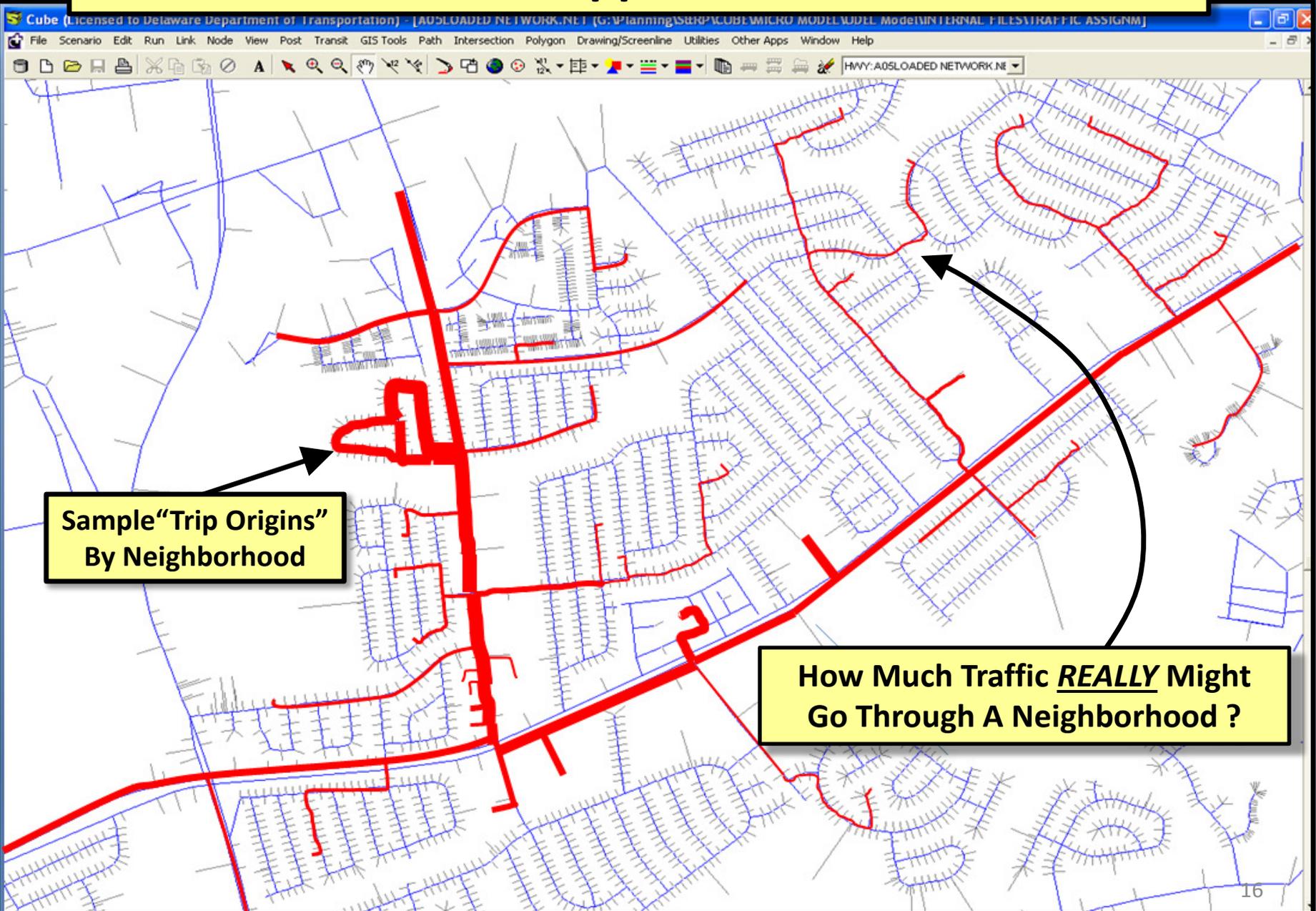
[Traditional vs. Smart Growth](#)

[US13 / Paddock Road Animation](#)

Potential Application: TID's



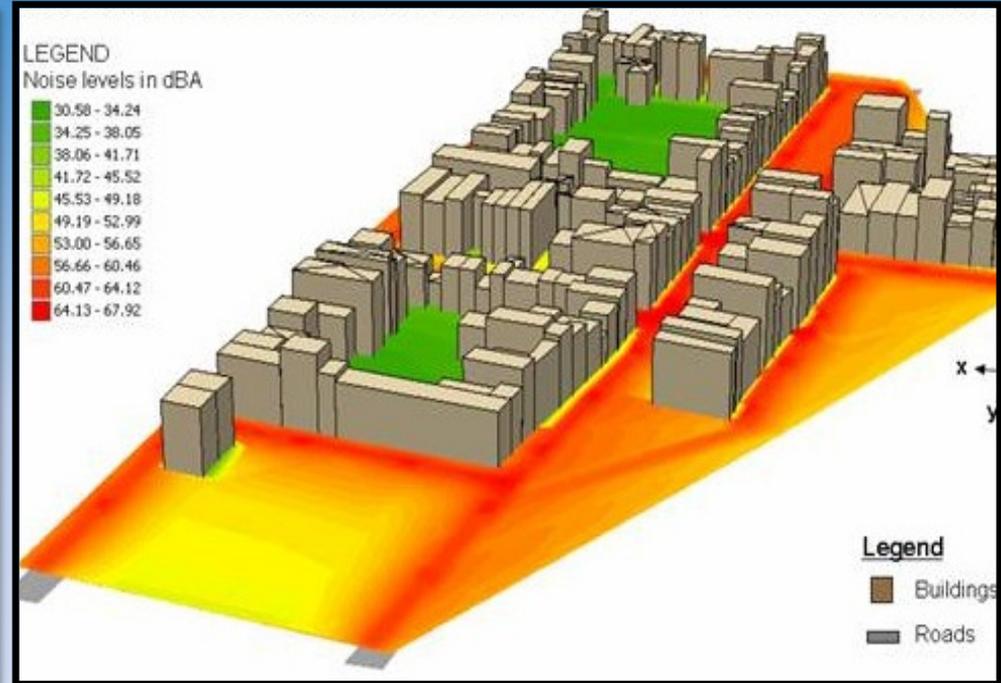
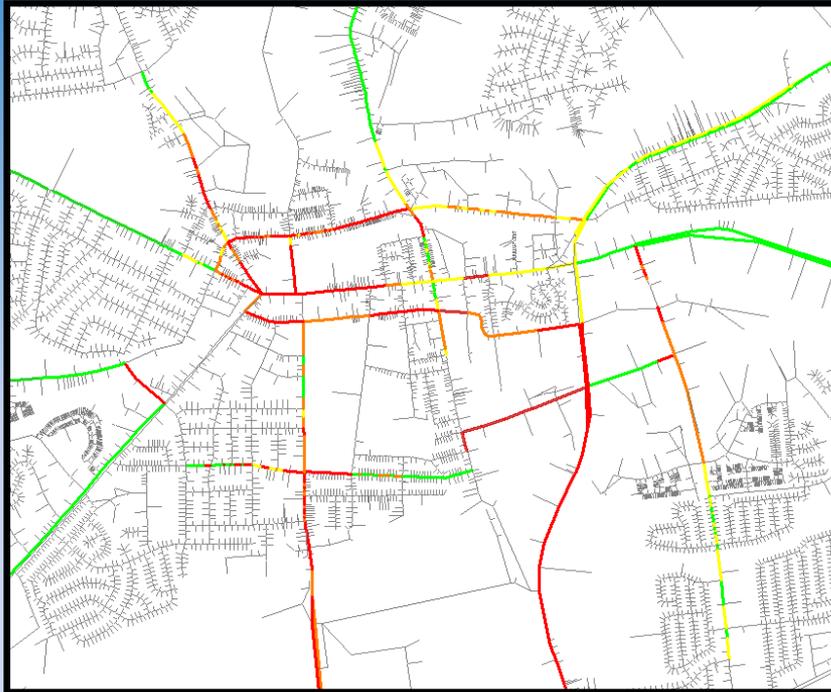
Potential Application: TIS's



Sample "Trip Origins"
By Neighborhood

How Much Traffic *REALLY* Might
Go Through A Neighborhood ?

Other Potential Applications:



Integrate EPA "MOVES Model":

Emissions by Road Segment & Street
Emissions To/From Each Tax Parcel

Integrate FHWA "Traffic Noise Model" (TNM):

Noise by Road Segment & Street
Noise Levels at Existing & Proposed Dwellings

Thank You !!!