

Transportation Planning Overview

Presentation to Landmark Van
Dorn Advisory Group

21 April, 2008

Purpose

- Provide background on transportation issues, policy and strategies,
- Provide two way communication,
- Start to answer the question:
“What about the congestion?”



Agenda

- Overview
- Transportation Trends
- Existing Conditions
- Transportation Solutions
- Conclusions

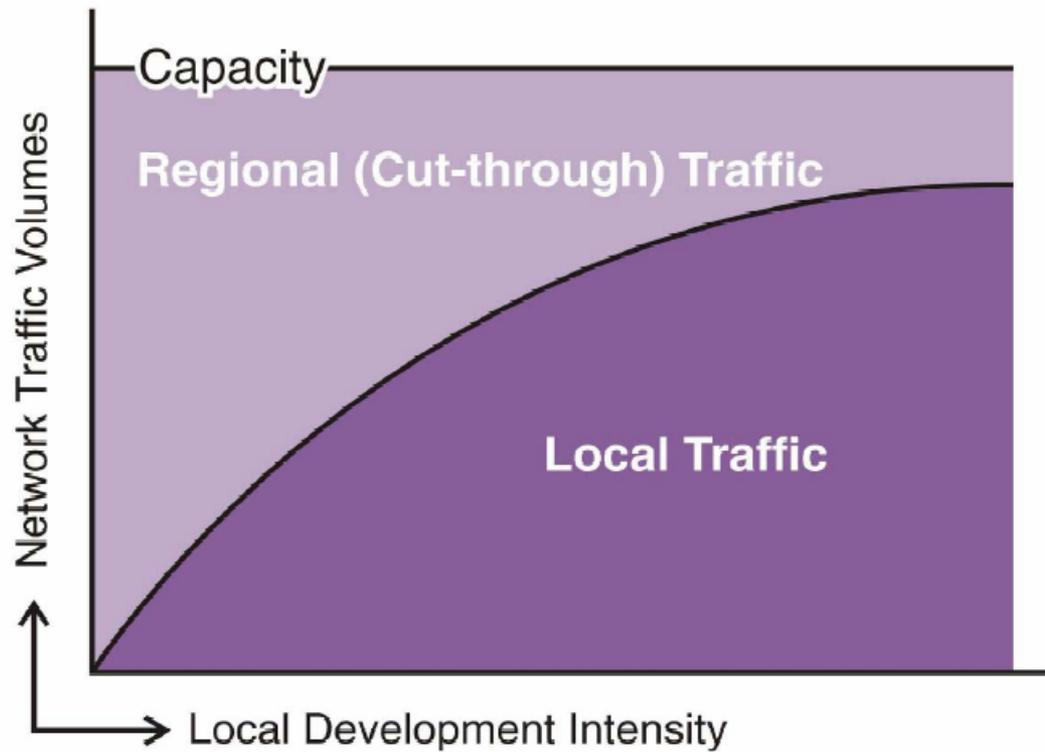
- ❖ Improved transit options, an upgraded street grid and appropriate land uses will transform the area into a vibrant destination with traffic typical of a successful urban place.



- Premise:

- Higher density land use will bring more trips.
- Local trips will displace through trips.

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■ Premise:

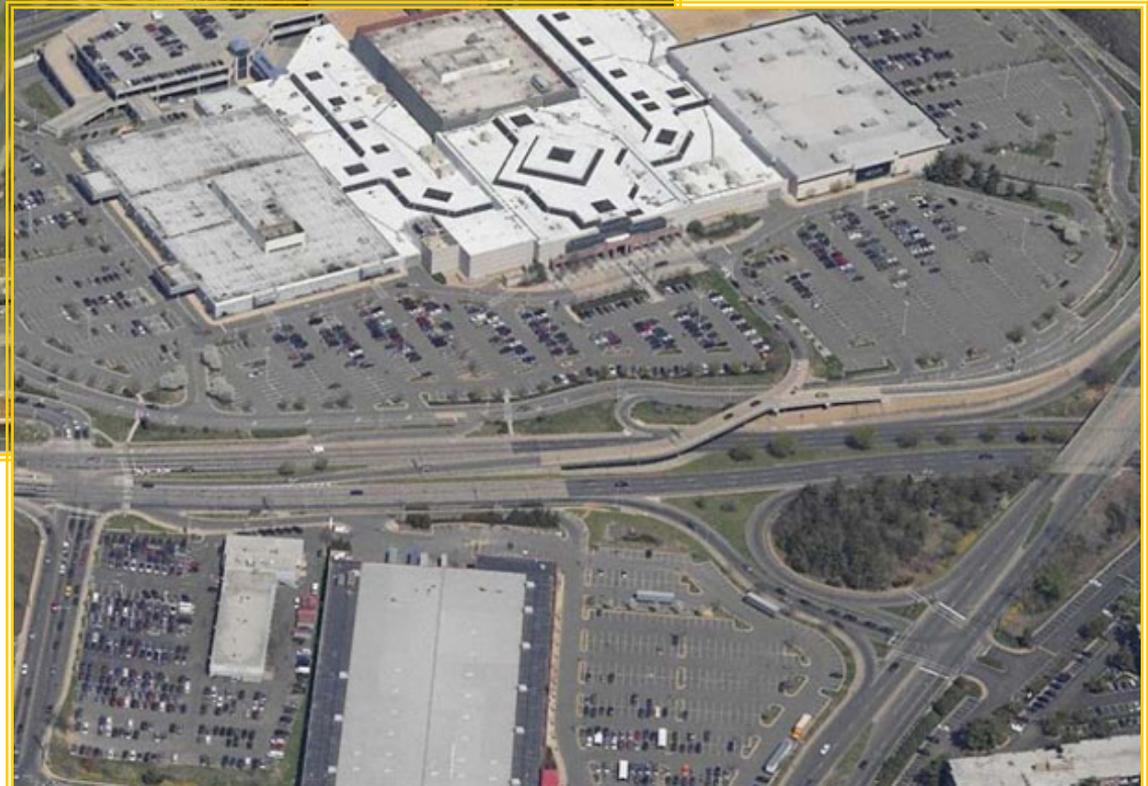
- Higher density land use will bring greater trips.
- Local trips will displace through trips.
- Mixed uses will result in internal capture.
- Travel Demand Management will further decrease Single Occupancy Vehicle (SOV) trips.

Up to 20% Possible

■ Premise:

- Higher density land use will bring more trips.
- Local trips will displace through trips.
- Mixed uses will result in internal capture.
- Travel Demand Management will further decrease Single Occupancy Vehicle (SOV) trips.
- Improved Transit, Bike and Pedestrian Facilities will further decrease SOV trips.

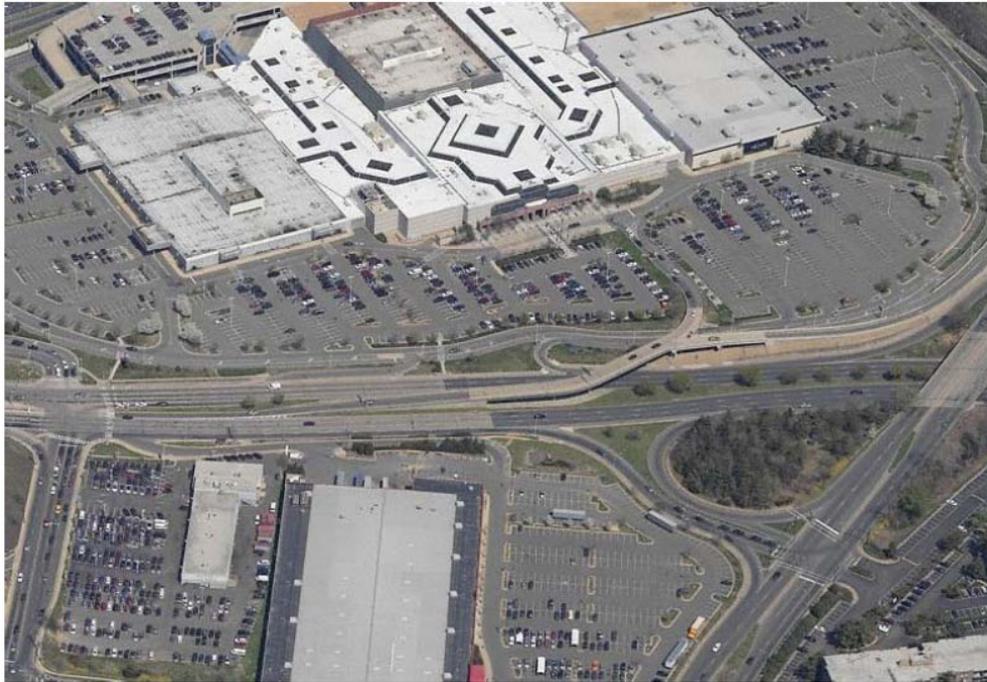
Auto Dominated....



Mixed Use, Multimodal Boulevards and Main Streets.



The quality of the Public Realm is impacted by Transportation choices



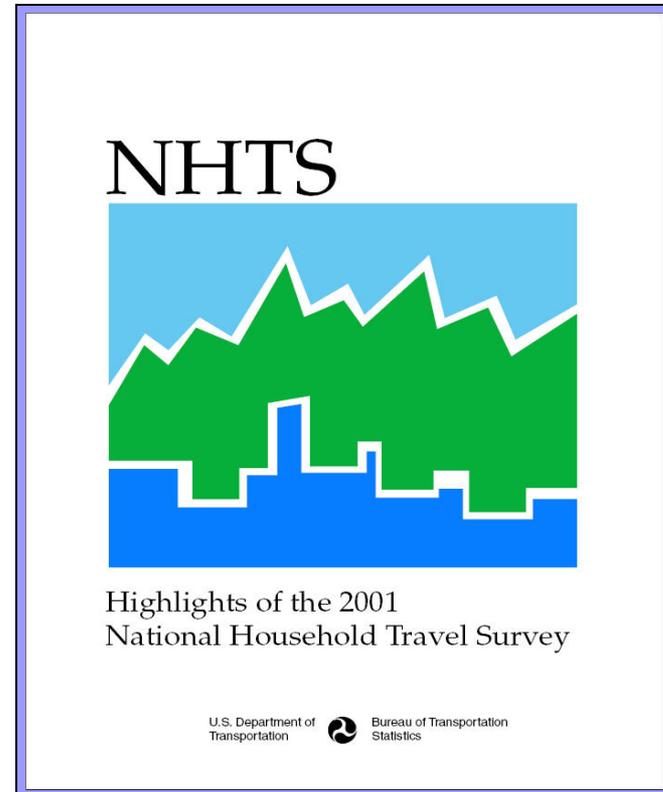
Auto-dominated public realm



Multi-modal, compact, walkable public realm

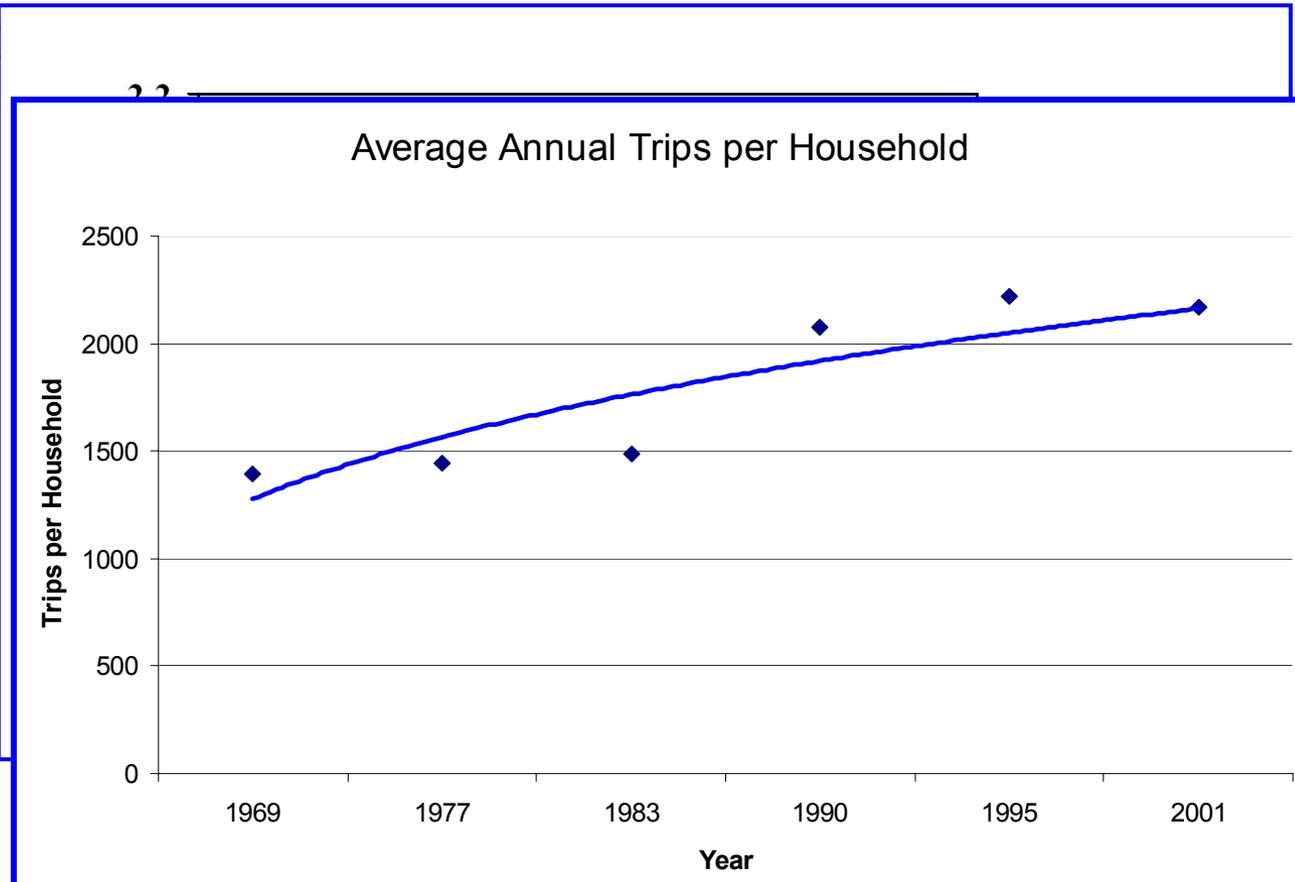
Nationwide Transportation Trends

- Nationwide: More drivers, more trips, longer distances, less transit.



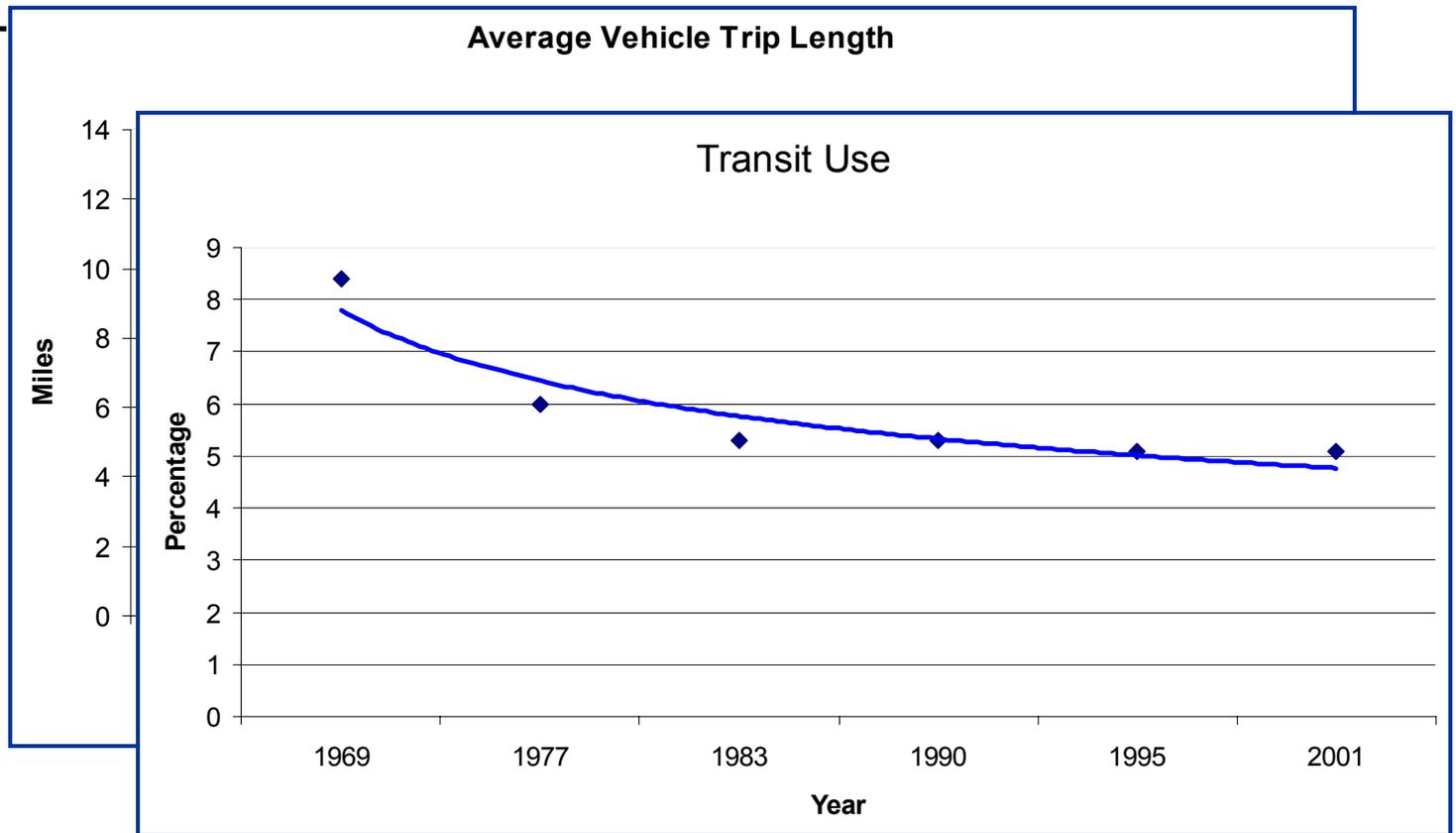
- More Drivers

- More Trips



■ Longer Distances

■ Less T



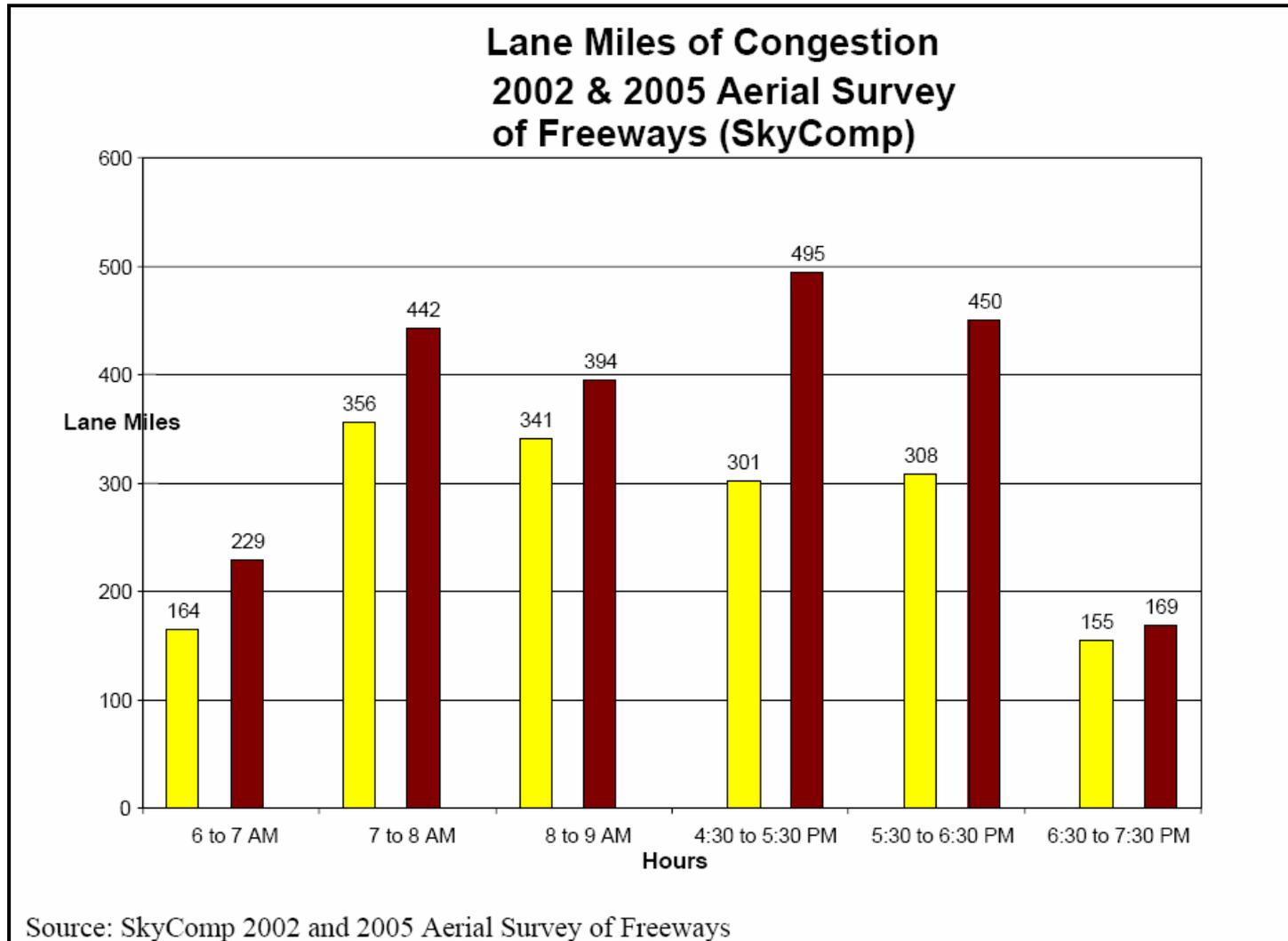
— All purposes
— To or from work

Trends: Metro Washington

Change in Commuting Mode 2000 - 2006				
Commuting Mode	2000		2006	
	Number of Workers	Percent of Workers	Number of Workers	Percent of Workers
Drove alone	1,708,868	67.7%	1,823,063	65.8%
Car or Van Pooled	337,858	13.4%	320,835	11.6%
Transit	278,914	11.0%	392,962	14.2%
Bicycle	7,668	0.3%	11,514	0.4%
Walked	76,473	3.0%	82,846	3.0%
Other Means	22,384	0.9%	28,417	1.0%
Worked at home	92,909	3.7%	112,582	4.1%
Total Workers	2,525,074	100.0%	2,772,219	100.0%

Source: 2000 Census SF3 and 2006 American Communities Survey. 2000 Census SF3 data for the 2003 MSA definition were aggregated from county-level to be geographical comparable to the commuting data from the 2006 ACS.

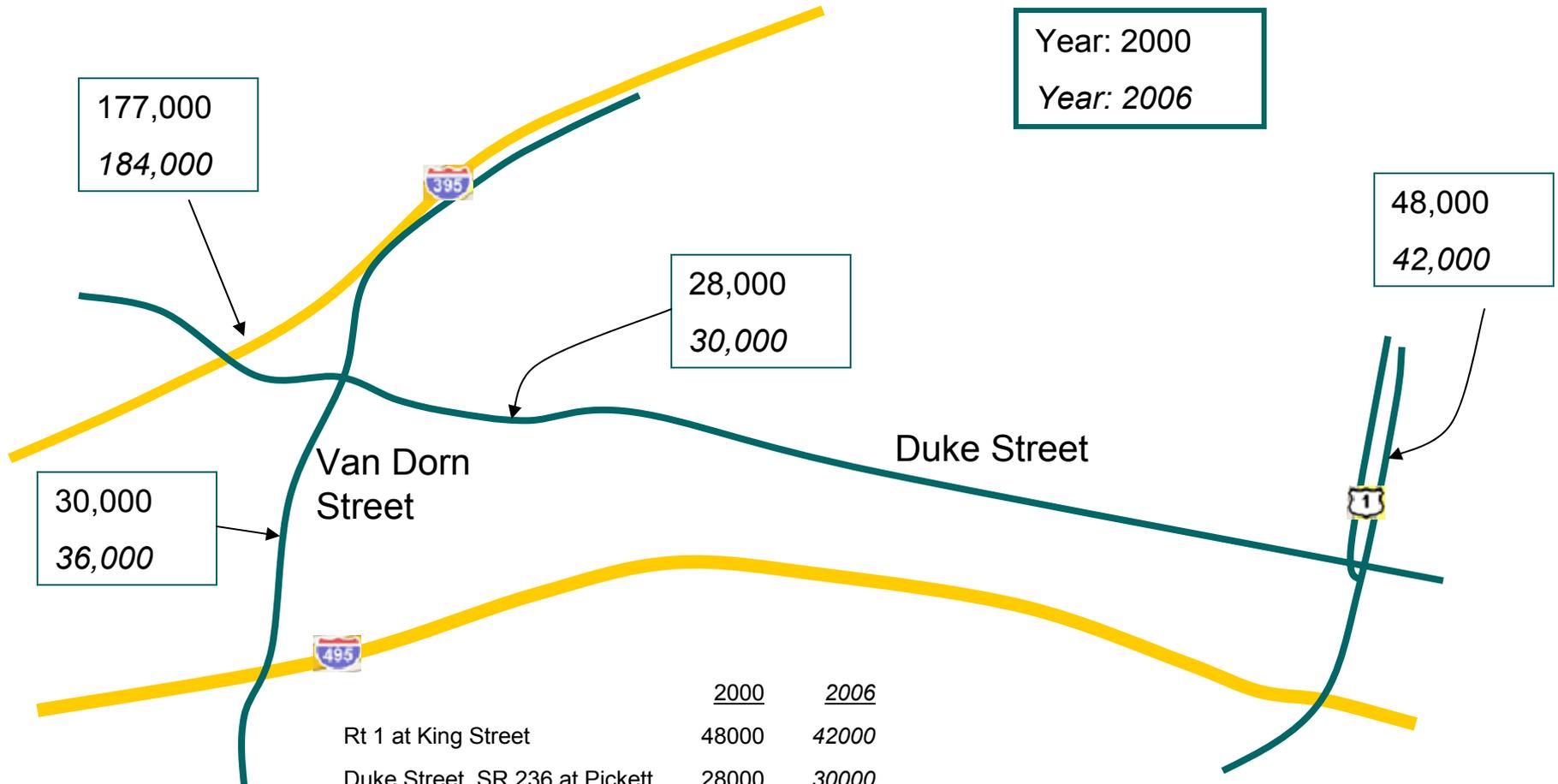
Trends: Metro Washington





Annual Average Daily Traffic (AADT) Trends

AADT Trends



	<u>2000</u>	<u>2006</u>
Rt 1 at King Street	48000	42000
Duke Street, SR 236 at Pickett	28000	30000
I - 395 at Duke	177000	184000
Van Dorn St, SR 401 at Edsall	30000	36000



Alexandria Transportation Master Plan

12 April, 2008

Transportation Master Plan

Guiding Principles:

- Alexandria Will:
 1. Develop innovative local and regional transit options.
 2. Provide quality pedestrian and bicycle accommodations.
 3. Provide all its citizens, regardless of age or ability, with accessibility and mobility.
 4. Increase the use of communications technology in transportation systems.
 5. Further transportation policies that support livable urban land use and encourage neighborhood preservation, in accordance with the City Council Strategic Plan.
 6. Lead the region in promoting environmentally friendly transportation policies.
 7. Ensure accessible, reliable and safe transportation for older and disabled citizens.



Transportation Master Plan Elements

- Transit
- Pedestrian
- Bike
- Streets
- Parking
- Funding and Implementation



Existing Conditions

Landmark/Van Dorn Area Plan

City of Alexandria, Virginia

Transportation Element Technical Report



January 2007

VHB *Vanasse Hangen Brustlin, Inc.*

8300 Boone Boulevard, Suite 700
Vienna, VA 22182-2624
(703) 847-3071 Fax : (703) 847-0298

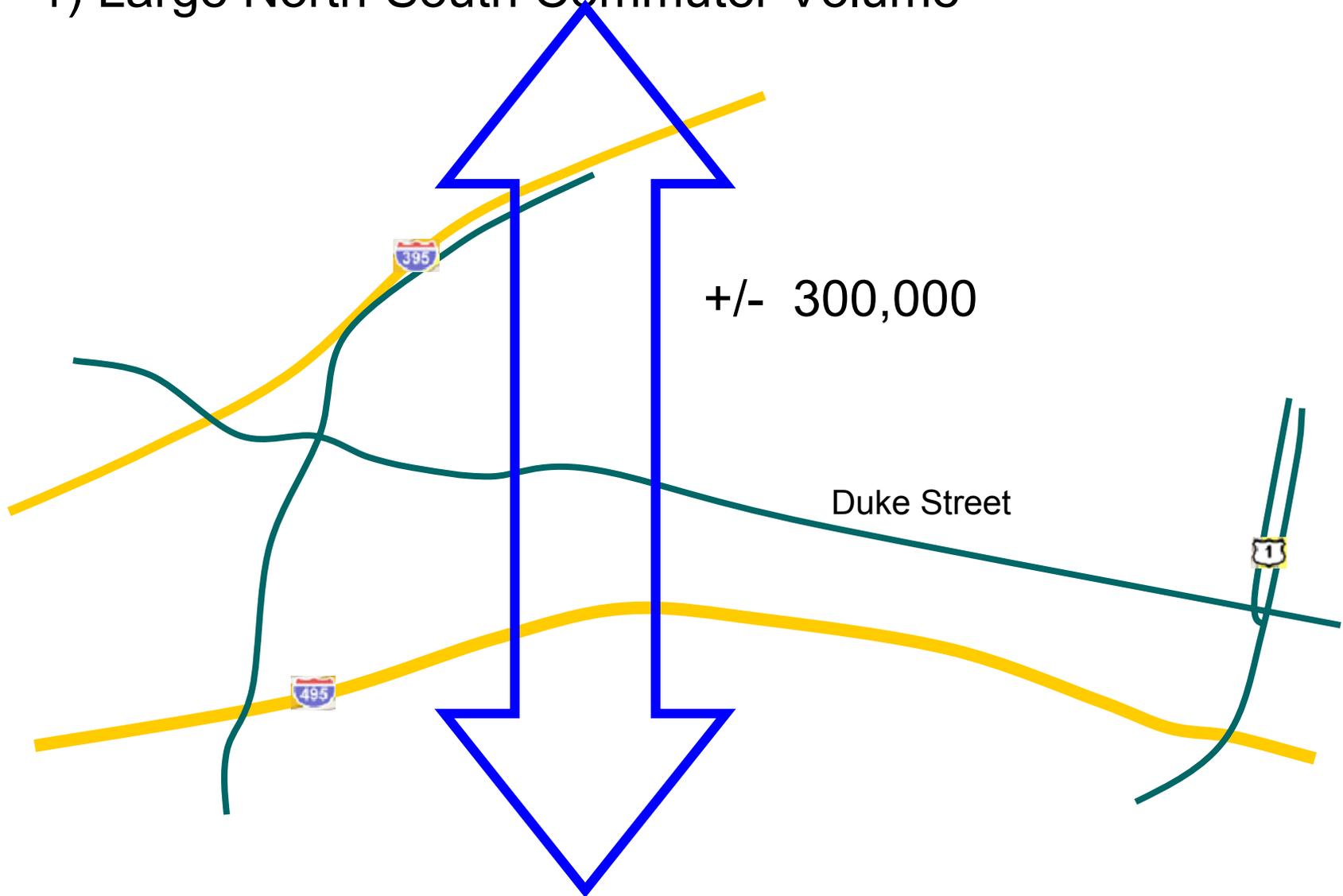
<http://alexandriava.gov/planning/info/>

“Documents”

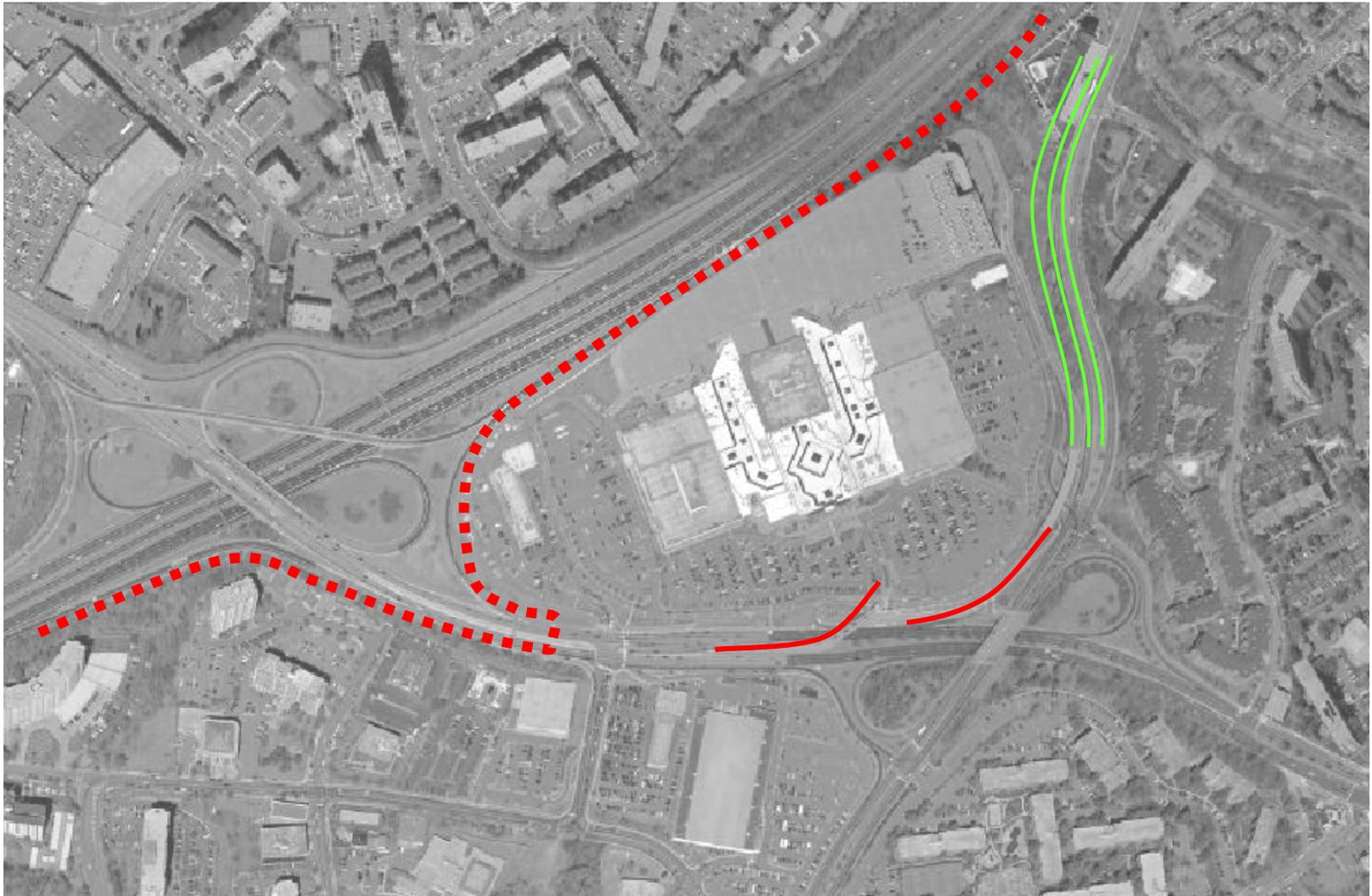
Existing Conditions

- Three Constraining Factors:

1) Large North-South Commuter Volume



2) Barriers to Landmark Mall Site





3) Limited Connectivity

Five Points of Connection

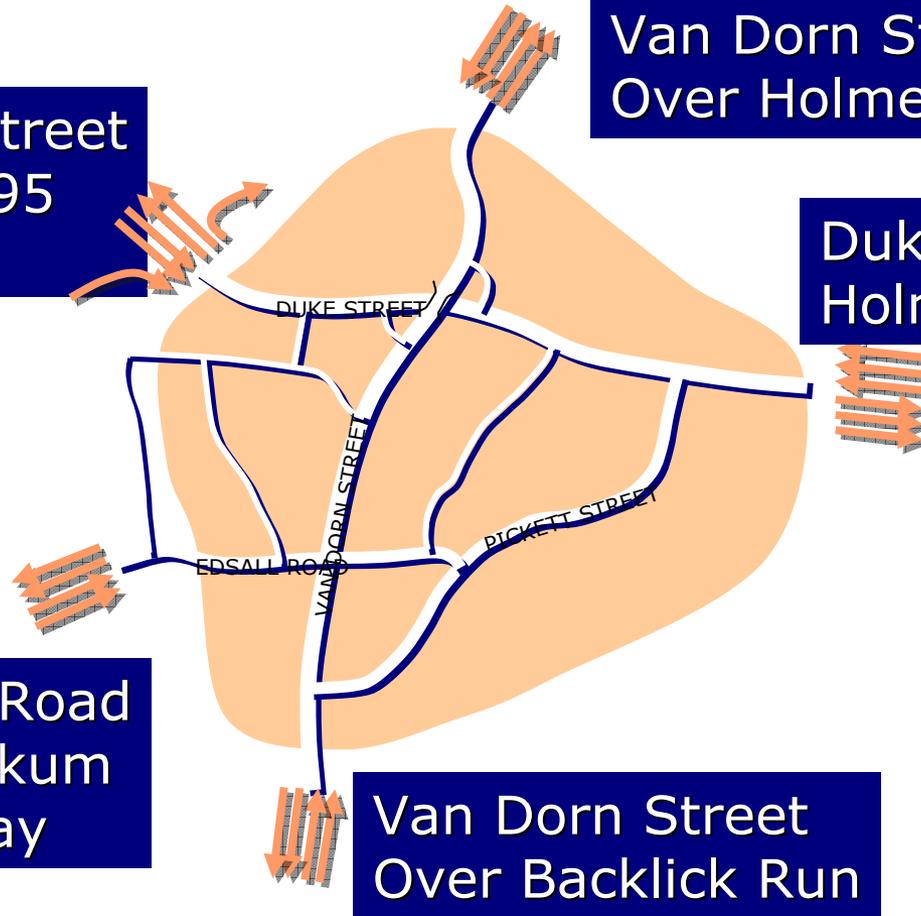
Duke Street
Over 395

Van Dorn Street
Over Holmes Run

Duke Street over
Holmes Run

Edsall Road
At Yoakum
Parkway

Van Dorn Street
Over Backlick Run



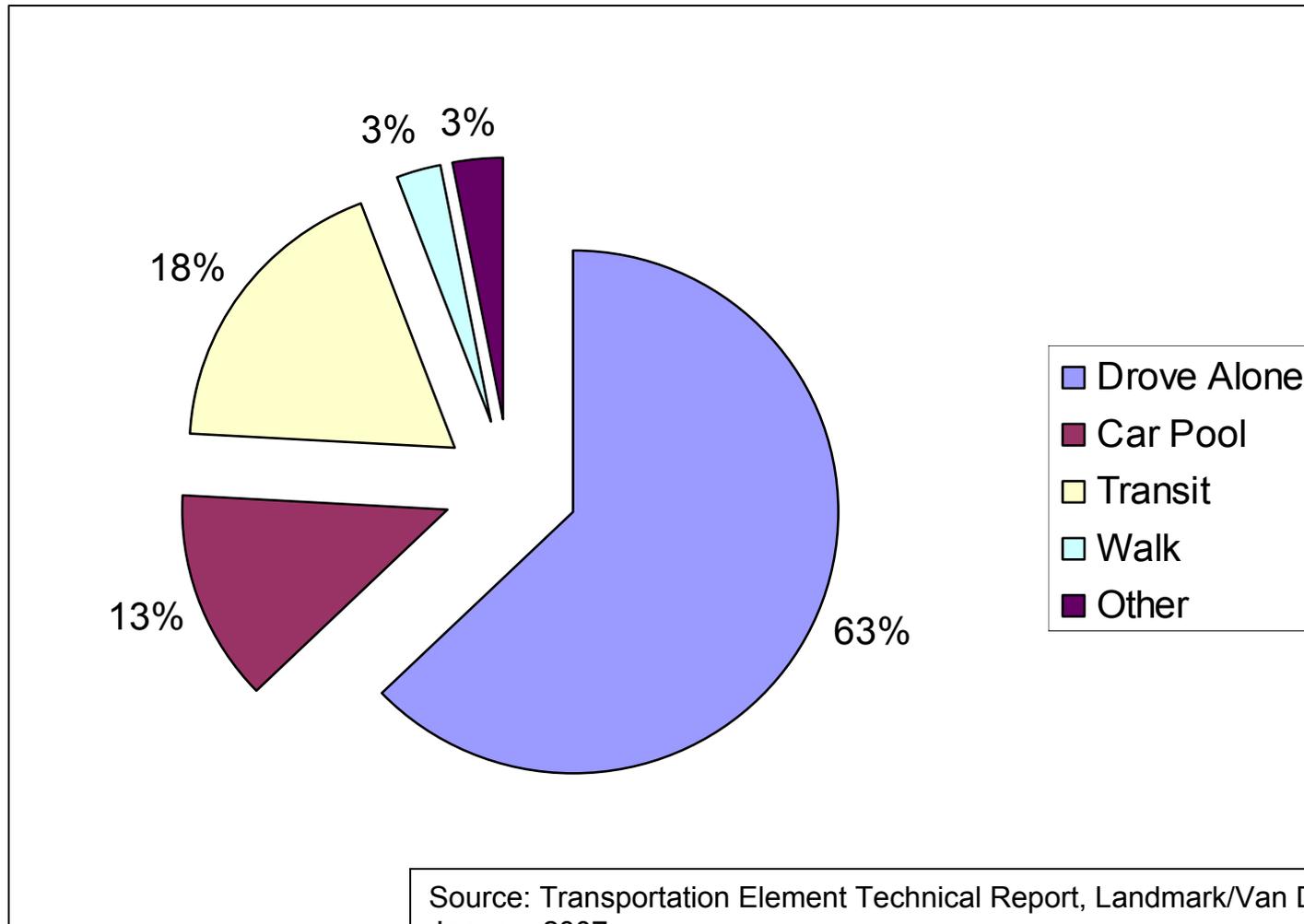
3) Limited Connectivity: “Superblocks”



Study Area Traffic Characteristics

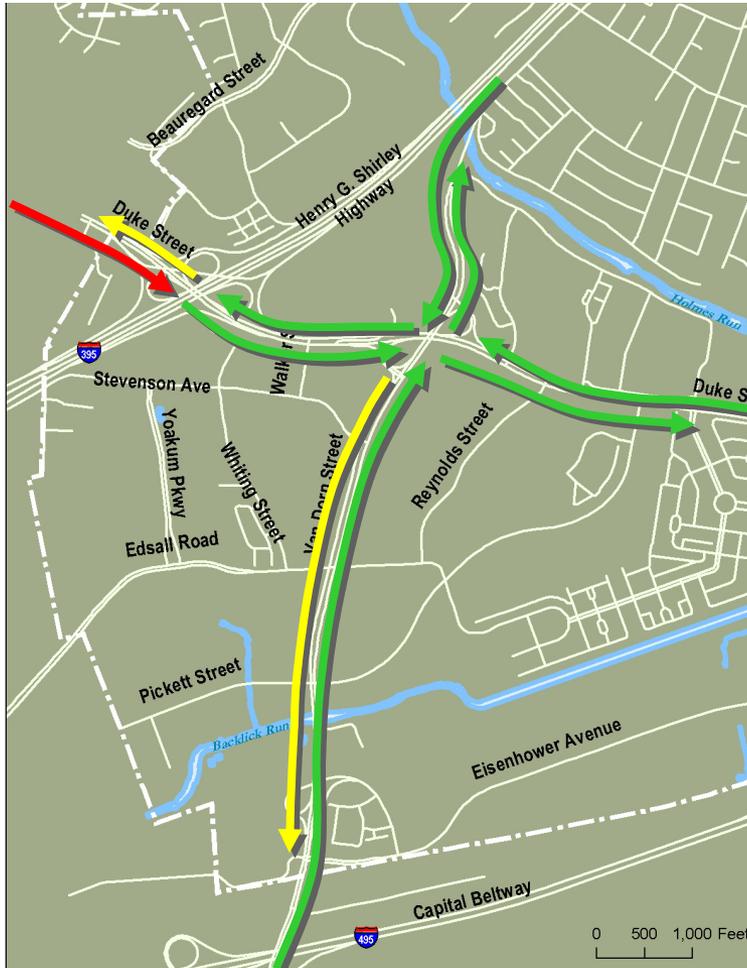
- Through traffic estimated to be 34%.
- Peak Hour Traffic = 10% of total
- Direction Split = 55%
- Mean travel time to work: 29.7 min.

Study Area Travel Mode Share



Source: Transportation Element Technical Report, Landmark/Van Dorn Area Plan, January 2007.

Study Area 2005 Existing PM LOS Based on traffic counts



Source: Transportation Element Technical Report,
Landmark/Van Dorn Area Plan, January 2007.

Transportation Solutions

- Achieve objectives of land use plan through use of “Best Practices”.
- Manage Traffic by:
 - Travel Demand Management
 - Creating choices
 - Appropriate accommodation of external traffic.



VAN DORN VISION

City of Alexandria, Planning & Zoning

January 28, 2008



P_HR+A

PATTON, HARRIS RUST AND ASSOCIATES

EHRENKRANTZ ECKSTUT & KUHN ARCHITECTS

Best Practices in Urban Design:

- Multimodal: Cater to public transportation/cars/pedestrians/cyclists,
- Proximity and convenient access to housing, retail & important open spaces
- Walkable street grid that reduces dependency on auto trips
- Safe and comfortable transit facilities

Best Practices in Urban Design:



STREETS - A hierarchy of streets that provides a clear way to move – by car, transit, bike and foot

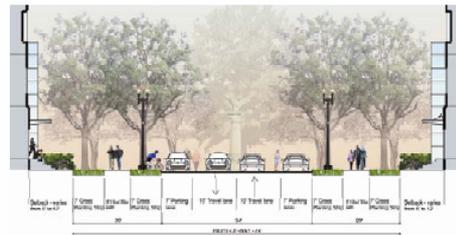


MAJOR TRANSIT STREETS AND BOULEVARDS

Provides transit services

Typically edged by a mix of uses

Often serves as the “Community’s Face” e.g. Connecticut Avenue, the 14th street corridor in DC, Canal street in New Orleans



MAJOR RESIDENTIAL STREETS

Edged by residential uses, punctuated at strategic intervals by neighborhood serving retail.

Very often is a place to “see and be seen”

A good example is Connecticut Avenue in Northwest Washington DC

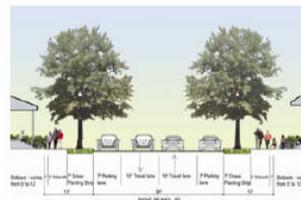


MIXED USE MAIN STREETS

Close to transit

Typically edged by retail, residential and some services

Examples include King Street in Alexandria, the U Street Corridor, P Street near Logan Circle, M Street in Georgetown



RESIDENTIAL STREETS

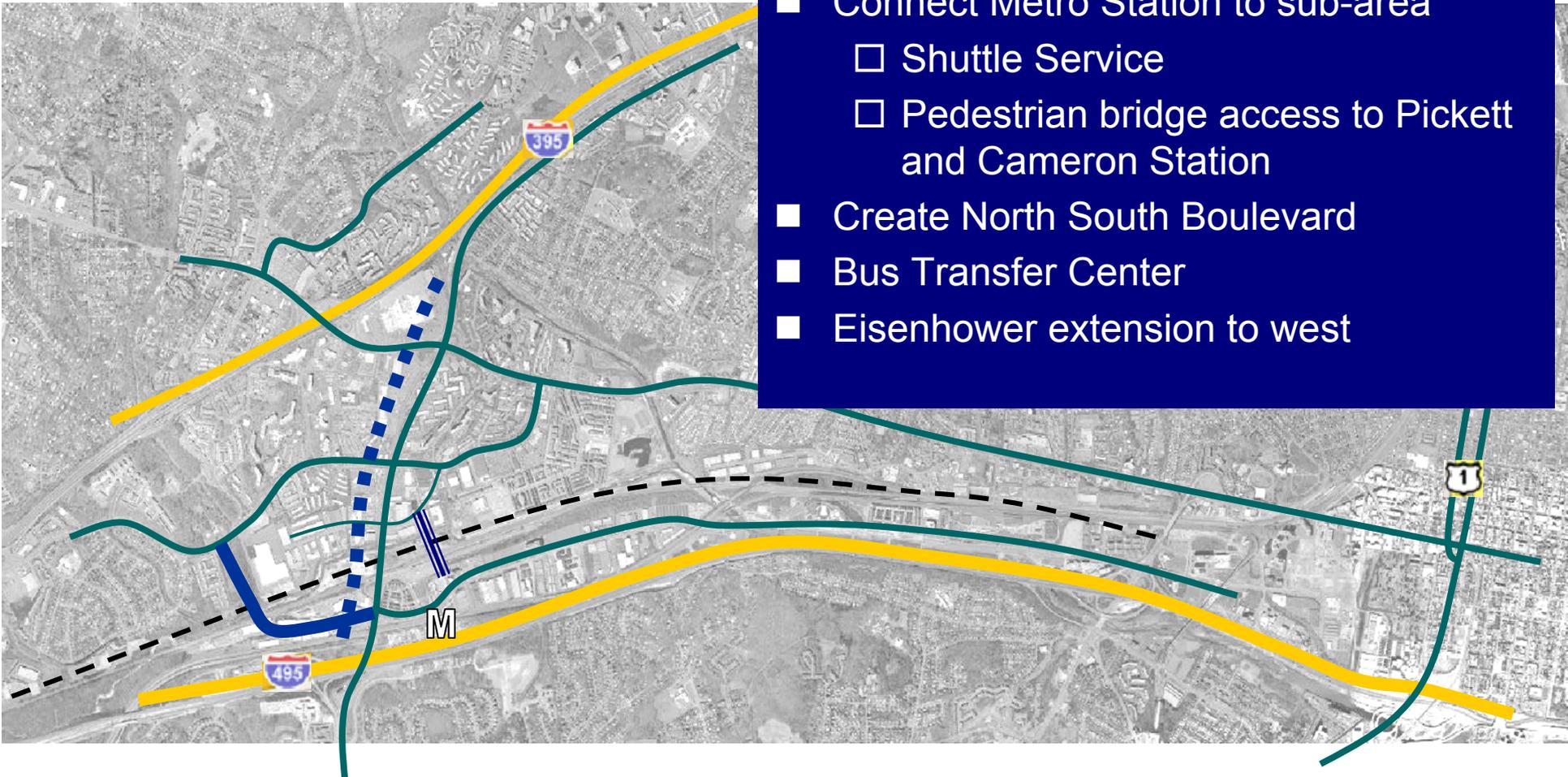
Smaller, intimate streets that facilitate interaction between neighbors

Best Practices in Urban Design: Preliminary Concepts

- Multimodal: Cater to public transportation/cars/pedestrians/cyclists,
- Proximity and convenient access to housing, retail & important open spaces
- Walkable street grid that reduces dependency on auto trips
- Safe and comfortable transit facilities

Example: Multimodal Options

- Connect Metro Station to sub-area
 - Shuttle Service
 - Pedestrian bridge access to Pickett and Cameron Station
- Create North South Boulevard
- Bus Transfer Center
- Eisenhower extension to west



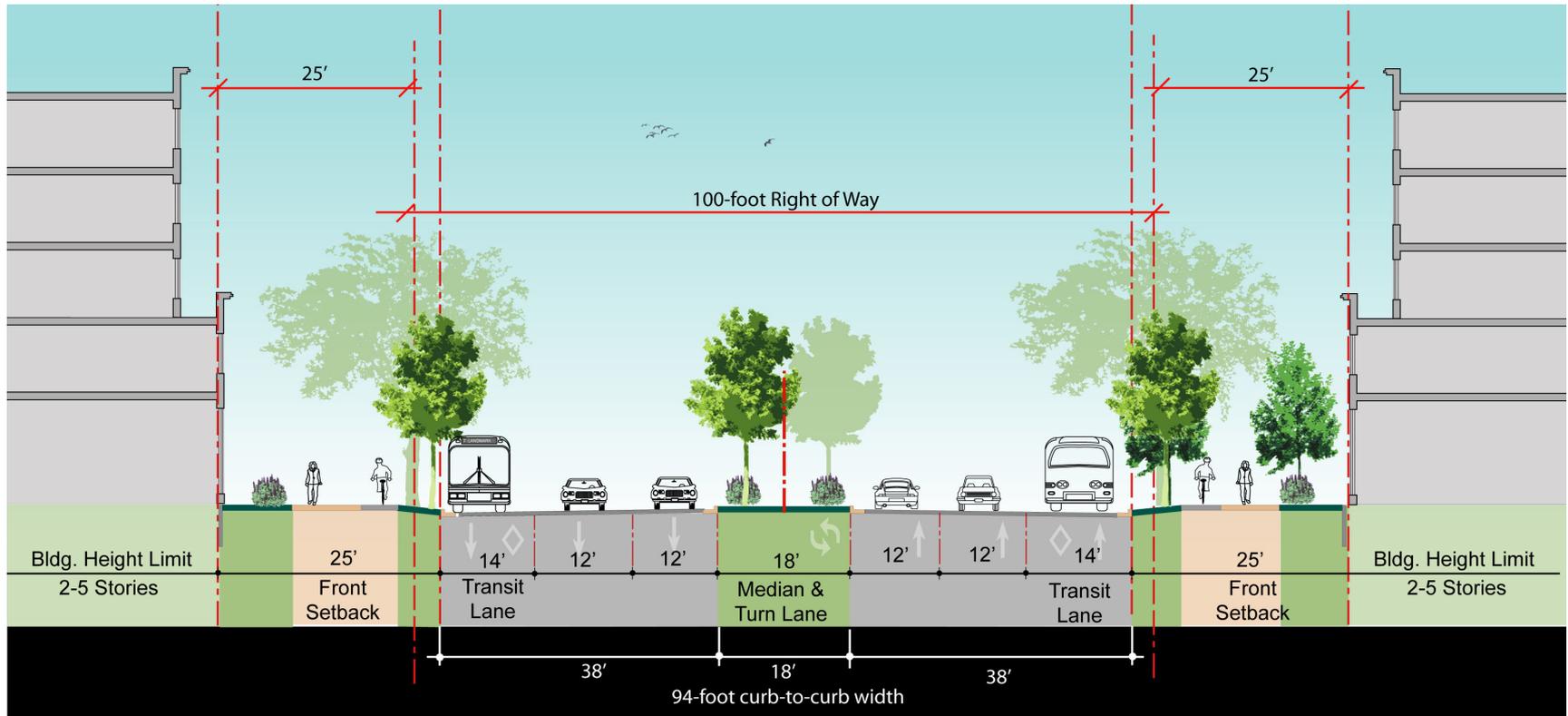
Transportation Solutions



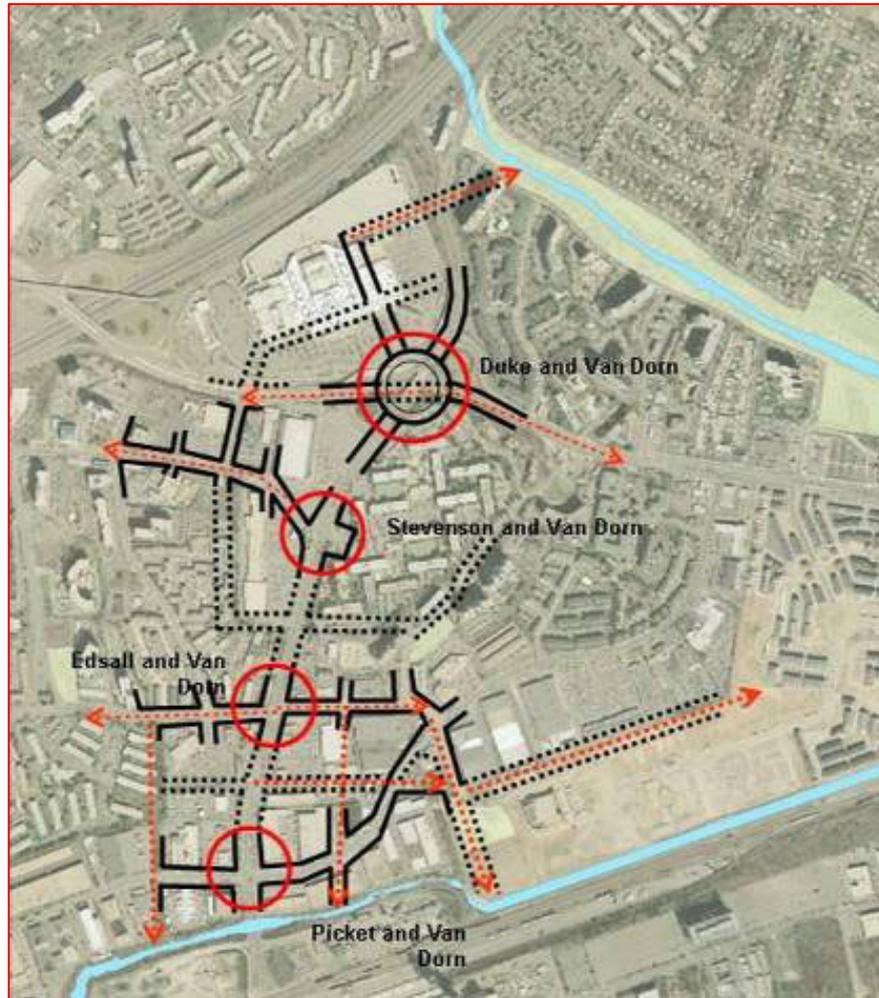
Walkable street grid

- Multimodal Roadway Typical Sections
- Create grid
- Integrate Landmark.

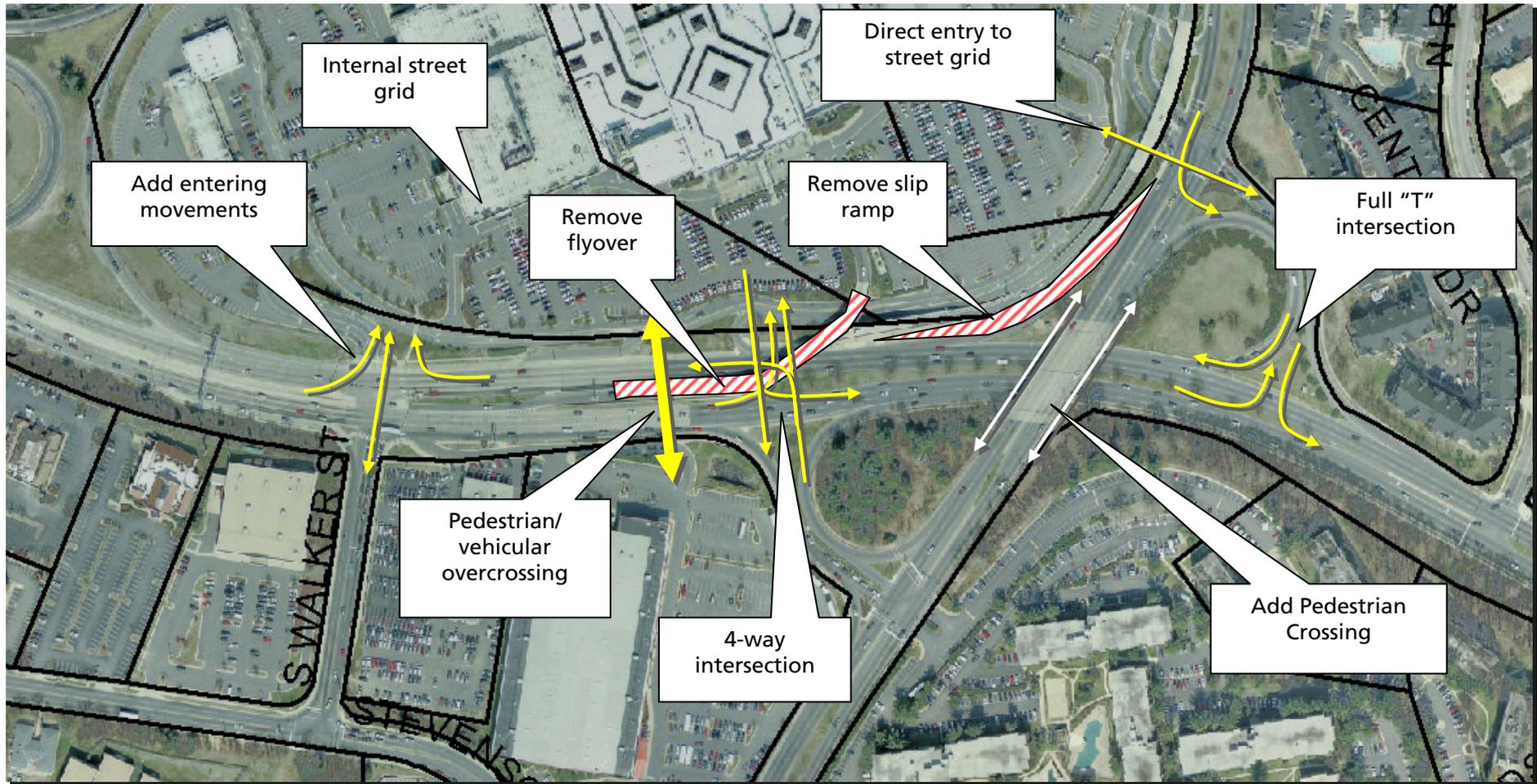
Example: Multimodal Roadway Typical Section Option



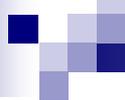
Example: Create Grid Network



Example: Integrate Landmark Mall Option



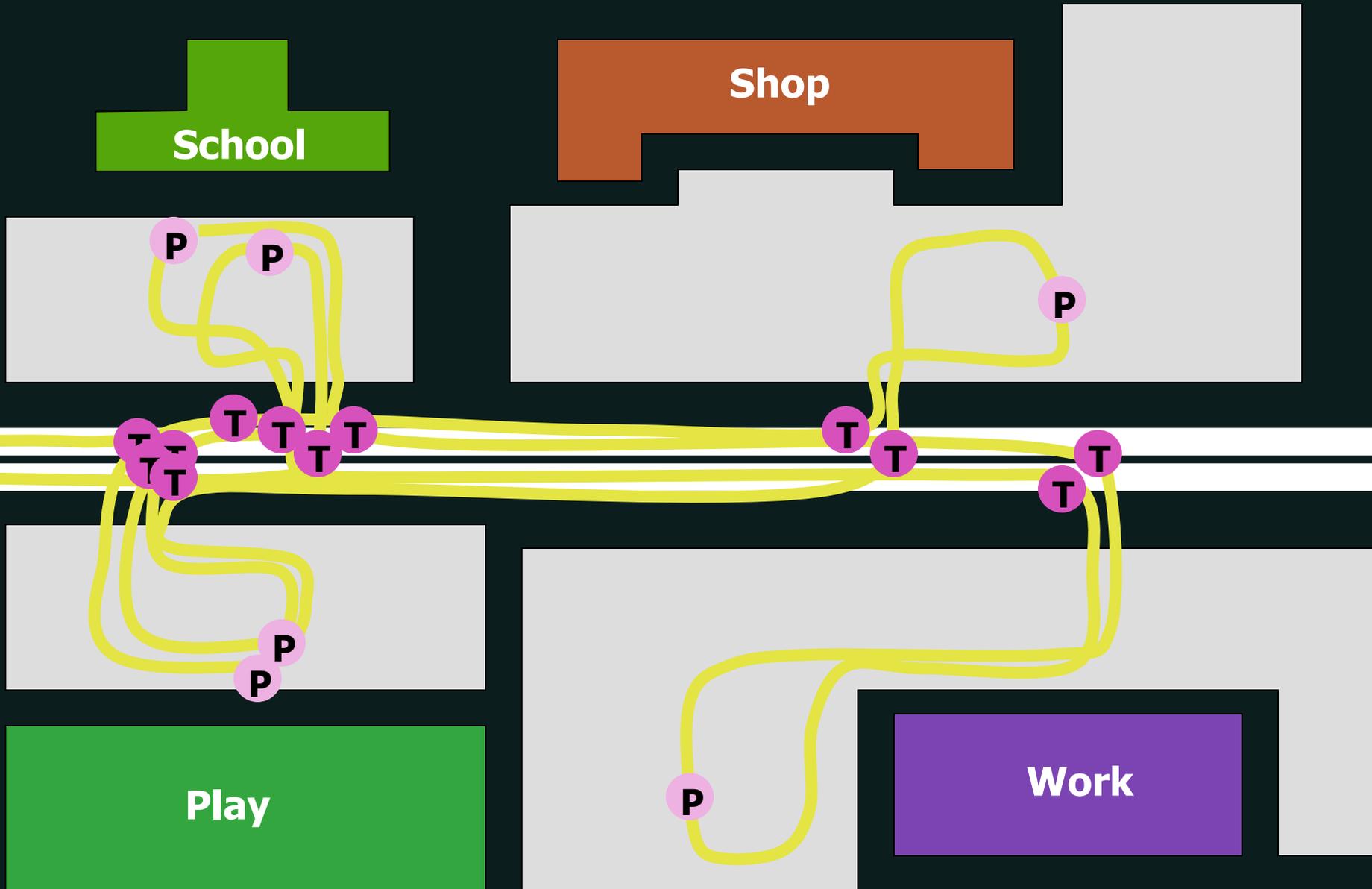
Source: Transportation Element Technical Report, Landmark/Van Dorn Area Plan, January 2007.



Best Practices in Transportation/ Land Use Planning

- Mix of land uses
- Focused (dense) development
 - Pedestrian accessible
- Served by frequent, reliable transit

Conventional Development



Mixed Use, Park Once District



Results:

- $< \frac{1}{2}$ the parking
- $< \frac{1}{2}$ the land area
- $\frac{1}{4}$ the arterial trips
- $\frac{1}{6}^{\text{th}}$ the arterial turning movements
- $< \frac{1}{4}$ the vehicle miles traveled

Essential Elements



Dorchester, MA 29.0 units / acre

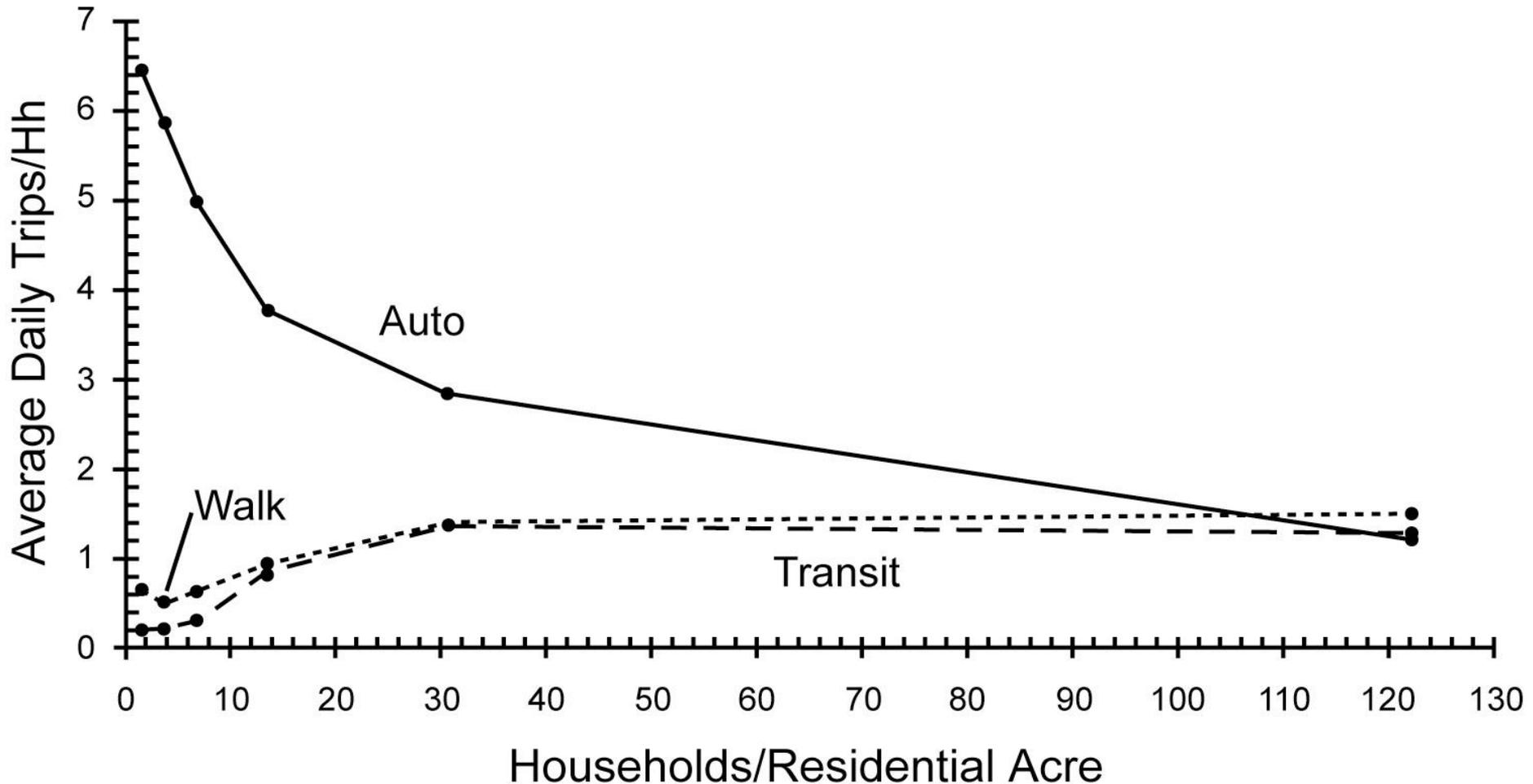
- **Mixed uses:** Destinations including retail first floor, office, research, medical, residential above
- **Minimum densities:**
 - >50 employees per acre
 - >30 residential units per acre
- **Connectivity and walkable blocks**
- ***Encourage* public facilities, theaters, recreational uses, and parks**
- **Parking policy based on the number of vehicles desired**
- ***Discourage* land uses that are highly dependent on automobiles for accessibility (i.e. drive through bank)**



Boulder, CO 33.0 units / acre

Result: Balanced Demand for Modes

Average Daily Trips/Household vs Density
MTC's 1990 Household Travel Survey



Design Places that Attract People



- Active uses for the first 15-20 feet of building height
- Smaller blocks
- Bring buildings up to the sidewalk
- Public space/green space in any breaks of building line



Transportation Keys

- Establish a walkable and pedestrian/ bicycle-oriented district
- Encourage bicycle and other low impact transportation modes
- Minimize street widths
- Calm traffic
- Match the transit to the community



Provide Transit People Can Use

- ✓ Frequent
- ✓ All Day
- ✓ Fast and Reliable
- ✓ Easy to Figure Out, Access, and Use
- ✓ 5-10 Minute Walk
- ✓ User Amenities

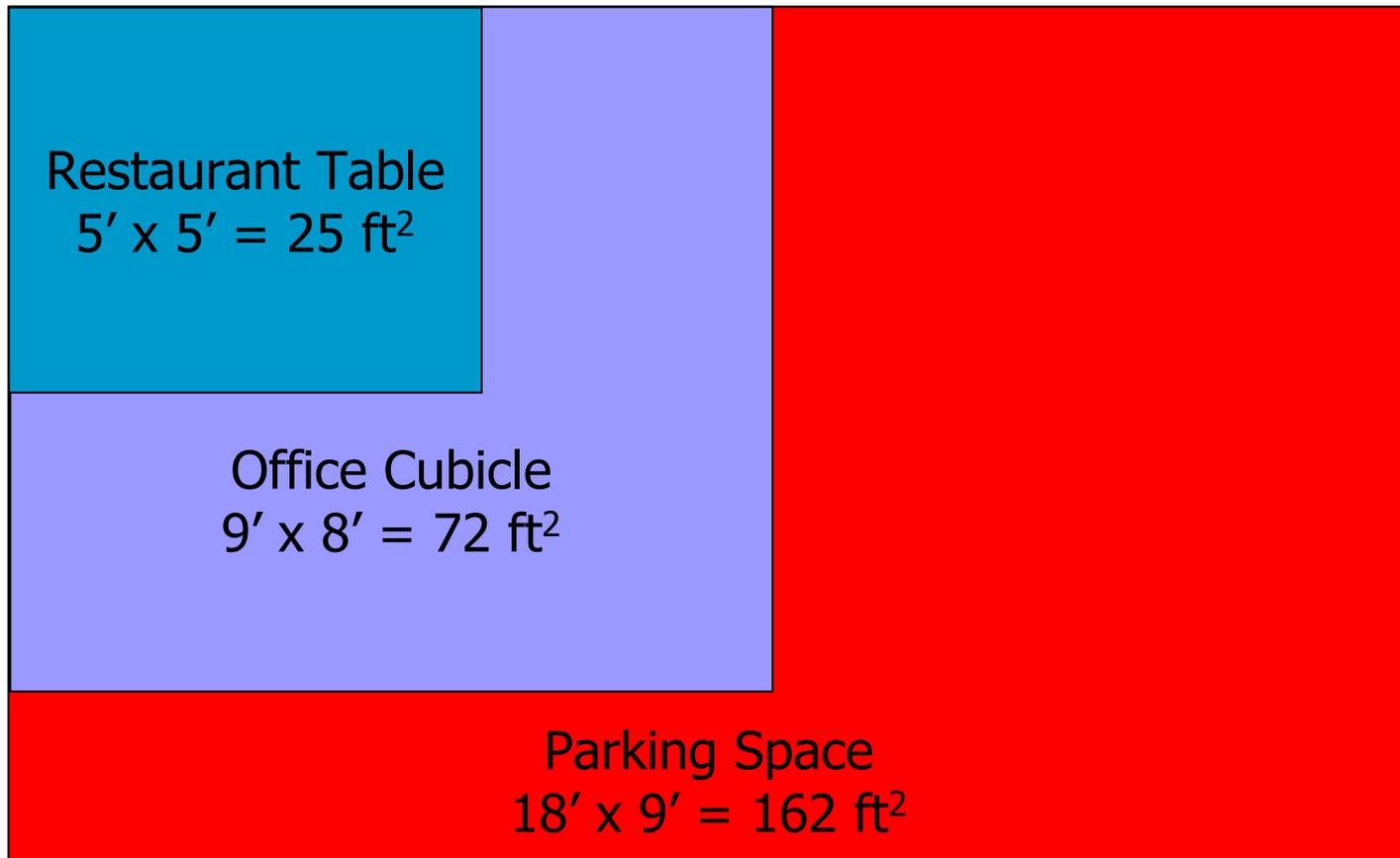
Plus: Emphasis on Pedestrian and Bicycle Access



These are the characteristics that make Metro appealing, but there's no copyright on good transit.

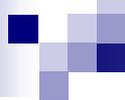
What's the Nexus Between Land Use and Transportation?

How we dedicate the land tells us the real orientation:



Land Dedicated to Parking





Right Size Parking: Err on the Side of People, not Parking

- Avoid Parking Oriented Development
- Eliminate minimum on-site parking requirements
- Manage on-street parking using price, time, and by context
- Provide shared garages
- Expand transportation choices with the modes that match the community
- Provide transit people can use

Parking & Transportation Demand Management

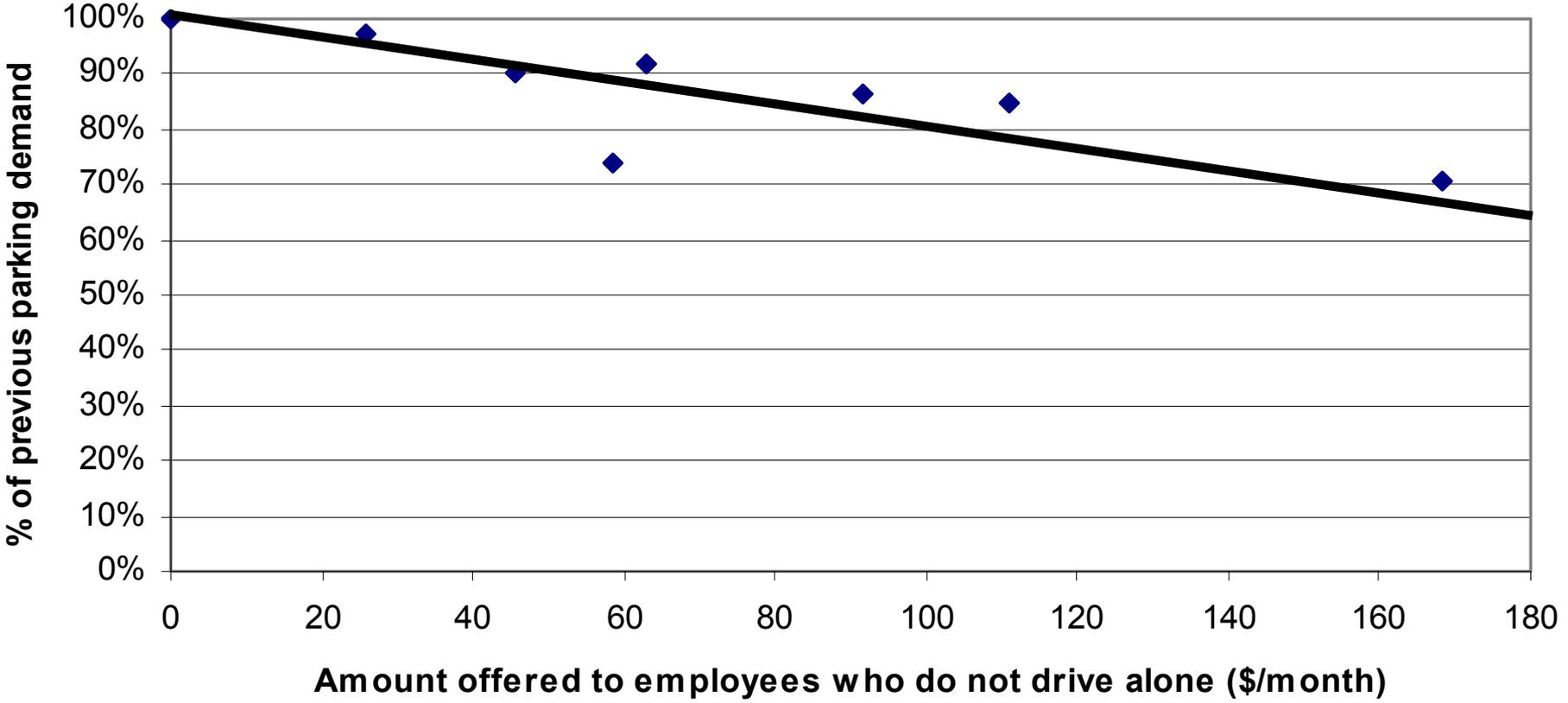
- **Strategies to reduce parking demand:**
 - Limit supply to encourage other modes
 - Pricing
 - Unbundling
 - Car-Sharing (“1 shared car replaces 6+ individually owned cars”-Zipcar)

- **Strategies to reduce parking impacts:**
 - Shared parking: Park Once
 - Structured parking
 - Stacked parking/parking lifts
 - Design requirements (e.g. wrap parking in active uses)

- **Strategies that manage transportation demand:**
 - Parking Cash-out
 - Sharing driving/parking costs
 - Universal transit passes
 - Transportation Management District



TDM Through Choice: Effects of Parking Cash Out on Parking Demand



Source: Derived from Donald Shoup, "Evaluating the Effects of Parking Cash-Out: Eight Case Studies," 1997. Based on the cost in 2005 dollars.

TDM Through Choice: Effects of Universal Transit Pass

Location	Drive to work		Transit to work	
	Before	After	Before	After
Santa Clara, California	76%	60%	11%	27%
Bellevue, Washington	81%	57%	13%	18%
Downtown Boulder, Colorado	56%	36%	15%	34%

Pedestrian Keys: How do people get around without being hit by a car?

Pedestrian improvements are often:

- Simple
- Isolated
- Site-specific
- Human scale

Someone just has to pay attention.

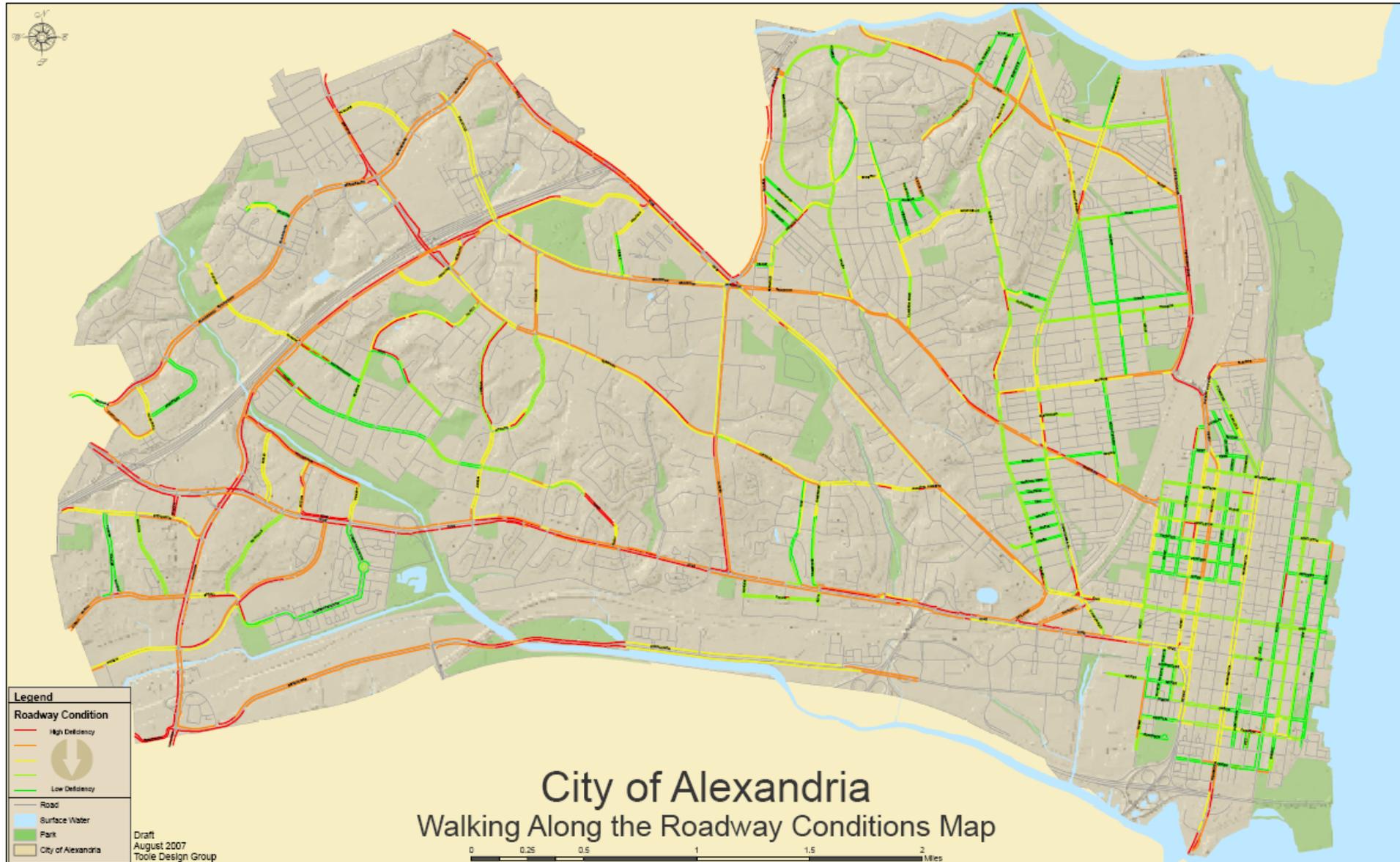


Pedestrian Keys: Complete Pedestrian Network

- Sidewalks
 - 10' minimum, including landscape zone, pedestrian zone, and building frontage
- Crossings
 - Every 200-330 feet (2004 AASHTO Pedestrian Guide and 2006 ITE Context Sensitive Solutions)
- Crosswalks
 - On all legs of all intersections
 - As short as possible
 - Aligned with sidewalks
- Stop Lines
 - At all controlled intersections.
 - Located at least 5 feet from the crosswalk
- Medians:
 - No more than three lanes of pedestrian crossing without a refuge
 - At least six feet wide with eight feet preferred



Walking “Level of Service” (A-F grade)



Pedestrian Crash "Hot Spots" 2004-06

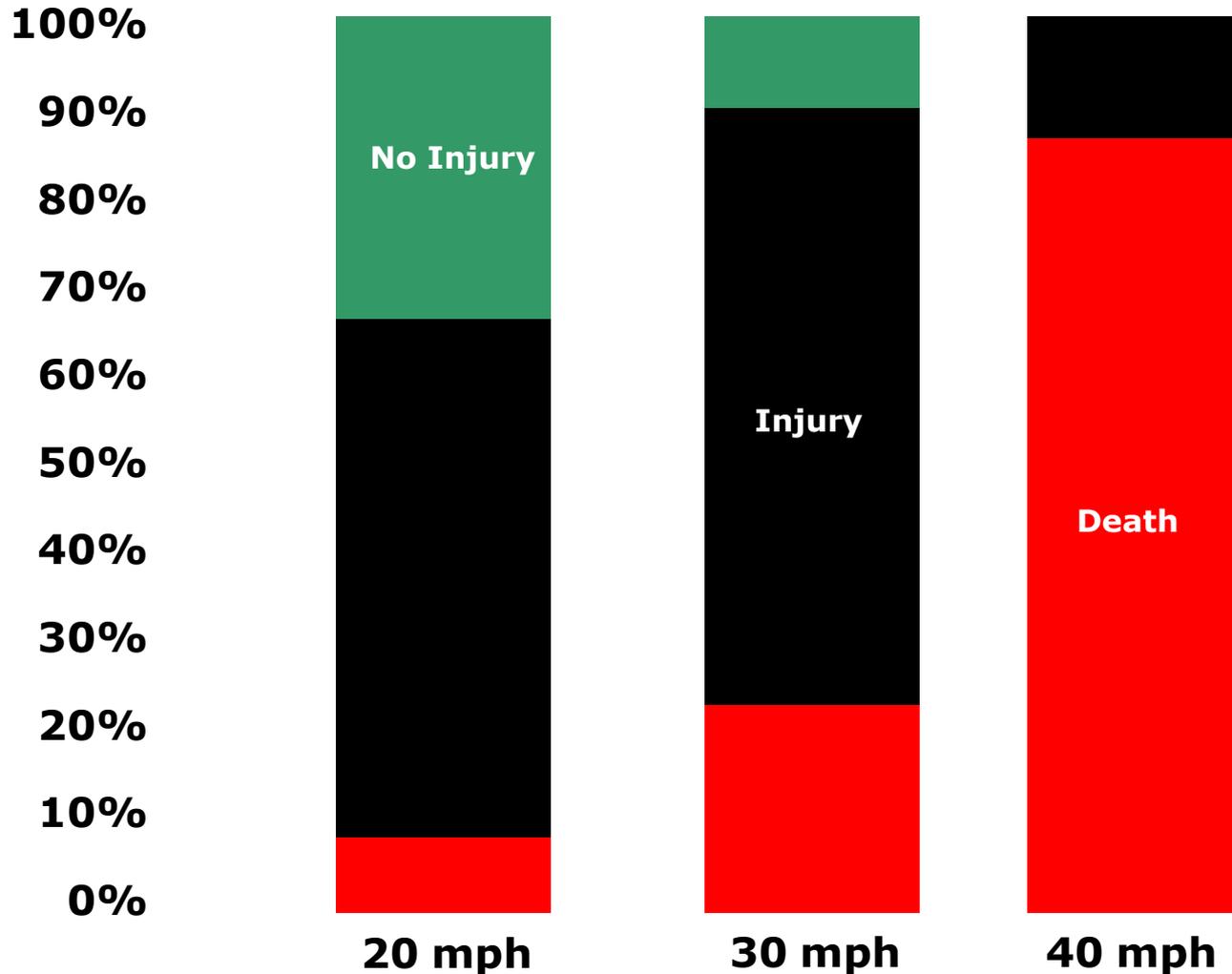


Pedestrian Keys: Vehicle Speed

- Significant determinant of crash severity.
- Critical factor where modes conflict.
- Should be logical with respect to context.



Vehicle Speed vs. Pedestrian Injury



Killing Speed and Saving Lives, UK Department of Transportation

Bicycles

Capture Area:

- Pedestrian capture is ~ 0.25-0.5 miles
- Bike capture is 1-3 miles

How can we facilitate biking?

- Bicycle routes/lanes
- Secure/protected bike parking
- Taking bikes on board transit
- Shower facilities at/near final destination.
 - Included in development codes for new office buildings



Existing Bicycle Parking at
Van Dorn Metro



Bicycle Rack in Old Town

Why Land Use and Transportation?

- + Mixed Uses ⇒ Options to Live, Work, Play
 - + Pedestrian & Bikes ⇒ Low-Impact, Low-Stress
 - + TDM and Parking Policy ⇒ Reduces Auto Dependence
 - + Transit ⇒ Transportation Options
 - + Density ⇒ Supports Economics for Services
 - + Design ⇒ Encourages Interaction
-
- = Complete Place to Live with Supportive Transportation and Land Use





Where do we go from here?

- What's most effective based on local conditions?
- What's already being done?
- What can be expanded? What would be new?
- Apply best practices to Landmark.

- Achieve objectives of land use plan through use of “Best Practices”.
- Manage Traffic by:
 - Travel Demand Management
 - Creating choices
 - Appropriate accommodation of through traffic.

Travel Demand Management

- Parking restrictions.
- Employer programs:
 - Incentives to carpool
 - Telecommute
 - Bus/Metro subsidies
 - Flex Time.
- Shuttle service to Metro or Landmark Transit hub.

Appropriate Accommodation of Through Traffic

- High capacity auto corridor not consistent with Planning Principles.
- Restricted access into area not consistent with Planning Principles.
- ❖ Provide sufficient access that the area can flourish as a destination.



Key Questions:

1. With mixed land uses, increased transit and TDM, how much new traffic?
2. With higher densities, how much through traffic?
3. With new modes and new traffic patterns, how will the improved roadway system function?

Key Questions

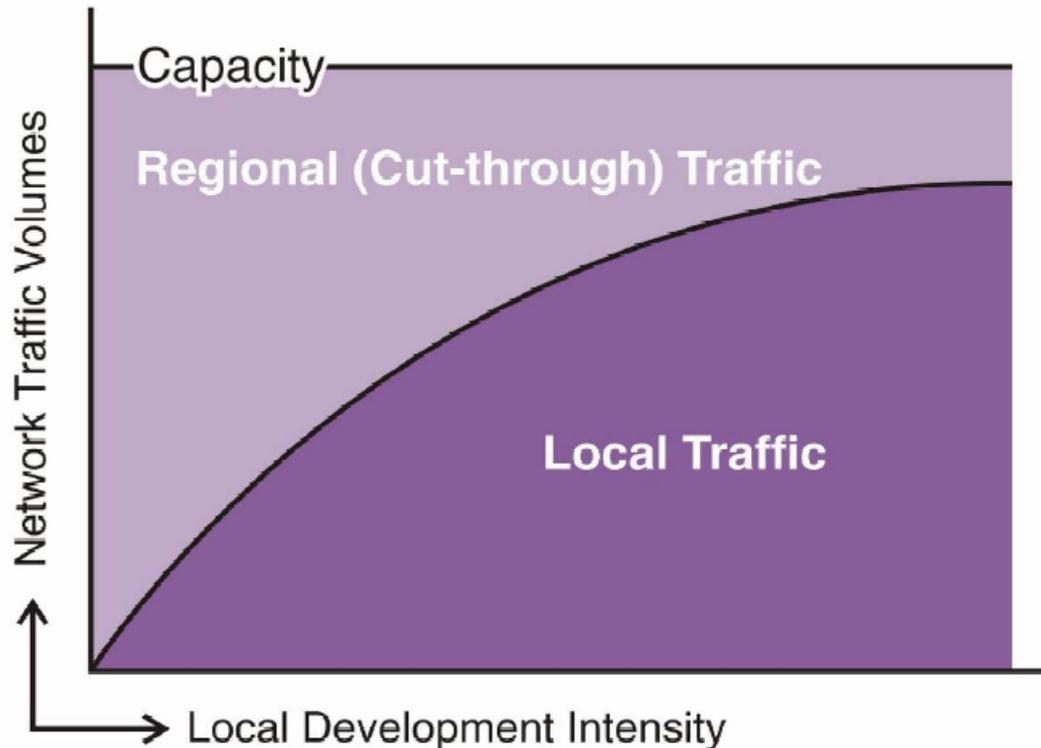
■ Premise:

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- Local trips will displace through trips.
- Mixed uses will result in internal capture.
- TDM will further decrease Single Occupancy Vehicle trips.
- Improved Transit, Bike and Pedestrian Facilities will further decrease SOV trips.

1...How Much New Traffic?

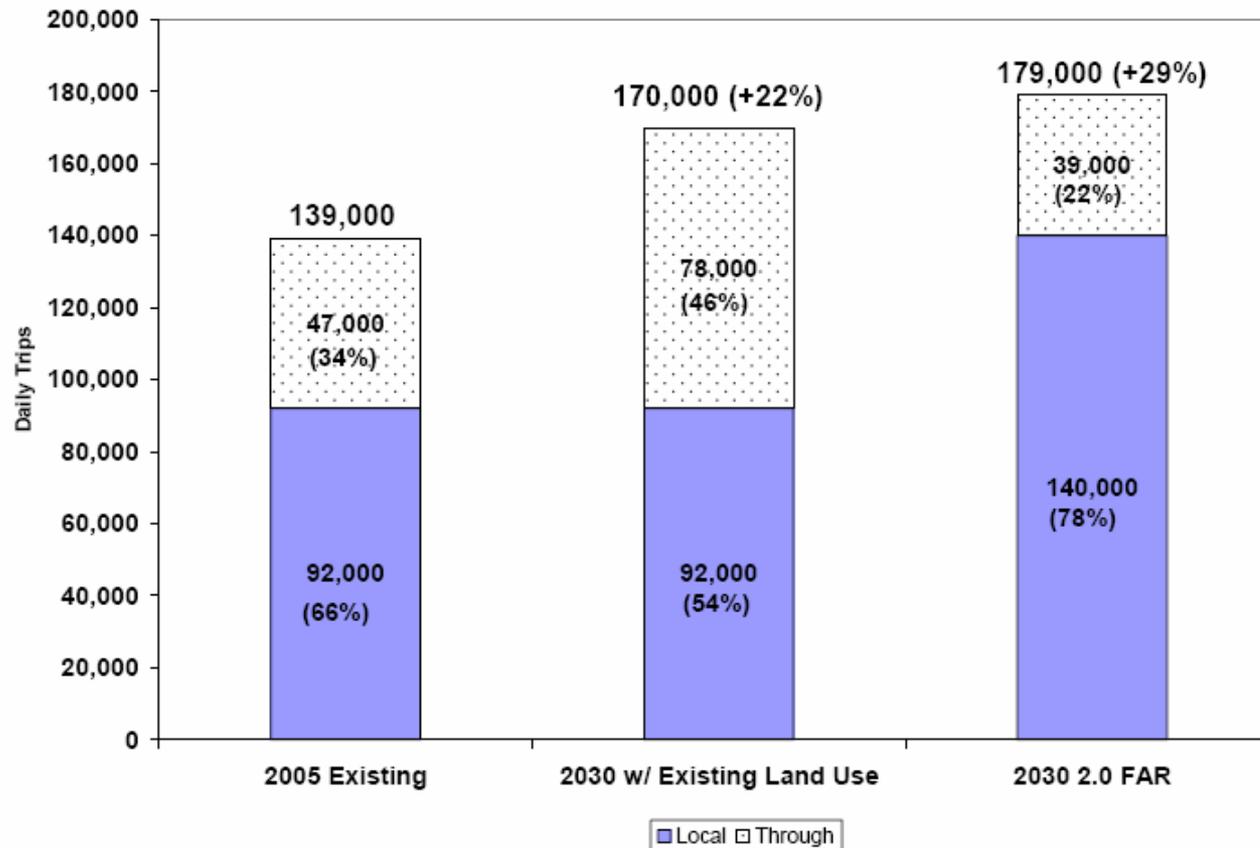
- Higher density land use will bring additional trips.
- Mixed uses will result in internal capture and pass-by stops.
 - 10% to 20% for a good mix of retail, commercial and residential.
- TDM will further decrease SOV
 - Up to 20% possible

2...How Much Through Traffic?



2...How Much Through Traffic: Example

Figure 18. Comparison of Through vs. Local Trips



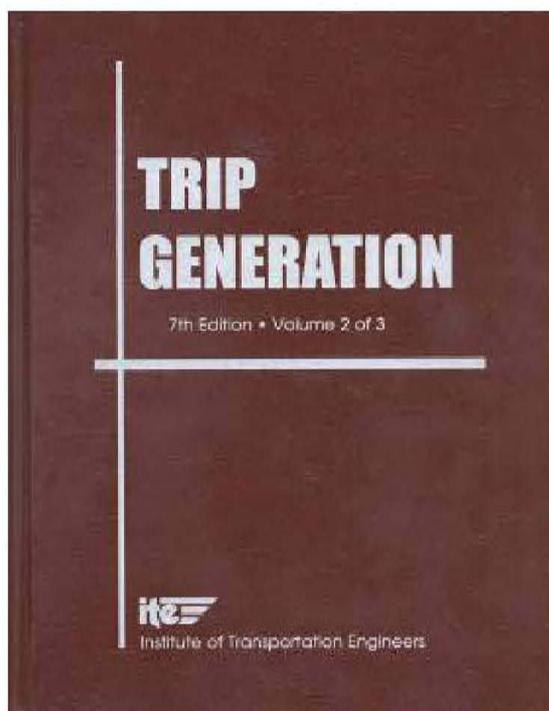
Source: Transportation Element Technical Report, Landmark/Van Dorn Area Plan, January 2007.

3...How Will the Improved Roadway System Function?

■ Process:

- Determine how many new trips,
- Determine trip origin and destinations,
- Estimate mode (SOV, bus, etc),
- Assign trips to roads,
- Analyze levels of congestion,
- Tweak roadways and repeat analysis.

Determine How Many New Trips:



General Office Building (710)

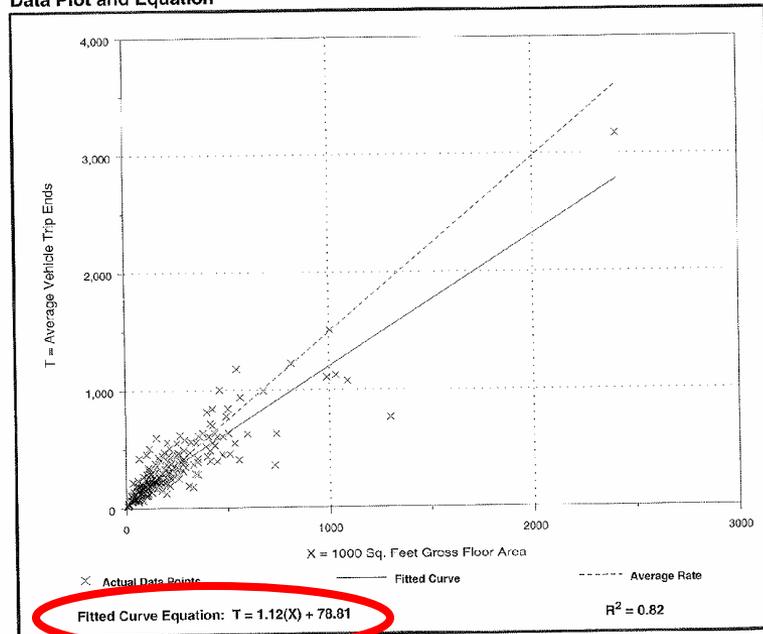
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
P.M. Peak Hour

Number of Studies: 235
Average 1000 Sq. Feet GFA: 216
Directional Distribution: 17% entering, 83% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
1.49	0.49 - 6.39	1.37

Data Plot and Equation



General Office Building (710)

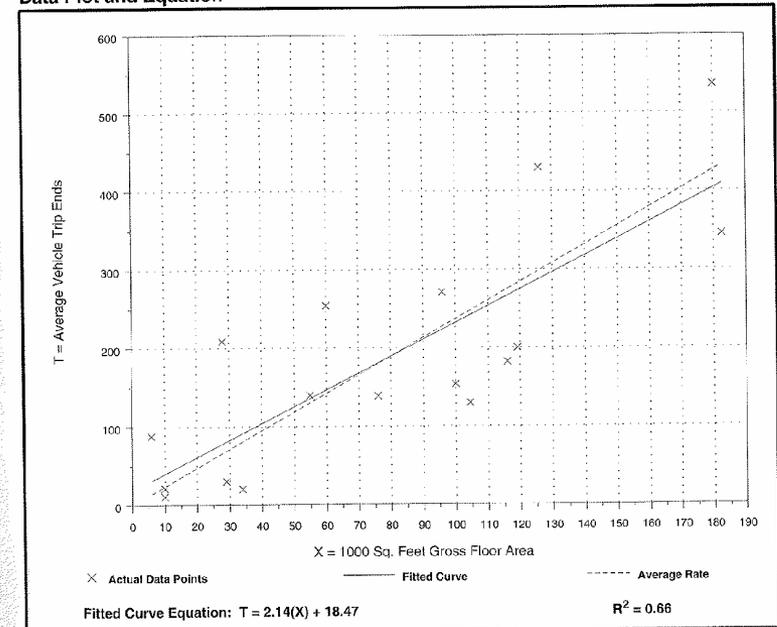
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Saturday

Number of Studies: 17
Average 1000 Sq. Feet GFA: 78
Directional Distribution: 50% entering, 50% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
2.37	0.59 - 14.67	2.08

Data Plot and Equation

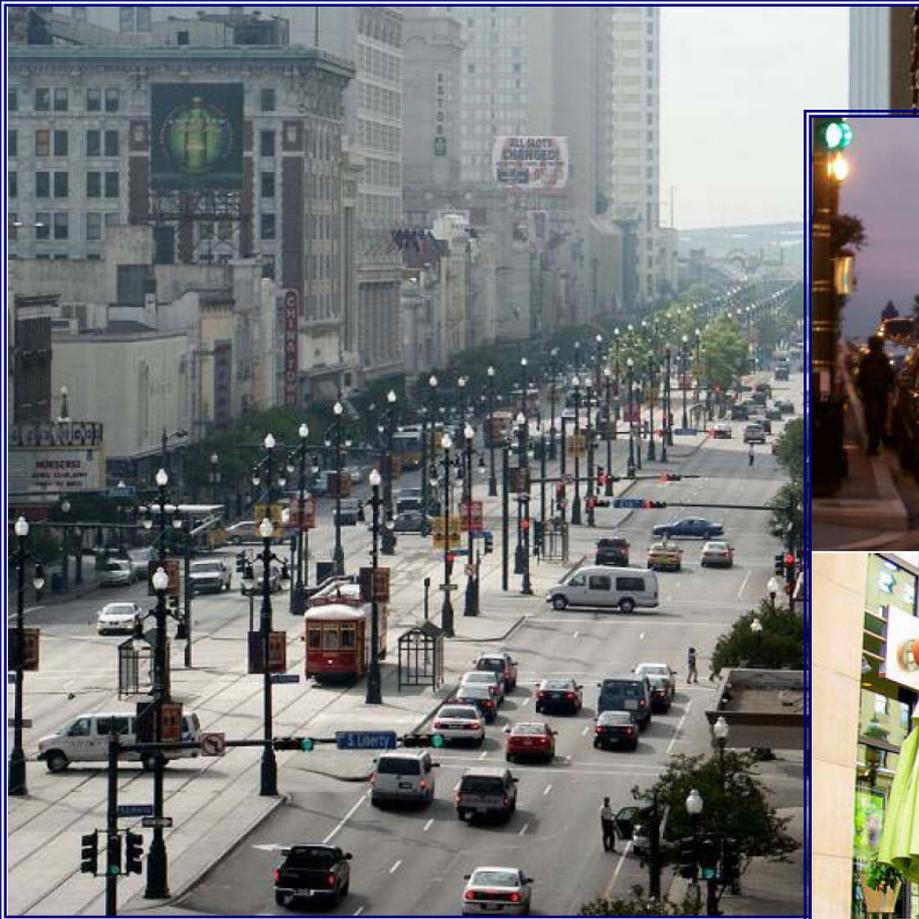


3...How Will the New Roadway System Function?

Analyze levels of congestion

- Level of Service (LOS) is universal measure.
- Good information.

- 
- ❖ Improved transit options, an upgraded street grid and appropriate land uses will transform the area into a vibrant destination with traffic typical of a successful urban place.





What's Next in Transportation

- ✓ Charrette 3 May and June (tentative),
 - Screening and analysis of options,
- ✓ Initial findings (July),
- ✓ Present Alternatives to Advisory Group,
- ✓ Draft Transportation Plan,
 - Final Transportation Plan.

- ✓ *Advisory Group Meeting Activity*





Area Projects

- Beauregard and Little River Turnpike
- I – 395 HOT Lanes
- I – 495 HOT Lanes



Beauregard-Duke Street

- Additional left turn lane to Beauregard
 - Channelization NB approach
 - Pedestrian amenities
 - Status: Advertised for Construction.
-
- New signal at Oasis Drive (VDOT project)

I – 395 HOT Lanes

- HOT: High Occupancy and Toll
- One additional reversible lane in current Bus/HOV roadway
- No ramp from HOT Lanes to Duke Street

Proposed new access from HOT Lanes

