

Traffic Impact Studies

April 2009

- Forecast additional traffic associated with new development, based on accepted practices.
- Determine the improvements that are necessary to accommodate the new development.
- Assist communities in land use decision making.
- Assist in allocating scarce resources to areas which need improvements
- Identify potential problems with the proposed development which may influence the developer's decision to pursue it.

TIS

- Allow the community to assess the impacts that a proposed development may have.
- Help to ensure safe and reasonable traffic conditions on streets after the development is complete.
- Reduce the negative impacts created by developments by helping to ensure that the transportation network can accommodate the development.
- Provide direction to community decision makers and developers of expected impacts.
- Protect the substantial community investment in the street system.

Traffic Impact Studies (TIS)

- Forecast future system effects from proposed development
- Predict useful life of a transportation project against an expected land use scenario
- Determine impact fees
- Usually only required for developments of a certain size or impact (i.e. 100 trips during peak hour)

New Development

- Impact surrounding roadway network
- Add traffic volume
- Alters traffic patterns
- Can reduce capacity on existing roadways
(more driveways = less capacity)

Study Area

- Identify limits of study area
- Boundaries of impact area
- Which streets are access points (driveway locations)
- Size

Study Area



Shopping center, 15 acres, 137,360 square feet, replacing existing buildings

Oregon DOT, 2006

Facilities Analyzed

- 4 intersections in site vicinity
 - Barger Drive/Beltline Hwy northbound ramps
 - Barger Drive/Beltline Hwy southbound ramps
 - Echo Hollow Street and Cubit St
 - Cubit St and Wagner St

Determine Analysis Period

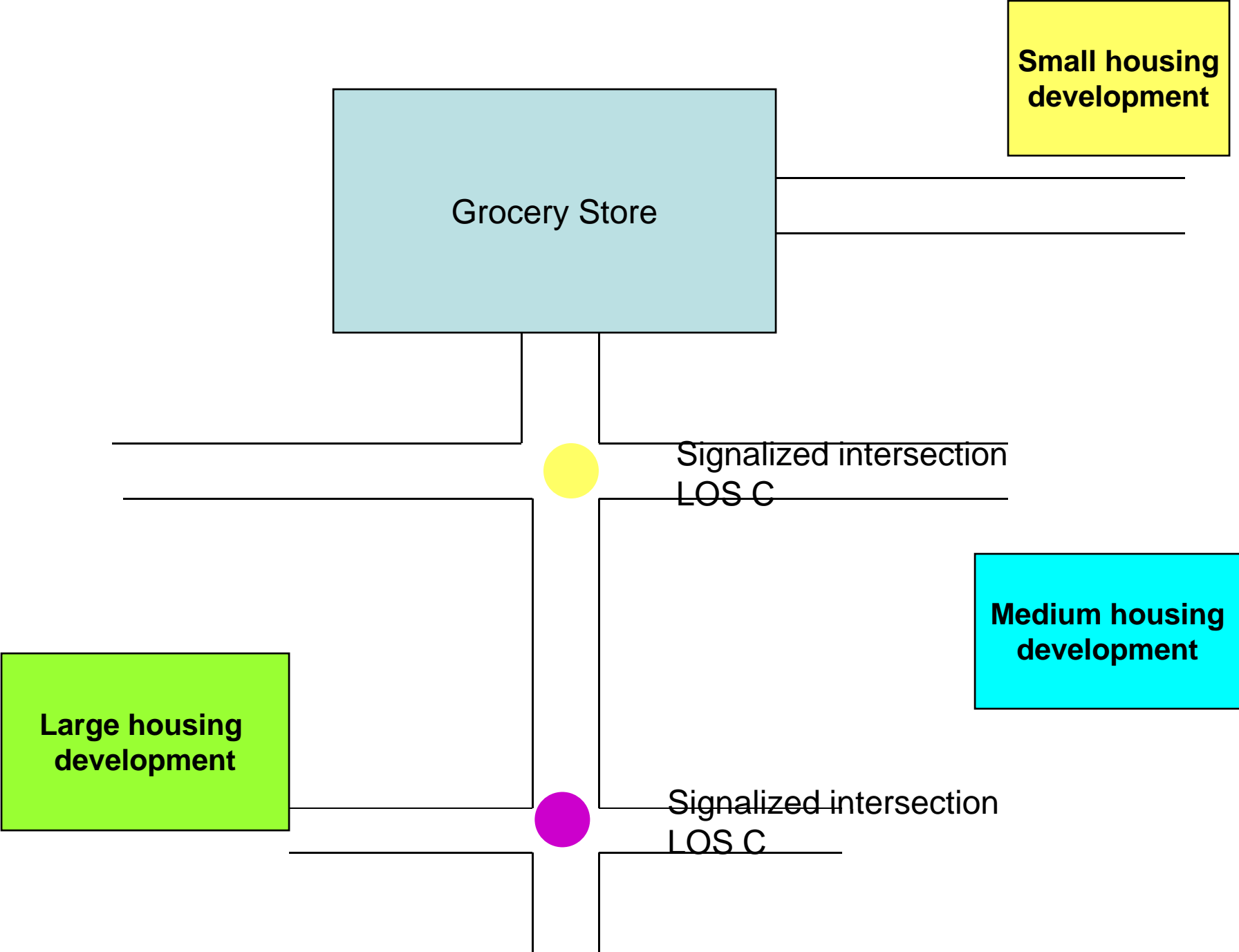
- Depends on facility
 - Movie theatre has different peak times than grocery store
- Depends on surrounding traffic
 - What is peak period of surrounding network
- Peak periods
 - Weekday am peak
 - Weekday lunch peak
 - Weekday pm peak
 - Weekend peak period

Identify other developments

- Other developments likely to impact project

Establish Base Conditions

- Traffic volumes on adjacent streets
 - Turning movement counts at intersection
 - Include vehicles and pedestrians as appropriate
- Establish existing LOS
- Establish future LOS using projected future conditions w/out new development
 - Determine & apply growth factor (i.e. 3% per year)
 - Account for planned facility improvements (i.e. already planning left turn lanes)



Trip Generation

- Determine number of new trips attracted to new facility for analysis period
 - Trips into facility
 - 200 trips enter facility during peak hour
 - Trips out of facility
 - 150 trips exist facility during peak hour

Trip Generation

- Depends on type of facility
 - School
 - Shopping center
 - Movie theatre
 - Gas station

Trip Generation

- Usually use ITE Trip Generation rates or generation rates developed by the local agency

Fast-Food Restaurant with Drive-Through Window (834)

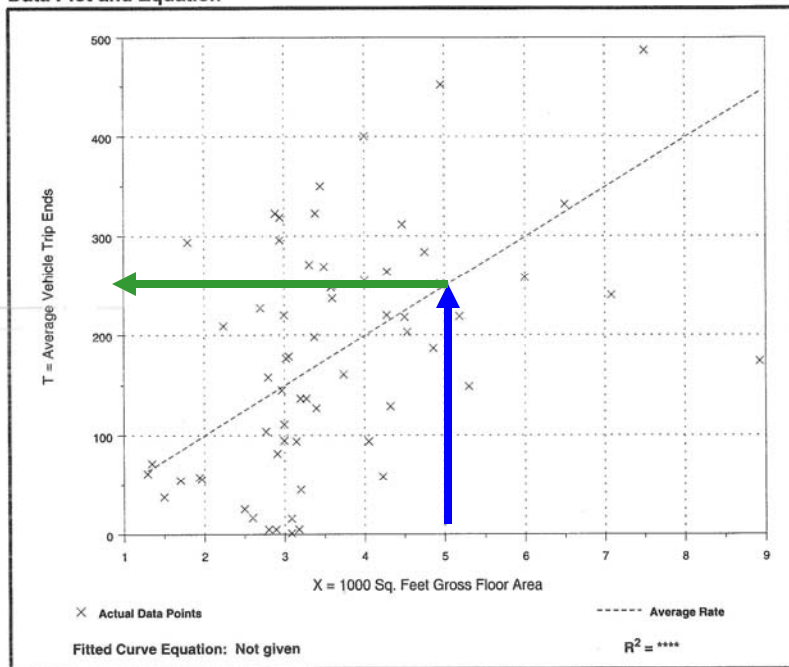
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 63
Average 1000 Sq. Feet GFA: 4
Directional Distribution: 51% entering, 49% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
49.86	0.32 - 163.33	29.60

Data Plot and Equation



About 250 trip ends are generated

Directional split is 51% entering

49% exiting

For am peak period (7 to 9 am)

Entering trips = 250 x 0.51 = 127.5 trips

Exiting trips = 250 x 0.49 = 122.5 trips

So additional 250 trips on network of which 128 are entering the facility and 122 are leaving

Trip Distribution

- Where the trips come from or go to
- 100 trips into the facility allocated among all the possible ways the enter the facility

Small housing
development

Grocery Store

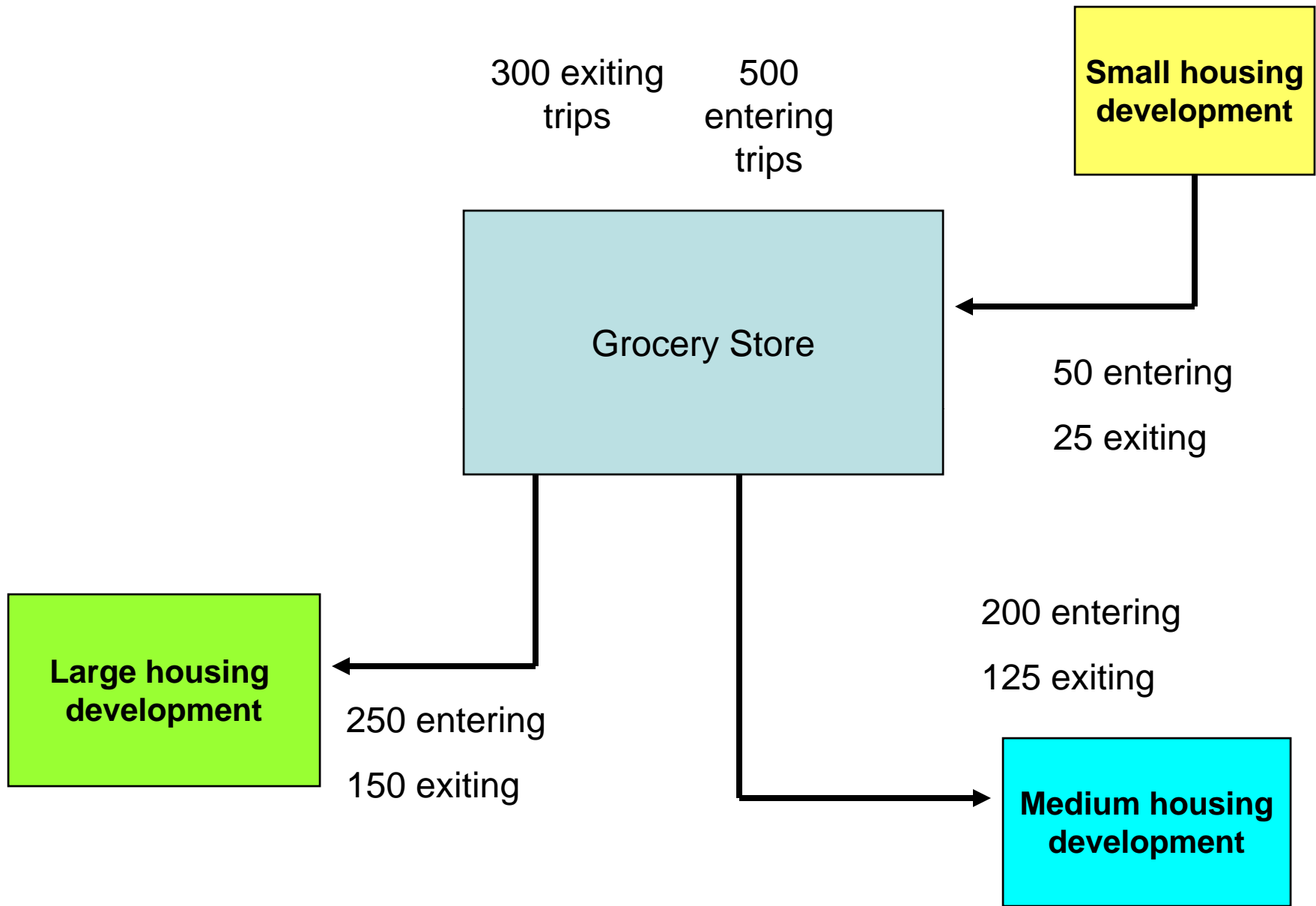
300
entering
trips

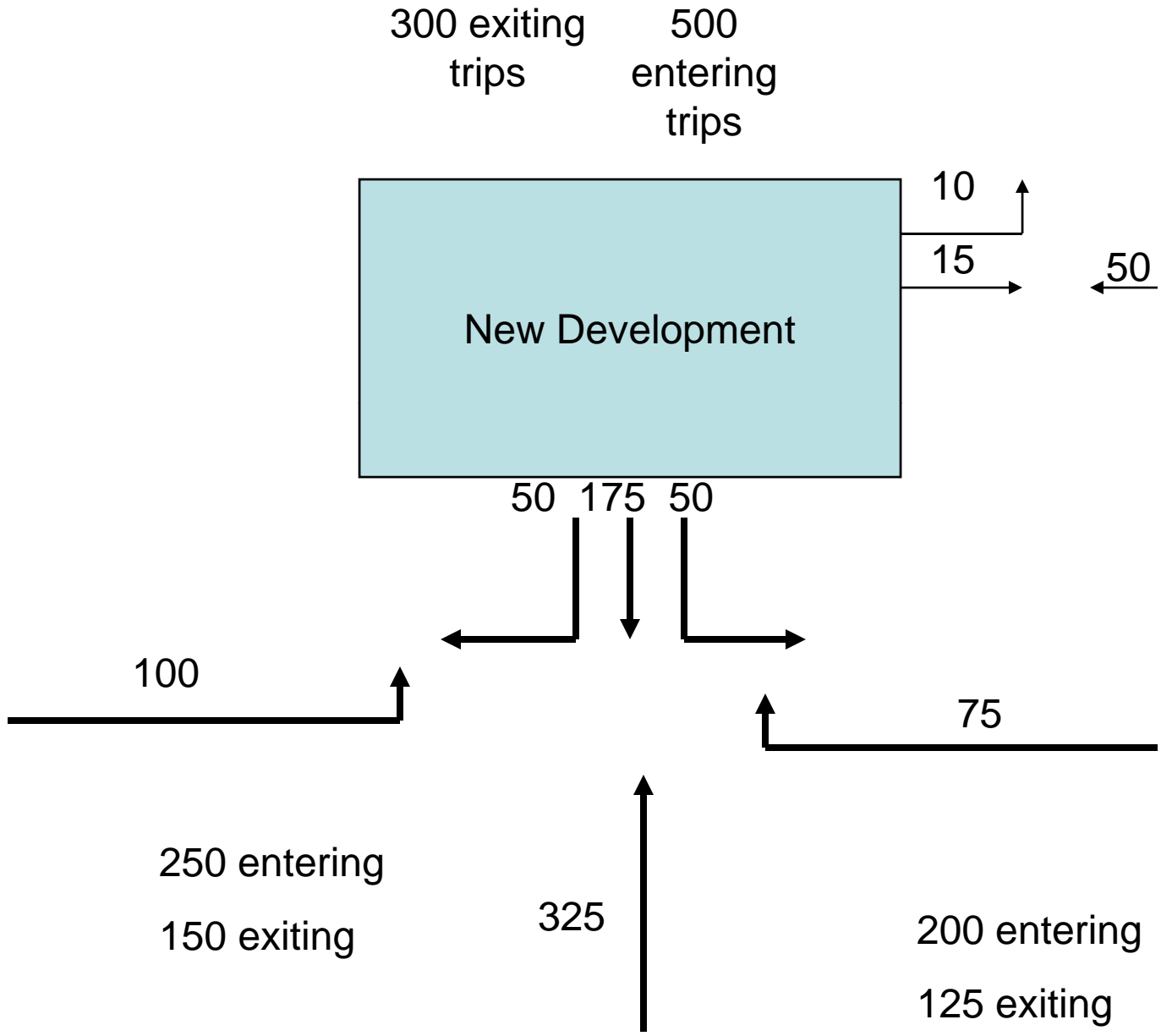


500
entering
trips

Large housing
development

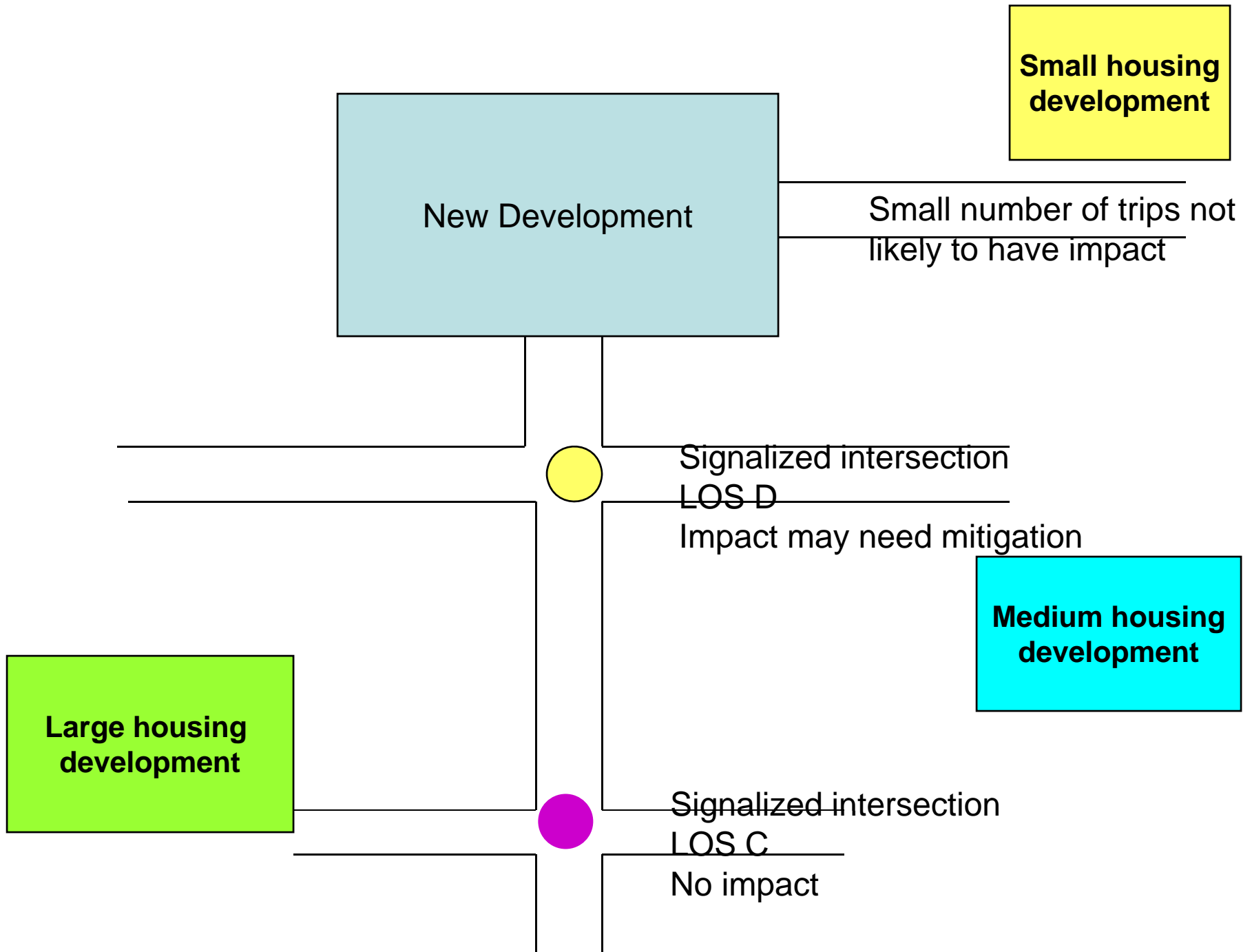
Medium housing
development





Assess Impact

- Impacts of additional trips
 - Decreased LOS
 - congestion
 - Safety
 - Noise
 - Air pollution (usually don't worry about on small scale)



Mitigation

- Decreased LOS or congestion
 - Change signal timing
 - Add signal
 - Add turn lanes
 - Widen roadway
 - Realign roadway

Mitigation

- Safety
 - Access management
 - Change facility (add left turn lanes to avoid rear-end)
- Noise