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Measuring Accessibility to Public Transit in Pasadena, CA

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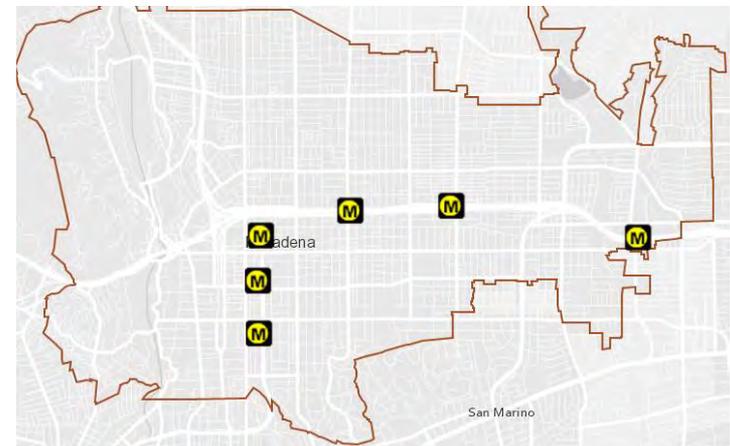


City of Pasadena, CA

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- Located in Los Angeles County, CA
- Home to the Rose Bowl, Rose Parade, NASA's Jet Propulsion Lab, CalTech, and many historic home and neighborhoods
- 23.5 Sq Mi. with 138,000 residents
- 6 Light Rail Stations



PASADENA



Reviewing TOD Standards

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What are the impacts of changing the criteria of Transit Oriented Development (TOD) Parking Standards?

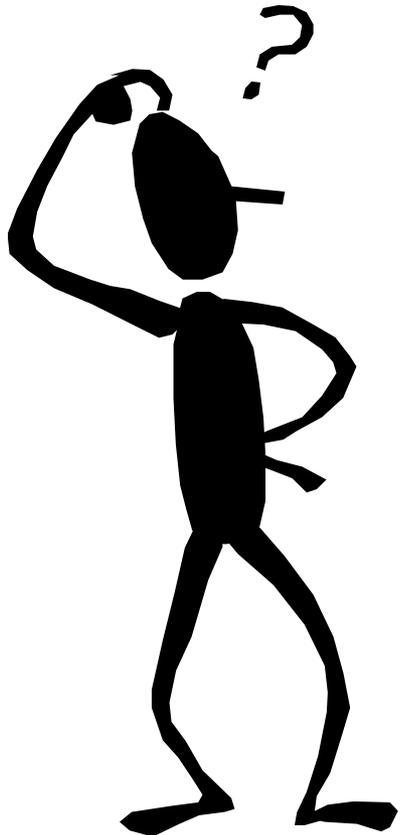




TOD Parking Standards Criteria: Accessibility to Transit

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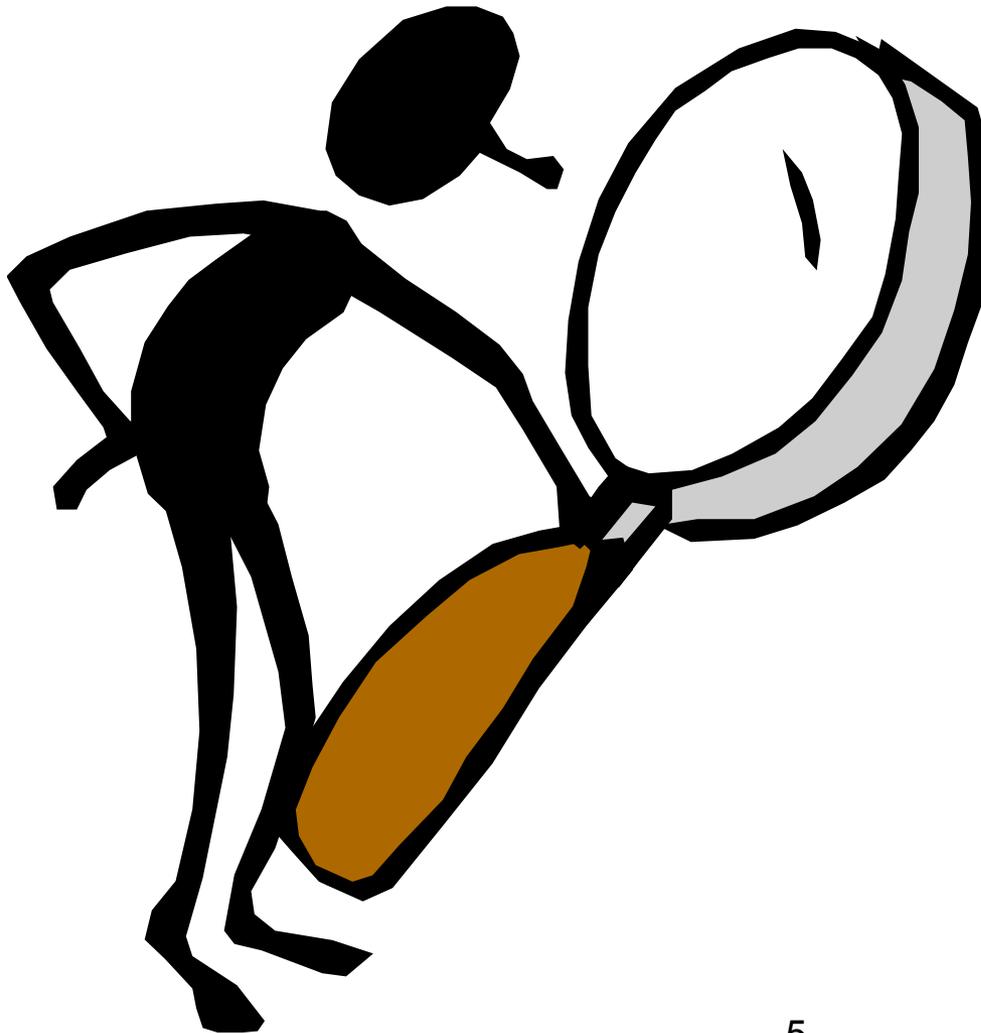
How to measure
Transit accessibility?





Performing the Analysis

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Accessibility Analysis - Basic Steps

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- **Prepare Data**
 - > Street Network, Destination Points
- **Perform Analysis**
 - > Create Cost Surface –
 - Euclidean Distance (tool), Reclassify (tool)
 - > Perform Cost Distance (tool)
 - > Convert Final Analysis Raster to Polygon
 - Reclassify, Covert to Polygon



Prepare Data

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- Street Network

The screenshot shows the 'Feature Class to Feature Class' dialog box in ArcGIS. The 'Query Builder' sub-dialog is open, displaying a list of fields on the left and a query expression in the center. The query expression is: 'LABEL IS NOT NULL AND LABEL <> 'Freeway/Highway' AND LABEL <> 'Private Driveway' AND LABEL <> 'Ramp'. The 'Field Map' section is expanded, showing various fields like ST_CL_ADDR, SHAPE_FID, LABEL, etc. The 'Geodatabase Settings' section is also visible.

Input Features
[LANDBASE.st_cl_addr]

Output Location
[\\ci.pasadena.ca.us\users2\ITSD\kfolkins\KLF_G...]

Output Feature Class
Streets4CostSurface

Expression (optional)

Field Map (optional)

- ST_CL_ADDR (Double)
- SHAPE_FID (Long)
- LABEL (Text)
- FROMLEFT (Double)
- TOLEFT (Double)
- FROMRIGHT (Double)
- TORIGHT (Double)
- STREET_NAME (Text)
- PREDIR (Text)
- STREET_TYPE (Text)
- FULL_ST_NAME (Text)
- IN_CITY_NY (Text)
- ONEWAY (Text)
- DIRECTION (Text)
- PW_COMMENTS (Text)

Geodatabase Settings (optional)

Query Builder:

OBJECTID
ST_CL_ADDR
SHAPE_FID
LABEL
FROMLEFT

= <> Like
> >= And
< <= Or
() Not
Is Get Unique Values Go To: []

LABEL IS NOT NULL AND LABEL <> 'Freeway/Highway' AND LABEL <> 'Private Driveway' AND LABEL <> 'Ramp'

Clear Verify Help Load... Save...

OK Cancel

Expression (optional)

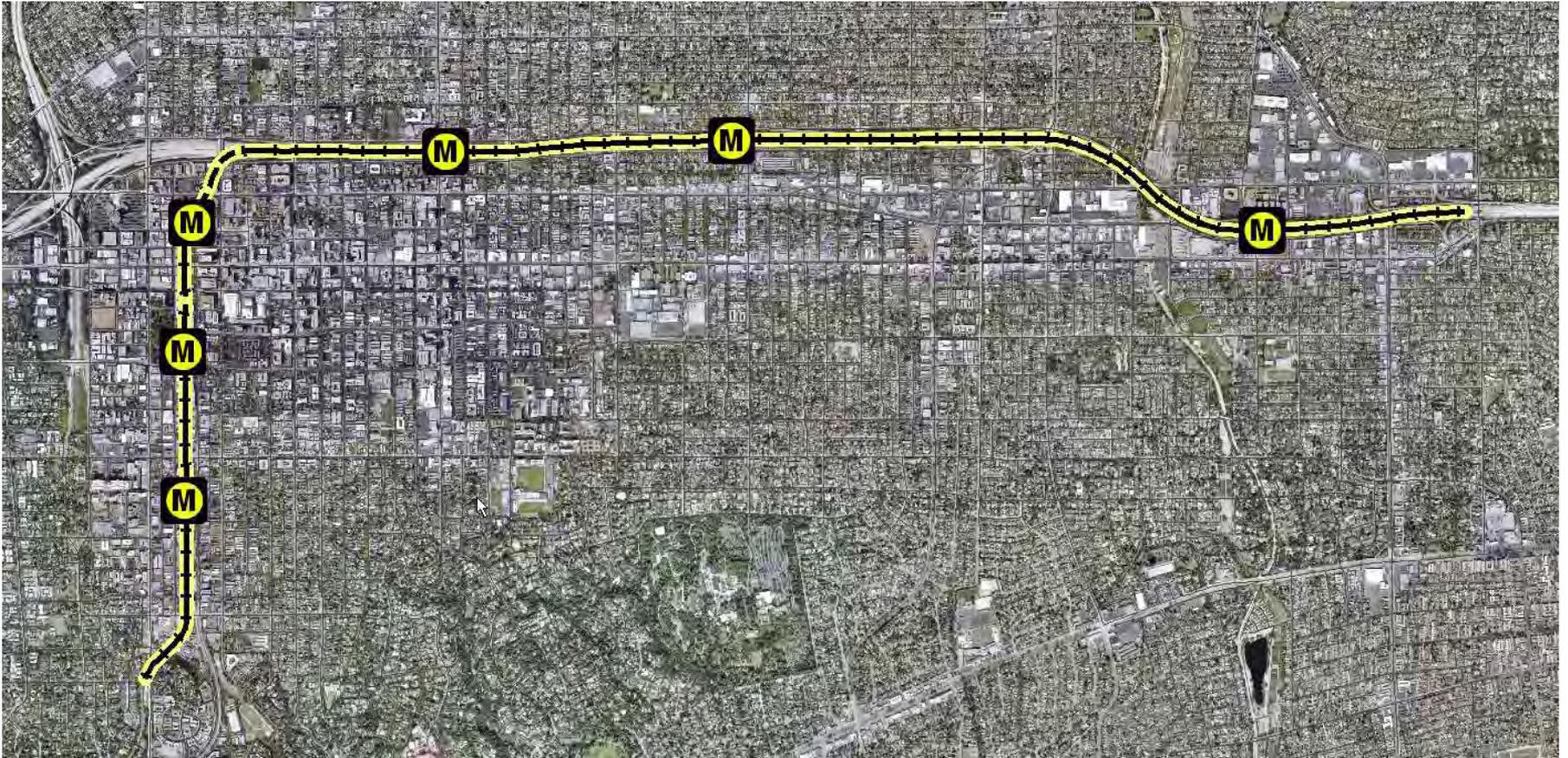
expression used to select a subset of
The syntax for the expression differs
depending on the data source. For
if you're querying file or ArcSDE
bases, shapefiles, or coverages, enclose
es in double quotes:
_D"
querying personal geodatabases, enclose
quare brackets:
_D]



Prepare Data

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- Destination Point Layer

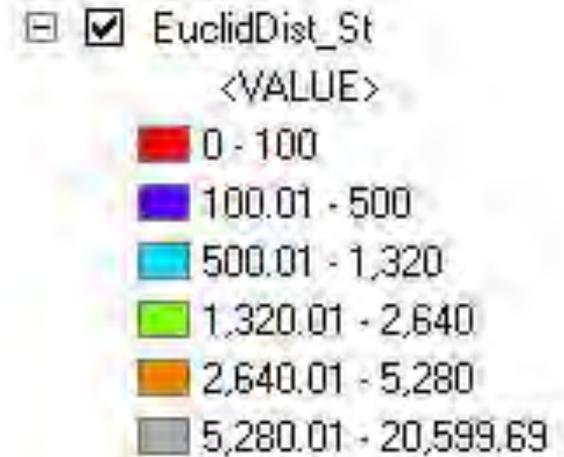
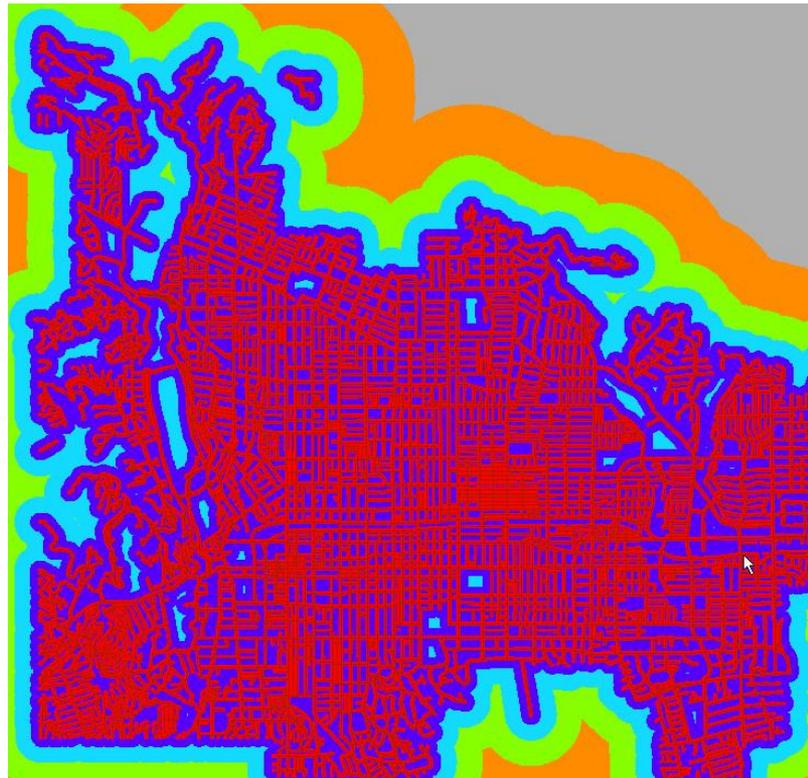




Create Cost Surface

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- Euclidean Distance
 - > 30 ft cell size gives good result





Create Cost Surface

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- **Reclassify**
 - > Assigns a value, or cost, of travel to each cell

ReClass

- 1 / 100 Feet
- 2 / 500 Feet
- 3 / Qtr Mile
- 4 / Half Mile
- 5 / 1 Mile
- 6 / Over 1 Mile

Reclassification

Old values	New values
0 - 100	1
100 - 500	2
500 - 1320	3
1320 - 2640	4
2640 - 5280	5
5280 - 20599.691406	6
NoData	NoData

Buttons:



Perform Cost Distance

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- Final Analysis: Merging

	1	1			
		1			
2					

Source_Ras

1	3	4	4	3	2
7	3	2	6	4	6
5	8	7	5	6	6
1	4	5		5	1
4	7	5		2	6
1	2	2	1	3	4

Cost_Ras

=

2.0	0.0	0.0	4.0	7.5	10.0
6.0	2.5	0.0	4.0	9.0	13.9
8.0	7.1	4.5	5.0	10.5	12.7
5.0	7.5	10.5		10.6	9.2
2.5	5.7	6.5		7.1	11.1
0.0	1.5	3.5	5.0	7.0	10.5

Cost_Dist

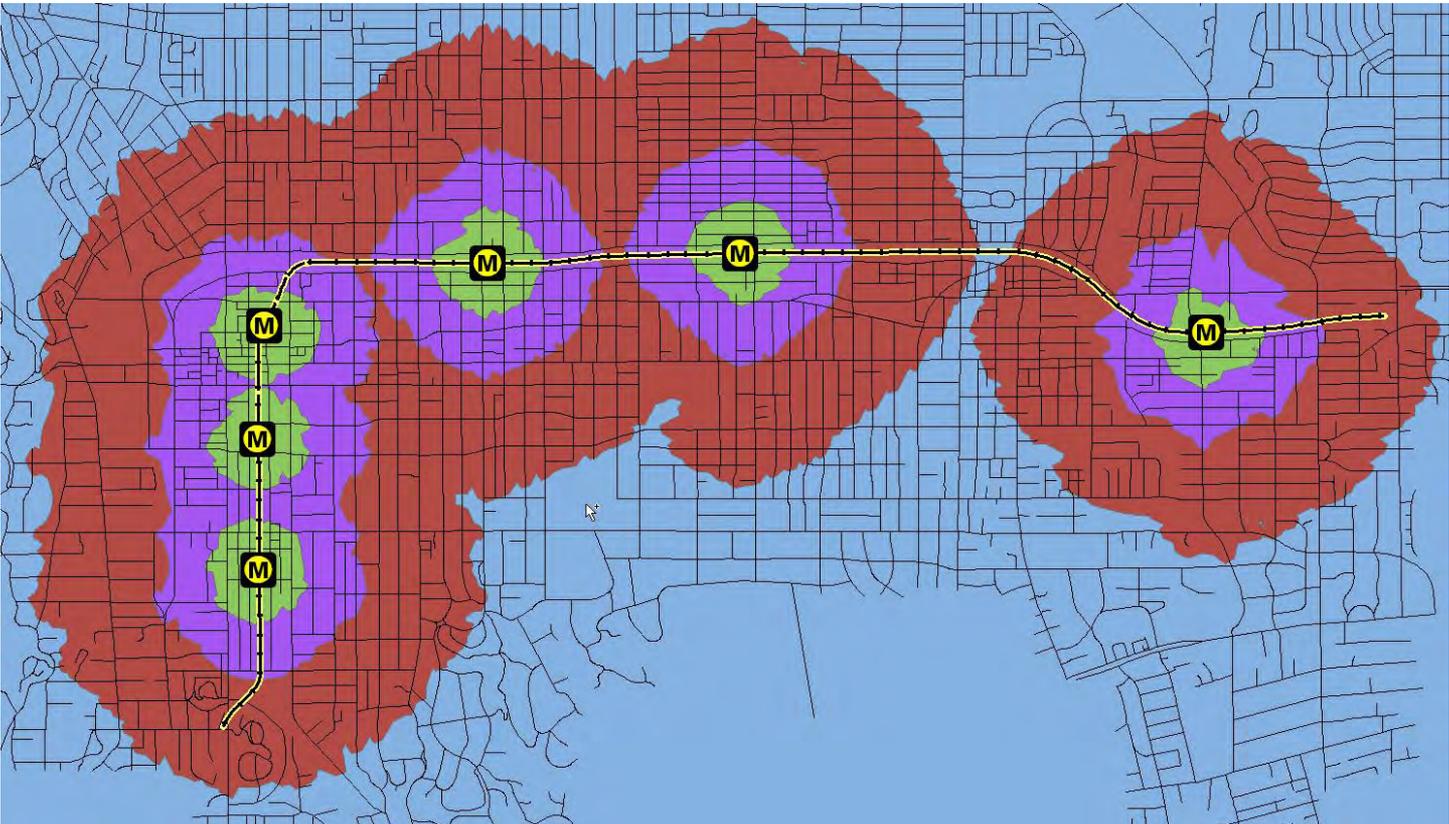
■ Value = NoData



Convert Analysis Raster to Polygon

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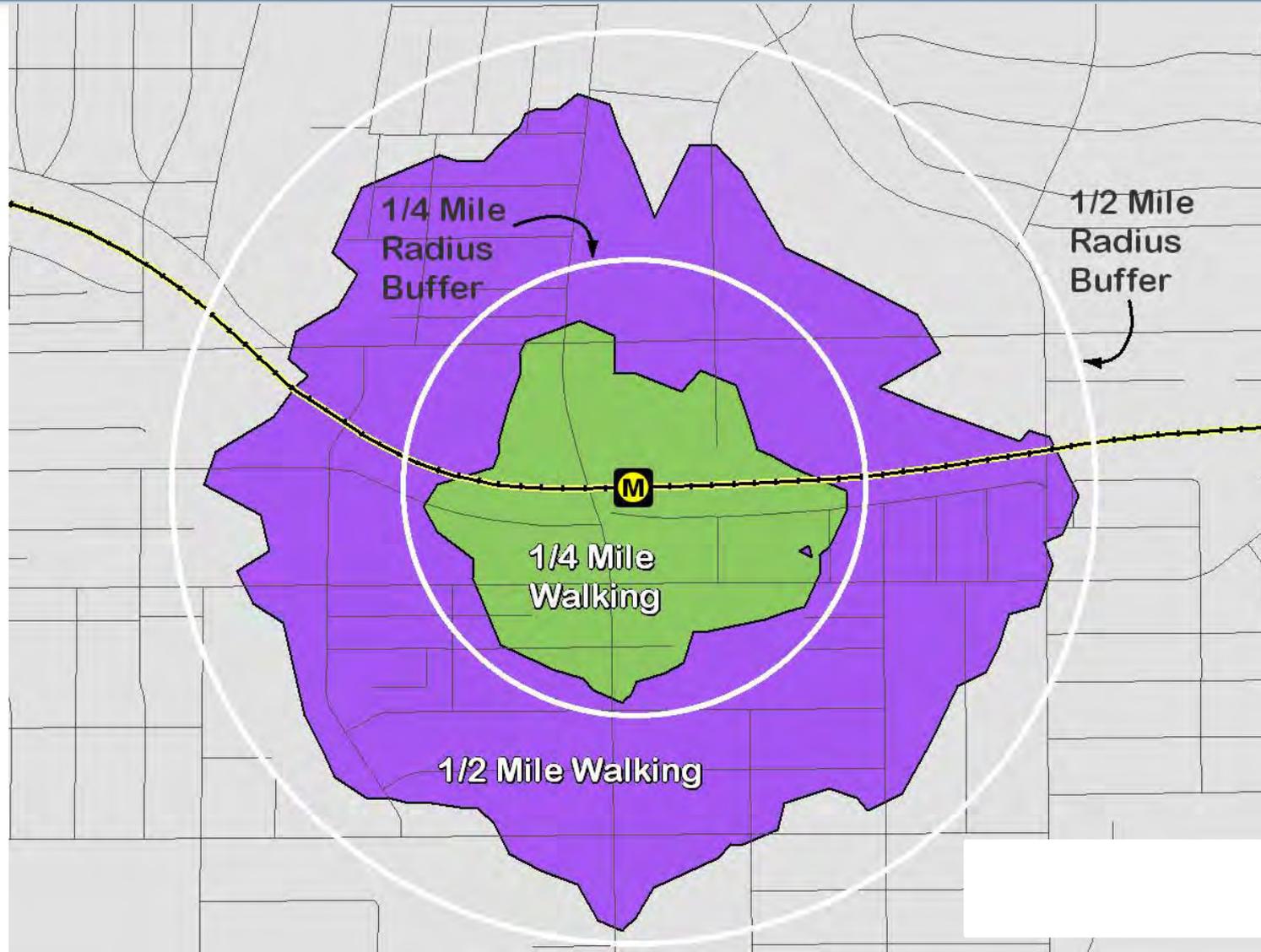
- Reclassify, Convert to Polygon





Final Analysis - Buffer Comparison

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Next Steps, Lessons Learned

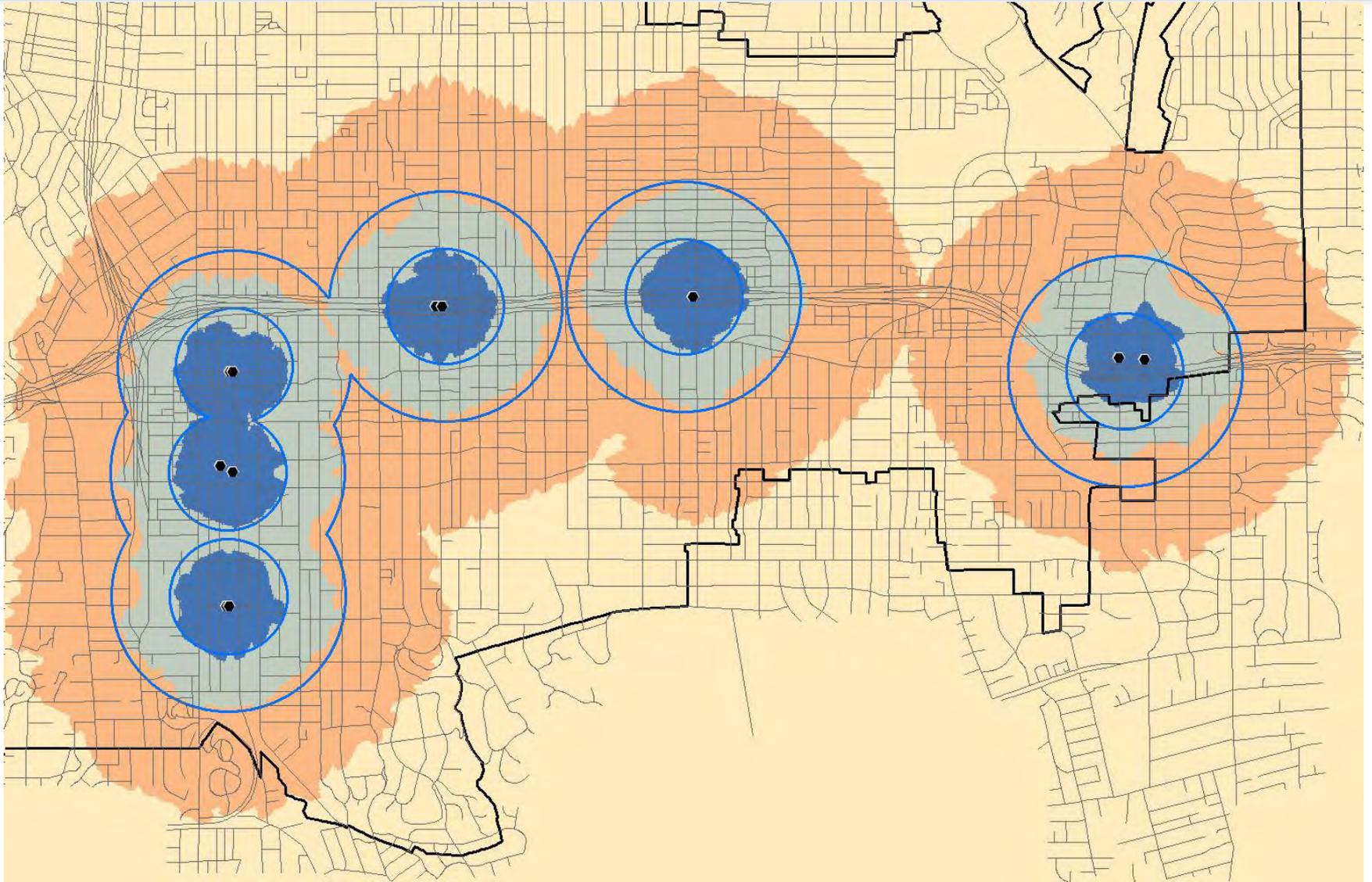
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- Build model for automation
- Developing true Pedestrian Network
- Refining Destination points: i.e. multiple entrances



Alternate Analysis

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Special Thanks To.....

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- Scott Reimers – City of Pasadena Planning Dept.
- Rhonda Glennon – ESRI:
 - > <http://blogs.esri.com/esri/arcgis/2011/06/30/park-analysis-and-design/>



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Questions?