

# **Future Land Use Allocation Model (FLUAM) Methodology**

**For: Lake/Sumter MPO**

**By: Data Transfer Solutions (DTS)**



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# DTS Presenters

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# Presentation Outline

- **Overview of FLUAM Methodology**
- **Data Sources**
- **L RTP Comparison Tool Demonstration**

**Overview of FLUAM Methodology:**

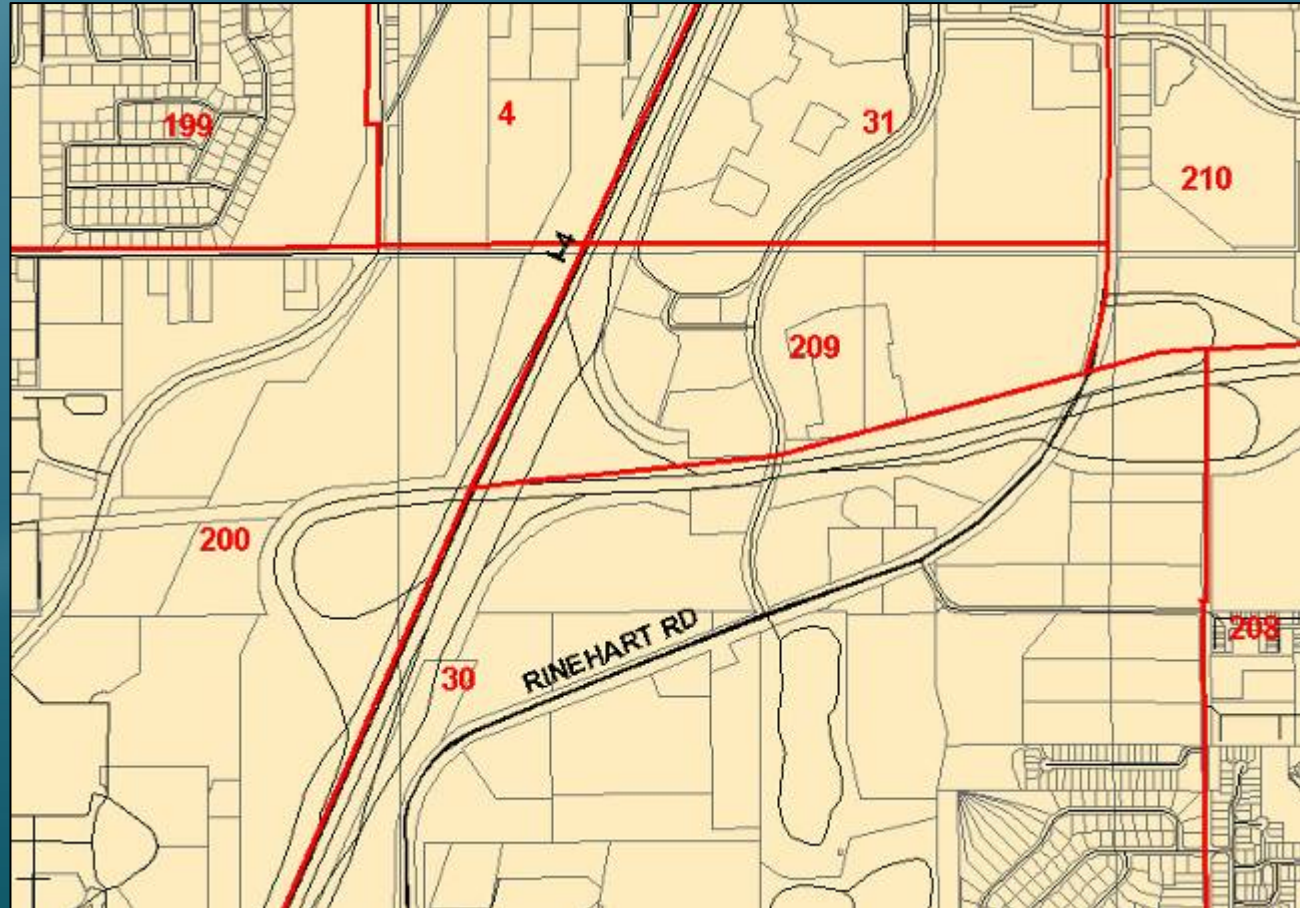
**Follows Comprehensive Plans**



# Existing Development

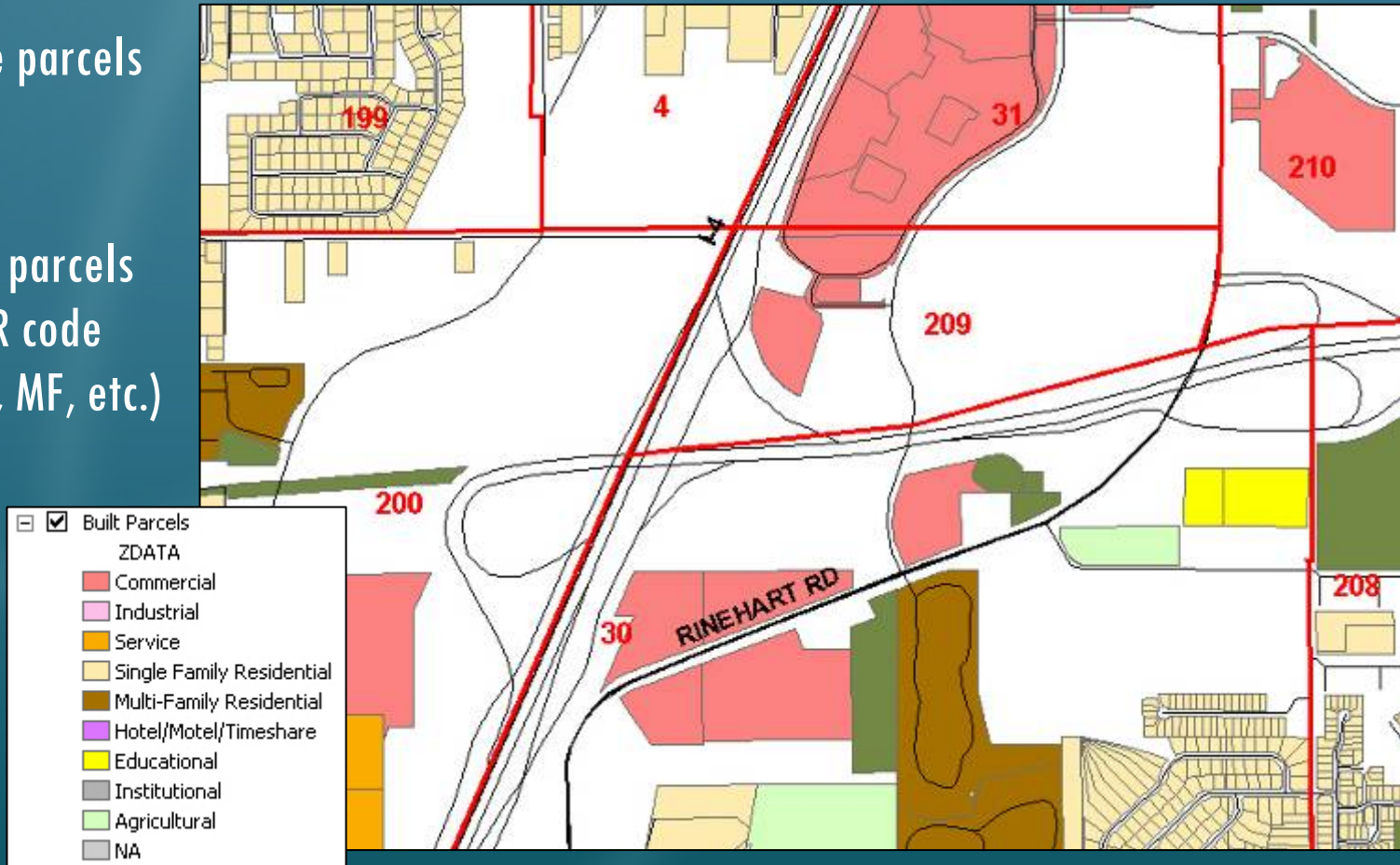
- ❖ Add latest parcel data from all District 5 Counties' Property Appraiser
- ❖ Data should have the attributes needed for the analysis

<input checked="" type="checkbox"/>	TAZ2025
<input checked="" type="checkbox"/>	Major Roads
<input checked="" type="checkbox"/>	Minor Roads
<input checked="" type="checkbox"/>	Parcels04



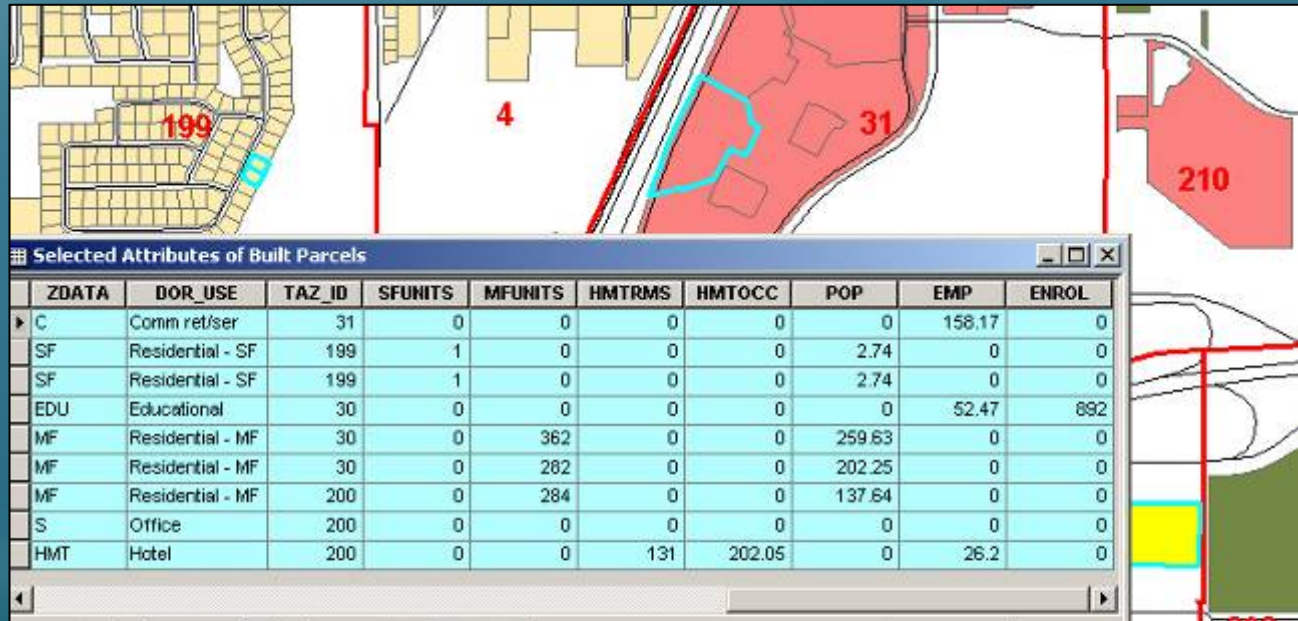
# Existing Development

- ❖ Select out the parcels that are built
- ❖ Assign Zdata categories to parcels based on DOR code (Com, Ser, SF, MF, etc.)



# Existing Development

- ❖ Join Built parcel table to Existing Factor table based on Zdata field
- ❖ Calculate the existing Unit count, Population, Employment, Enrollment — based on PPH, Vacancy Rates, Units/Acre, Square Footage/Employee

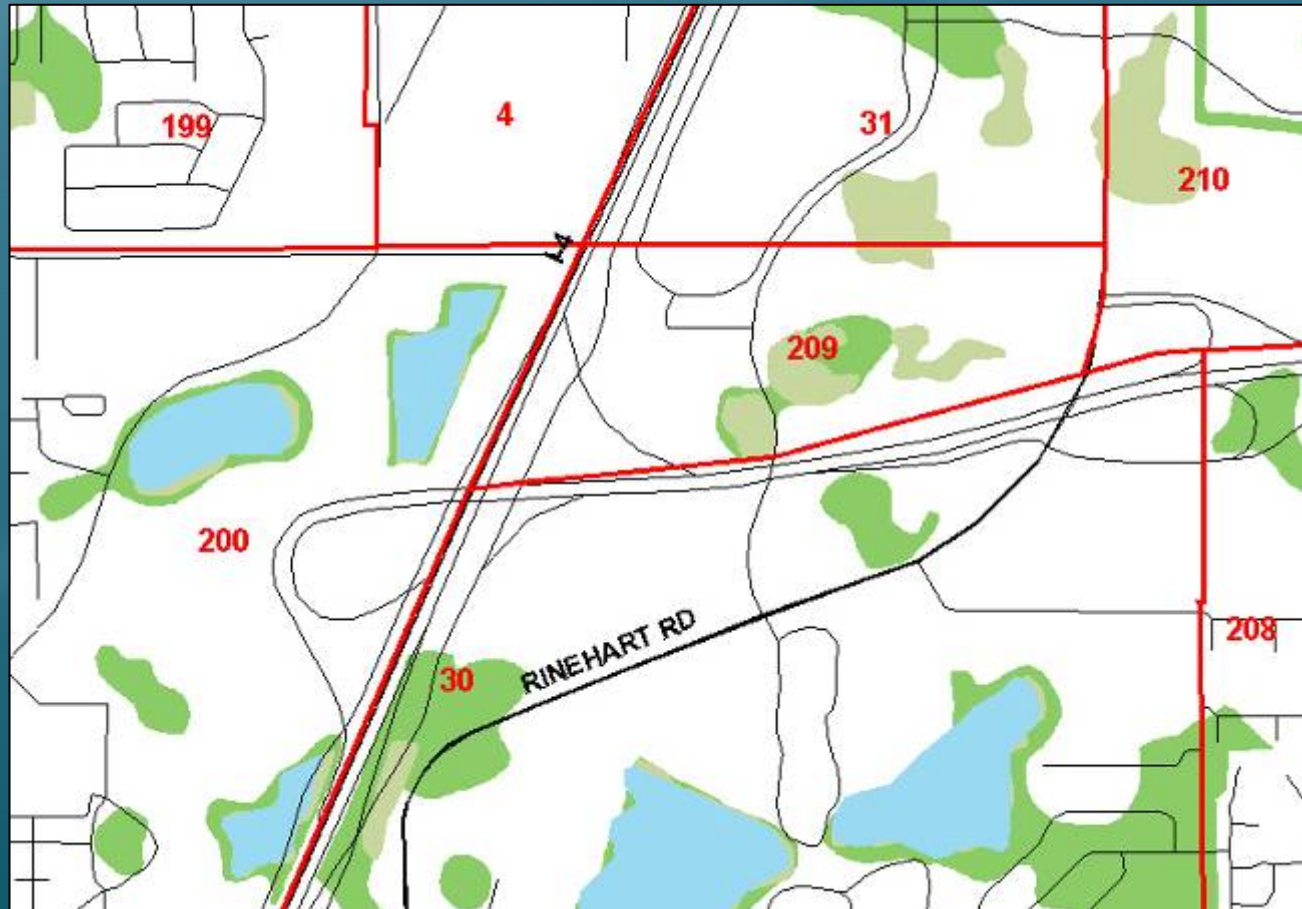
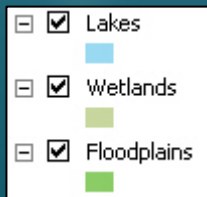


The figure shows a screenshot of a data table titled "exfact\_sf\_mf.dbf". The table displays various metrics for different parcels, including TAZ, SF, PPH, SF VAC, MF PPH, MF VAC, MF UA, HMT OCC, RMS AC, OCC RATE, HMT PPR, C EA, S EA, and I EA.

	A	B	C	D	E	F	G	H	I	J	K	L	M	
	TAZ	SF	PPH	SF VAC	MF PPH	MF VAC	MF UA	HMT OCC	RMS AC	OCC RATE	HMT PPR	C EA	S EA	I EA
1	1	2.24	10.92	1.39	10.11	9.85	0.00	38.38	64.00	2.41	7.38	17.31	9.99	
2	2	2.74	0.00	0.77	37.06	26.85	0.00	38.38	64.00	2.41	20.75	0.00	59.71	
3	3	2.11	13.86	1.00	24.70	18.27	0.00	38.38	64.00	2.41	0.44	43.36	0.00	
4	4	2.74	0.00	1.00	37.06	18.27	0.00	38.38	64.00	2.41	6.94	0.00	0.00	
5	5	2.01	7.22	1.09	23.75	169.14	0.00	38.38	64.00	2.41	0.06	0.00	0.00	
6	6	2.94	6.31	1.00	10.72	18.27	0.00	38.38	64.00	2.41	0.02	0.00	0.00	
7	7	2.94	6.31	1.30	10.72	20.00	0.00	38.38	64.00	2.41	0.11	0.00	0.00	
8	8	2.69	5.53	2.73	10.72	15.89	0.00	38.38	64.00	2.41	14.30	23.71	0.00	
9	9	2.69	5.53	1.81	10.72	25.22	0.00	38.38	64.00	2.41	42.96	6.77	0.59	
10	10	3.05	4.04	1.81	10.72	25.22	0.00	38.38	64.00	2.41	0.00	0.00	0.00	
11	11	2.69	3.11	2.25	10.72	25.00	0.00	38.38	64.00	2.41	25.43	5.59	14.28	

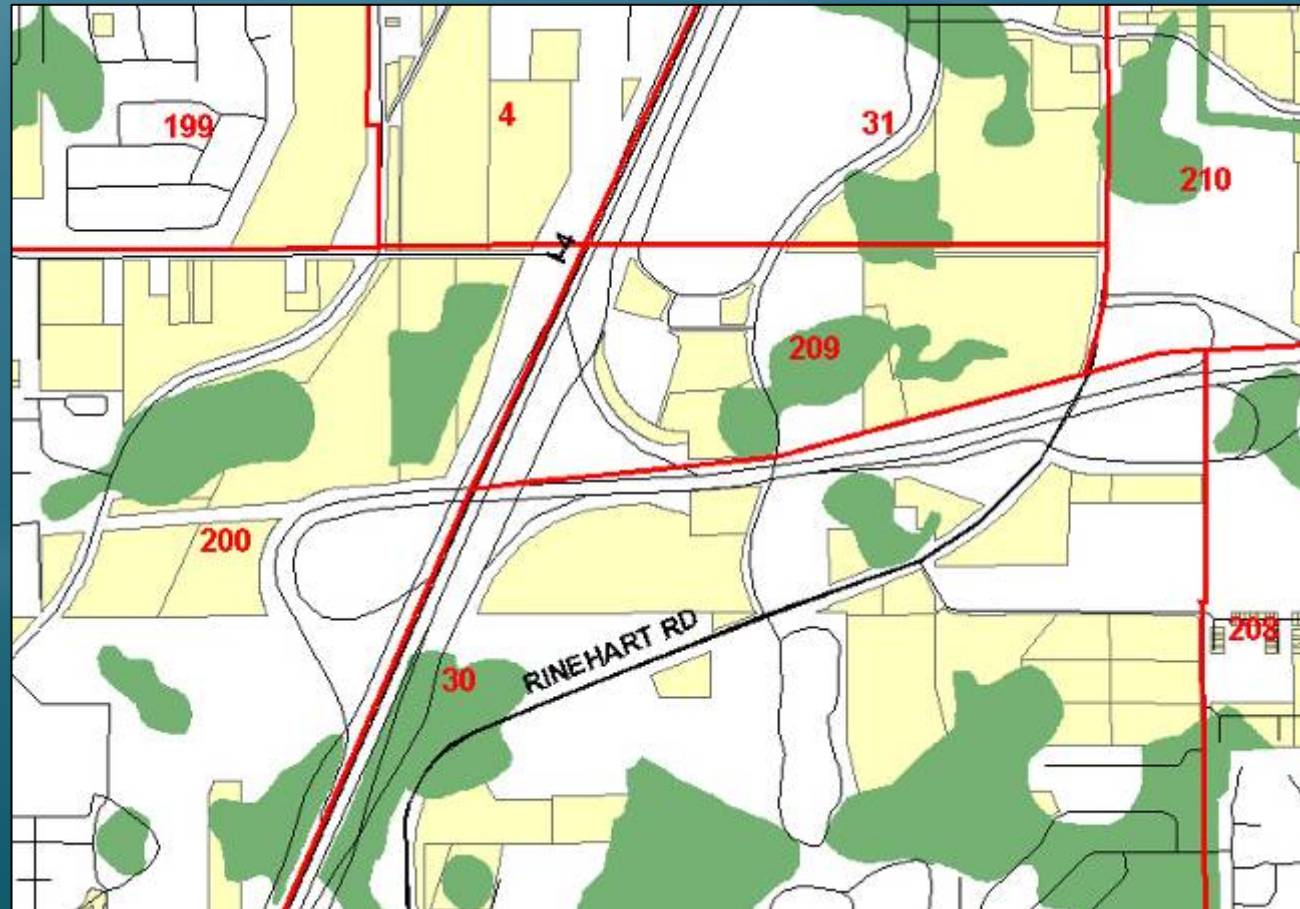
# Forecasted Development

- ❖ Create the Environmentally Constrained layer by combining the 100 Year Floodplain, Wetlands and Water Bodies



# Forecasted Development

- ❖ Overlay the Environmentally Constrained layer on the Vacant Lands layer



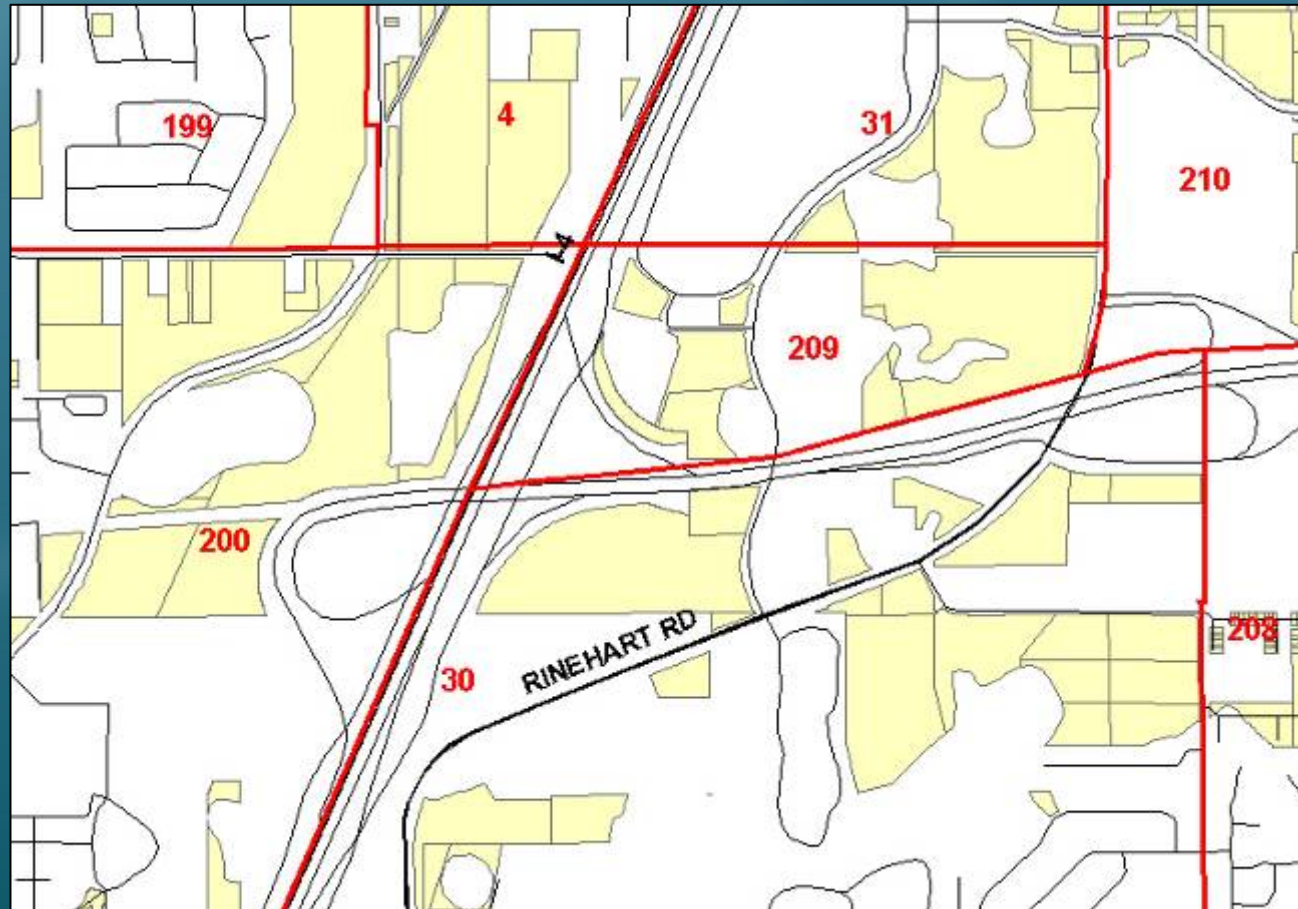
- Environmentally Constrained
- Vacant Land



**Data  
Transfer  
Solutions**

# Forecasted Development

- ❖ Clip out these Environmentally Constrained areas to remove those sensitive areas from any future development scenarios



<input checked="" type="checkbox"/>	Environmentally Constrained
<input checked="" type="checkbox"/>	Vacant Land



**Data  
Transfer  
Solutions**

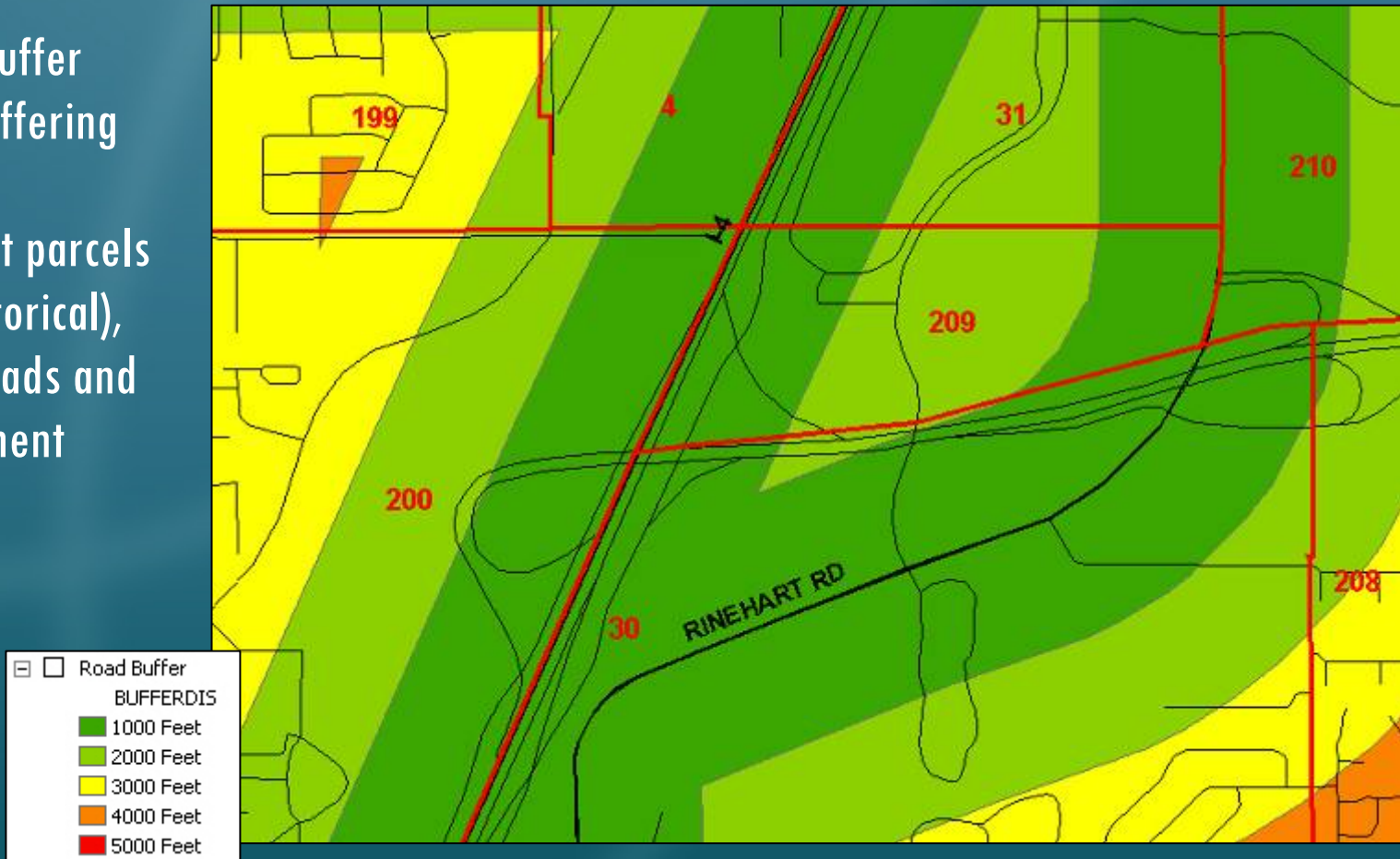
# Forecasted Development

- ❖ Overlay this layer with the Future Land Use to determine the amount of developable land in each FLU category



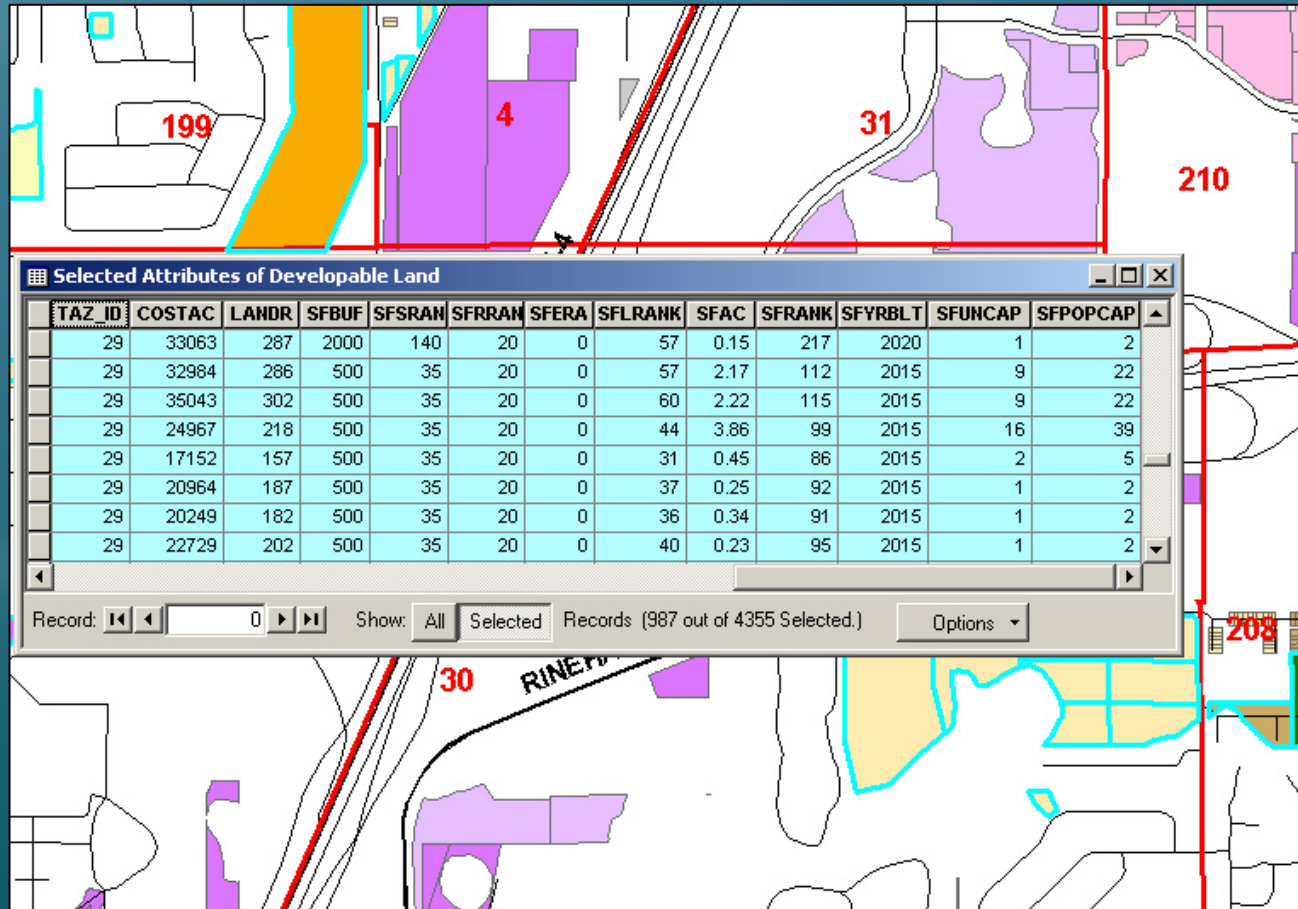
# Forecasted Development

- ❖ Create the Buffer layers by buffering the Similar Development parcels (15 year historical), the major roads and the Employment Centers



# Forecasted Development

- ❖ Rank the Developable Vacant Land parcels based on these buffer layers as well as Land Value (Cost/Ac)
- ❖ This determines the development potential for each parcel — higher ranked parcels develop first



# Forecasted Development

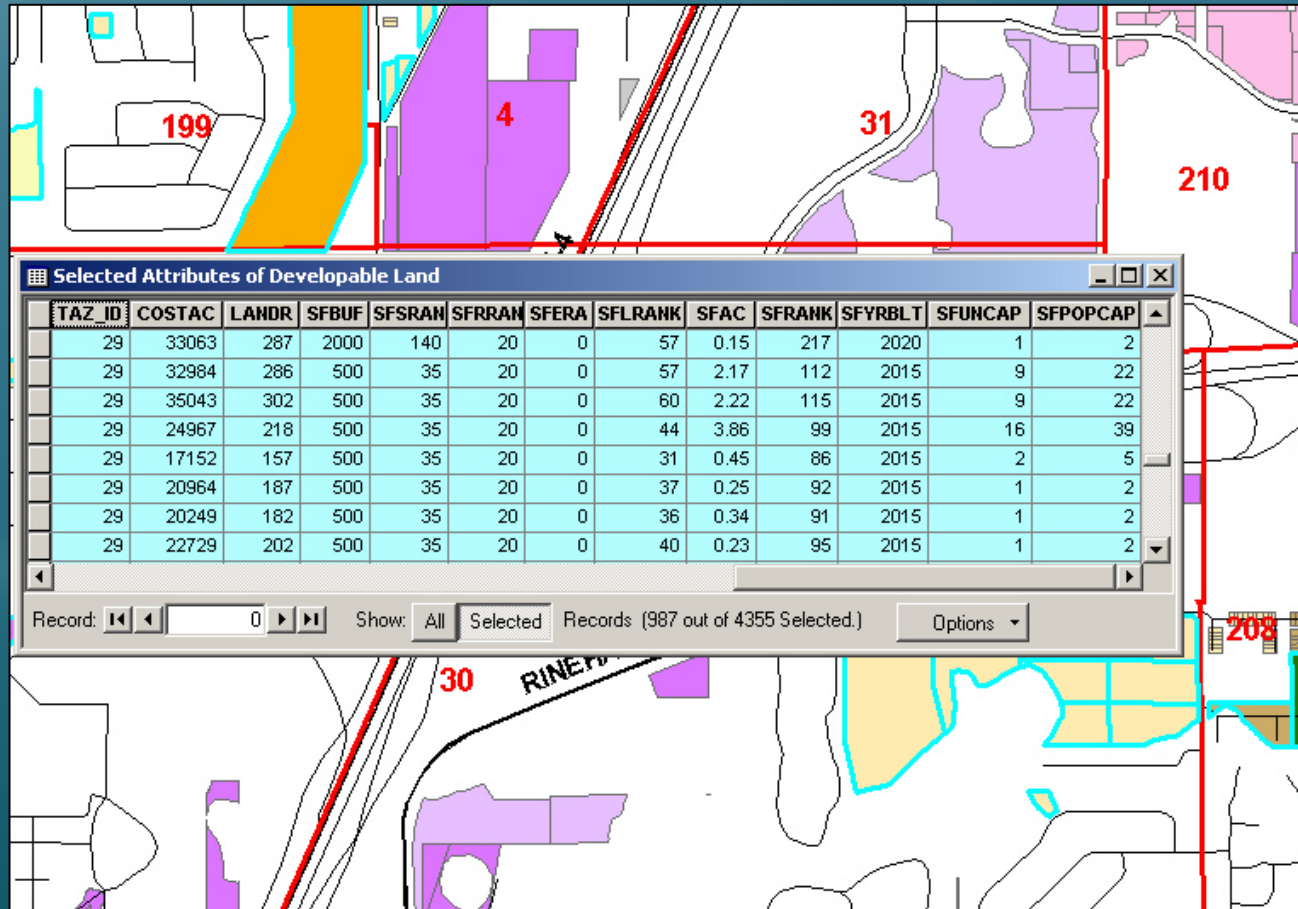
- ❖ Determine the Population and Employment control totals by the Residential and Employment Submarkets
- ❖ Census Tract or municipal boundaries can also be used

	A	B	C	D	E	F	G	H	I
1	<b>SUB</b>	<b>SF UN</b>	<b>SF POP</b>	<b>MF UN</b>	<b>MF POP</b>	<b>ENROL</b>	<b>HMT RMS</b>	<b>HMT</b>	
2	1	4320	12341	4288	11776	1288	785	1333	
3	2	1047	2926	3461	6455	1799	282	430	
4	3	980	2996	3270	6605	3877	229	352	
5	4	3453	10256	1214	2387	675	278	427	
6	5	1897	5410	5426	11337	2109	572	1098	
7	6	5039	14296	4197	8232	5169	251	386	
8	7	5053	14358	193	325	1590	99	152	
9									
10									
11									

	A	B	C	D	E	F	G	H	
1	<b>SUB</b>	<b>C EMP</b>	<b>S EMP</b>	<b>I EMP</b>	<b>TOTAL</b>	<b>ENROL</b>	<b>HMT RMS</b>	<b>HMT OCC</b>	
2	1	2298	4535	1013	7844	159	226	347	
3	2	1706	2433	252	4391	3877	229	352	
4	3	1505	2802	403	4712	208	205	315	
5	4	2390	18104	844	21339	1611	822	1387	
6	5	1223	2874	822	4921	698	100	153	
7	6	3498	6206	2008	11716	2706	447	906	
8	7	1107	3084	412	4600	2757	135	208	
9	8	8134	3268	306	11709	2901	233	358	
10	9	513	1499	185	2197	1590	99	152	
11									

# Forecasted Development

- ❖ Calculate the population and employment of each of the vacant ranked parcels until the Submarket Control Totals are reached for each forecast year (2010 - 2030)



# Forecasted Development

- ❖ Output the final Zdata 1 & Zdata2 results to Excel tables — summarized by TAZ Numbers

	A	B	C	D	E	F	G	H
1	TAZ	IND	COM	SER	TOTAL	SCH	STPARK	LTPARK
2	1	381	219	271	870	0	0	0
3	2	230	1166	91	1487	0	0	0
4	3	162	29	59	250	0	0	0
5	4	0	243	200	443	0	0	0
6	5	17	363	2412	2792	1051	0	0
7	6	6	5	152	163	0	0	0
8	7	14	31	119	164	0	0	0
9	8	5	254	357	616	0	0	0

	A	B	C	D	E	F	G	H	I	
1	TAZ	SF UNITS	PCT NP VAC	PCT SF VAC	SF POP RES	PCT 0 AUTO	PCT 1 AUTO	PCT 2 AUTO	MF UNITS	PCT
2	1	844	6	6	2184	26	16	58	282	
3	2	539	6	6	1323	20	46	34	954	
4	3	2142	6	6	5605	6	38	56	76	
5	4	37	6	6	94	6	38	56	0	
6	5	3171	5	5	8853	0	33	67	1428	
7	6	646	5	5	1969	0	27	73	372	
8	7	949	5	5	2888	0	35	65	86	
9	8	3	5	5	9	4	11	85	718	
10	9	0	3	3	0	0	52	48	30	
11	10	1429	3	3	4196	0	52	48	3	

# Data Sources



# Data Sources

- Parcel Shapefile and Attribute Table — from each County Property Appraiser; need such attributes as DOR (Land Use Code), Owner, Building Value and Year Built, Building Square Footage
- Future Land Use Shapefile — this can be gathered from all of the Counties and Cities in the study area, or the Generalized FLU Shapefile that the ECFRPC produced can be incorporated into the analysis
- Environmental Constraints Data — Floodplain, wetlands and water body shapefiles can be downloaded from the FGDL website

# Data Sources

- Development of Regional Impact Shapefile — this data is available from the ECFRPC; some additional research is needed to determine build-out years
- Existing Roads — available from Counties, MPOs, TPOs, FDOT
- InfoUSA — employment location data

# Data Sources

- Census Block & Block Group Data — Census Block Group information is used to produce the development factors that are then assigned to overlaying TAZs. These factors include Single and Multi-Family Vacancy Rates, People per Household, and the number of Autos per household

# FLUAM vs. LUCIS Differences

- FLUAM: FLUAM was designed to forecast population and employment out to the year 2035 in 5 year increments; this is driven by the Comprehensive Plans for the County and Cities in the study area
- LUCIS: Vision-based Density Model
- FLUAM: Based on modeling land use from the parcel level
- LUCIS: Uses a grid-based raster modeling approach

# **LRTP Model Comparison Tool**





### L RTP Comparison Tool

The Long Range Transportation Plan (L RTP) Landuse Comparison Tool was created to allow FDOT, Metropolitan Planning Organizations, and Local Government review landuse modeling results for several years of data including 2015, 2020, 2025, 2030, and 2035 for a 10-county region of Central Florida. The two land use models utilized for the study were the Future Land Use Allocation Model (FLUAM) which focuses on compliance of land uses with the comprehensive plans and the Land Use Conflict Identification Strategy (LUCIS) model which is a more future visioning tool not necessarily dependent on the comprehensive plans. For the L RTP, a FLUAM trend analysis, a LUCIS trend analysis, and a LUCIS future composite analysis were run. Any of the three model runs can be compared using the Comparison Tool and a resulting report is run highlighting percent differences between the model runs, highlighted by a user selected criteria. In addition, a PDF report and series of maps is generated.

**Step 1** Choose a geographic area:

Choose from list

-or- [Select area of interest with interactive map](#)

**Step 2** Choose models to compare:

Choose from list

**Step 3** Choose a Year:

Choose from list

**Step 4** Choose Datasets: ([Dataset definitions](#))

- |   |  |
|---|--|
| <input type="checkbox"/> Single Family Population         | <input type="checkbox"/> Multi-Family Population |
| <input type="checkbox"/> Total Population                 | <input type="checkbox"/> Population Density      |
| <input type="checkbox"/> Hotel Motel Timeshare Population | <input type="checkbox"/> Commercial Employment   |
| <input type="checkbox"/> Industrial Employment            | <input type="checkbox"/> Service Employment      |
| <input type="checkbox"/> Total Employment                 | <input type="checkbox"/> Employment Density      |
| <input type="checkbox"/> School Enrollment                |  |

**Step 5** Please select the threshold (percentage)  %  
that you wish to use to highlight differences  
between the two models:



**Step 1** Choose a geographic area:    
-or- [Select area of interest with interactive map](#)

**Step 2** Choose models to compare:

**Step 3** Choose a Year:

**Step 4** Choose Datasets: ([Dataset definitions](#))

<input type="checkbox"/> Single Family Population	<input type="checkbox"/> Multi-Family Population
<input type="checkbox"/> Total Population	<input type="checkbox"/> Population Density
<input type="checkbox"/> Hotel Motel Timeshare Population	<input type="checkbox"/> Commercial Employment
<input type="checkbox"/> Industrial Employment	<input type="checkbox"/> Service Employment
<input type="checkbox"/> Total Employment	<input type="checkbox"/> Employment Density
<input type="checkbox"/> School Enrollment	

**Step 5** Please select the threshold (percentage) that you wish to use to highlight differences between the two models:  %

- **Step 1 — Choose your geographic area — this can be at the county level or city level**

**Step 1** Choose a geographic area:    
-or- [Select area of interest with interactive map](#)

**Step 2** Choose models to compare:

**Step 3** Choose a Year:

**Step 4** Choose Datasets: ([Dataset definitions](#))

<input type="checkbox"/> Single Family Population	<input type="checkbox"/> Multi-Family Population
<input type="checkbox"/> Total Population	<input type="checkbox"/> Population Density
<input type="checkbox"/> Hotel Motel Timeshare Population	<input type="checkbox"/> Commercial Employment
<input type="checkbox"/> Industrial Employment	<input type="checkbox"/> Service Employment
<input type="checkbox"/> Total Employment	<input type="checkbox"/> Employment Density
<input type="checkbox"/> School Enrollment	

**Step 5** Please select the threshold (percentage) that you wish to use to highlight differences between the two models:  %

- **Step 2 — Choose the models to compare — comparisons can be made between: FLUAM and LUCIS Trend, FLUAM and LUCIS Composite, LUCIS Trend and LUCIS Composite**

**Step 1** Choose a geographic area:    
-or- [Select area of interest with interactive map](#)

**Step 2** Choose models to compare:

**Step 3** Choose a Year:

**Step 4** Choose Datasets: ([Dataset definitions](#))

<input type="checkbox"/> Single Family Population	<input type="checkbox"/> Multi-Family Population
<input type="checkbox"/> Total Population	<input type="checkbox"/> Population Density
<input type="checkbox"/> Hotel Motel Timeshare Population	<input type="checkbox"/> Commercial Employment
<input type="checkbox"/> Industrial Employment	<input type="checkbox"/> Service Employment
<input type="checkbox"/> Total Employment	<input type="checkbox"/> Employment Density
<input type="checkbox"/> School Enrollment	

**Step 5** Please select the threshold (percentage) that you wish to use to highlight differences between the two models:  %

- **Step 3 — Choose a year to compare — this can be 2015, 2020, 2025, 2030 or 2035**

**Step 1** Choose a geographic area:    
-or- [Select area of interest with interactive map](#)

**Step 2** Choose models to compare:

**Step 3** Choose a Year:

**Step 4** Choose Datasets: ([Dataset definitions](#))

<input type="checkbox"/> Single Family Population	<input type="checkbox"/> Multi-Family Population
<input type="checkbox"/> Total Population	<input type="checkbox"/> Population Density
<input type="checkbox"/> Hotel Motel Timeshare Population	<input type="checkbox"/> Commercial Employment
<input type="checkbox"/> Industrial Employment	<input type="checkbox"/> Service Employment
<input type="checkbox"/> Total Employment	<input type="checkbox"/> Employment Density
<input type="checkbox"/> School Enrollment	

**Step 5** Please select the threshold (percentage) that you wish to use to highlight differences between the two models:  %

- **Step 4 — Choose the datasets — any combination of datasets can be chosen for the comparison**

**Step 1** Choose a geographic area:    
-or- [Select area of interest with interactive map](#)

**Step 2** Choose models to compare:

**Step 3** Choose a Year:

**Step 4** Choose Datasets: ([Dataset definitions](#))

<input type="checkbox"/> Single Family Population	<input type="checkbox"/> Multi-Family Population
<input type="checkbox"/> Total Population	<input type="checkbox"/> Population Density
<input type="checkbox"/> Hotel Motel Timeshare Population	<input type="checkbox"/> Commercial Employment
<input type="checkbox"/> Industrial Employment	<input type="checkbox"/> Service Employment
<input type="checkbox"/> Total Employment	<input type="checkbox"/> Employment Density
<input type="checkbox"/> School Enrollment	

**Step 5** Please select the threshold (percentage) that you wish to use to highlight differences between the two models:  %

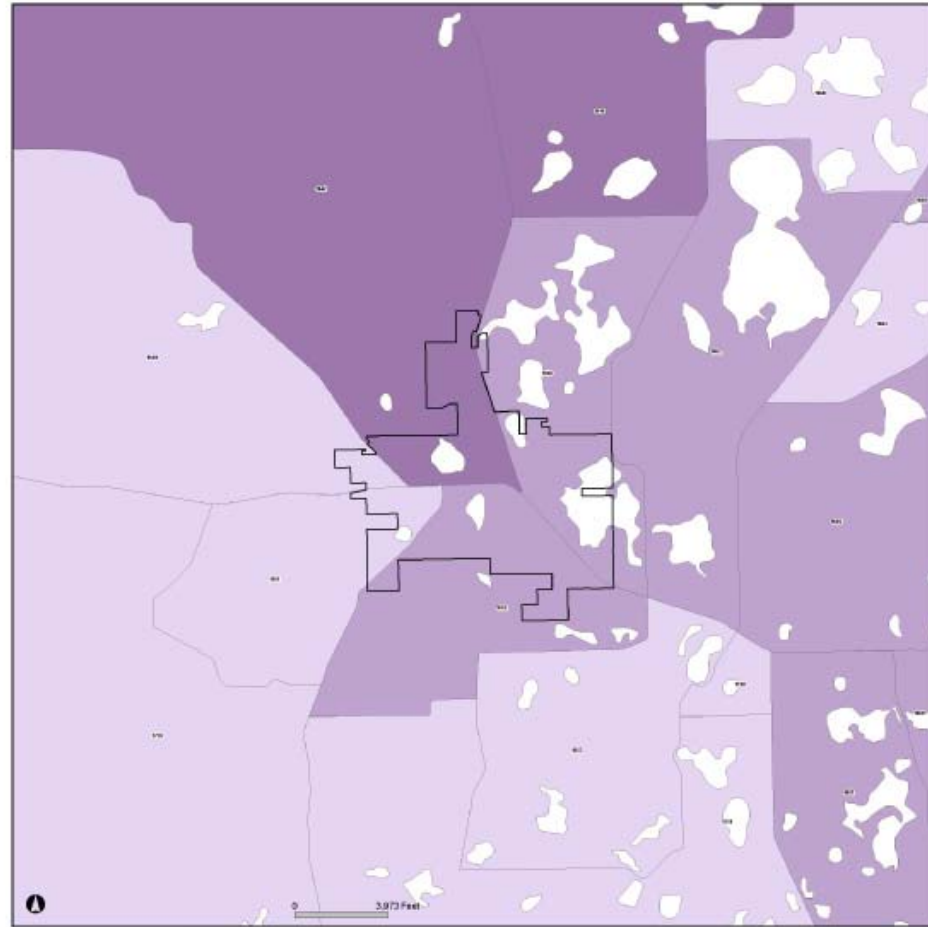
- **Step 5 — Choose your threshold (percentage) — all records will be displayed but any records above the chose percentage will be highlighted**

### MASCOTTE: 2030 Total Population

TAZ #	FLUAM Trend	LUCIS Comp.	% VAR
1647	9703	19072	49.12
1650	4300	1300	-230.77
1652	3464	3264	-6.13

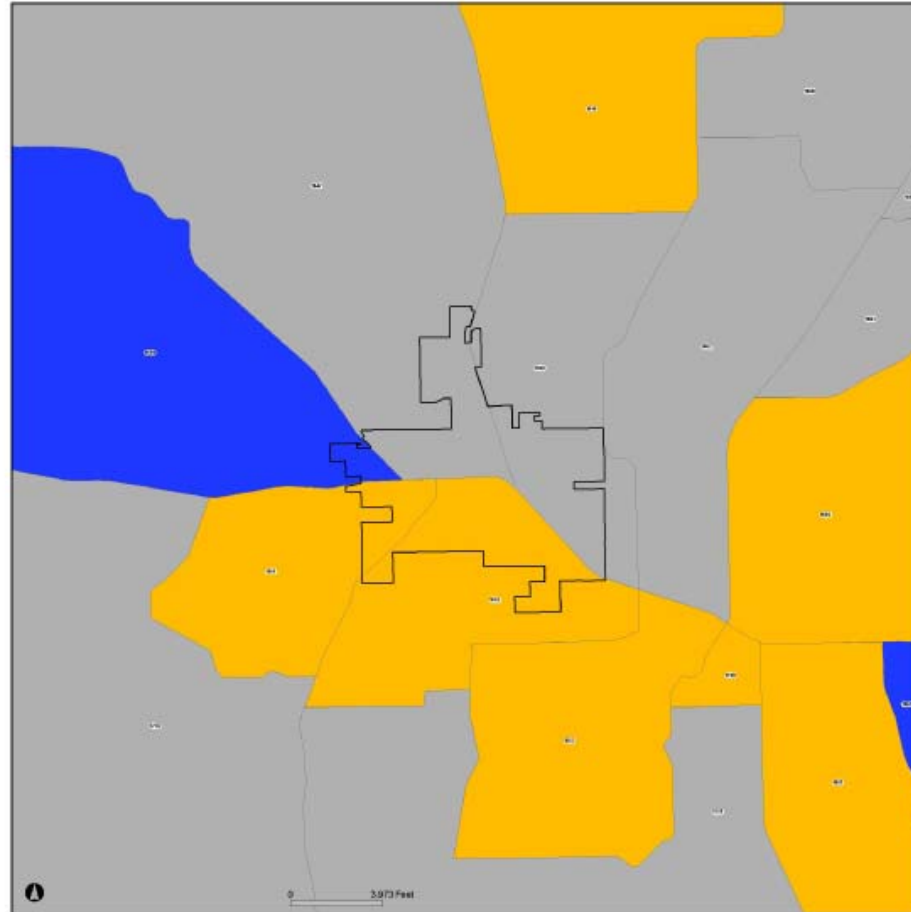
TAZ #	FLUAM Trend	LUCIS Comp.	% VAR
1649	668	469	-42.43
1651	1130	1126	-0.36

## MASCOTTE: 2030 Total Population



**LUCIS Comp. Total: 25231**

## MASCOTTE: 2030 Total Population



**Average Variation Factor: 23.65%**