The City of Fort Worth
BUILDABLE LANDS INVENTORY:
Where to Start Digging

2024 NCTCOG Regional GIS Conference (May)

Korrie Becht | Luis Vazquez | Cauner McDonald

Agenda

- ❑ **Background**
- ❑ GIS Workflow
  - Input Datasets
  - Vacant Land Analysis
  - Underutilized Land Analysis
- ❑ Draft Results
- ❑ Next Steps

Project Goal

Identify ***undeveloped*** or ***underutilized*** land by analyzing and mapping key land use factors in GIS,

to support Fort Worth growth in a strategic manner through data-driven decisions.

Why Use Buildable Lands Inventory?

1. Highlights existing **undeveloped** or **underutilized** land at the parcel level

2. Identifies where municipalities can optimize **infrastructure investments** by focusing growth in strategic locations

3. Allows more **cost-effective** allocation of resources and delivery of services

Estimated Population

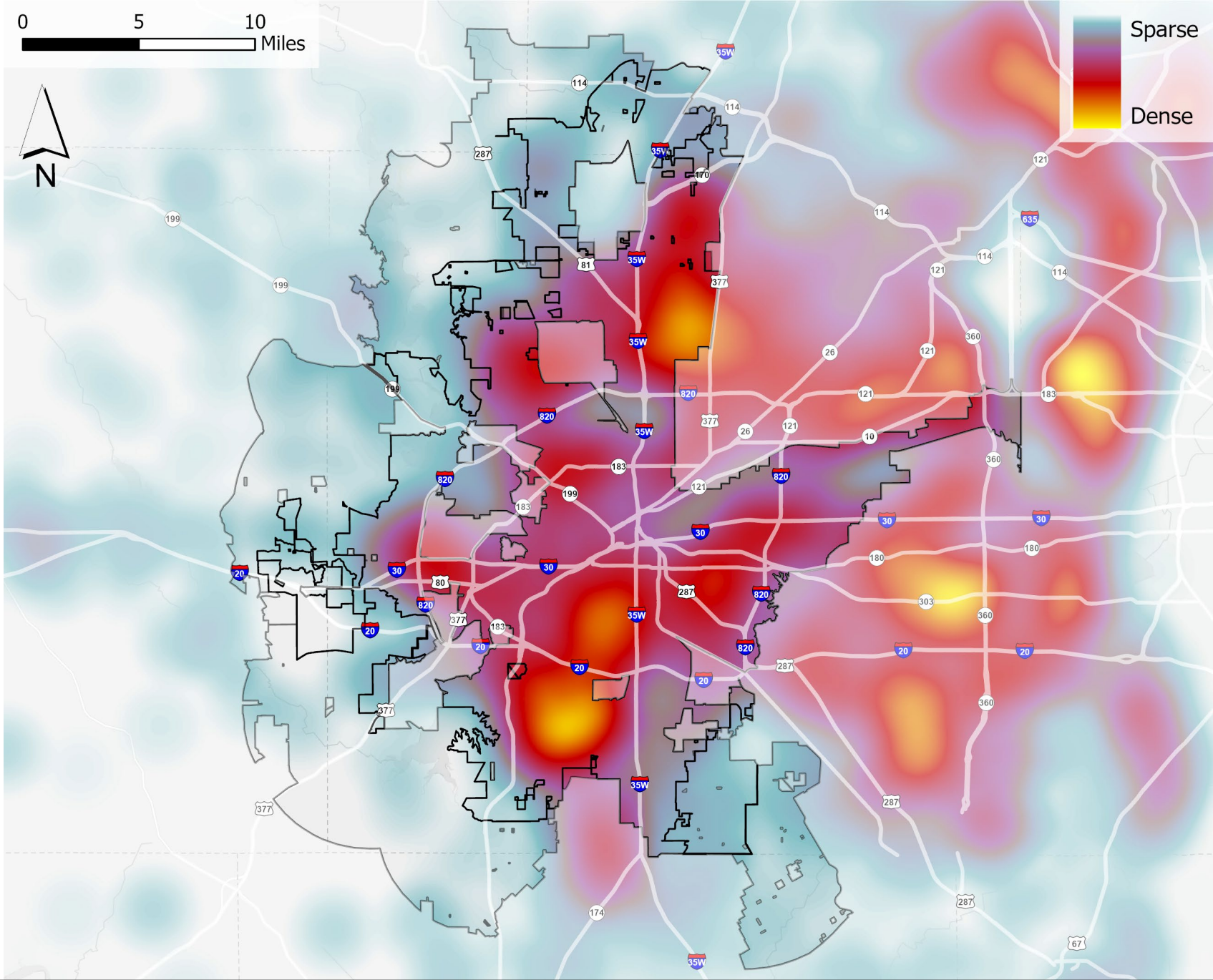
Fort Worth ranks…

1st in growth rate*

13th in population

17th in density*

***of the top 20 cities by population**



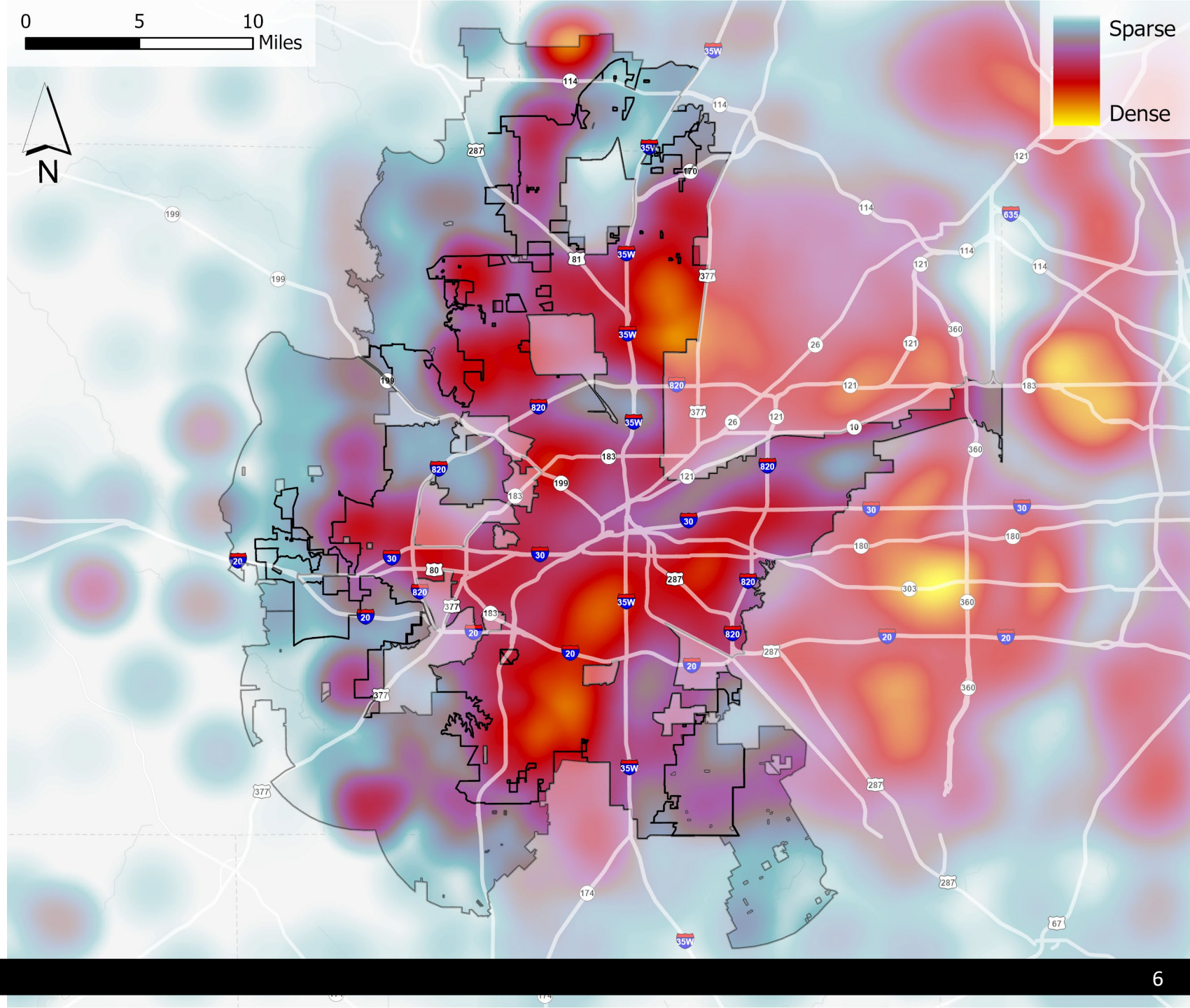
Source: U.S. Census Bureau, 2022

Projected Population

1,206,000 people by 2045*

20.7% growth in less than 25yrs

How do we plan for this growth?



** = NCTCOG, 2022*

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Land Suitable for Re-Development or New Development

FORT WORTH®

City Limits + ETJ		
Category	**Acreage**	**Percent**
Total Land Area	386,042.61	100%
Gas Wells	-9,057.29	-2.35%
Utilized Land	-194,535.02	-50.39%
Constrained Vacant Land	-22,941.44	-5.94%
Infrastructure Set-Asides*	-25,058.75	-6.49%
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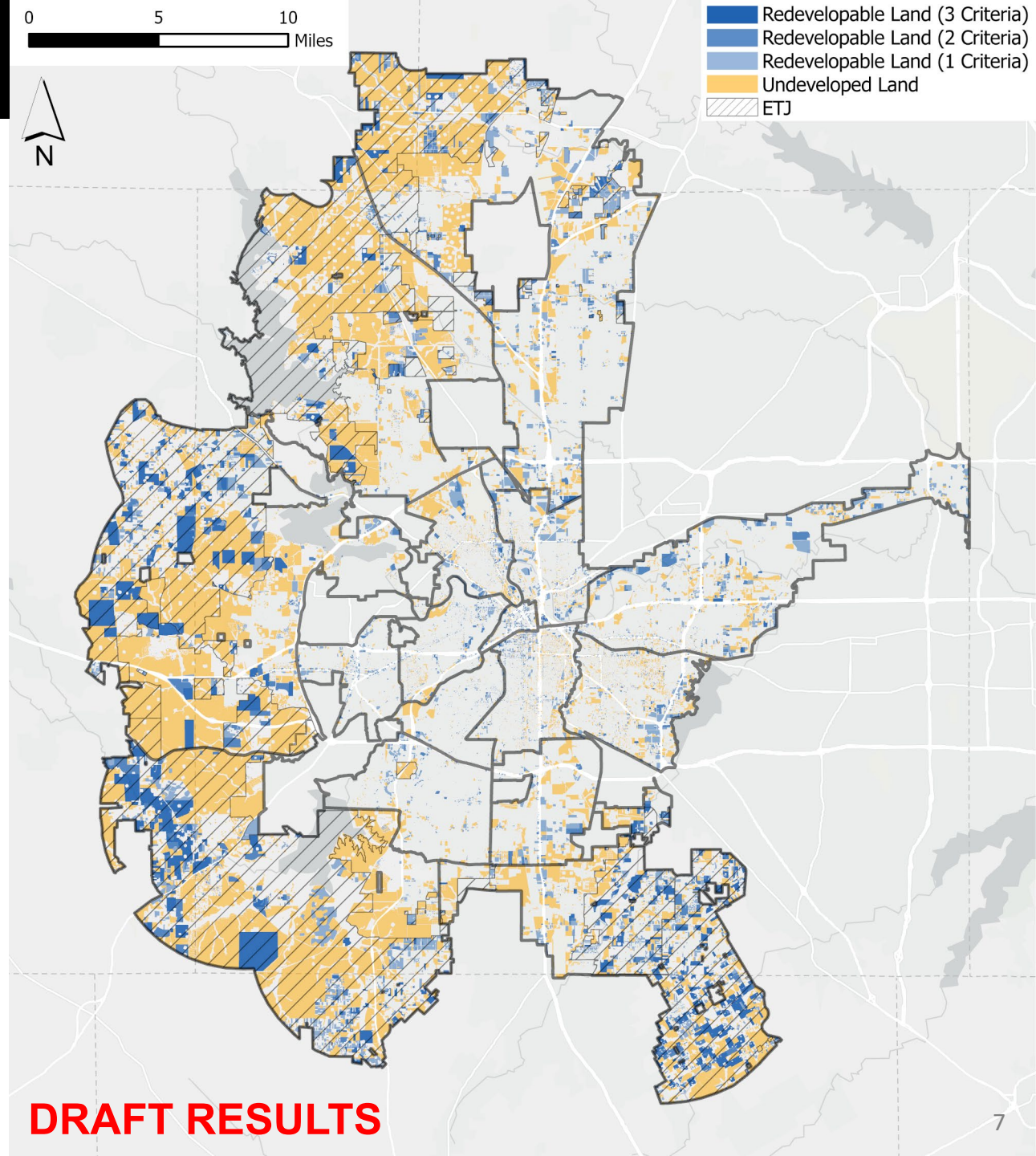
Net Developable Land	**134,450.11**	**34.83%**

**25% of Vacant Land for Outside Loop-820 Planning Sectors*



DRAFT RESULTS

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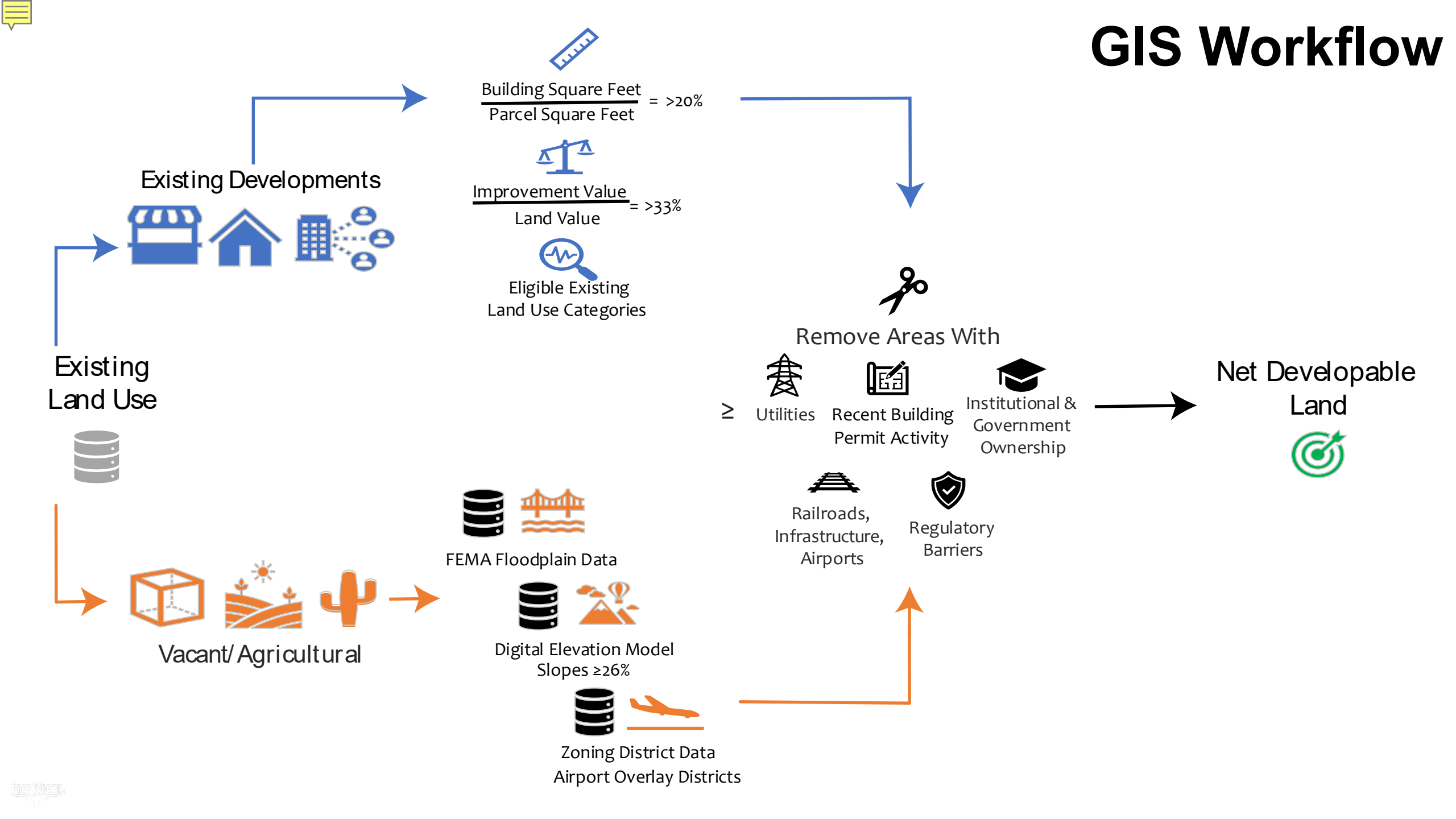
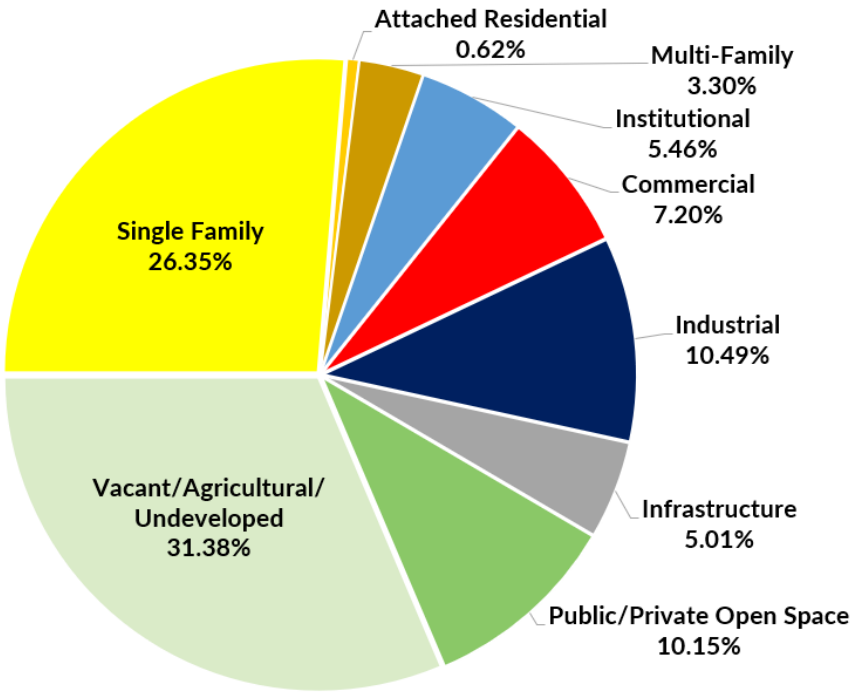
GIS Workflow



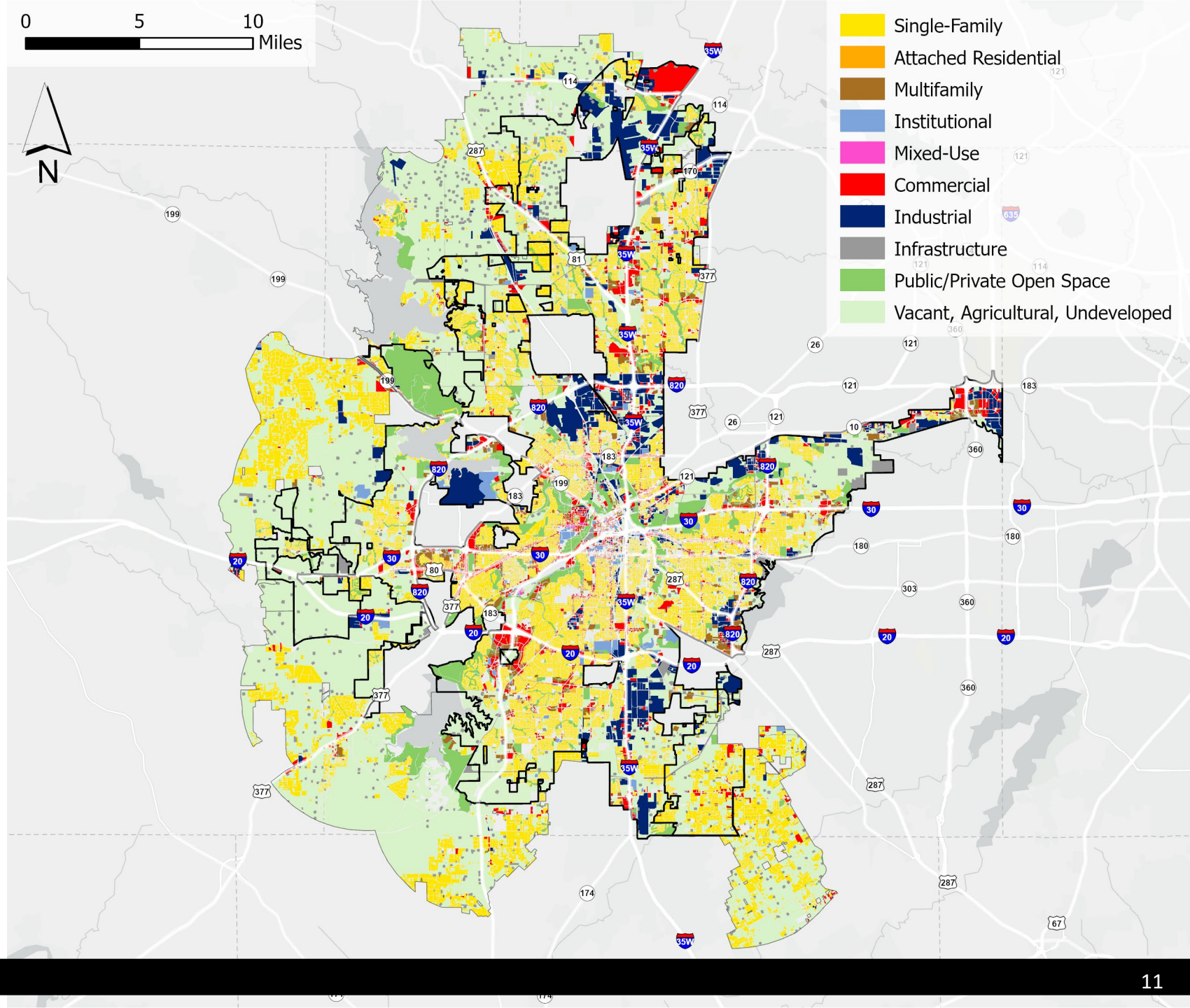
Foundational Input Datasets:

- ✓ Existing Land Use
- ✓ Neighboring County Parcel Data
- ✓ Digital Elevation Model

Existing Land Use (ELU) Designations: 2023



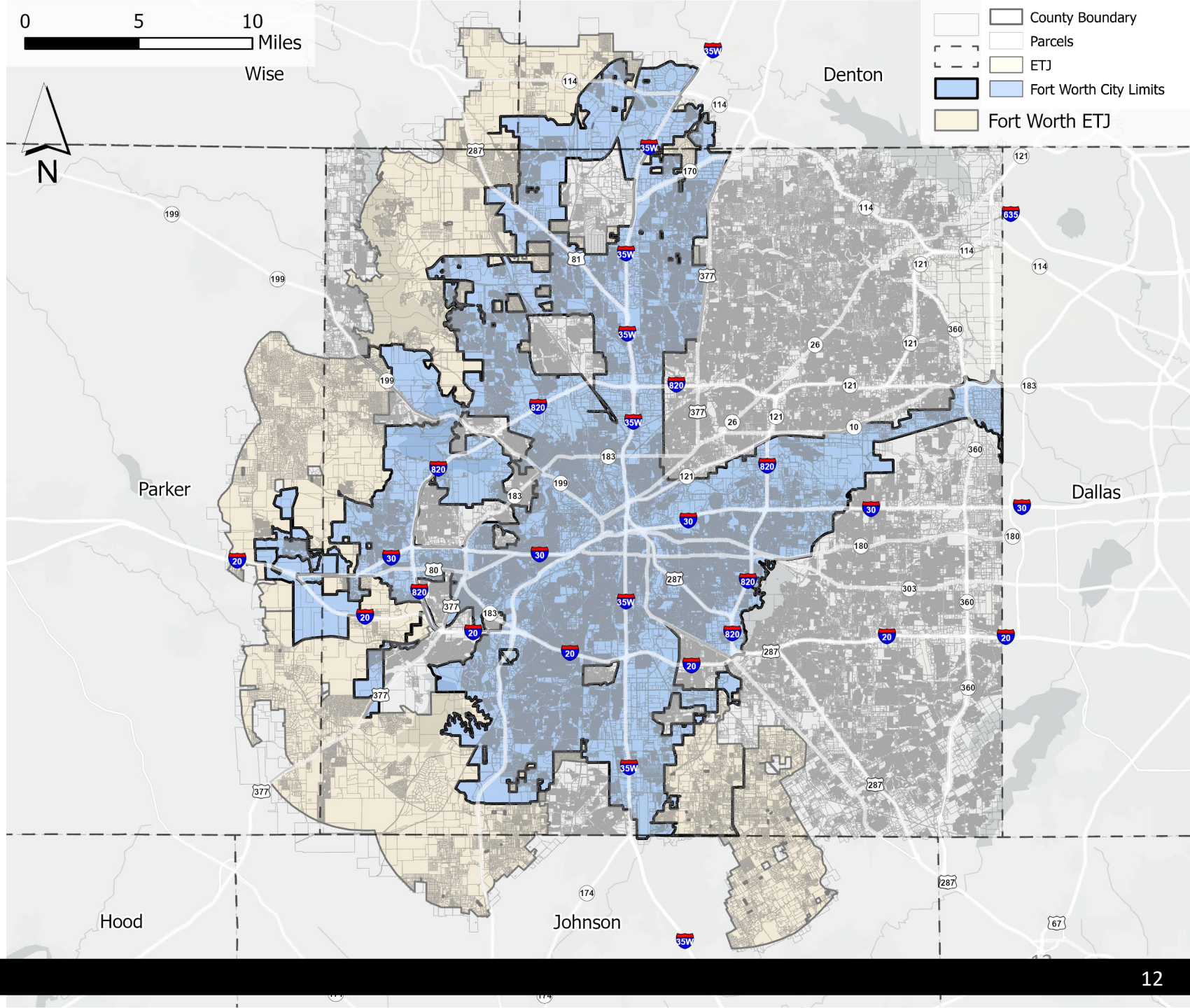
** City Limits Only*



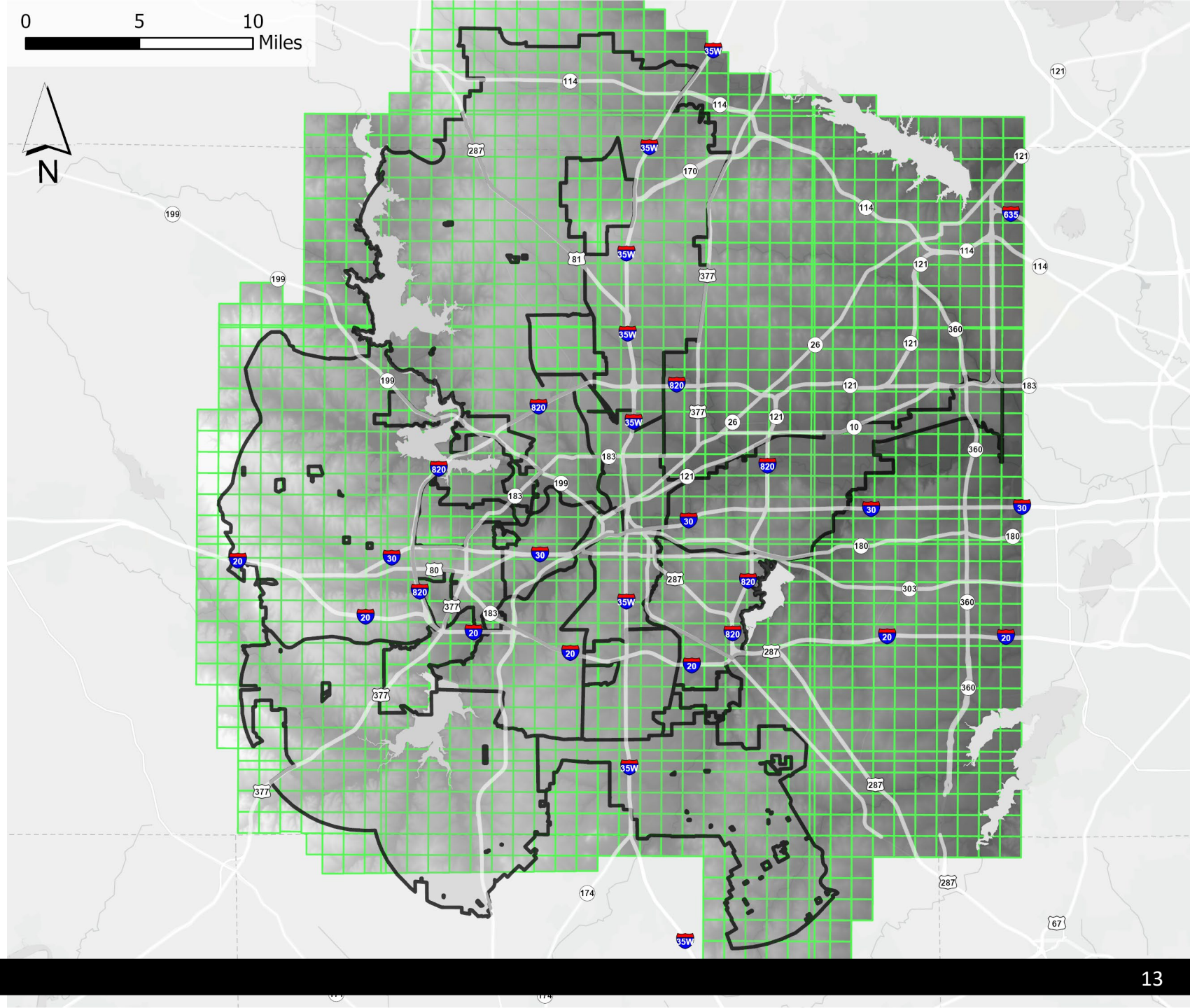
Land Parcel Data Needs

Chief Challenges:

- Area of Interest covers five counties
- Each county has unique data
- Meeting all business needs:
  - Address validation
  - Property value data accuracy
  - Land use coding
  - Speed
  - Proper spatial associations



Input Datasets Digital Elevation Model (DEM)



Vacant Land Workflow

Existing Land Use

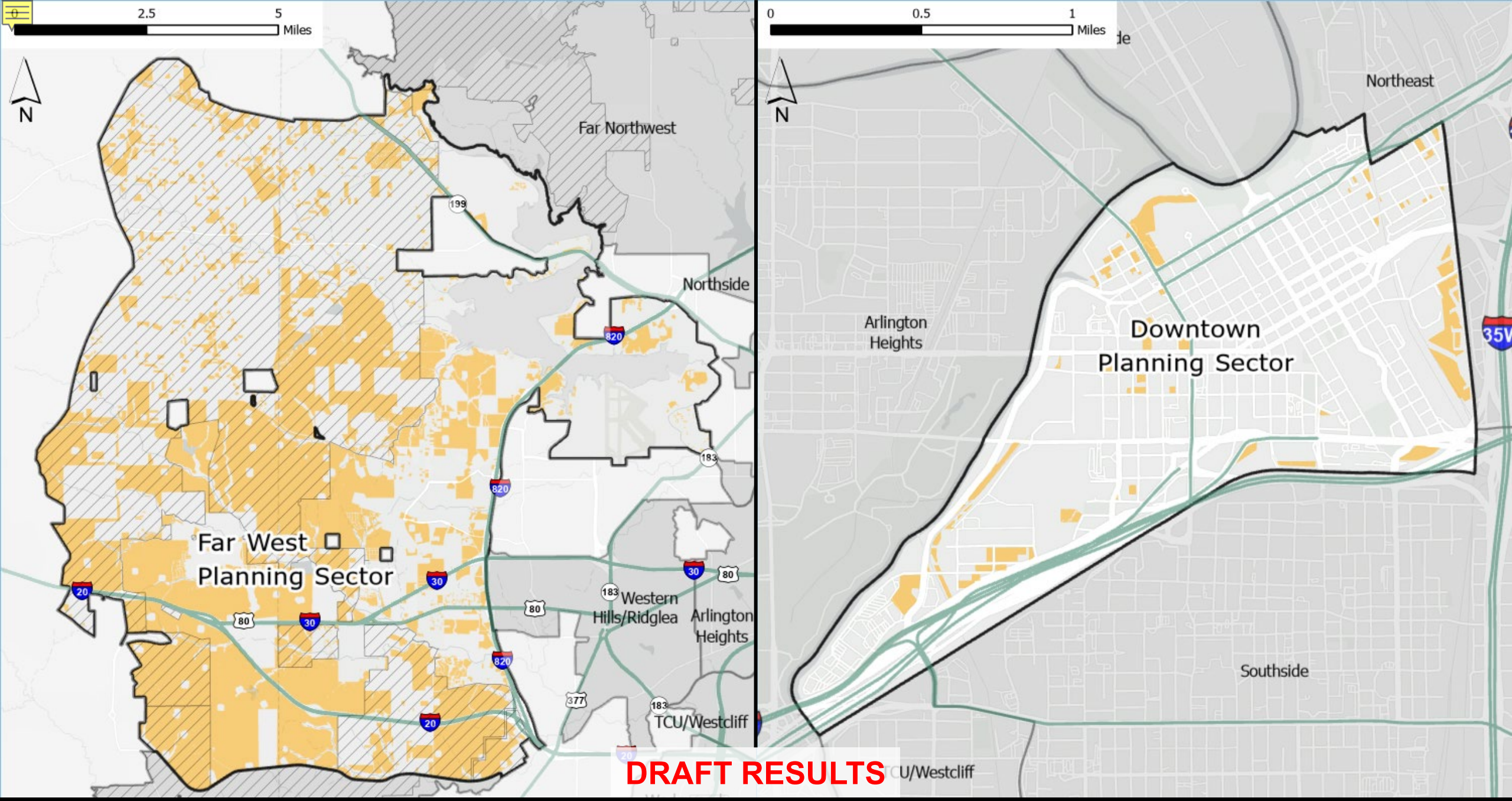
Vacant/Agricultural

FEMA Floodplain Data

Digital Elevation Model
Slopes ≥26%

Zoning District Data
Airport Overlay Districts

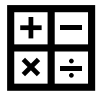
Constrained Vacant Land



Vacant Land with Constrained Land Removed

Parcel Utilization Workflow

Automation Pending



1. Calculate Building and Parcel Acreage

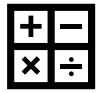
2. Spatial Join

3. Calculate Parcel ID

4. Python Code Sums Acreage Per Parcel ID

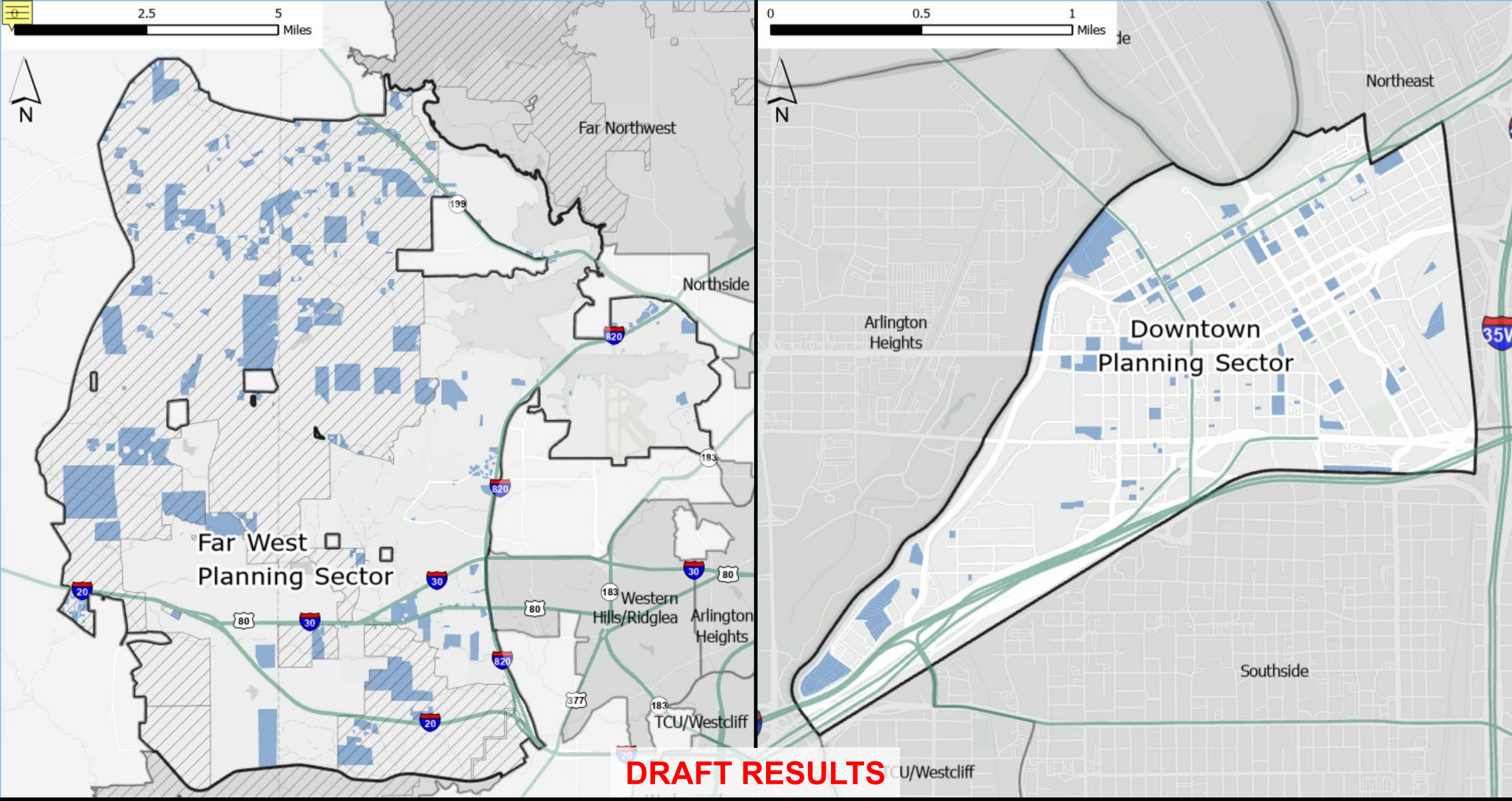
5. Python Code Exports CSV

6. Join CSV to Parcel Table



7. Calculate Building Acreage in Parcel Dataset

8. Calculate Parcel Utilization Ratio between Building Acreage & Parcel Acreage



DRAFT RESULTS

Parcel Utilization Ratio

GIS Workflow

Improvement Value / Land Value = >33%

Eligible Existing Land Use Categories

Existing Developments

Existing Land Use

Vacant/Agricultural

FEMA Floodplain Data

Digital Elevation Model
Slopes ≥26%

Zoning District Data
Airport Overlay Districts

≥

Remove Areas With

Utilities

Recent Building Permit Activity

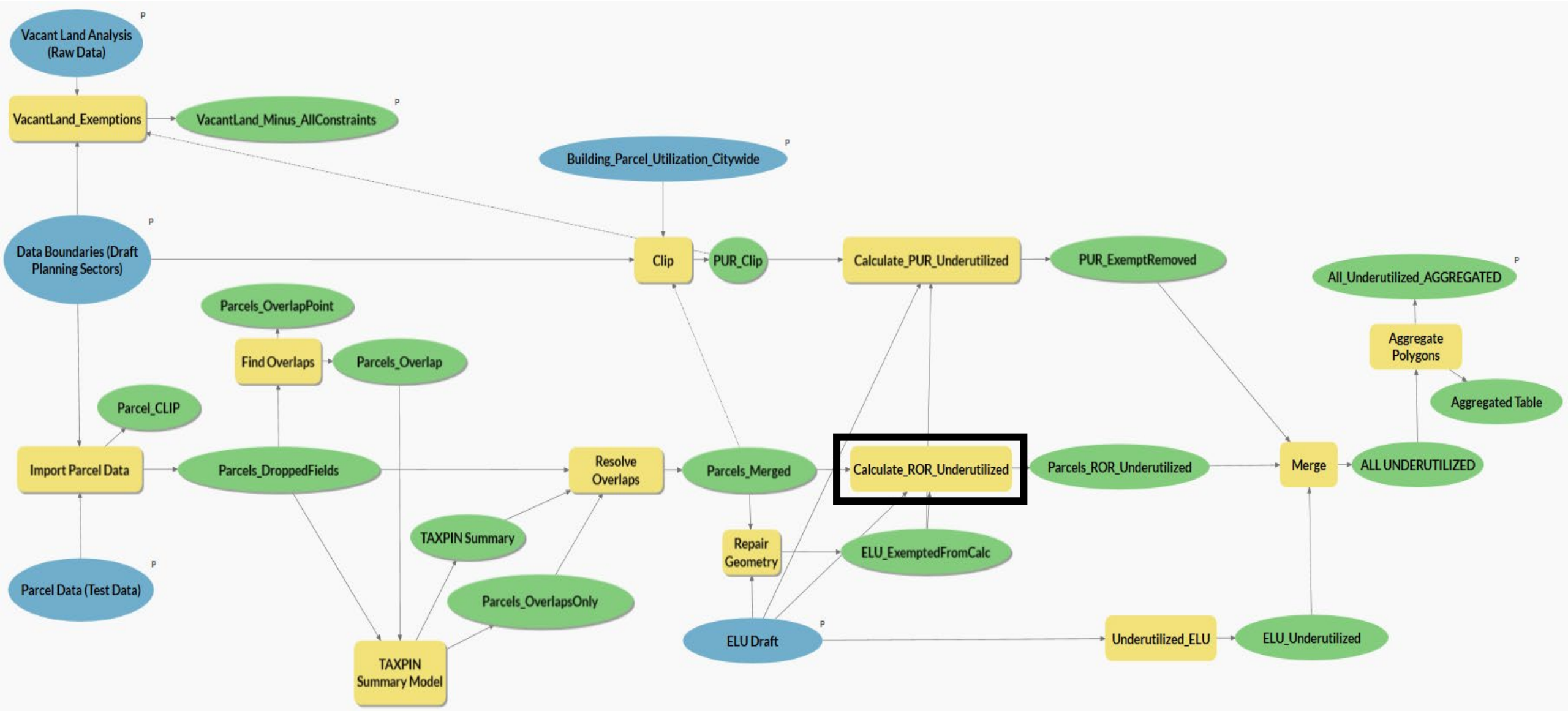
Institutional & Government Ownership

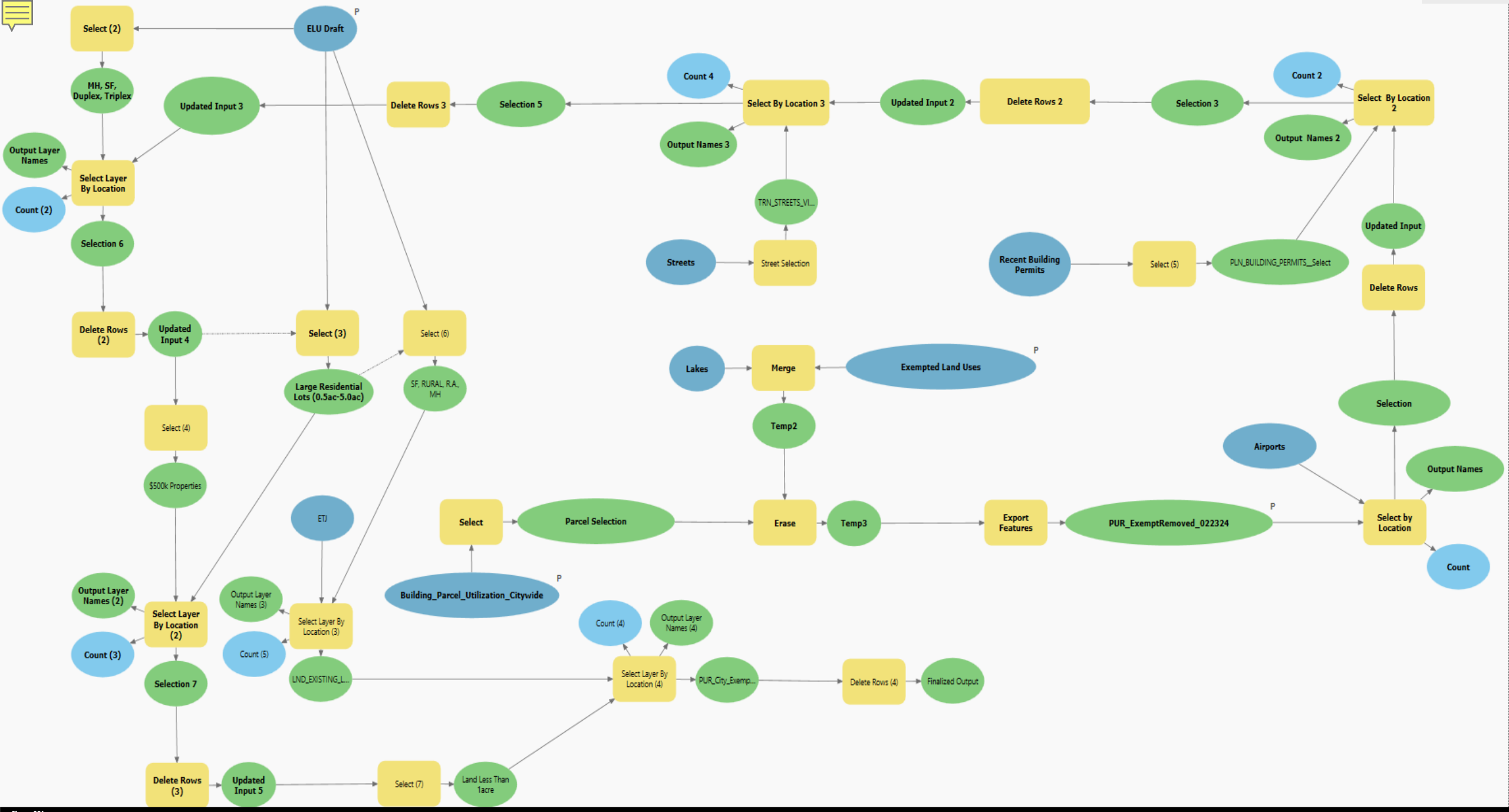
Railroads, Infrastructure, Airports

Regulatory Barriers

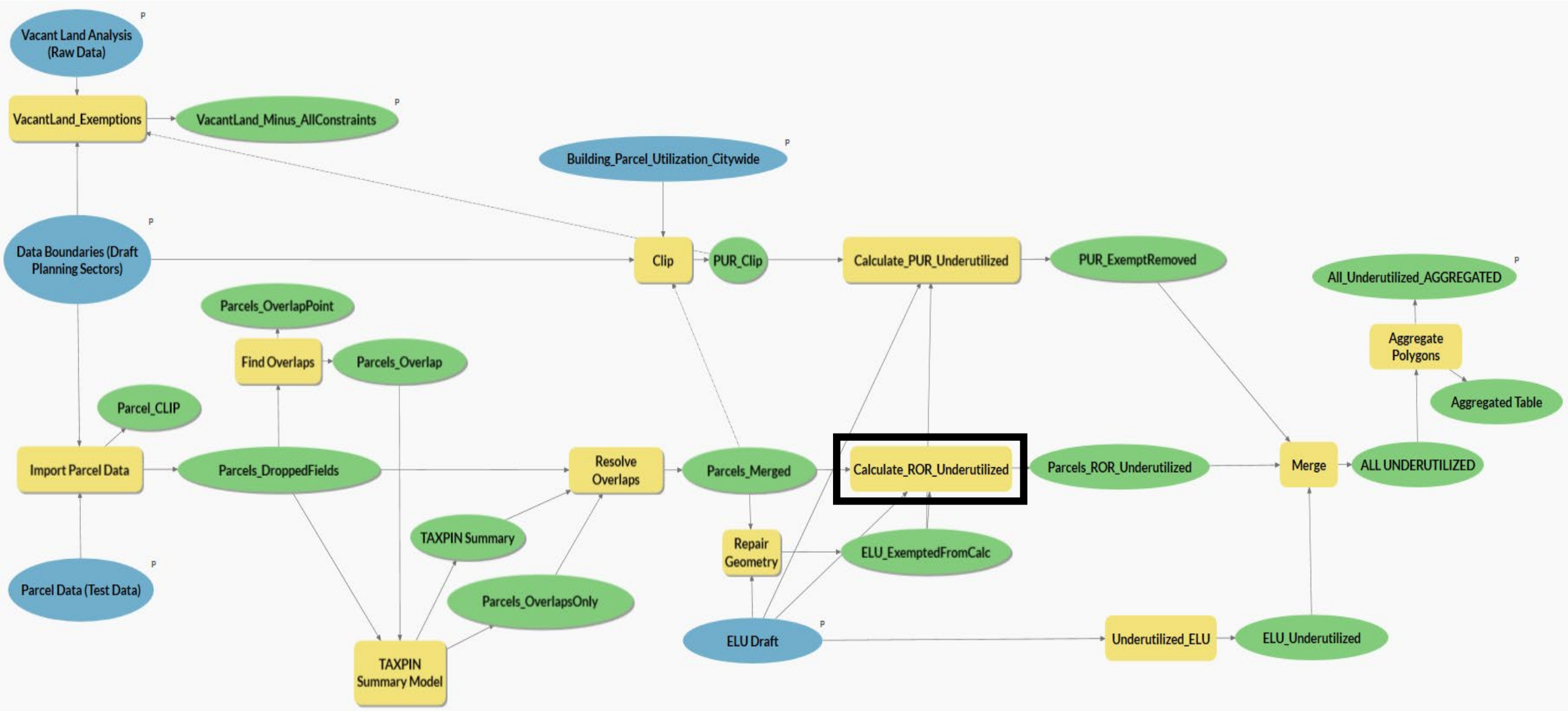
Net Developabl Land

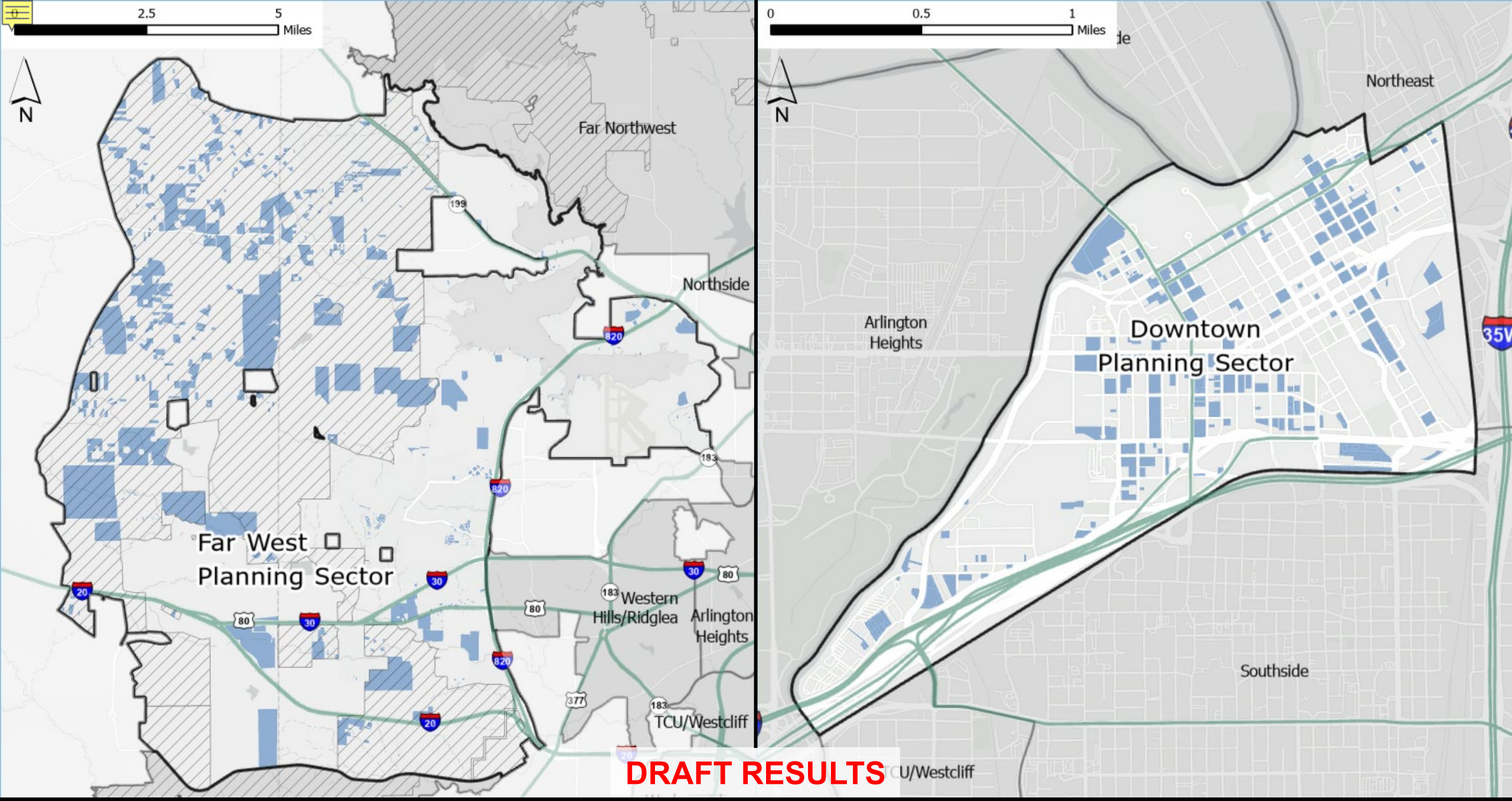
Model to Calculate Underutilized Land Uses




Select (2)
ELU Draft
MH, SF, Duplex, Triplex
Updated Input 3
Delete Rows 3
Selection 5
Count 4
Select By Location 3
Updated Input 2
Delete Rows 2
Selection 3
Count 2
Select By Location 2
Output Names 3
Output Names 2
Output Layer Names
Select Layer By Location
Count (2)
Selection 6
TRN_STREETS_VI...
Streets
Street Selection
Recent Building Permits
Select (5)
PLN_BUILDING_PERMITS_Select
Updated Input
Delete Rows
Delete Rows (2)
Updated Input 4
Select (3)
Select (6)
Large Residential Lots (0.5ac-5.0ac)
SF, RURAL, R.A., MH
Lakes
Merge
Exempted Land Uses
Temp2
Selection
Select (4)
$500k Properties
Airports
Output Names
ETJ
Select
Parcel Selection
Erase
Temp3
Export Features
PUR_ExemptRemoved_022324
Select by Location
Count
Output Layer Names (2)
Select Layer By Location (2)
Count (3)
Selection 7
Output Layer Names (3)
Select Layer By Location (3)
Count (5)
LND_EXISTING_L...
Building_Parcel_Utilization_Citywide
Count (4)
Output Layer Names (4)
Select Layer By Location (4)
PUR_City_Exemp...
Delete Rows (4)
Finalized Output
Delete Rows (3)
Updated Input 5
Select (7)
Land Less Than 1acre

Model to Calculate Underutilized Land Uses





Redevelopment Opportunity Ratio

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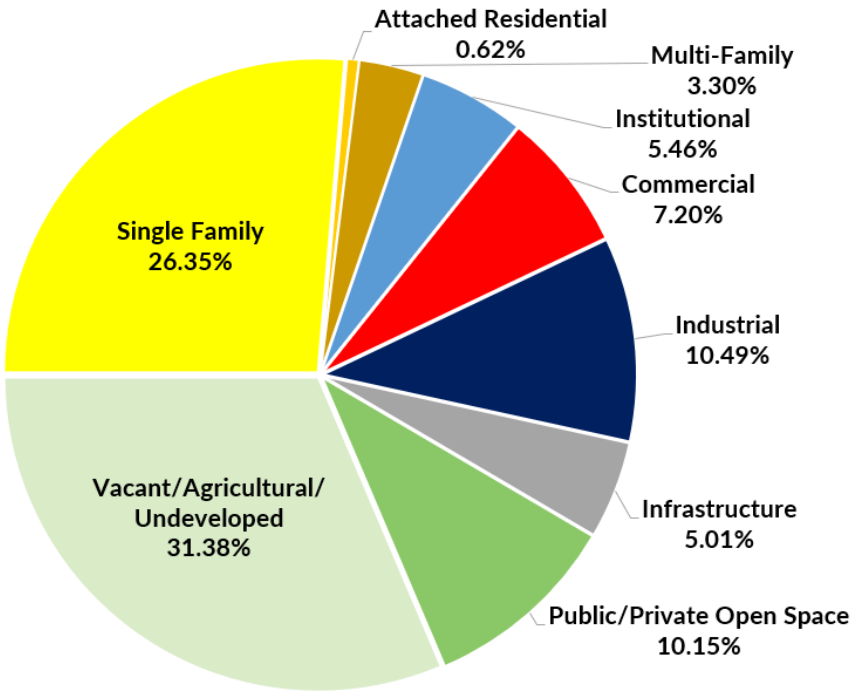

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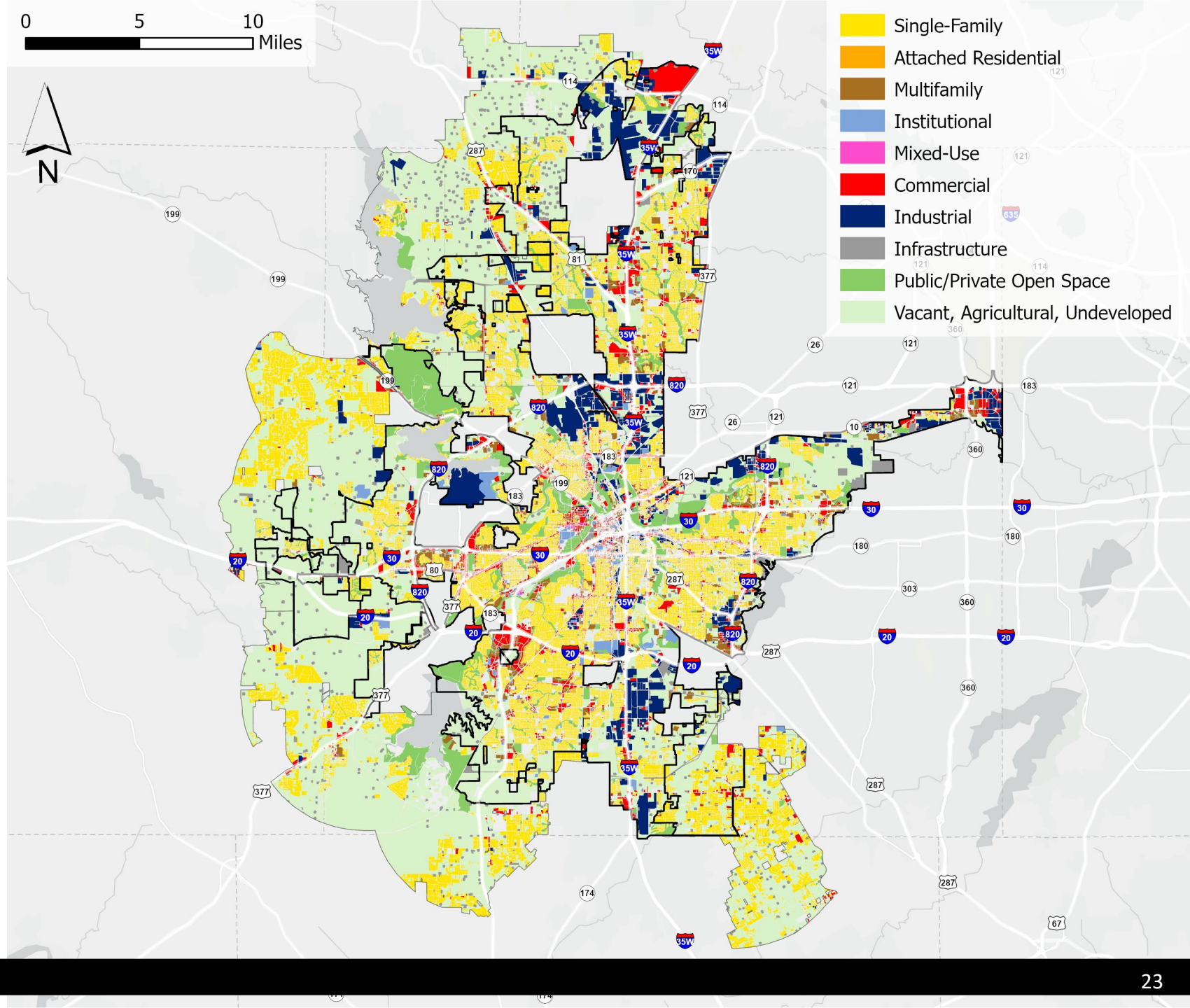

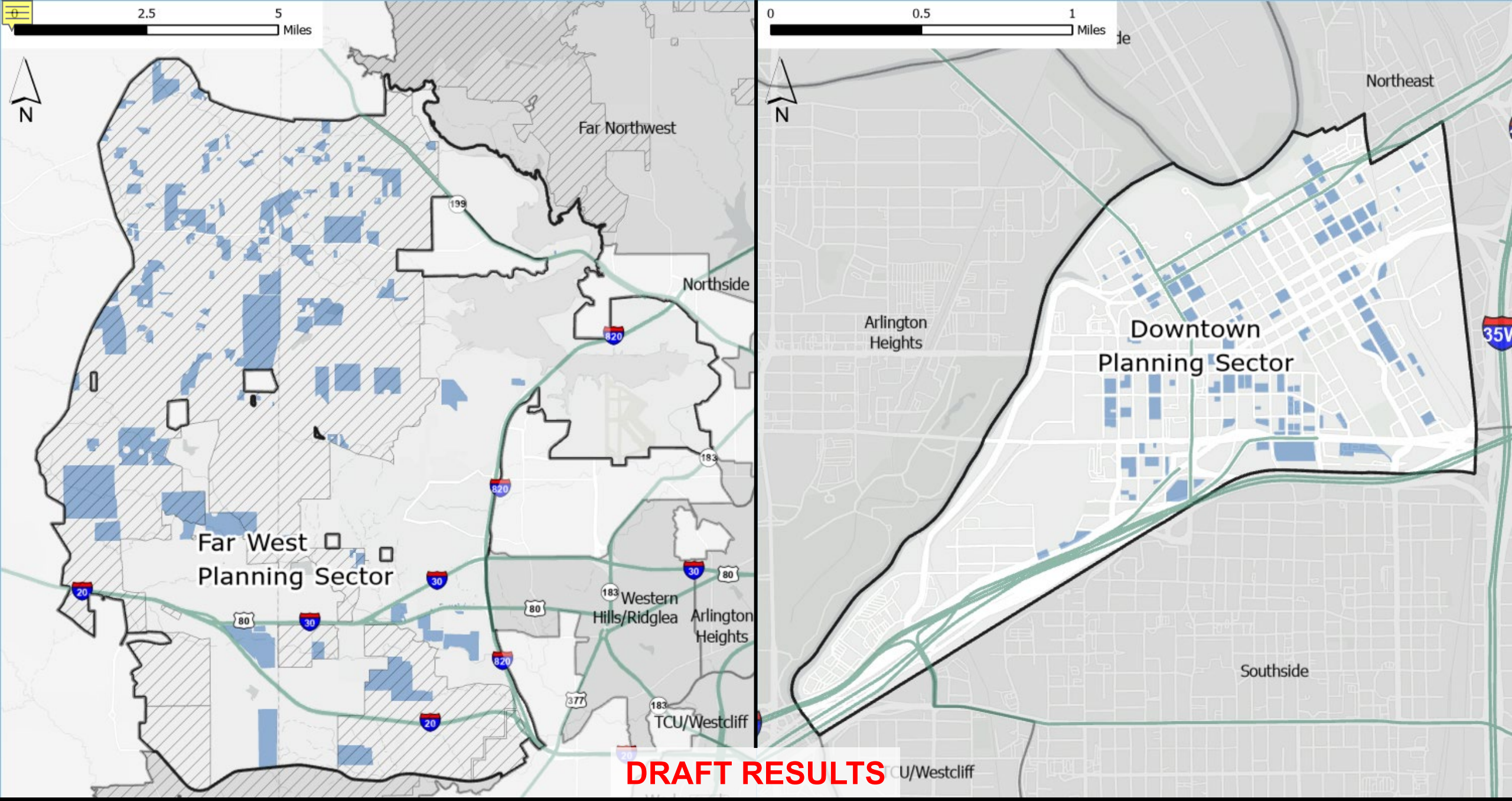

Existing Land Use Designations

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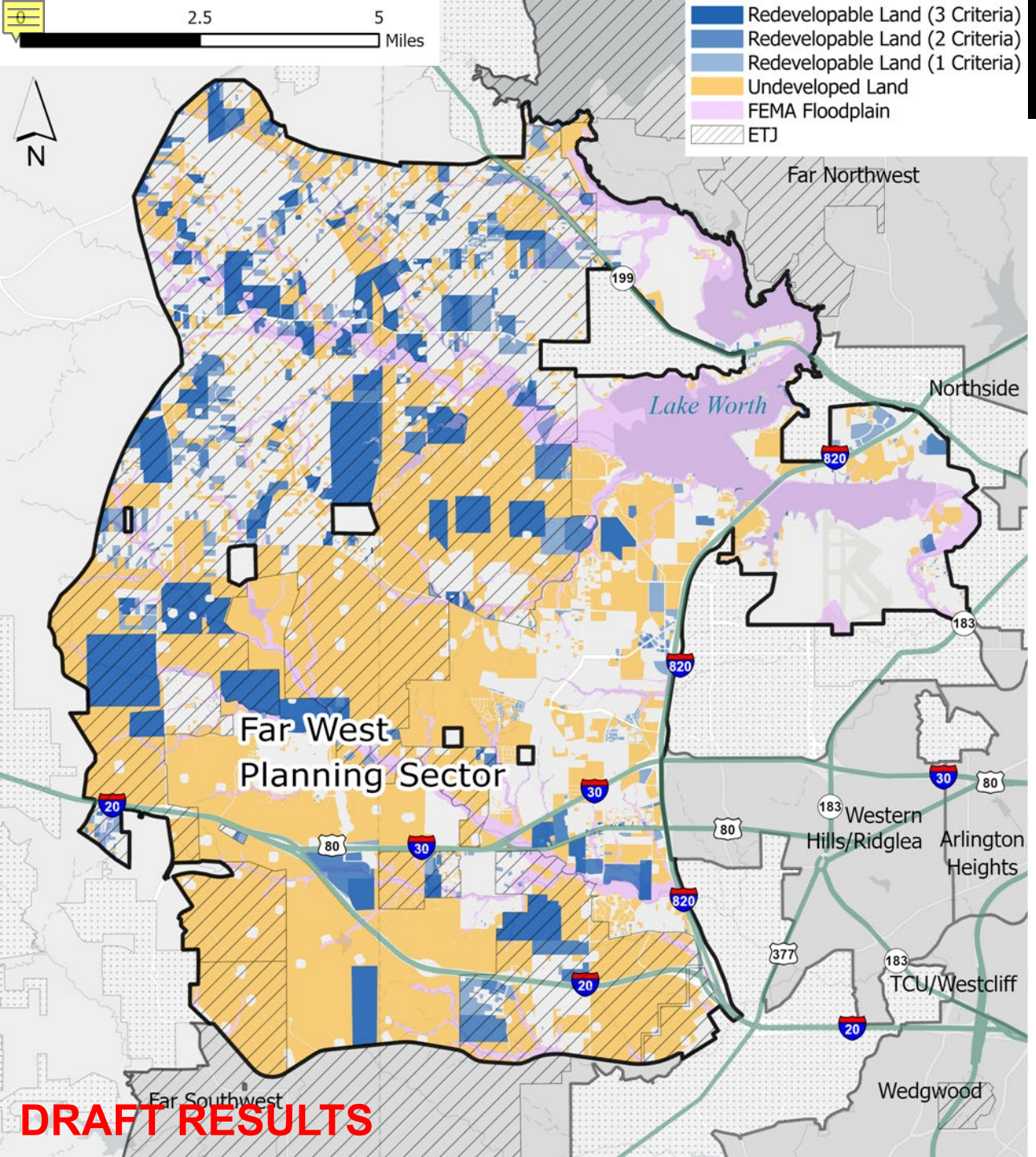

DRAFT RESULTS

Far West Planning Sector		
Category	**Acreage**	**Percent**
Total Land Area	65,911.10	100%
Gas Wells	-1,284.45	-1.95%
Utilized Land	-24,820.10	-37.66%
Constrained Vacant Land	-3,120.10	-4.73%
Infrastructure Set-Aside*	-6,528.31	-9.90%
Redevelopable Land	+10,573.23	+16.04%
Developable Vacant Land	+19,584.92	+29.71%
Net Developable Land	**30,158.15**	**45.76%**

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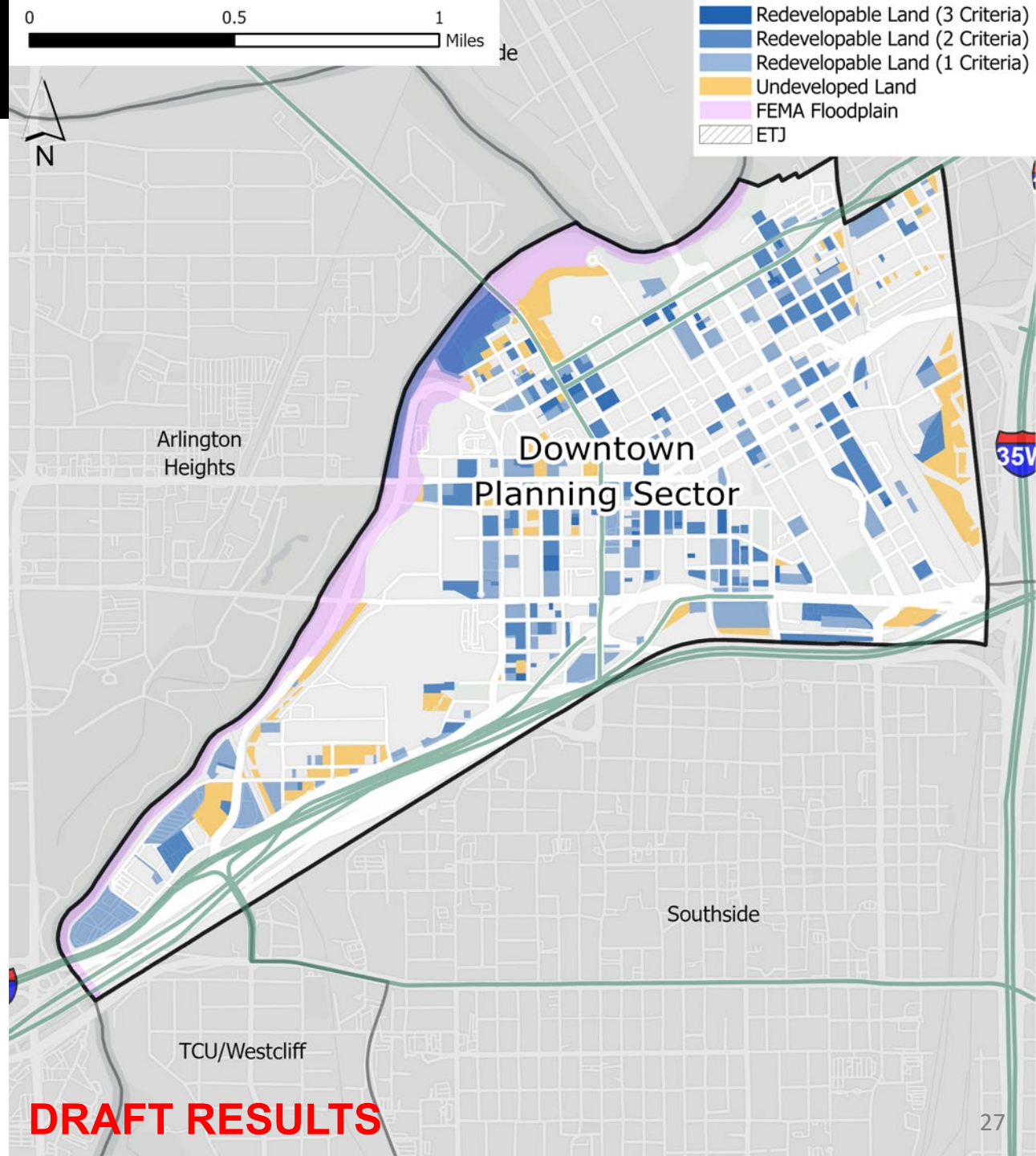
Land Suitable for Re-Development or New Development

Downtown Planning Sector		
Category	**Acreage**	**Percent**
Total Land Area	1,245.30	100%
Gas Wells	-7.66	-0.61%
Utilized Land	-977.13	-78.47%
Constrained Vacant Land	-8.29	-0.67%
Infrastructure Set-Asides	N/A	N/A
Redevelopable Land	+192.85	+15.49%
Developable Vacant Land	+59.37	+4.77%
Net Developable Land	**252.23**	**20.25%**



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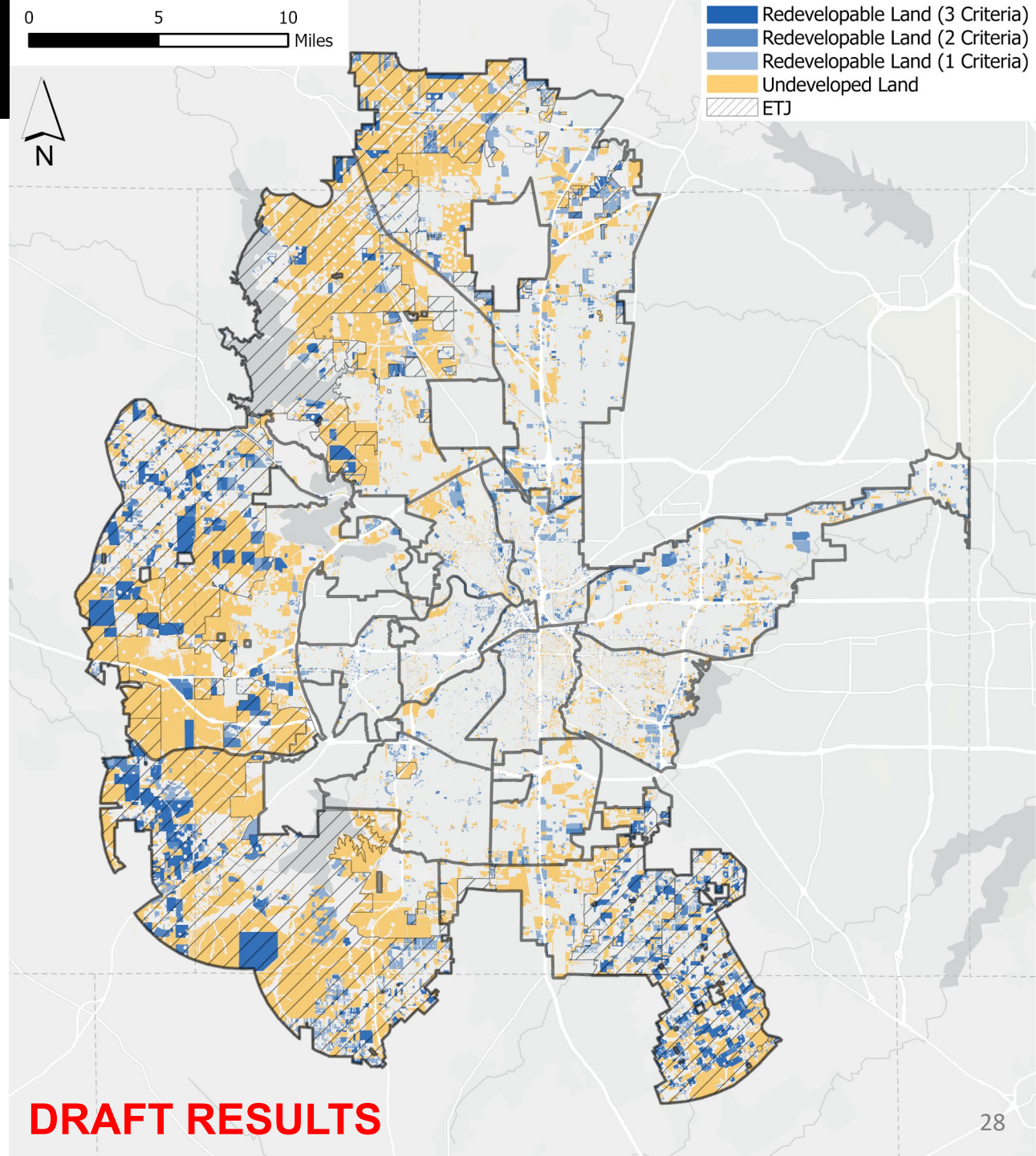

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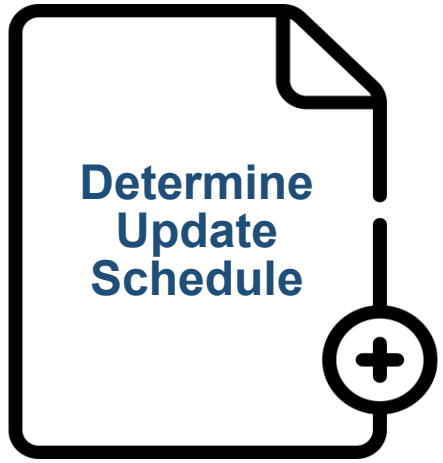
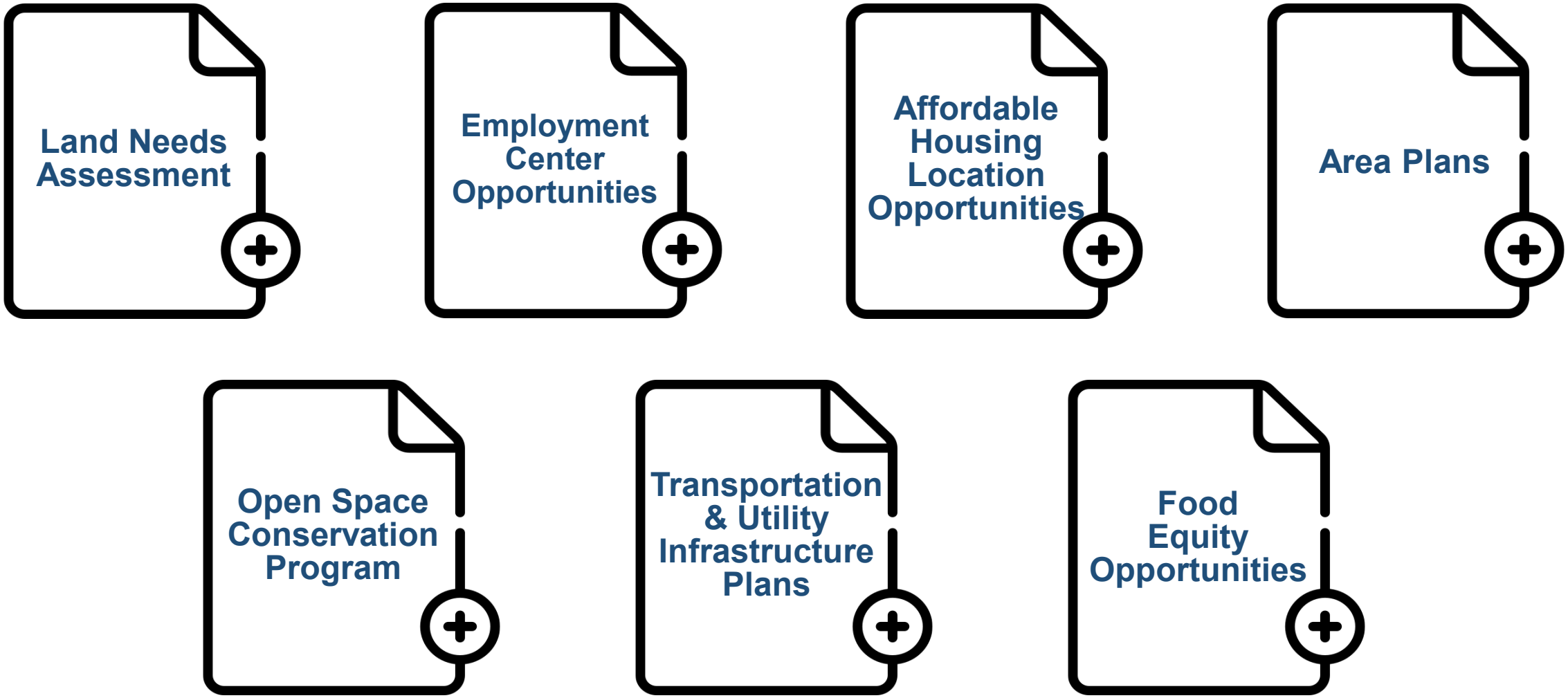
Next Steps - GIS



Application of BLI



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Thank You

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