SMALL AREA POPULATION PROJECTION WITH ARC TAZ-DISAGGREGATOR

Presented By: Stephen Bourne, PE, AtkinsRéalis
Stephen.bourne@atkinsrealis.com

Contact: Wei Wang, Socioeconomic Forecasting Group Manager at Atlanta Regional Commission
wwang@atlantaregional.org

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welcome

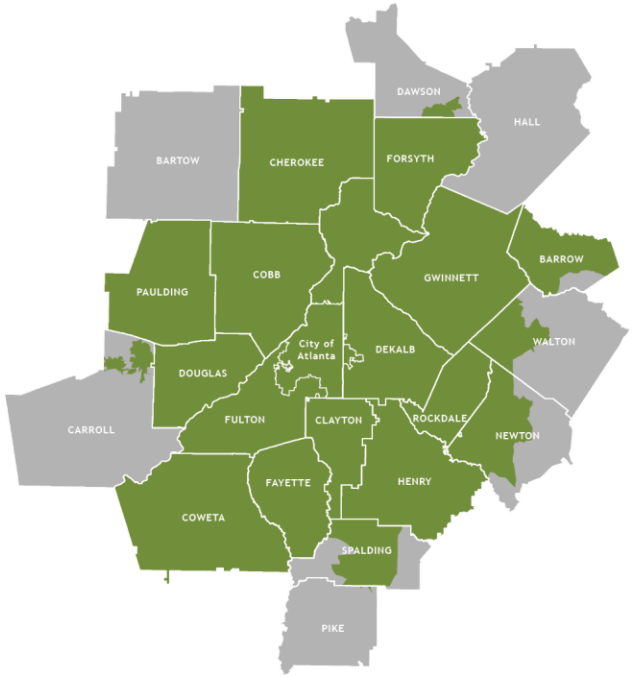
Overview

1. Population Projection at ARC
2. TAZ-Disaggregator
3. Tool workflow
4. The future

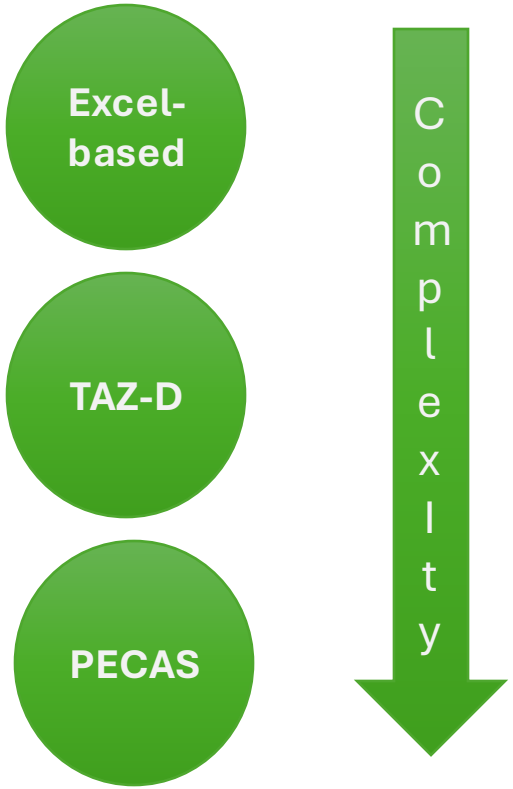
Small Area Population Projection in the Atlanta Region

The need

Where and when will population and jobs grow in the Atlanta Region over the next 30 years?



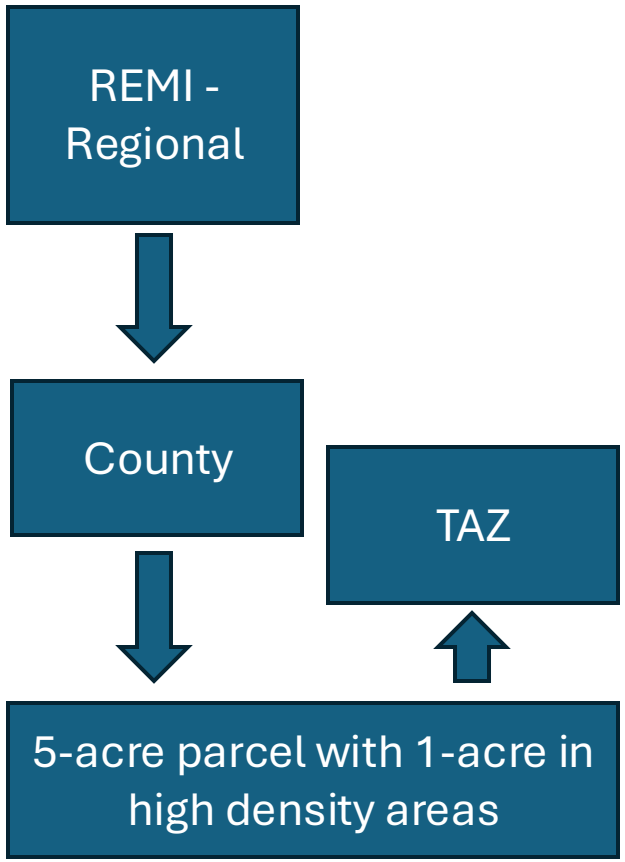
ARC Solutions



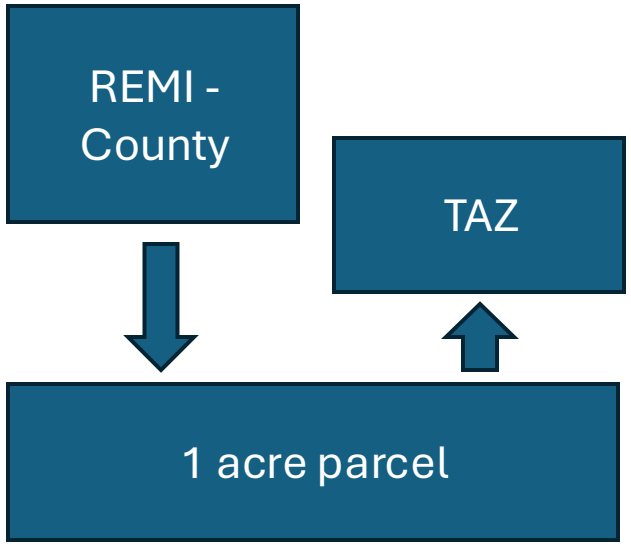
TAZ DISAGGREGATOR

- Disaggregates Regional Population and Employment Forecast to Traffic Analysis Zone (TAZ) Scale.
- 2020 - 2050 time horizon, annual time step.
- Downscale-then-upscale approach
- Uses Map-based factors like proximity to roads to govern where projected growth occurs.
- Calibrate with historical landuse change patterns.

First Versions

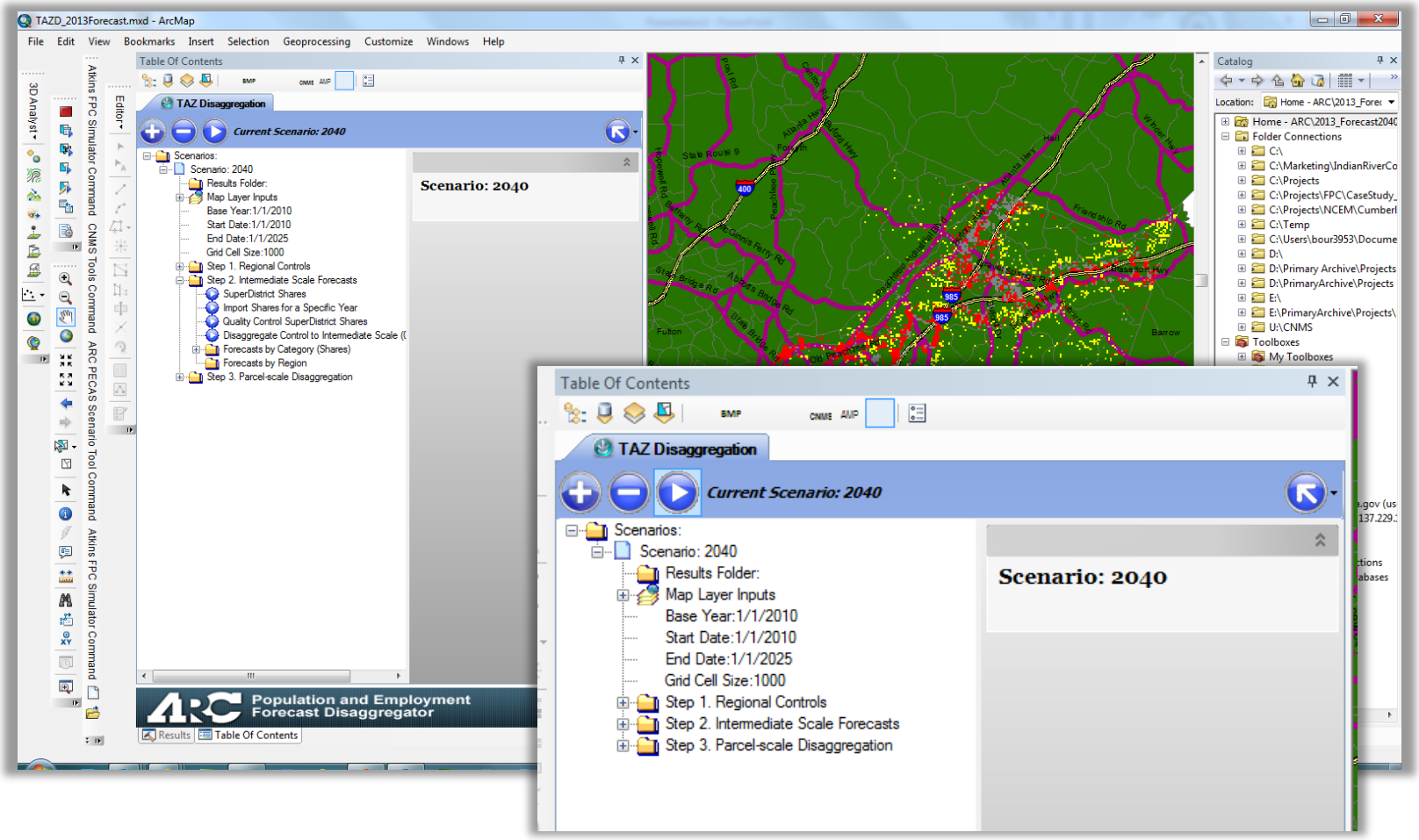


Current Version



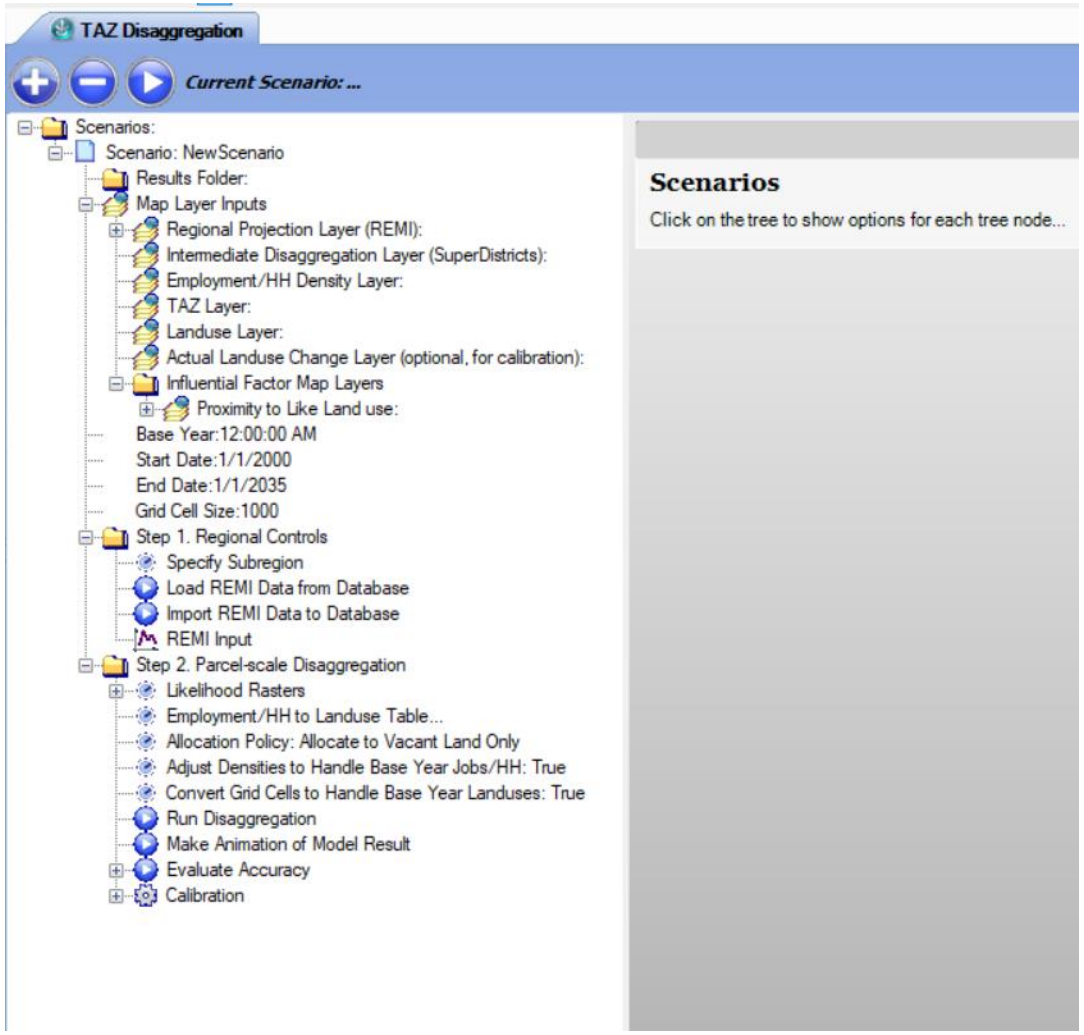
DOWNSCALE-THEN-UPSCALE

The TAZ-D Tool



- GIS-based
- Esri ArcMap Extension
- Plugs into ArcMap as a Table of Contents View
- Inputs are map layers and geodatabases
- User can create scenarios to try different forecasting schemes.
- Results are Map Layers, geodatabase tables, and Excel-based output formatted to plug into ARC Transport Modeling Process.

Workflow

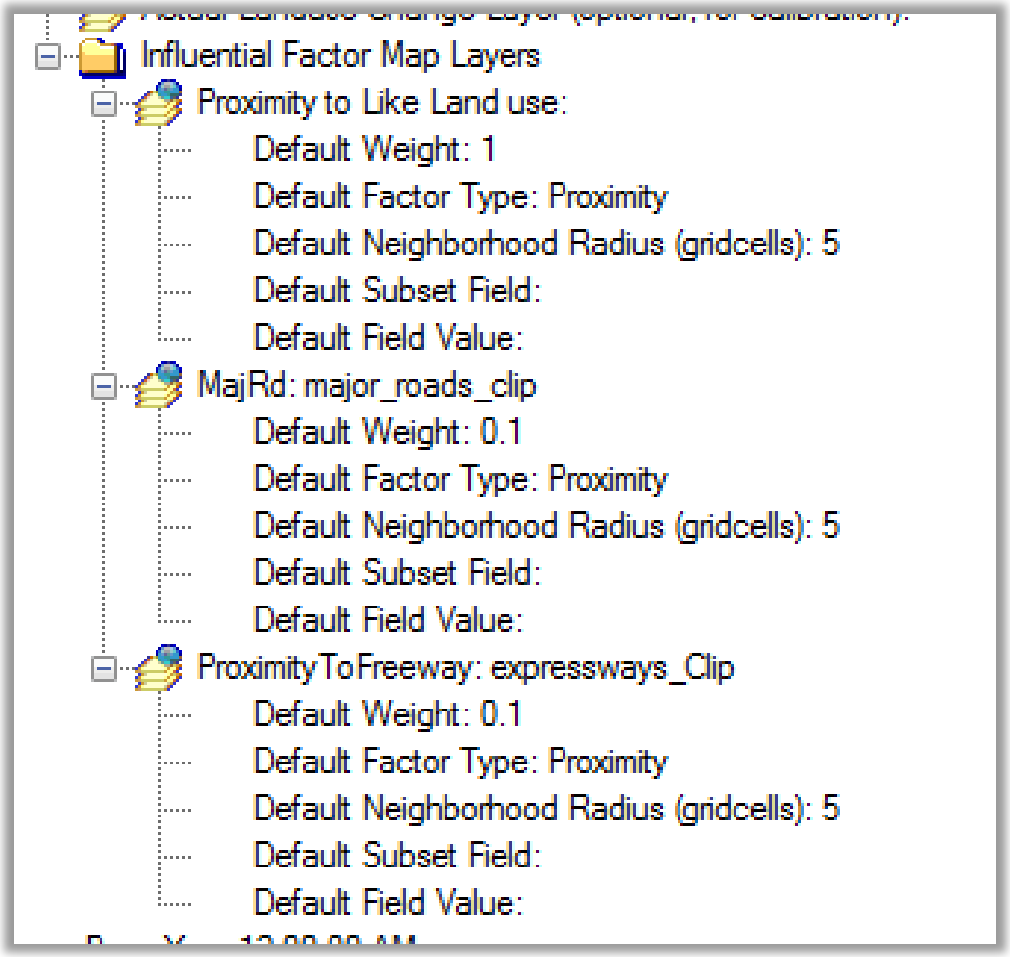


Create Scenario

Step 0: Specify Map Inputs

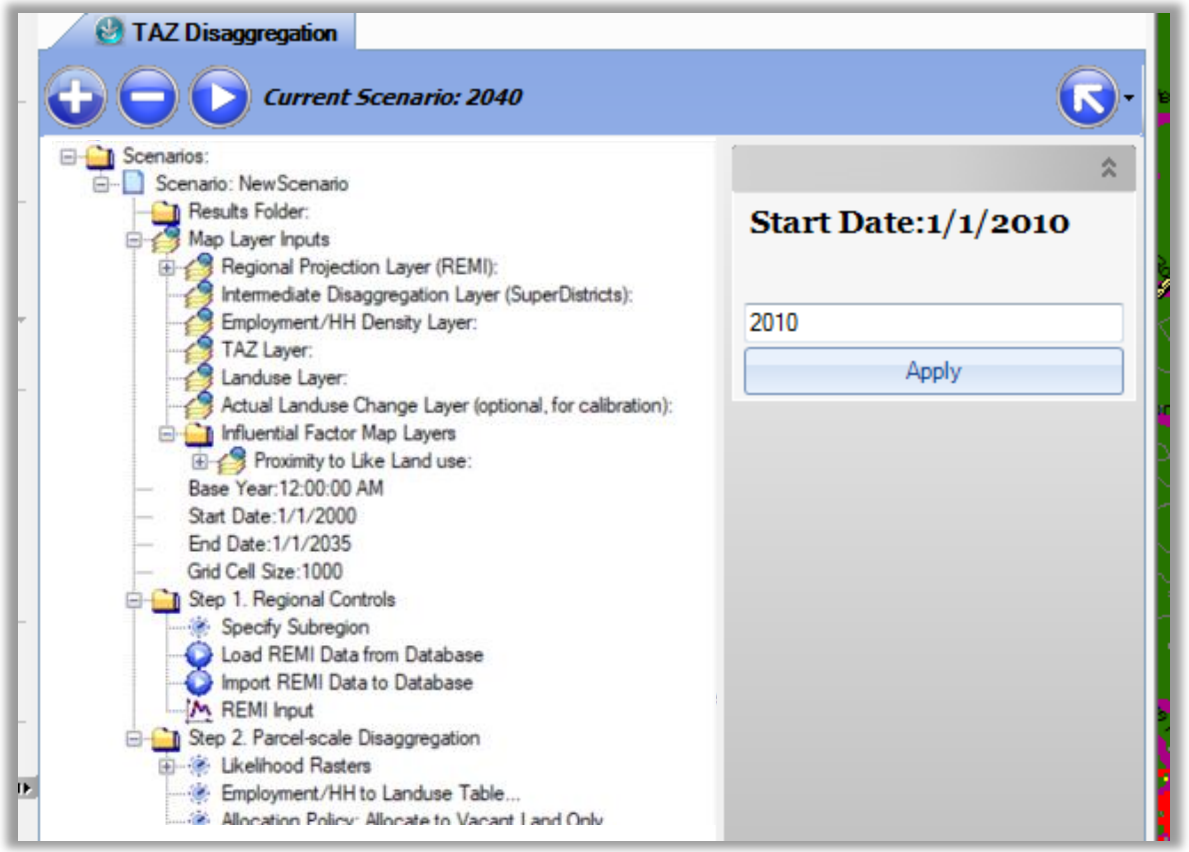
- Regional Projection Layer
- ~~Intermediate Disaggregation Layer (SuperDistricts)~~
- Employment/HH Density Layer
- TAZ Layer
- Landuse Layer
- Actual Landuse Layer (for calibration)

Workflow - continued



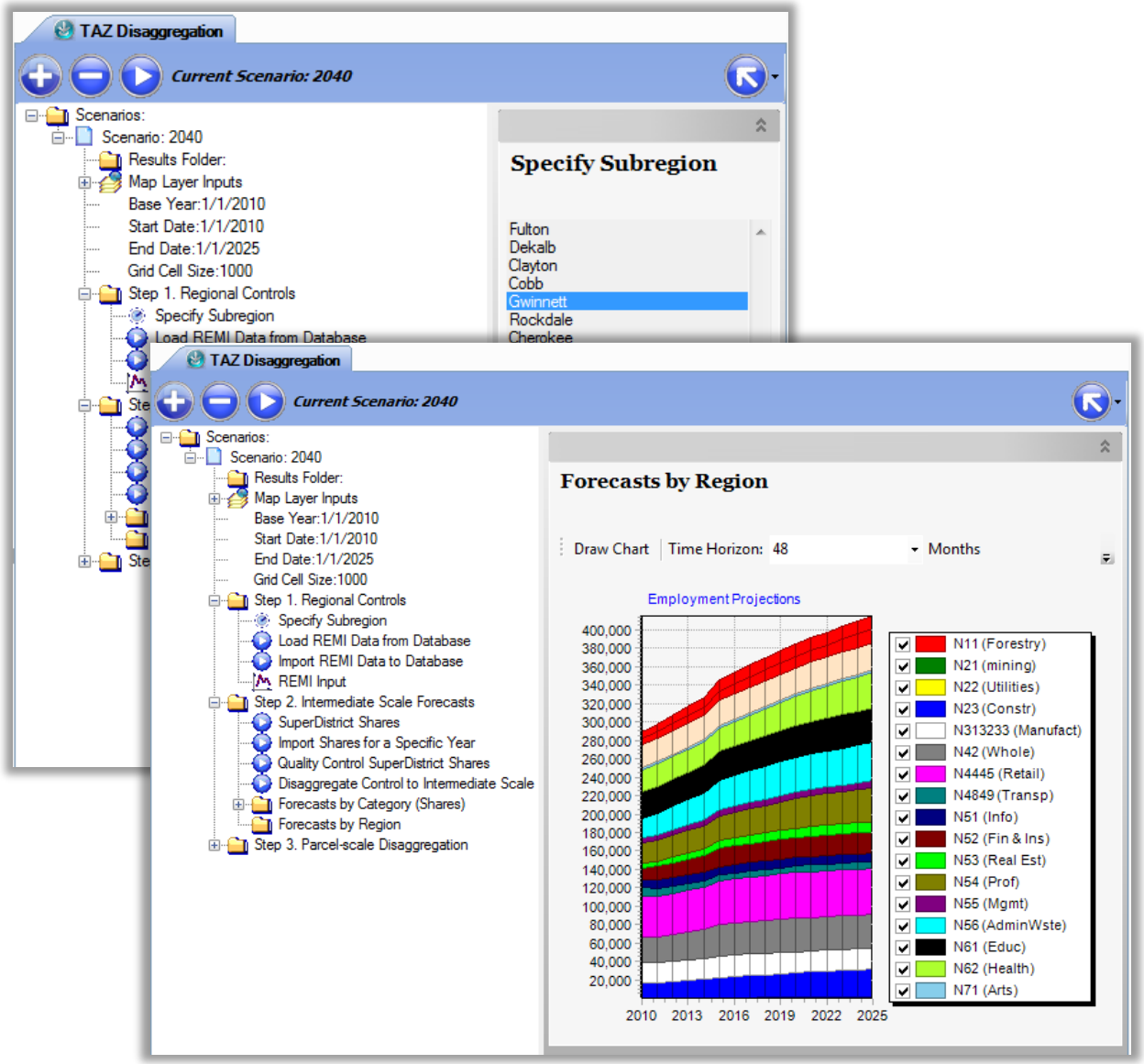
- Setting Influential Map Layers
- Layers that govern where new growth is allocated.
- Weight governs how important the factor is relative to other factors.
- Type can be either proximity or neighborhood density

Workflow - continued



- Setting the Forecast Time Horizon
- Requires
  - Base Year - year that the current landuse and densities apply to
  - Start year – start year of the forecast simulation (most often the same as the base year)
  - End Year – end year of the forecast simulation.
- Set by clicking on the item in the tree and then entering a 4-digit year.

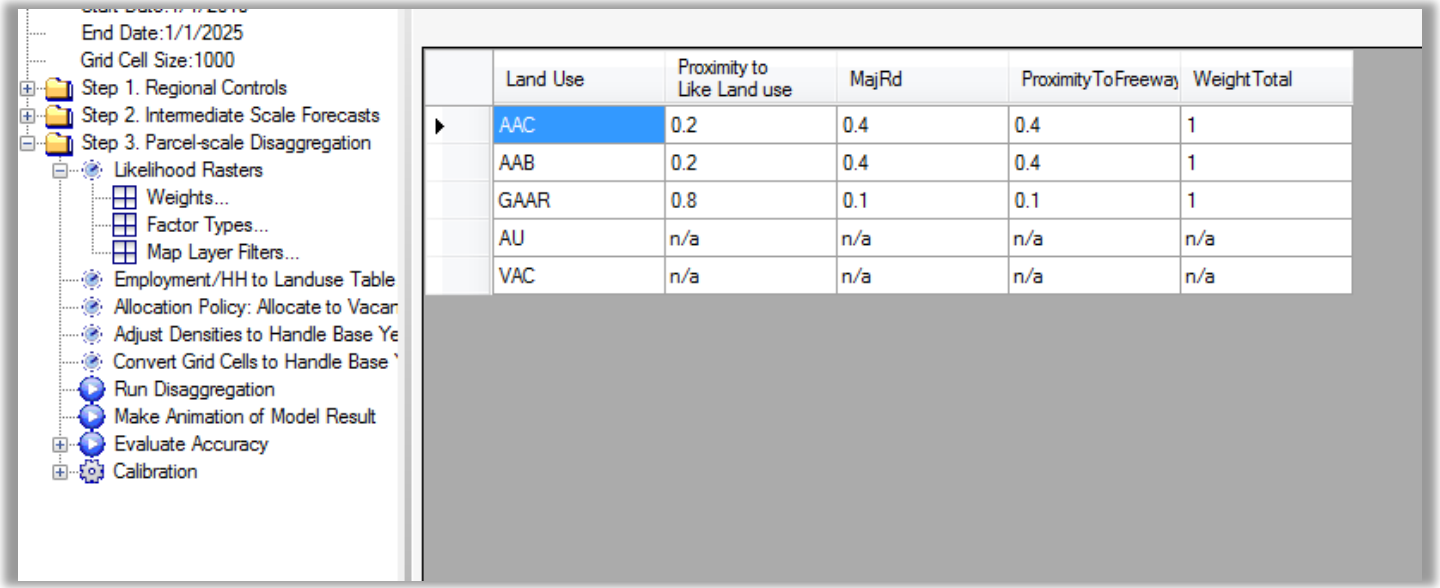
Workflow - continued



Step 1: Regional Controls

- County-level REMI models
- Includes:
  - Population by age cohort
  - Employment by NAICs categories
- To run, click the specify subregion item in the tree and pick the county you want to run.
- Then click the Load REMI Data from Database item in tree and click Load REMI Data. The chart of the forecast will appear.

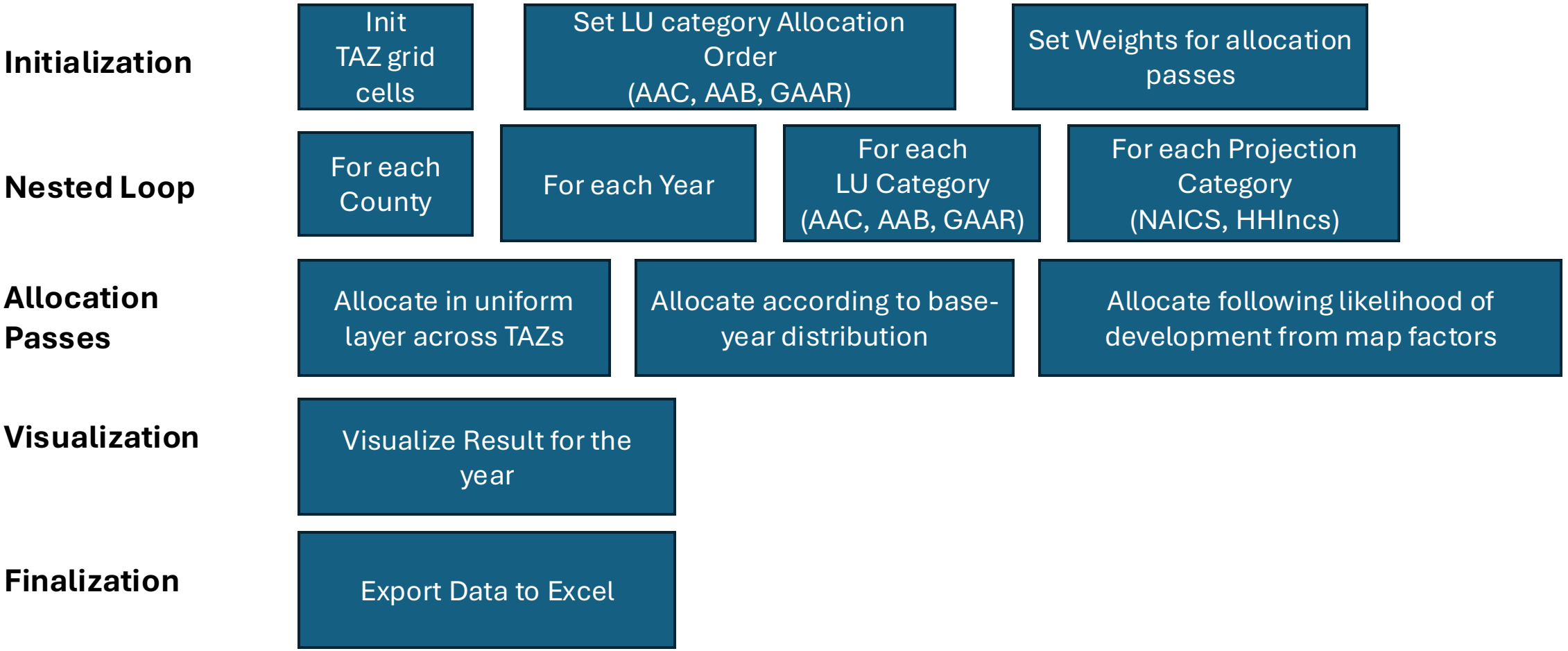
Workflow - continued



Land Use	Proximity to Like Land use	MajRd	ProximityToFreeway	WeightTotal
AAC	0.2	0.4	0.4	1
AAB	0.2	0.4	0.4	1
GAAR	0.8	0.1	0.1	1
AU	n/a	n/a	n/a	n/a
VAC	n/a	n/a	n/a	n/a

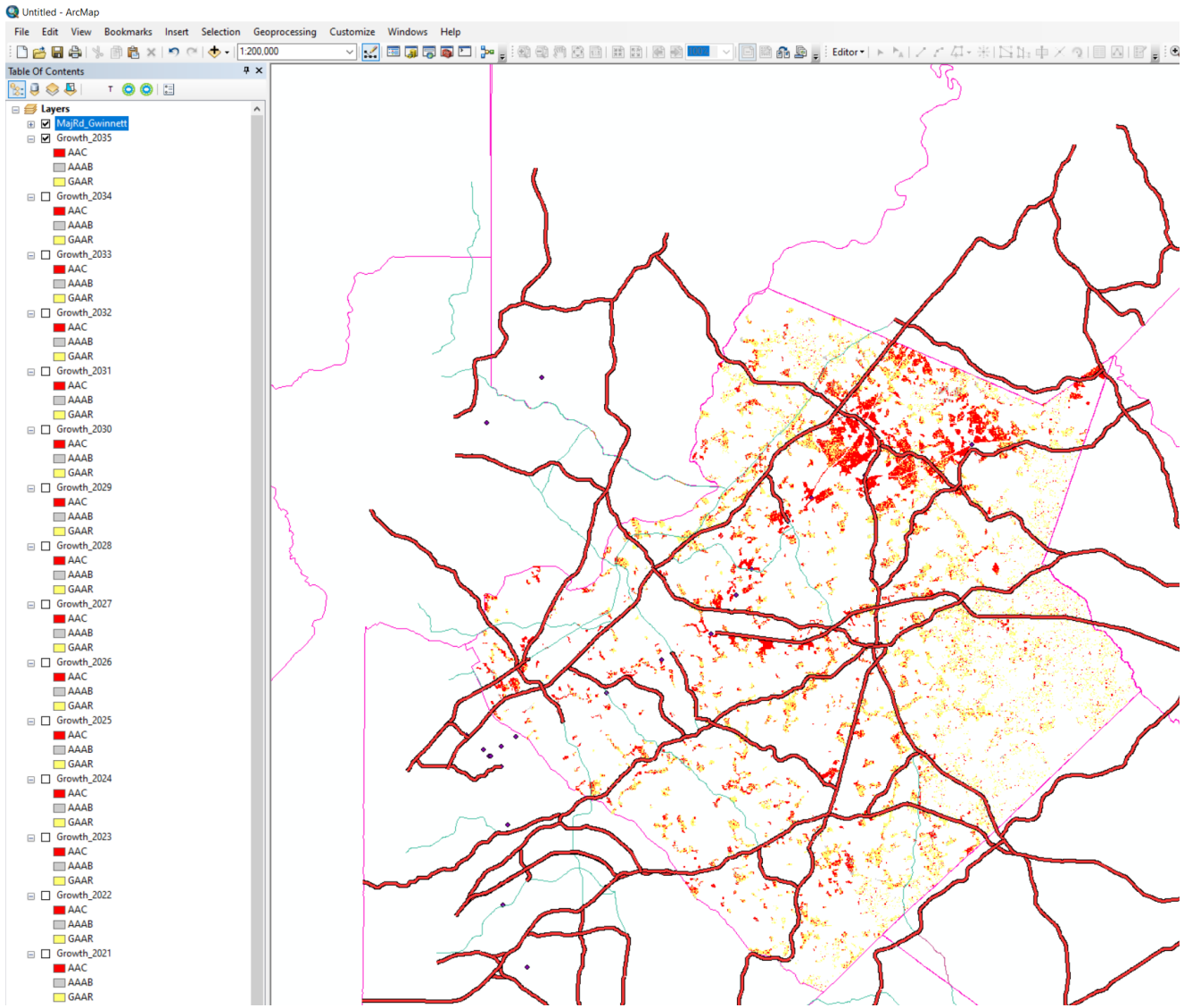
Step 2: Parcel Scale Disaggregation

- Disaggregates to parcel scale.
- It applies the main algorithm, which evaluates likelihood of development to allocated growth to new parcels.
- To set weights, click the likelihood rasters item in the tree. Then click weights to set the weights for each map layer for AAC (commercial), AAB (basic), and GAAR (residential).
- Note that the map layers are added in the Map Inputs section of the tree.
- You can also set the factor types (either proximity or neighborhood density).



PRIMARY TAZ-D ALGORITHM

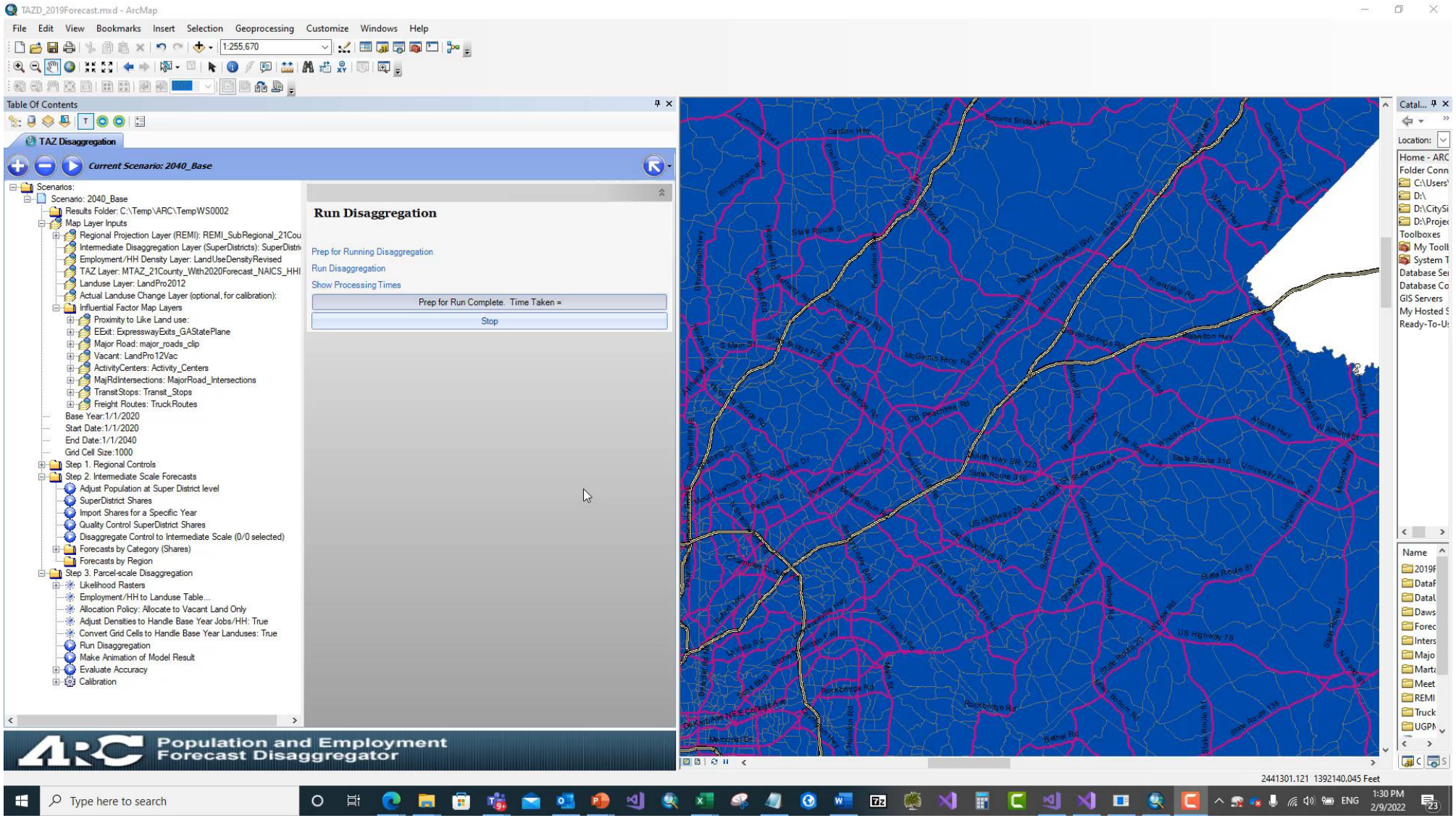
Workflow - continued



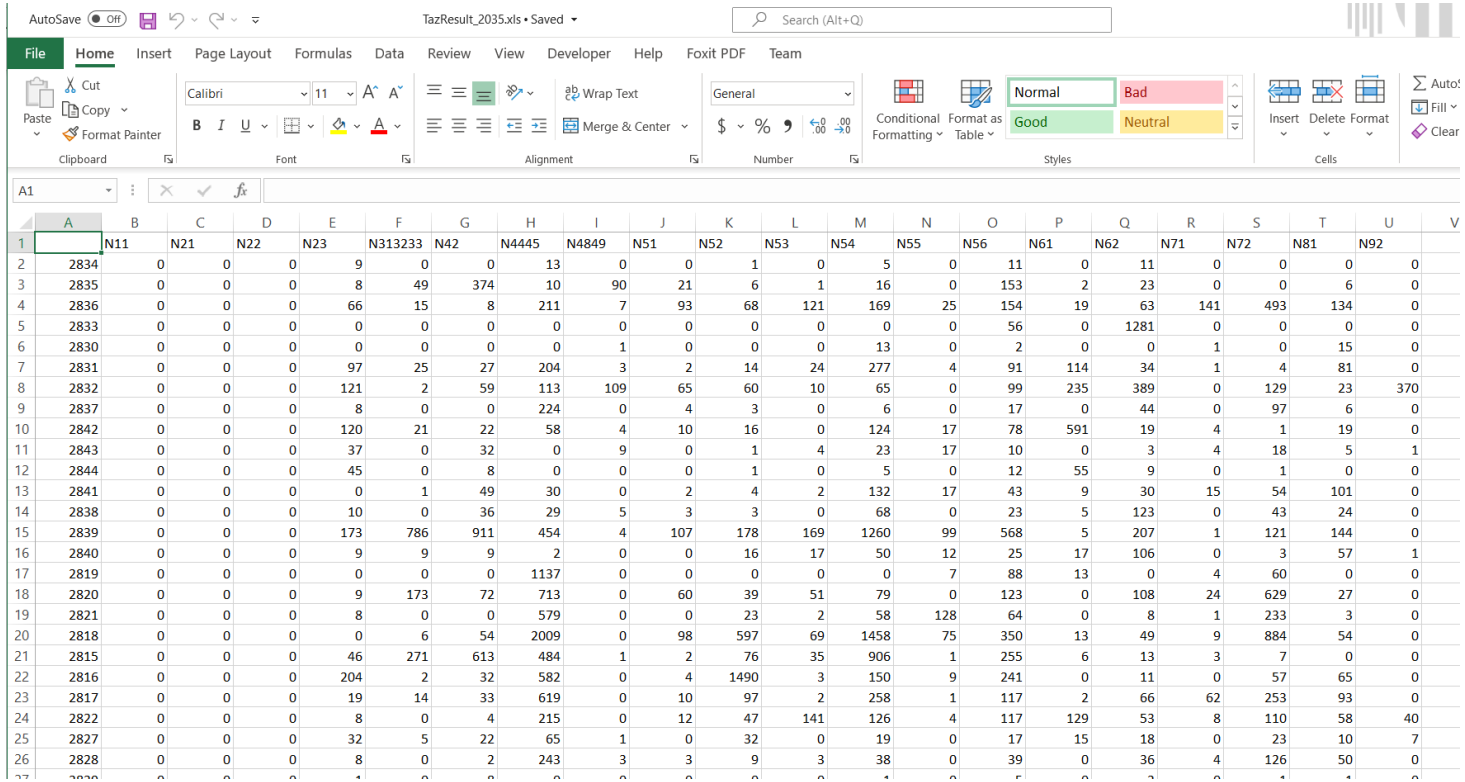
Step 3: Parcel Scale Disaggregation

- To run the algorithm, click the Run Disaggregation item in the tree and click Run Disaggregation.
- Generates growth raster per year and adds to map
- LU types in each raster
- Animations can be created to show growth over time.
- Final result is excel based sheet that is created and opened in Excel automatically. Designed to plug into ARC travel demand model.

Workflow - continued



Workflow - continued



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1		N11	N21	N22	N23	N313233	N42	N4445	N4849	N51	N52	N53	N54	N55	N56	N61	N62	N71	N72	N81	N92
2	2834	0	0	0	9	0	0	13	0	0	1	0	5	0	11	0	11	0	0	0	0
3	2835	0	0	0	8	49	374	10	90	21	6	1	16	0	153	2	23	0	0	6	0
4	2836	0	0	0	66	15	8	211	7	93	68	121	169	25	154	19	63	141	493	134	0
5	2833	0	0	0	0	0	0	0	0	0	0	0	0	0	56	0	1281	0	0	0	0
6	2830	0	0	0	0	0	0	0	1	0	0	0	13	0	2	0	0	1	0	15	0
7	2831	0	0	0	97	25	27	204	3	2	14	24	277	4	91	114	34	1	4	81	0
8	2832	0	0	0	121	2	59	113	109	65	60	10	65	0	99	235	389	0	129	23	370
9	2837	0	0	0	8	0	0	224	0	4	3	0	6	0	17	0	44	0	97	6	0
10	2842	0	0	0	120	21	22	58	4	10	16	0	124	17	78	591	19	4	1	19	0
11	2843	0	0	0	37	0	32	0	9	0	1	4	23	17	10	0	3	4	18	5	1
12	2844	0	0	0	45	0	8	0	0	0	1	0	5	0	12	55	9	0	1	0	0
13	2841	0	0	0	0	1	49	30	0	2	4	2	132	17	43	9	30	15	54	101	0
14	2838	0	0	0	10	0	36	29	5	3	3	0	68	0	23	5	123	0	43	24	0
15	2839	0	0	0	173	786	911	454	4	107	178	169	1260	99	568	5	207	1	121	144	0
16	2840	0	0	0	9	9	9	2	0	0	16	17	50	12	25	17	106	0	3	57	1
17	2819	0	0	0	0	0	0	1137	0	0	0	0	0	7	88	13	0	4	60	0	0
18	2820	0	0	0	9	173	72	713	0	60	39	51	79	0	123	0	108	24	629	27	0
19	2821	0	0	0	8	0	0	579	0	0	23	2	58	128	64	0	8	1	233	3	0
20	2818	0	0	0	0	6	54	2009	0	98	597	69	1458	75	350	13	49	9	884	54	0
21	2815	0	0	0	46	271	613	484	1	2	76	35	906	1	255	6	13	3	7	0	0
22	2816	0	0	0	204	2	32	582	0	4	1490	3	150	9	241	0	11	0	57	65	0
23	2817	0	0	0	19	14	33	619	0	10	97	2	258	1	117	2	66	62	253	93	0
24	2822	0	0	0	8	0	4	215	0	12	47	141	126	4	117	129	53	8	110	58	40
25	2827	0	0	0	32	5	22	65	1	0	32	0	19	0	17	15	18	0	23	10	7
26	2828	0	0	0	8	0	2	243	3	3	9	3	38	0	39	0	36	4	126	50	0

Step 3: Parcel Scale Disaggregation

- Final result is excel based sheet that is created and opened in Excel automatically. Designed to plug into ARC travel demand model.

Recommendations for TAZ-D

Go Online

Move to real Parcels

Integrate better with PECAS and ABM

thank you

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