Simulating Future Development in Delaware with the Chesapeake Bay Land Change Model (CBLCM)

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DISCLAIMER:

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"All models are wrong, but some are useful."

~ George Box

"The past is prologue."

~ William Shakespeare

CBLCM was designed to simulate *plausible* future development scenarios given local projections of population and employment growth.

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Why simulate plausible futures?

- Build consensus around a community vision and trajectory

- Quantify potential impacts from future growth (e.g., water quality, wildlife habitat, working lands, open space, housing attainability, tax revenue)

- Visualize and communicate development patterns and impacts to stakeholders

Residential Building Permit Trends in Delaware Counties

2005

2024
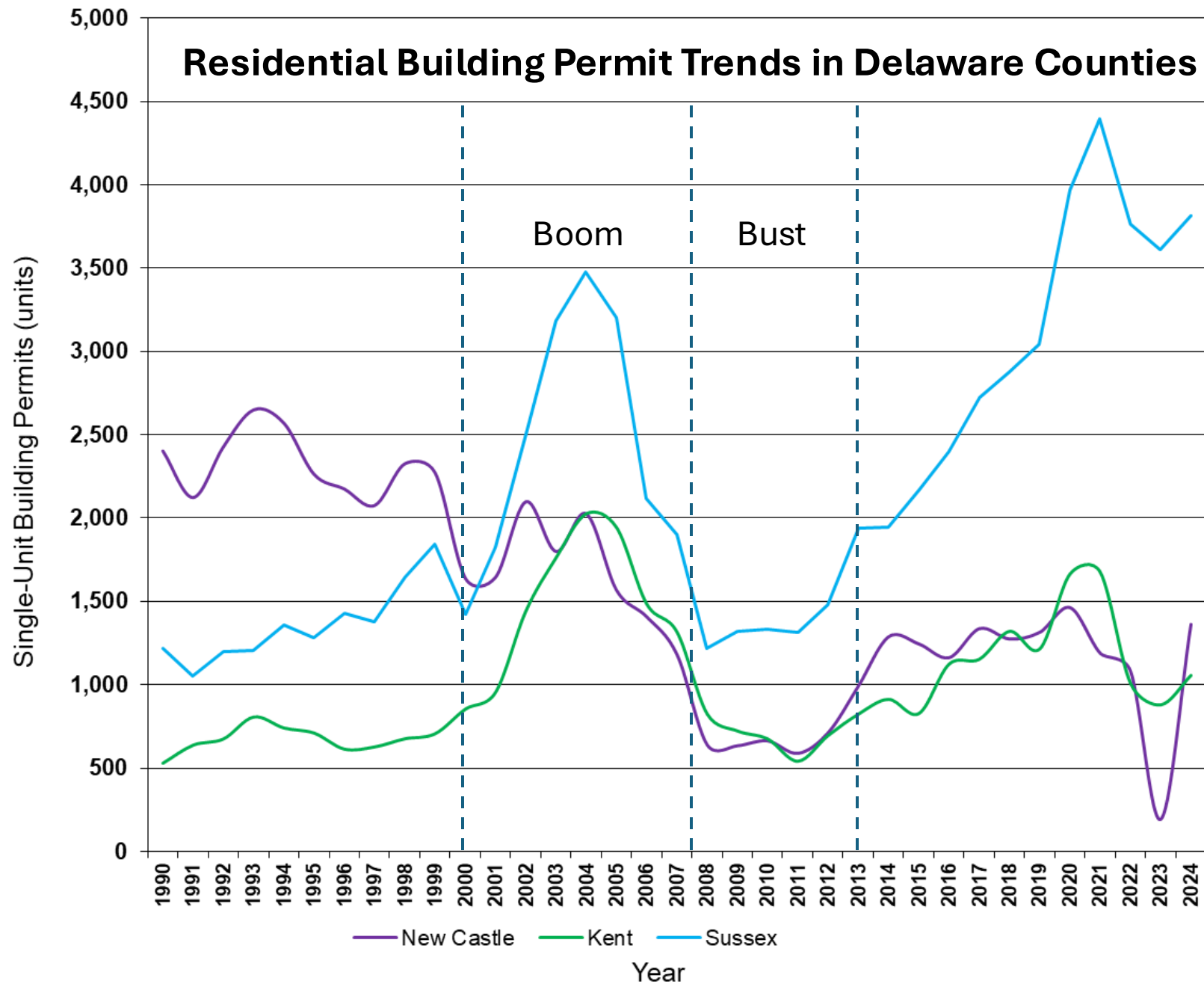
Lewes

Sussex County, Delaware

Simulated Future Scenarios for Delaware (thru 2050 in 10-yr. increments)

1. **Calibration**
   - Informed by observed growth over the 2000's

2. **Trends**
   - Informed by observed growth over the 2010's and validated against current building permit patterns.

3. **Business as Usual** (26% in Investment Level 4)
   - Informed by observed growth over the 2010's and permitted future growth

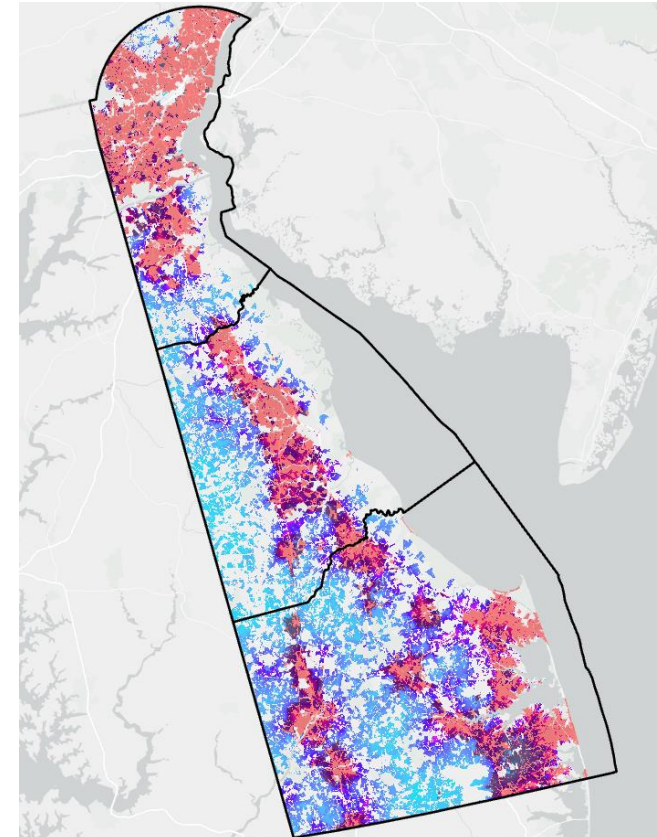4. **Sprawl** (50% in Investment Level 4)
   - Informed by observed growth over the 2010's and permitted future growth

5. **Compact** (5% in Investment Level 4)
   - Informed by observed growth over the 2010's and permitted future growth

6. **Balanced** (10% in Investment Level 4)
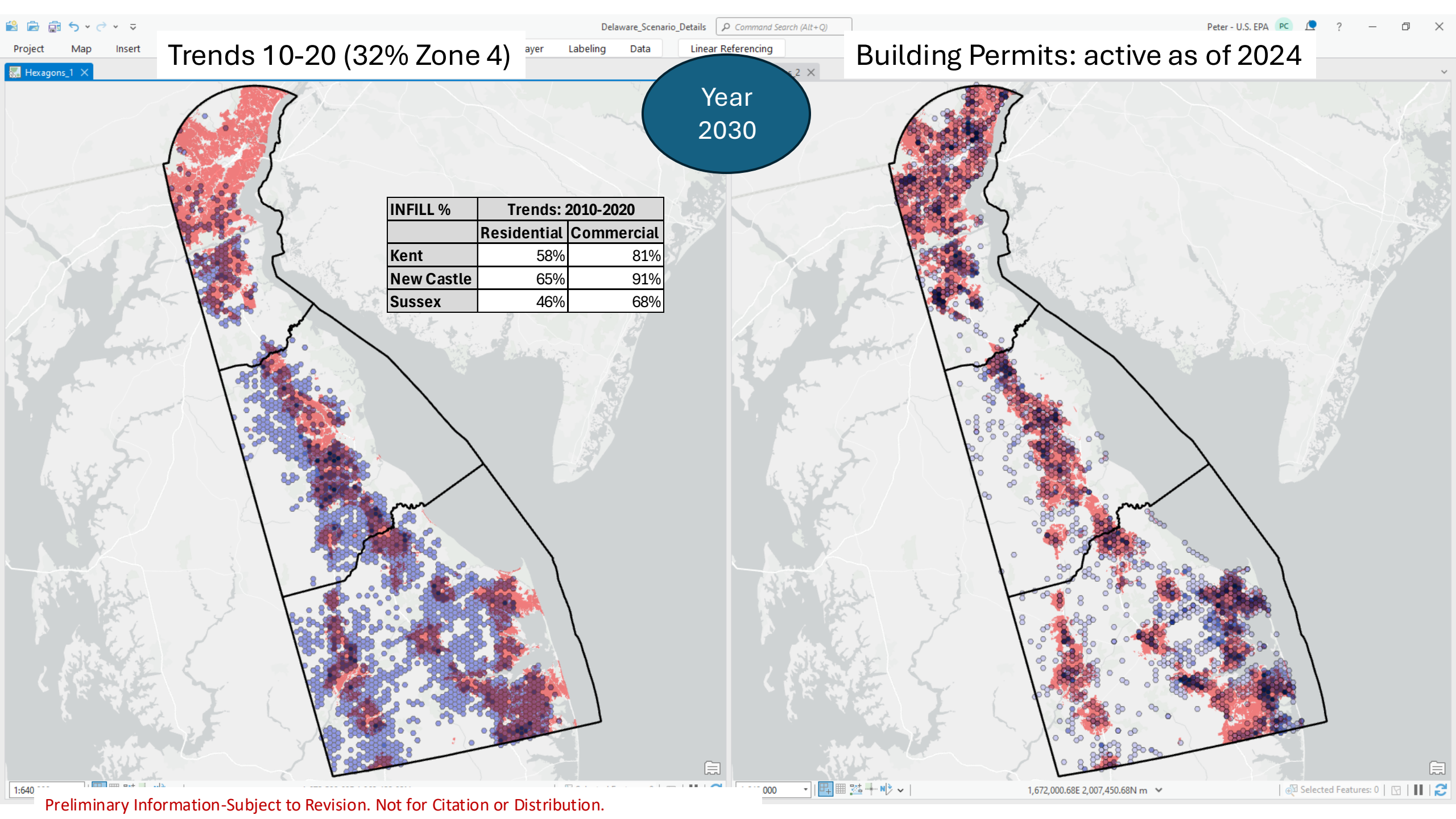   - Informed by observed growth over the 2010's and permitted future growth

Calibration (30% HU, 25% Jobs in Zone 4)

Observed Impervious Change: 2010-2020

Year 2020

INFILL %	Calibration: 2000-2010	
	Residential	Commercial
Kent	31%	76%
New Castle	61%	85%
Sussex	34%	67%

Preliminary Information-Subject to Revision. Not for Citation or Distribution.

Trends 10-20 (32% Zone 4)

Building Permits: active as of 2024

Year 2030

INFILL %	Trends: 2010-2020	
	Residential	Commercial
Kent	58%	81%
New Castle	65%	91%
Sussex	46%	68%
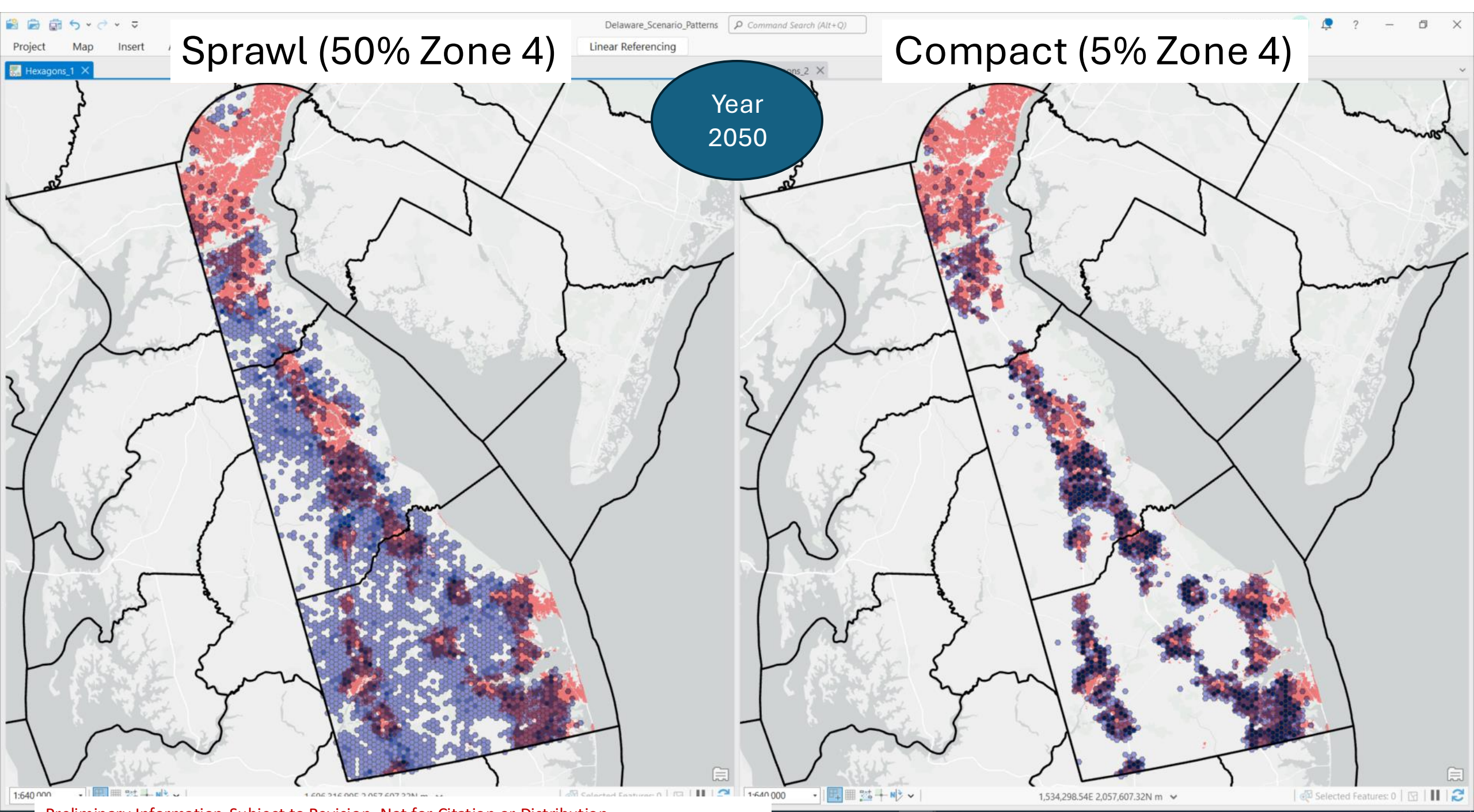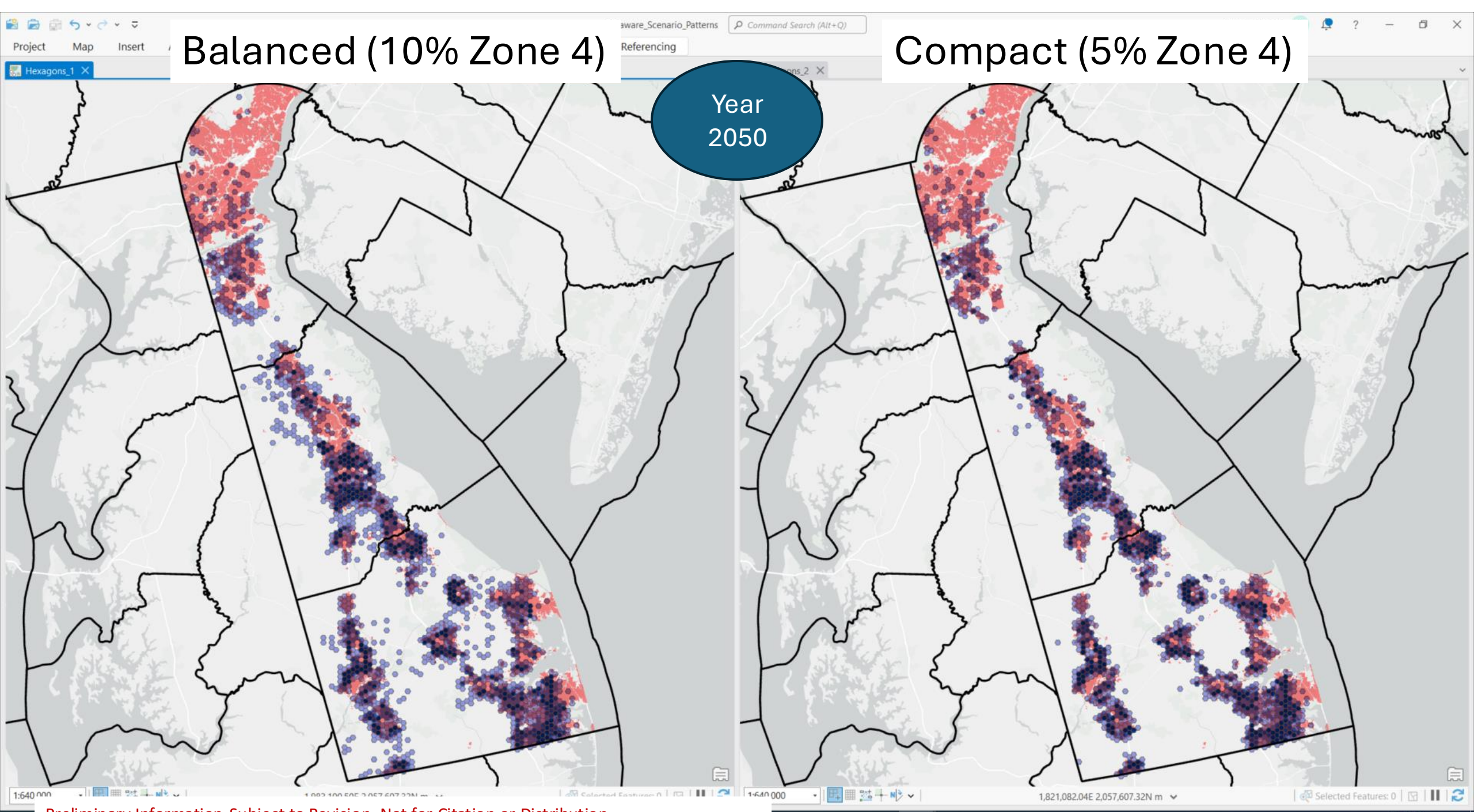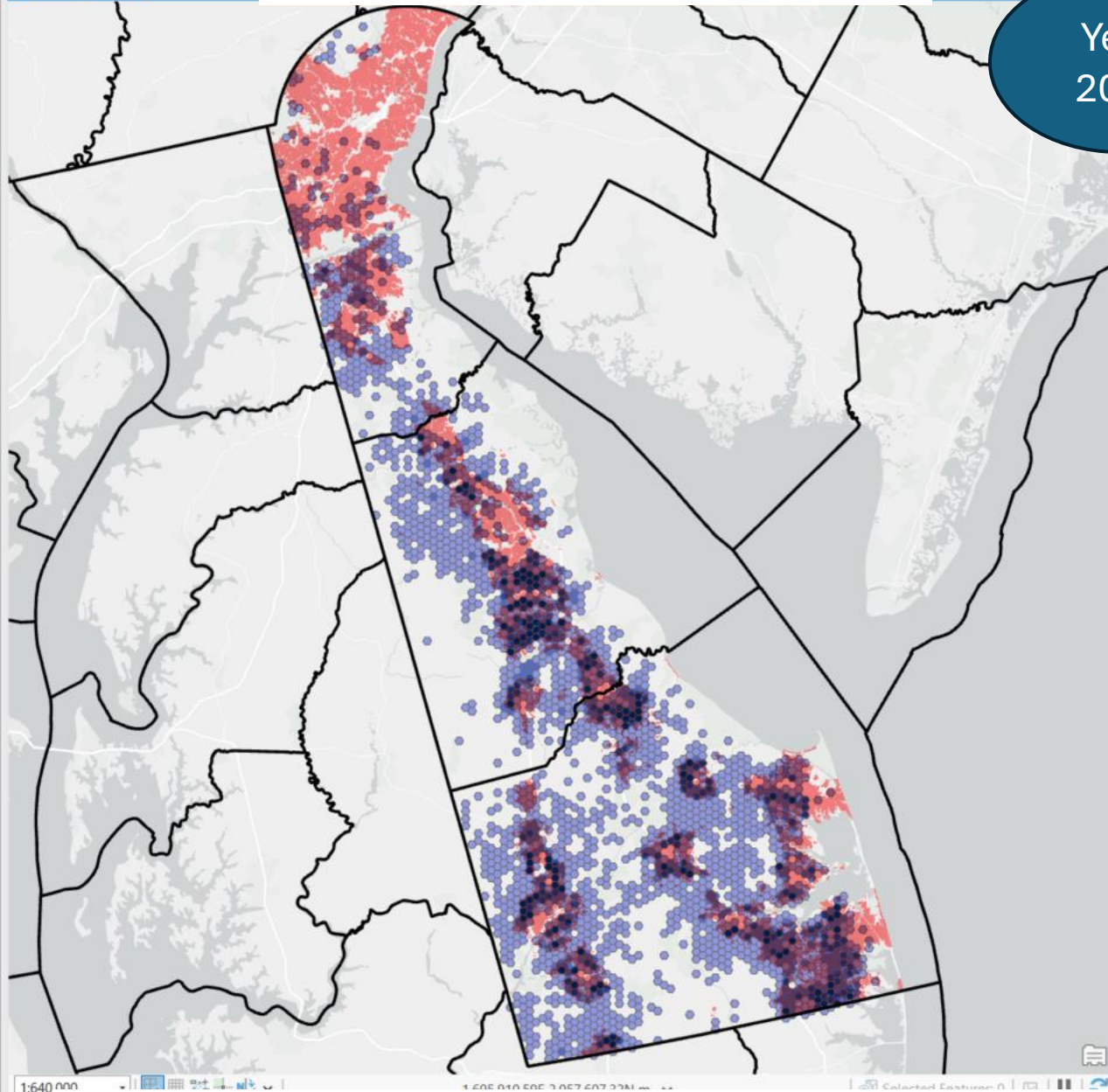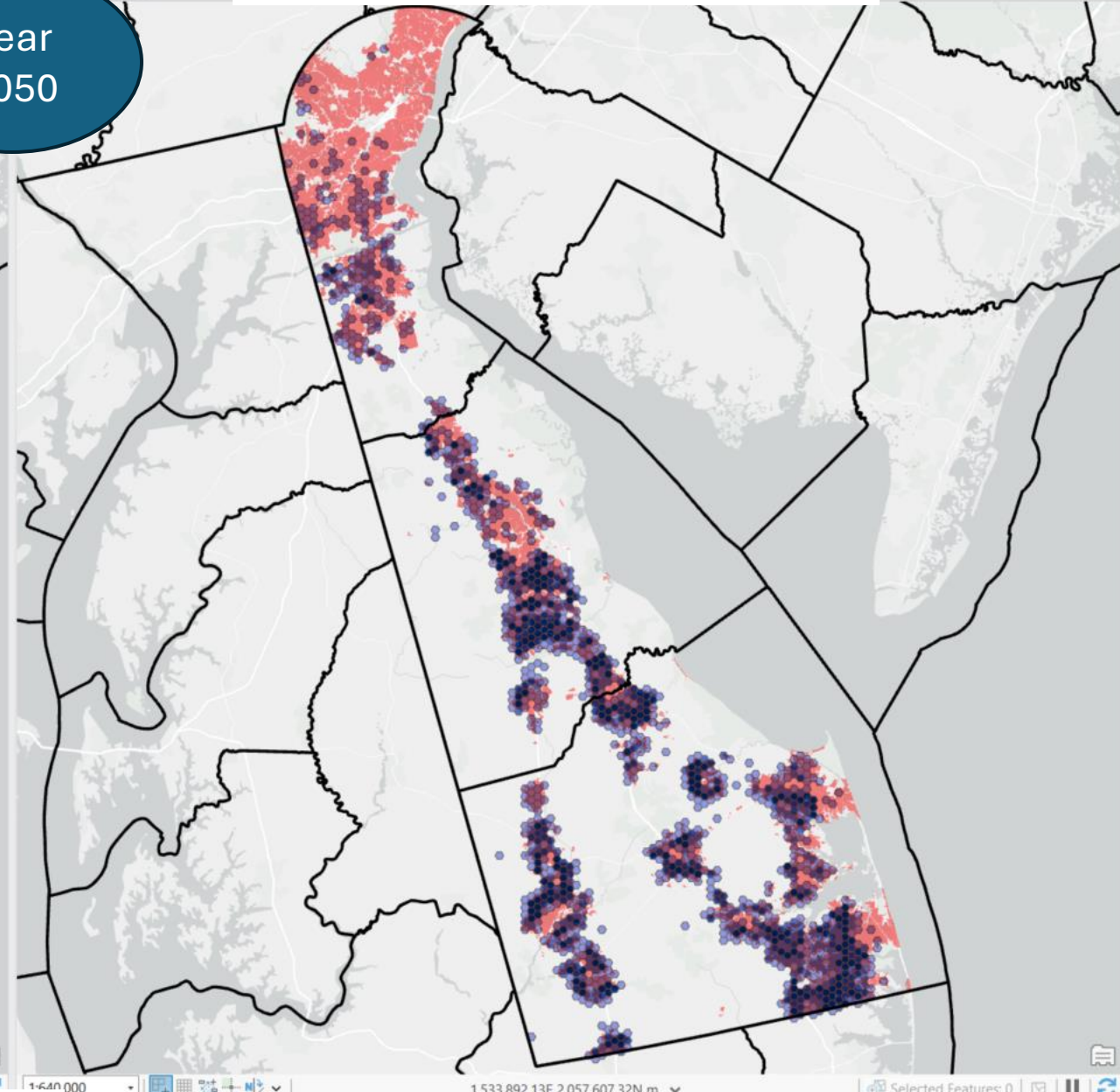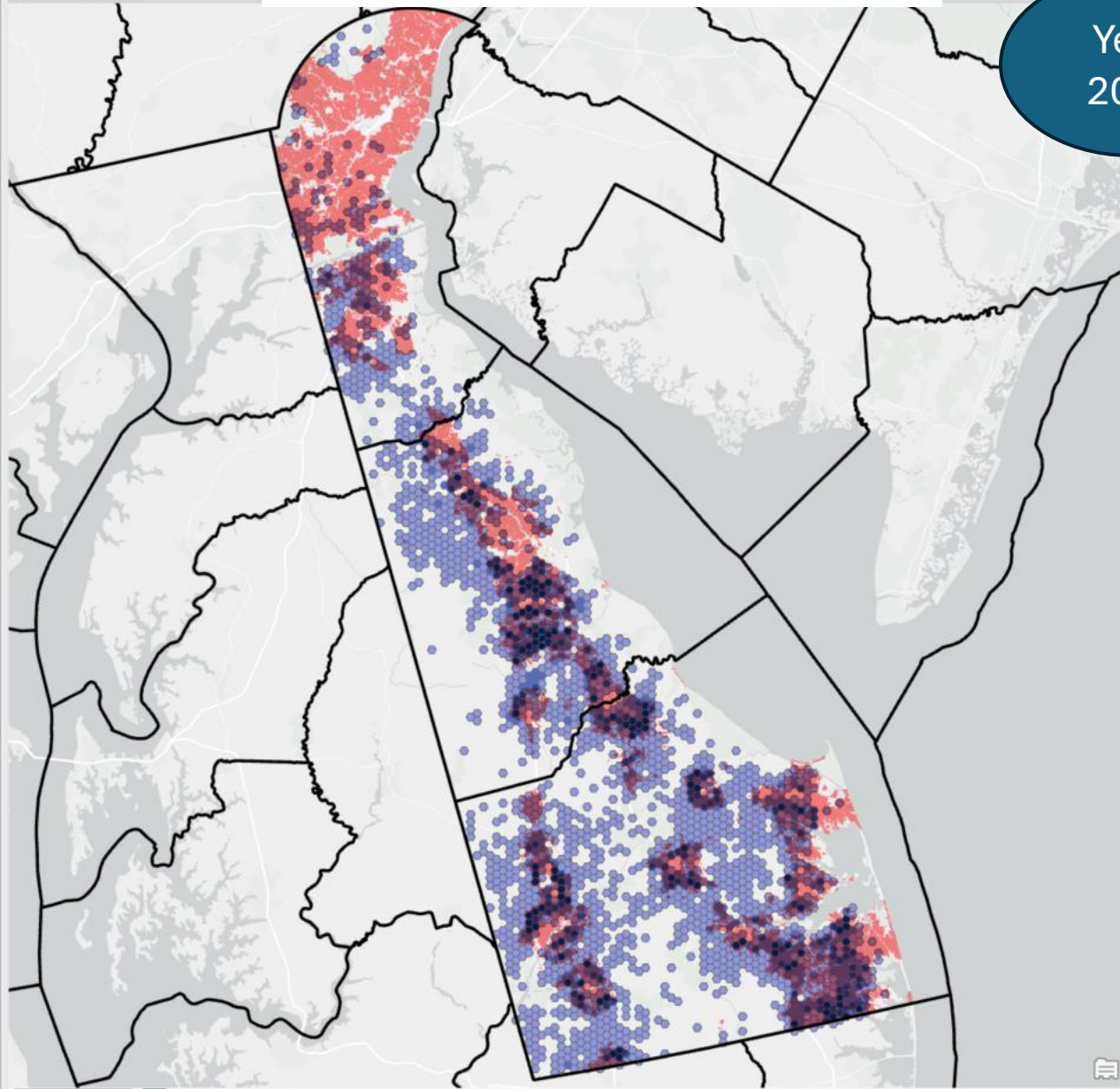
Sprawl (50% Zone 4)

Compact (5% Zone 4)

Year 2050

Balanced (10% Zone 4)

Compact (5% Zone 4)

Year 2050

Business (26% Zone 4)

Compact (5% Zone 4)

Year 2050

Business (26% Zone 4)

Trends 10-20 (32% Zone 4)

Year 2050

Business (26% Zone 4)

Sprawl (50% Zone 4)

Year 2050

Sprawl (50% Zone 4)

Compact (5% Zone 4)

Year 2050

Sprawl (50% Zone 4)

Compact (5% Zone 4)

Year 2050

ches = new development)
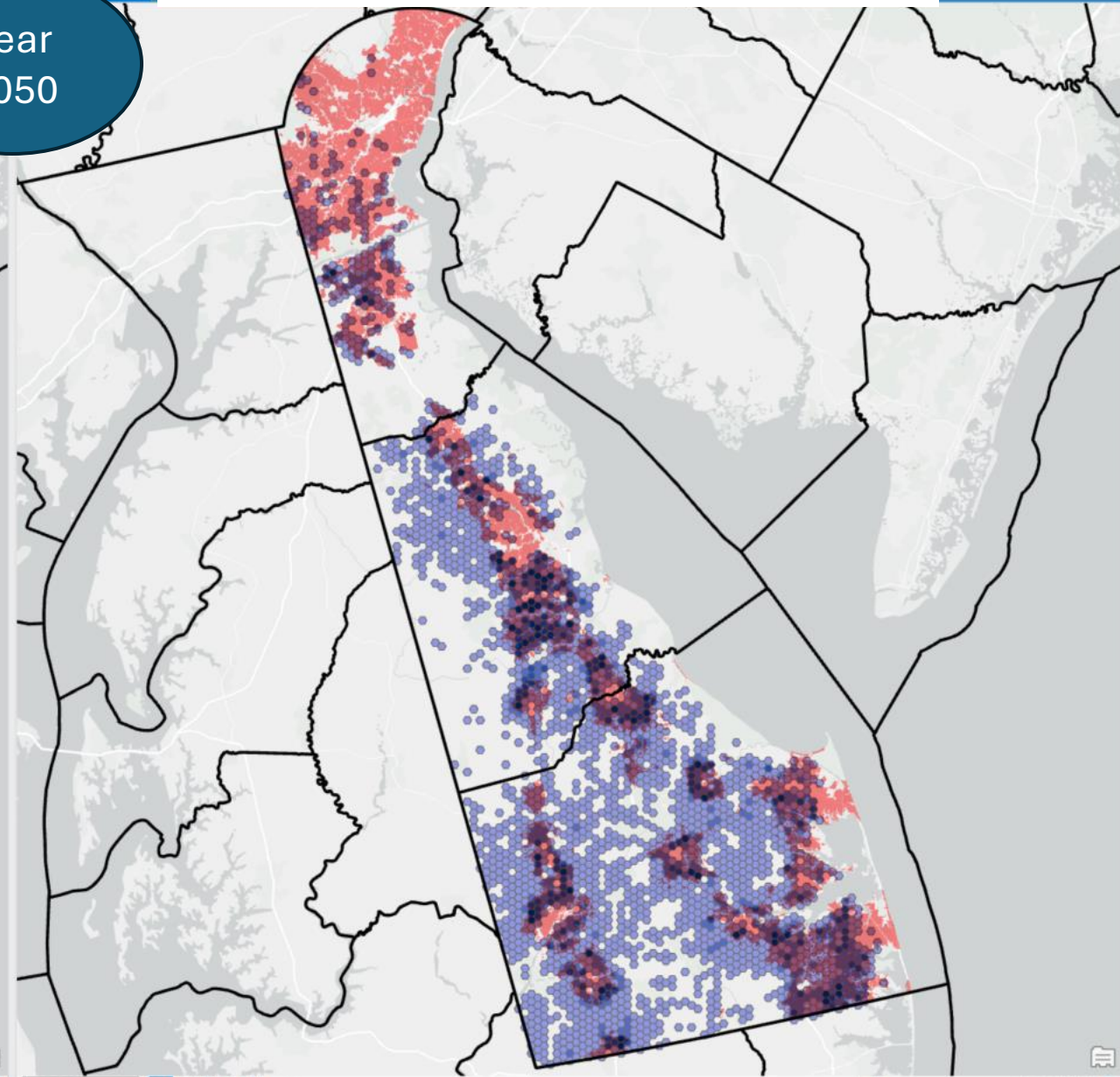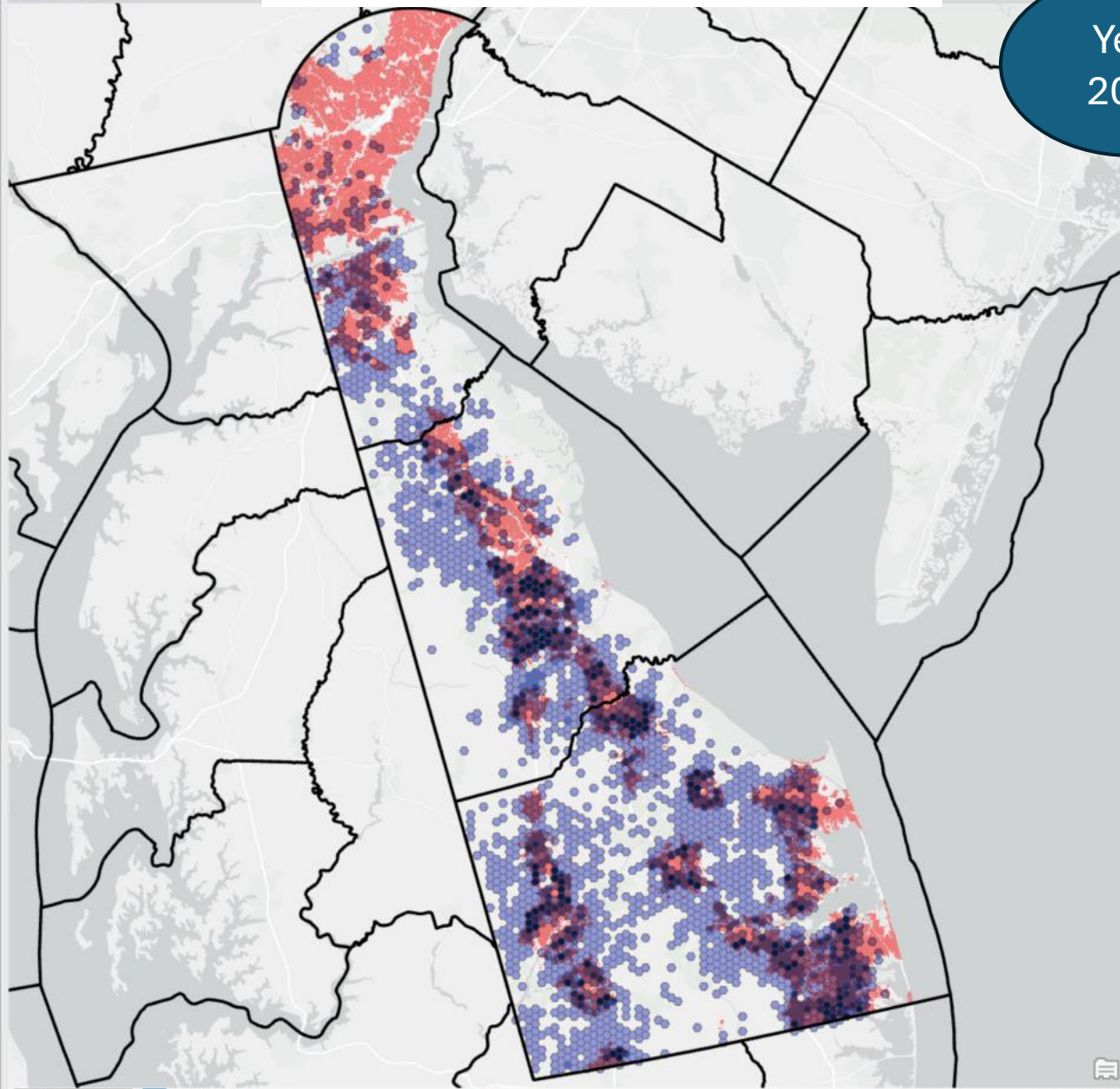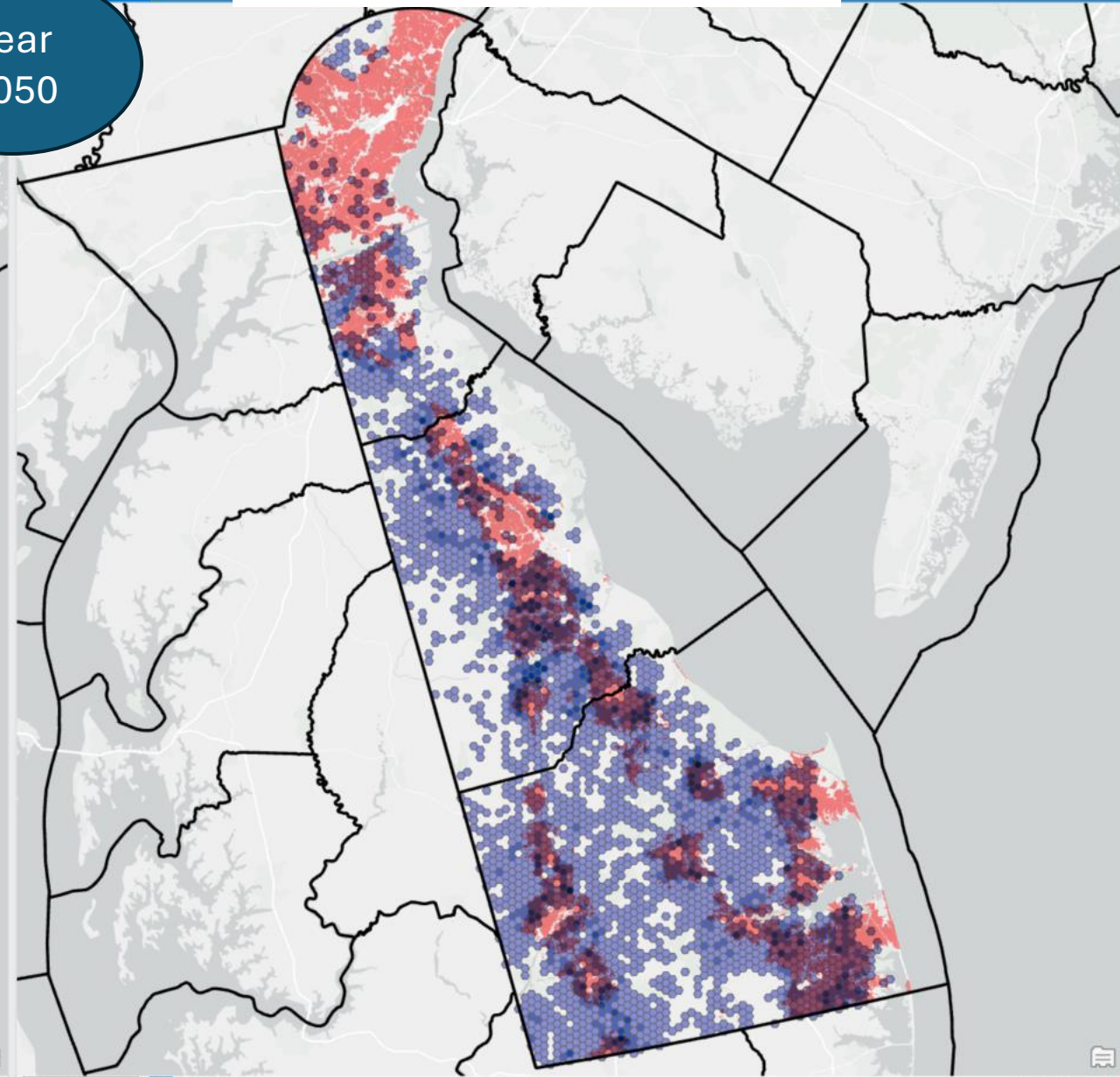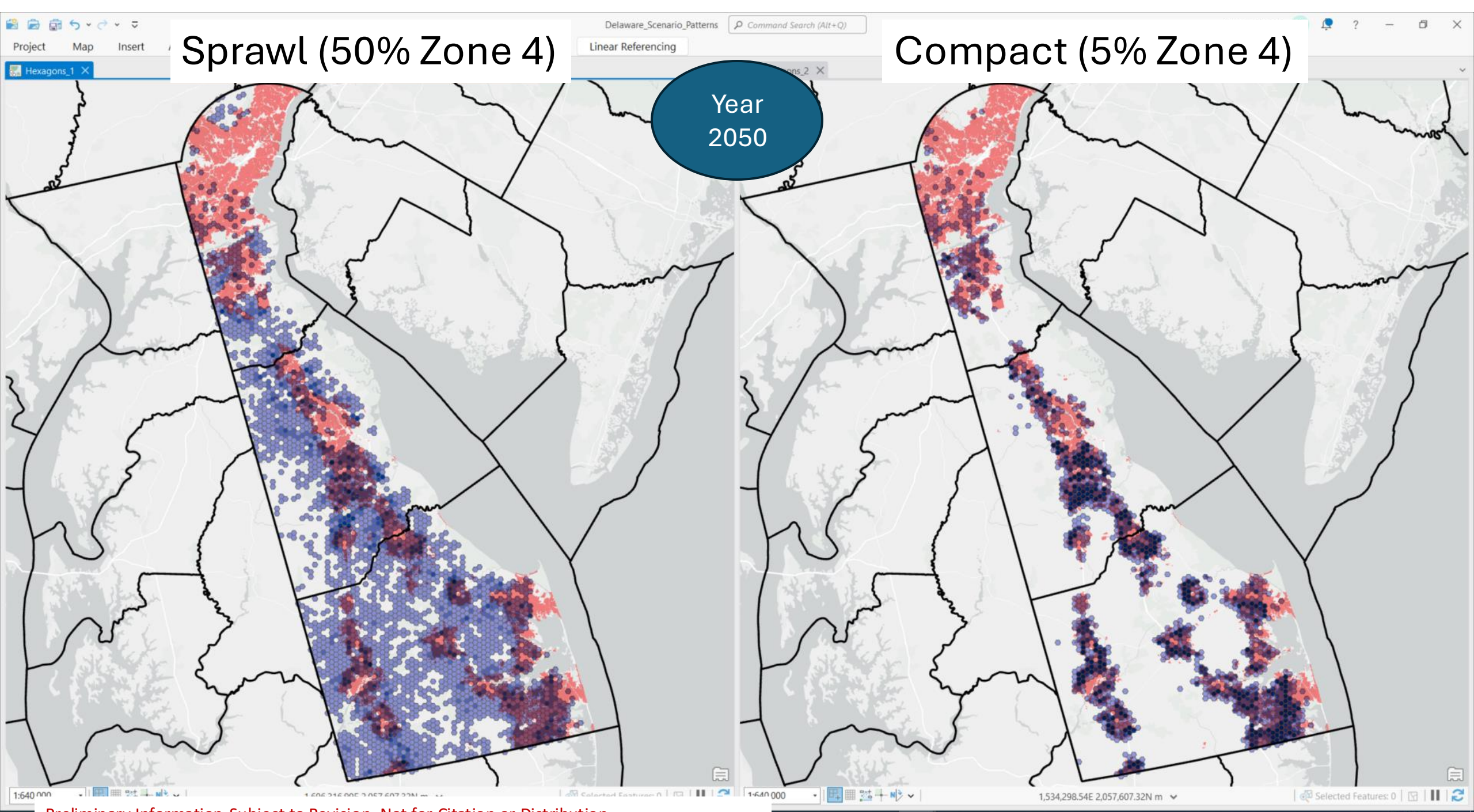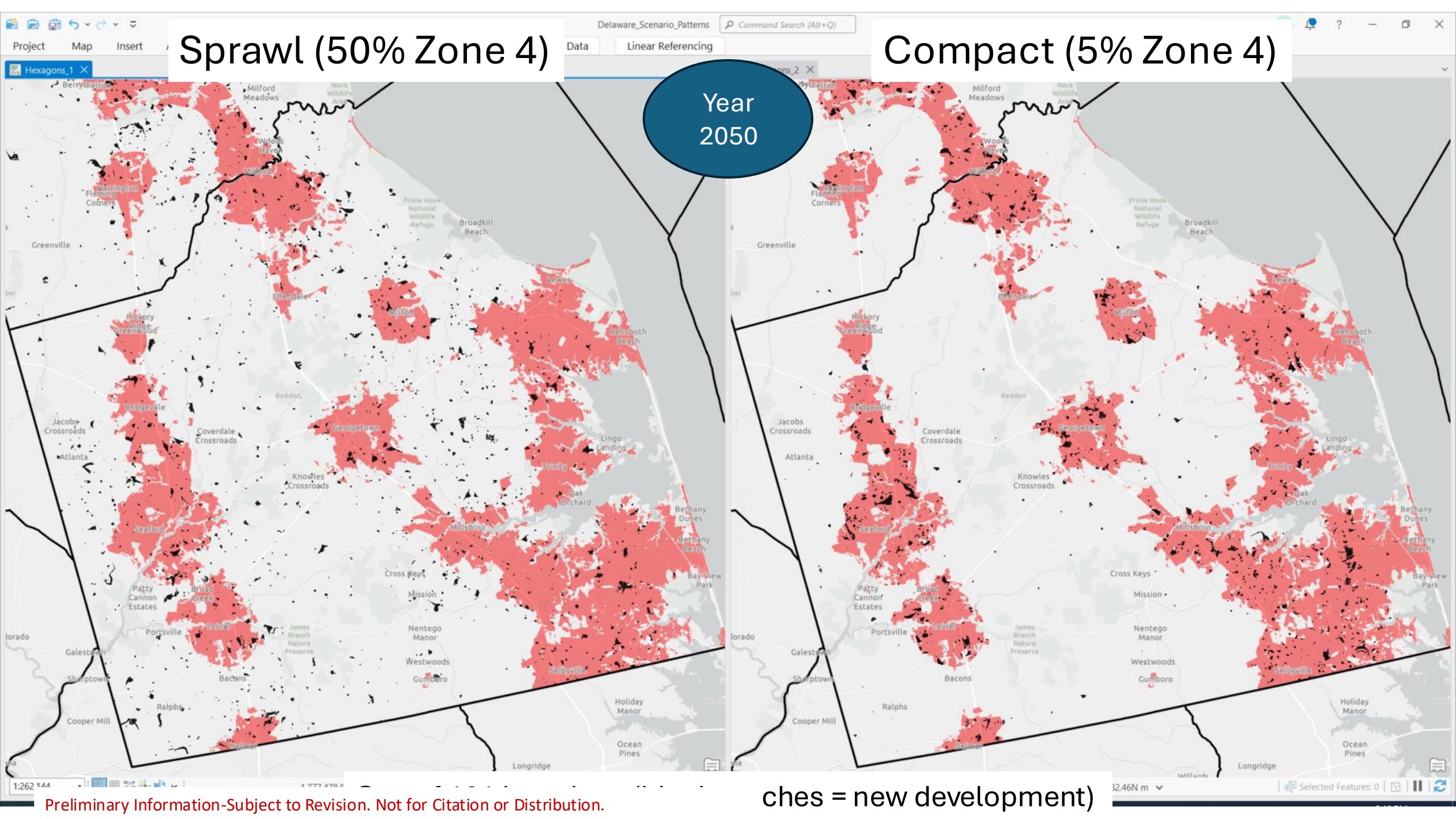
Statewide Results for 2050: All Scenarios

2020-2050	Residential	Commercial	Mixed	Total_Dev	Impervious	Forest_conv	Farm_conv	HH_on_Sewer	HH_on_Septic
Trends									
Investment Levels 1-3	9,210	635	22	9,867	1,998	2,470	7,276	27,650	14,859
Investment Level 4	7,911	571	8	8,489	1,469	2,090	5,947	9,552	8,722
Total	17,121	1,206	30	18,357	3,467	4,560	13,223	37,202	23,580
Business									
Investment Levels 1-3	10,119	669	25	10,812	2,186	2,627	8,055	27,977	16,054
Investment Level 4	6,534	493	6	7,034	1,216	1,693	4,962	9,178	7,574
Total	16,654	1,162	30	17,846	3,402	4,320	13,017	37,155	23,628
Sprawl									
Investment Levels 1-3	7,407	509	15	7,931	1,589	2,029	5,792	19,798	11,497
Investment Level 4	11,706	793	14	12,514	2,166	3,047	8,759	16,177	13,311
Total	19,113	1,302	29	20,444	3,755	5,077	14,551	35,974	24,808
Balanced									
Investment Levels 1-3	11,999	768	39	12,806	2,594	3,028	9,634	33,536	19,050
Investment Level 4	3,089	264	3	3,356	584	796	2,400	4,461	3,736
Total	15,088	1,032	42	16,162	3,178	3,824	12,033	37,997	22,785
Compact									
Investment Levels 1-3	12,650	793	39	13,481	2,734	3,159	10,170	35,137	19,979
Investment Level 4	2,070	172	2	2,245	396	510	1,644	3,071	2,596
Total	14,720	965	42	15,726	3,130	3,669	11,813	38,208	22,575
Business_v_Trends	(467)	(44)	1	(510)	(64)	(240)	(205)	(48)	48
Business_v_Sprawl	(2,459)	(140)	1	(2,598)	(352)	(757)	(1,533)	1,180	(1,180)
Business_v_Balanced	1,566	130	(12)	1,684	224	496	984	(842)	842
Business_v_Compact	1,934	197	(11)	2,120	273	650	1,204	(1,053)	1,053

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