



TCC WORKING SESSION

Metropolitan Transportation Plan (MTP)

April 21, 2023



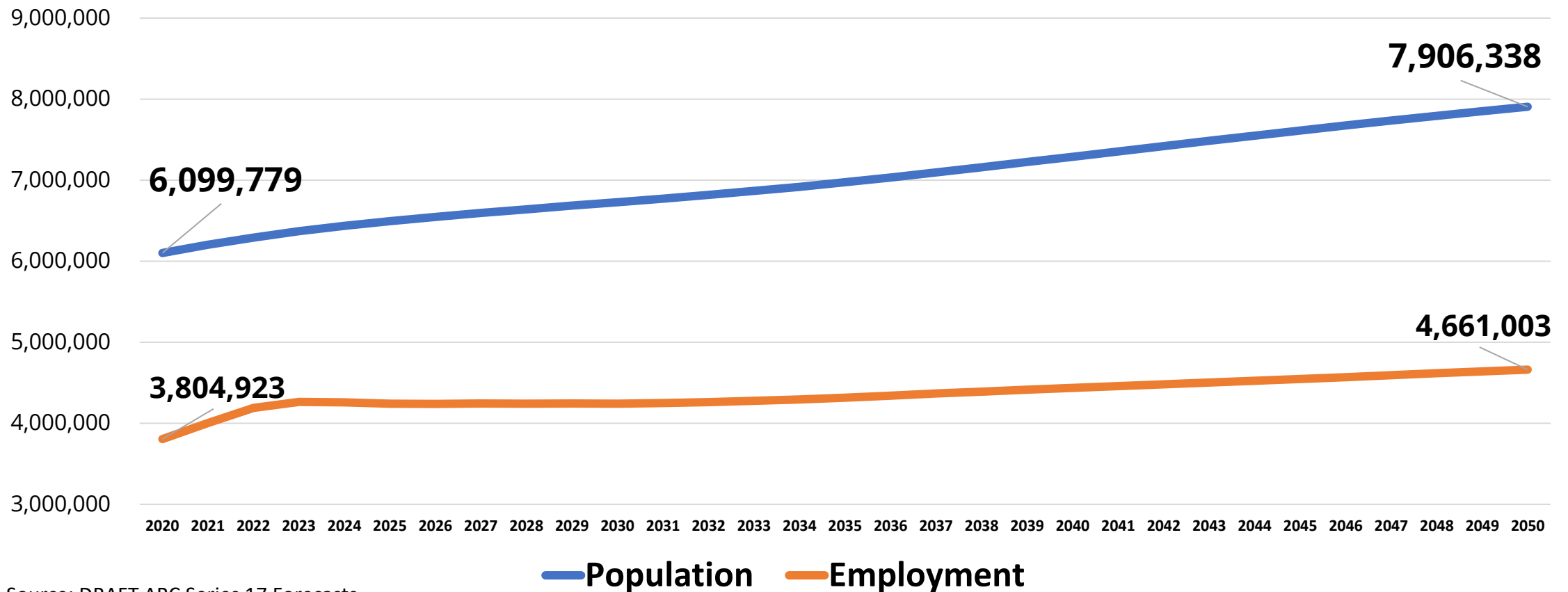
The Evolving Atlanta Region / Forecasts

The regional forecast is the foundation of ARC planning,
including the MTP

DRAFT ARC regional (21-County) population and employment forecasts

The draft forecast adds approximately **1.8 million** new residents and **860,000** new jobs by 2050. This forecast is lower than previous forecasts, including lower national fertility rates and slowing migration.

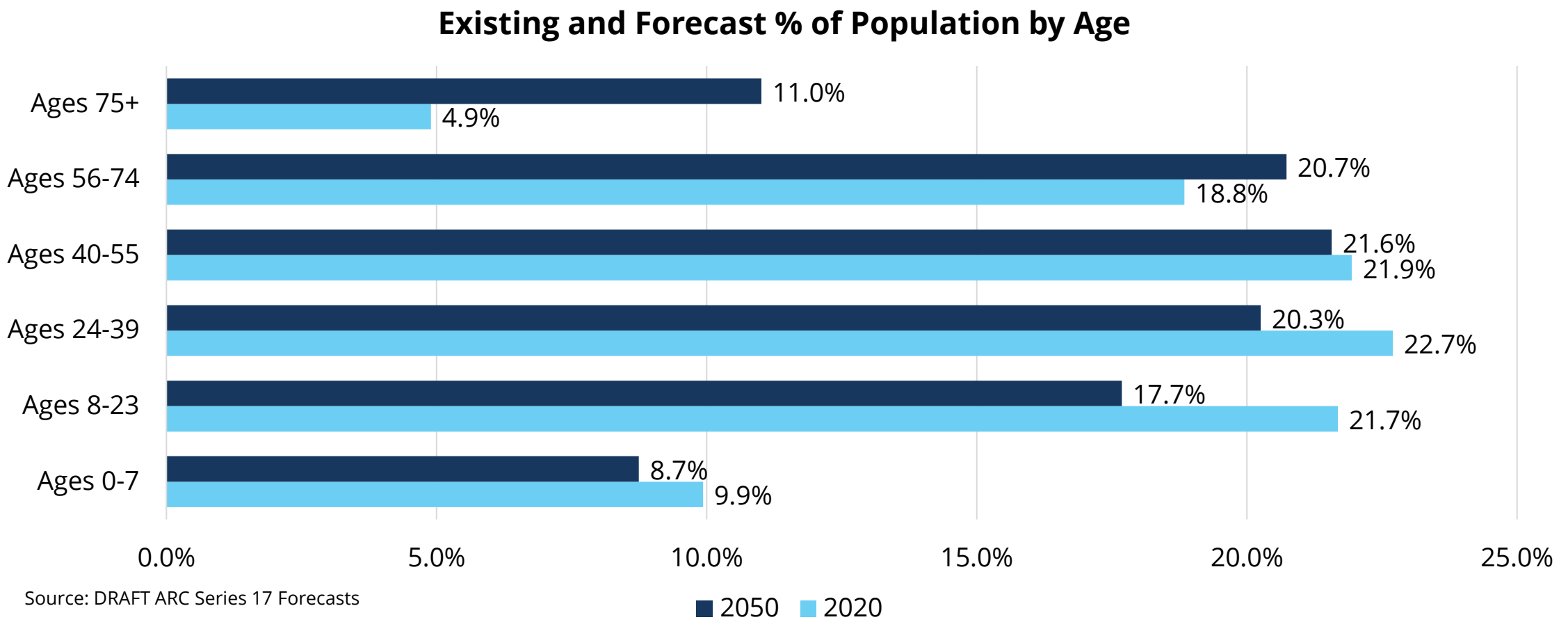
Slowing population growth is a global phenomenon among developed countries



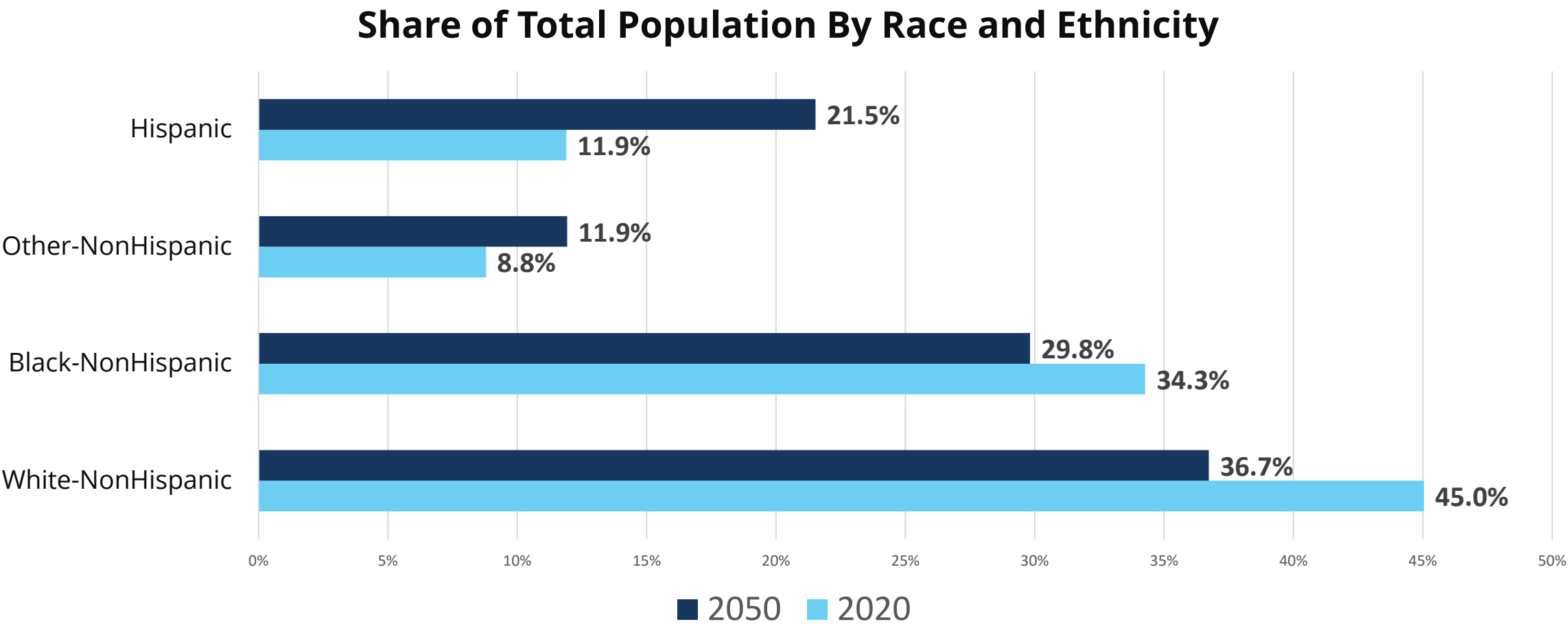
Source: DRAFT ARC Series 17 Forecasts

By 2050, the region's prime working age population – as a share of total population – is forecast to decrease

Only the 75+ and the 56 - 74 age cohorts will grow in share of population by 2050. The declining fertility rates are a significant driver of this trend. Almost 900,000 people aged 75 and older are forecast to live in the region by 2050. The aging population will impact travel, community design, and health care, to name a few.

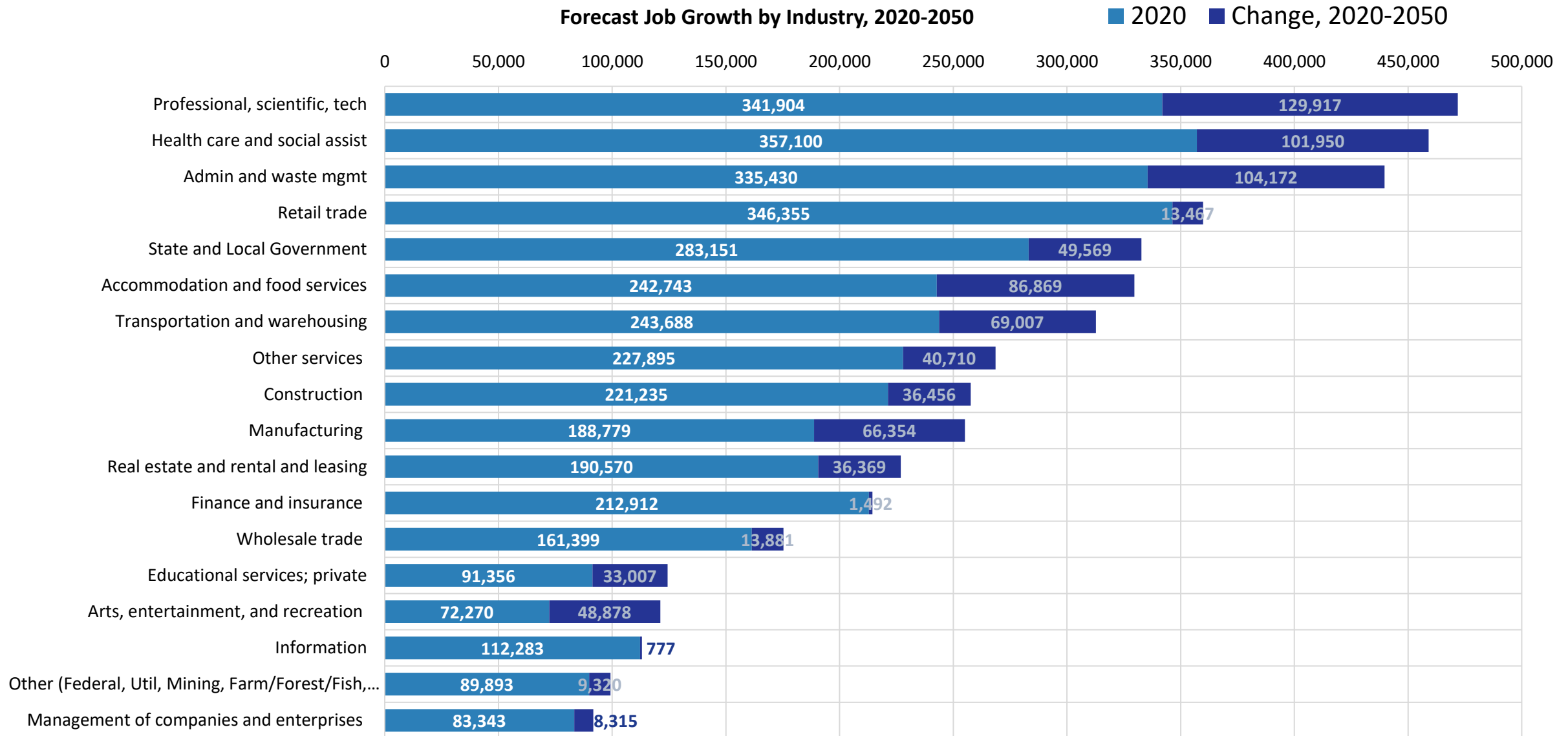


2050 forecasts show significant increases – as a share of the population – for both the Hispanic and the Asian populations (listed in Other Non-Hispanic)



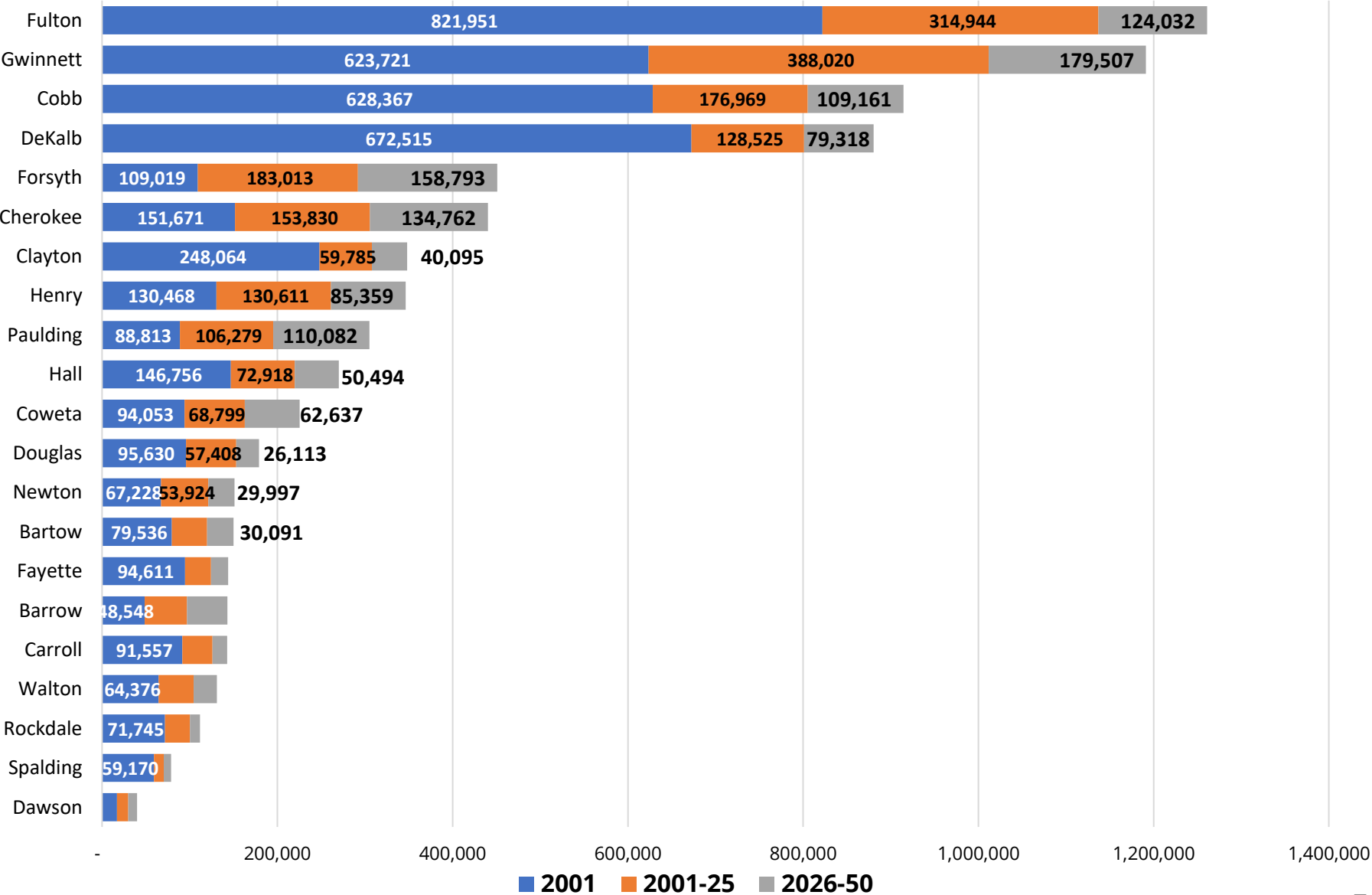
Source: ARC Series 17 Forecasts Draft

By 2050, Professional, Scientific, Tech jobs to replace healthcare as the largest industry



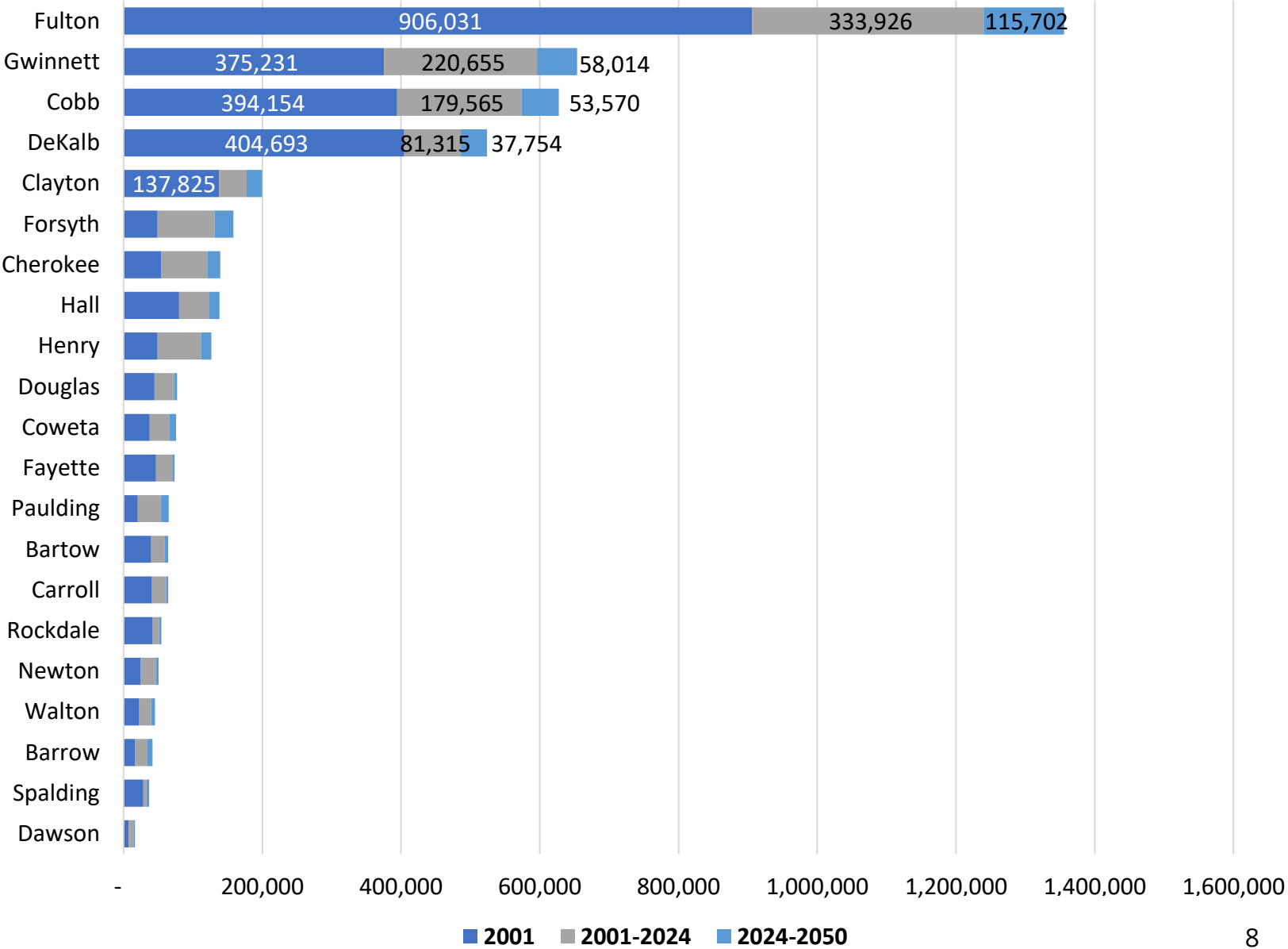
County Population Forecasts – Series 17 (Draft – Work in Progress)

County	2001	2001-25	2026-50	Total
Fulton	821,951	314,944	124,032	1,260,927
Gwinnett	623,721	388,020	179,507	1,191,248
Cobb	628,367	176,969	109,161	914,497
DeKalb	672,515	128,525	79,318	880,358
Forsyth	109,019	183,013	158,793	450,825
Cherokee	151,671	153,830	134,762	440,263
Clayton	248,064	59,785	40,095	347,944
Henry	130,468	130,611	85,359	346,438
Paulding	88,813	106,279	110,082	305,174
Hall	146,756	72,918	50,494	270,168
Coweta	94,053	68,799	62,637	225,489
Douglas	95,630	57,408	26,113	179,151
Newton	67,228	53,924	29,997	151,149
Bartow	79,536	40,210	30,091	149,837
Fayette	94,611	29,550	19,648	143,809
Barrow	48,548	48,335	46,020	142,903
Carroll	91,557	34,259	16,777	142,593
Walton	64,376	39,946	26,658	130,980
Rockdale	71,745	28,538	11,279	111,562
Spalding	59,170	11,144	8,403	78,717
Dawson	16,908	13,011	9,839	39,758
Total	4,404,707	2,140,018	1,359,065	7,903,790



County Employment Forecasts – Series 17 (Draft – Work in Progress)

County	2001	2001-2024	2024-2050	2050
Fulton	906,031	333,926	115,702	1,355,659
Gwinnett	375,231	220,655	58,014	653,900
Cobb	394,154	179,565	53,570	627,289
DeKalb	404,693	81,315	37,754	523,762
Clayton	137,825	39,387	22,571	199,782
Forsyth	48,997	82,326	27,098	158,421
Cherokee	54,093	66,467	18,837	139,397
Hall	79,954	43,827	14,384	138,165
Henry	48,939	62,578	15,188	126,705
Douglas	44,589	28,319	4,256	77,165
Coweta	37,539	28,881	9,306	75,727
Fayette	46,757	23,310	3,244	73,311
Paulding	20,474	33,369	11,243	65,086
Bartow	39,649	19,241	5,334	64,224
Carroll	40,835	20,680	2,665	64,181
Rockdale	42,134	8,878	3,593	54,605
Newton	24,659	21,654	4,016	50,329
Walton	22,575	17,303	5,310	45,188
Barrow	16,621	17,535	7,407	41,563
Spalding	28,567	4,619	3,677	36,863
Dawson	7,086	7,283	2,107	16,476
Grand Total	2,821,402	1,341,118	425,278	4,587,799

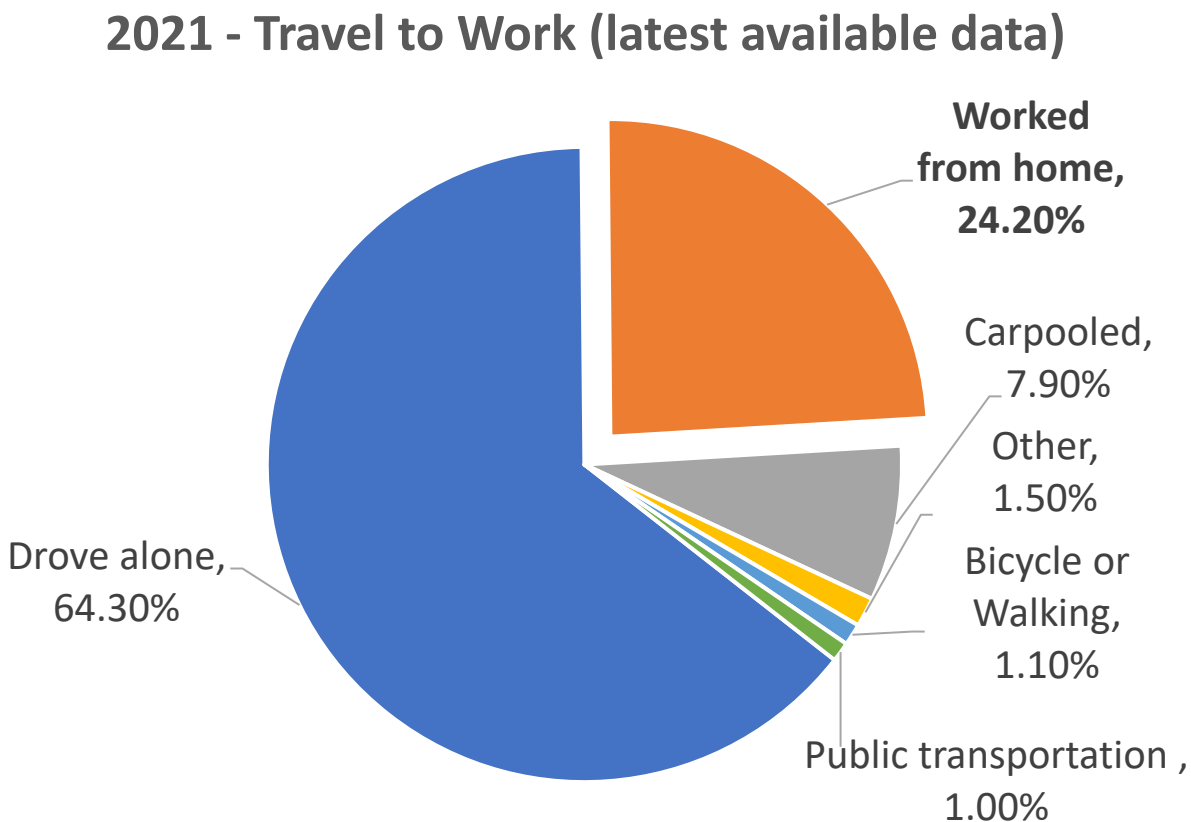
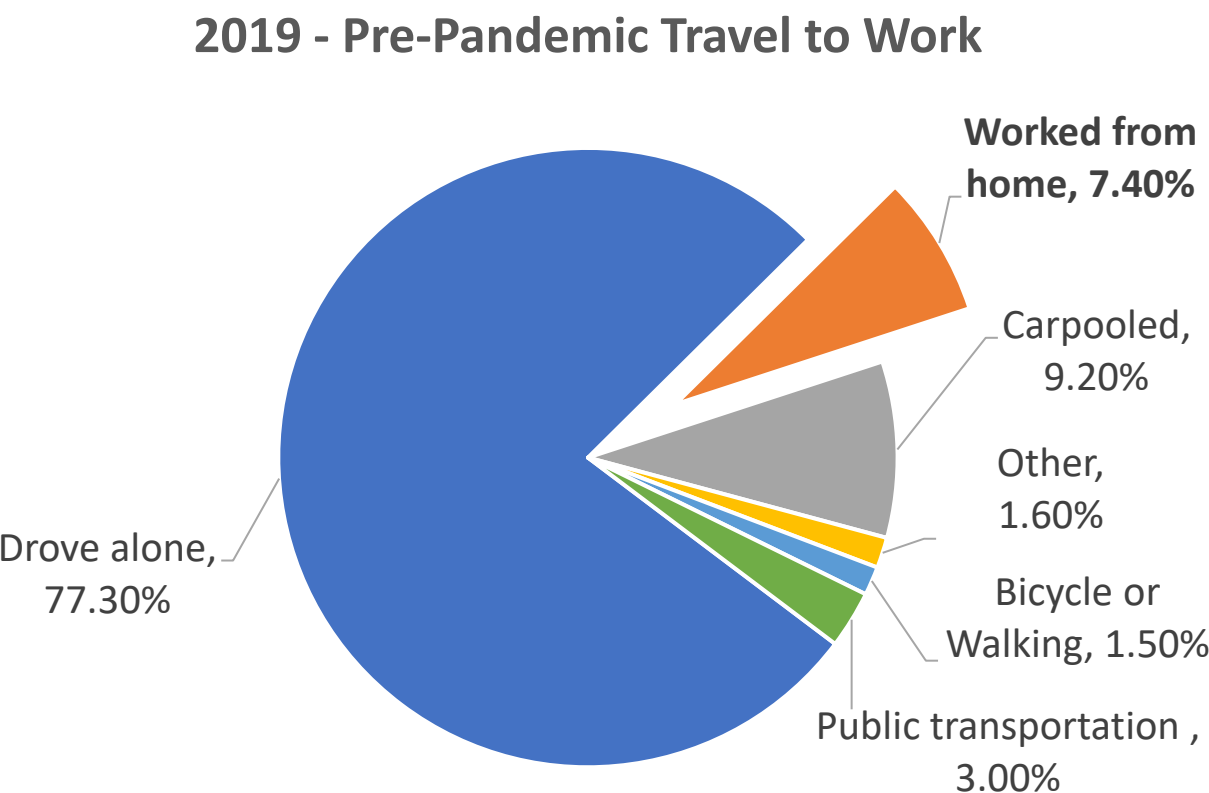




Understanding the Change in Travel and Impacts to the MTP

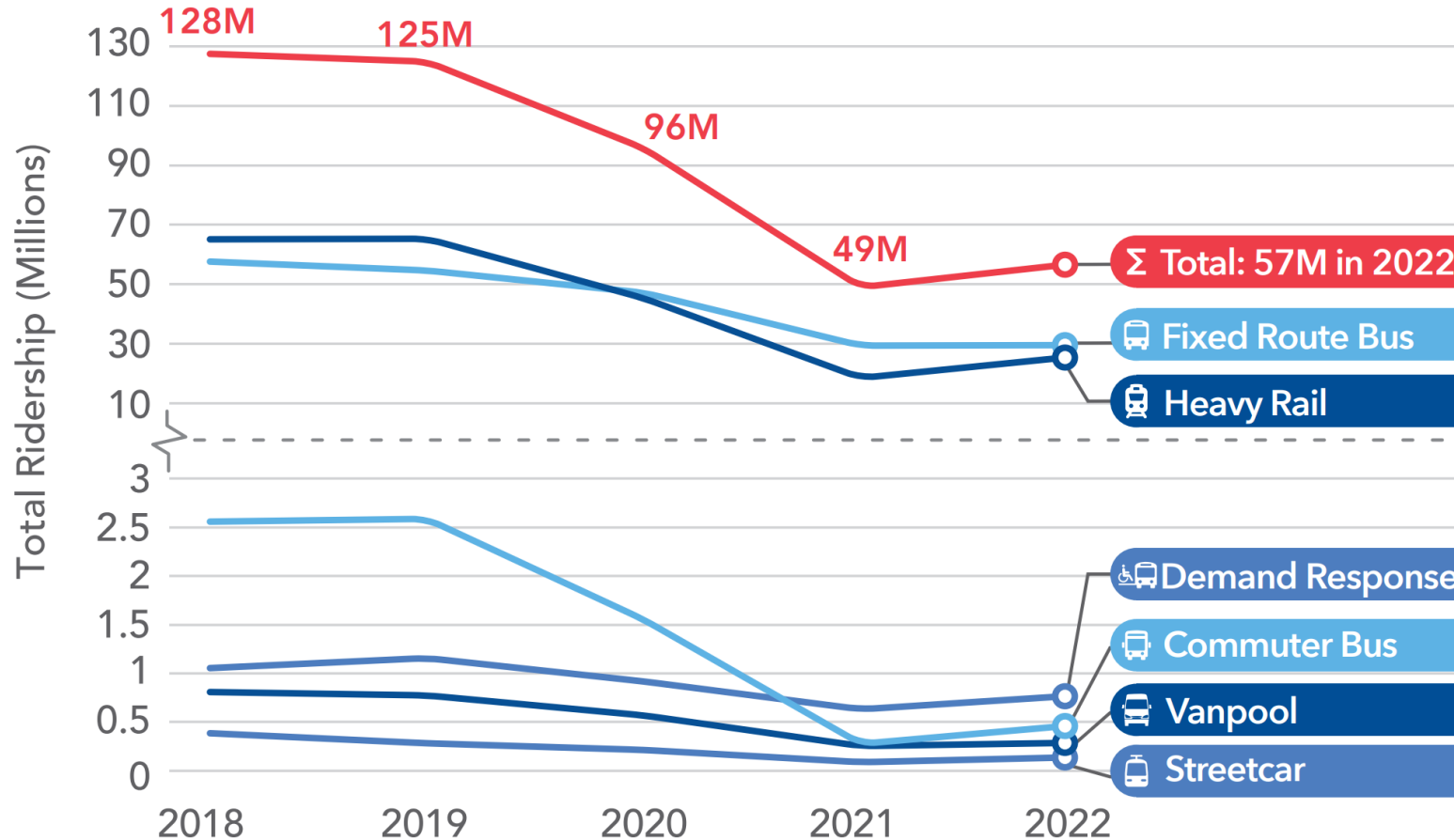
The number of workers who work from home now exceeds the number of workers that use carpools and public transportation - combined

The change in commuting characteristics drastically impacts office, retail, and housing markets



2022 transit ridership is 54% below pre-pandemic levels

Heavy rail and commuter bus ridership have decreased significantly



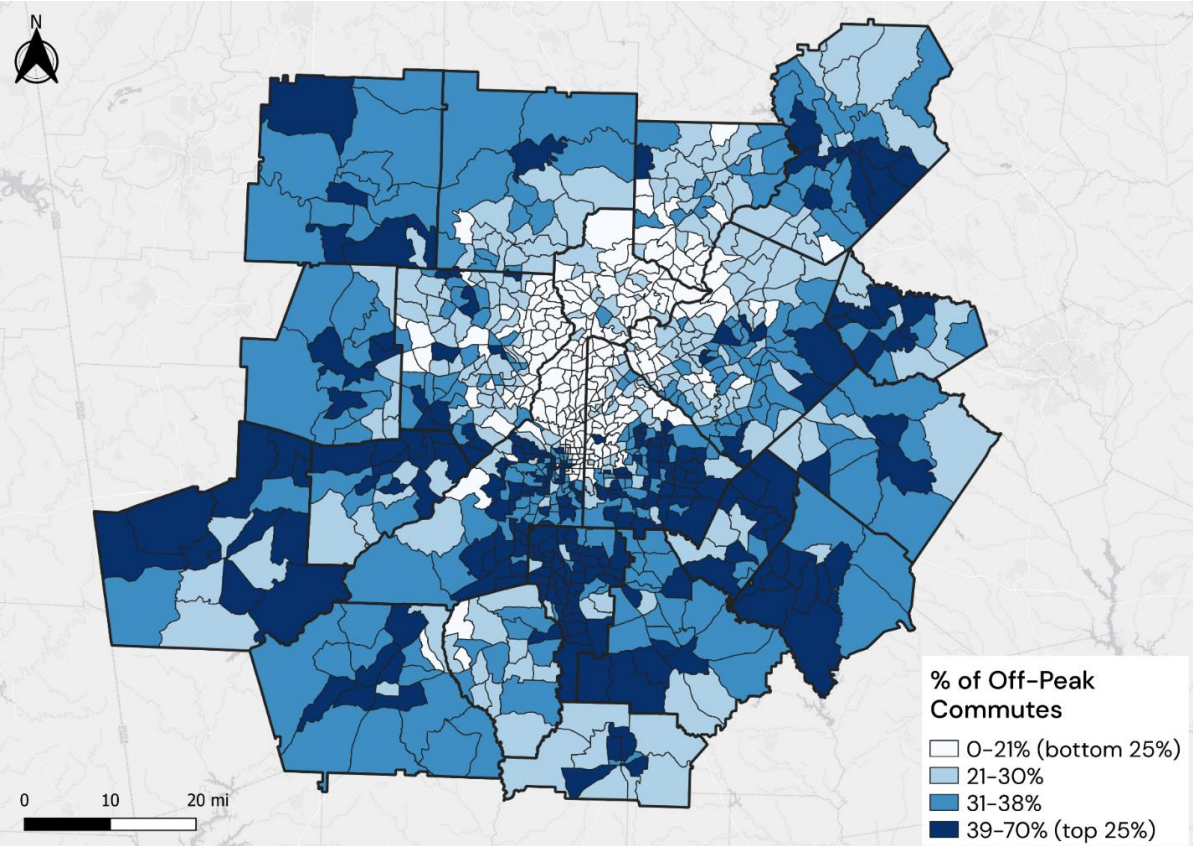
Source: ATL Authority

While a ridership recovery occurred in 2022, the rate of increase was relatively weak considering that pandemic restrictions are lifted.

With the region expecting nearly 1.8 million more people by 2050, **a strong transit system is critical for mobility** – including managing congestion and reducing GHG emissions.

Only 34% of workers have job types that allow remote work; many workers also work in during off-peak periods

Off-Peak Commuters by %



<https://www.bls.gov/opub/mlr/2020/article/ability-to-work-from-home.htm>

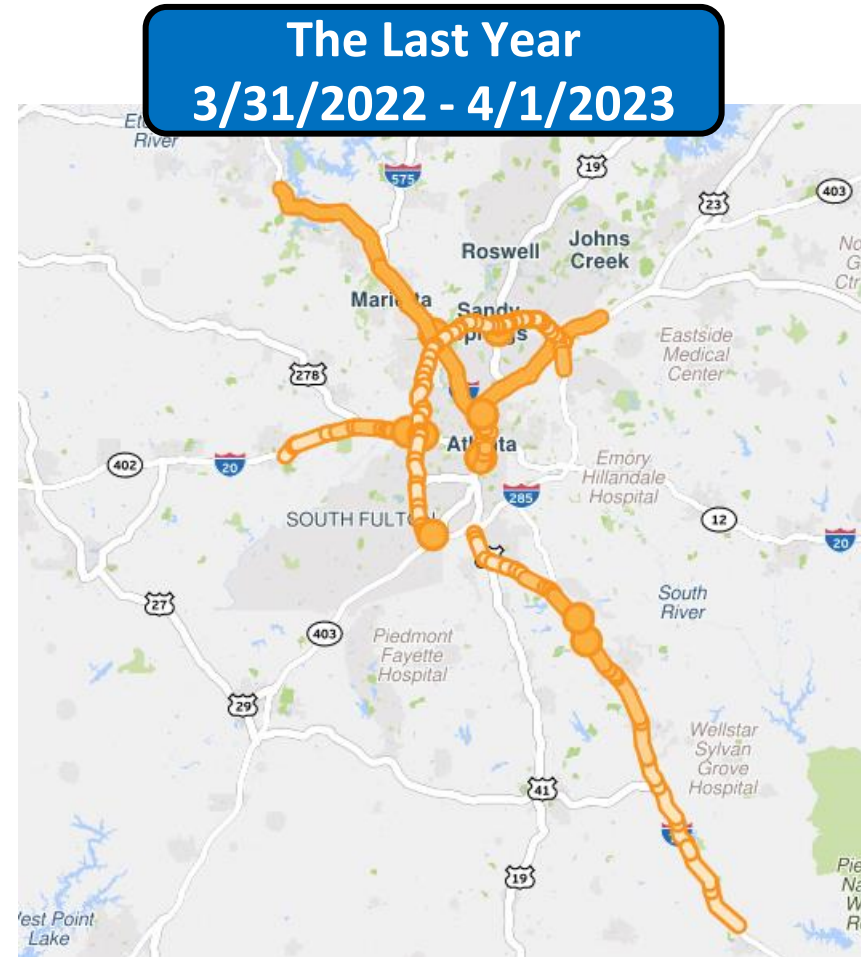
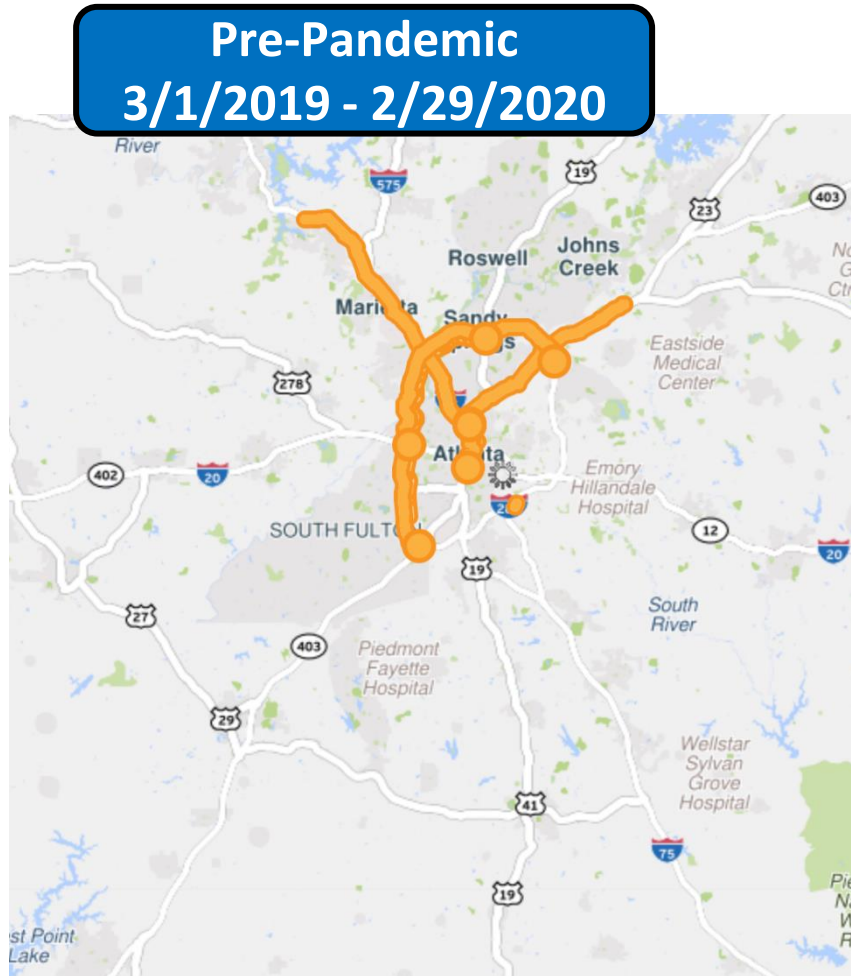
ACS 2019 5-Year Estimates

Ability of Occupations to Work Remotely

Occupation	Empl	Number that can Telework	Mean Ann Wages ²	LQ	Telework O*NET-derived baseline	Manual assignment
Management Occupations	188,327	158,195	\$119,600	1.01	0.87	0.84
Business and Financial Operations Occupations	185,840	170,973	\$79,700	1.14	0.88	0.92
Computer and Mathematical Occupations	109,974	109,974	\$93,700	1.25	1	1
Architecture and Engineering Occupations	42,528	37,425	\$85,300	0.89	0.61	0.88
Life, Physical, and Social Science Occupations	19,486	7,015	\$77,900	0.76	0.54	0.36
Community and Social Service Occupations	38,270	19,135	\$49,800	0.77	0.37	0.5
Legal Occupations	27,620	23,201	\$113,900	1.14	0.97	0.84
Educational Instruction and Library Occupations	157,178	133,601	\$51,800	1.03	0.98	0.85
Arts, Design, Entertainment, Sports, and Media Occupations	58,237	33,195	\$63,300	1.2	0.76	0.57
Healthcare Practitioners and Technical Occupations	140,635	8,438	\$88,300	0.85	0.05	0.06
Healthcare Support Occupations	83,619	0	\$33,200	0.67	0.02	0
Protective Service Occupations	58,451	0	\$43,300	0.98	0.06	0
Food Preparation and Serving Related Occupations	203,705	0	\$24,100	1.02	0	0
Building and Grounds Cleaning and Maintenance Occupations	82,115	0	\$29,400	0.92	0	0
Personal Care and Service Occupations	69,455	0	\$31,800	1.02	0.26	0
Sales and Related Occupations	289,347	60,763	\$45,800	1.1	0.28	0.21
Office and Administrative Support Occupations	365,261	186,283	\$41,200	1.04	0.65	0.51
Farming, Fishing, and Forestry Occupations	4,101	0	\$34,800	0.22	0.01	0
Construction and Extraction Occupations	113,724	0	\$46,200	0.88	0	0
Installation, Maintenance, and Repair Occupations	111,669	0	\$50,900	1.05	0.01	0
Production Occupations	135,700	0	\$38,300	0.85	0.01	0
Transportation and Material Moving Occupations	275,848	0	\$39,000	1.16	0.03	0
Total - All Occupations	2,761,090	948,197	\$55,100		Share of Employed that 1 can Telework	34%

Congestion bottlenecks have returned to the interstates and exceed pre-pandemic levels along I-20 West and I-75 South

Congested Interstate segments with average daily delays of 3 hours...or more



**During the COVID-19 pandemic, none of the interstate corridors averaged over three hours of daily delay for an entire year:
3/1/2020 to 2/28/2021**

Important Questions:

Understanding the Change in Travel and Impacts to the MTP

- 1 | Travel Patterns have changed; do you think this is permanent or will we return to pre-pandemic travel?
- 2 | What are the core reasons for expanding future transit services? (improved mobility for people without cars, reduce congestion, etc.)
- 3 | Are there additional programs you can suggest that would help our residents and workers the most in the future?



Regional Land Use Growth Trends and Scenario Planning

Residential construction growth by decade is slowing

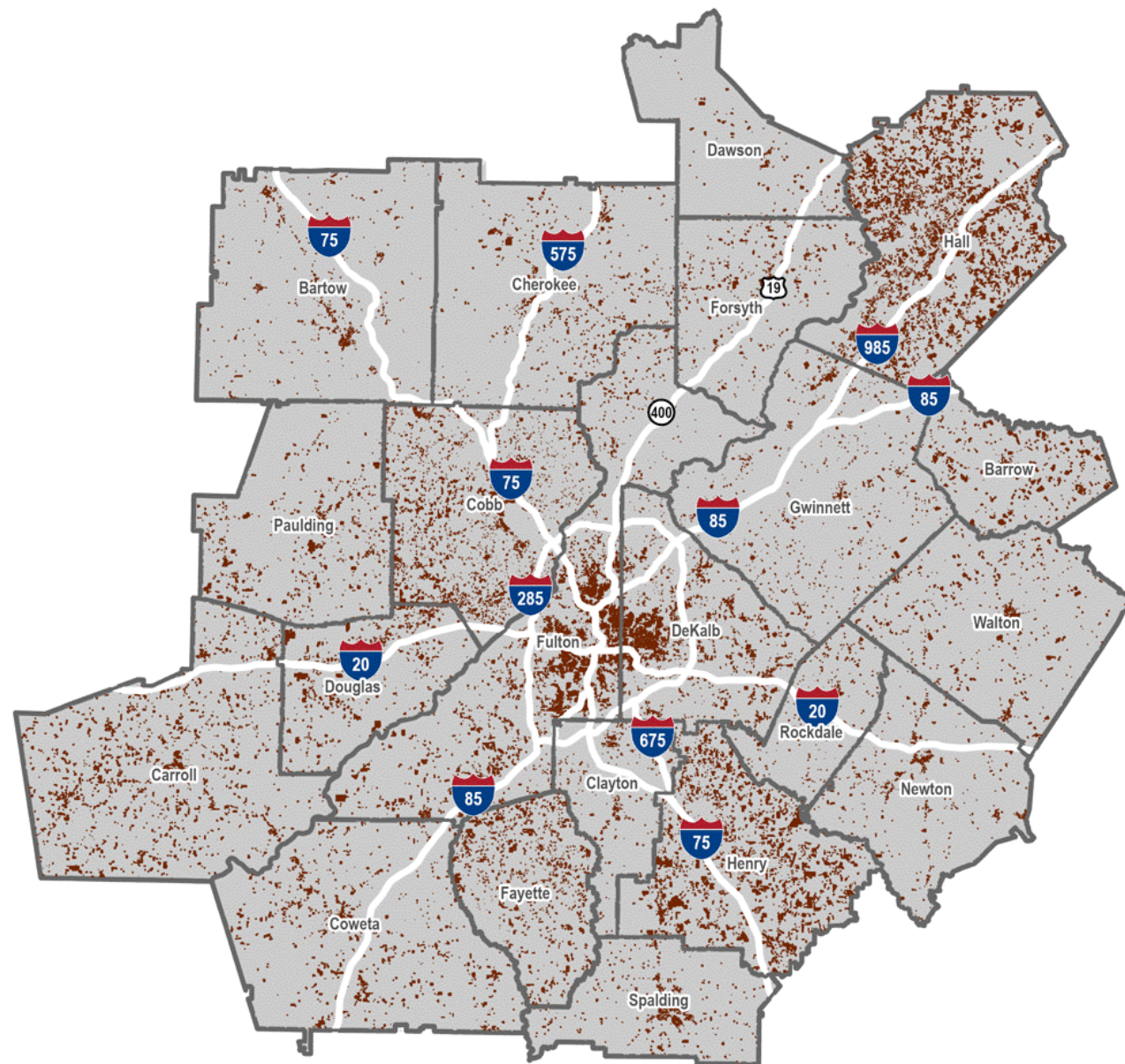
Residential growth significantly slowed down in the last decade.

Many counties have limited available land for residential growth. What strategies can be pursued in local future land use plans to ensure adequate workforce housing is available?

Year Built

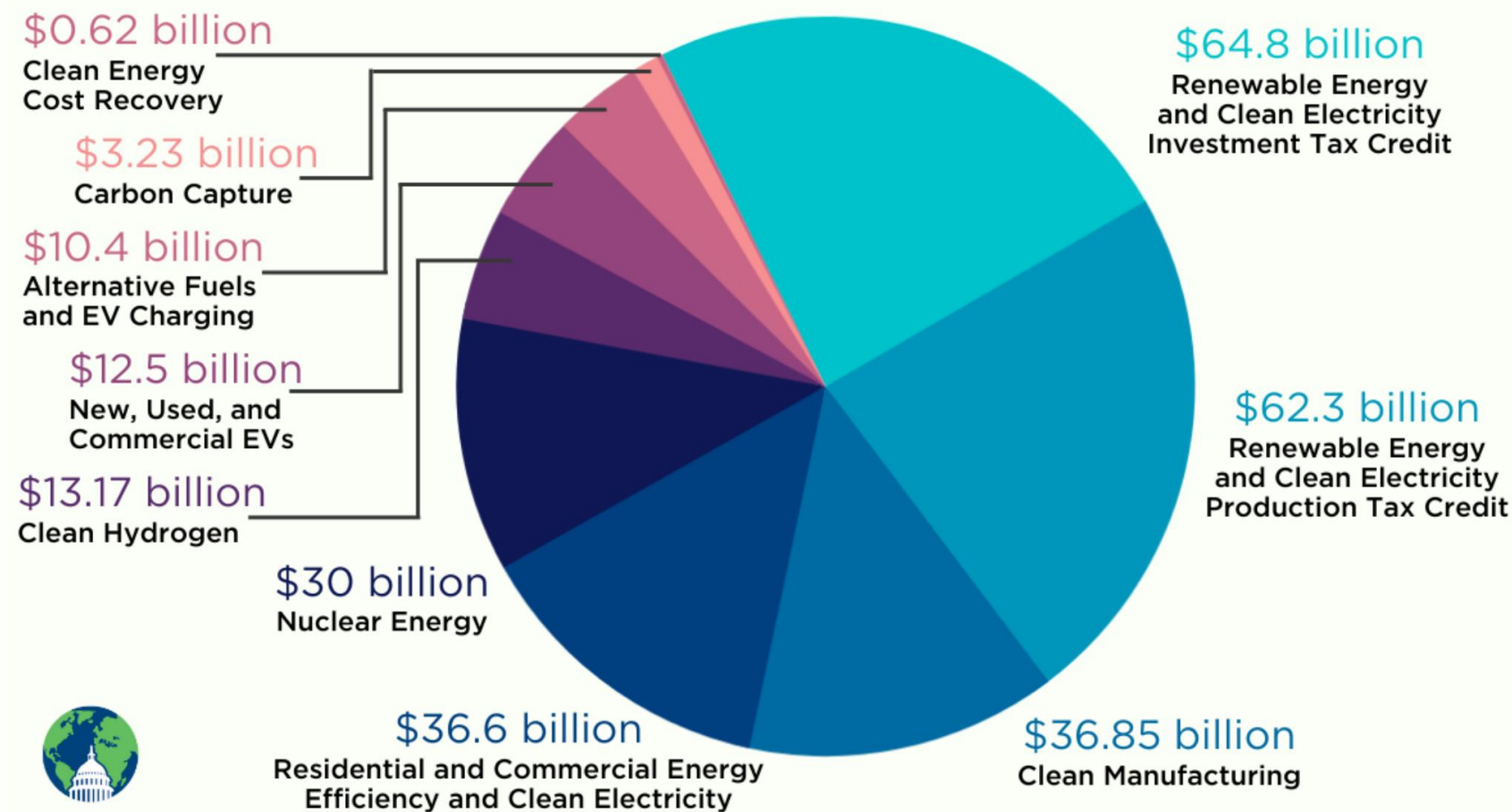
■ Vacant Land or Non-Residential

■ Older than 1950



Federal Implementation Priority: Climate and Resilience

The **Inflation Reduction Act (IRA)**, with over \$270 billion in tax credits, is contributing to a major “on-shoring” of green manufacturing and energy businesses in Georgia



The IRA has supported a green manufacturing and energy boom in Georgia. The IRA has increased manufacturing in Georgia for several “green” technologies - such as electric vehicles and solar panels

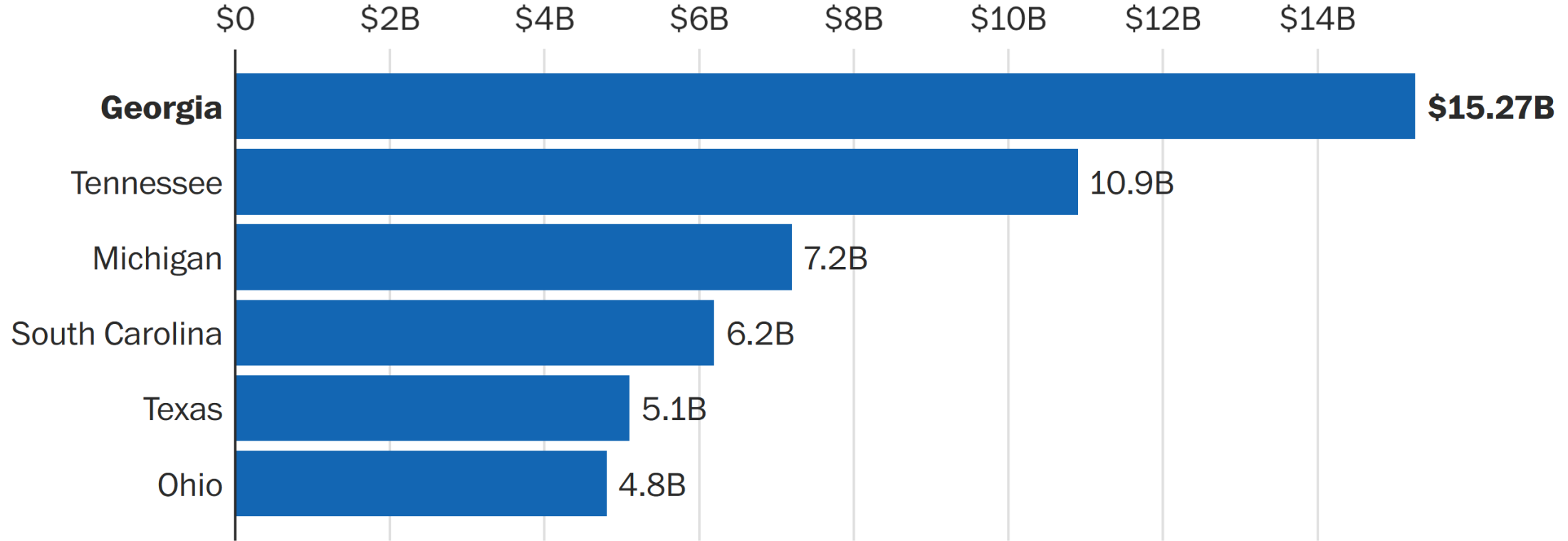


Source: Congressional Budget Office

Graphic by: Alison Davis

Georgia leads the nation in clean energy investments since August 2022

Clean energy projects announced, in billions of dollars



As of Jan. 31, 2023.

Source: [Climate Power](#)

SHANNON OSAKA / THE WASHINGTON POST

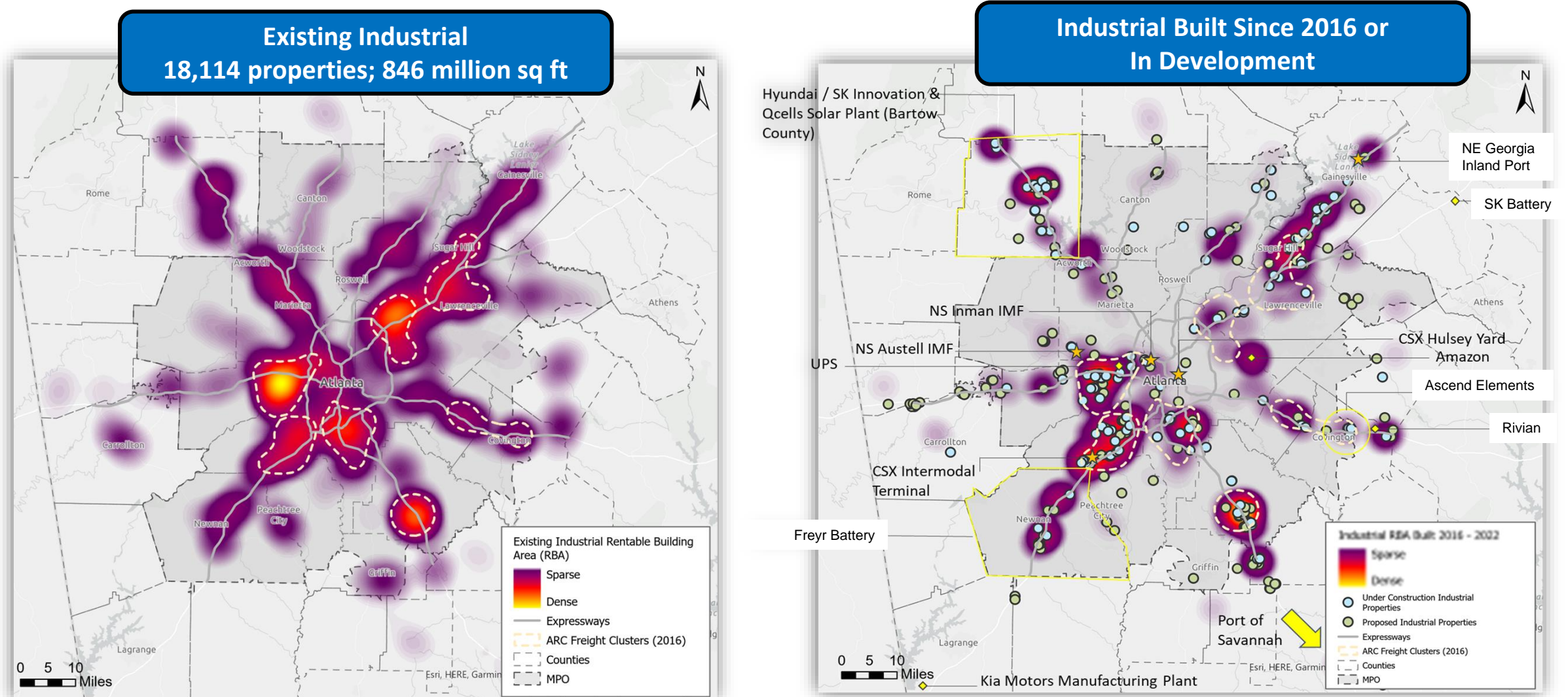
“Green” manufacturing is booming in North Georgia

This activity impacts both transportation and land use patterns. Recent examples of growth include both North America’s largest electric-vehicle battery recycling facility and the largest solar panel manufacturer.

The significant expansion of manufacturing since 2020 – which previously decreased for decades – is a major factor that must be included in future land use and transportation plans. Are plans in place to respond to the the growing “green” manufacturing demands in your community?

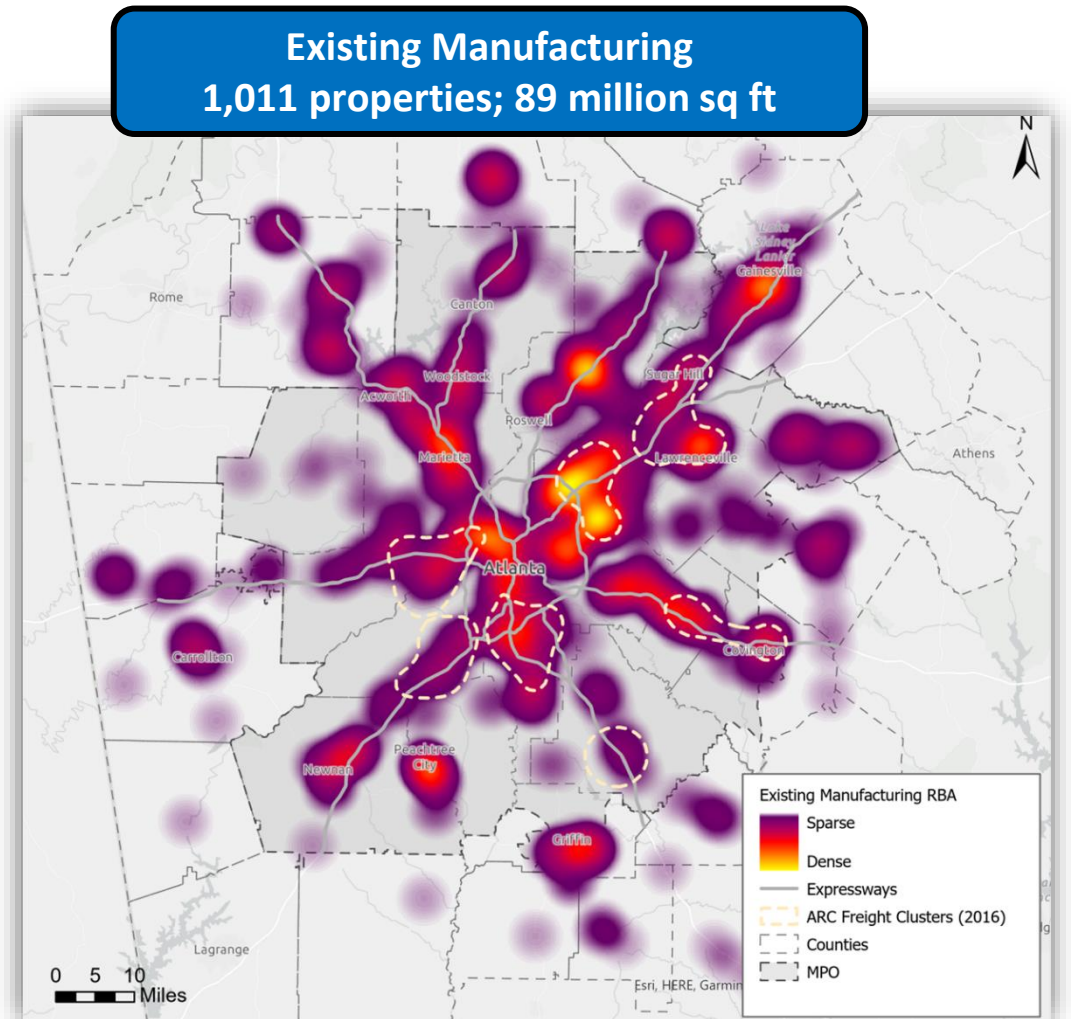
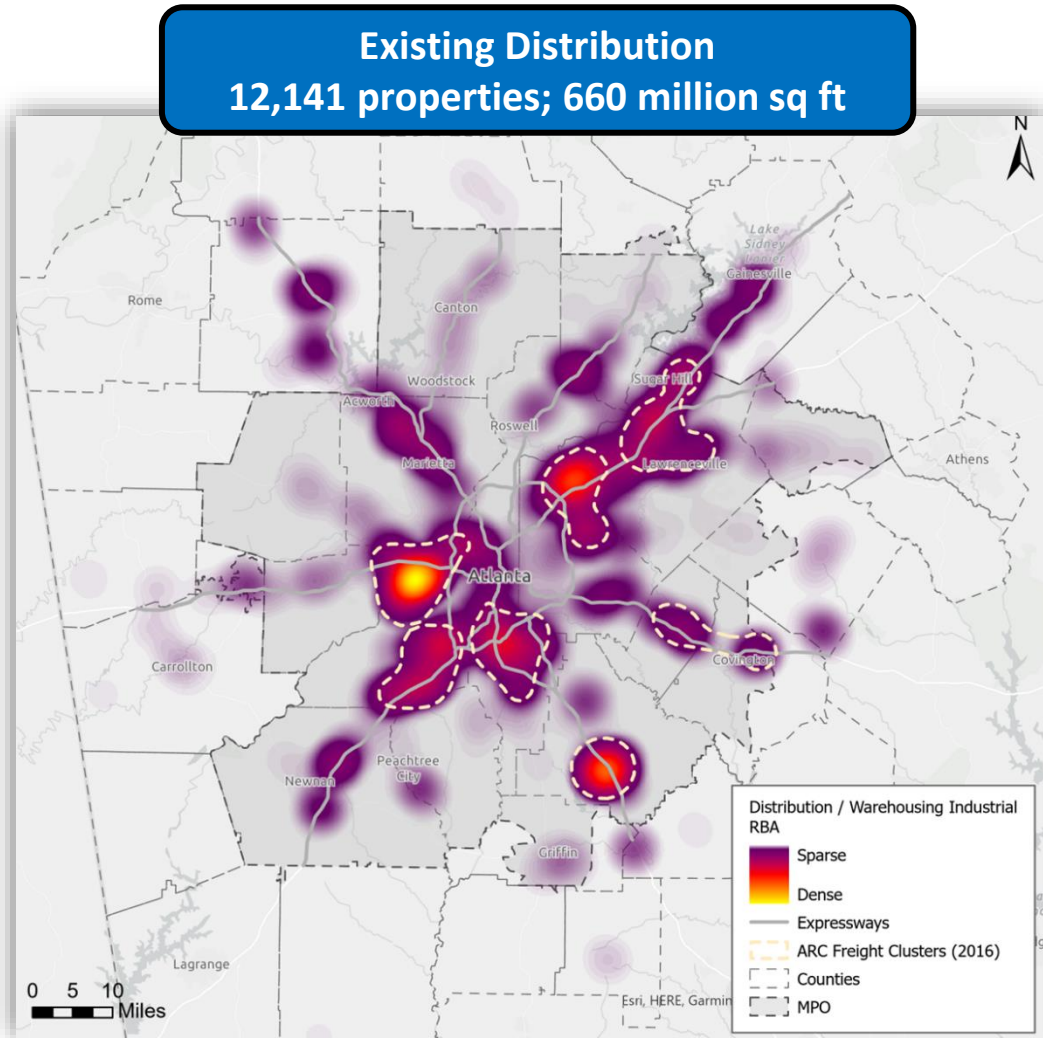
Industrial growth is concentrated along the major interstate corridors outside of I-285

All corridors are experiencing industrial growth: I-20, I-75, and I-85

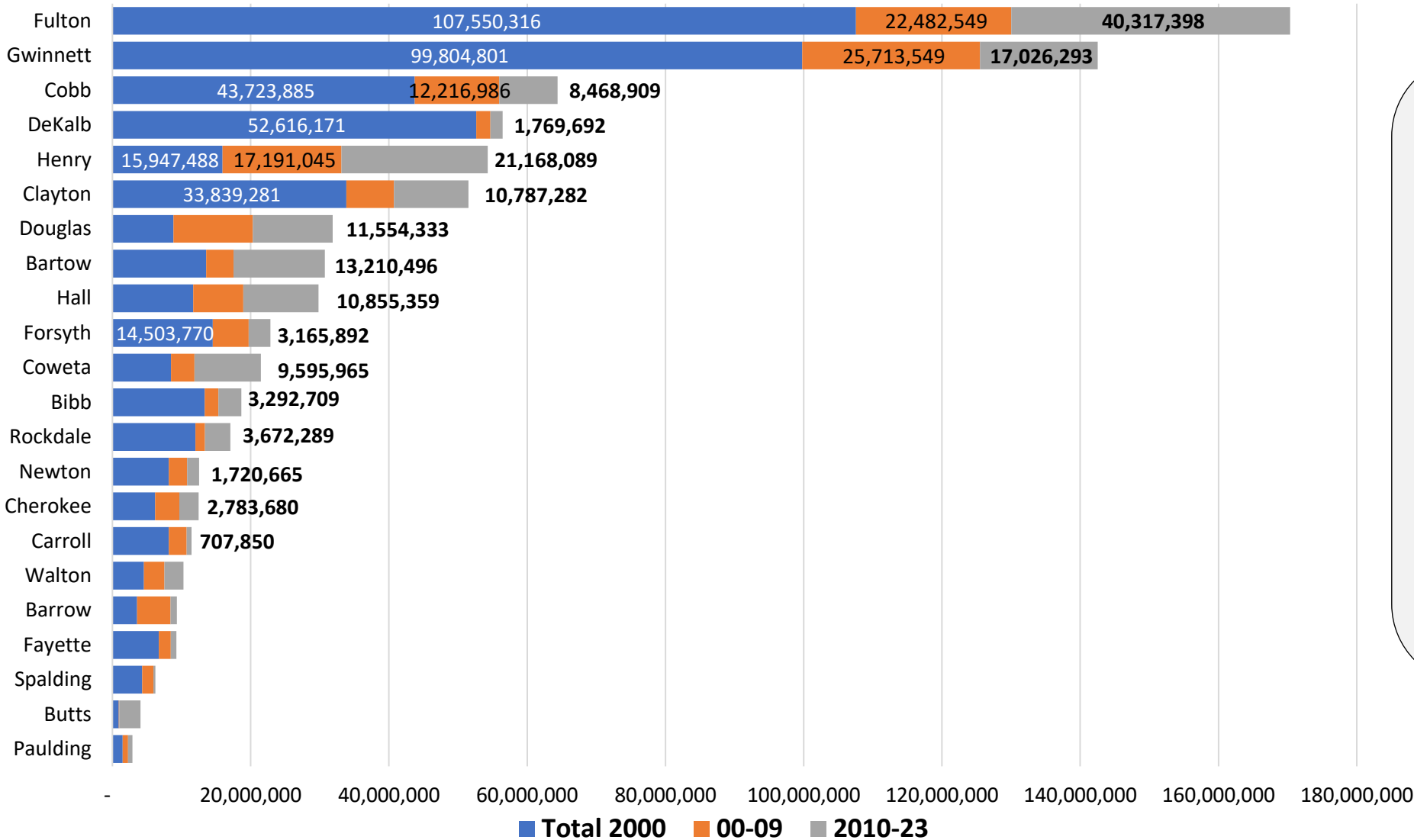


Distribution land uses are concentrated along the major interstate corridors;
manufacturing is dispersed on interstates and major state routes

Both land uses significantly impact community land uses and require coordination with transportation planning



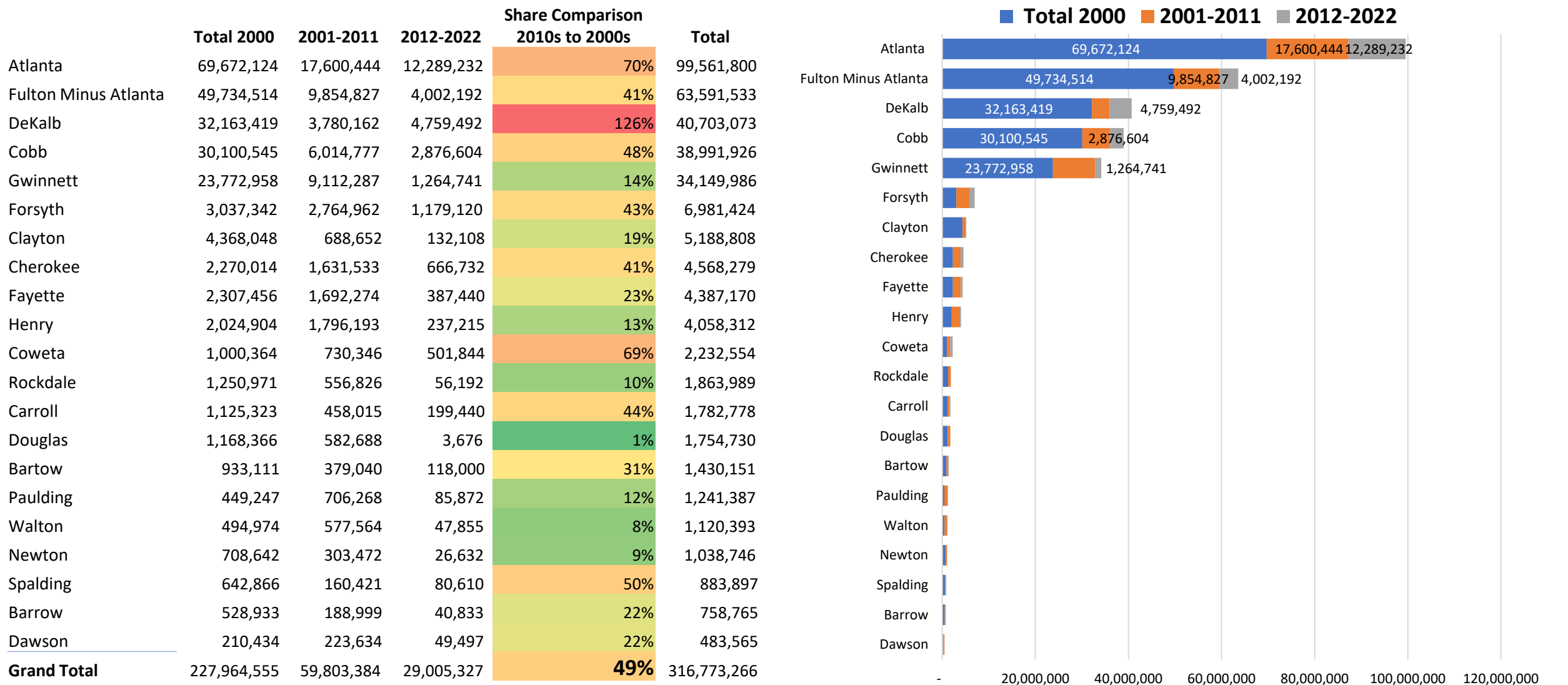
Distribution space construction is growing rapidly



The Atlanta region is a national distribution center. Fulton, Henry, Gwinnett, Douglas, Clayton (as well as Bartow and Hall) have each added more than 10 M sq ft of space since 2010. What land use and transportation strategies are needed to best manage this growing land use – and critical part of the economy?

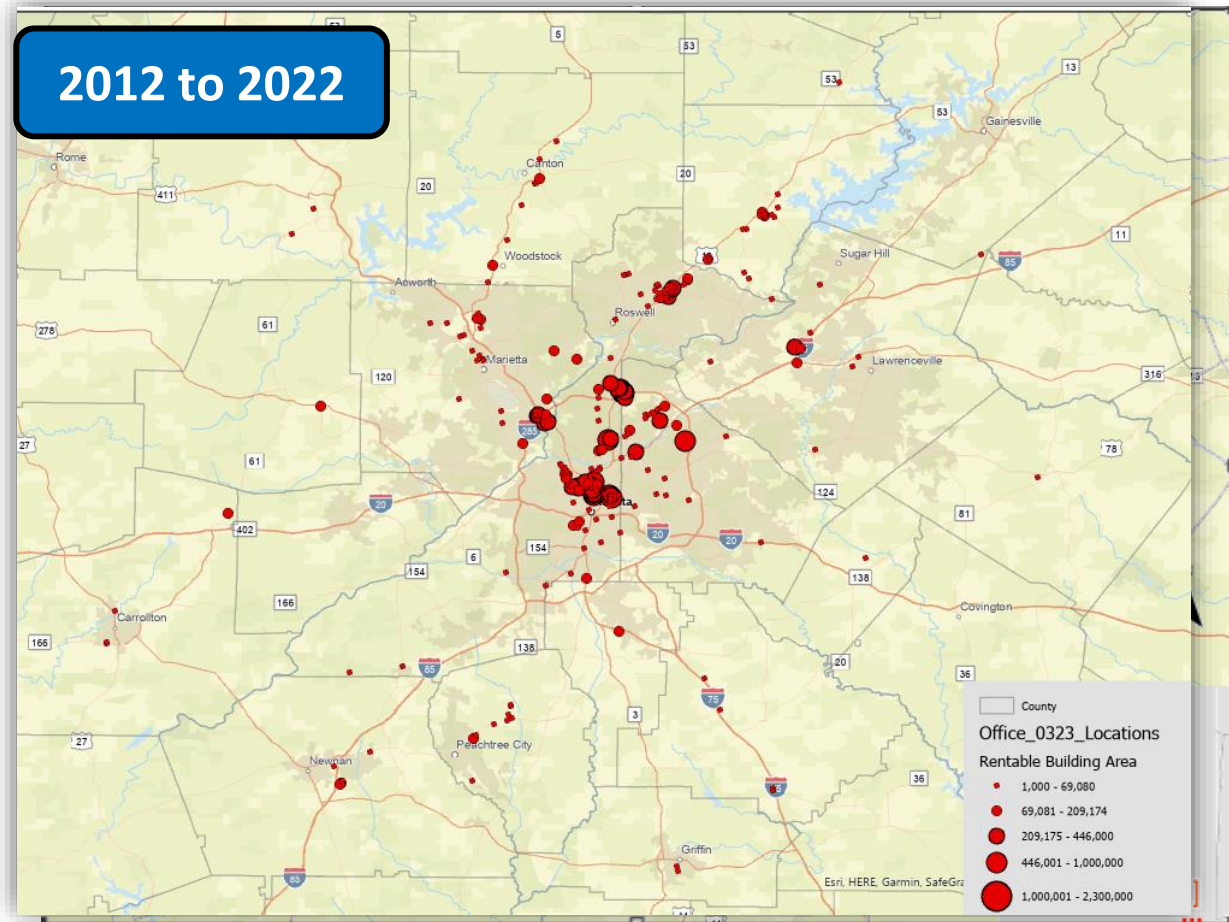
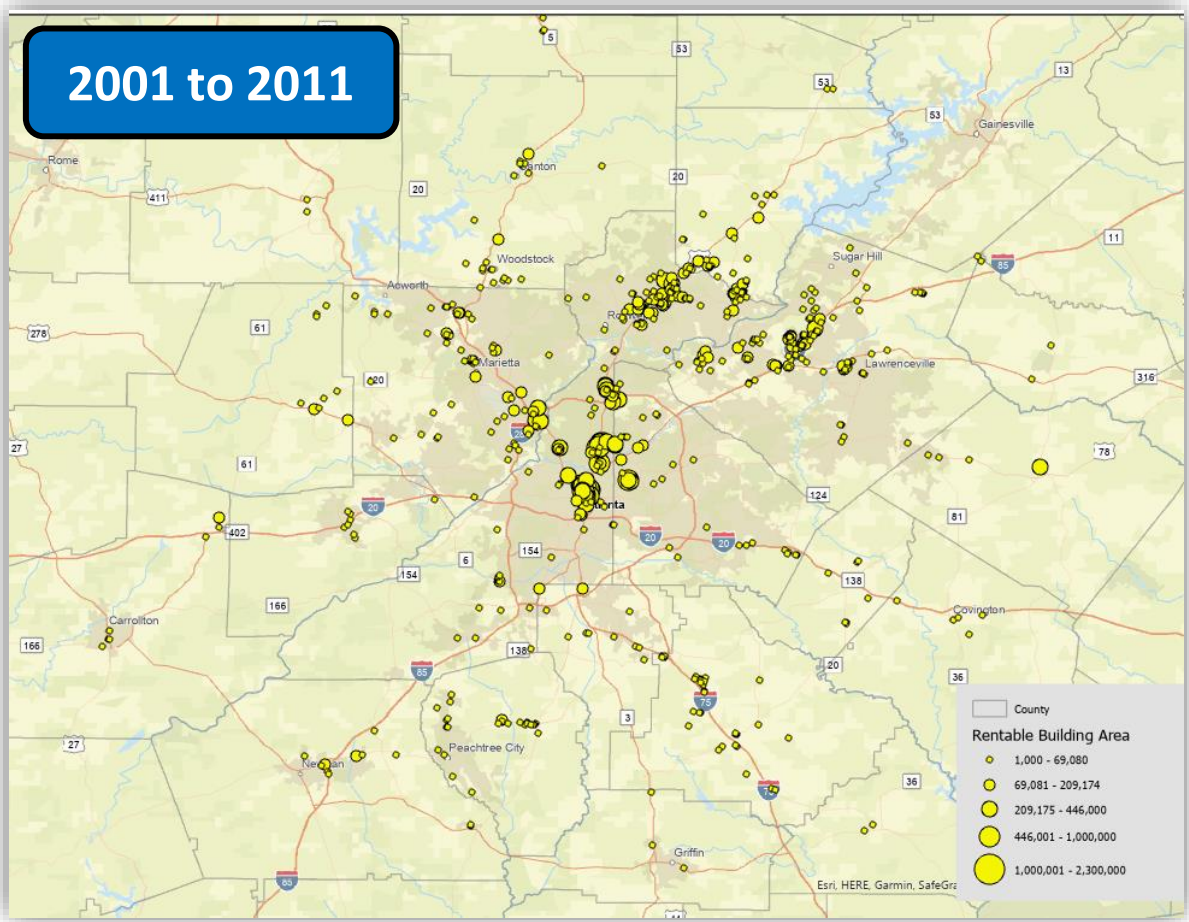
Office space construction decreased by 49% between 2012-2022 compared to the prior decade, with the majority of construction in Atlanta, Fulton and DeKalb

How will the increase in remote working impact future office construction levels and travel patterns?



Major office construction projects (over 50,000 sq ft) have decreased over the last decade, impacting growth and transportation patterns

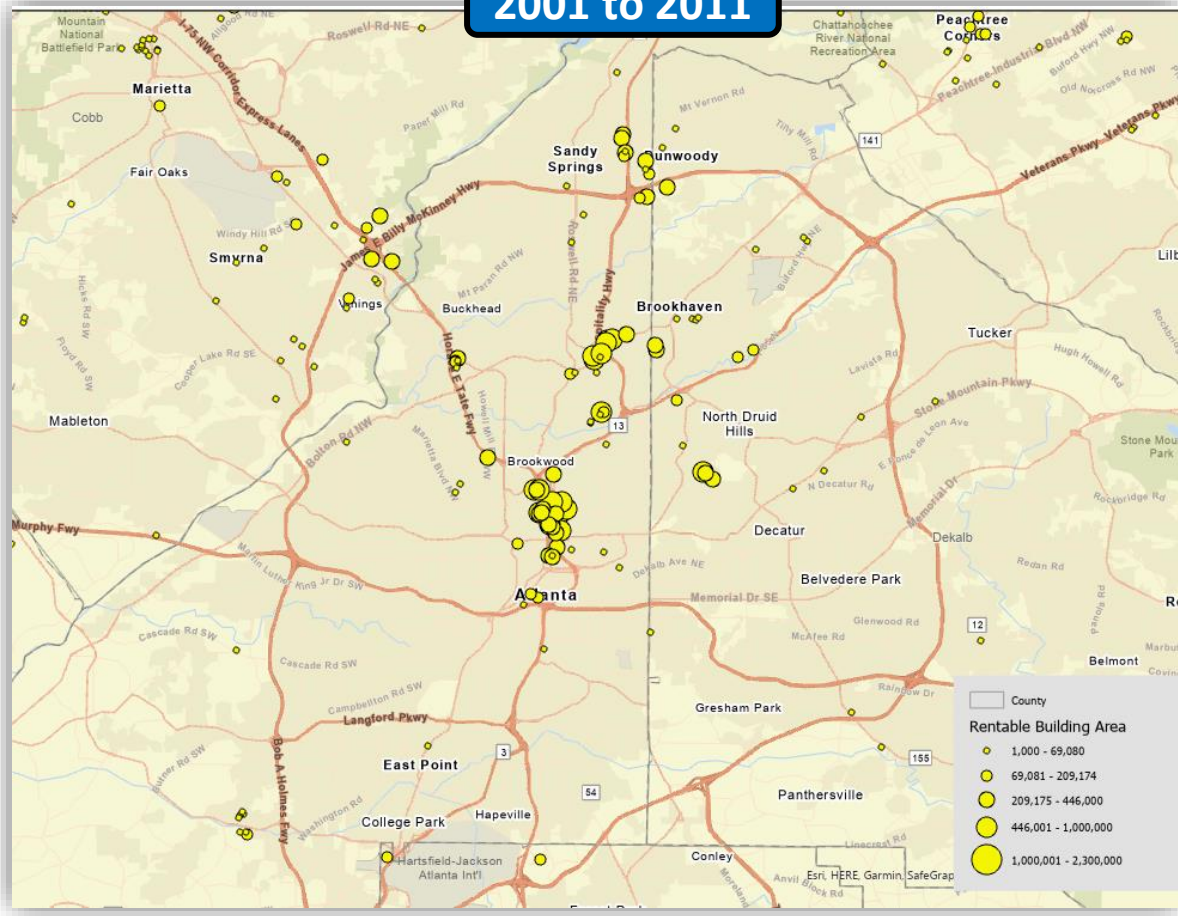
With generally higher office vacancy rates and fewer major construction projects in the region's traditional office centers, what strategies should communities pursue to keep office centers vibrant?



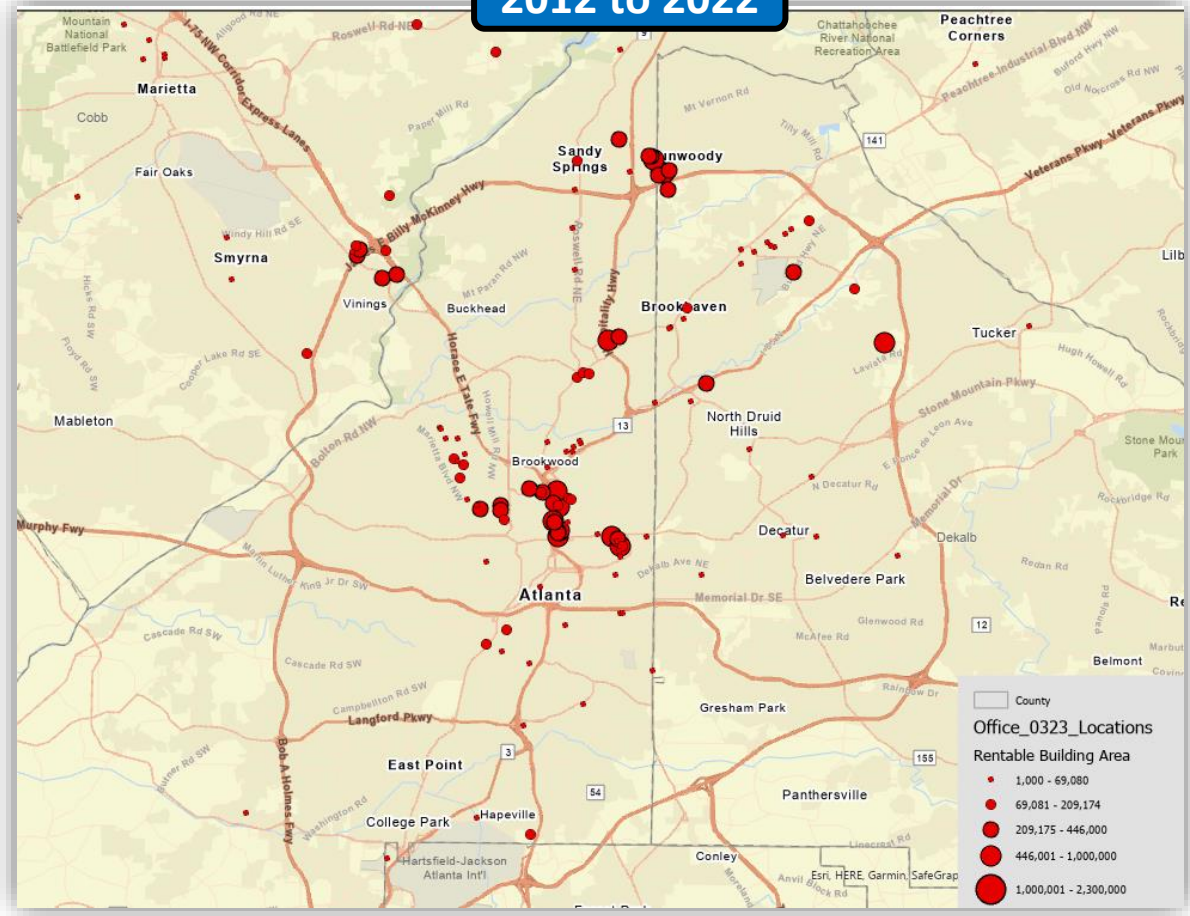
Central Region: Office Building Construction (over 15,000 sq ft)

Ponce City Market, “West Midtown”, and the Chamblee/Doraville area are growing

2001 to 2011

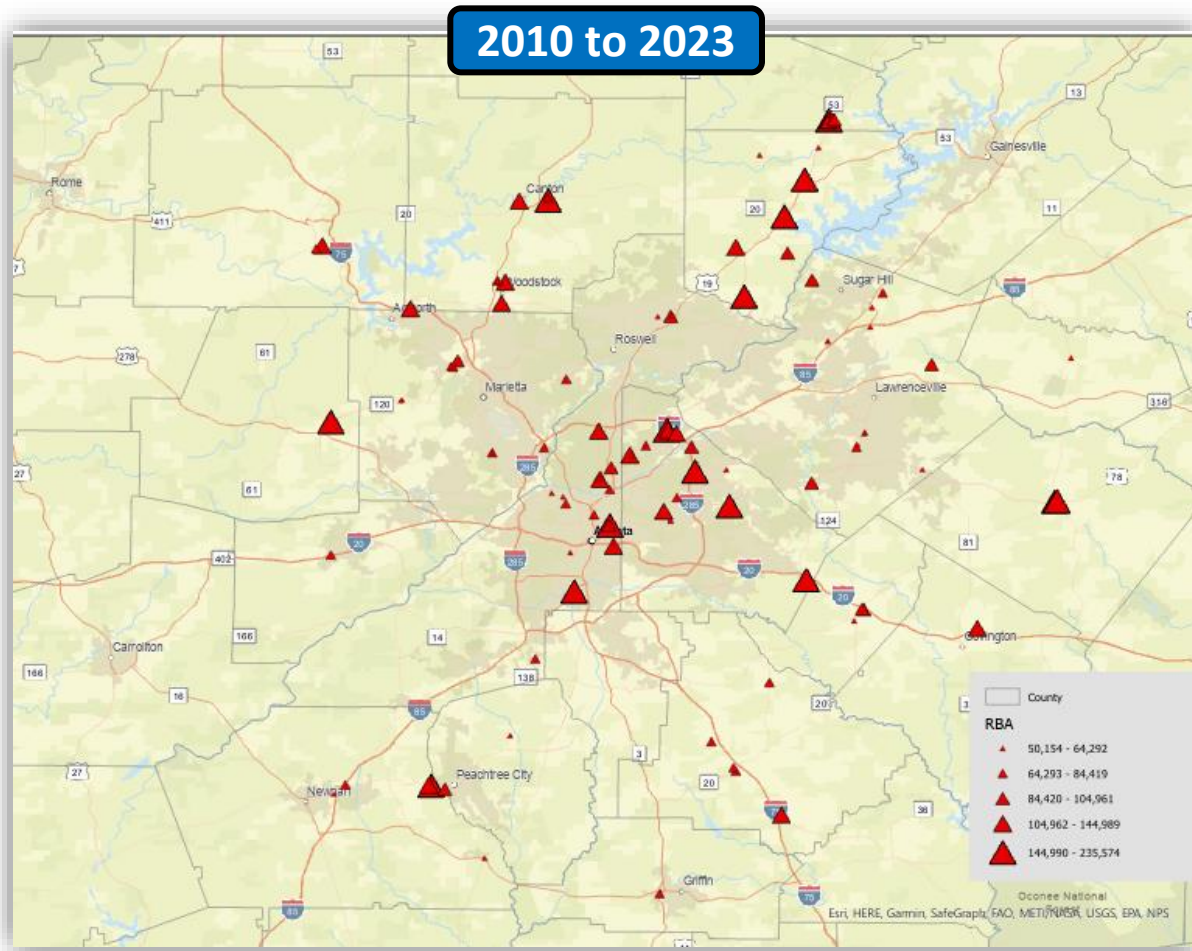
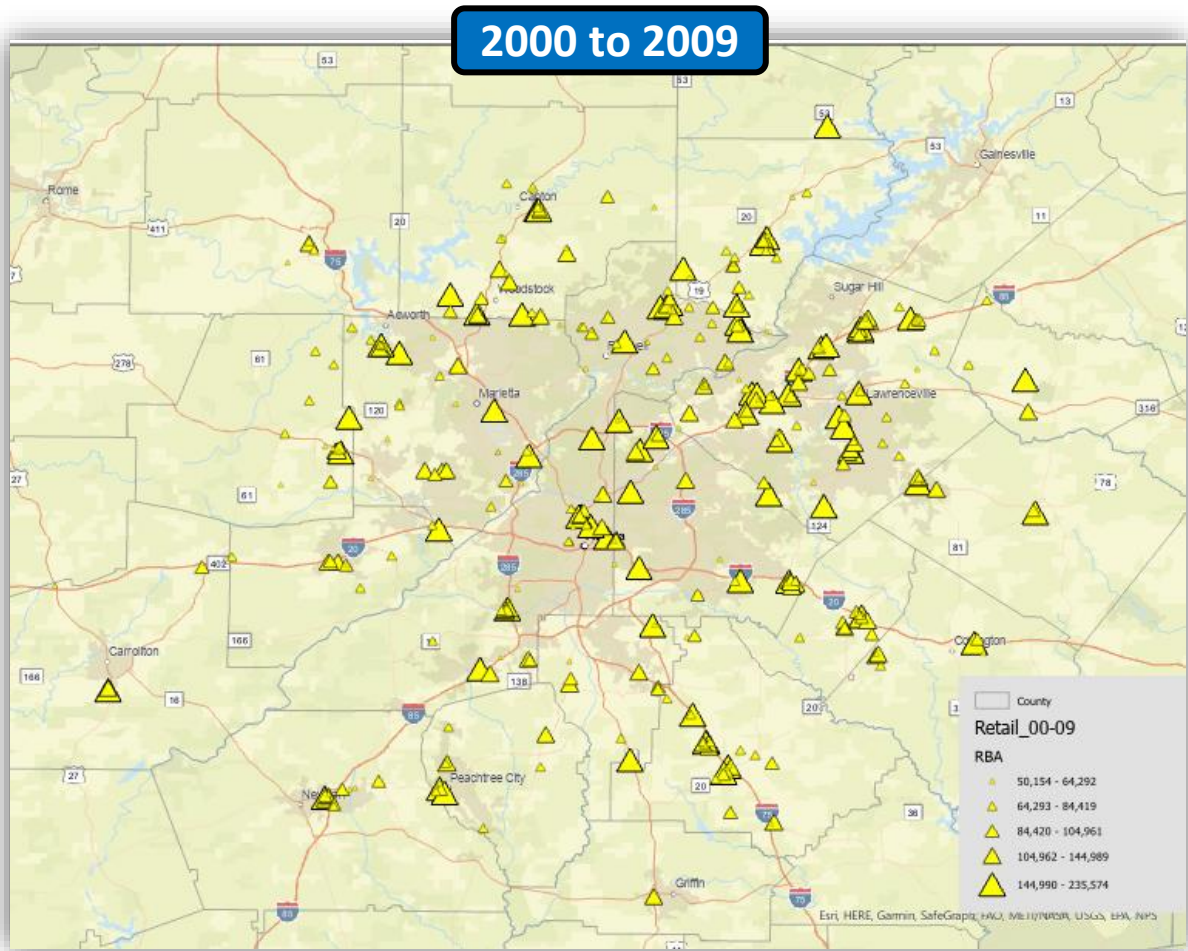


2012 to 2022

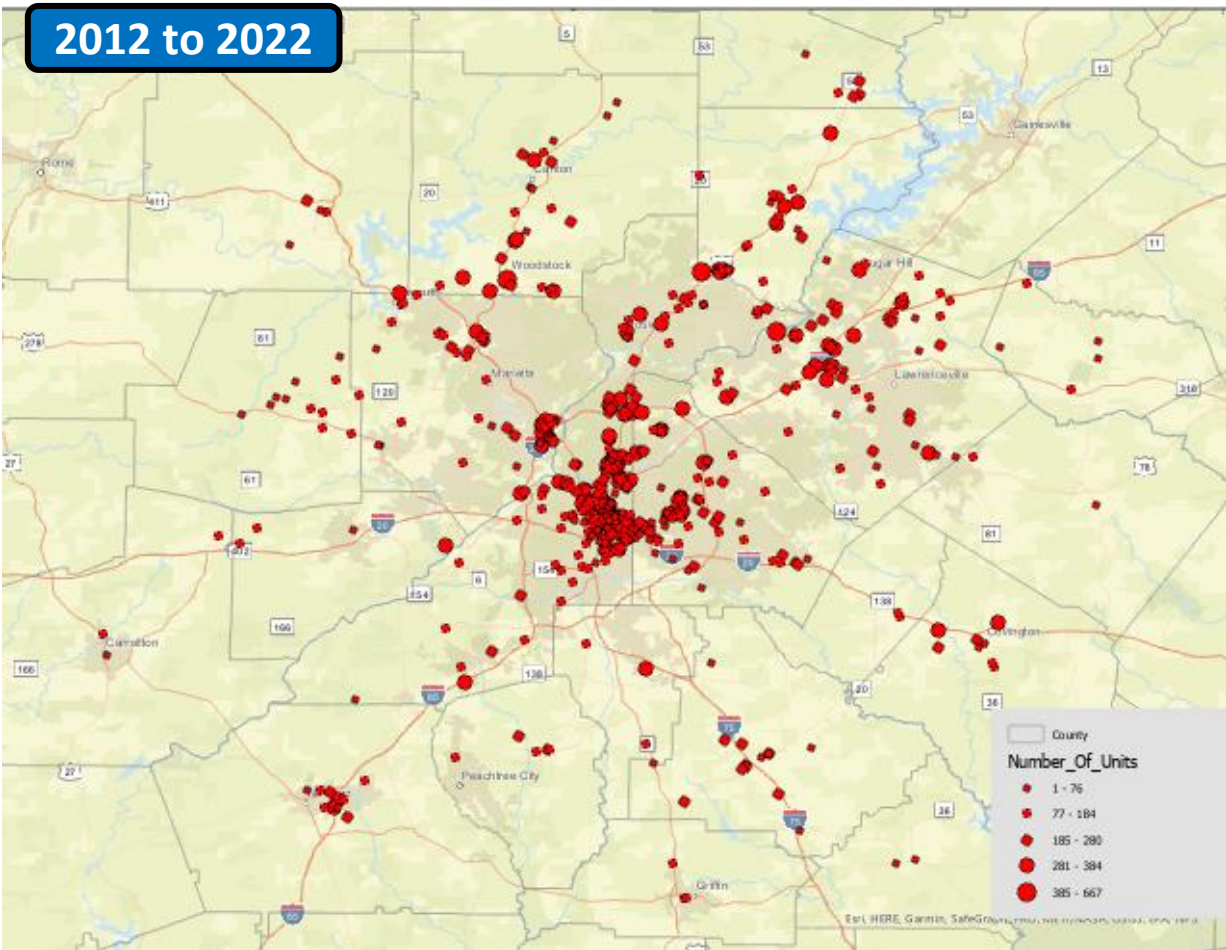
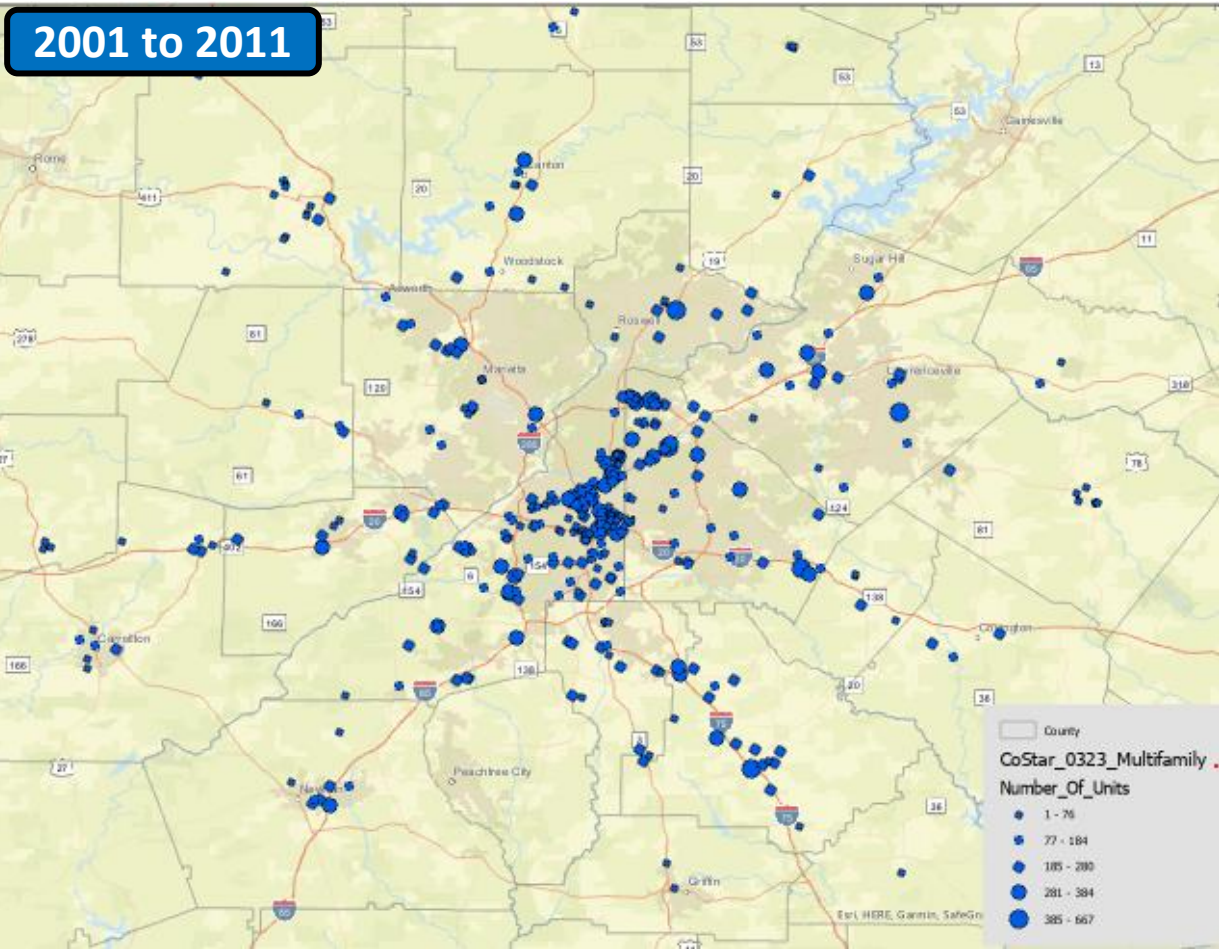


New retail construction since 2010 (over 15,000 sq ft) has slowed significantly compared to the prior decade

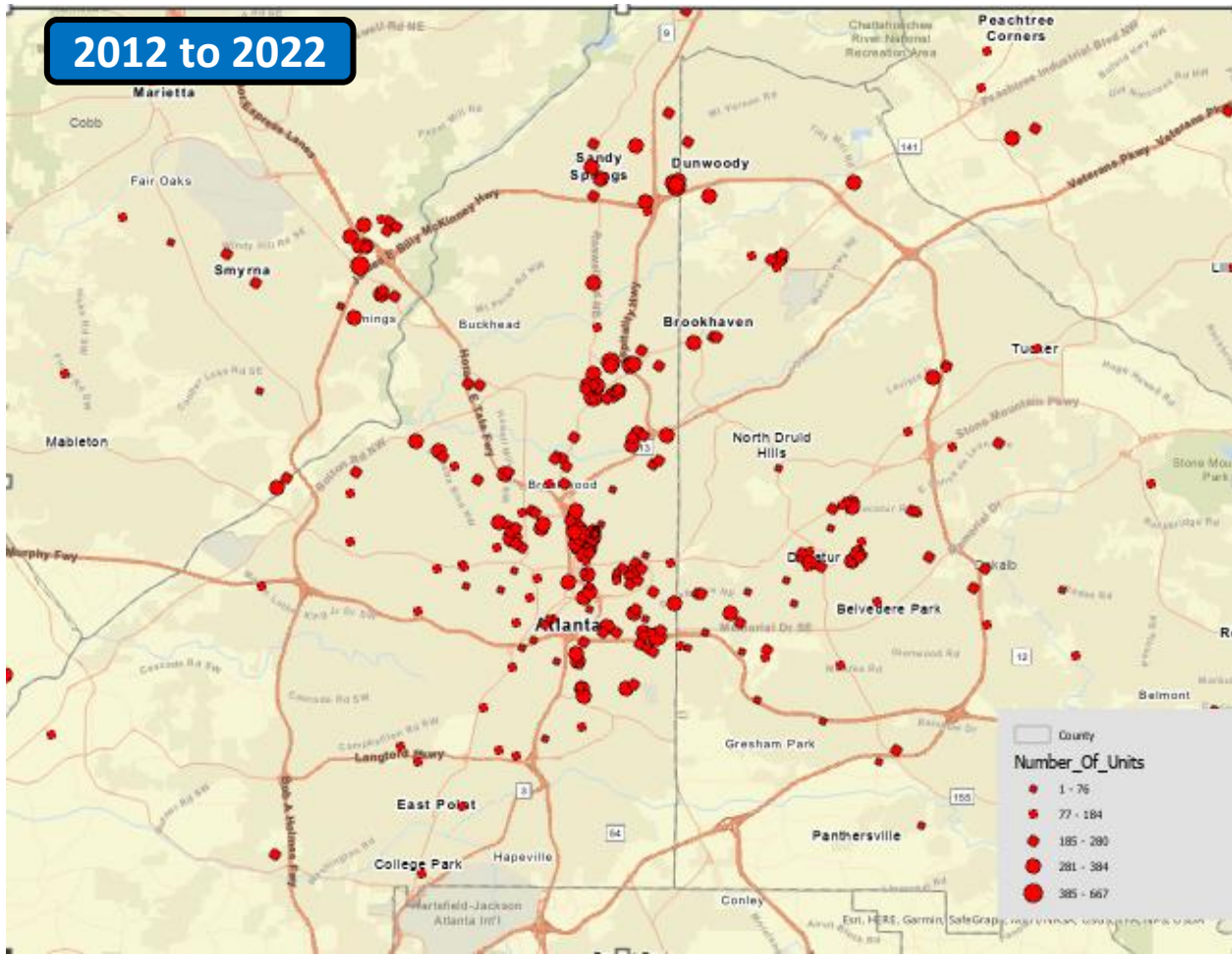
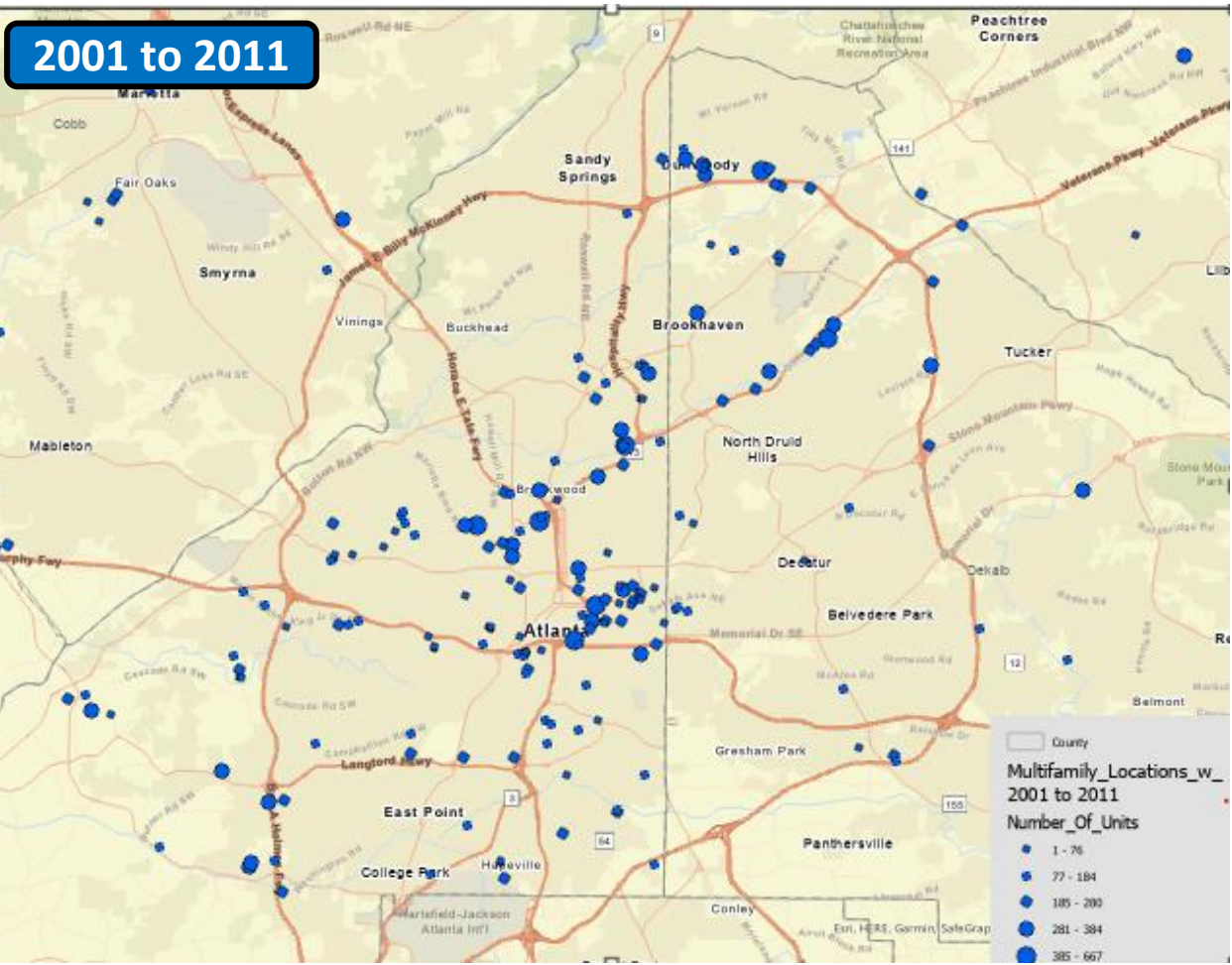
Retail centers and corridors must react to the rise of e-commerce and changing consumer trends; **what strategies can communities pursue to support these areas** that are essential to local sales tax revenues and quality of life?



Regional multi-family construction continues to concentrate around the interstate system and major arterial roadway corridors

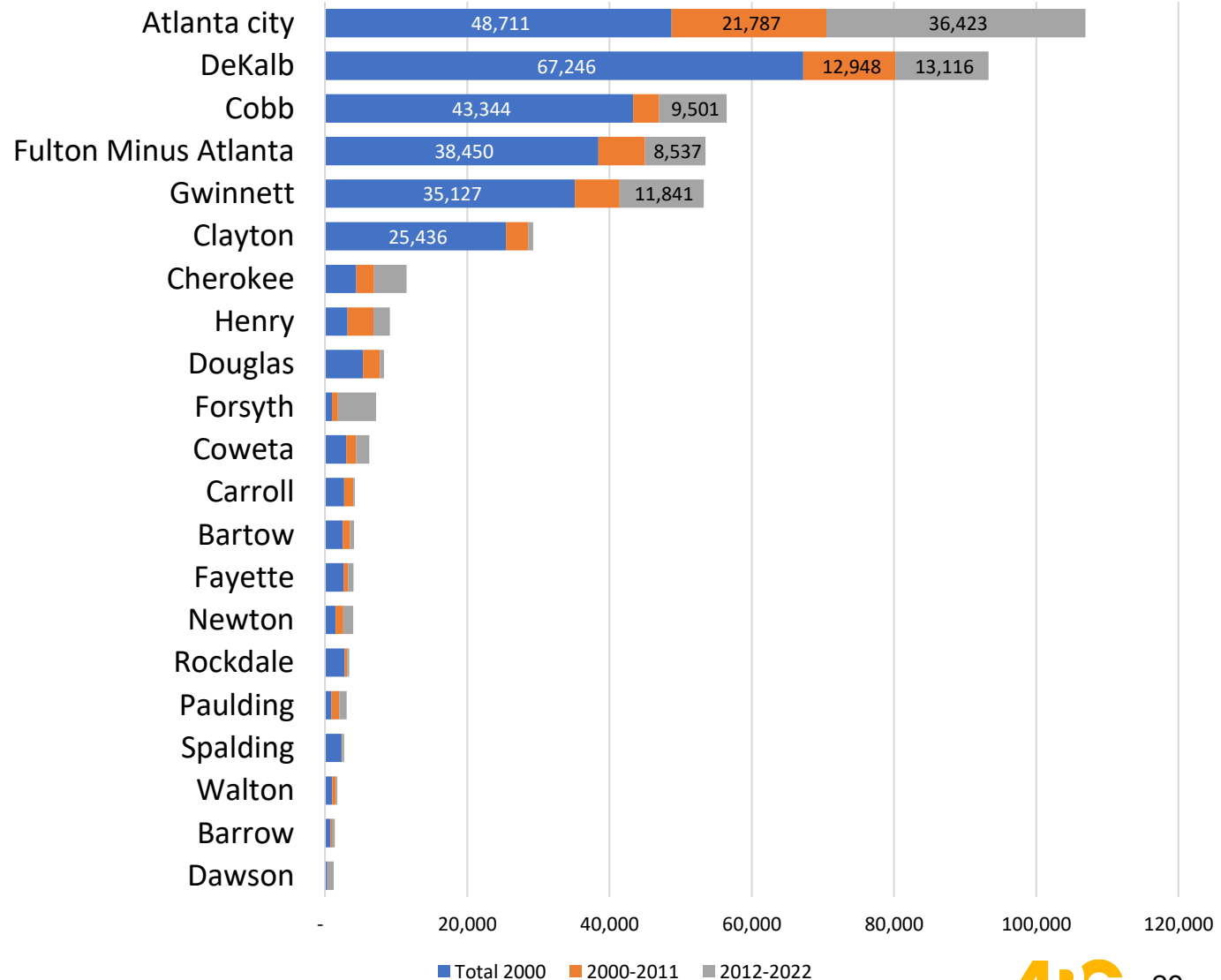


Core Region: Multi-family construction increased over the last decade in several activity centers (Midtown, Buckhead, Cumberland, Decatur, etc.)



Multi-Family Construction Increased in Most Jurisdictions, Especially in the Core

Row Labels	Total 2000	2000-2011	2012-2022	Share Comparison 2010s to 2000s
Atlanta city	48,711	21,787	36,423	167%
DeKalb	67,246	12,948	13,116	101%
Cobb	43,344	3,649	9,501	260%
Fulton Minus Atlanta	38,450	6,527	8,537	131%
Gwinnett	35,127	6,278	11,841	189%
Clayton	25,436	3,161	662	21%
Cherokee	4,375	2,518	4,579	182%
Henry	3,165	3,661	2,302	63%
Douglas	5,363	2,377	541	23%
Forsyth	970	841	5,345	636%
Coweta	2,985	1,357	1,878	138%
Carroll	2,703	1,305	203	16%
Bartow	2,473	1,043	543	52%
Fayette	2,614	615	774	126%
Newton	1,497	1,052	1,422	135%
Rockdale	2,771	364	250	69%
Paulding	916	1,098	1,034	94%
Spalding	2,328	72	289	401%
Walton	1,008	508	202	40%
Barrow	792	167	411	246%
Dawson	313	36	865	2403%



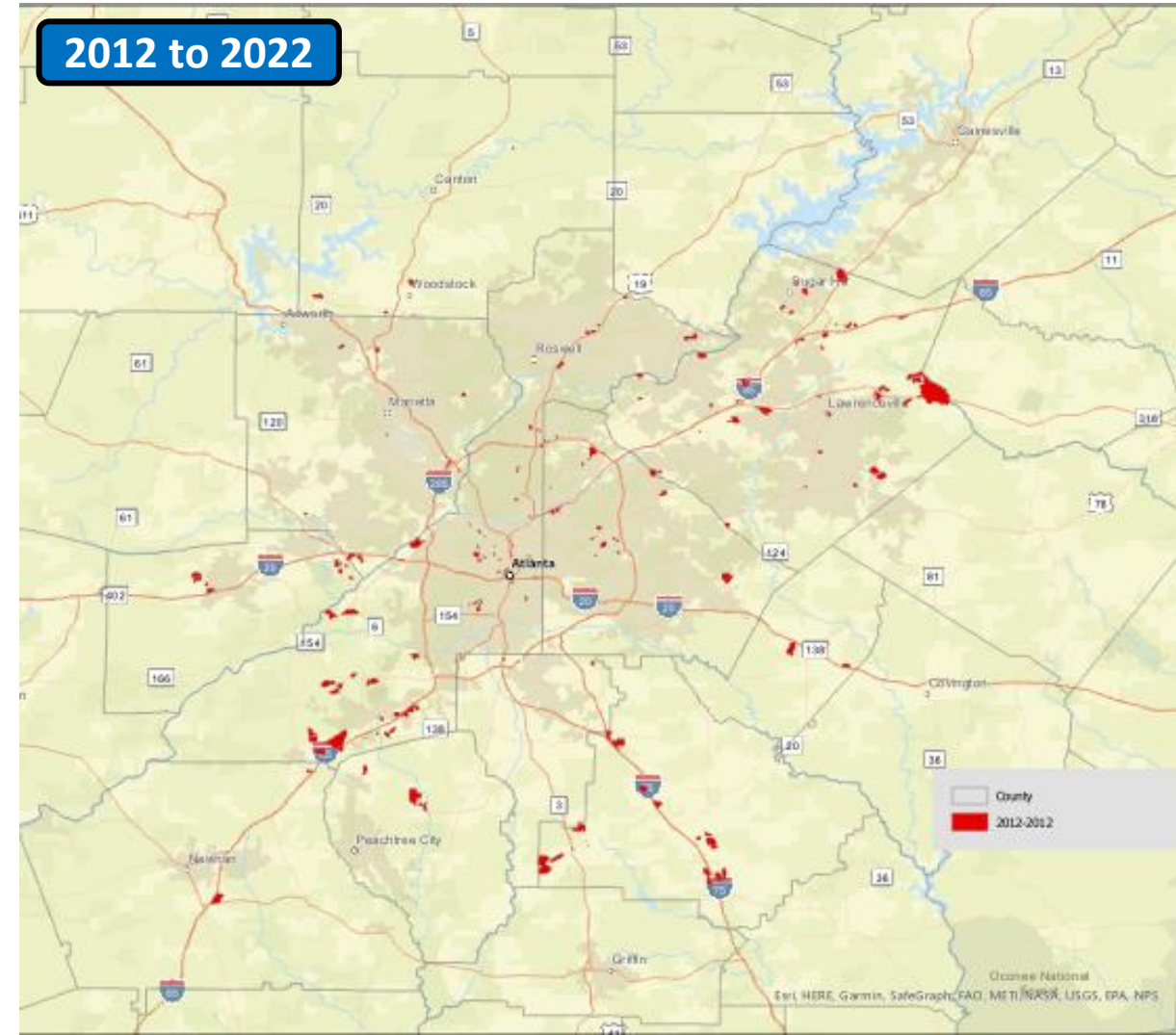
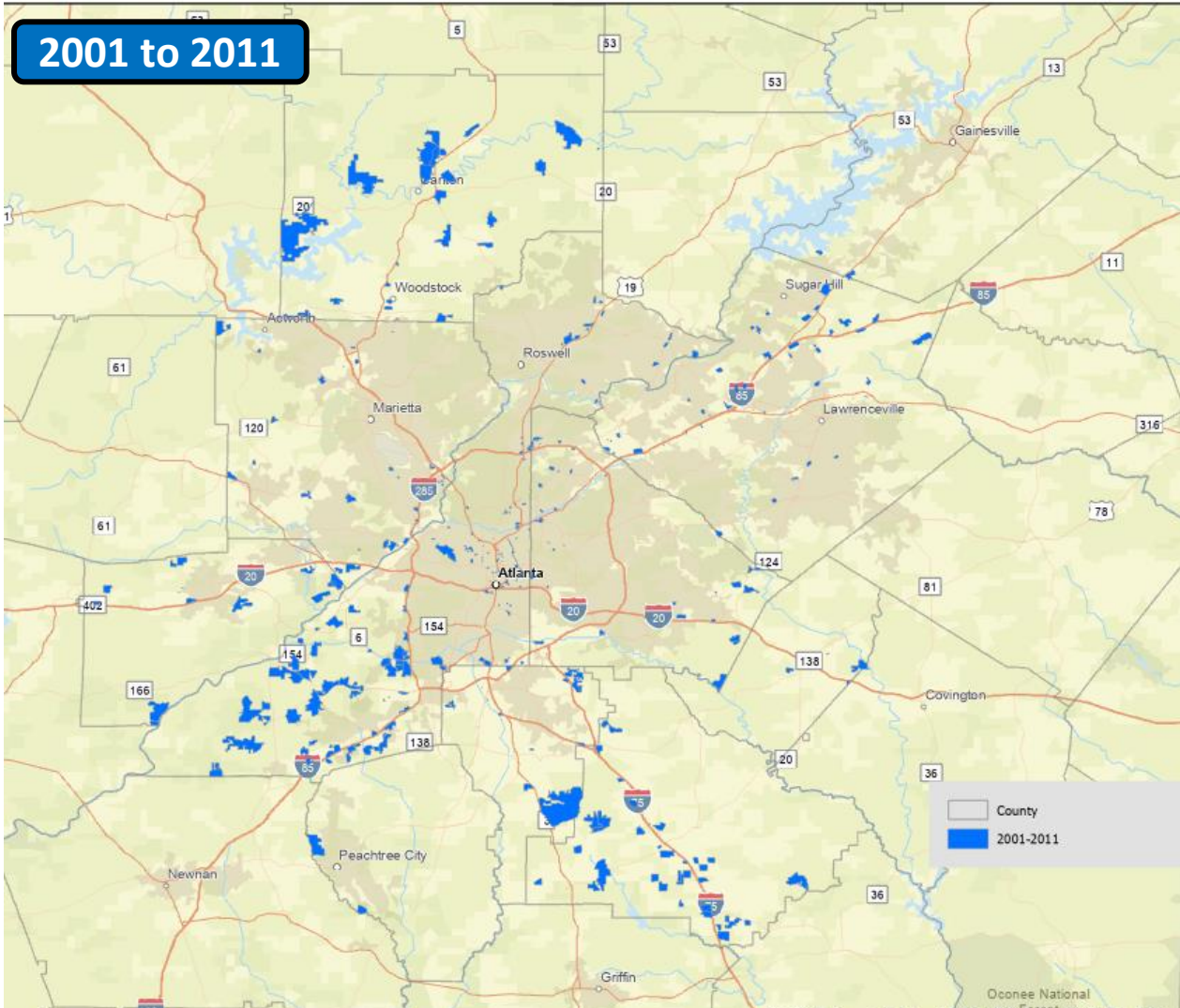
Residential Units Authorized by Permits Lag Levels from the 2001-2010 Period by **59%**

Between 2011 to 2020, only Forsyth County issued building permits at the same level as in 2001-2010.

Jurisdiction	2019	2020	2021	2022	Avg 01-10	Av 11-20	Share of 01-10
ATLANTA	3283	1674	2413	11853	6168	4419	72%
Barrow	740	940	1124	1040	874.7	479.8	55%
Bartow	860	864	1135	2405	818.8	453.4	55%
Carroll	792	792	1251	746	1195.6	373.8	31%
Cherokee	2443	2394	2754	3021	2674.3	2039.6	76%
Clayton	905	954	929	373	1817.9	441.7	24%
Cobb	3567	2494	2953	2873	4045.6	2739.9	68%
Coweta	1344	1014	1716	717	1431.6	887	62%
Dawson	423	430	581	553	291	267.3	92%
DeKalb	2011	2200	2844	2409	4587.1	1884	41%
Douglas	449	747	1639	665	1391.2	323	23%
Fayette	518	564	762	602	615.4	414.4	67%
Forsyth	1851	2485	2359	2601	2665.9	2740.1	103%
Fulton not Atlanta	3107	2600	2778	2772	4409.5	2790.7	63%
Gwinnett	4165	4539	4754	5359	6871.7	3424.7	50%
Hall	1096	1080	1588	2067	1142.3	838.3	73%
Henry	1816	1867	2761	2522	2738.5	1212.4	44%
Jackson	1097	1422	1782	2056	828.6	714.4	86%
Paulding	1635	1893	2193	1534	2174.4	1117.6	51%
Rockdale	275	269	218	1024	627.4	172.6	28%
Spalding	417	257	623	524	384.3	203.2	53%
Walton	782	855	1136	810	989.7	438.8	44%
Grand Total	35926	32818	41265	58920	54468.9	32183.4	59%

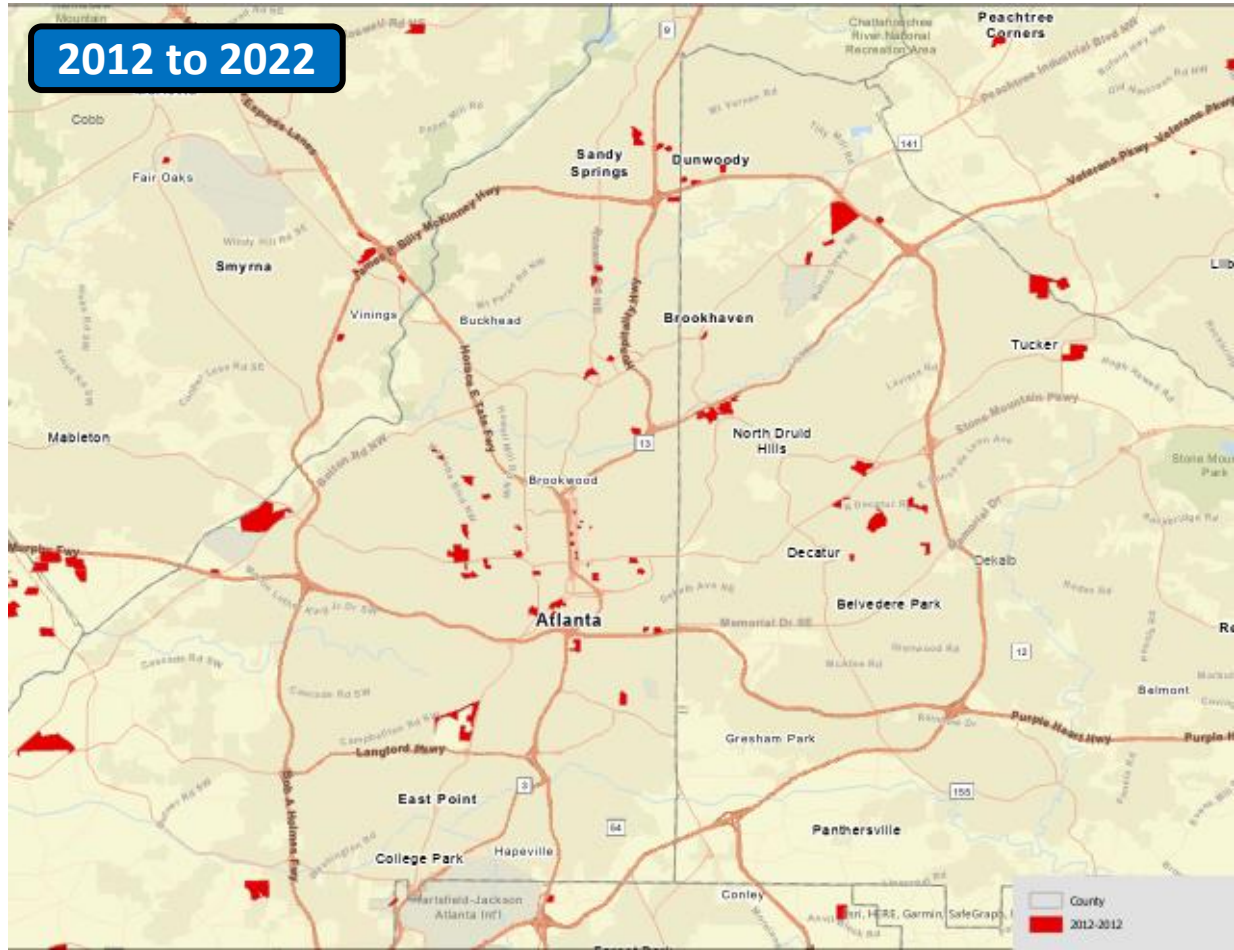
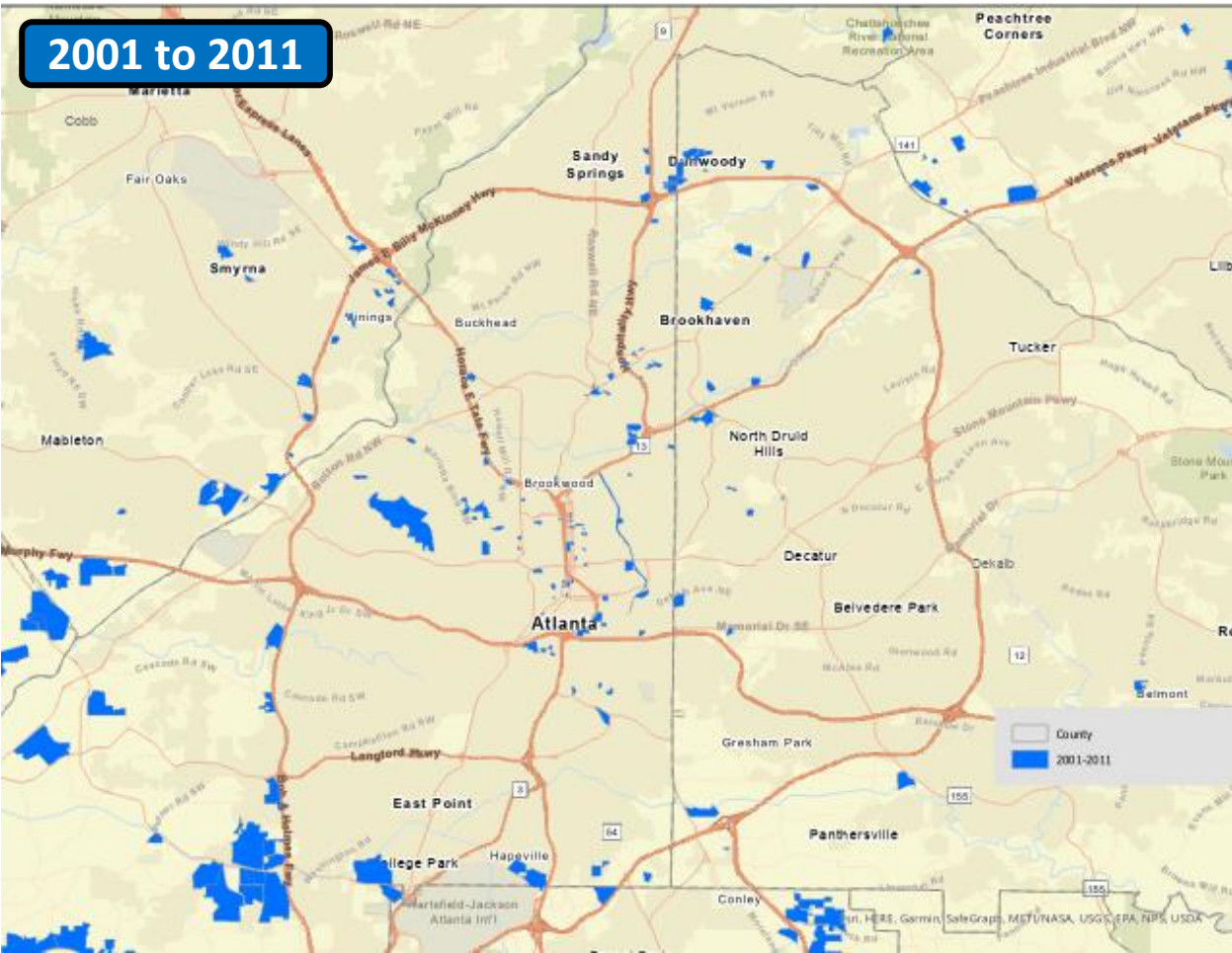
Developments of Regional Impact (DRI) Reviews

Generally, over the past decade, the scale of individual DRIs has decreased compared to prior decades. However, many of the DRIs previously reviewed from 2001 to 2011 are returning for updated reviews



Core Region: Developments of Regional Impact (DRI) Reviews

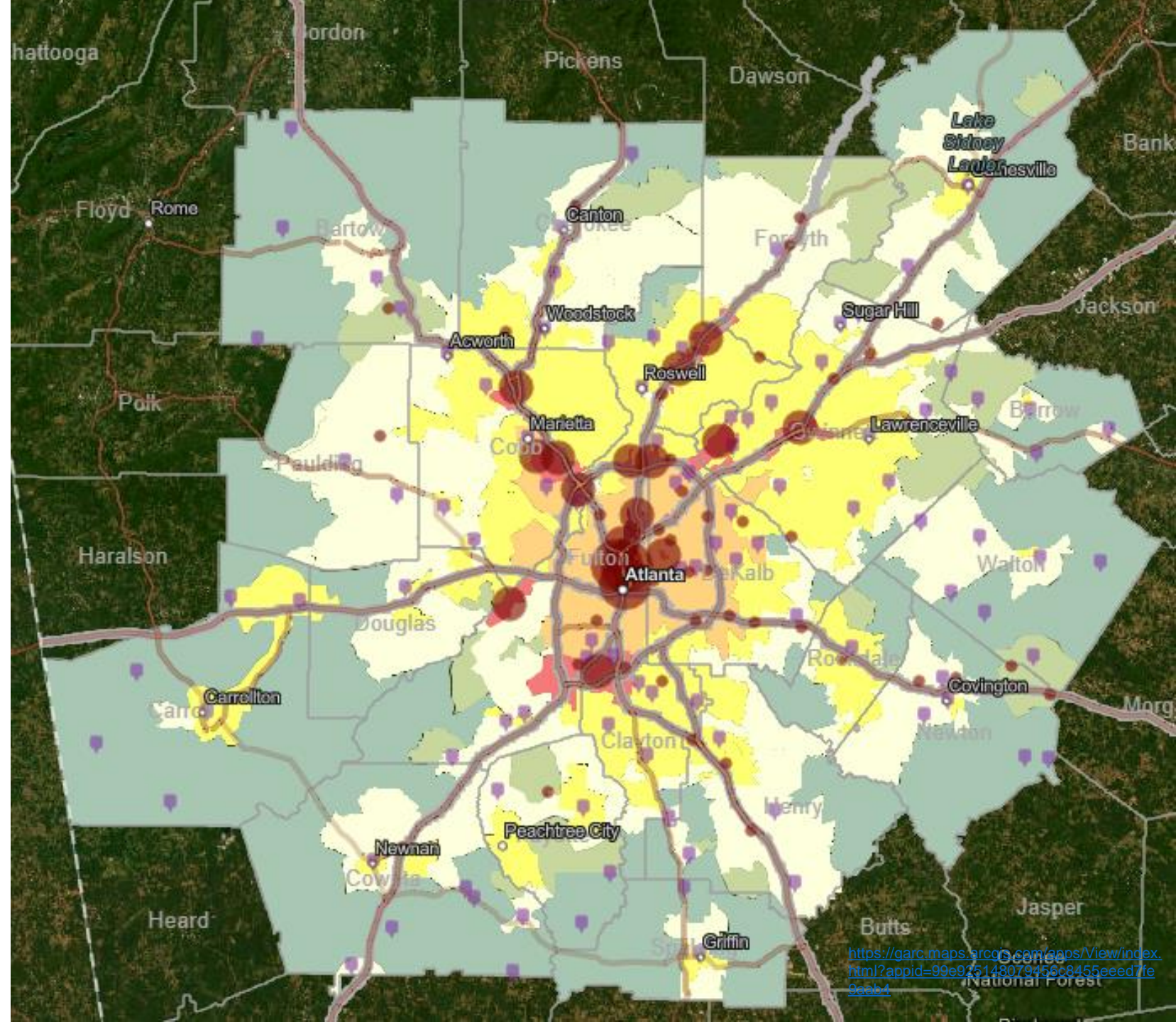
During the 2001 to 2011 period, the rapid growth of light industrial and distribution land uses in the SR 6 corridor (South Fulton and Douglas) is clearly illustrated



UGPM



The Unified Growth Policy Map (UGPM), first adopted in 2006, was developed and implemented in partnership with local governments to foster a stronger link between regional patterns of development and transportation needs. It creates a regional planning spatial structure that allows for the development of place-based regional policies and priorities by area type, with appropriate development design for centers and corridors and helps to inform transportation infrastructure decision-making.



<https://garc.maps.arcgis.com/apps/View/index.html?appid=99e975148079456c8455eed7fe9cab4>

ARC is conducting scenario planning to understand the impact of potential regional strategies on climate change

Special funding support has been provided by FHWA to ARC to advance national models that assist incorporating climate change – along with other factors - into the planning process (Approx. 3 Million in \$)












POOLED FUND FHWA-VOLPE

DOTs: CA, MD, NC, OH, OR, VA, WA

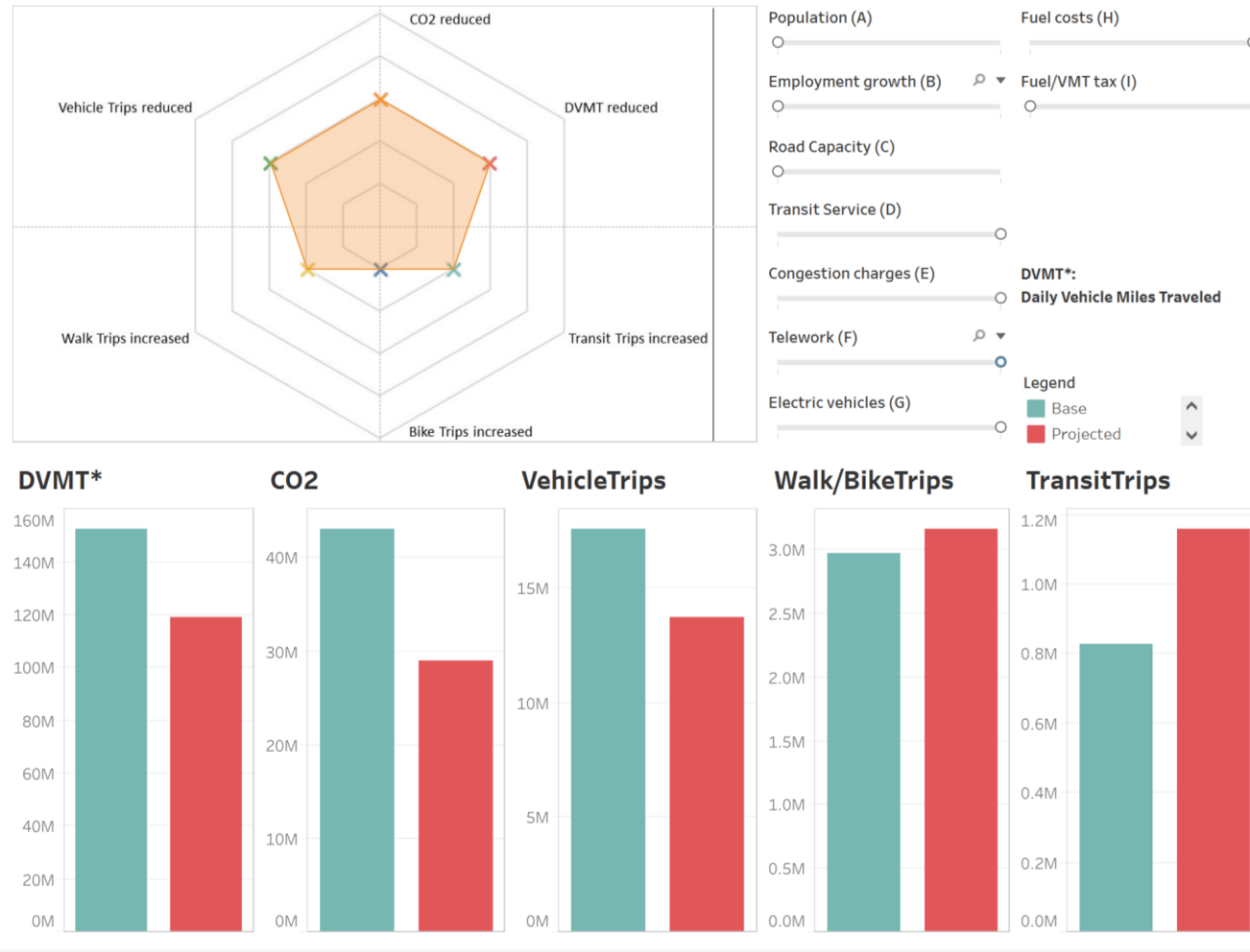
MPOs: Atlanta, Boston, Houston, Las Vegas, Philadelphia, Portland, San Diego

VARIABLES

 Population	<ul style="list-style-type: none">15% growth in population from 2050 base model	 Telework	<ul style="list-style-type: none">50% of telework
 Employment	<ul style="list-style-type: none">60% growth in employment from 2050 base model	 Electric vehicles	<ul style="list-style-type: none">95% of battery electric vehicles (BEV) in households
 Road capacity	<ul style="list-style-type: none">50% growth in freeway and artery miles from 2050 base model	 Fuel costs	<ul style="list-style-type: none">Fuel cost: \$8.00 per gallon (retail cost before tax)Power cost: \$0.30 per kilowatt-hour (retail cost before tax)
 Transit service	<ul style="list-style-type: none">50% growth in all transit revenue miles from 2050 base model	 Fuel/VMT tax	<ul style="list-style-type: none">Fuel tax: \$0.90 per gas gallon equivalent of fuelVehicle Miles Traveled (VMT) tax: \$0.90 per gas gallon equivalent of fuel
 Congestion charges	<ul style="list-style-type: none">\$1.00 per vehicle traveled mile on freeways during periods of severe and extreme congestion	2⁹ = 512 future scenarios	

VisionEval Allows Policymakers and Users to Adjust Future Policy Assumptions for Items Such as Electrification and Growth

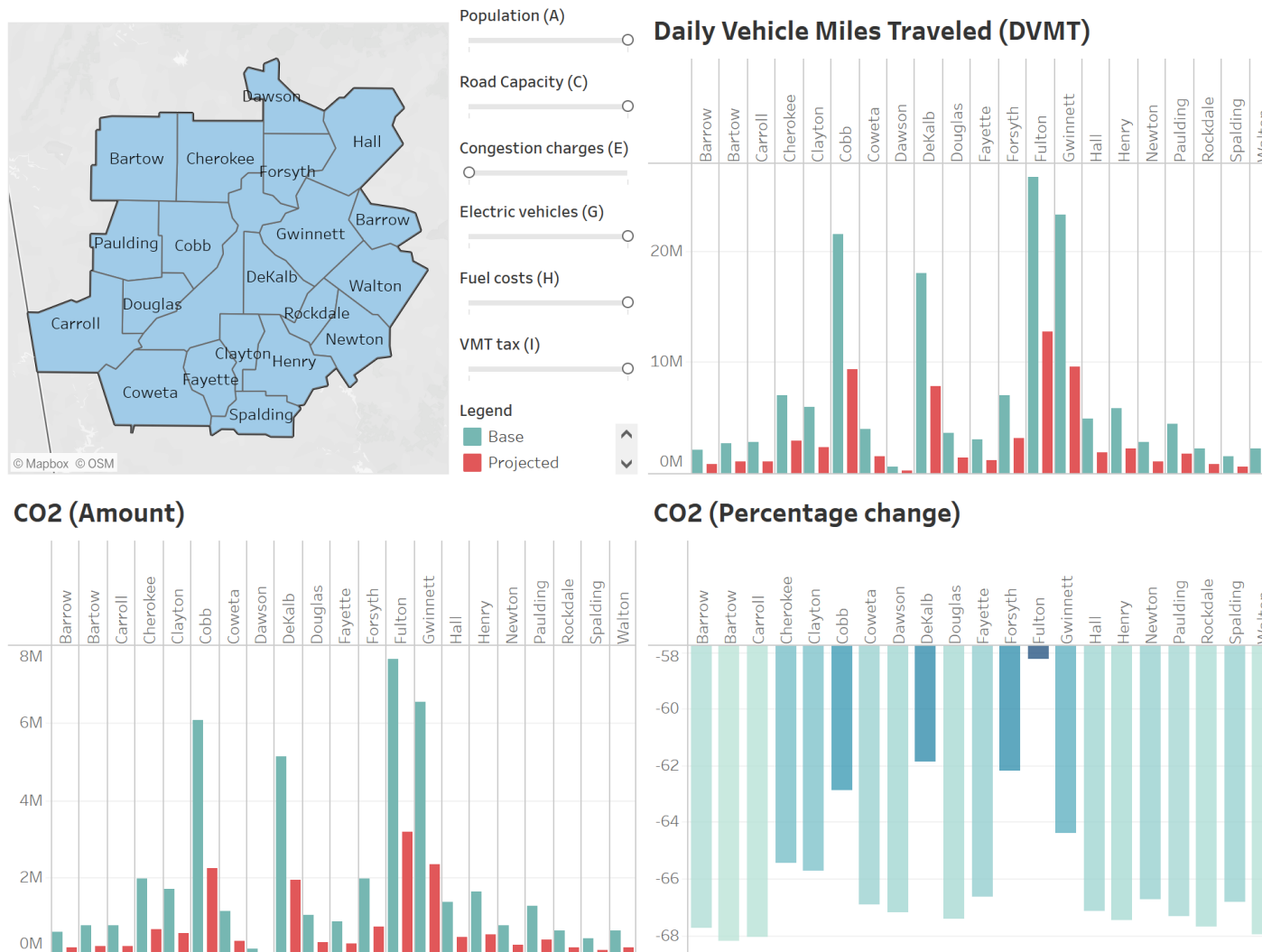
VisionEval scenario results



Comprehensive evaluation through the development of **over 500 scenario** combinations now allows us to examine the relationship between land use, travel technology, and transportation policies and to see these future impacts through climate variable measures like **CO2 emissions**. Initial results show that **no one policy change will substantially impact our greenhouse gas emissions**.

VisionEval provides county-level results and can determine the impact of alternative strategies on planning metrics

County level analysis



ARC has been a long-time leader in national efforts to develop “quick response” scenario planning models.

Work is continuing this Spring to further test and apply the scenario planning model, but outputs will be ready for ARC policymaker review over the Summer. Current version can be reviewed in the link below:

https://public.tableau.com/app/profile/jay.kwon8030/viz/Presentation_16793385675040/Final1

https://public.tableau.com/app/profile/jay.kwon8030/viz/County_Test_16781342978400/Final3

2. Policymaker Questions on Regional Land Use Growth Trends and Scenario Planning

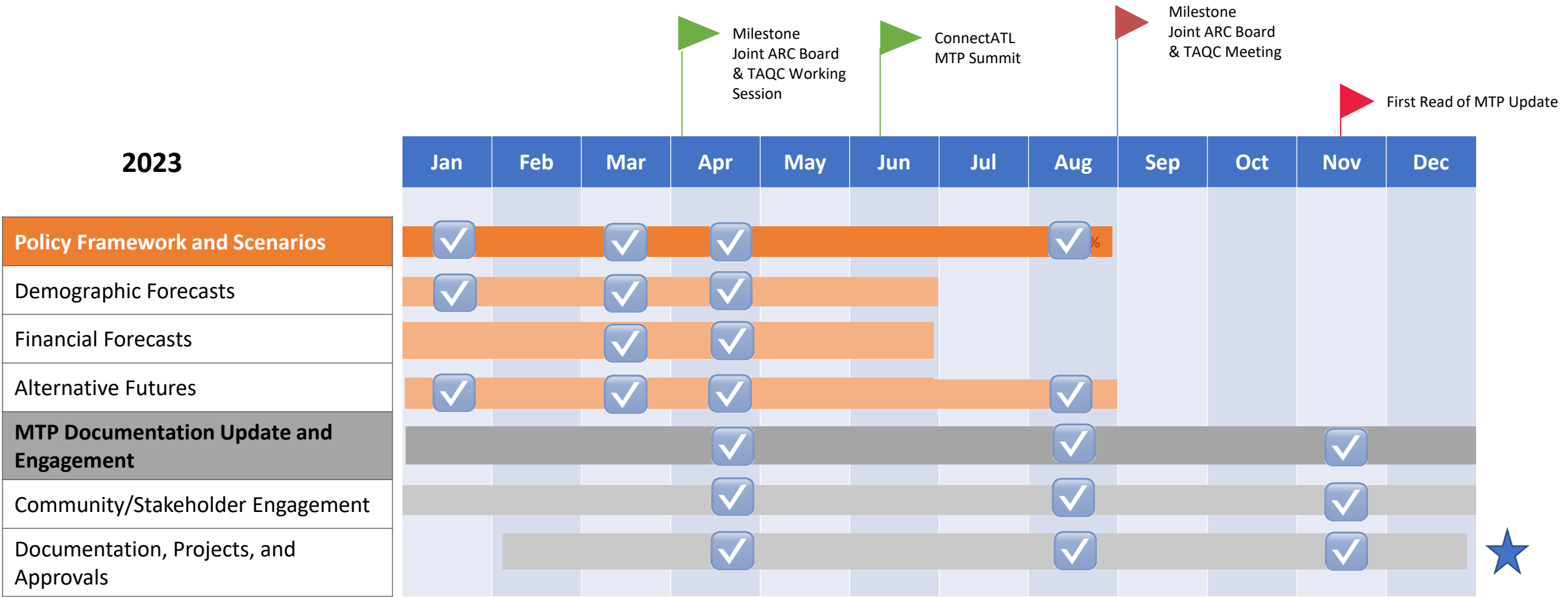
- 1 | Does your community intend to attract manufacturers or businesses that are related to the new “green” industries?
- 2 | Distribution has grown significantly. What land use and transportation strategies are needed to best manage this growing land use – and critical part of the economy?
- 3 | What strategies can be pursued in local plans to provide more workforce housing?



Building the Plan: Federal Priorities, Financial and Project Planning

2023 MTP Work Activities

Final Review and Approval Required: January 2024



ONE
great
REGION

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Federal Implementation Priorities



Workforce Development

IJJA places focus on creating job opportunities with **fair wages and high labor standards**. Certain IJJA grants set-aside funds specifically for this purpose. Key programs include the Workforce Development, Training, and Education Program; the State Digital Equity Capacity Grant Program; and the Digital Equity Competitive Grant Program.



Equity and Justice40

IJJA encourages funds to be invested equitably, including through the Justice40 initiative, which seeks that 40% of overall benefits from **federal investments in climate and clean energy reach underserved communities**. Federal agencies are taking steps to ensure that IJJA programs are accessible to underserved communities, including by offering technical assistance and simplifying the funding process. Certain programs have carved out **funds for disadvantaged communities**.

Multiple IJJA programs including Reconnecting Communities, Community Charging, and the Broadband Equity, Access, and Deployment Program emphasize equity goals in their program design.



Climate and Resilience

IJJA makes funding available to **prioritize building resilient infrastructure** that can withstand the impacts of climate change. Several IJJA programs focus on bolstering resilience, such as the PROTECT program, while others support resiliency through development of **electric vehicle charging infrastructure**, new battery development programs, and programs that promote innovation to **advance clean energy technologies** and water infrastructure.

Source: <https://www.whitehouse.gov/briefing-room>

Federal Implementation Priority: Workforce Development

Investing funds from transportation programs in workforce development is now allowed by the IIJA

- The **IIJA expands the allowable uses** of funds to allow for engagement with workforce development boards and for activities around addressing workforce gaps.

Aligning investments from transportation programs with existing workforce development programs

- Human Capital Plans can help determine immediate and long-term workforce needs and **align workers with future transportation and public infrastructure investments.**

Identifying which competitive or formula programs should make investments in workforce development

- **Example programs that are eligible** include the National Highway Performance Program; the Surface Transportation Block Grant Program; and the Congestion Mitigation and Air Quality Improvement Program

The MTP has not previously included workforce development investments. As a policymaker, to what degree do you support using funding for workforce development in the MTP?

Federal Implementation Priority: Equity and Justice40

Justice40 is a federal **“all of government approach”** that sets a goal of **40%** of the benefits of certain federal investments flowing to **disadvantaged communities**. ARC must now consider Justice40 in making **MTP recommendations and assess equity using federal definitions**.

US DOT used the 6 categories below to assess the overall level of disadvantage of communities.



Transportation: communities that spend more, and take longer, to get where they need to go



Health: communities with adverse health outcomes, disabilities, and low access to health care services



Environmental: communities experiencing disproportionately high levels of pollutants & toxins



Economic: communities with high levels of poverty, and low access to jobs and education



Resilience: communities vulnerable to hazards caused by climate change



Equity: communities with a shared history of discrimination or other forms of disadvantage



US DOT is implementing J40 across 39 Covered Programs

The 7 areas of Federal investments covered by Justice40 are:



Climate Change



Clean energy & energy efficiency



Clean Transit



Affordable & sustainable housing



Remediation & reduction of legacy pollution



Clean water & wastewater infrastructure

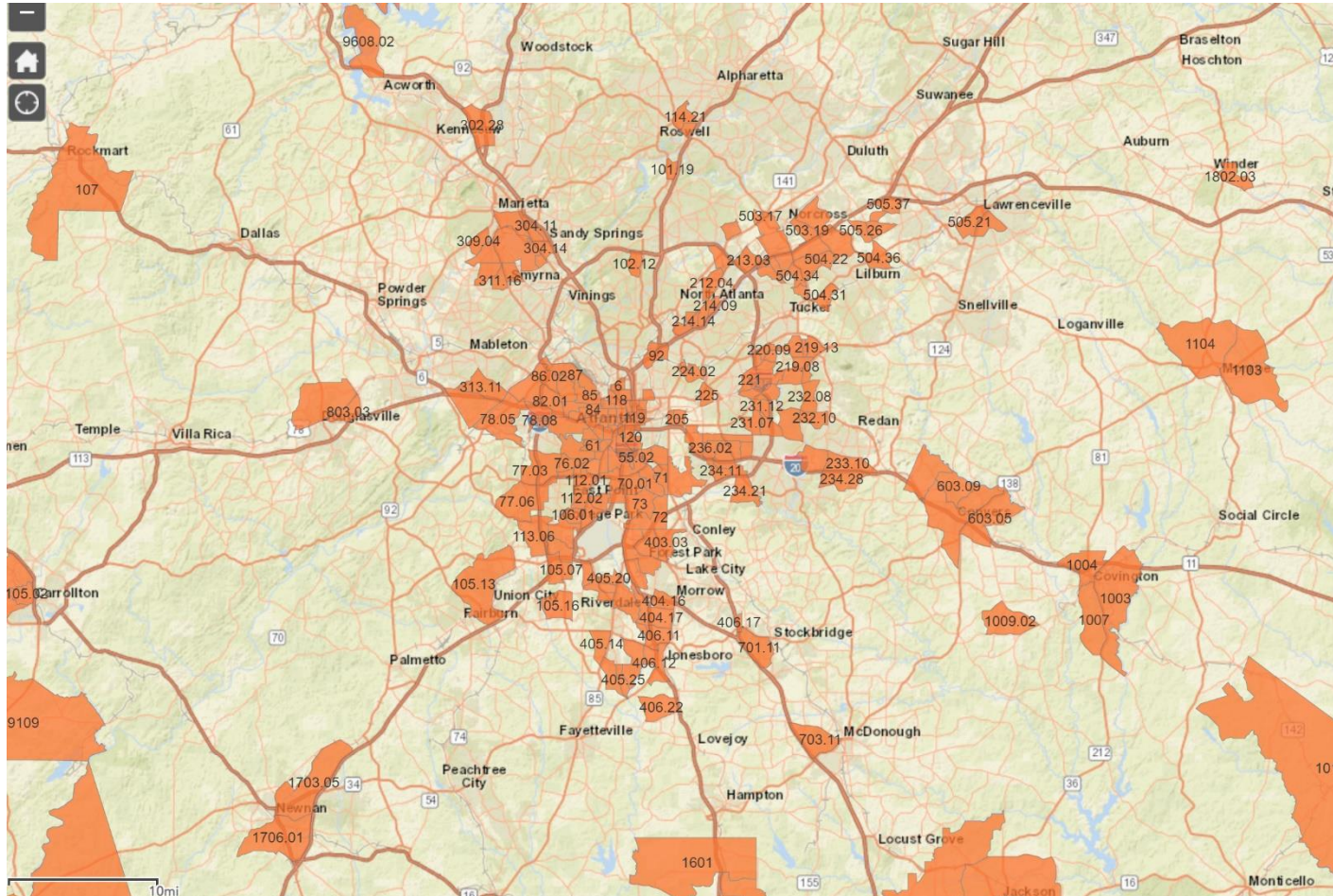


Training & workforce development

Across 5 Modes ~\$204 Billion in BIL authorizations

Federal Implementation Priority: Equity and Justice40

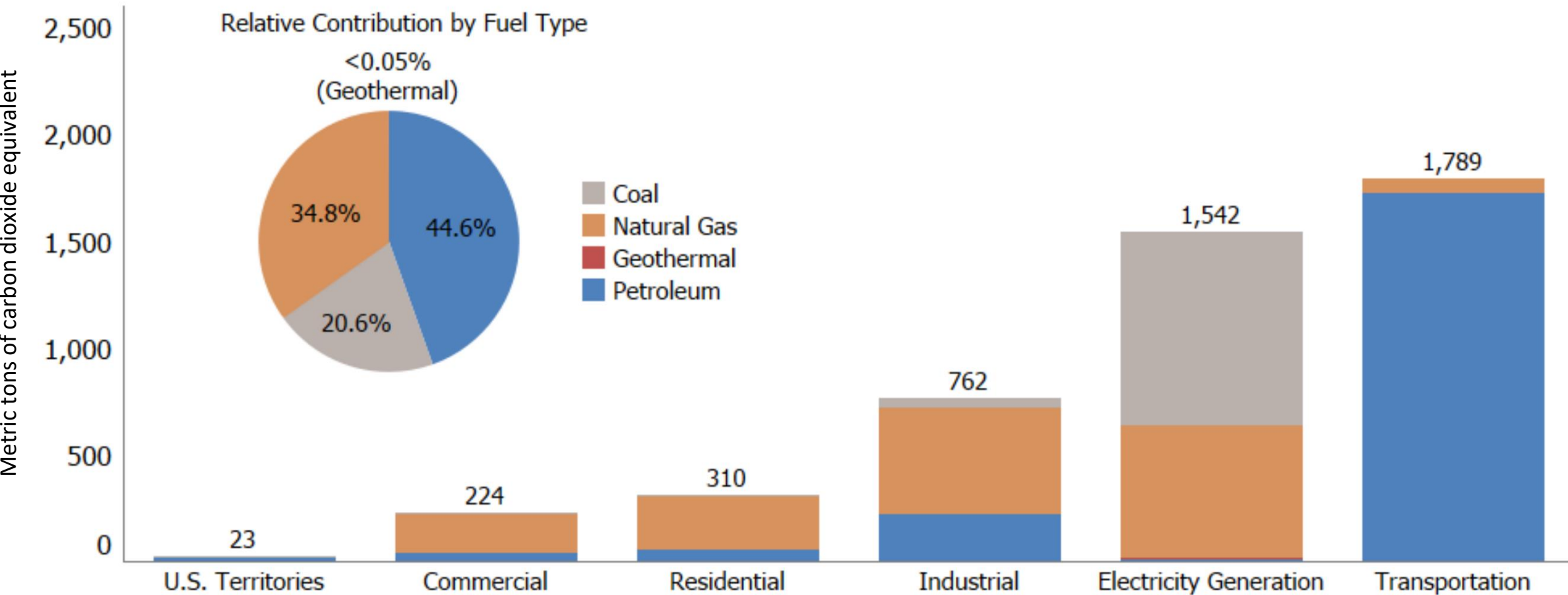
Addressing **“Areas of Persistent Poverty”** is now a federal focus for planning and funding. These areas are **Census Tracts** which have a poverty rate of **at least 20 percent** as measured by the Census for 2014-2018



To what degree have you as a local government policymaker started to incorporate considerations of “Areas of Persistent Poverty” into transportation and community planning? Note: These areas have lower match requirements for many projects (such as RAISE)

Federal Implementation Priority: Climate and Resilience

With transportation the largest single category of GHG emissions, the Federal government is focusing on pursuing climate “mitigation” strategies - such as powering vehicles with alternative fuels



Source: EPA:- <https://www.epa.gov/system/files/documents/2023-02/US-GHG-Inventory-2023-Main-Text.pdf>

Federal Implementation Priority: Climate and Resilience

Four competitive IIJA transportation funding programs, with a major climate emphasis, that **Atlanta region governments should prioritize**

RAISE Grants
\$7.5 billion



Charging and Fueling Grants
\$2.5 billion



Safe Streets and Road for All Grants
\$5 billion



PROTECT Grants
\$1.5 billion



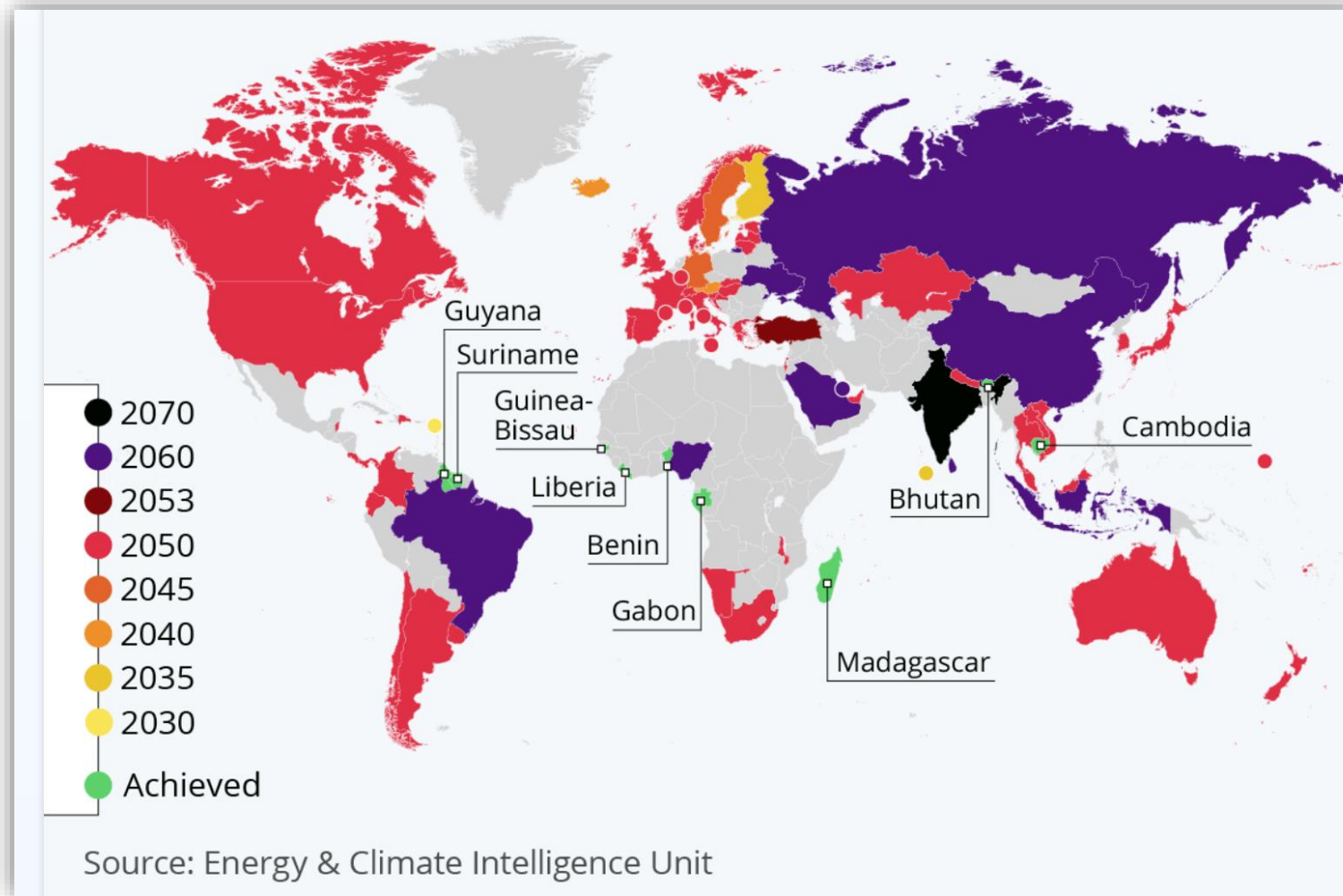
The Jan. 2024 MTP Update will emphasize resiliency, equity and safety based on the high federal priority on these areas. However, ARC must continue to focus on these areas – and the associated IIJA funding programs – moving forward in the future.



Appendix

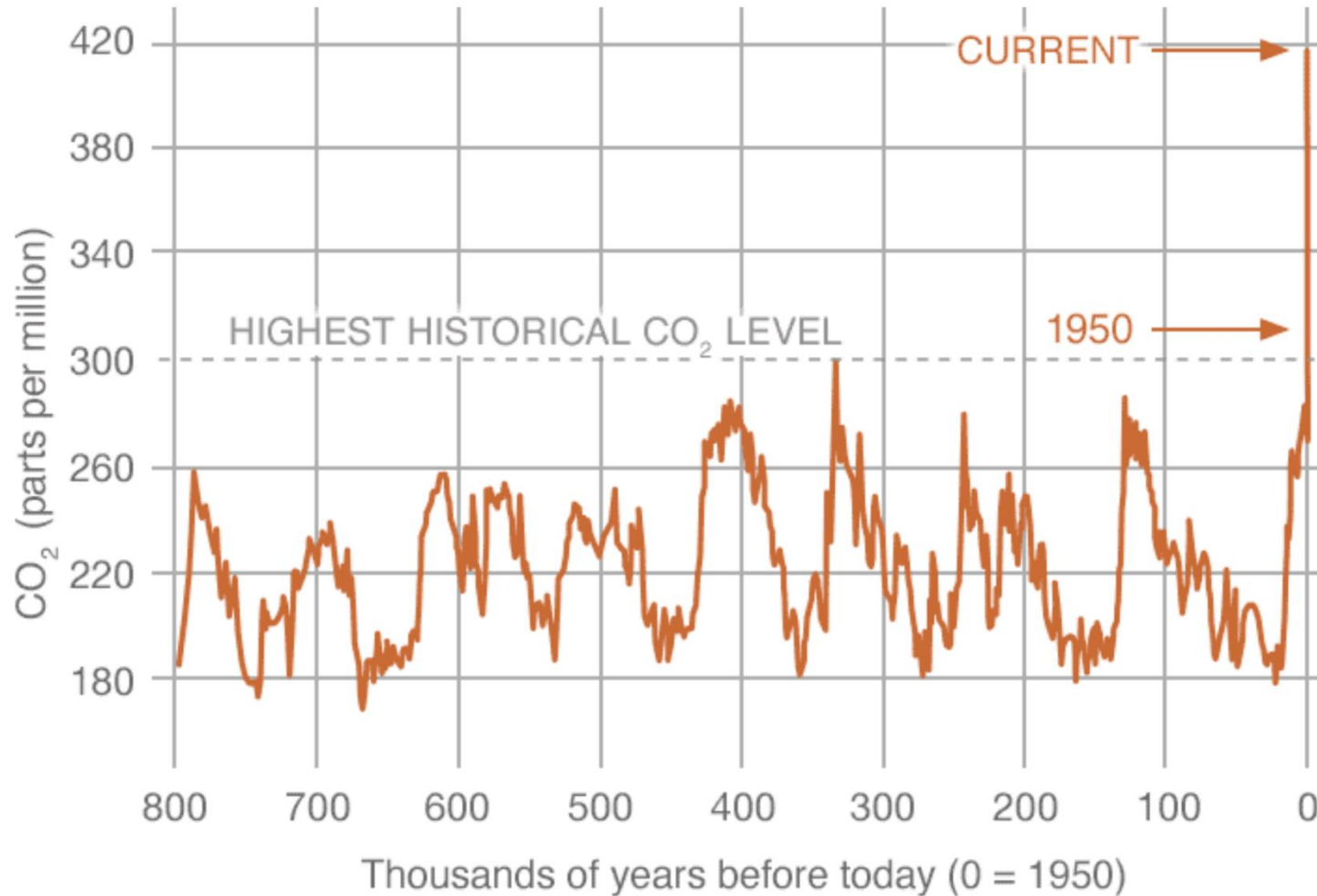
Federal Implementation Priority: Climate and Resilience

Most Industrialized Nations Have Committed to “Net Zero” GHG Emissions between 2050 to 2070



This Net Zero policy is reflected in laws such as the Bipartisan Infrastructure Law (BIL) and the Inflation Reduction Act (IRA) - as well as by Executive Orders. Has your local government started to discuss climate change in local land use and transportation plans?

Over the past 800,000 years, CO₂ (carbon dioxide) has ranged from around 180 ppm to 280 ppm. Starting in the 1960s, CO₂ levels began to increase dramatically



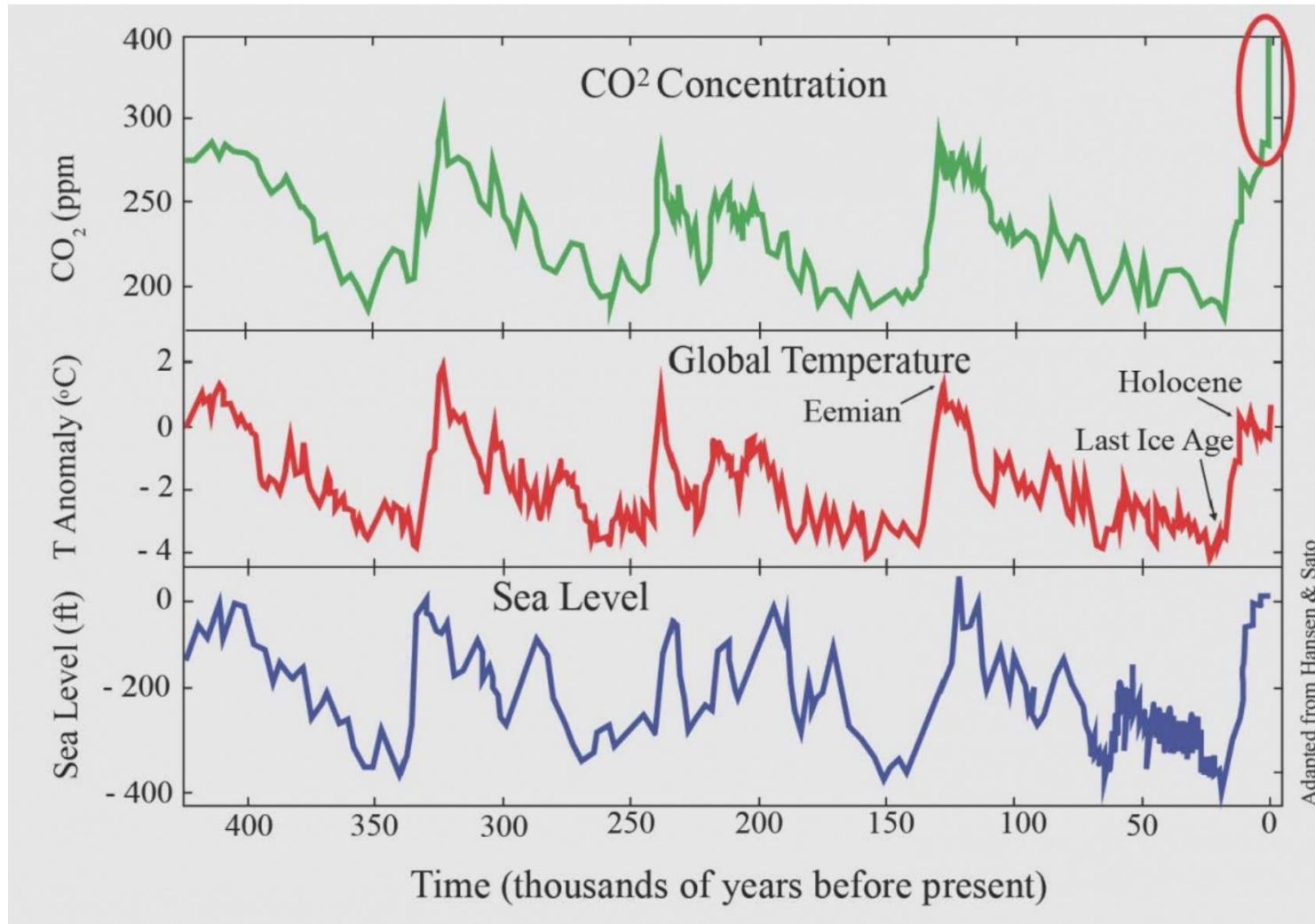
As of February 2023, the CO₂ level is **419 ppm**. In 1958, the CO₂ level was **315 ppm**.

Where does the historical CO₂ data come from? The oldest readings come from ice core drillings in Antarctica. Since 1958 data comes from atmospheric testing at the Mauna Loa, Hawaii observatory.

<https://gml.noaa.gov/obop/mlo/>

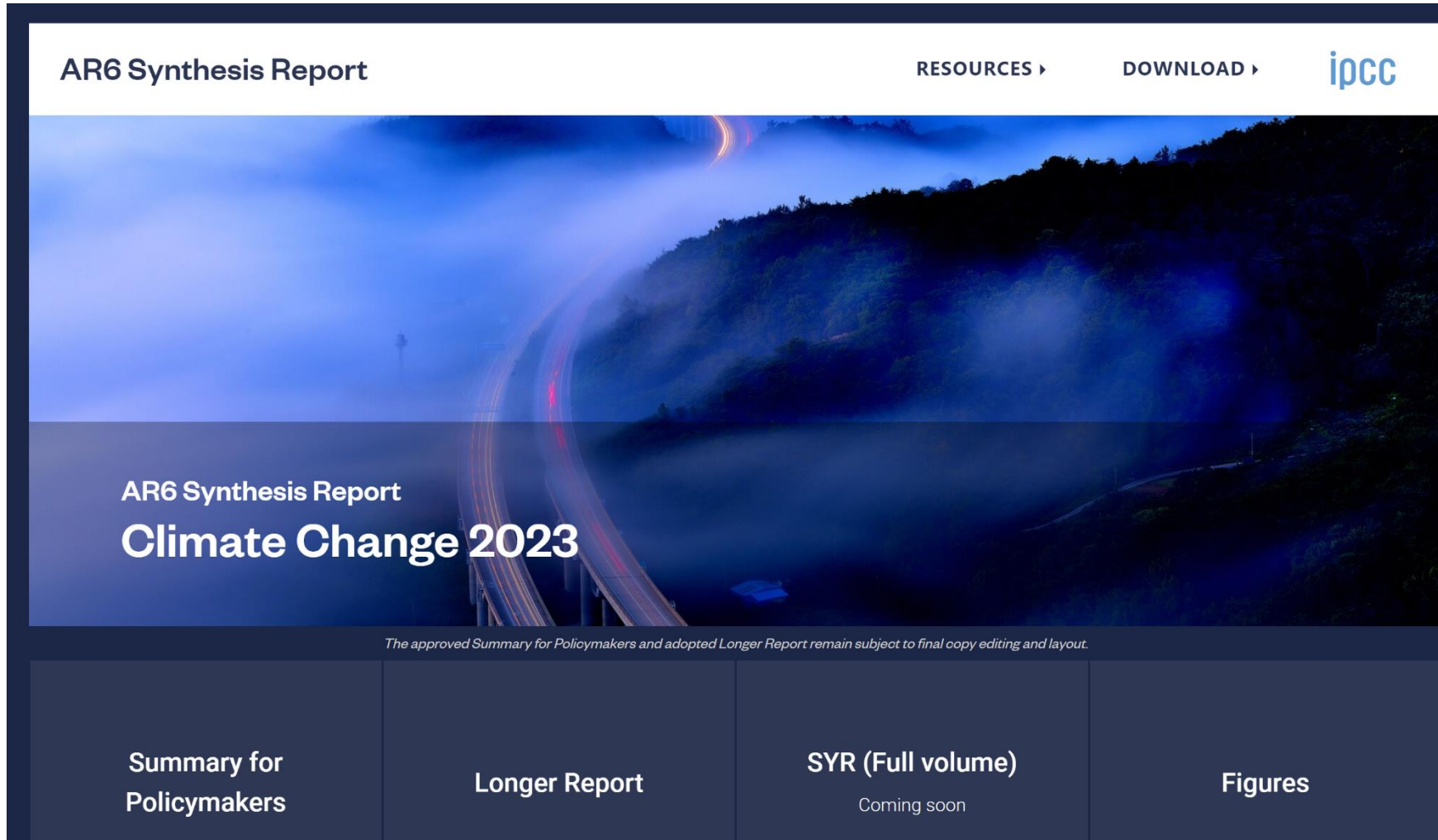
Source: NASA: <https://climate.nasa.gov/vital-signs/carbon-dioxide/>

The Historical Relationship of CO₂ to Temperatures and Sea Levels Concerns Scientists



Based on this historical relationship between CO₂ and temperature, climate models are forecasting **significant temperature increases this century**

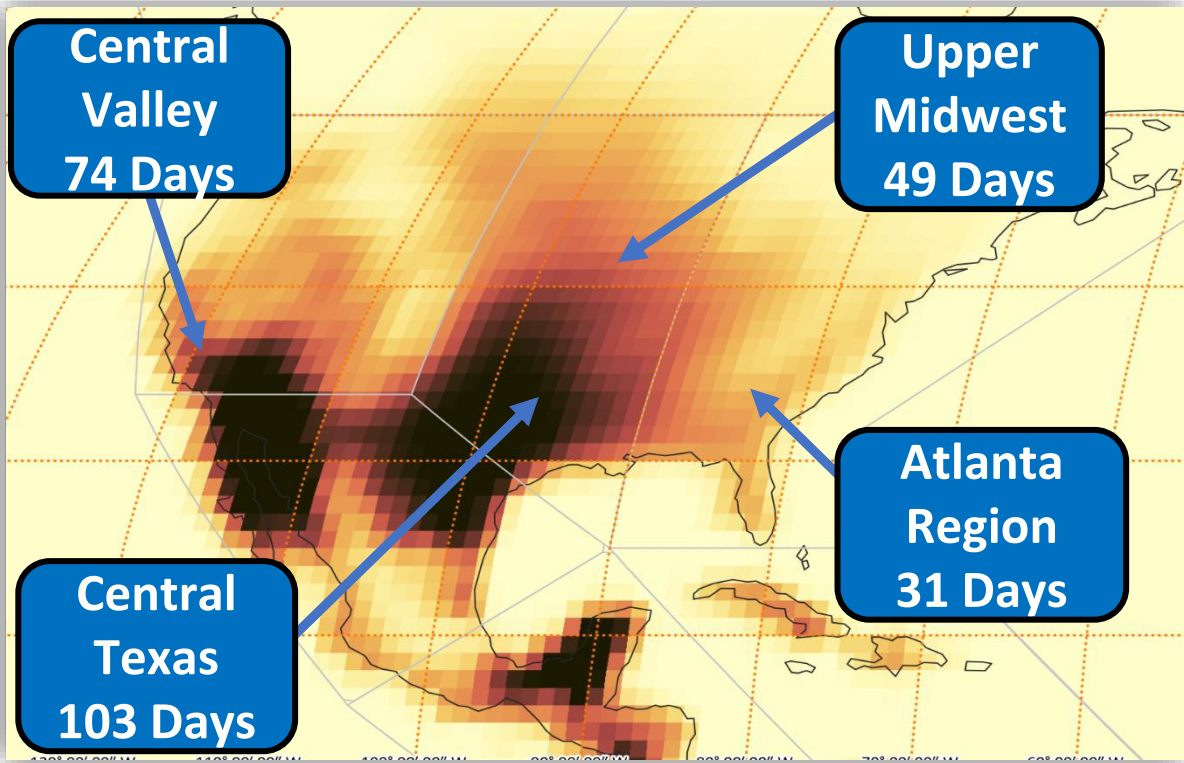
What are the Latest Climate Models Forecasting for the Atlanta Region and the Southeastern United States?



The Intergovernmental Panel on Climate Change (IPCC) is the definitive source of climate forecasts. The latest synthesis report – including climate modeling – was released in March 2023

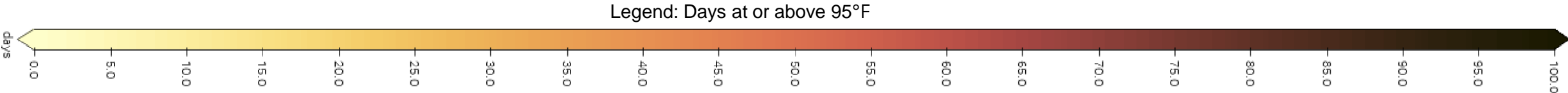
The Atlanta Region is Forecast to have 31 Days of 95°+ Temperatures by 2100. Some areas in **Central Texas will Experience Over 100 Days** – and 49 Days in the Upper Midwest

IPCC “Intermediate Scenario” assuming global CO₂ emissions remain around current levels until 2050 – then decrease



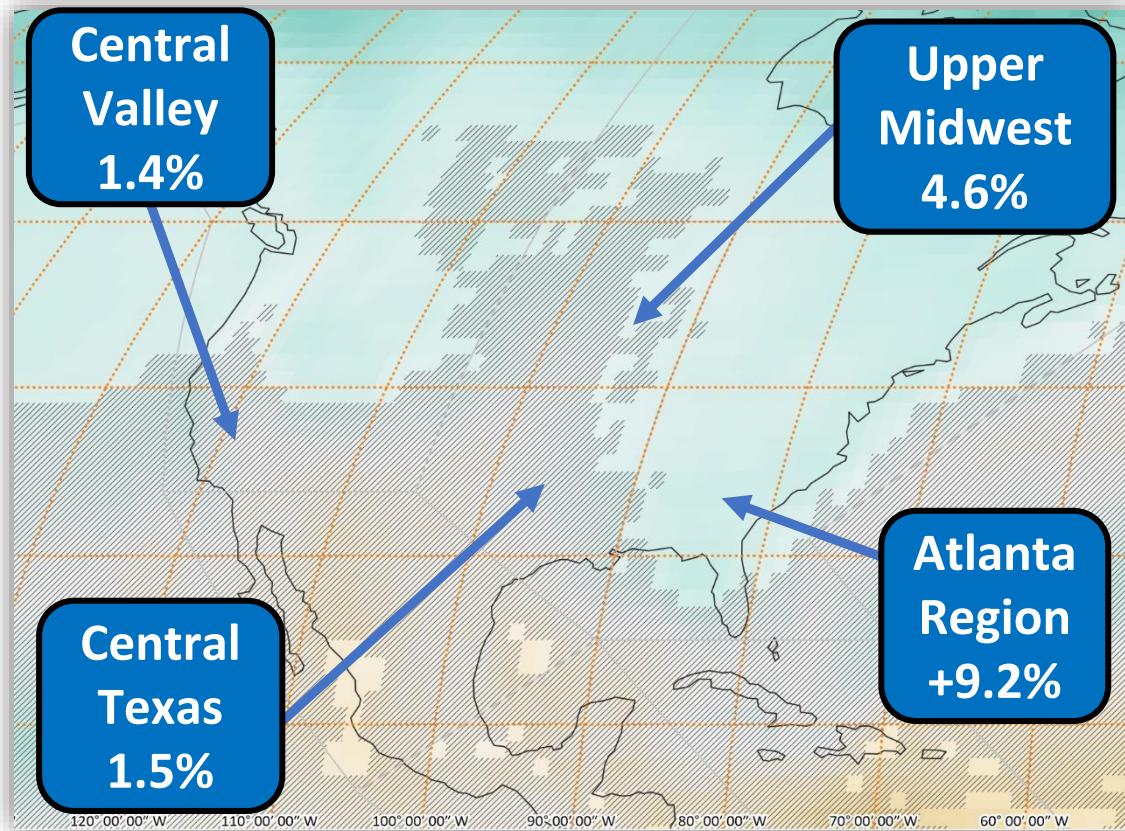
Other areas in the nation are forecast to have significant increases in the number of hot days, including many **population and agricultural centers**

Area	1981-2010	2021-2040	2041-2060	2061-2100
Atlanta Region	12	20	24	31
Upper Midwest	22	34	40	49
Calif. Central Valley	33	48	55	74
Central Texas	63	84	92	103



Metro Atlanta is Forecast to Have 9.2% More Annual Precipitation by 2100

IPCC “Intermediate Scenario” assuming global CO₂ emissions remain around current levels until 2050 – then decrease

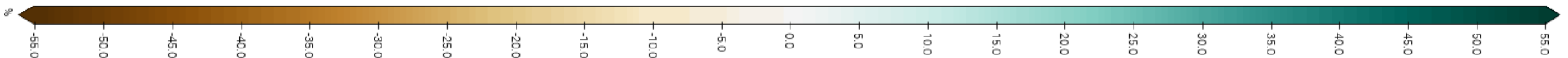


The climate is forecast to be wetter in the eastern United States. Climate models are not in agreement for the **Midwest and Southwest** (note the hatched areas).

If precipitation forecasts are accurate, many areas in the Nation – such as the Southwest - will have significant water supply challenges due to the increase in forecast temperatures. **ARC population and employment forecasts will be reevaluated in future to incorporate the potential impact of climate change.** Additional analysis is needed.

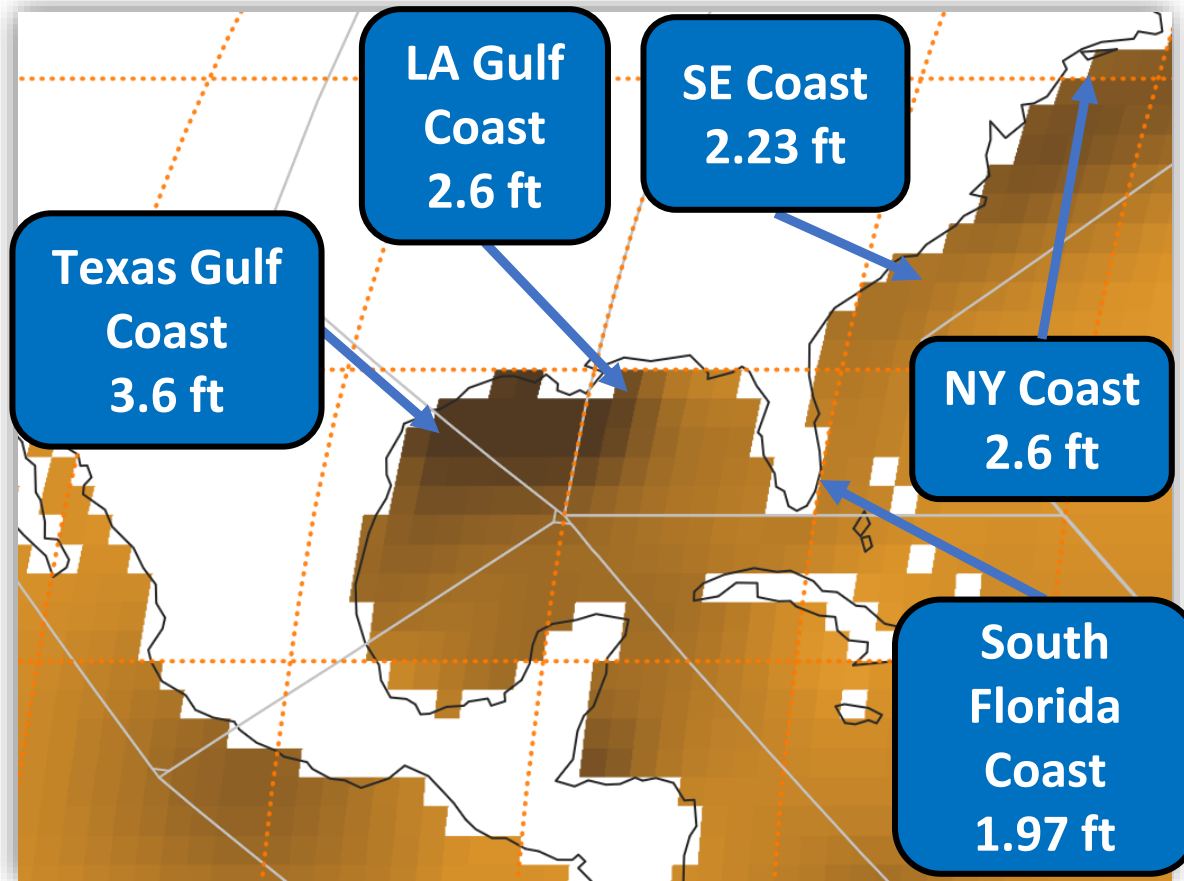
 Areas where climate models are in Low Agreement

Legend: % Change in Annual Precipitation



Most Coastal Communities Are Forecast to Experience a 2' to 3.6' Rise in Sea Level by 2100

IPCC “Intermediate Scenario” assuming global CO₂ emissions remain around current levels until 2050 – then decrease



Rising sea levels are forecast to significantly impact the **Gulf Coast**, with sea levels forecast to rise 3.6 ft.

Major impacts are forecast for **South Florida**. A forecast sea level rise of nearly 2' impacts communities that are currently only about **6.5' above sea level**. Florida communities have average tidal ranges of 4' between high and low tide.

Global average sea level has risen between 8–9" since 1880. Nearly 4" of this sea level rise (3.8') has occurred since 1993.

<https://www.climate.gov/news-features/understanding-climate/climate-change-global-sea-level>

Legend: Sea Level Rise (meters)

